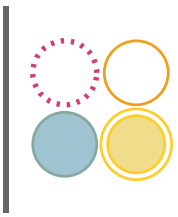
latexindent.pl

Version 3.17



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`latexindent.pl` is a `Perl` script that indents `.tex` (and other) files according to an indentation scheme that the user can modify to suit their taste. Environments, including those with alignment delimiters (such as `tabular`), and commands, including those that can split braces and brackets across lines, are *usually* handled correctly by the script. Options for `verbatim`-like environments and commands, together with indentation after headings (such as `chapter`, `section`, etc) are also available. The script also has the ability to modify line breaks, and to add comment symbols and blank lines; furthermore, it permits string or regex-based substitutions. All user options are customisable via the switches and the YAML interface; you can find a quick start guide in Section 1.4 on page 6.

Contents

*and contributors! See Section 11.5 on page 131. For all communication, please visit [14].

SECTION 1

Introduction

1.1 Thanks

I first created `latexindent.pl` to help me format chapter files in a big project. After I blogged about it on the TEX stack exchange [1] I received some positive feedback and follow-up feature requests. A big thank you to Harish Kumar [21] who helped to develop and test the initial versions of the script.

The `YAML`-based interface of `latexindent.pl` was inspired by the wonderful `arara` tool; any similarities are deliberate, and I hope that it is perceived as the compliment that it is. Thank you to Paulo Cereda and the team for releasing this awesome tool; I initially worried that I was going to have to make a GUI for `latexindent.pl`, but the release of `arara` has meant there is no need.

There have been several contributors to the project so far (and hopefully more in the future!); thank you very much to the people detailed in Section 11.5 on page 131 for their valued contributions, and thank you to those who report bugs and request features at [14].

1.2 License

`latexindent.pl` is free and open source, and it always will be; it is released under the GNU General Public License v3.0.

Before you start using it on any important files, bear in mind that `latexindent.pl` has the option to overwrite your `.tex` files. It will always make at least one backup (you can choose how many it makes, see page 22) but you should still be careful when using it. The script has been tested on many files, but there are some known limitations (see Section 10). You, the user, are responsible for ensuring that you maintain backups of your files before running `latexindent.pl` on them. I think it is important at this stage to restate an important part of the license here:

> *This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.*

There is certainly no malicious intent in releasing this script, and I do hope that it works as you expect it to; if it does not, please first of all make sure that you have the correct settings, and then feel free to let me know at [14] with a complete minimum working example as I would like to improve the code as much as possible.

Warning!

Before you try the script on anything important (like your thesis), test it out on the sample files in the `test-case` directory [14].

If you have used any version 2. of `latexindent.pl`, there are a few changes to the interface; see appendix J on page 148 and the comments throughout this document for details.*

1.3 About this documentation

As you read through this documentation, you will see many listings; in this version of the documentation, there are a total of 538. This may seem a lot, but I deem it necessary in presenting the various different options of `latexindent.pl` and the associated output that they are capable of producing.

The different listings are presented using different styles:

LISTING 1: demo-tex.tex

```
demonstration .tex file
```

This type of listing is a `.tex` file.

LISTING 2: fileExtensionPreference

```
44 fileExtensionPreference:
45     .tex: 1
46     .sty: 2
47     .cls: 3
48     .bib: 4
```

This type of listing is a `.yaml` file; when you see line numbers given (as here) it means that the snippet is taken directly from `defaultSettings.yaml`, discussed in detail in Section 5 on page 21.

LISTING 3: modifyLineBreaks -m

```
491 modifyLineBreaks:
492     preserveBlankLines: 1
493     condenseMultipleBlankLinesInto: 1
```

This type of listing is a `.yaml` file, but it will only be relevant when the `-m` switch is active; see Section 6 on page 69 for more details.

LISTING 4: replacements -r

```
604 replacements:
605   -
606     amalgamate: 1
607   -
608     this: 'latexindent.pl'
609     that: 'pl.latexindent'
610     lookForThis: 0
611     when: before
```

This type of listing is a `.yaml` file, but it will only be relevant when the `-r` switch is active; see Section 7 on page 106 for more details.

N: 2017-06-25

You will occasionally see dates shown in the margin (for example, next to this paragraph!) which detail the date of the version in which the feature was implemented; the 'N' stands for 'new as of the date shown' and 'U' stands for 'updated as of the date shown'. If you see ✨, it means that the feature is either new (N) or updated (U) as of the release of the current version; if you see ✨ attached to a listing, then it means that listing is new (N) or updated (U) as of the current version. If you have not read this document before (and even if you have!), then you can ignore every occurrence of the ✨; they are simply there to highlight new and updated features. The new and updated features in this documentation (V3.17) are on the following pages:

1.4 Quick start

If you'd like to get started with `latexindent.pl` then simply type

```
cmh:~$ latexindent.pl myfile.tex
```

from the command line. If you receive an error message such as that given in Listing 5, then you need to install the missing perl modules.

LISTING 5: Possible error messages

```
Can't␣locate␣File/HomeDir.pm␣in␣@INC␣(@INC␣contains:␣
    /Library/Perl/5.12/darwin-thread-multi-2level␣/Library/Perl/5.12␣
    /Network/Library/Perl/5.12/darwin-thread-multi-2level␣
    /Network/Library/Perl/5.12␣
    /Library/Perl/Updates/5.12.4/darwin-thread-multi-2level␣
    /Library/Perl/Updates/5.12.4␣
    /System/Library/Perl/5.12/darwin-thread-multi-2level␣/System/Library/Perl/5.12␣
    /System/Library/Perl/Extras/5.12/darwin-thread-multi-2level␣
    /System/Library/Perl/Extras/5.12␣.)␣at␣helloworld.pl␣line␣10.
BEGIN␣failed--compilation␣aborted␣at␣helloworld.pl␣line␣10.
```

`latexindent.pl` ships with a script to help with this process; if you run the following script, you should be prompted to install the appropriate modules.

```
cmh:~$ perl latexindent-module-installer.pl
```

You might also like to see https://stackoverflow.com/questions/19590042/error-cant-locate-file-homedir-pm-in-inc, for example, as well as appendix A on page 132.

1.5 A word about regular expressions

As you read this documentation, you may encounter the term *regular expressions*. I've tried to write this documentation in such a way so as to allow you to engage with them or not, as you prefer. This documentation is not designed to be a guide to regular expressions, and if you'd like to read about them, I recommend [12].

SECTION 2

Demonstration: before and after

Let's give a demonstration of some before and after code – after all, you probably won't want to try the script if you don't much like the results. You might also like to watch the video demonstration I made on youtube [35]

As you look at Listings 6 to 11, remember that `latexindent.pl` is just following its rules, and there is nothing particular about these code snippets. All of the rules can be modified so that you can personalise your indentation scheme.

In each of the samples given in Listings 6 to 11 the 'before' case is a 'worst case scenario' with no effort to make indentation. The 'after' result would be the same, regardless of the leading white space at the beginning of each line which is stripped by `latexindent.pl` (unless a `verbatim`-like environment or `noIndentBlock` is specified – more on this in Section 5).

LISTING 6: `filecontents1.tex`

```
\begin{filecontents}{mybib.bib}
@online{strawberryperl,
title="Strawberry Perl",
url="http://strawberryperl.com/"}
@online{cmhblog,
title="A Perl script ...
url="...
}
\end{filecontents}
```

LISTING 7: `filecontents1.tex` default output

```
\begin{filecontents}{mybib.bib}
   @online{strawberryperl,
      title="Strawberry Perl",
      url="http://strawberryperl.com/"}
   @online{cmhblog,
      title="A Perl script ...
      url="...
   }
\end{filecontents}
```

LISTING 8: `tikzset.tex`

```
\tikzset{
shrink inner sep/.code={
\pgfkeysgetvalue...
\pgfkeysgetvalue...
}
}
```

LISTING 9: `tikzset.tex` default output

```
\tikzset{
   shrink inner sep/.code={
         \pgfkeysgetvalue...
         \pgfkeysgetvalue...
      }
}
```

LISTING 10: `pstricks.tex`

```
\def\Picture#1{%
\def\stripH{#1}%
\begin{pspicture}[showgrid}
\psforeach{\row}{%
{{3,2.8,2.7,3,3.1}},%
{2.8,1,1.2,2,3},%
...
}{%
\expandafter...
}
\end{pspicture}}
```

LISTING 11: `pstricks.tex` default output

```
\def\Picture#1{%
   \def\stripH{#1}%
   \begin{pspicture}[showgrid}
      \psforeach{\row}{%
         {{3,2.8,2.7,3,3.1}},%
         {2.8,1,1.2,2,3},%
         ...
      }{%
         \expandafter...
      }
   \end{pspicture}}
```

SECTION 3

How to use the script

`latexindent.pl` ships as part of the TEXLive distribution for Linux and Mac users; `latexindent.exe` ships as part of the TEXLive for Windows users. These files are also available from github [14] should you wish to use them without a TEX distribution; in this case, you may like to read appendix B on page 136 which details how the `path` variable can be updated.

In what follows, we will always refer to `latexindent.pl`, but depending on your operating system and preference, you might substitute `latexindent.exe` or simply `latexindent`.

There are two ways to use `latexindent.pl`: from the command line, and using `arara`; we discuss these in Section 3.1 and Section 3.2 respectively. We will discuss how to change the settings and behaviour of the script in Section 5 on page 21.

`latexindent.pl` ships with `latexindent.exe` for Windows users, so that you can use the script with or without a Perl distribution. If you plan to use `latexindent.pl` (i.e, the original Perl script) then you will need a few standard Perl modules – see appendix A on page 132 for details; in particular, note that a module installer helper script is shipped with `latexindent.pl`.

N: 2018-01-13

MiKTeX users on Windows may like to see [17] for details of how to use `latexindent.exe` without a Perl installation.

3.1 From the command line

`latexindent.pl` has a number of different switches/flags/options, which can be combined in any way that you like, either in short or long form as detailed below. `latexindent.pl` produces a `.log` file, `indent.log`, every time it is run; the name of the log file can be customised, but we will refer to the log file as `indent.log` throughout this document. There is a base of information that is written to `indent.log`, but other additional information will be written depending on which of the following options are used.

N: 2017-06-25

`-v, -version`

```
cmh:~$ latexindent.pl -v
cmh:~$ latexindent.pl --version
```

This will output only the version number to the terminal.

N: 2022-01-08

`-vv, -vversion`

```
cmh:~$ latexindent.pl -vv
cmh:~$ latexindent.pl --vversion
```

This will output *verbose* version details to the terminal, including the location of `latexindent.pl` and `defaultSettings.yaml`.

`-h, -help`

```
cmh:~$ latexindent.pl -h
cmh:~$ latexindent.pl --help
```

As above this will output a welcome message to the terminal, including the version number and available options.

```
cmh:~$ latexindent.pl myfile.tex
```

This will operate on `myfile.tex`, but will simply output to your terminal; `myfile.tex` will not be changed by `latexindent.pl` in any way using this command.

N: 2022-03-25

You can instruct `latexindent.pl` to operate on multiple (batches) of files, for example

```
cmh:~$ latexindent.pl myfile1.tex myfile2.tex
```

Full details are given in appendix C on page 138.

`-w, -overwrite`

```
cmh:~$ latexindent.pl -w myfile.tex
cmh:~$ latexindent.pl --overwrite myfile.tex
cmh:~$ latexindent.pl myfile.tex --overwrite
```

This *will* overwrite `myfile.tex`, but it will make a copy of `myfile.tex` first. You can control the name of the extension (default is `.bak`), and how many different backups are made – more on this in Section 5, and in particular see `backupExtension` and `onlyOneBackUp`.

Note that if `latexindent.pl` can not create the backup, then it will exit without touching your original file; an error message will be given asking you to check the permissions of the backup file.

N: 2022-03-25

`-wd, -overwriteIfDifferent`

```
cmh:~$ latexindent.pl -wd myfile.tex
cmh:~$ latexindent.pl --overwriteIfDifferent myfile.tex
cmh:~$ latexindent.pl myfile.tex --overwriteIfDifferent
```

This *will* overwrite `myfile.tex` but only *if the indented text is different from the original*. If the indented text is *not* different from the original, then `myfile.tex` will *not* be overwritten.

All other details from the `-w` switch are relevant here. If you call `latexindent.pl` with both the `-wd` and the `-w` switch, then the `-w` switch will be deactivated and the `-wd` switch takes priority.

`-o=output.tex,-outputfile=output.tex`

```
cmh:~$ latexindent.pl -o=output.tex myfile.tex
cmh:~$ latexindent.pl myfile.tex -o=output.tex
cmh:~$ latexindent.pl --outputfile=output.tex myfile.tex
cmh:~$ latexindent.pl --outputfile output.tex myfile.tex
```

This will indent `myfile.tex` and output it to `output.tex`, overwriting it (`output.tex`) if it already exists[1].

Note that if `latexindent.pl` is called with both the `-w` and `-o` switches, then `-w` will be ignored and `-o` will take priority (this seems safer than the other way round). The same is true for the `-wd` switch, and the `-o` switch takes priority over it.

Note that using `-o` as above is equivalent to using

[1] Users of version 2.* should note the subtle change in syntax

```
cmh:~$ latexindent.pl myfile.tex > output.tex
```

N: 2017-06-25

You can call the `-o` switch with the name of the output file *without* an extension; in this case, `latexindent.pl` will use the extension from the original file. For example, the following two calls to `latexindent.pl` are equivalent:

```
cmh:~$ latexindent.pl myfile.tex -o=output
cmh:~$ latexindent.pl myfile.tex -o=output.tex
```

N: 2017-06-25

You can call the `-o` switch using a `+` symbol at the beginning; this will concatenate the name of the input file and the text given to the `-o` switch. For example, the following two calls to `latexindent.pl` are equivalent:

```
cmh:~$ latexindent.pl myfile.tex -o=+new
cmh:~$ latexindent.pl myfile.tex -o=myfilenew.tex
```

N: 2017-06-25

You can call the `-o` switch using a `++` symbol at the end of the name of your output file; this tells `latexindent.pl` to search successively for the name of your output file concatenated with $0, 1, \ldots$ while the name of the output file exists. For example,

```
cmh:~$ latexindent.pl myfile.tex -o=output++
```

tells `latexindent.pl` to output to `output0.tex`, but if it exists then output to `output1.tex`, and so on.

Calling `latexindent.pl` with simply

```
cmh:~$ latexindent.pl myfile.tex -o=++
```

tells it to output to `myfile0.tex`, but if it exists then output to `myfile1.tex` and so on.

The `+` and `++` feature of the `-o` switch can be combined; for example, calling

```
cmh:~$ latexindent.pl myfile.tex -o=+out++
```

tells `latexindent.pl` to output to `myfileout0.tex`, but if it exists, then try `myfileout1.tex`, and so on.

There is no need to specify a file extension when using the `++` feature, but if you wish to, then you should include it *after* the `++` symbols, for example

```
cmh:~$ latexindent.pl myfile.tex -o=+out++.tex
```

See appendix J on page 148 for details of how the interface has changed from Version 2.2 to Version 3.0 for this flag.

`-s, -silent`

```
cmh:~$ latexindent.pl -s myfile.tex
cmh:~$ latexindent.pl myfile.tex -s
```

Silent mode: no output will be given to the terminal.

`-t, -trace`

```
cmh:~$ latexindent.pl -t myfile.tex
cmh:~$ latexindent.pl myfile.tex -t
```

Tracing mode: verbose output will be given to `indent.log`. This is useful if `latexindent.pl` has made a mistake and you're trying to find out where and why. You might also be interested in learning about `latexindent.pl`'s thought process – if so, this switch is for you, although it should be noted that, especially for large files, this does affect performance of the script.

`-tt, -ttrace`

```
cmh:~$ latexindent.pl -tt myfile.tex
cmh:~$ latexindent.pl myfile.tex -tt
```

More detailed tracing mode: this option gives more details to `indent.log` than the standard `trace` option (note that, even more so than with `-t`, especially for large files, performance of the script will be affected).

`-l, -local[=myyaml.yaml,other.yaml,...]`

```
cmh:~$ latexindent.pl -l myfile.tex
cmh:~$ latexindent.pl -l=myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l first.yaml,second.yaml,third.yaml myfile.tex
cmh:~$ latexindent.pl -l=first.yaml,second.yaml,third.yaml myfile.tex
cmh:~$ latexindent.pl myfile.tex -l=first.yaml,second.yaml,third.yaml
```

`latexindent.pl` will always load `defaultSettings.yaml` (rhymes with camel) and if it is called with the `-l` switch and it finds `localSettings.yaml` in the same directory as `myfile.tex`, then, if not found, it looks for `localSettings.yaml` (and friends, see Section 4.2 on page 18) in the current working directory, then these settings will be added to the indentation scheme. Information will be given in `indent.log` on the success or failure of loading `localSettings.yaml`.

U: 2021-03-14

The `-l` flag can take an *optional* parameter which details the name (or names separated by commas) of a YAML file(s) that resides in the same directory as `myfile.tex`; you can use this option if you would like to load a settings file in the current working directory that is *not* called `localSettings.yaml`. In fact, you can specify both *relative* and *absolute paths* for your YAML files; for example

U: 2017-08-21

```
cmh:~$ latexindent.pl -l=../../myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l=/home/cmhughes/Desktop/myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l=C:\Users\cmhughes\Desktop\myyaml.yaml myfile.tex
```

You will find a lot of other explicit demonstrations of how to use the `-l` switch throughout this documentation,

N: 2017-06-25

You can call the `-l` switch with a '+' symbol either before or after another YAML file; for example:

```
cmh:~$ latexindent.pl -l=+myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l "+␣myyaml.yaml" myfile.tex
cmh:~$ latexindent.pl -l=myyaml.yaml+  myfile.tex
```

which translate, respectively, to

```
cmh:~$ latexindent.pl -l=localSettings.yaml,myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l=localSettings.yaml,myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l=myyaml.yaml,localSettings.yaml myfile.tex
```

Note that the following is *not* allowed:

```
cmh:~$ latexindent.pl -l+myyaml.yaml myfile.tex
```

and

```
cmh:~$ latexindent.pl -l + myyaml.yaml myfile.tex
```

will *only* load `localSettings.yaml`, and `myyaml.yaml` will be ignored. If you wish to use spaces between any of the YAML settings, then you must wrap the entire list of YAML files in quotes, as demonstrated above.

N: 2017-06-25

You may also choose to omit the `yaml` extension, such as

```
cmh:~$ latexindent.pl -l=localSettings,myyaml myfile.tex
```

`-y, -yaml=yaml settings`

```
cmh:~$ latexindent.pl myfile.tex -y="defaultIndent:␣'␣'"
cmh:~$ latexindent.pl myfile.tex -y="defaultIndent:␣'␣',maximumIndentation:'␣'"
cmh:~$ latexindent.pl myfile.tex -y="indentRules:␣one:␣'\t\t\t\t'"
cmh:~$ latexindent.pl myfile.tex
    -y='modifyLineBreaks:environments:EndStartsOnOwnLine:3' -m
cmh:~$ latexindent.pl myfile.tex
    -y='modifyLineBreaks:environments:one:EndStartsOnOwnLine:3' -m
```

N: 2017-08-21

You can specify YAML settings from the command line using the `-y` or `-yaml` switch; sample demonstrations are given above. Note, in particular, that multiple settings can be specified by separating them via commas. There is a further option to use a `;` to separate fields, which is demonstrated in Section 4.3 on page 19.

Any settings specified via this switch will be loaded *after* any specified using the `-l` switch. This is discussed further in Section 4.4 on page 20.

`-d, -onlydefault`

```
cmh:~$ latexindent.pl -d myfile.tex
```

Only `defaultSettings.yaml`: you might like to read Section 5 before using this switch. By default, `latexindent.pl` will always search for `indentconfig.yaml` or `.indentconfig.yaml` in your home directory. If you would prefer it not to do so then (instead of deleting or renaming `indentconfig.yaml` or `.indentconfig.yaml`) you can simply call the script with the `-d` switch; note that this will also tell the script to ignore `localSettings.yaml` even if it has been called with the `-l` switch; `latexindent.pl` will also ignore any settings specified from the `-y` switch.

U: 2017-08-21

`-c, -cruft=<directory>`

```
cmh:~$ latexindent.pl -c=/path/to/directory/ myfile.tex
```

If you wish to have backup files and `indent.log` written to a directory other than the current working directory, then you can send these 'cruft' files to another directory. Note the use of a trailing forward slash.

`-g, -logfile=<name of log file>`

```
cmh:~$ latexindent.pl -g=other.log myfile.tex
cmh:~$ latexindent.pl -g other.log myfile.tex
cmh:~$ latexindent.pl --logfile other.log myfile.tex
cmh:~$ latexindent.pl myfile.tex -g other.log
```

By default, `latexindent.pl` reports information to `indent.log`, but if you wish to change the name of this file, simply call the script with your chosen name after the `-g` switch as demonstrated above.

N: 2021-05-07

If `latexindent.pl` can not open the log file that you specify, then the script will operate, and no log file will be produced; this might be helpful to users who wish to specify the following, for example

```
cmh:~$ latexindent.pl -g /dev/null myfile.tex
```

`-sl, -screenlog`

```
cmh:~$ latexindent.pl -sl myfile.tex
cmh:~$ latexindent.pl -screenlog myfile.tex
```

N: 2018-01-13

Using this option tells `latexindent.pl` to output the log file to the screen, as well as to your chosen log file.

`-m, -modifylinebreaks`

```
cmh:~$ latexindent.pl -m myfile.tex
cmh:~$ latexindent.pl -modifylinebreaks myfile.tex
```

One of the most exciting developments in Version 3.0 is the ability to modify line breaks; for full details see Section 6 on page 69

`latexindent.pl` can also be called on a file without the file extension, for example

```
cmh:~$ latexindent.pl myfile
```

and in which case, you can specify the order in which extensions are searched for; see Listing 16 on page 21 for full details.

`STDIN`

```
cmh:~$ cat myfile.tex | latexindent.pl
cmh:~$ cat myfile.tex | latexindent.pl -
```

N: 2018-01-13

`latexindent.pl` will allow input from STDIN, which means that you can pipe output from other commands directly into the script. For example assuming that you have content in `myfile.tex`, then the above command will output the results of operating upon `myfile.tex`.

If you wish to use this feature with your own local settings, via the `-l` switch, then you should finish your call to `latexindent.pl` with a `-` sign:

```
cmh:~$ cat myfile.tex | latexindent.pl -l=mysettings.yaml -
```

U: 2018-01-13

Similarly, if you simply type `latexindent.pl` at the command line, then it will expect (STDIN) input from the command line.

```
cmh:~$ latexindent.pl
```

Once you have finished typing your input, you can press

- `CTRL+D` on Linux
- `CTRL+Z` followed by `ENTER` on Windows

to signify that your input has finished. Thanks to [5] for an update to this feature.

`-r, -replacement`

```
cmh:~$ latexindent.pl -r myfile.tex
cmh:~$ latexindent.pl -replacement myfile.tex
```

N: 2019-07-13

You can call `latexindent.pl` with the `-r` switch to instruct it to perform replacements/substitutions on your file; full details and examples are given in Section 7 on page 106.

`-rv, -replacementrespectverb`

```
cmh:~$ latexindent.pl -rv myfile.tex
cmh:~$ latexindent.pl -replacementrespectverb myfile.tex
```

N: 2019-07-13

You can instruct `latexindent.pl` to perform replacements/substitutions by using the `-rv` switch, but will *respect verbatim code blocks*; full details and examples are given in Section 7 on page 106.

`-rr, -onlyreplacement`

```
cmh:~$ latexindent.pl -rr myfile.tex
cmh:~$ latexindent.pl -onlyreplacement myfile.tex
```

N: 2019-07-13

You can instruct `latexindent.pl` to skip all of its other indentation operations and *only* perform replacements/substitutions by using the `-rr` switch; full details and examples are given in Section 7 on page 106.

`-k, -check`

```
cmh:~$ latexindent.pl -k myfile.tex
cmh:~$ latexindent.pl -check myfile.tex
```

N: 2021-09-16

You can instruct `latexindent.pl` to check if the text after indentation matches that given in the original file.

The `exit` code of `latexindent.pl` is 0 by default. If you use the `-k` switch then

- if the text after indentation matches that given in the original file, then the exit code is 0;
- if the text after indentation does *not* match that given in the original file, then the exit code is 1.

The value of the exit code may be important to those wishing to, for example, check the status of the indentation in continuous integration tools such as GitHub Actions. Full details of the exit codes of `latexindent.pl` are given in Table 1.

A simple `diff` will be given in `indent.log`.

`-kv, -checkv`

```
cmh:~$ latexindent.pl -kv myfile.tex
cmh:~$ latexindent.pl -checkv myfile.tex
```

N: 2021-09-16

The `check verbose` switch is exactly the same as the `-k` switch, except that it is *verbose*, and it will output the (simple) diff to the terminal, as well as to `indent.log`.

`-n, -lines=MIN-MAX`

```
cmh:~$ latexindent.pl -n 5-8 myfile.tex
cmh:~$ latexindent.pl -lines 5-8 myfile.tex
```

N: 2021-09-16

The `lines` switch instructs `latexindent.pl` to operate only on specific line ranges within `myfile.tex`.

Complete demonstrations are given in Section 8.

`-GCString`

```
cmh:~$ latexindent.pl --GCString myfile.tex
```

N: 2022-03-25

instructs `latexindent.pl` to load the `Unicode::GCString` module. This should only be necessary if you find that the alignment at ampersand routine (described in Section 5.5) does not work for your language. Further details are given in appendix A.3.

3.2 From arara

Using `latexindent.pl` from the command line is fine for some folks, but others may find it easier to use from `arara`; you can find the arara rule for `latexindent.pl` and its associated documentation at [4].

3.3 Summary of exit codes

Assuming that you call `latexindent.pl` on `myfile.tex`

```
cmh:~$ latexindent.pl myfile.tex
```

then `latexindent.pl` can exit with the exit codes given in Table 1.

TABLE 1: Exit codes for `latexindent.pl`

exit code	indentation	status
0	✔	success; if `-k` or `-kv` active, indented text matches original
0	✖	success; if `-version`, `-vversion` or `-help`, no indentation performed
1	✔	success, and `-k` or `-kv` active; indented text *different* from original
2	✖	failure, `defaultSettings.yaml` could not be read
3	✖	failure, myfile.tex not found
4	✖	failure, myfile.tex exists but cannot be read
5	✖	failure, `-w` active, and back-up file cannot be written
6	✖	failure, `-c` active, and cruft directory does not exist

SECTION 4

indentconfig.yaml, local settings and the -y switch

The behaviour of `latexindent.pl` is controlled from the settings specified in any of the YAML files that you tell it to load. By default, `latexindent.pl` will only load `defaultSettings.yaml`, but there are a few ways that you can tell it to load your own settings files.

4.1 indentconfig.yaml and .indentconfig.yaml

`latexindent.pl` will always check your home directory for `indentconfig.yaml` and `.indentconfig.yaml` (unless it is called with the `-d` switch), which is a plain text file you can create that contains the *absolute* paths for any settings files that you wish `latexindent.pl` to load. There is no difference between `indentconfig.yaml` and `.indentconfig.yaml`, other than the fact that `.indentconfig.yaml` is a 'hidden' file; thank you to [11] for providing this feature. In what follows, we will use `indentconfig.yaml`, but it is understood that this could equally represent `.indentconfig.yaml`. If you have both files in existence then `indentconfig.yaml` takes priority.

For Mac and Linux users, their home directory is `/username` while Windows (Vista onwards) is `C:\Users\username`[2] Listing 12 shows a sample `indentconfig.yaml` file.

LISTING 12: `indentconfig.yaml` (sample)

```
# Paths to user settings for latexindent.pl
#
# Note that the settings will be read in the order you
# specify here- each successive settings file will overwrite
# the variables that you specify

paths:
- /home/cmhughes/Documents/yamlfiles/mysettings.yaml
- /home/cmhughes/folder/othersettings.yaml
- /some/other/folder/anynameyouwant.yaml
- C:\Users\chughes\Documents\mysettings.yaml
- C:\Users\chughes\Desktop\test spaces\more spaces.yaml
```

Note that the `.yaml` files you specify in `indentconfig.yaml` will be loaded in the order in which you write them. Each file doesn't have to have every switch from `defaultSettings.yaml`; in fact, I recommend that you only keep the switches that you want to *change* in these settings files.

To get started with your own settings file, you might like to save a copy of `defaultSettings.yaml` in another directory and call it, for example, `mysettings.yaml`. Once you have added the path to `indentconfig.yaml` you can change the switches and add more code-block names to it as you see fit – have a look at Listing 13 for an example that uses four tabs for the default indent, adds the `tabbing` environment/command to the list of environments that contains alignment delimiters; you might also like to refer to the many YAML files detailed throughout the rest of this documentation.

[2] If you're not sure where to put `indentconfig.yaml`, don't worry `latexindent.pl` will tell you in the log file exactly where to put it assuming it doesn't exist already.

LISTING 13: `mysettings.yaml` (example)

```
# Default value of indentation
defaultIndent: "\t\t\t\t"

# environments that have tab delimiters, add more
# as needed
lookForAlignDelims:
    tabbing: 1
```

You can make sure that your settings are loaded by checking `indent.log` for details – if you have specified a path that `latexindent.pl` doesn't recognise then you'll get a warning, otherwise you'll get confirmation that `latexindent.pl` has read your settings file [3].

Warning!

When editing `.yaml` files it is *extremely* important to remember how sensitive they are to spaces. I highly recommend copying and pasting from `defaultSettings.yaml` when you create your first `whatevernameyoulike.yaml` file.

If `latexindent.pl` can not read your `.yaml` file it will tell you so in `indent.log`.

N: 2021-06-19

If you find that `latexindent.pl` does not read your YAML file, then it might be as a result of the default commandline encoding not being UTF-8; normally this will only occcur for Windows users. In this case, you might like to explore the `encoding` option for `indentconfig.yaml` as demonstrated in Listing 14.

LISTING 14: The `encoding` option for `indentconfig.yaml`

```
encoding: GB2312
paths:
- D:\cmh\latexindent.yaml
```

Thank you to [29] for this contribution; please see appendix H on page 146 and details within [27] for further information.

4.2 localSettings.yaml and friends

U: 2021-03-14

The `-l` switch tells `latexindent.pl` to look for `localSettings.yaml` and/or friends in the *same directory* as `myfile.tex`. For example, if you use the following command

```
cmh:~$ latexindent.pl -l myfile.tex
```

then `latexindent.pl` will search for and then, assuming they exist, load each of the following files in the following order:

1. localSettings.yaml
2. latexindent.yaml
3. .localSettings.yaml
4. .latexindent.yaml

These files will be assumed to be in the same directory as `myfile.tex`, or otherwise in the current working directory. You do not need to have all of the above files, usually just one will be sufficient. In what follows, whenever we refer to `localSettings.yaml` it is assumed that it can mean any of the four named options listed above.

[3] Windows users may find that they have to end `.yaml` files with a blank line

If you'd prefer to name your `localSettings.yaml` file something different, (say, `mysettings.yaml` as in Listing 13) then you can call `latexindent.pl` using, for example,

```
cmh:~$ latexindent.pl -l=mysettings.yaml myfile.tex
```

Any settings file(s) specified using the `-l` switch will be read *after* `defaultSettings.yaml` and, assuming they exist, any user setting files specified in `indentconfig.yaml`.

Your settings file can contain any switches that you'd like to change; a sample is shown in Listing 15, and you'll find plenty of further examples throughout this manual.

LISTING 15: `localSettings.yaml` (example)

```
#  verbatim environments - environments specified
#  here will not be changed at all!
verbatimEnvironments:
    cmhenvironment: 0
    myenv: 1
```

You can make sure that your settings file has been loaded by checking `indent.log` for details; if it can not be read then you receive a warning, otherwise you'll get confirmation that `latexindent.pl` has read your settings file.

4.3 The -y|yaml switch

N: 2017-08-21

You may use the `-y` switch to load your settings; for example, if you wished to specify the settings from Listing 15 using the `-y` switch, then you could use the following command:

```
cmh:~$ latexindent.pl -y="verbatimEnvironments:cmhenvironment:0;myenv:1" myfile.tex
```

Note the use of `;` to specify another field within `verbatimEnvironments`. This is shorthand, and equivalent, to using the following command:

```
cmh:~$ latexindent.pl
    -y="verbatimEnvironments:cmhenvironment:0,verbatimEnvironments:myenv:1"
    myfile.tex
```

You may, of course, specify settings using the `-y` switch as well as, for example, settings loaded using the `-l` switch; for example,

```
cmh:~$ latexindent.pl -l=mysettings.yaml
    -y="verbatimEnvironments:cmhenvironment:0;myenv:1" myfile.tex
```

Any settings specified using the `-y` switch will be loaded *after* any specified using `indentconfig.yaml` and the `-l` switch.

If you wish to specify any regex-based settings using the `-y` switch, it is important not to use quotes surrounding the regex; for example, with reference to the 'one sentence per line' feature (Section 6.2 on page 81) and the listings within Listing 318 on page 83, the following settings give the option to have sentences end with a semicolon

```
cmh:~$ latexindent.pl -m
    --yaml='modifyLineBreaks:oneSentencePerLine:sentencesEndWith:other:\;'
```

4.4 Settings load order

`latexindent.pl` loads the settings files in the following order:

1. `defaultSettings.yaml` is always loaded, and can not be renamed;
2. `anyUserSettings.yaml` and any other arbitrarily-named files specified in `indentconfig.yaml`;
3. `localSettings.yaml` but only if found in the same directory as `myfile.tex` and called with `-l` switch; this file can be renamed, provided that the call to `latexindent.pl` is adjusted accordingly (see Section 4.2). You may specify both relative and absolute paths to other YAML files using the `-l` switch, separating multiple files using commas;

U: 2017-08-21

4. any settings specified in the `-y` switch.

N: 2017-08-21

A visual representation of this is given in Figure 1.

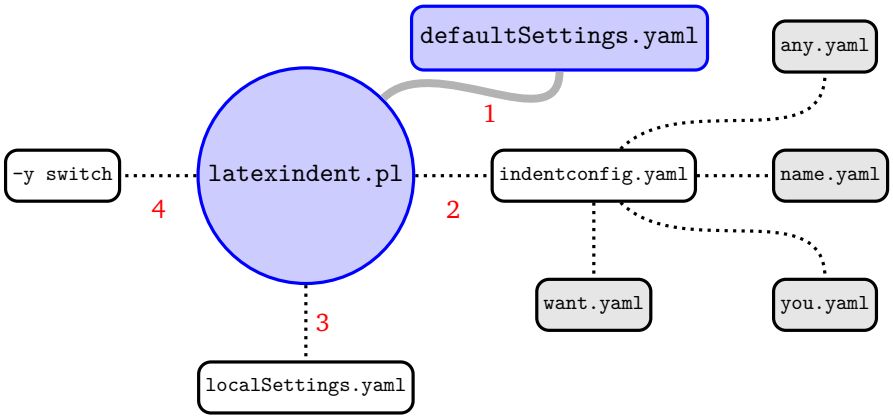

FIGURE 1: Schematic of the load order described in Section 4.4; solid lines represent mandatory files, dotted lines represent optional files. `indentconfig.yaml` can contain as many files as you like. The files will be loaded in order; if you specify settings for the same field in more than one file, the most recent takes priority.

SECTION 5

defaultSettings.yaml

`latexindent.pl` loads its settings from `defaultSettings.yaml`. The idea is to separate the behaviour of the script from the internal working – this is very similar to the way that we separate content from form when writing our documents in LaTeX.

If you look in `defaultSettings.yaml` you'll find the switches that govern the behaviour of `latexindent.pl`. If you're not sure where `defaultSettings.yaml` resides on your computer, don't worry as `indent.log` will tell you where to find it. `defaultSettings.yaml` is commented, but here is a description of what each switch is designed to do. The default value is given in each case; whenever you see *integer* in *this* section, assume that it must be greater than or equal to `0` unless otherwise stated.

For most of the settings in `defaultSettings.yaml` that are specified as integers, then we understand `0` to represent 'off' and `1` to represent 'on'. For fields that allow values other than `0` or `1`, it is hoped that the specific context and associated commentary should make it clear which values are allowed.

`fileExtensionPreference`: ⟨*fields*⟩

`latexindent.pl` can be called to act on a file without specifying the file extension. For example we can call

```
cmh:~$ latexindent.pl myfile
```

in which case the script will look for `myfile` with the extensions specified in `fileExtensionPreference` in their numeric order. If no match is found, the script will exit. As with all of the fields, you should change and/or add to this as necessary.

LISTING 16: `fileExtensionPreference`

```
44 fileExtensionPreference:
45     .tex: 1
46     .sty: 2
47     .cls: 3
48     .bib: 4
```

Calling `latexindent.pl myfile` with the (default) settings specified in Listing 16 means that the script will first look for `myfile.tex`, then `myfile.sty`, `myfile.cls`, and finally `myfile.bib` in order[4].

5.1 Backup and log file preferences

`backupExtension`: ⟨*extension name*⟩

If you call `latexindent.pl` with the `-w` switch (to overwrite `myfile.tex`) then it will create a backup file before doing any indentation; the default extension is `.bak`, so, for example, `myfile.bak0` would be created when calling `latexindent.pl myfile.tex` for the first time.

By default, every time you subsequently call `latexindent.pl` with the `-w` to act upon `myfile.tex`, it will create successive back up files: `myfile.bak1`, `myfile.bak2`, etc.

[4] Throughout this manual, listings shown with line numbers represent code taken directly from `defaultSettings.yaml`.

`onlyOneBackUp`: ⟨*integer*⟩

If you don't want a backup for every time that you call `latexindent.pl` (so you don't want `myfile.bak1`, `myfile.bak2`, etc) and you simply want `myfile.bak` (or whatever you chose `backupExtension` to be) then change `onlyOneBackUp` to `1`; the default value of `onlyOneBackUp` is `0`.

`maxNumberOfBackUps`: ⟨*integer*⟩

Some users may only want a finite number of backup files, say at most 3, in which case, they can change this switch. The smallest value of `maxNumberOfBackUps` is 0 which will *not* prevent backup files being made; in this case, the behaviour will be dictated entirely by `onlyOneBackUp`. The default value of `maxNumberOfBackUps` is `0`.

`cycleThroughBackUps`: ⟨*integer*⟩

Some users may wish to cycle through backup files, by deleting the oldest backup file and keeping only the most recent; for example, with `maxNumberOfBackUps: 4`, and `cycleThroughBackUps` set to `1` then the `copy` procedure given below would be obeyed.

```
cmh:~$ copy myfile.bak1 to myfile.bak0
cmh:~$ copy myfile.bak2 to myfile.bak1
cmh:~$ copy myfile.bak3 to myfile.bak2
cmh:~$ copy myfile.bak4 to myfile.bak3
```

The default value of `cycleThroughBackUps` is `0`.

`logFilePreferences`: ⟨*fields*⟩

`latexindent.pl` writes information to `indent.log`, some of which can be customized by changing `logFilePreferences`; see Listing 17. If you load your own user settings (see Section 4 on page 17) then `latexindent.pl` will detail them in `indent.log`; you can choose not to have the details logged by switching `showEveryYamlRead` to `0`. Once all of your settings have been loaded, you can see the amalgamated settings in the log file by switching `showAmalgamatedSettings` to `1`, if you wish.

LISTING 17: `logFilePreferences`

```
88  logFilePreferences:
89      showEveryYamlRead: 1
90      showAmalgamatedSettings: 0
91      showDecorationStartCodeBlockTrace: 0
92      showDecorationFinishCodeBlockTrace: 0
93      endLogFileWith: '--------------'
94      showGitHubInfoFooter: 1
95      Dumper:
96        Terse: 1
97        Indent: 1
98        Useqq: 1
99        Deparse: 1
100       Quotekeys: 0
101       Sortkeys: 1
102       Pair: " => "
```

N: 2018-01-13

When either of the `trace` modes (see page 12) are active, you will receive detailed information in `indent.log`. You can specify character strings to appear before and after the notification of a found code block using, respectively, `showDecorationStartCodeBlockTrace` and `showDecorationFinishCodeBlockTra` A demonstration is given in appendix G on page 145.

The log file will end with the characters given in `endLogFileWith`, and will report the `GitHub` address of `latexindent.pl` to the log file if `showGitHubInfoFooter` is set to `1`.

U: 2021-03-14 Note: `latexindent.pl` no longer uses the `log4perl` module to handle the creation of the logfile.

U: 2021-06-19 Some of the options for Perl's `Dumper` module can be specified in Listing 17; see [9] and [8] for more information. These options will mostly be helpful for those calling `latexindent.pl` with the `-tt` option described in Section 3.1.

5.2 Verbatim code blocks

`verbatimEnvironments`: ⟨*fields*⟩

A field that contains a list of environments that you would like left completely alone – no indentation will be performed on environments that you have specified in this field, see Listing 18.

LISTING 18: `verbatimEnvironments`

```
106 verbatimEnvironments:
107     verbatim: 1
108     lstlisting: 1
109     minted: 1
```

LISTING 19: `verbatimCommands`

```
112 verbatimCommands:
113     verb: 1
114     lstinline: 1
```

Note that if you put an environment in `verbatimEnvironments` and in other fields such as `lookForAlignDelims` or `noAdditionalIndent` then `latexindent.pl` will *always* prioritize `verbatimEnvironments`.

N: 2021-10-30 You can, optionally, specify the `verbatim` field using the `name` field which takes a regular expression as its argument; thank you to [40] for contributing this feature.

For demonstration, then assuming that your file contains the environments `latexcode`, `latexcode*`, `pythoncode` and `pythoncode*`, then the listings given in Listings 20 and 21 are equivalent.

LISTING 20: `nameAsRegex1.yaml`

```
verbatimEnvironments:
    latexcode: 1
    latexcode*: 1
    pythoncode: 1
    pythoncode*: 1
```

LISTING 21: `nameAsRegex2.yaml`

```
verbatimEnvironments:
    nameAsRegex:
      name: '\w+code\*?'
      lookForThis: 1
```

With reference to Listing 21:

- the `name` field as specified here means *any word followed by the word code, optionally followed by* *;
- we have used `nameAsRegex` to identify this field, but you can use any description you like;
- the `lookForThis` field is optional, and can take the values 0 (off) or 1 (on); by default, it is assumed to be 1 (on).

`verbatimCommands`: ⟨*fields*⟩

A field that contains a list of commands that are verbatim commands, for example `\lstinline`; any commands populated in this field are protected from line breaking routines (only relevant if the `-m` is active, see Section 6 on page 69).

With reference to Listing 19, by default `latexindent.pl` looks for `\verb` immediately followed by another character, and then it takes the body as anything up to the next occurrence of the character; this means that, for example, `\verb!x+3!` is treated as a `verbatimCommands`.

N: 2021-10-30 You can, optionally, specify the `verbatimCommands` field using the `name` field which takes a regular expression as its argument; thank you to [40] for contributing this feature.

For demonstration, then assuming that your file contains the commands `verbinline`, `myinline` then the listings given in Listings 22 and 23 are equivalent.

LISTING 22: nameAsRegex3.yaml

```
verbatimCommands:
    verbinline: 1
    myinline: 1
```

LISTING 23: nameAsRegex4.yaml

```
verbatimCommands:
    nameAsRegex:
      name: '\w+inline'
      lookForThis: 1
```

With reference to Listing 23:

- the `name` field as specified here means *any word followed by the word inline*;
- we have used `nameAsRegex` to identify this field, but you can use any description you like;
- the `lookForThis` field is optional, and can take the values 0 (off) or 1 (on); by default, it is assumed to be 1 (on).

`noIndentBlock`: ⟨*fields*⟩

If you have a block of code that you don't want `latexindent.pl` to touch (even if it is *not* a verbatim-like environment) then you can wrap it in an environment from `noIndentBlock`; you can use any name you like for this, provided you populate it as demonstrate in Listing 24.

LISTING 24: noIndentBlock

```
119 noIndentBlock:
120     noindent: 1
121     cmhtest: 1
```

Of course, you don't want to have to specify these as null environments in your code, so you use them with a comment symbol, %, followed by as many spaces (possibly none) as you like; see Listing 25 for example.

LISTING 25: noIndentBlock.tex

```
% \begin{noindent}
some before text
        this code
                won't
     be touched
                    by
             latexindent.pl!
some after text
% \end{noindent}
```

Important note: it is assumed that the `noindent` block statements specified in this way appear on their own line.

N: 2021-06-19

The `noIndentBlock` fields can also be specified in terms of `begin` and `end` fields. We use the code in Listing 26 to demonstrate this feature.

LISTING 26: noIndentBlock1.tex

```
some before text
        this code
                won't
     be touched
                    by
             latexindent.pl!
some after text
```

The settings given in Listings 27 and 28 are equivalent:

LISTING 27: noindent1.yaml

```
noIndentBlock:
    demo:
        begin: 'some\hbefore'
        body: '.*?'
        end: 'some\hafter\htext'
        lookForThis: 1
```

LISTING 28: noindent2.yaml

```
noIndentBlock:
    demo:
        begin: 'some\hbefore'
        end: 'some\hafter\htext'
```

LISTING 29: noindent3.yaml

```
noIndentBlock:
    demo:
        begin: 'some\hbefore'
        body: '.*?'
        end: 'some\hafter\htext'
        lookForThis: 0
```

Upon running the commands

```
cmh:~$ latexindent.pl -l noindent1.yaml noindent1
cmh:~$ latexindent.pl -l noindent2.yaml noindent1
```

then we receive the output given in Listing 30.

LISTING 30: noIndentBlock1.tex using Listing 27 or Listing 28

```
some before text
        this code
                won't
     be touched
                    by
              latexindent.pl!
some after text
```

The begin, body and end fields for noIndentBlock are all *regular expressions*. If the body field is not specified, then it takes a default value of .*? which is written explicitly in Listing 27. In this context, we interpret .*? in words as *the fewest number of characters (possibly none) until the 'end' field is reached*.

The lookForThis field is optional, and can take the values 0 (off) or 1 (on); by default, it is assumed to be 1 (on).

Using Listing 29 demonstrates setting lookForThis to 0 (off); running the command

```
cmh:~$ latexindent.pl -l noindent3.yaml noindent1
```

gives the output in Listing 31.

LISTING 31: noIndentBlock1.tex using Listing 29

```
some before text
this code
won't
be touched
by
latexindent.pl!
some after text
```

We will demonstrate this feature later in the documentation in Listing 510.

N: 2021-10-30

You can, optionally, specify the noIndentBlock field using the name field which takes a regular expression as its argument; thank you to [40] for contributing this feature.

For demonstration, then assuming that your file contains the environments testnoindent, testnoindent* then the listings given in Listings 32 and 33 are equivalent.

LISTING 32: nameAsRegex5.yaml

```
noIndentBlock:
    mytest:
      begin: '\\begin\{testnoindent\*?\}'
      end: '\\end\{testnoindent\*?\}'
```

LISTING 33: nameAsRegex6.yaml

```
noIndentBlock:
    nameAsRegex:
      name: '\w+noindent\*?'
      lookForThis: 1
```

With reference to Listing 33:

- the `name` field as specified here means *any word followed by the word noindent, optionally followed by **;
- we have used `nameAsRegex` to identify this field, but you can use any description you like;
- the `lookForThis` field is optional, and can take the values 0 (off) or 1 (on); by default, it is assumed to be 1 (on).

5.3 filecontents and preamble

`fileContentsEnvironments`: ⟨*field*⟩

Before `latexindent.pl` determines the difference between preamble (if any) and the main document, it first searches for any of the environments specified in `fileContentsEnvironments`, see Listing 34. The behaviour of `latexindent.pl` on these environments is determined by their location (preamble or not), and the value `indentPreamble`, discussed next.

LISTING 34: fileContentsEnvironments

```
125 fileContentsEnvironments:
126     filecontents: 1
127     filecontents*: 1
```

`indentPreamble`: **0|1**

The preamble of a document can sometimes contain some trickier code for `latexindent.pl` to operate upon. By default, `latexindent.pl` won't try to operate on the preamble (as `indentPreamble` is set to 0, by default), but if you'd like `latexindent.pl` to try then change `indentPreamble` to 1.

`lookForPreamble`: ⟨*fields*⟩

Not all files contain preamble; for example, `sty`, `cls` and `bib` files typically do *not*. Referencing Listing 35, if you set, for example, `.tex` to 0, then regardless of the setting of the value of `indentPreamble`, preamble will not be assumed when operating upon `.tex` files.

LISTING 35: lookForPreamble

```
133 lookForPreamble:
134     .tex: 1
135     .sty: 0
136     .cls: 0
137     .bib: 0
```

`preambleCommandsBeforeEnvironments`: **0|1**

Assuming that `latexindent.pl` is asked to operate upon the preamble of a document, when this switch is set to 0 then environment code blocks will be sought first, and then command code blocks. When this switch is set to 1, commands will be sought first. The example that first motivated this switch contained the code given in Listing 36.

LISTING 36: Motivating preambleCommandsBeforeEnvironments

```
...
preheadhook={\begin{mdframed}[style=myframedstyle]},
postfoothook=\end{mdframed},
...
```

5.4 Indentation and horizontal space

`defaultIndent`: ⟨*horizontal space*⟩

This is the default indentation used in the absence of other details for the code block with which we are working. The default value is `\t` which means a tab; we will explore customisation beyond `defaultIndent` in Section 5.8 on page 47.

If you're interested in experimenting with `latexindent.pl` then you can *remove* all indentation by setting `defaultIndent: ""`.

`removeTrailingWhitespace`: ⟨*fields*⟩

Trailing white space can be removed both *before* and *after* processing the document, as detailed in Listing 37; each of the fields can take the values 0 or 1. See Listings 401 to 403 on pages 95–96 for before and after results. Thanks to [36] for providing this feature.

LISTING 37: removeTrailingWhitespace

```
150 removeTrailingWhitespace:
151     beforeProcessing: 0
152     afterProcessing: 1
```

LISTING 38: removeTrailingWhitespace (alt)

```
removeTrailingWhitespace: 1
```

N: 2017-06-28

You can specify `removeTrailingWhitespace` simply as 0 or 1, if you wish; in this case, `latexindent.pl` will set both `beforeProcessing` and `afterProcessing` to the value you specify; see Listing 38.

5.5 Aligning at delimiters

`lookForAlignDelims`: ⟨*fields*⟩

This contains a list of code blocks that are operated upon in a special way by `latexindent.pl` (see Listing 39). In fact, the fields in `lookForAlignDelims` can actually take two different forms: the *basic* version is shown in Listing 39 and the *advanced* version in Listing 42; we will discuss each in turn.

LISTING 39: lookForAlignDelims (basic)

```
lookForAlignDelims:
   tabular: 1
   tabularx: 1
   longtable: 1
   array: 1
   matrix: 1
   ...
```

Specifying code blocks in this field instructs `latexindent.pl` to try and align each column by its alignment delimiters. It does have some limitations (discussed further in Section 10), but in many cases it will produce results such as those in Listings 40 and 41.

If you find that `latexindent.pl` does not perform satisfactorily on such environments then you can set the relevant key to 0, for example `tabular: 0`; alternatively, if you just want to ignore *specific* instances of the environment, you could wrap them in something from `noIndentBlock` (see Listing 24 on page 24).

LISTING 40: tabular1.tex

```
\begin{tabular}{cccc}
1& 2 &3       &4\\
5& &6       &\\
\end{tabular}
```

LISTING 41: tabular1.tex default output

```
\begin{tabular}{cccc}
   1 & 2 & 3 & 4 \\
   5 &   & 6 &   \\
\end{tabular}
```

If, for example, you wish to remove the alignment of the \\ within a delimiter-aligned block, then the advanced form of `lookForAlignDelims` shown in Listing 42 is for you.

LISTING 42: lookForAlignDelims (advanced)

```
155 lookForAlignDelims:
156    tabular:
157       delims: 1
158       alignDoubleBackSlash: 1
159       spacesBeforeDoubleBackSlash: 1
160       multiColumnGrouping: 0
161       alignRowsWithoutMaxDelims: 1
162       spacesBeforeAmpersand: 1
163       spacesAfterAmpersand: 1
164       justification: left
165       alignFinalDoubleBackSlash: 0
166       dontMeasure: 0
167       delimiterRegEx: '(?<!\\)(&)'
168       delimiterJustification: left
169       lookForChildCodeBlocks: 1
170    tabularx:
171       delims: 1
```

Note that you can use a mixture of the basic and advanced form: in Listing 42 `tabular` and `tabularx` are advanced and `longtable` is basic. When using the advanced form, each field should receive at least 1 sub-field, and *can* (but does not have to) receive any of the following fields:

- `delims`: binary switch (0 or 1) equivalent to simply specifying, for example, `tabular: 1` in the basic version shown in Listing 39. If `delims` is set to 0 then the align at ampersand routine will not be called for this code block (default: 1);
- `alignDoubleBackSlash`: binary switch (0 or 1) to determine if \\ should be aligned (default: 1);

U: 2018-01-13

- `spacesBeforeDoubleBackSlash`: optionally, specifies the number (integer ≥ 0) of spaces to be inserted before \\ (default: 1);

N: 2017-06-19

- `multiColumnGrouping`: binary switch (0 or 1) that details if `latexindent.pl` should group columns above and below a `\multicolumn` command (default: 0);

N: 2017-06-19

- `alignRowsWithoutMaxDelims`: binary switch (0 or 1) that details if rows that do not contain the maximum number of delimeters should be formatted so as to have the ampersands aligned (default: 1);

N: 2018-01-13

- `spacesBeforeAmpersand`: optionally specifies the number (integer ≥ 0) of spaces to be placed *before* ampersands (default: 1);

N: 2018-01-13

- `spacesAfterAmpersand`: optionally specifies the number (integer ≥ 0) of spaces to be placed *After* ampersands (default: 1);

N: 2018-01-13

- `justification`: optionally specifies the justification of each cell as either *left* or *right* (default: left);

N: 2020-03-21
- alignFinalDoubleBackSlash optionally specifies if the *final* double back slash should be used for alignment (default: 0);

N: 2020-03-21
- dontMeasure optionally specifies if user-specified cells, rows or the largest entries should *not* be measured (default: 0);

N: 2020-03-21
- delimiterRegEx optionally specifies the pattern matching to be used for the alignment delimeter (default: `'(?<!\\)(&)'`);

N: 2020-03-21
- delimiterJustification optionally specifies the justification for the alignment delimeters (default: left); note that this feature is only useful if you have delimiters of different lengths in the same column, discussed in Section 5.5.4;

N: 2021-12-13
- lookForChildCodeBlocks optionally instructs `latexindent.pl` to search for child code blocks or not (default: 1), discussed in Section 5.5.5.

We will explore most of these features using the file `tabular2.tex` in Listing 43 (which contains a `\multicolumn` command), and the YAML files in Listings 44 to 50; we will explore `alignFinalDoubleBackSlash` in Listing 71; the `dontMeasure` feature will be described in Section 5.5.3, and `delimiterRegEx` in Section 5.5.4.

LISTING 43: tabular2.tex

```
\begin{tabular}{cccc}
A&    B & C       &D\\
AAA&    BBB & CCC       &DDD\\
  \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading}\\
one&    two & three       &four\\
five& &six      &\\
seven & \\
\end{tabular}
```

LISTING 44: tabular2.yaml

```
lookForAlignDelims:
   tabular:
      multiColumnGrouping: 1
```

LISTING 45: tabular3.yaml

```
lookForAlignDelims:
   tabular:
      alignRowsWithoutMaxDelims: 0
```

LISTING 46: tabular4.yaml

```
lookForAlignDelims:
   tabular:
      spacesBeforeAmpersand: 4
```

LISTING 47: tabular5.yaml

```
lookForAlignDelims:
   tabular:
      spacesAfterAmpersand: 4
```

LISTING 48: tabular6.yaml

```
lookForAlignDelims:
   tabular:
      alignDoubleBackSlash: 0
```

LISTING 49: tabular7.yaml

```
lookForAlignDelims:
   tabular:
      spacesBeforeDoubleBackSlash: 0
```

LISTING 50: tabular8.yaml

```
lookForAlignDelims:
   tabular:
      justification: "right"
```

On running the commands

```
cmh:~$ latexindent.pl tabular2.tex
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular3.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular4.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular5.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular6.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular7.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular8.yaml
```

we obtain the respective outputs given in Listings 51 to 58.

LISTING 51: tabular2.tex default output

```
\begin{tabular}{cccc}
   A                                & B                                & C     & D    \\
   AAA                              & BBB                              & CCC   & DDD  \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading}                \\
   one                              & two                              & three & four \\
   five                             &                                  & six   &      \\
   seven                            &                                  &       \\
\end{tabular}
```

LISTING 52: tabular2.tex using Listing 44

```
\begin{tabular}{cccc}
   A     & B                        & C     & D                        \\
   AAA   & BBB                      & CCC   & DDD                      \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} \\
   one   & two                      & three & four                     \\
   five  &                          & six   &                          \\
   seven &                                                             \\
\end{tabular}
```

LISTING 53: tabular2.tex using Listing 45

```
\begin{tabular}{cccc}
   A    & B   & C     & D                                              \\
   AAA  & BBB & CCC   & DDD                                            \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} \\
   one  & two & three & four                                           \\
   five &     & six   &                                                \\
   seven &                                                            \\
\end{tabular}
```

LISTING 54: tabular2.tex using Listings 44 and 46

```
\begin{tabular}{cccc}
   A        & B                        & C        & D                        \\
   AAA      & BBB                      & CCC      & DDD                      \\
   \multicolumn{2}{c}{first heading}    & \multicolumn{2}{c}{second heading} \\
   one      & two                      & three    & four                     \\
   five     &                          & six      &                          \\
   seven    &                                                              \\
\end{tabular}
```

LISTING 55: tabular2.tex using Listings 44 and 47

```
\begin{tabular}{cccc}
   A     &    B                       &    C     &    D                       \\
   AAA   &    BBB                     &    CCC   &    DDD                     \\
   \multicolumn{2}{c}{first heading} &    \multicolumn{2}{c}{second heading} \\
   one   &    two                     &    three &    four                    \\
   five  &                            &    six   &                            \\
   seven &                                                                    \\
\end{tabular}
```

LISTING 56: tabular2.tex using Listings 44 and 48

```
\begin{tabular}{cccc}
   A     & B                          & C     & D \\
   AAA   & BBB                        & CCC   & DDD \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} \\
   one   & two                        & three & four \\
   five  &                            & six   & \\
   seven & \\
\end{tabular}
```

LISTING 57: tabular2.tex using Listings 44 and 49

```
\begin{tabular}{cccc}
   A     & B                          & C     & D                          \\
   AAA   & BBB                        & CCC   & DDD                        \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading}\\
   one   & two                        & three & four                       \\
   five  &                            & six   &                            \\
   seven &                                                                 \\
\end{tabular}
```

LISTING 58: tabular2.tex using Listings 44 and 50

```
\begin{tabular}{cccc}
                              A &   B &                              C &    D \\
                            AAA & BBB &                            CCC &  DDD \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} \\
                            one & two &                          three & four \\
                           five &     &                            six &      \\
                          seven &                                        \\
\end{tabular}
```

Notice in particular:

- in both Listings 51 and 52 all rows have been aligned at the ampersand, even those that do not contain the maximum number of ampersands (3 ampersands, in this case);
- in Listing 51 the columns have been aligned at the ampersand;
- in Listing 52 the `\multicolumn` command has grouped the 2 columns beneath *and* above it, because `multiColumnGrouping` is set to 1 in Listing 44;
- in Listing 53 rows 3 and 6 have *not* been aligned at the ampersand, because `alignRowsWithoutMaxDelims` has been to set to 0 in Listing 45; however, the `\\` *have* still been aligned;
- in Listing 54 the columns beneath and above the `\multicolumn` commands have been grouped (because `multiColumnGrouping` is set to 1), and there are at least 4 spaces *before* each aligned ampersand because `spacesBeforeAmpersand` is set to 4;
- in Listing 55 the columns beneath and above the `\multicolumn` commands have been grouped (because `multiColumnGrouping` is set to 1), and there are at least 4 spaces *after* each aligned ampersand because `spacesAfterAmpersand` is set to 4;

- in Listing 56 the \\ have *not* been aligned, because `alignDoubleBackSlash` is set to `0`, otherwise the output is the same as Listing 52;
- in Listing 57 the \\ *have* been aligned, and because `spacesBeforeDoubleBackSlash` is set to `0`, there are no spaces ahead of them; the output is otherwise the same as Listing 52;
- in Listing 58 the cells have been *right*-justified; note that cells above and below the `\multicol` statements have still been group correctly, because of the settings in Listing 44.

5.5.1 lookForAlignDelims: spacesBeforeAmpersand

U: 2021-06-19

The `spacesBeforeAmpersand` can be specified in a few different ways. The *basic* form is demonstrated in Listing 46, but we can customise the behaviour further by specifying if we would like this value to change if it encounters a *leading blank column*; that is, when the first column contains only zero-width entries. We refer to this as the *advanced* form.

We demonstrate this feature in relation to Listing 59; upon running the following command

```
cmh:~$ latexindent.pl aligned1.tex -o=+-default
```

then we receive the default output given in Listing 60.

LISTING 59: aligned1.tex

```
\begin{aligned}
& a & b, \\
& c & d.
\end{aligned}
```

LISTING 60: aligned1-default.tex

```
\begin{aligned}
    & a & b, \\
    & c & d.
\end{aligned}
```

The settings in Listings 61 to 64 are all equivlanent; we have used the not-yet discussed `noAdditionalIndent` field (see Section 5.8 on page 47) which will assist in the demonstration in what follows.

LISTING 61: sba1.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned: 1
```

LISTING 62: sba2.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand: 1
```

LISTING 63: sba3.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        default: 1
```

LISTING 64: sba4.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        leadingBlankColumn: 1
```

Upon running the following commands

```
cmh:~$ latexindent.pl aligned1.tex -l sba1.yaml
cmh:~$ latexindent.pl aligned1.tex -l sba2.yaml
cmh:~$ latexindent.pl aligned1.tex -l sba3.yaml
cmh:~$ latexindent.pl aligned1.tex -l sba4.yaml
```

then we receive the (same) output given in Listing 65; we note that there is *one space* before each ampersand.

LISTING 65: aligned1-mod1.tex

```
\begin{aligned}
 & a & b, \\
 & c & d.
\end{aligned}
```

We note in particular:

- Listing 61 demonstrates the *basic* form for `lookForAlignDelims`; in this case, the default values are specified as in Listing 42 on page 28;
- Listing 62 demonstrates the *advanced* form for `lookForAlignDelims` and specified `spacesBeforeAmpersand`. The default value is `1`;
- Listing 63 demonstrates the new *advanced* way to specify `spacesBeforeAmpersand`, and for us to set the `default` value that sets the number of spaces before ampersands which are *not* in leading blank columns. The default value is `1`.

  We note that `leadingBlankColumn` has not been specified in Listing 63, and it will inherit the value from `default`;
- Listing 64 demonstrates spaces to be used before amperands for *leading blank columns*. We note that *default* has not been specified, and it will be set to `1` by default.

We can customise the space before the ampersand in the *leading blank column* of Listing 65 by using either of Listings 66 and 67, which are equivalent.

LISTING 66: sba5.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        leadingBlankColumn: 0
```

LISTING 67: sba6.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        leadingBlankColumn: 0
        default: 1
```

Upon running

```
cmh:~$ latexindent.pl aligned1.tex -l sba5.yaml
cmh:~$ latexindent.pl aligned1.tex -l sba6.yaml
```

then we receive the (same) output given in Listing 68. We note that the space before the ampersand in the *leading blank column* has been set to `0` by Listing 67.

We can demonstrated this feature further using the settings in Listing 70 which give the output in Listing 69.

LISTING 68: aligned1-mod5.tex

```
\begin{aligned}
& a & b, \\
& c & d.
\end{aligned}
```

LISTING 69: aligned1.tex using Listing 70

```
\begin{aligned}
   & a& b, \\
   & c& d.
\end{aligned}
```

LISTING 70: sba7.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        leadingBlankColumn: 3
        default: 0
```

5.5.2 lookForAlignDelims: alignFinalDoubleBackSlash

N: 2020-03-21

We explore the `alignFinalDoubleBackSlash` feature by using the file in Listing 71. Upon running the following commands

```
cmh:~$ latexindent.pl tabular4.tex -o=+-default
cmh:~$ latexindent.pl tabular4.tex -o=+-FDBS
    -y="lookForAlignDelims:tabular:alignFinalDoubleBackSlash:1"
```

then we receive the respective outputs given in Listing 72 and Listing 73.

LISTING 71: tabular4.tex

```
\begin{tabular}{lc}
    Name & \shortstack{Hi \\ Lo} \\
    Foo  & Bar            \\
\end{tabular}
```

LISTING 72: tabular4-default.tex

```
\begin{tabular}{lc}
   Name & \shortstack{Hi \\ Lo} \\
   Foo  & Bar            \\
\end{tabular}
```

LISTING 73: tabular4-FDBS.tex

```
\begin{tabular}{lc}
   Name & \shortstack{Hi \\ Lo} \\
   Foo  & Bar                   \\
\end{tabular}
```

We note that in:

- Listing 72, by default, the *first* set of double back slashes in the first row of the `tabular` environment have been used for alignment;
- Listing 73, the *final* set of double back slashes in the first row have been used, because we specified `alignFinalDoubleBackSlash` as 1.

As of Version 3.0, the alignment routine works on mandatory and optional arguments within commands, and also within 'special' code blocks (see `specialBeginEnd` on page 39); for example, assuming that you have a command called `\matrix` and that it is populated within `lookForAlignDelims` (which it is, by default), and that you run the command

```
cmh:~$ latexindent.pl matrix1.tex
```

then the before-and-after results shown in Listings 74 and 75 are achievable by default.

LISTING 74: matrix1.tex

```
\matrix [
   1&2   &3\\
4&5&6]{
7&8   &9\\
10&11&12
}
```

LISTING 75: matrix1.tex default output

```
\matrix [
   1 & 2 & 3 \\
   4 & 5 & 6]{
   7  & 8  & 9  \\
   10 & 11 & 12
}
```

If you have blocks of code that you wish to align at the & character that are *not* wrapped in, for example, `\begin{tabular}` ... `\end{tabular}`, then you can use the mark up illustrated in Listing 76; the default output is shown in Listing 77. Note that the `%*` must be next to each other, but that there can be any number of spaces (possibly none) between the `*` and `\begin{tabular}`; note also that you may use any environment name that you have specified in `lookForAlignDelims`.

LISTING 76: align-block.tex

```
%* \begin{tabular}
   1 & 2 & 3 & 4 \\
   5 &   & 6 &   \\
  %* \end{tabular}
```

LISTING 77: align-block.tex default output

```
%* \begin{tabular}
   1 & 2 & 3 & 4 \\
   5 &   & 6 &   \\
%* \end{tabular}
```

With reference to Table 2 on page 46 and the, yet undiscussed, fields of `noAdditionalIndent` and `indentRules` (see Section 5.8 on page 47), these comment-marked blocks are considered `environments`.

5.5.3 lookForAlignDelims: the dontMeasure feature

N: 2020-03-21

The `lookForAlignDelims` field can, optionally, receive the `dontMeasure` option which can be specified in a few different ways. We will explore this feature in relation to the code given in Listing 78; the default output is shown in Listing 79.

LISTING 78: tabular-DM.tex

```
\begin{tabular}{cccc}
  aaaaaa&bbbbb&ccc&dd\\
  11&2&33&4\\
  5&66&7&8
\end{tabular}
```

LISTING 79: tabular-DM.tex default output

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11     & 2     & 33  & 4  \\
   5      & 66    & 7   & 8
\end{tabular}
```

The dontMeasure field can be specified as largest, and in which case, the largest element will not be measured; with reference to the YAML file given in Listing 81, we can run the command

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure1.yaml
```

and receive the output given in Listing 80.

LISTING 80: tabular-DM.tex using Listing 81

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 81: dontMeasure1.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure: largest
```

We note that the *largest* column entries have not contributed to the measuring routine.

The dontMeasure field can also be specified in the form demonstrated in Listing 83. On running the following commands,

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure2.yaml
```

we receive the output in Listing 82.

LISTING 82: tabular-DM.tex using Listing 83 or Listing 85

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 83: dontMeasure2.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        - aaaaaa
        - bbbbb
        - ccc
        - dd
```

We note that in Listing 83 we have specified entries not to be measured, one entry per line.

The dontMeasure field can also be specified in the forms demonstrated in Listing 85 and Listing 86. Upon running the commands

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure3.yaml
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure4.yaml
```

we receive the output given in Listing 84

LISTING 84: tabular-DM.tex using Listing 85 or Listing 85

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 85: dontMeasure3.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        -
          this: aaaaaa
          applyTo: cell
        -
          this: bbbbb
        - ccc
        - dd
```

LISTING 86: dontMeasure4.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        -
          regex: [a-z]
          applyTo: cell
```

We note that in:

- Listing 85 we have specified entries not to be measured, each one has a *string* in the `this` field, together with an optional specification of `applyTo` as `cell`;
- Listing 86 we have specified entries not to be measured as a *regular expression* using the `regex` field, together with an optional specification of `applyTo` as `cell` field, together with an optional specification of `applyTo` as `cell`.

In both cases, the default value of `applyTo` is `cell`, and does not need to be specified.

We may also specify the `applyTo` field as `row`, a demonstration of which is given in Listing 88; upon running

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure5.yaml
```

we receive the output in Listing 87.

LISTING 87: tabular-DM.tex using Listing 88

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 88: dontMeasure5.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        -
          this: aaaaaa&bbbbb&ccc&dd\\
          applyTo: row
```

Finally, the `applyTo` field can be specified as `row`, together with a `regex` expression. For example, for the settings given in Listing 90, upon running

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure6.yaml
```

we receive the output in Listing 89.

LISTING 89: tabular-DM.tex using Listing 90

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 90: dontMeasure6.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        -
          regex: [a-z]
          applyTo: row
```

5.5.4 lookForAlignDelims: the delimiterRegEx and delimiterJustification feature

N: 2020-03-21

The delimiter alignment will, by default, align code blocks at the ampersand character. The behaviour is controlled by the `delimiterRegEx` field within `lookForAlignDelims`; the default value is `'(?<!\\)(&)'`, which can be read as: *an ampersand, as long as it is not immediately preceeded by a backslash*.

Warning!

Important: note the 'capturing' parenthesis in the `(&)` which are necessary; if you intend to customise this field, then be sure to include them appropriately.

We demonstrate how to customise this with respect to the code given in Listing 91; the default output from `latexindent.pl` is given in Listing 92.

LISTING 91: tabbing.tex

```
\begin{tabbing}
    aa \=   bb \= cc \= dd \= ee \\
    \>2\> 1 \> 7 \> 3 \\
    \>3 \> 2\>8\> 3 \\
    \>4 \>2 \\
\end{tabbing}
```

LISTING 92: tabbing.tex default output

```
\begin{tabbing}
   aa \=   bb \= cc \= dd \= ee \\
   \>2\> 1 \> 7 \> 3 \\
   \>3 \> 2\>8\> 3 \\
   \>4 \>2 \\
\end{tabbing}
```

Let's say that we wish to align the code at either the `\=` or `\>`. We employ the settings given in Listing 94 and run the command

```
cmh:~$ latexindent.pl tabbing.tex -l=delimiterRegEx1.yaml
```

to receive the output given in Listing 93.

LISTING 93: tabbing.tex using Listing 94

```
\begin{tabbing}
   aa \= bb \= cc \= dd \= ee \\
      \> 2  \> 1  \> 7  \> 3  \\
      \> 3  \> 2  \> 8  \> 3  \\
      \> 4  \> 2              \\
\end{tabbing}
```

LISTING 94: delimiterRegEx1.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(\\(?:=|>))'
```

We note that:

- in Listing 93 the code has been aligned, as intended, at both the `\=` and `\>`;
- in Listing 94 we have heeded the warning and captured the expression using grouping parenthesis, specified a backslash using `\\` and said that it must be followed by either `=` or `>`.

We can explore `delimiterRegEx` a little further using the settings in Listing 96 and run the command

```
cmh:~$ latexindent.pl tabbing.tex -l=delimiterRegEx2.yaml
```

to receive the output given in Listing 95.

LISTING 95: tabbing.tex using Listing 96

```
\begin{tabbing}
   aa \=   bb \= cc \= dd \= ee \\
    \> 2 \> 1 \> 7 \> 3         \\
    \> 3 \> 2 \> 8 \> 3         \\
    \> 4 \> 2                   \\
\end{tabbing}
```

LISTING 96: delimiterRegEx2.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(\\>)'
```

We note that only the `\>` have been aligned.

Of course, the other lookForAlignDelims options can be used alongside the `delimiterRegEx`; regardless of the type of delimiter being used (ampersand or anything else), the fields from Listing 42 on page 28 remain the same; for example, using the settings in Listing 98, and running

```
cmh:~$ latexindent.pl tabbing.tex -l=delimiterRegEx3.yaml
```

to receive the output given in Listing 97.

LISTING 97: tabbing.tex using Listing 98

```
\begin{tabbing}
   aa\=bb\=cc\=dd\=ee \\
     \>2 \>1 \>7 \>3  \\
     \>3 \>2 \>8 \>3  \\
     \>4 \>2          \\
\end{tabbing}
```

LISTING 98: delimiterRegEx3.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(\\(?:=|>))'
    spacesBeforeAmpersand: 0
    spacesAfterAmpersand: 0
```

It is possible that delimiters specified within `delimiterRegEx` can be of different lengths. Consider the file in Listing 99, and associated YAML in Listing 101. Note that the Listing 101 specifies the option for the delimiter to be either `#` or `\>`, *which are different lengths*. Upon running the command

```
cmh:~$ latexindent.pl tabbing1.tex -l=delimiterRegEx4.yaml -o=+-mod4
```

we receive the output in Listing 100.

LISTING 99: tabbing1.tex

```
\begin{tabbing}
    1#22\>333\\
    xxx#aaa#yyyyy\\
    .##&\\
\end{tabbing}
```

LISTING 100: tabbing1-mod4.tex

```
\begin{tabbing}
   1   # 22  \> 333   \\
   xxx # aaa #  yyyyy \\
   .   #     #  &     \\
\end{tabbing}
```

LISTING 101: delimiterRegEx4.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(#|\\>)'
```

You can set the *delimiter* justification as either `left` (default) or `right`, which will only have effect when delimiters in the same column have different lengths. Using the settings in Listing 103 and running the command

```
cmh:~$ latexindent.pl tabbing1.tex -l=delimiterRegEx5.yaml -o=+-mod5
```

gives the output in Listing 102.

LISTING 102: tabbing1-mod5.tex

```
\begin{tabbing}
   1   # 22  \> 333   \\
   xxx # aaa  # yyyyy \\
   .   #      # &     \\
\end{tabbing}
```

LISTING 103: delimiterRegEx5.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(#|\\>)'
    delimiterJustification: right
```

Note that in Listing 102 the second set of delimiters have been *right aligned* – it is quite subtle!

5.5.5 lookForAlignDelims: lookForChildCodeBlocks

N: 2021-12-13

There may be scenarios in which you would prefer to instruct `latexindent.pl` *not* to search for child blocks; in which case setting `lookForChildCodeBlocks` to 0 may be a good way to proceed.

Using the settings from Listing 81 on page 35 on the file in Listing 104 and running the command

```
cmh:~$ latexindent.pl tabular-DM-1.tex -l=dontMeasure1.yaml -o=+-mod1
```

gives the output in Listing 105.

LISTING 104: tabular-DM-1.tex

```
\begin{tabular}{cc}
1&2\only<2->{\\
3&4}
\end{tabular}
```

LISTING 105: tabular-DM-1-mod1.tex

```
\begin{tabular}{cc}
   1 & 2\only<2->{ \\
      3 & 4}
\end{tabular}
```

We can improve the output from Listing 105 by employing the settings in Listing 107

```
cmh:~$ latexindent.pl tabular-DM-1.tex -l=dontMeasure1a.yaml -o=+-mod1a
```

which gives the output in Listing 107.

LISTING 106: tabular-DM-1-mod1a.tex

```
\begin{tabular}{cc}
   1 & 2\only<2->{ \\
   3 & 4}
\end{tabular}
```

LISTING 107: dontMeasure1a.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure: largest
      lookForChildCodeBlocks: 0
```

5.6 Indent after items, specials and headings

indentAfterItems: ⟨*fields*⟩

The environment names specified in indentAfterItems tell latexindent.pl to look for \item commands; if these switches are set to 1 then indentation will be performed so as indent the code after each item. A demonstration is given in Listings 109 and 110

LISTING 108: indentAfterItems

```
indentAfterItems:
    itemize: 1
    enumerate: 1
    description: 1
    list: 1
```

LISTING 109: items1.tex

```
\begin{itemize}
\item some text here
some more text here
some more text here
\item another item
some more text here
\end{itemize}
```

LISTING 110: items1.tex default output

```
\begin{itemize}
   \item some text here
         some more text here
         some more text here
   \item another item
         some more text here
\end{itemize}
```

itemNames: ⟨*fields*⟩

If you have your own item commands (perhaps you prefer to use myitem, for example) then you can put populate them in itemNames. For example, users of the exam document class might like to add parts to indentAfterItems and part to itemNames to their user settings (see Section 4 on page 17 for details of how to configure user settings, and Listing 13 on page 18 in particular .)

LISTING 111: itemNames

```
itemNames:
    item: 1
    myitem: 1
```

specialBeginEnd: ⟨*fields*⟩

U: 2017-08-21

The fields specified in specialBeginEnd are, in their default state, focused on math mode begin and end statements, but there is no requirement for this to be the case; Listing 112 shows the default settings of specialBeginEnd.

LISTING 112: specialBeginEnd

```
specialBeginEnd:
    displayMath:
        begin: '\\\['
        end: '\\\]'
        lookForThis: 1
    inlineMath:
        begin: '(?<!\$)(?<!\\)\$(?!\$)'
        end: '(?<!\\)\$(?!\$)'
        lookForThis: 1
    displayMathTeX:
        begin: '\$\$'
        end: '\$\$'
        lookForThis: 1
    specialBeforeCommand: 0
```

The field `displayMath` represents `\[...\]`, `inlineMath` represents `$...$` and `displayMathTex` represents `$$...$$`. You can, of course, rename these in your own YAML files (see Section 4.2 on page 18); indeed, you might like to set up your own special begin and end statements.

A demonstration of the before-and-after results are shown in Listings 113 and 114.

LISTING 113: special1.tex before

```
The function $f$ has formula
\[
f(x)=x^2.
\]
If you like splitting dollars,
$
g(x)=f(2x)
$
```

LISTING 114: special1.tex default output

```
The function $f$ has formula
\[
   f(x)=x^2.
\]
If you like splitting dollars,
$
   g(x)=f(2x)
$
```

For each field, `lookForThis` is set to `1` by default, which means that `latexindent.pl` will look for this pattern; you can tell `latexindent.pl` not to look for the pattern, by setting `lookForThis` to `0`.

N: 2017-08-21

There are examples in which it is advantageous to search for `specialBeginEnd` fields *before* searching for commands, and the `specialBeforeCommand` switch controls this behaviour. For example, consider the file shown in Listing 115.

LISTING 115: specialLR.tex

```
\begin{equation}
\left[
\sqrt{
a+b
}
\right]
\end{equation}
```

Now consider the YAML files shown in Listings 116 and 117

LISTING 116: specialsLeftRight.yaml

```
specialBeginEnd:
    leftRightSquare:
        begin: '\\left\['
        end: '\\right\]'
        lookForThis: 1
```

LISTING 117: specialBeforeCommand.yaml

```
specialBeginEnd:
    specialBeforeCommand: 1
```

Upon running the following commands

```
cmh:~$ latexindent.pl specialLR.tex -l=specialsLeftRight.yaml
cmh:~$ latexindent.pl specialLR.tex -l=specialsLeftRight.yaml,specialBeforeCommand.yaml
```

we receive the respective outputs in Listings 118 and 119.

LISTING 118: specialLR.tex using Listing 116

```
\begin{equation}
   \left[
      \sqrt{
         a+b
      }
      \right]
\end{equation}
```

LISTING 119: specialLR.tex using Listings 116 and 117

```
\begin{equation}
   \left[
      \sqrt{
         a+b
      }
   \right]
\end{equation}
```

Notice that in:

- Listing 118 the `\left` has been treated as a *command*, with one optional argument;
- Listing 119 the `specialBeginEnd` pattern in Listing 116 has been obeyed because Listing 117 specifies that the `specialBeginEnd` should be sought *before* commands.

N: 2018-04-27

You can,optionally, specify the `middle` field for anything that you specify in `specialBeginEnd`. For example, let's consider the `.tex` file in Listing 120.

LISTING 120: special2.tex

```
\If
something 0
\ElsIf
something 1
\ElsIf
something 2
\ElsIf
something 3
\Else
something 4
\EndIf
```

Upon saving the YAML settings in Listings 121 and 123 and running the commands

```
cmh:~$ latexindent.pl special2.tex -l=middle
cmh:~$ latexindent.pl special2.tex -l=middle1
```

then we obtain the output given in Listings 122 and 124.

LISTING 121: middle.yaml

```
specialBeginEnd:
    If:
        begin: '\\If'
        middle: '\\ElsIf'
        end: '\\EndIf'
        lookForThis: 1
```

LISTING 122: special2.tex using Listing 121

```
\If
   something 0
\ElsIf
   something 1
\ElsIf
   something 2
\ElsIf
   something 3
   \Else
   something 4
\EndIf
```

LISTING 123: middle1.yaml

```
specialBeginEnd:
    If:
        begin: '\\If'
        middle:
          - '\\ElsIf'
          - '\\Else'
        end: '\\EndIf'
        lookForThis: 1
```

LISTING 124: special2.tex using Listing 123

```
\If
   something 0
\ElsIf
   something 1
\ElsIf
   something 2
\ElsIf
   something 3
\Else
   something 4
\EndIf
```

We note that:

- in Listing 122 the bodies of each of the `Elsif` statements have been indented appropriately;
- the `Else` statement has *not* been indented appropriately in Listing 122 – read on!
- we have specified multiple settings for the `middle` field using the syntax demonstrated in Listing 123 so that the body of the `Else` statement has been indented appropriately in Listing 124.

N: 2018-08-13

You may specify fields in `specialBeginEnd` to be treated as verbatim code blocks by changing `lookForThis` to be `verbatim`.

For example, beginning with the code in Listing 126 and the YAML in Listing 125, and running

```
cmh:~$ latexindent.pl special3.tex -l=special-verb1
```

then the output in Listing 126 is unchanged.

LISTING 125: special-verb1.yaml

```
specialBeginEnd:
    displayMath:
        lookForThis: verbatim
```

LISTING 126: special3.tex and output using Listing 125

```
\[
  special code
blocks
    can be
  treated
    as verbatim\]
```

We can combine the `specialBeginEnd` with the `lookForAlignDelims` feature. We begin with the code in Listing 127.

LISTING 127: special-align.tex

```
\begin{tikzpicture}
  \path (A) edge node {0,1,L}(B)
  edge node {1,1,R} (C)
  (B) edge [loop above]node {1,1,L}(B)
  edge node {0,1,L}(C)
  (C) edge node {0,1,L}(D)
  edge [bend left]node {1,0,R}(E)
  (D) edge[loop below] node {1,1,R}(D)
  edge node {0,1,R}(A)
  (E) edge[bend left] node {1,0,R} (A);
\end{tikzpicture}
```

Let's assume that our goal is to align the code at the `edge` and `node` text; we employ the code given in Listing 128 and run the command

```
cmh:~$ latexindent.pl special-align.tex -l edge-node1.yaml -o=+-mod1
```

to receive the output in Listing 129.

LISTING 128: edge-node1.yaml

```
specialBeginEnd:
    path:
        begin: '\\path'
        end: ';'
        lookForThis: 1
    specialBeforeCommand: 1

lookForAlignDelims:
   path:
      delimiterRegEx: '(edge|node)'
```

LISTING 129: special-align.tex using Listing 128

```
\begin{tikzpicture}
   \path (A) edge               node {0,1,L}(B)
             edge               node {1,1,R} (C)
         (B) edge [loop above] node {1,1,L}(B)
             edge               node {0,1,L}(C)
         (C) edge               node {0,1,L}(D)
             edge [bend left]   node {1,0,R}(E)
         (D) edge [loop below] node {1,1,R}(D)
             edge               node {0,1,R}(A)
         (E) edge [bend left]   node {1,0,R} (A);
\end{tikzpicture}
```

The output in Listing 129 is not quite ideal. We can tweak the settings within Listing 128 in order to improve the output; in particular, we employ the code in Listing 130 and run the command

```
cmh:~$ latexindent.pl special-align.tex -l edge-node2.yaml -o=+-mod2
```

to receive the output in Listing 131.

LISTING 130: edge-node2.yaml

```
specialBeginEnd:
    path:
        begin: '\\path'
        end: ';'
    specialBeforeCommand: 1

lookForAlignDelims:
   path:
      delimiterRegEx:
    '(edge|node\h*\{[0-9,A-Z]+\})'
```

LISTING 131: special-align.tex using Listing 130

```
\begin{tikzpicture}
   \path (A) edge               node {0,1,L} (B)
             edge               node {1,1,R} (C)
         (B) edge [loop above] node {1,1,L} (B)
             edge               node {0,1,L} (C)
         (C) edge               node {0,1,L} (D)
             edge [bend left]   node {1,0,R} (E)
         (D) edge [loop below] node {1,1,R} (D)
             edge               node {0,1,R} (A)
         (E) edge [bend left]   node {1,0,R} (A);
\end{tikzpicture}
```

U: 2021-06-19

The `lookForThis` field can be considered optional; by default, it is assumed to be 1, which is demonstrated in Listing 130.

`indentAfterHeadings`: ⟨*fields*⟩

This field enables the user to specify indentation rules that take effect after heading commands such as `\part`, `\chapter`, `\section`, `\subsection*`, or indeed any user-specified command written in this field.[5]

[5] There is a slight difference in interface for this field when comparing Version 2.2 to Version 3.0; see appendix J on page 148 for details.

LISTING 132: indentAfterHeadings

```
indentAfterHeadings:
    part:
       indentAfterThisHeading: 0
       level: 1
    chapter:
       indentAfterThisHeading: 0
       level: 2
    section:
       indentAfterThisHeading: 0
       level: 3
```

The default settings do *not* place indentation after a heading, but you can easily switch them on by changing `indentAfterThisHeading` from 0 to 1. The `level` field tells `latexindent.pl` the hierarchy of the heading structure in your document. You might, for example, like to have both `section` and `subsection` set with `level: 3` because you do not want the indentation to go too deep.

You can add any of your own custom heading commands to this field, specifying the `level` as appropriate. You can also specify your own indentation in `indentRules` (see Section 5.8 on page 47); you will find the default `indentRules` contains `chapter: " "` which tells `latexindent.pl` simply to use a space character after `chapter` headings (once `indent` is set to 1 for `chapter`).

For example, assuming that you have the code in Listing 133 saved into `headings1.yaml`, and that you have the text from Listing 134 saved into `headings1.tex`.

LISTING 133: headings1.yaml

```
indentAfterHeadings:
    subsection:
       indentAfterThisHeading: 1
       level: 1
    paragraph:
       indentAfterThisHeading: 1
       level: 2
```

LISTING 134: headings1.tex

```
\subsection{subsection title}
subsection text
subsection text
\paragraph{paragraph title}
paragraph text
paragraph text
\paragraph{paragraph title}
paragraph text
paragraph text
```

If you run the command

```
cmh:~$ latexindent.pl headings1.tex -l=headings1.yaml
```

then you should receive the output given in Listing 135.

LISTING 135: headings1.tex using Listing 133

```
\subsection{subsection title}
    subsection text
    subsection text
    \paragraph{paragraph title}
        paragraph text
        paragraph text
    \paragraph{paragraph title}
        paragraph text
        paragraph text
```

LISTING 136: headings1.tex second modification

```
\subsection{subsection title}
    subsection text
    subsection text
\paragraph{paragraph title}
    paragraph text
    paragraph text
\paragraph{paragraph title}
    paragraph text
    paragraph text
```

Now say that you modify the YAML from Listing 133 so that the paragraph `level` is 1; after running

```
cmh:~$ latexindent.pl headings1.tex -l=headings1.yaml
```

you should receive the code given in Listing 136; notice that the `paragraph` and `subsection` are at the same indentation level.

`maximumIndentation`: ⟨*horizontal space*⟩

N: 2017-08-21

You can control the maximum indentation given to your file by specifying the `maximumIndentation` field as horizontal space (but *not* including tabs). This feature uses the `Text::Tabs` module [33], and is *off* by default.

For example, consider the example shown in Listing 137 together with the default output shown in Listing 138.

LISTING 137: `mult-nested.tex`

```
\begin{one}
one
\begin{two}
    two
\begin{three}
     three
\begin{four}
       four
\end{four}
\end{three}
\end{two}
\end{one}
```

LISTING 138: `mult-nested.tex` default output

```
\begin{one}
___one
___\begin{two}
_____two
_____\begin{three}
_______three
_______\begin{four}
_________four
_______\end{four}
_____\end{three}
___\end{two}
\end{one}
```

Now say that, for example, you have the `max-indentation1.yaml` from Listing 139 and that you run the following command:

```
cmh:~$ latexindent.pl mult-nested.tex -l=max-indentation1
```

You should receive the output shown in Listing 140.

LISTING 139: `max-indentation1.yaml`

```
maximumIndentation: " "
```

LISTING 140: `mult-nested.tex` using Listing 139

```
\begin{one}
␣one
␣\begin{two}
␣two
␣\begin{three}
␣three
␣\begin{four}
␣four
␣\end{four}
␣\end{three}
␣\end{two}
\end{one}
```

Comparing the output in Listings 138 and 140 we notice that the (default) tabs of indentation have been replaced by a single space.

In general, when using the `maximumIndentation` feature, any leading tabs will be replaced by equivalent spaces except, of course, those found in `verbatimEnvironments` (see Listing 18 on page 23) or `noIndentBlock` (see Listing 24 on page 24).

5.7 The code blocks known latexindent.pl

As of Version 3.0, `latexindent.pl` processes documents using code blocks; each of these are shown in Table 2.

TABLE 2: Code blocks known to `latexindent.pl`

Code block	characters allowed in name	example

environments	`a-zA-Z@\*0-9_\\`	`\begin{myenv}`
		`body of myenv`
		`\end{myenv}`

optionalArguments	*inherits* name from parent (e.g environment name)	`[`
		`opt arg text`
		`]`

mandatoryArguments	*inherits* name from parent (e.g environment name)	`{`
		`mand arg text`
		`}`

commands	`+a-zA-Z@\*0-9_\:`	`\mycommand`⟨*arguments*⟩
keyEqualsValuesBracesBrackets	`a-zA-Z@\*0-9_\/.\h\{\}:\#-`	`my key/.style=`⟨*arguments*⟩
namedGroupingBracesBrackets	`0-9\.a-zA-Z@\*><`	`in`⟨*arguments*⟩
UnNamedGroupingBracesBrackets	*No name!*	`{` or `[` or `,` or `\&` or `)` or `(` or `$` followed by ⟨*arguments*⟩

ifElseFi	`@a-zA-Z` but must begin with either `\if` of `\@if`	`\ifnum...`
		`...`
		`\else`
		`...`
		`\fi`

items	User specified, see Listings 108 and 111 on page 39	`\begin{enumerate}`
		`  \item ...`
		`\end{enumerate}`

specialBeginEnd	User specified, see Listing 112 on page 40	`\[`
		`  ...`
		`\]`

afterHeading	User specified, see Listing 132 on page 44	`\chapter{title}`
		`  ...`
		`\section{title}`

filecontents	User specified, see Listing 34 on page 26	`\begin{filecontents}`
		`...`
		`\end{filecontents}`

N: 2019-07-13

We will refer to these code blocks in what follows. Note that the fine tuning of the definition of the code blocks detailed in Table 2 is discussed in Section 9 on page 121.

5.8 noAdditionalIndent and indentRules

`latexindent.pl` operates on files by looking for code blocks, as detailed in Section 5.7 on page 45; for each type of code block in Table 2 on the preceding page (which we will call a ⟨*thing*⟩ in what follows) it searches YAML fields for information in the following order:

1. `noAdditionalIndent` for the *name* of the current ⟨*thing*⟩;
2. `indentRules` for the *name* of the current ⟨*thing*⟩;
3. `noAdditionalIndentGlobal` for the *type* of the current ⟨*thing*⟩;
4. `indentRulesGlobal` for the *type* of the current ⟨*thing*⟩.

Using the above list, the first piece of information to be found will be used; failing that, the value of `defaultIndent` is used. If information is found in multiple fields, the first one according to the list above will be used; for example, if information is present in both `indentRules` and in `noAdditionalIndentGlobal`, then the information from `indentRules` takes priority.

We now present details for the different type of code blocks known to `latexindent.pl`, as detailed in Table 2 on the previous page; for reference, there follows a list of the code blocks covered.

5.8.1 Environments and their arguments

There are a few different YAML switches governing the indentation of environments; let's start with the code shown in Listing 141.

LISTING 141: `myenv.tex`

```
\begin{outer}
\begin{myenv}
  body of environment
body of environment
     body of environment
\end{myenv}
\end{outer}
```

`noAdditionalIndent`: ⟨*fields*⟩

If we do not wish `myenv` to receive any additional indentation, we have a few choices available to us, as demonstrated in Listings 142 and 143.

LISTING 142: myenv-noAdd1.yaml

```
noAdditionalIndent:
    myenv: 1
```

LISTING 143: myenv-noAdd2.yaml

```
noAdditionalIndent:
    myenv:
        body: 1
```

On applying either of the following commands,

```
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd1.yaml
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd2.yaml
```

we obtain the output given in Listing 144; note in particular that the environment myenv has not received any *additional* indentation, but that the outer environment *has* still received indentation.

LISTING 144: myenv.tex output (using either Listing 142 or Listing 143)

```
\begin{outer}
   \begin{myenv}
   body of environment
   body of environment
   body of environment
   \end{myenv}
\end{outer}
```

Upon changing the YAML files to those shown in Listings 145 and 146, and running either

```
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd3.yaml
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd4.yaml
```

we obtain the output given in Listing 147.

LISTING 145: myenv-noAdd3.yaml

```
noAdditionalIndent:
    myenv: 0
```

LISTING 146: myenv-noAdd4.yaml

```
noAdditionalIndent:
    myenv:
        body: 0
```

LISTING 147: myenv.tex output (using either Listing 145 or Listing 146)

```
\begin{outer}
   \begin{myenv}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

Let's now allow myenv to have some optional and mandatory arguments, as in Listing 148.

LISTING 148: myenv-args.tex

```
\begin{outer}
\begin{myenv}[%
  optional argument text
        optional argument text]%
  { mandatory argument text
 mandatory argument text}
  body of environment
body of environment
     body of environment
\end{myenv}
\end{outer}
```

Upon running

```
cmh:~$ latexindent.pl -l=myenv-noAdd1.yaml myenv-args.tex
```

we obtain the output shown in Listing 149; note that the optional argument, mandatory argument and body *all* have received no additional indent. This is because, when `noAdditionalIndent` is specified in 'scalar' form (as in Listing 142), then *all* parts of the environment (body, optional and mandatory arguments) are assumed to want no additional indent.

LISTING 149: myenv-args.tex using Listing 142

```
\begin{outer}
   \begin{myenv}[%
   optional argument text
   optional argument text]%
   { mandatory argument text
   mandatory argument text}
   body of environment
   body of environment
   body of environment
   \end{myenv}
\end{outer}
```

We may customise `noAdditionalIndent` for optional and mandatory arguments of the `myenv` environment, as shown in, for example, Listings 150 and 151.

LISTING 150: myenv-noAdd5.yaml

```
noAdditionalIndent:
    myenv:
        body: 0
        optionalArguments: 1
        mandatoryArguments: 0
```

LISTING 151: myenv-noAdd6.yaml

```
noAdditionalIndent:
    myenv:
        body: 0
        optionalArguments: 0
        mandatoryArguments: 1
```

Upon running

```
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd5.yaml
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd6.yaml
```

we obtain the respective outputs given in Listings 152 and 153. Note that in Listing 152 the text for the *optional* argument has not received any additional indentation, and that in Listing 153 the *mandatory* argument has not received any additional indentation; in both cases, the *body* has not received any additional indentation.

LISTING 152: myenv-args.tex using Listing 150

```
\begin{outer}
   \begin{myenv}[%
      optional argument text
      optional argument text]%
      { mandatory argument text
         mandatory argument text}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

LISTING 153: myenv-args.tex using Listing 151

```
\begin{outer}
   \begin{myenv}[%
         optional argument text
         optional argument text]%
      { mandatory argument text
      mandatory argument text}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

indentRules: ⟨*fields*⟩

We may also specify indentation rules for environment code blocks using the indentRules field; see, for example, Listings 154 and 155.

LISTING 154: myenv-rules1.yaml

```
indentRules:
    myenv: "    "
```

LISTING 155: myenv-rules2.yaml

```
indentRules:
    myenv:
        body: "    "
```

On applying either of the following commands,

```
cmh:~$ latexindent.pl myenv.tex -l myenv-rules1.yaml
cmh:~$ latexindent.pl myenv.tex -l myenv-rules2.yaml
```

we obtain the output given in Listing 156; note in particular that the environment myenv has received one tab (from the outer environment) plus three spaces from Listing 154 or 155.

LISTING 156: myenv.tex output (using either Listing 154 or Listing 155)

```
\begin{outer}
___\begin{myenv}
___␣␣␣␣body␣of␣environment
___␣␣␣␣body␣of␣environment
___␣␣␣␣body␣of␣environment
___\end{myenv}
\end{outer}
```

If you specify a field in indentRules using anything other than horizontal space, it will be ignored.

Returning to the example in Listing 148 that contains optional and mandatory arguments. Upon using Listing 154 as in

```
cmh:~$ latexindent.pl myenv-args.tex -l=myenv-rules1.yaml
```

we obtain the output in Listing 157; note that the body, optional argument and mandatory argument of myenv have *all* received the same customised indentation.

LISTING 157: myenv-args.tex using Listing 154

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
        { mandatory argument text
        mandatory argument text}
        body of environment
        body of environment
        body of environment
    \end{myenv}
\end{outer}
```

You can specify different indentation rules for the different features using, for example, Listings 158 and 159

LISTING 158: myenv-rules3.yaml

```
indentRules:
    myenv:
        body: "    "
        optionalArguments: " "
```

LISTING 159: myenv-rules4.yaml

```
indentRules:
    myenv:
        body: "    "
        mandatoryArguments: "\t\t"
```

After running

```
cmh:~$ latexindent.pl myenv-args.tex -l myenv-rules3.yaml
cmh:~$ latexindent.pl myenv-args.tex -l myenv-rules4.yaml
```

then we obtain the respective outputs given in Listings 160 and 161.

LISTING 160: myenv-args.tex using Listing 158

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
        { mandatory argument text
            mandatory argument text}
        body of environment
        body of environment
        body of environment
    \end{myenv}
\end{outer}
```

LISTING 161: myenv-args.tex using Listing 159

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
        { mandatory argument text
            mandatory argument text}
        body of environment
        body of environment
        body of environment
    \end{myenv}
\end{outer}
```

Note that in Listing 160, the optional argument has only received a single space of indentation, while the mandatory argument has received the default (tab) indentation; the environment body has received three spaces of indentation.

In Listing 161, the optional argument has received the default (tab) indentation, the mandatory argument has received two tabs of indentation, and the body has received three spaces of indentation.

`noAdditionalIndentGlobal`: ⟨*fields*⟩

Assuming that your environment name is not found within neither `noAdditionalIndent` nor `indentRules`, the next place that `latexindent.pl` will look is `noAdditionalIndentGlobal`, and in particular *for the environments* key (see Listing 162).

LISTING 162: noAdditionalIndentGlobal

```
330 noAdditionalIndentGlobal:
331     environments: 0
```

Let's say that you change the value of `environments` to `1` in Listing 162, and that you run

```
cmh:~$ latexindent.pl myenv-args.tex -l env-noAdditionalGlobal.yaml
cmh:~$ latexindent.pl myenv-args.tex -l myenv-rules1.yaml,env-noAdditionalGlobal.yaml
```

The respective output from these two commands are in Listings 163 and 164; in Listing 163 notice that *both* environments receive no additional indentation but that the arguments of `myenv` still *do* receive indentation. In Listing 164 notice that the *outer* environment does not receive additional indentation, but because of the settings from `myenv-rules1.yaml` (in Listing 154 on page 50), the `myenv` environment still *does* receive indentation.

LISTING 163: myenv-args.tex using Listing 162

```
\begin{outer}
\begin{myenv}[%
   optional argument text
   optional argument text]%
{ mandatory argument text
   mandatory argument text}
body of environment
body of environment
body of environment
\end{myenv}
\end{outer}
```

LISTING 164: myenv-args.tex using Listings 154 and 162

```
\begin{outer}
\begin{myenv}[%
      optional argument text
      optional argument text]%
   { mandatory argument text
      mandatory argument text}
   body of environment
   body of environment
   body of environment
\end{myenv}
\end{outer}
```

In fact, `noAdditionalIndentGlobal` also contains keys that control the indentation of optional and mandatory arguments; on referencing Listings 165 and 166

LISTING 165: opt-args-no-add-glob.yaml

```
noAdditionalIndentGlobal:
    optionalArguments: 1
```

LISTING 166: mand-args-no-add-glob.yaml

```
noAdditionalIndentGlobal:
    mandatoryArguments: 1
```

we may run the commands

```
cmh:~$ latexindent.pl myenv-args.tex -local opt-args-no-add-glob.yaml
cmh:~$ latexindent.pl myenv-args.tex -local mand-args-no-add-glob.yaml
```

which produces the respective outputs given in Listings 167 and 168. Notice that in Listing 167 the *optional* argument has not received any additional indentation, and in Listing 168 the *mandatory* argument has not received any additional indentation.

LISTING 167: myenv-args.tex using Listing 165

```
\begin{outer}
   \begin{myenv}[%
      optional argument text
      optional argument text]%
      { mandatory argument text
         mandatory argument text}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

LISTING 168: myenv-args.tex using Listing 166

```
\begin{outer}
   \begin{myenv}[%
         optional argument text
         optional argument text]%
      { mandatory argument text
      mandatory argument text}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

indentRulesGlobal: ⟨*fields*⟩

The final check that latexindent.pl will make is to look for indentRulesGlobal as detailed in Listing 169.

LISTING 169: indentRulesGlobal

```
346 indentRulesGlobal:
347     environments: 0
```

If you change the environments field to anything involving horizontal space, say " ", and then run the following commands

```
cmh:~$ latexindent.pl myenv-args.tex -l env-indentRules.yaml
cmh:~$ latexindent.pl myenv-args.tex -l myenv-rules1.yaml,env-indentRules.yaml
```

then the respective output is shown in Listings 170 and 171. Note that in Listing 170, both the environment blocks have received a single-space indentation, whereas in Listing 171 the outer environment has received single-space indentation (specified by indentRulesGlobal), but myenv has received " ", as specified by the particular indentRules for myenv Listing 154 on page 50.

LISTING 170: myenv-args.tex using Listing 169

```
\begin{outer}
␣\begin{myenv}[%
␣␣␣␣␣optional␣argument␣text
␣␣␣␣␣optional␣argument␣text]%
␣␣{␣mandatory␣argument␣text
␣␣␣␣␣mandatory␣argument␣text}
␣␣body␣of␣environment
␣␣body␣of␣environment
␣␣body␣of␣environment
␣\end{myenv}
\end{outer}
```

LISTING 171: myenv-args.tex using Listings 154 and 169

```
\begin{outer}
␣\begin{myenv}[%
␣␣␣␣␣␣␣optional␣argument␣text
␣␣␣␣␣␣␣optional␣argument␣text]%
␣␣␣␣{␣mandatory␣argument␣text
␣␣␣␣␣␣␣mandatory␣argument␣text}
␣␣␣␣body␣of␣environment
␣␣␣␣body␣of␣environment
␣␣␣␣body␣of␣environment
␣\end{myenv}
\end{outer}
```

You can specify indentRulesGlobal for both optional and mandatory arguments, as detailed in Listings 172 and 173

LISTING 172: opt-args-indent-rules-glob.yaml

```
indentRulesGlobal:
    optionalArguments: "\t\t"
```

LISTING 173: mand-args-indent-rules-glob.yaml

```
indentRulesGlobal:
    mandatoryArguments: "\t\t"
```

Upon running the following commands

```
cmh:~$ latexindent.pl myenv-args.tex -local opt-args-indent-rules-glob.yaml
cmh:~$ latexindent.pl myenv-args.tex -local mand-args-indent-rules-glob.yaml
```

we obtain the respective outputs in Listings 174 and 175. Note that the *optional* argument in Listing 174 has received two tabs worth of indentation, while the *mandatory* argument has done so in Listing 175.

LISTING 174: myenv-args.tex using Listing 172

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
    { mandatory argument text
        mandatory argument text}
    body of environment
    body of environment
    body of environment
    \end{myenv}
\end{outer}
```

LISTING 175: myenv-args.tex using Listing 173

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
    { mandatory argument text
        mandatory argument text}
    body of environment
    body of environment
    body of environment
    \end{myenv}
\end{outer}
```

5.8.2 Environments with items

With reference to Listings 108 and 111 on page 39, some commands may contain `item` commands; for the purposes of this discussion, we will use the code from Listing 109 on page 39.

Assuming that you've populated `itemNames` with the name of your `item`, you can put the item name into `noAdditionalIndent` as in Listing 176, although a more efficient approach may be to change the relevant field in `itemNames` to `0`. Similarly, you can customise the indentation that your `item` receives using `indentRules`, as in Listing 177

LISTING 176: item-noAdd1.yaml

```
noAdditionalIndent:
    item: 1
# itemNames:
#   item: 0
```

LISTING 177: item-rules1.yaml

```
indentRules:
    item: " "
```

Upon running the following commands

```
cmh:~$ latexindent.pl items1.tex -local item-noAdd1.yaml
cmh:~$ latexindent.pl items1.tex -local item-rules1.yaml
```

the respective outputs are given in Listings 178 and 179; note that in Listing 178 that the text after each `item` has not received any additional indentation, and in Listing 179, the text after each `item` has received a single space of indentation, specified by Listing 177.

LISTING 178: items1.tex using Listing 176

```
\begin{itemize}
   \item some text here
   some more text here
   some more text here
   \item another item
   some more text here
\end{itemize}
```

LISTING 179: items1.tex using Listing 177

```
\begin{itemize}
    \item␣some␣text␣here
    ␣some␣more␣text␣here
    ␣some␣more␣text␣here
    \item␣another␣item
    ␣some␣more␣text␣here
\end{itemize}
```

Alternatively, you might like to populate `noAdditionalIndentGlobal` or `indentRulesGlobal` using the `items` key, as demonstrated in Listings 180 and 181. Note that there is a need to 're-set/remove' the `item` field from `indentRules` in both cases (see the hierarchy description given on page 47) as the `item` command is a member of `indentRules` by default.

LISTING 180: items-noAdditionalGlobal.yaml

```
indentRules:
    item: 0
noAdditionalIndentGlobal:
    items: 1
```

LISTING 181: items-indentRulesGlobal.yaml

```
indentRules:
    item: 0
indentRulesGlobal:
    items: " "
```

Upon running the following commands,

```
cmh:~$ latexindent.pl items1.tex -local items-noAdditionalGlobal.yaml
cmh:~$ latexindent.pl items1.tex -local items-indentRulesGlobal.yaml
```

the respective outputs from Listings 178 and 179 are obtained; note, however, that *all* such `item` commands without their own individual `noAdditionalIndent` or `indentRules` settings would behave as in these listings.

5.8.3 Commands with arguments

Let's begin with the simple example in Listing 182; when `latexindent.pl` operates on this file, the default output is shown in Listing 183. [6]

LISTING 182: mycommand.tex

```
\mycommand
{
mand arg text
mand arg text}
[
opt arg text
opt arg text
]
```

LISTING 183: mycommand.tex default output

```
\mycommand
{
   mand arg text
   mand arg text}
[
   opt arg text
   opt arg text
]
```

As in the environment-based case (see Listings 142 and 143 on page 48) we may specify `noAdditionalIndent` either in 'scalar' form, or in 'field' form, as shown in Listings 184 and 185

LISTING 184: mycommand-noAdd1.yaml

```
noAdditionalIndent:
    mycommand: 1
```

LISTING 185: mycommand-noAdd2.yaml

```
noAdditionalIndent:
    mycommand:
        body: 1
```

After running the following commands,

```
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd1.yaml
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd2.yaml
```

we receive the respective output given in Listings 186 and 187

[6] The command code blocks have quite a few subtleties, described in Section 5.9 on page 63.

LISTING 186: mycommand.tex using Listing 184

```
\mycommand
{
mand arg text
mand arg text}
[
opt arg text
opt arg text
]
```

LISTING 187: mycommand.tex using Listing 185

```
\mycommand
{
   mand arg text
   mand arg text}
[
   opt arg text
   opt arg text
]
```

Note that in Listing 186 that the 'body', optional argument *and* mandatory argument have *all* received no additional indentation, while in Listing 187, only the 'body' has not received any additional indentation. We define the 'body' of a command as any lines following the command name that include its optional or mandatory arguments.

We may further customise `noAdditionalIndent` for `mycommand` as we did in Listings 150 and 151 on page 49; explicit examples are given in Listings 188 and 189.

LISTING 188: mycommand-noAdd3.yaml

```
noAdditionalIndent:
    mycommand:
        body: 0
        optionalArguments: 1
        mandatoryArguments: 0
```

LISTING 189: mycommand-noAdd4.yaml

```
noAdditionalIndent:
    mycommand:
        body: 0
        optionalArguments: 0
        mandatoryArguments: 1
```

After running the following commands,

```
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd3.yaml
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd4.yaml
```

we receive the respective output given in Listings 190 and 191.

LISTING 190: mycommand.tex using Listing 188

```
\mycommand
{
   mand arg text
   mand arg text}
[
opt arg text
opt arg text
]
```

LISTING 191: mycommand.tex using Listing 189

```
\mycommand
{
mand arg text
mand arg text}
[
   opt arg text
   opt arg text
]
```

Attentive readers will note that the body of `mycommand` in both Listings 190 and 191 has received no additional indent, even though `body` is explicitly set to `0` in both Listings 188 and 189. This is because, by default, `noAdditionalIndentGlobal` for `commands` is set to `1` by default; this can be easily fixed as in Listings 192 and 193.

LISTING 192: mycommand-noAdd5.yaml

```
noAdditionalIndent:
    mycommand:
        body: 0
        optionalArguments: 1
        mandatoryArguments: 0
noAdditionalIndentGlobal:
    commands: 0
```

LISTING 193: mycommand-noAdd6.yaml

```
noAdditionalIndent:
    mycommand:
        body: 0
        optionalArguments: 0
        mandatoryArguments: 1
noAdditionalIndentGlobal:
    commands: 0
```

After running the following commands,

```
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd5.yaml
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd6.yaml
```

we receive the respective output given in Listings 194 and 195.

LISTING 194: mycommand.tex using Listing 192

```
\mycommand
   {
      mand arg text
      mand arg text}
   [
   opt arg text
   opt arg text
   ]
```

LISTING 195: mycommand.tex using Listing 193

```
\mycommand
   {
   mand arg text
   mand arg text}
   [
      opt arg text
      opt arg text
   ]
```

Both indentRules and indentRulesGlobal can be adjusted as they were for *environment* code blocks, as in Listings 158 and 159 on page 51 and Listings 169, 172 and 173 on page 53.

5.8.4 ifelsefi code blocks

Let's use the simple example shown in Listing 196; when latexindent.pl operates on this file, the output as in Listing 197; note that the body of each of the \if statements have been indented, and that the \else statement has been accounted for correctly.

LISTING 196: ifelsefi1.tex

```
\ifodd\radius
\ifnum\radius<14
\pgfmathparse{100-(\radius)*4};
\else
\pgfmathparse{200-(\radius)*3};
\fi\fi
```

LISTING 197: ifelsefi1.tex default output

```
\ifodd\radius
   \ifnum\radius<14
      \pgfmathparse{100-(\radius)*4};
   \else
      \pgfmathparse{200-(\radius)*3};
   \fi\fi
```

It is recommended to specify noAdditionalIndent and indentRules in the 'scalar' form only for these type of code blocks, although the 'field' form would work, assuming that body was specified. Examples are shown in Listings 198 and 199.

LISTING 198: ifnum-noAdd.yaml

```
noAdditionalIndent:
    ifnum: 1
```

LISTING 199: ifnum-indent-rules.yaml

```
indentRules:
    ifnum: "  "
```

After running the following commands,

```
cmh:~$ latexindent.pl ifelsefi1.tex -local ifnum-noAdd.yaml
cmh:~$ latexindent.pl ifelsefi1.tex -l ifnum-indent-rules.yaml
```

we receive the respective output given in Listings 200 and 201; note that in Listing 200, the ifnum code block has *not* received any additional indentation, while in Listing 201, the ifnum code block has received one tab and two spaces of indentation.

LISTING 200: ifelsefi1.tex using Listing 198

```
\ifodd\radius
   \ifnum\radius<14
   \pgfmathparse{100-(\radius)*4};
   \else
   \pgfmathparse{200-(\radius)*3};
   \fi\fi
```

LISTING 201: ifelsefi1.tex using Listing 199

```
\ifodd\radius
___\ifnum\radius<14
___␣␣\pgfmathparse{100-(\radius)*4};
___\else
___␣␣\pgfmathparse{200-(\radius)*3};
___\fi\fi
```

We may specify `noAdditionalIndentGlobal` and `indentRulesGlobal` as in Listings 202 and 203.

LISTING 202: ifelsefi-noAdd-glob.yaml

```
noAdditionalIndentGlobal:
    ifElseFi: 1
```

LISTING 203: ifelsefi-indent-rules-global.yaml

```
indentRulesGlobal:
    ifElseFi: " "
```

Upon running the following commands

```
cmh:~$ latexindent.pl ifelsefi1.tex -local ifelsefi-noAdd-glob.yaml
cmh:~$ latexindent.pl ifelsefi1.tex -l ifelsefi-indent-rules-global.yaml
```

we receive the outputs in Listings 204 and 205; notice that in Listing 204 neither of the `ifelsefi` code blocks have received indentation, while in Listing 205 both code blocks have received a single space of indentation.

LISTING 204: ifelsefi1.tex using Listing 202

```
\ifodd\radius
\ifnum\radius<14
\pgfmathparse{100-(\radius)*4};
\else
\pgfmathparse{200-(\radius)*3};
\fi\fi
```

LISTING 205: ifelsefi1.tex using Listing 203

```
\ifodd\radius
␣\ifnum\radius<14
␣␣\pgfmathparse{100-(\radius)*4};
␣\else
␣␣\pgfmathparse{200-(\radius)*3};
␣\fi\fi
```

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We can further explore the treatment of `ifElseFi` code blocks in Listing 206, and the associated default output given in Listing 207; note, in particular, that the bodies of each of the 'or statements' have been indented.

LISTING 206: ifelsefi2.tex

```
\ifcase#1
zero%
\or
one%
\or
two%
\or
three%
\else
default
\fi
```

LISTING 207: ifelsefi2.tex default output

```
\ifcase#1
   zero%
\or
   one%
\or
   two%
\or
   three%
\else
   default
\fi
```

5.8.5 specialBeginEnd code blocks

Let's use the example from Listing 113 on page 40 which has default output shown in Listing 114 on page 40.

It is recommended to specify `noAdditionalIndent` and `indentRules` in the 'scalar' form for these type of code blocks, although the 'field' form would work, assuming that `body` was specified. Examples are shown in Listings 208 and 209.

LISTING 208: displayMath-noAdd.yaml

```
noAdditionalIndent:
    displayMath: 1
```

LISTING 209: displayMath-indent-rules.yaml

```
indentRules:
    displayMath: "\t\t\t"
```

After running the following commands,

```
cmh:~$ latexindent.pl special1.tex -local displayMath-noAdd.yaml
cmh:~$ latexindent.pl special1.tex -l displayMath-indent-rules.yaml
```

we receive the respective output given in Listings 210 and 211; note that in Listing 210, the `displayMath` code block has *not* received any additional indentation, while in Listing 211, the `displayMath` code block has received three tabs worth of indentation.

LISTING 210: special1.tex using Listing 208

```
The function $f$ has formula
\[
f(x)=x^2.
\]
If you like splitting dollars,
$
   g(x)=f(2x)
$
```

LISTING 211: special1.tex using Listing 209

```
The function $f$ has formula
\[
		f(x)=x^2.
\]
If you like splitting dollars,
$
	g(x)=f(2x)
$
```

We may specify `noAdditionalIndentGlobal` and `indentRulesGlobal` as in Listings 212 and 213.

LISTING 212: special-noAdd-glob.yaml

```
noAdditionalIndentGlobal:
    specialBeginEnd: 1
```

LISTING 213: special-indent-rules-global.yaml

```
indentRulesGlobal:
    specialBeginEnd: " "
```

Upon running the following commands

```
cmh:~$ latexindent.pl special1.tex -local special-noAdd-glob.yaml
cmh:~$ latexindent.pl special1.tex -l special-indent-rules-global.yaml
```

we receive the outputs in Listings 214 and 215; notice that in Listing 214 neither of the `special` code blocks have received indentation, while in Listing 215 both code blocks have received a single space of indentation.

LISTING 214: special1.tex using Listing 212

```
The function $f$ has formula
\[
f(x)=x^2.
\]
If you like splitting dollars,
$
g(x)=f(2x)
$
```

LISTING 215: special1.tex using Listing 213

```
The␣function␣$f$␣has␣formula
\[
␣f(x)=x^2.
\]
If␣you␣like␣splitting␣dollars,
$
␣g(x)=f(2x)
$
```

5.8.6 afterHeading code blocks

Let's use the example Listing 216 for demonstration throughout this Section. As discussed on page 44, by default `latexindent.pl` will not add indentation after headings.

LISTING 216: headings2.tex

```
\paragraph{paragraph
title}
paragraph text
paragraph text
```

On using the YAML file in Listing 218 by running the command

```
cmh:~$ latexindent.pl headings2.tex -l headings3.yaml
```

we obtain the output in Listing 217. Note that the argument of paragraph has received (default) indentation, and that the body after the heading statement has received (default) indentation.

LISTING 217: headings2.tex using Listing 218

```
\paragraph{paragraph
      title}
   paragraph text
   paragraph text
```

LISTING 218: headings3.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
```

If we specify noAdditionalIndent as in Listing 220 and run the command

```
cmh:~$ latexindent.pl headings2.tex -l headings4.yaml
```

then we receive the output in Listing 219. Note that the arguments *and* the body after the heading of paragraph has received no additional indentation, because we have specified noAdditionalIndent in scalar form.

LISTING 219: headings2.tex using Listing 220

```
\paragraph{paragraph
title}
paragraph text
paragraph text
```

LISTING 220: headings4.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
noAdditionalIndent:
    paragraph: 1
```

Similarly, if we specify indentRules as in Listing 222 and run analogous commands to those above, we receive the output in Listing 221; note that the *body*, *mandatory argument* and content *after the heading* of paragraph have *all* received three tabs worth of indentation.

LISTING 221: headings2.tex using Listing 222

```
\paragraph{paragraph
		title}
		paragraph text
		paragraph text
```

LISTING 222: headings5.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
indentRules:
    paragraph: "\t\t\t"
```

We may, instead, specify noAdditionalIndent in 'field' form, as in Listing 224 which gives the output in Listing 223.

LISTING 223: headings2.tex using Listing 224

```
\paragraph{paragraph
   title}
paragraph text
paragraph text
```

LISTING 224: headings6.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
noAdditionalIndent:
    paragraph:
        body: 0
        mandatoryArguments: 0
        afterHeading: 1
```

Analogously, we may specify `indentRules` as in Listing 226 which gives the output in Listing 225; note that mandatory argument text has only received a single space of indentation, while the body after the heading has received three tabs worth of indentation.

LISTING 225: headings2.tex using Listing 226

```
\paragraph{paragraph
___ title}
paragraph text
paragraph text
```

LISTING 226: headings7.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
indentRules:
    paragraph:
        mandatoryArguments: " "
        afterHeading: "\t\t\t"
```

Finally, let's consider `noAdditionalIndentGlobal` and `indentRulesGlobal` shown in Listings 228 and 230 respectively, with respective output in Listings 227 and 229. Note that in Listing 228 the *mandatory argument* of `paragraph` has received a (default) tab's worth of indentation, while the body after the heading has received *no additional indentation*. Similarly, in Listing 229, the *argument* has received both a (default) tab plus two spaces of indentation (from the global rule specified in Listing 230), and the remaining body after `paragraph` has received just two spaces of indentation.

LISTING 227: headings2.tex using Listing 228

```
\paragraph{paragraph
   title}
paragraph text
paragraph text
```

LISTING 228: headings8.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
noAdditionalIndentGlobal:
    afterHeading: 1
```

LISTING 229: headings2.tex using Listing 230

```
\paragraph{paragraph
___␣␣title}
␣␣paragraph␣text
␣␣paragraph␣text
```

LISTING 230: headings9.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
indentRulesGlobal:
    afterHeading: "  "
```

5.8.7 The remaining code blocks

Referencing the different types of code blocks in Table 2 on page 46, we have a few code blocks yet to cover; these are very similar to the `commands` code block type covered comprehensively in Section 5.8.3 on page 55, but a small discussion defining these remaining code blocks is necessary.

5.8.7.1 keyEqualsValuesBracesBrackets

`latexindent.pl` defines this type of code block by the following criteria:

- it must immediately follow either `{` OR `[` OR `,` with comments and blank lines allowed.
- then it has a name made up of the characters detailed in Table 2 on page 46;

- then an = symbol;
- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

N: 2019-07-13

See the `keyEqualsValuesBracesBrackets: follow` and `keyEqualsValuesBracesBrackets: name` fields of the fine tuning section in Listing 494 on page 121

An example is shown in Listing 231, with the default output given in Listing 232.

LISTING 231: `pgfkeys1.tex`

```
\pgfkeys{/tikz/.cd,
start coordinate/.initial={0,
\vertfactor},
}
```

LISTING 232: `pgfkeys1.tex` default output

```
\pgfkeys{/tikz/.cd,
    start coordinate/.initial={0,
        \vertfactor},
}
```

In Listing 232, note that the maximum indentation is three tabs, and these come from:

- the `\pgfkeys` command's mandatory argument;
- the `start coordinate/.initial` key's mandatory argument;
- the `start coordinate/.initial` key's body, which is defined as any lines following the name of the key that include its arguments. This is the part controlled by the *body* field for `noAdditionalIndent` and friends from page 47.

5.8.7.2 namedGroupingBracesBrackets

This type of code block is mostly motivated by tikz-based code; we define this code block as follows:

- it must immediately follow either *horizontal space* OR *one or more line breaks* OR `{` OR `[` OR `$` OR `)` OR `(`
- the name may contain the characters detailed in Table 2 on page 46;
- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

N: 2019-07-13

See the `NamedGroupingBracesBrackets: follow` and `NamedGroupingBracesBrackets: name` fields of the fine tuning section in Listing 494 on page 121

A simple example is given in Listing 233, with default output in Listing 234.

LISTING 233: `child1.tex`

```
\coordinate
child[grow=down]{
edge from parent [antiparticle]
node [above=3pt] {$C$}
}
```

LISTING 234: `child1.tex` default output

```
\coordinate
child[grow=down]{
    edge from parent [antiparticle]
    node [above=3pt] {$C$}
}
```

In particular, `latexindent.pl` considers `child`, `parent` and `node` all to be `namedGroupingBracesBrackets`[7]. Referencing Listing 234, note that the maximum indentation is two tabs, and these come from:

- the `child`'s mandatory argument;
- the `child`'s body, which is defined as any lines following the name of the `namedGroupingBracesBrackets` that include its arguments. This is the part controlled by the *body* field for `noAdditionalIndent` and friends from page 47.

5.8.7.3 UnNamedGroupingBracesBrackets

occur in a variety of situations; specifically, we define this type of code block as satisfying the following criteria:

- it must immediately follow either `{` OR `[` OR `,` OR `&` OR `)` OR `(` OR `$`;

[7] You may like to verify this by using the `-tt` option and checking `indent.log`!

- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

N: 2019-07-13

See the `UnNamedGroupingBracesBrackets: follow` field of the fine tuning section in Listing 494 on page 121

An example is shown in Listing 235 with default output give in Listing 236.

LISTING 235: `psforeach1.tex`

```
\psforeach{\row}{%
{
{3,2.8,2.7,3,3.1}},%
{2.8,1,1.2,2,3},%
}
```

LISTING 236: `psforeach1.tex` default output

```
\psforeach{\row}{%
___{
_____{3,2.8,2.7,3,3.1}},%
___{2.8,1,1.2,2,3},%
}
```

Referencing Listing 236, there are *three* sets of unnamed braces. Note also that the maximum value of indentation is three tabs, and these come from:

- the `\psforeach` command's mandatory argument;
- the *first* un-named braces mandatory argument;
- the *first* un-named braces *body*, which we define as any lines following the first opening `{` or `[` that defined the code block. This is the part controlled by the *body* field for `noAdditionalIndent` and friends from page 47.

Users wishing to customise the mandatory and/or optional arguments on a *per-name* basis for the `UnNamedGroupingBracesBrackets` should use `always-un-named`.

5.8.7.4 filecontents

code blocks behave just as `environments`, except that neither arguments nor items are sought.

5.8.8 Summary

Having considered all of the different types of code blocks, the functions of the fields given in Listings 237 and 238 should now make sense.

LISTING 237: `noAdditionalIndentGlobal`

```
noAdditionalIndentGlobal:
    environments: 0
    commands: 1
    optionalArguments: 0
    mandatoryArguments: 0
    ifElseFi: 0
    items: 0
    keyEqualsValuesBracesBrackets: 0
    namedGroupingBracesBrackets: 0
    UnNamedGroupingBracesBrackets: 0
    specialBeginEnd: 0
    afterHeading: 0
    filecontents: 0
```

LISTING 238: `indentRulesGlobal`

```
indentRulesGlobal:
    environments: 0
    commands: 0
    optionalArguments: 0
    mandatoryArguments: 0
    ifElseFi: 0
    items: 0
    keyEqualsValuesBracesBrackets: 0
    namedGroupingBracesBrackets: 0
    UnNamedGroupingBracesBrackets: 0
    specialBeginEnd: 0
    afterHeading: 0
    filecontents: 0
```

5.9 Commands and the strings between their arguments

The `command` code blocks will always look for optional (square bracketed) and mandatory (curly braced) arguments which can contain comments, line breaks and 'beamer' commands `<.*?>` between them. There are switches that can allow them to contain other strings, which we discuss next.

`commandCodeBlocks`: ⟨*fields*⟩

U: 2018-04-27

The `commandCodeBlocks` field contains a few switches detailed in Listing 239.

LISTING 239: commandCodeBlocks

```
361 commandCodeBlocks:
362     roundParenthesesAllowed: 1
363     stringsAllowedBetweenArguments:
364       -
365         amalgamate: 1
366       - 'node'
367       - 'at'
368       - 'to'
369       - 'decoration'
370       - '\+\+'
371       - '\-\-'
372       - '\#\#\d'
373     commandNameSpecial:
374       -
375         amalgamate: 1
376       - '@ifnextchar\['
```

`roundParenthesesAllowed`: **0|1**

The need for this field was mostly motivated by commands found in code used to generate images in `PSTricks` and `tikz`; for example, let's consider the code given in Listing 240.

LISTING 240: pstricks1.tex

```
\defFunction[algebraic]{torus}(u,v)
{(2+cos(u))*cos(v+\Pi)}
{(2+cos(u))*sin(v+\Pi)}
{sin(u)}
```

LISTING 241: pstricks1 default output

```
\defFunction[algebraic]{torus}(u,v)
{(2+cos(u))*cos(v+\Pi)}
{(2+cos(u))*sin(v+\Pi)}
{sin(u)}
```

Notice that the `\defFunction` command has an optional argument, followed by a mandatory argument, followed by a round-parenthesis argument, (u, v).

By default, because `roundParenthesesAllowed` is set to 1 in Listing 239, then `latexindent.pl` will allow round parenthesis between optional and mandatory arguments. In the case of the code in Listing 240, `latexindent.pl` finds *all* the arguments of `defFunction`, both before and after `(u,v)`.

The default output from running `latexindent.pl` on Listing 240 actually leaves it unchanged (see Listing 241); note in particular, this is because of `noAdditionalIndentGlobal` as discussed on page 56.

Upon using the YAML settings in Listing 243, and running the command

```
cmh:~$ latexindent.pl pstricks1.tex -l noRoundParentheses.yaml
```

we obtain the output given in Listing 242.

LISTING 242: pstricks1.tex using Listing 243

```
\defFunction[algebraic]{torus}(u,v)
{(2+cos(u))*cos(v+\Pi)}
   {(2+cos(u))*sin(v+\Pi)}
   {sin(u)}
```

LISTING 243: noRoundParentheses.yaml

```
commandCodeBlocks:
    roundParenthesesAllowed: 0
```

Notice the difference between Listing 241 and Listing 242; in particular, in Listing 242, because round parentheses are *not* allowed, `latexindent.pl` finds that the `\defFunction` command finishes at the first opening round parenthesis. As such, the remaining braced, mandatory, arguments are found to be `UnNamedGroupingBracesBrackets` (see Table 2 on page 46) which, by default, assume indentation for their body, and hence the tabbed indentation in Listing 242.

Let's explore this using the YAML given in Listing 245 and run the command

```
cmh:~$ latexindent.pl pstricks1.tex -l defFunction.yaml
```

then the output is as in Listing 244.

LISTING 244: pstricks1.tex using Listing 245

```
\defFunction[algebraic]{torus}(u,v)
␣{(2+cos(u))*cos(v+\Pi)}
␣{(2+cos(u))*sin(v+\Pi)}
␣{sin(u)}
```

LISTING 245: defFunction.yaml

```
indentRules:
    defFunction:
        body: " "
```

Notice in Listing 244 that the *body* of the `defFunction` command i.e, the subsequent lines containing arguments after the command name, have received the single space of indentation specified by Listing 245.

`stringsAllowedBetweenArguments`: ⟨*fields*⟩

`tikz` users may well specify code such as that given in Listing 246; processing this code using `latexindent.pl` gives the default output in Listing 247.

LISTING 246: tikz-node1.tex

```
\draw[thin]
(c) to[in=110,out=-90]
++(0,-0.5cm)
node[below,align=left,scale=0.5]
```

LISTING 247: tikz-node1 default output

```
\draw[thin]
(c) to[in=110,out=-90]
++(0,-0.5cm)
node[below,align=left,scale=0.5]
```

With reference to Listing 239 on the previous page, we see that the strings

to, node, ++

are all allowed to appear between arguments; importantly, you are encouraged to add further names to this field as necessary. This means that when `latexindent.pl` processes Listing 246, it consumes:

- the optional argument `[thin]`
- the round-bracketed argument `(c)` because `roundParenthesesAllowed` is 1 by default
- the string `to` (specified in `stringsAllowedBetweenArguments`)
- the optional argument `[in=110,out=-90]`
- the string `++` (specified in `stringsAllowedBetweenArguments`)
- the round-bracketed argument `(0,-0.5cm)` because `roundParenthesesAllowed` is 1 by default
- the string `node` (specified in `stringsAllowedBetweenArguments`)
- the optional argument `[below,align=left,scale=0.5]`

We can explore this further, for example using Listing 249 and running the command

```
cmh:~$ latexindent.pl tikz-node1.tex -l draw.yaml
```

we receive the output given in Listing 248.

LISTING 248: tikz-node1.tex using Listing 249

```
\draw[thin]
␣␣(c)␣to[in=110,out=-90]
␣␣++(0,-0.5cm)
␣␣node[below,align=left,scale=0.5]
```

LISTING 249: draw.yaml

```
indentRules:
    draw:
        body: "  "
```

Notice that each line after the `\draw` command (its 'body') in Listing 248 has been given the appropriate two-spaces worth of indentation specified in Listing 249.

Let's compare this with the output from using the YAML settings in Listing 251, and running the command

```
cmh:~$ latexindent.pl tikz-node1.tex -l no-strings.yaml
```

given in Listing 250.

LISTING 250: tikz-node1.tex using Listing 251

```
\draw[thin]
(c) to[in=110,out=-90]
++(0,-0.5cm)
node[below,align=left,scale=0.5]
```

LISTING 251: no-strings.yaml

```
commandCodeBlocks:

    stringsAllowedBetweenArguments:
    0
```

In this case, `latexindent.pl` sees that:

- the `\draw` command finishes after the `(c)`, as `stringsAllowedBetweenArguments` has been set to 0 so there are no strings allowed between arguments;
- it finds a `namedGroupingBracesBrackets` called `to` (see Table 2 on page 46) *with* argument `[in=110,out=-90]`
- it finds another `namedGroupingBracesBrackets` but this time called `node` with argument `[below,align=left,scale=0.5]`

U: 2018-04-27

Referencing Listing 239 on page 64, , we see that the first field in the `stringsAllowedBetweenArguments` is `amalgamate` and is set to `1` by default. This is for users who wish to specify their settings in multiple YAML files. For example, by using the settings in either Listing 252 orListing 253 is equivalent to using the settings in Listing 254.

LISTING 252: amalgamate-demo.yaml

```
commandCodeBlocks:

    stringsAllowedBetweenArguments:
      - 'more'
      - 'strings'
      - 'here'
```

LISTING 253: amalgamate-demo1.yaml

```
commandCodeBlocks:

    stringsAllowedBetweenArguments:
      -
        amalgamate: 1
      - 'more'
      - 'strings'
      - 'here'
```

LISTING 254: amalgamate-demo2.yaml

```
commandCodeBlocks:

    stringsAllowedBetweenArguments:
      -
        amalgamate: 1
      - 'node'
      - 'at'
      - 'to'
      - 'decoration'
      - '\+\+'
      - '\-\-'
      - 'more'
      - 'strings'
      - 'here'
```

We specify `amalgamate` to be set to `0` and in which case any settings loaded prior to those specified, including the default, will be overwritten. For example, using the settings in Listing 255 means that only the strings specified in that field will be used.

LISTING 255: amalgamate-demo3.yaml

```
commandCodeBlocks:
    stringsAllowedBetweenArguments:
      -
        amalgamate: 0
      - 'further'
      - 'settings'
```

It is important to note that the `amalgamate` field, if used, must be in the first field, and specified using the syntax given in Listings 253 to 255.

We may explore this feature further with the code in Listing 256, whose default output is given in Listing 257.

LISTING 256: for-each.tex

```
\foreach \x/\y in {0/1,1/2}{
body of foreach
}
```

LISTING 257: for-each default output

```
\foreach \x/\y in {0/1,1/2}{
      body of foreach
   }
```

Let's compare this with the output from using the YAML settings in Listing 259, and running the command

```
cmh:~$ latexindent.pl for-each.tex -l foreach.yaml
```

given in Listing 258.

LISTING 258: for-each.tex using Listing 259

```
\foreach \x/\y in {0/1,1/2}{
   body of foreach
}
```

LISTING 259: foreach.yaml

```
commandCodeBlocks:
    stringsAllowedBetweenArguments:
      -
        amalgamate: 0
      - '\\x\/\\y'
      - 'in'
```

You might like to compare the output given in Listing 257 and Listing 258. Note,in particular, in Listing 257 that the `foreach` command has not included any of the subsequent strings, and that the braces have been treated as a `namedGroupingBracesBrackets`. In Listing 258 the `foreach` command has been allowed to have `\x/\y` and `in` between arguments because of the settings given in Listing 259.

`commandNameSpecial`: ⟨*fields*⟩

U: 2018-04-27

There are some special command names that do not fit within the names recognised by `latexindent.pl`, the first one of which is `\@ifnextchar[`. From the perspective of `latexindent.pl`, the whole of the text `\@ifnextchar[` is a command, because it is immediately followed by sets of mandatory arguments. However, without the `commandNameSpecial` field, `latexindent.pl` would not be able to label it as such, because the `[` is, necessarily, not matched by a closing `]`.

For example, consider the sample file in Listing 260, which has default output in Listing 261.

LISTING 260: ifnextchar.tex

```
\parbox{
\@ifnextchar[{arg 1}{arg 2}
}
```

LISTING 261: ifnextchar.tex default output

```
\parbox{
   \@ifnextchar[{arg 1}{arg 2}
}
```

Notice that in Listing 261 the `parbox` command has been able to indent its body, because `latexindent.pl` has successfully found the command `\@ifnextchar` first; the pattern-matching of `latexindent.pl` starts from *the inner most <thing> and works outwards*, discussed in more detail on page 104.

For demonstration, we can compare this output with that given in Listing 262 in which the settings from Listing 263 have dictated that no special command names, including the `\@ifnextchar[` command, should not be searched for specially; as such, the `parbox` command has been *unable* to indent its body successfully, because the `\@ifnextchar[` command has not been found.

LISTING 262: `ifnextchar.tex` using Listing 263

```
\parbox{
\@ifnextchar[{arg 1}{arg 2}
}
```

LISTING 263: `no-ifnextchar.yaml`

```
commandCodeBlocks:
    commandNameSpecial: 0
```

The `amalgamate` field can be used for `commandNameSpecial`, just as for `stringsAllowedBetweenArguments`. The same condition holds as stated previously, which we state again here:

Warning!

It is important to note that the `amalgamate` field, if used, in either `commandNameSpecial` or `stringsAllowedBetweenArguments` must be in the first field, and specified using the syntax given in Listings 253 to 255.

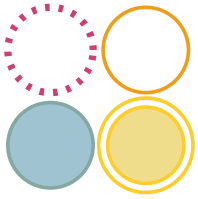
SECTION 6

The -m (modifylinebreaks) switch

All features described in this section will only be relevant if the `-m` switch is used.

`modifylinebreaks`: ⟨*fields*⟩

As of Version 3.0, `latexindent.pl` has the `-m` switch, which permits `latexindent.pl` to modify line breaks, according to the specifications in the `modifyLineBreaks` field. *The settings in this field will only be considered if the `-m` switch has been used*. A snippet of the default settings of this field is shown in Listing 264.



LISTING 264: `modifyLineBreaks` `-m`

```
491 modifyLineBreaks:
492     preserveBlankLines: 1
493     condenseMultipleBlankLinesInto: 1
```

Having read the previous paragraph, it should sound reasonable that, if you call `latexindent.pl` using the `-m` switch, then you give it permission to modify line breaks in your file, but let's be clear:

Warning!

If you call `latexindent.pl` with the `-m` switch, then you are giving it permission to modify line breaks. By default, the only thing that will happen is that multiple blank lines will be condensed into one blank line; many other settings are possible, discussed next.

`preserveBlankLines`: **0|1**

This field is directly related to *poly-switches*, discussed in Section 6.3. By default, it is set to `1`, which means that blank lines will be *protected* from removal; however, regardless of this setting, multiple blank lines can be condensed if `condenseMultipleBlankLinesInto` is greater than `0`, discussed next.

`condenseMultipleBlankLinesInto`: ⟨*positive integer*⟩

Assuming that this switch takes an integer value greater than `0`, `latexindent.pl` will condense multiple blank lines into the number of blank lines illustrated by this switch. As an example, Listing 265 shows a sample file with blank lines; upon running

```
cmh:~$ latexindent.pl myfile.tex -m -o=+-mod1
```

the output is shown in Listing 266; note that the multiple blank lines have been condensed into one blank line, and note also that we have used the `-m` switch!

LISTING 265: `mlb1.tex`

```
before blank line



after blank line


after blank line
```

LISTING 266: `mlb1-mod1.tex`

```
before blank line

after blank line

after blank line
```

6.1 Text Wrapping

N: 2022-03-13

The text wrapping routine has been over-hauled as of V3.16; I hope that the interface is simpler, and most importantly, the results are better.

The complete settings for this feature are given in Listing 267.

LISTING 267: textWrapOptions -m

```
519     textWrapOptions:
520         columns: 0
521         multipleSpacesToSingle: 1
522         blocksFollow:
523            headings: 1
524            commentOnPreviousLine: 1
525            par: 1
526            blankLine: 1
527            verbatim: 1
528            filecontents: 1
529            other: '\\\]|\\item(?:\h|\[)'      # regex
530         blocksBeginWith:
531            A-Z: 1
532            a-z: 1
533            0-9: 0
534            other: 0                           # regex
535         blocksEndBefore:
536            commentOnOwnLine: 1
537            verbatim: 1
538            filecontents: 1
539            other: '\\begin\{|\\\[|\\end\{'    # regex
540         huge: overflow                        # forbid mid-word line breaks
541         separator: ""
```

6.1.1 Text wrap: overview

An overview of how the text wrapping feature works:

1. the default value of `columns` is 0, which means that text wrapping will *not* happen by default;
2. it happens *after* verbatim blocks have been found;
3. it happens *after* the oneSentencePerLine routine (see Section 6.2);
4. it happens *before* all of the other code blocks are found and does *not* operate on a per-code-block basis;
5. code blocks to be text wrapped will:
   (a) *follow* the fields specified in `blocksFollow`
   (b) *begin* with the fields specified in `blocksBeginWith`
   (c) *end* before the fields specified in `blocksEndBefore`
6. setting `columns` to a value > 0 will text wrap blocks by first removing line breaks, and then wrapping according to the specified value of `columns`;
7. setting `columns` to -1 will *only* remove line breaks within the text wrap block.

We demonstrate this feature using a series of examples.

6.1.2 Text wrap: simple examples

Example 1 Let's use the sample text given in Listing 268.

LISTING 268: textwrap1.tex

```
Here  is a line of text that will be wrapped by latexindent.pl.

Here is  a line of text that will be wrapped by latexindent.pl.
```

We will change the value of `columns` in Listing 270 and then run the command

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml textwrap1.tex
```

then we receive the output given in Listing 269.

LISTING 269: textwrap1-mod1.tex

```
Here is a line of
text that will be
wrapped by
latexindent.pl.

Here is a line of
text that will be
wrapped by
latexindent.pl.
```

LISTING 270: textwrap1.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 20
```

Example 2 If we set `columns` to −1 then `latexindent.pl` remove line breaks within the text wrap block, and will *not* perform text wrapping. We can use this to undo text wrapping.

Starting from the file in Listing 269 and using the settings in Listing 271

LISTING 271: textwrap1A.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: -1
```

and running

```
cmh:~$ latexindent.pl -m -l textwrap1A.yaml textwrap1-mod1.tex
```

gives the output in Listing 272.

LISTING 272: textwrap1-mod1A.tex

```
Here is a line of text that will be wrapped by latexindent.pl.

Here is a line of text that will be wrapped by latexindent.pl.
```

Example 3 By default, the text wrapping routine will convert multiple spaces into single spaces. You can change this behaviour by flicking the switch `multipleSpacesToSingle` which we have done in Listing 273

Using the settings in Listing 273 and running

```
cmh:~$ latexindent.pl -m -l textwrap1B.yaml textwrap1-mod1.tex
```

gives the output in Listing 274.

LISTING 273: textwrap1B.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 20
        multipleSpacesToSingle: 0
```

LISTING 274: textwrap1-mod1B.tex

```
Here␣␣is␣a␣line␣of
text␣that␣will␣be
wrapped␣by
latexindent.pl.

Here␣is␣␣a␣line␣of
text␣that␣will␣be
wrapped␣by
latexindent.pl.
```

We note that in Listing 274 the multiple spaces have *not* been condensed into single spaces.

6.1.3 Text wrap: `blocksFollow` examples

We examine the `blocksFollow` field of Listing 267.

Example 4 Let's use the sample text given in Listing 275.

LISTING 275: tw-headings1.tex

```
\section{my heading}\label{mylabel1}
text to
    be
 wrapped from the first section
\subsection{subheading}
text to
    be
 wrapped from the first section
```

We note that Listing 275 contains the heading commands `section` and `subsection`. Upon running the command

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml tw-headings1.tex
```

then we receive the output given in Listing 276.

LISTING 276: tw-headings1-mod1.tex

```
\section{my heading}\label{mylabel1}
text to be wrapped
from the first
section
\subsection{subheading}
text to be wrapped
from the first
section
```

We reference Listing 267 on page 71 and also Listing 132 on page 44:

- in Listing 267 the `headings` field is set to `1`, which instructs `latexindent.pl` to read the fields from Listing 132 on page 44, *regardless of the value of indentAfterThisHeading or level*;
- the default is to assume that the heading command can, optionally, be followed by a `label` command.

If you find scenarios in which the default value of `headings` does not work, then you can explore the `other` field.

We can turn off `headings` as in Listing 277 and then run

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml,bf-no-headings.yaml tw-headings1.tex
```

gives the output in Listing 278, in which text wrapping has been instructed *not to happen* following headings.

LISTING 277: bf-no-headings.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        blocksFollow:
           headings: 0
```

LISTING 278: tw-headings1-mod2.tex

```
\section{my heading}\label{mylabel1}
text to
be
wrapped from the first section
\subsection{subheading}
text to
be
wrapped from the first section
```

Example 5 Let's use the sample text given in Listing 279.

LISTING 279: tw-comments1.tex

```
% trailing comment
text to
    be
 wrapped following first comment
% another comment
text to
    be
 wrapped following second comment
```

We note that Listing 279 contains trailing comments. Upon running the command

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml tw-comments1.tex
```

then we receive the output given in Listing 280.

LISTING 280: tw-comments1-mod1.tex

```
% trailing comment
text to be wrapped
following first
comment
% another comment
text to be wrapped
following second
comment
```

With reference to Listing 267 on page 71 the commentOnPreviousLine field is set to 1, which instructs latexindent.pl to find text wrap blocks after a comment on its own line.

We can turn off comments as in Listing 281 and then run

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml,bf-no-comments.yaml tw-comments1.tex
```

gives the output in Listing 282, in which text wrapping has been instructed *not to happen* following comments on their own line.

LISTING 281: bf-no-comments.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        blocksFollow:
           commentOnPreviousLine: 0
```

LISTING 282: tw-comments1-mod2.tex

```
% trailing comment
text to
be
wrapped following first comment
% another comment
text to
be
wrapped following second comment
```

Referencing Listing 267 on page 71 the `blocksFollow` fields `par`, `blankline`, `verbatim` and `filecontents` fields operate in analogous ways to those demonstrated in the above.

The `other` field of the `blocksFollow` can either be `0` (turned off) or set as a regular expression. The default value is set to `\\\]|\\item(?:\h|\[)` which can be translated to *backslash followed by a square bracket* or *backslash item followed by horizontal space or a square bracket*, or in other words, *end of display math* or an item command.

Example 6 Let's use the sample text given in Listing 283.

LISTING 283: tw-disp-math1.tex

```
text to
    be
 wrapped before display math
 \[ y = x\]
text to
    be
 wrapped after display math
```

We note that Listing 283 contains display math. Upon running the command

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml tw-disp-math1.tex
```

then we receive the output given in Listing 284.

LISTING 284: tw-disp-math1-mod1.tex

```
text to be wrapped
before display math
\[ y = x\]
text to be wrapped
after display math
```

With reference to Listing 267 on page 71 the `other` field is set to `\\\]`, which instructs `latexindent.pl` to find text wrap blocks after the end of display math.

We can turn off this switch as in Listing 285 and then run

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml,bf-no-disp-math.yaml tw-disp-math1.tex
```

gives the output in Listing 286, in which text wrapping has been instructed *not to happen* following display math.

LISTING 285: bf-no-disp-math.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        blocksFollow:
            other: 0
```

LISTING 286: tw-disp-math1-mod2.tex

```
text to be wrapped
before display math
\[ y = x\]
text to
be
wrapped after display math
```

Naturally, you should feel encouraged to customise this as you see fit.

The `blocksFollow` field *deliberately* does not default to allowing text wrapping to occur after `begin environment` statements. You are encouraged to customize the `other` field to accomodate the environments that you would like to text wrap individually, as in the next example.

Example 7 Let's use the sample text given in Listing 287.

LISTING 287: tw-bf-myenv1.tex

```
text to
    be
 wrapped before myenv environment
 \begin{myenv}
text to
    be
 wrapped within myenv environment
 \end{myenv}
text to
    be
 wrapped after myenv environment
```

We note that Listing 287 contains `myenv` environment. Upon running the command

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml tw-bf-myenv1.tex
```

then we receive the output given in Listing 288.

LISTING 288: tw-bf-myenv1-mod1.tex

```
text to be wrapped
before myenv
environment
\begin{myenv}
   text to
   be
   wrapped within myenv environment
\end{myenv}
text to
be
wrapped after myenv environment
```

We note that we have *not* received much text wrapping. We can turn do better by employing Listing 289 and then run

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml,tw-bf-myenv.yaml tw-bf-myenv1.tex
```

which gives the output in Listing 290, in which text wrapping has been implemented across the file.

LISTING 289: tw-bf-myenv.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        blocksFollow:
           other: |-
             (?x)
                \\\]
                |
                \\item(?:\h|\[)
                |
                \\begin|{myenv\} # <--- new bit
                |                # <--- new bit
                \\end|{myenv\}   # <--- new bit
```

LISTING 290: tw-bf-myenv1-mod2.tex

```
text to be wrapped
before myenv
environment
\begin{myenv}
   text to be wrapped
   within myenv
   environment
\end{myenv}
text to be wrapped
after myenv
environment
```

6.1.4 Text wrap: blocksBeginWith examples

We examine the blocksBeginWith field of Listing 267 with a series of examples.

Example 8 By default, text wrap blocks can begin with the characters a-z and A-Z.

If we start with the file given in Listing 291

LISTING 291: tw-0-9.tex

```
123 text to
    be
 wrapped before display math
 \[ y = x\]
456 text to
    be
 wrapped after display math
```

and run the command

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml tw-0-9.tex
```

then we receive the output given in Listing 292 in which text wrapping has *not* occured.

LISTING 292: tw-0-9-mod1.tex

```
123 text to
be
wrapped before display math
\[ y = x\]
456 text to
be
wrapped after display math
```

We can allow paragraphs to begin with 0-9 characters by using the settings in Listing 293 and running

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml,bb-0-9-yaml tw-0-9.tex
```

gives the output in Listing 294, in which text wrapping *has* happened.

LISTING 293: bb-0-9.yaml.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        blocksBeginWith:
            0-9: 1
```

LISTING 294: tw-0-9-mod2.tex

```
123 text to be
wrapped before
display math
\[ y = x\]
456 text to be
wrapped after
display math
```

Example 9 Let's now use the file given in Listing 295

LISTING 295: tw-bb-announce1.tex

```
% trailing comment
\announce{announce text}
    and text
    to be
 wrapped before
  goes here
```

and run the command

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml tw-bb-announce1.tex
```

then we receive the output given in Listing 296 in which text wrapping has *not* occured.

LISTING 296: tw-bb-announce1-mod1.tex

```
% trailing comment
\announce{announce text}
and text
to be
wrapped before
goes here
```

We can allow `\announce` to be at the beginning of paragraphs by using the settings in Listing 297 and running

```
cmh:~$ latexindent.pl -m -l textwrap1.yaml,tw-bb-announce.yaml tw-bb-announce1.tex
```

gives the output in Listing 298, in which text wrapping *has* happened.

LISTING 297: tw-bb-announce.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        blocksBeginWith:
            other: '\\announce'
```

LISTING 298: tw-bb-announce1-mod2.tex

```
% trailing comment
\announce{announce
   text} and text to
be wrapped before
goes here
```

6.1.5 Text wrap: `blocksEndBefore` examples

We examine the `blocksEndBefore` field of Listing 267 with a series of examples.

Example 10 Let's use the sample text given in Listing 299.

LISTING 299: tw-be-equation.tex

```
before
equation
text
\begin{align}
  1 & 2 \\
  3 & 4
\end{align}
after
equation
text
```

We note that Listing 299 contains an environment. Upon running the command

```
cmh:~$ latexindent.pl -m -l textwrap1A.yaml tw-be-equation.tex
```

then we receive the output given in Listing 300.

LISTING 300: tw-be-equation-mod1.tex

```
before equation text
\begin{align}
   1 & 2 \\
   3 & 4
\end{align}
after
equation
text
```

With reference to Listing 267 on page 71 the `other` field is set to `\\begin\{|\\\[|\\end\{`, which instructs `latexindent.pl` to *stop* text wrap blocks before `begin` statements, display math, and `end` statements.

We can turn off this switch as in Listing 301 and then run

```
cmh:~$ latexindent.pl -m -l textwrap1A.yaml,tw-be-equation.yaml tw-be-equation.tex
```

gives the output in Listing 302, in which text wrapping has been instructed *not* to stop at these statements.

LISTING 301: tw-be-equation.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        blocksEndBefore:
           other: 0
```

LISTING 302: tw-be-equation-mod2.tex

```
before equation text \begin{align} 1 & 2 \\ 3 & 4 \end{align} after equation text
```

Naturally, you should feel encouraged to customise this as you see fit.

6.1.6 Text wrap: huge, tabstop and separator

U: 2021-07-23

The default value of `huge` is `overflow`, which means that words will *not* be broken by the text wrapping routine, implemented by the `Text::Wrap` [34]. There are options to change the `huge` option for the `Text::Wrap` module to either `wrap` or `die`. Before modifying the value of `huge`, please bear in mind the following warning:

Warning!

Changing the value of `huge` to anything other than `overflow` will slow down `latexindent.pl` significantly when the `-m` switch is active.

Furthermore, changing `huge` means that you may have some words *or commands*(!) split across lines in your .tex file, which may affect your output. I do not recommend changing this field.

For example, using the settings in Listings 304 and 306 and running the commands

```
cmh:~$     latexindent.pl -m textwrap4.tex -o=+-mod2A -l textwrap2A.yaml
cmh:~$     latexindent.pl -m textwrap4.tex -o=+-mod2B -l textwrap2B.yaml
```

gives the respective output in Listings 303 and 305.

LISTING 303: textwrap4-mod2A.tex

```
He
re
is
a
li
ne
of
te
xt
.
```

LISTING 304: textwrap2A.yaml -m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 3
    huge: wrap
```

LISTING 305: textwrap4-mod2B.tex

```
Here
is
a
line
of
text.
```

LISTING 306: textwrap2B.yaml -m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 3
```

N: 2020-11-06

You can also specify the `tabstop` field as an integer value, which is passed to the text wrap module; see [34] for details. Starting with the code in Listing 307 with settings in Listing 308, and running the command

```
cmh:~$     latexindent.pl -m textwrap-ts.tex -o=+-mod1 -l tabstop.yaml
cmh:~$
```

gives the code given in Listing 309.

LISTING 307: textwrap-ts.tex

```
x       y
```

LISTING 308: tabstop.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 80
        tabstop: 9
        multipleSpacesToSingle: 0
```

LISTING 309: textwrap-ts-mod1.tex

```
x       y
```

You can specify `separator`, `break` and `unexpand` options in your settings in analogous ways to those demonstrated in Listings 306 and 308, and they will be passed to the `Text::Wrap` module. I have not found a useful reason to do this; see [34] for more details.

6.2 oneSentencePerLine: modifying line breaks for sentences

N: 2018-01-13

You can instruct `latexindent.pl` to format your file so that it puts one sentence per line. Thank you to [23] for helping to shape and test this feature. The behaviour of this part of the script is controlled by the switches detailed in Listing 310, all of which we discuss next.

LISTING 310: oneSentencePerLine

-m

```
494     oneSentencePerLine:
495         manipulateSentences: 0
496         removeSentenceLineBreaks: 1
497         multipleSpacesToSingle: 1
498         textWrapSentences: 0   # setting to 1 disables main textWrap
    routine
499         sentenceIndent: ""
500         sentencesFollow:
501             par: 1
502             blankLine: 1
503             fullStop: 1
504             exclamationMark: 1
505             questionMark: 1
506             rightBrace: 1
507             commentOnPreviousLine: 1
508             other: 0
509         sentencesBeginWith:
510             A-Z: 1
511             a-z: 0
512             other: 0
513         sentencesEndWith:
514             basicFullStop: 0
515             betterFullStop: 1
516             exclamationMark: 1
517             questionMark: 1
518             other: 0
```

`manipulateSentences`: **0|1**

This is a binary switch that details if `latexindent.pl` should perform the sentence manipulation routine; it is *off* (set to 0) by default, and you will need to turn it on (by setting it to 1) if you want the script to modify line breaks surrounding and within sentences.

`removeSentenceLineBreaks`: **0|1**

When operating upon sentences `latexindent.pl` will, by default, remove internal line breaks as `removeSentenceLineBreaks` is set to 1. Setting this switch to 0 instructs `latexindent.pl` not to do so.

For example, consider `multiple-sentences.tex` shown in Listing 311.

LISTING 311: multiple-sentences.tex

```
This is the first
sentence. This is the; second, sentence. This is the
third sentence.

This is the fourth
sentence! This is the fifth sentence? This is the
sixth sentence.
```

If we use the YAML files in Listings 313 and 315, and run the commands

```
cmh:~$ latexindent.pl multiple-sentences -m -l=manipulate-sentences.yaml
cmh:~$ latexindent.pl multiple-sentences -m -l=keep-sen-line-breaks.yaml
```

then we obtain the respective output given in Listings 312 and 314.

LISTING 312: multiple-sentences.tex using Listing 313

```
This is the first sentence.
This is the; second, sentence.
This is the third sentence.

This is the fourth sentence!
This is the fifth sentence?
This is the sixth sentence.
```

LISTING 313: manipulate-sentences.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
```

LISTING 314: multiple-sentences.tex using Listing 315

```
This is the first
sentence.
This is the; second, sentence.
This is the
third sentence.

This is the fourth
sentence!
This is the fifth sentence?
This is the
sixth sentence.
```

LISTING 315: keep-sen-line-breaks.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        removeSentenceLineBreaks: 0
```

Notice, in particular, that the 'internal' sentence line breaks in Listing 311 have been removed in Listing 312, but have not been removed in Listing 314.

multipleSpacesToSingle: **0|1**

U: 2022-03-25

By default, the one-sentence-per-line routine will convert multiple spaces into single spaces. You can change this behaviour by changing the switch multipleSpacesToSingle to a value of 0.

The remainder of the settings displayed in Listing 310 on the previous page instruct latexindent.pl on how to define a sentence. From the perspective of latexindent.pl a sentence must:

- *follow* a certain character or set of characters (see Listing 316); by default, this is either \par, a blank line, a full stop/period (.), exclamation mark (!), question mark (?) right brace (}) or a comment on the previous line;
- *begin* with a character type (see Listing 317); by default, this is only capital letters;
- *end* with a character (see Listing 318); by default, these are full stop/period (.), exclamation mark (!) and question mark (?).

In each case, you can specify the other field to include any pattern that you would like; you can specify anything in this field using the language of regular expressions.

LISTING 316: sentencesFollow -m

```
500         sentencesFollow:
501             par: 1
502             blankLine: 1
503             fullStop: 1
504             exclamationMark: 1
505             questionMark: 1
506             rightBrace: 1
507
      commentOnPreviousLine: 1
508             other: 0
```

LISTING 317: sentencesBeginWith -m

```
509         sentencesBeginWith:
510             A-Z: 1
511             a-z: 0
512             other: 0
```

LISTING 318: sentencesEndWith -m

```
513         sentencesEndWith:
514             basicFullStop: 0
515             betterFullStop: 1
516             exclamationMark: 1
517             questionMark: 1
518             other: 0
```

6.2.1 sentencesFollow

Let's explore a few of the switches in `sentencesFollow`; let's start with Listing 311 on page 81, and use the YAML settings given in Listing 320. Using the command

```
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-follow1.yaml
```

we obtain the output given in Listing 319.

LISTING 319: multiple-sentences.tex using Listing 320

```
This is the first sentence.
This is the; second, sentence.
This is the third sentence.

This is the fourth
sentence!
This is the fifth sentence?
This is the sixth sentence.
```

LISTING 320: sentences-follow1.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesFollow:
            blankLine: 0
```

Notice that, because `blankLine` is set to `0`, `latexindent.pl` will not seek sentences following a blank line, and so the fourth sentence has not been accounted for.

We can explore the `other` field in Listing 316 with the `.tex` file detailed in Listing 321.

LISTING 321: multiple-sentences1.tex

```
(Some sentences stand alone in brackets.) This is the first
sentence. This is the; second, sentence. This is the
third sentence.
```

Upon running the following commands

```
cmh:~$ latexindent.pl multiple-sentences1 -m -l=manipulate-sentences.yaml
cmh:~$ latexindent.pl multiple-sentences1 -m -l=manipulate-sentences.yaml,sentences-follow2.yaml
```

then we obtain the respective output given in Listings 322 and 323.

LISTING 322: multiple-sentences1.tex using Listing 313 on the previous page

```
(Some sentences stand alone in brackets.) This is the first
sentence.
This is the; second, sentence.
This is the third sentence.
```

LISTING 323: multiple-sentences1.tex using Listing 324

```
(Some sentences stand alone in brackets.)
This is the first sentence.
This is the; second, sentence.
This is the third sentence.
```

LISTING 324: sentences-follow2.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesFollow:
           other: "\)"
```

Notice that in Listing 322 the first sentence after the) has not been accounted for, but that following the inclusion of Listing 324, the output given in Listing 323 demonstrates that the sentence *has* been accounted for correctly.

6.2.2 sentencesBeginWith

By default, `latexindent.pl` will only assume that sentences begin with the upper case letters `A-Z`; you can instruct the script to define sentences to begin with lower case letters (see Listing 317), and we can use the `other` field to define sentences to begin with other characters.

LISTING 325: multiple-sentences2.tex

```
This is the first
sentence.

$a$ can
represent a
number. 7 is
at the beginning of this sentence.
```

Upon running the following commands

```
cmh:~$ latexindent.pl multiple-sentences2 -m -l=manipulate-sentences.yaml
cmh:~$ latexindent.pl multiple-sentences2 -m -l=manipulate-sentences.yaml,sentences-begin1.yaml
```

then we obtain the respective output given in Listings 326 and 327.

LISTING 326: multiple-sentences2.tex using Listing 313 on page 82

```
This is the first sentence.

$a$ can
represent a
number. 7 is
at the beginning of this sentence.
```

LISTING 327: multiple-sentences2.tex using Listing 328

```
This is the first sentence.

$a$ can represent a number.
7 is at the beginning of this sentence.
```

LISTING 328: sentences-begin1.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesBeginWith:
            other: "\$|[0-9]"
```

Notice that in Listing 326, the first sentence has been accounted for but that the subsequent sentences have not. In Listing 327, all of the sentences have been accounted for, because the `other` field in Listing 328 has defined sentences to begin with either `$` or any numeric digit, `0` to `9`.

6.2.3 sentencesEndWith

Let's return to Listing 311 on page 81; we have already seen the default way in which `latexindent.pl` will operate on the sentences in this file in Listing 312 on page 82. We can populate the `other` field

with any character that we wish; for example, using the YAML specified in Listing 330 and the command

```
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-end1.yaml
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-end2.yaml
```

then we obtain the output in Listing 329.

LISTING 329: multiple-sentences.tex using Listing 330

```
This is the first sentence.
This is the;
second, sentence.
This is the third sentence.

This is the fourth sentence!
This is the fifth sentence?
This is the sixth sentence.
```

LISTING 330: sentences-end1.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesEndWith:
          other: "\:|\;|\,"
```

LISTING 331: multiple-sentences.tex using Listing 332

```
This is the first sentence.
This is the;
second,
sentence.
This is the third sentence.

This is the fourth sentence!
This is the fifth sentence?
This is the sixth sentence.
```

LISTING 332: sentences-end2.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesEndWith:
          other: "\:|\;|\,"
        sentencesBeginWith:
          a-z: 1
```

There is a subtle difference between the output in Listings 329 and 331; in particular, in Listing 329 the word `sentence` has not been defined as a sentence, because we have not instructed `latexindent.pl` to begin sentences with lower case letters. We have changed this by using the settings in Listing 332, and the associated output in Listing 331 reflects this.

Referencing Listing 318 on page 83, you'll notice that there is a field called `basicFullStop`, which is set to 0, and that the `betterFullStop` is set to 1 by default.

Let's consider the file shown in Listing 333.

LISTING 333: url.tex

```
This sentence, \url{tex.stackexchange.com/} finishes here. Second sentence.
```

Upon running the following commands

```
cmh:~$ latexindent.pl url -m -l=manipulate-sentences.yaml
```

we obtain the output given in Listing 334.

LISTING 334: url.tex using Listing 313 on page 82

```
This sentence, \url{tex.stackexchange.com/} finishes here.
Second sentence.
```

Notice that the full stop within the url has been interpreted correctly. This is because, within the `betterFullStop`, full stops at the end of sentences have the following properties:

- they are ignored within `e.g.` and `i.e.`;
- they can not be immediately followed by a lower case or upper case letter;

- they can not be immediately followed by a hyphen, comma, or number.

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If you find that the `betterFullStop` does not work for your purposes, then you can switch it off by setting it to `0`, and you can experiment with the `other` field. You can also seek to customise the `betterFullStop` routine by using the *fine tuning*, detailed in Listing 494 on page 121.

The `basicFullStop` routine should probably be avoided in most situations, as it does not accommodate the specifications above. For example, using the following command

```
cmh:~$ latexindent.pl url -m -l=alt-full-stop1.yaml
```

and the YAML in Listing 336 gives the output in Listing 335.

LISTING 335: `url.tex` using Listing 336

```
This sentence, \url{tex.
   stackexchange.com/} finishes here.Second sentence.
```

LISTING 336: `alt-full-stop1.yaml` `-m`

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesEndWith:
            basicFullStop: 1
            betterFullStop: 0
```

Notice that the full stop within the URL has not been accommodated correctly because of the non-default settings in Listing 336.

6.2.4 Features of the oneSentencePerLine routine

The sentence manipulation routine takes place *after* verbatim environments, preamble and trailing comments have been accounted for; this means that any characters within these types of code blocks will not be part of the sentence manipulation routine.

For example, if we begin with the `.tex` file in Listing 337, and run the command

```
cmh:~$ latexindent.pl multiple-sentences3 -m -l=manipulate-sentences.yaml
```

then we obtain the output in Listing 338.

LISTING 337: `multiple-sentences3.tex`

```
The first sentence continues after the verbatim
\begin{verbatim}
  there are sentences within this. These
  will not be operated
  upon by latexindent.pl.
\end{verbatim}
and finishes here. Second sentence % a commented full stop.
contains trailing comments,
which are ignored.
```

LISTING 338: `multiple-sentences3.tex` using Listing 313 on page 82

```
The first sentence continues after the verbatim \begin{verbatim}
  there are sentences within this. These
  will not be operated
  upon by latexindent.pl.
\end{verbatim} and finishes here.
Second sentence contains trailing comments, which are ignored.
% a commented full stop.
```

Furthermore, if sentences run across environments then, by default, the line breaks internal to the sentence will be removed. For example, if we use the `.tex` file in Listing 339 and run the commands

```
cmh:~$ latexindent.pl multiple-sentences4 -m -l=manipulate-sentences.yaml
cmh:~$ latexindent.pl multiple-sentences4 -m -l=keep-sen-line-breaks.yaml
```

then we obtain the output in Listings 340 and 341.

LISTING 339: multiple-sentences4.tex

```
This sentence
\begin{itemize}
  \item continues
\end{itemize}
across itemize
and finishes here.
```

LISTING 340: multiple-sentences4.tex using Listing 313 on page 82

```
This sentence \begin{itemize} \item continues \end{itemize} across itemize and finishes here.
```

LISTING 341: multiple-sentences4.tex using Listing 315 on page 82

```
This sentence
\begin{itemize}
   \item continues
\end{itemize}
across itemize
and finishes here.
```

Once you've read Section 6.3, you will know that you can accommodate the removal of internal sentence line breaks by using the YAML in Listing 343 and the command

```
cmh:~$ latexindent.pl multiple-sentences4 -m -l=item-rules2.yaml
```

the output of which is shown in Listing 342.

LISTING 342: multiple-sentences4.tex using Listing 343

```
This sentence
\begin{itemize}
   \item continues
\end{itemize}
across itemize and finishes here.
```

LISTING 343: item-rules2.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
    items:
        ItemStartsOnOwnLine: 1
    environments:
        BeginStartsOnOwnLine: 1
        BodyStartsOnOwnLine: 1
        EndStartsOnOwnLine: 1
        EndFinishesWithLineBreak: 1
```

6.2.5 Text wrapping and indenting sentences

N: 2018-08-13

The oneSentencePerLine can be instructed to perform text wrapping and indentation upon sentences.

Let's use the code in Listing 344.

LISTING 344: multiple-sentences5.tex

```
A distincao entre conteudo \emph{real} e conteudo \emph{intencional} esta
relacionada, ainda, a distincao entre o conceito husserliano de
\emph{experiencia} e o uso popular desse termo. No sentido comum,
o \term{experimentado} e um complexo de eventos exteriores,
e o \term{experimentar} consiste em percepcoes (alem de julgamentos e outros
atos) nas quais tais eventos aparecem como objetos, e objetos frequentemente
to the end.
```

Referencing Listing 346, and running the following command

```
cmh:~$ latexindent.pl multiple-sentences5 -m -l=sentence-wrap1.yaml
```

we receive the output given in Listing 345.

LISTING 345: multiple-sentences5.tex using Listing 346

```
A distincao entre conteudo \emph{real} e conteudo
  \emph{intencional} esta relacionada, ainda, a
  distincao entre o conceito husserliano de
  \emph{experiencia} e o uso popular desse termo.
No sentido comum, o \term{experimentado} e um
  complexo de eventos exteriores, e o
  \term{experimentar} consiste em percepcoes (alem
  de julgamentos e outros atos) nas quais tais
  eventos aparecem como objetos, e objetos
  frequentemente to the end.
```

LISTING 346: sentence-wrap1.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        removeSentenceLineBreaks: 1
        textWrapSentences: 1
        sentenceIndent: "  "
    textWrapOptions:
        columns: 50
```

If you specify `textWrapSentences` as 1, but do *not* specify a value for `columns` then the text wrapping will *not* operate on sentences, and you will see a warning in `indent.log`.

The indentation of sentences requires that sentences are stored as code blocks. This means that you may need to tweak Listing 318 on page 83. Let's explore this in relation to Listing 347.

LISTING 347: multiple-sentences6.tex

```
Consider the following:
\begin{itemize}
        \item firstly.
        \item secondly.
\end{itemize}
```

By default, `latexindent.pl` will find the full-stop within the first `item`, which means that, upon running the following commands

```
cmh:~$ latexindent.pl multiple-sentences6 -m -l=sentence-wrap1.yaml
cmh:~$ latexindent.pl multiple-sentences6 -m -l=sentence-wrap1.yaml
    -y="modifyLineBreaks:oneSentencePerLine:sentenceIndent:''"
```

we receive the respective output in Listing 348 and Listing 349.

LISTING 348: multiple-sentences6-mod1.tex using Listing 346

```
Consider the following: \begin{itemize} \item
  firstly.
\item secondly.
\end{itemize}
```

LISTING 349: multiple-sentences6-mod2.tex using Listing 346 and no sentence indentation

```
Consider the following: \begin{itemize} \item
        firstly.
   \item secondly.
\end{itemize}
```

We note that Listing 348 the itemize code block has *not* been indented appropriately. This is because the oneSentencePerLine has been instructed to store sentences (because Listing 346); each sentence is then searched for code blocks.

We can tweak the settings in Listing 318 on page 83 to ensure that full stops are not followed by item commands, and that the end of sentences contains \end{itemize} as in Listing 350 (if you intend to use this, ensure that you remove the line breaks from the other field).

LISTING 350: itemize.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesEndWith:
            betterFullStop: 0
            other: '(?:\.\)(?!\h*[a-z]))|(?:(?<!(?:(?:e\.g)
                    |(?:i\.e)|(?:etc))))\.(?:\h*\R*(?:\\end\{itemize\})?)
                    (?!(?:[a-z]|[A-Z]|\-|\,|[0-9]|(?:(?:\R|\h)*\\item)))'
```

Upon running

```
cmh:~$ latexindent.pl multiple-sentences6 -m -l=sentence-wrap1.yaml,itemize.yaml
```

we receive the output in Listing 351.

LISTING 351: multiple-sentences6-mod3.tex using Listing 346 and Listing 350

```
Consider the following: \begin{itemize}
  \item
firstly.
\item secondly.
\end{itemize}
```

Notice that the sentence has received indentation, and that the itemize code block has been found and indented correctly.

6.3 Poly-switches

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Every other field in the modifyLineBreaks field uses poly-switches, and can take one of the following integer values:

−1 *remove mode*: line breaks before or after the *<part of thing>* can be removed (assuming that preserveBlankLines is set to 0);

0 *off mode*: line breaks will not be modified for the *<part of thing>* under consideration;

1 *add mode*: a line break will be added before or after the *<part of thing>* under consideration, assuming that there is not already a line break before or after the *<part of thing>*;

2 *comment then add mode*: a comment symbol will be added, followed by a line break before or after the *<part of thing>* under consideration, assuming that there is not already a comment and line break before or after the *<part of thing>*;

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3 *add then blank line mode*: a line break will be added before or after the *<part of thing>* under consideration, assuming that there is not already a line break before or after the *<part of thing>*, followed by a blank line;

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4 *add blank line mode*; a blank line will be added before or after the *<part of thing>* under consideration, even if the *<part of thing>* is already on its own line.

In the above, *<part of thing>* refers to either the *begin statement*, *body* or *end statement* of the code blocks detailed in Table 2 on page 46. All poly-switches are *off* by default; `latexindent.pl` searches first of all for per-name settings, and then followed by global per-thing settings.

6.3.1 Poly-switches for environments

We start by viewing a snippet of `defaultSettings.yaml` in Listing 352; note that it contains *global* settings (immediately after the `environments` field) and that *per-name* settings are also allowed – in the case of Listing 352, settings for `equation*` have been specified for demonstration. Note that all poly-switches are *off* (set to 0) by default.

LISTING 352: `environments` -m

```
543     environments:
544         BeginStartsOnOwnLine: 0
545         BodyStartsOnOwnLine: 0
546         EndStartsOnOwnLine: 0
547         EndFinishesWithLineBreak: 0
548         equation*:
549             BeginStartsOnOwnLine: 0
550             BodyStartsOnOwnLine: 0
551             EndStartsOnOwnLine: 0
552             EndFinishesWithLineBreak: 0
```

Let's begin with the simple example given in Listing 353; note that we have annotated key parts of the file using ♠, ♡, ♢ and ♣, these will be related to fields specified in Listing 352.

LISTING 353: `env-mlb1.tex`

```
before words♠ \begin{myenv}♡body of myenv♢\end{myenv}♣ after words
```

6.3.1.1 Adding line breaks: BeginStartsOnOwnLine and BodyStartsOnOwnLine

Let's explore `BeginStartsOnOwnLine` and `BodyStartsOnOwnLine` in Listings 354 and 355, and in particular, let's allow each of them in turn to take a value of 1.

LISTING 354: `env-mlb1.yaml` -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: 1
```

LISTING 355: `env-mlb2.yaml` -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: 1
```

After running the following commands,

```
cmh:~$ latexindent.pl -m env-mlb.tex -l env-mlb1.yaml
cmh:~$ latexindent.pl -m env-mlb.tex -l env-mlb2.yaml
```

the output is as in Listings 356 and 357 respectively.

LISTING 356: `env-mlb.tex` using Listing 354

```
before words
\begin{myenv}body of myenv\end{myenv} after words
```

LISTING 357: `env-mlb.tex` using Listing 355

```
before words \begin{myenv}
    body of myenv\end{myenv} after words
```

There are a couple of points to note:

- in Listing 356 a line break has been added at the point denoted by ♠ in Listing 353; no other line breaks have been changed;
- in Listing 357 a line break has been added at the point denoted by ♡ in Listing 353; furthermore, note that the *body* of `myenv` has received the appropriate (default) indentation.

Let's now change each of the 1 values in Listings 354 and 355 so that they are 2 and save them into `env-mlb3.yaml` and `env-mlb4.yaml` respectively (see Listings 358 and 359).

LISTING 358: `env-mlb3.yaml` -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: 2
```

LISTING 359: `env-mlb4.yaml` -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: 2
```

Upon running commands analogous to the above, we obtain Listings 360 and 361.

LISTING 360: `env-mlb.tex` using Listing 358

```
before words%
\begin{myenv}body of myenv\end{myenv} after words
```

LISTING 361: `env-mlb.tex` using Listing 359

```
before words \begin{myenv}%
   body of myenv\end{myenv} after words
```

Note that line breaks have been added as in Listings 356 and 357, but this time a comment symbol has been added before adding the line break; in both cases, trailing horizontal space has been stripped before doing so.

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Let's now change each of the 1 values in Listings 354 and 355 so that they are 3 and save them into `env-mlb5.yaml` and `env-mlb6.yaml` respectively (see Listings 362 and 363).

LISTING 362: `env-mlb5.yaml` -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: 3
```

LISTING 363: `env-mlb6.yaml` -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: 3
```

Upon running commands analogous to the above, we obtain Listings 364 and 365.

LISTING 364: `env-mlb.tex` using Listing 362

```
before words

\begin{myenv}body of myenv\end{myenv} after words
```

LISTING 365: `env-mlb.tex` using Listing 363

```
before words \begin{myenv}

   body of myenv\end{myenv} after words
```

Note that line breaks have been added as in Listings 356 and 357, but this time a *blank line* has been added after adding the line break.

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Let's now change each of the 1 values in Listings 362 and 363 so that they are 4 and save them into `env-beg4.yaml` and `env-body4.yaml` respectively (see Listings 366 and 367).

LISTING 366: `env-beg4.yaml` -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: 4
```

LISTING 367: `env-body4.yaml` -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: 4
```

We will demonstrate this poly-switch value using the code in Listing 368.

LISTING 368: `env-mlb1.tex`

```
before words
\begin{myenv}
body of myenv
\end{myenv}
after words
```

Upon running the commands

```
cmh:~$ latexindent.pl -m env-mlb1.tex -l env-beg4.yaml
cmh:~$ latexindent.pl -m env-mlb.1tex -l env-body4.yaml
```

then we receive the respective outputs in Listings 369 and 370.

LISTING 369: env-mlb1.tex using Listing 366

```
before words

\begin{myenv}
   body of myenv
\end{myenv}
after words
```

LISTING 370: env-mlb1.tex using Listing 367

```
before words
\begin{myenv}

   body of myenv
\end{myenv}
after words
```

We note in particular that, by design, for this value of the poly-switches:

1. in Listing 369 a blank line has been inserted before the \begin statement, even though the \begin statement was already on its own line;
2. in Listing 370 a blank line has been inserted before the beginning of the *body*, even though it already began on its own line.

6.3.1.2 Adding line breaks using EndStartsOnOwnLine and EndFinishesWithLineBreak

Let's explore EndStartsOnOwnLine and EndFinishesWithLineBreak in Listings 371 and 372, and in particular, let's allow each of them in turn to take a value of 1.

LISTING 371: env-mlb7.yaml -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 1
```

LISTING 372: env-mlb8.yaml -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: 1
```

After running the following commands,

```
cmh:~$ latexindent.pl -m env-mlb.tex -l env-mlb7.yaml
cmh:~$ latexindent.pl -m env-mlb.tex -l env-mlb8.yaml
```

the output is as in Listings 373 and 374.

LISTING 373: env-mlb.tex using Listing 371

```
before words \begin{myenv}body of myenv
\end{myenv} after words
```

LISTING 374: env-mlb.tex using Listing 372

```
before words \begin{myenv}body of myenv\end{myenv}
after words
```

There are a couple of points to note:

- in Listing 373 a line break has been added at the point denoted by ♢ in Listing 353 on page 90; no other line breaks have been changed and the \end{myenv} statement has *not* received indentation (as intended);
- in Listing 374 a line break has been added at the point denoted by ♣ in Listing 353 on page 90.

Let's now change each of the 1 values in Listings 371 and 372 so that they are 2 and save them into env-mlb9.yaml and env-mlb10.yaml respectively (see Listings 375 and 376).

LISTING 375: env-mlb9.yaml -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 2
```

LISTING 376: env-mlb10.yaml -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: 2
```

Upon running commands analogous to the above, we obtain Listings 377 and 378.

LISTING 377: env-mlb.tex using Listing 375

```
before words \begin{myenv}body of myenv%
\end{myenv} after words
```

LISTING 378: env-mlb.tex using Listing 376

```
before words \begin{myenv}body of myenv\end{myenv}%
after words
```

Note that line breaks have been added as in Listings 373 and 374, but this time a comment symbol has been added before adding the line break; in both cases, trailing horizontal space has been stripped before doing so.

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Let's now change each of the 1 values in Listings 371 and 372 so that they are 3 and save them into `env-mlb11.yaml` and `env-mlb12.yaml` respectively (see Listings 379 and 380).

LISTING 379: `env-mlb11.yaml` -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 3
```

LISTING 380: `env-mlb12.yaml` -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: 3
```

Upon running commands analogous to the above, we obtain Listings 381 and 382.

LISTING 381: `env-mlb.tex` using Listing 379

```
before words \begin{myenv}body of myenv

\end{myenv} after words
```

LISTING 382: `env-mlb.tex` using Listing 380

```
before words \begin{myenv}body of myenv\end{myenv}

after words
```

Note that line breaks have been added as in Listings 373 and 374, and that a *blank line* has been added after the line break.

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Let's now change each of the 1 values in Listings 379 and 380 so that they are 4 and save them into `env-end4.yaml` and `env-end-f4.yaml` respectively (see Listings 383 and 384).

LISTING 383: `env-end4.yaml` -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 4
```

LISTING 384: `env-end-f4.yaml` -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: 4
```

We will demonstrate this poly-switch value using the code from Listing 368 on page 91.

Upon running the commands

```
cmh:~$ latexindent.pl -m env-mlb1.tex -l env-end4.yaml
cmh:~$ latexindent.pl -m env-mlb.1tex -l env-end-f4.yaml
```

then we receive the respective outputs in Listings 385 and 386.

LISTING 385: `env-mlb1.tex` using Listing 383

```
before words
\begin{myenv}
   body of myenv

\end{myenv}
after words
```

LISTING 386: `env-mlb1.tex` using Listing 384

```
before words
\begin{myenv}
   body of myenv
\end{myenv}

after words
```

We note in particular that, by design, for this value of the poly-switches:

1. in Listing 385 a blank line has been inserted before the `\end` statement, even though the `\end` statement was already on its own line;
2. in Listing 386 a blank line has been inserted after the `\end` statement, even though it already began on its own line.

6.3.1.3 poly-switches 1, 2, and 3 only add line breaks when necessary

If you ask `latexindent.pl` to add a line break (possibly with a comment) using a poly-switch value of 1 (or 2 or 3), it will only do so if necessary. For example, if you process the file in Listing 387 on the next page using poly-switch values of 1, 2, or 3, it will be left unchanged.

LISTING 387: env-mlb2.tex

```
before words
\begin{myenv}
  body of myenv
\end{myenv}
after words
```

LISTING 388: env-mlb3.tex

```
before words
\begin{myenv}  %
  body of myenv%
\end{myenv}%
after words
```

Setting the poly-switches to a value of 4 instructs `latexindent.pl` to add a line break even if the *<part of thing>* is already on its own line; see Listings 369 and 370 and Listings 385 and 386.

In contrast, the output from processing the file in Listing 388 will vary depending on the poly-switches used; in Listing 389 you'll see that the comment symbol after the `\begin{myenv}` has been moved to the next line, as `BodyStartsOnOwnLine` is set to `1`. In Listing 390 you'll see that the comment has been accounted for correctly because `BodyStartsOnOwnLine` has been set to 2, and the comment symbol has *not* been moved to its own line. You're encouraged to experiment with Listing 388 and by setting the other poly-switches considered so far to 2 in turn.

LISTING 389: env-mlb3.tex using Listing 355 on page 90

```
before words
\begin{myenv}
   %
   body of myenv%
\end{myenv}%
after words
```

LISTING 390: env-mlb3.tex using Listing 359 on page 91

```
before words
\begin{myenv}  %
   body of myenv%
\end{myenv}%
after words
```

The details of the discussion in this section have concerned *global* poly-switches in the `environments` field; each switch can also be specified on a *per-name* basis, which would take priority over the global values; with reference to Listing 352 on page 90, an example is shown for the `equation*` environment.

6.3.1.4 Removing line breaks (poly-switches set to −1)

Setting poly-switches to −1 tells `latexindent.pl` to remove line breaks of the *<part of the thing>*, if necessary. We will consider the example code given in Listing 391, noting in particular the positions of the line break highlighters, ♠, ♡, ♢ and ♣, together with the associated YAML files in Listings 392 to 395.

LISTING 391: env-mlb4.tex

```
before words♠
\begin{myenv}♡
body of myenv♢
\end{myenv}♣
after words
```

LISTING 392: env-mlb13.yaml -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: -1
```

LISTING 393: env-mlb14.yaml -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: -1
```

LISTING 394: env-mlb15.yaml -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: -1
```

LISTING 395: env-mlb16.yaml -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: -1
```

After running the commands

```
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb13.yaml
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb14.yaml
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb15.yaml
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb16.yaml
```

we obtain the respective output in Listings 396 to 399.

LISTING 396: env-mlb4.tex using Listing 392

```
before words\begin{myenv}
   body of myenv
\end{myenv}
after words
```

LISTING 397: env-mlb4.tex using Listing 393

```
before words
\begin{myenv}body of myenv
\end{myenv}
after words
```

LISTING 398: env-mlb4.tex using Listing 394

```
before words
\begin{myenv}
   body of myenv\end{myenv}
after words
```

LISTING 399: env-mlb4.tex using Listing 395

```
before words
\begin{myenv}
   body of myenv
\end{myenv}after words
```

Notice that in:

- Listing 396 the line break denoted by ♠ in Listing 391 has been removed;
- Listing 397 the line break denoted by ♡ in Listing 391 has been removed;
- Listing 398 the line break denoted by ♢ in Listing 391 has been removed;
- Listing 399 the line break denoted by ♣ in Listing 391 has been removed.

We examined each of these cases separately for clarity of explanation, but you can combine all of the YAML settings in Listings 392 to 395 into one file; alternatively, you could tell `latexindent.pl` to load them all by using the following command, for example

```
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml
```

which gives the output in Listing 353 on page 90.

6.3.1.5 About trailing horizontal space

Recall that on page 27 we discussed the YAML field `removeTrailingWhitespace`, and that it has two (binary) switches to determine if horizontal space should be removed `beforeProcessing` and `afterProcessing`. The `beforeProcessing` is particularly relevant when considering the `-m` switch; let's consider the file shown in Listing 400, which highlights trailing spaces.

LISTING 400: env-mlb5.tex

```
before␣words␣␣␣♠
\begin{myenv}␣␣␣␣␣␣␣␣␣␣␣♡
body␣of␣myenv␣␣␣␣␣␣♢
\end{myenv}␣␣␣␣␣♣
after␣words
```

LISTING 401: removeTWS-before.yaml

```
removeTrailingWhitespace:
    beforeProcessing: 1
```

The output from the following commands

```
cmh:~$ latexindent.pl -m env-mlb5.tex -l env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml
cmh:~$ latexindent.pl -m env-mlb5.tex -l
    env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml,removeTWS-before.yaml
```

is shown, respectively, in Listings 402 and 403; note that the trailing horizontal white space has been preserved (by default) in Listing 402, while in Listing 403, it has been removed using the switch specified in Listing 401.

LISTING 402: env-mlb5.tex using Listings 396 to 399

```
before␣words␣␣␣\begin{myenv}␣␣␣␣␣␣␣␣␣␣␣body␣of␣myenv␣␣␣␣␣␣␣\end{myenv}␣␣␣␣␣after␣words
```

LISTING 403: env-mlb5.tex using Listings 396 to 399 *and* Listing 401

```
before␣words\begin{myenv}body␣of␣myenv\end{myenv}after␣words
```

6.3.1.6 poly-switch line break removal and blank lines

Now let's consider the file in Listing 404, which contains blank lines.

LISTING 404: env-mlb6.tex

```
before words♠


\begin{myenv}♡


body of myenv♢


\end{myenv}♣

after words
```

LISTING 405: UnpreserveBlankLines.yaml -m

```
modifyLineBreaks:
    preserveBlankLines: 0
```

Upon running the following commands

```
cmh:~$ latexindent.pl -m env-mlb6.tex -l env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml
cmh:~$ latexindent.pl -m env-mlb6.tex -l
    env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml,UnpreserveBlankLines.yaml
```

we receive the respective outputs in Listings 406 and 407. In Listing 406 we see that the multiple blank lines have each been condensed into one blank line, but that blank lines have *not* been removed by the poly-switches – this is because, by default, `preserveBlankLines` is set to 1. By contrast, in Listing 407, we have allowed the poly-switches to remove blank lines because, in Listing 405, we have set `preserveBlankLines` to 0.

LISTING 406: env-mlb6.tex using Listings 396 to 399

```
before words

\begin{myenv}

   body of myenv

\end{myenv}

after words
```

LISTING 407: env-mlb6.tex using Listings 396 to 399 *and* Listing 405

```
before words\begin{myenv}body of myenv\end{myenv}after words
```

We can explore this further using the blank-line poly-switch value of 3; let's use the file given in Listing 408.

LISTING 408: env-mlb7.tex

```
\begin{one} one text \end{one} \begin{two} two text \end{two}
```

Upon running the following commands

```
cmh:~$ latexindent.pl -m env-mlb7.tex -l env-mlb12.yaml,env-mlb13.yaml
cmh:~$ latexindent.pl -m env-mlb7.tex -l
    env-mlb13.yaml,env-mlb14.yaml,UnpreserveBlankLines.yaml
```

we receive the outputs given in Listings 409 and 410.

LISTING 409: env-mlb7-preserve.tex

```
\begin{one} one text \end{one}

\begin{two} two text \end{two}
```

LISTING 410: env-mlb7-no-preserve.tex

```
\begin{one} one text \end{one} \begin{two} two text \end{two}
```

Notice that in:

- Listing 409 that `\end{one}` has added a blank line, because of the value of `EndFinishesWithLineBreak` in Listing 380 on page 93, and even though the line break ahead of `\begin{two}` should have been removed (because of `BeginStartsOnOwnLine` in Listing 392 on page 94), the blank line has been preserved by default;
- Listing 410, by contrast, has had the additional line-break removed, because of the settings in Listing 405.

6.3.2 Poly-switches for double back slash

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With reference to `lookForAlignDelims` (see Listing 39 on page 27) you can specify poly-switches to dictate the line-break behaviour of double back slashes in environments (Listing 41 on page 28), commands (Listing 75 on page 34), or special code blocks (Listing 114 on page 40). Note that for these poly-switches to take effect, the name of the code block must necessarily be specified within `lookForAlignDelims` (Listing 39 on page 27); we will demonstrate this in what follows.

Consider the code given in Listing 411.

LISTING 411: tabular3.tex

```
\begin{tabular}{cc}
 1 & 2 ★\\□ 3 & 4 ★\\□
\end{tabular}
```

Referencing Listing 411:

- DBS stands for *double back slash*;
- line breaks ahead of the double back slash are annotated by ★, and are controlled by `DBSStartsOnOwnLine`;
- line breaks after the double back slash are annotated by □, and are controlled by `DBSFinishesWithLineBreak`.

Let's explore each of these in turn.

6.3.2.1 Double back slash starts on own line

We explore `DBSStartsOnOwnLine` (★ in Listing 411); starting with the code in Listing 411, together with the YAML files given in Listing 413 and Listing 415 and running the following commands

```
cmh:~$ latexindent.pl -m tabular3.tex -l DBS1.yaml
cmh:~$ latexindent.pl -m tabular3.tex -l DBS2.yaml
```

then we receive the respective output given in Listing 412 and Listing 414.

LISTING 412: tabular3.tex using Listing 413

```
\begin{tabular}{cc}
   1 & 2
   \\ 3 & 4
   \\
\end{tabular}
```

LISTING 413: DBS1.yaml -m

```
modifyLineBreaks:
    environments:
        DBSStartsOnOwnLine: 1
```

LISTING 414: tabular3.tex using Listing 415

```
\begin{tabular}{cc}
   1 & 2 %
   \\ 3 & 4%
   \\
\end{tabular}
```

LISTING 415: DBS2.yaml -m

```
modifyLineBreaks:
    environments:
        tabular:
            DBSStartsOnOwnLine: 2
```

We note that

- Listing 413 specifies `DBSStartsOnOwnLine` for *every* environment (that is within `lookForAlignDelims`, Listing 42 on page 28); the double back slashes from Listing 411 have been moved to their own line in Listing 412;
- Listing 415 specifies `DBSStartsOnOwnLine` on a *per-name* basis for `tabular` (that is within `lookForAlignDelims`, Listing 42 on page 28); the double back slashes from Listing 411 have been moved to their own line in Listing 414, having added comment symbols before moving them.

6.3.2.2 Double back slash finishes with line break

Let's now explore `DBSFinishesWithLineBreak` (□ in Listing 411); starting with the code in Listing 411, together with the YAML files given in Listing 417 and Listing 419 and running the following commands

```
cmh:~$ latexindent.pl -m tabular3.tex -l DBS3.yaml
cmh:~$ latexindent.pl -m tabular3.tex -l DBS4.yaml
```

then we receive the respective output given in Listing 416 and Listing 418.

LISTING 416: tabular3.tex using Listing 417

```
\begin{tabular}{cc}
   1 & 2 \\
   3 & 4 \\
\end{tabular}
```

LISTING 417: DBS3.yaml -m

```
modifyLineBreaks:
    environments:
        DBSFinishesWithLineBreak: 1
```

LISTING 418: tabular3.tex using Listing 419

```
\begin{tabular}{cc}
   1 & 2 \\%
   3 & 4 \\
\end{tabular}
```

LISTING 419: DBS4.yaml -m

```
modifyLineBreaks:
    environments:
        tabular:
            DBSFinishesWithLineBreak: 2
```

We note that

- Listing 417 specifies `DBSFinishesWithLineBreak` for *every* environment (that is within `lookForAlignDelims`, Listing 42 on page 28); the code following the double back slashes from Listing 411 has been moved to their own line in Listing 416;
- Listing 419 specifies `DBSFinishesWithLineBreak` on a *per-name* basis for `tabular` (that is within `lookForAlignDelims`, Listing 42 on page 28); the first double back slashes from List-

ing 411 have moved code following them to their own line in Listing 418, having added comment symbols before moving them; the final double back slashes have *not* added a line break as they are at the end of the body within the code block.

6.3.2.3 Double back slash poly-switches for specialBeginEnd

Let's explore the double back slash poly-switches for code blocks within `specialBeginEnd` code blocks (Listing 112 on page 40); we begin with the code within Listing 420.

LISTING 420: special4.tex

```
\< a& =b  \\ & =c\\ & =d\\ & =e \>
```

Upon using the YAML settings in Listing 422, and running the command

```
cmh:~$ latexindent.pl -m special4.tex -l DBS5.yaml
```

then we receive the output given in Listing 421.

LISTING 421: special4.tex using Listing 422

```
\<
   a & =b \\
     & =c \\
     & =d \\
     & =e %
\>
```

LISTING 422: DBS5.yaml -m

```
specialBeginEnd:
    cmhMath:
        lookForThis: 1
        begin: '\\<'
        end: '\\>'
lookForAlignDelims:
    cmhMath: 1
modifyLineBreaks:
    specialBeginEnd:
        cmhMath:
            DBSFinishesWithLineBreak: 1
            SpecialBodyStartsOnOwnLine: 1
            SpecialEndStartsOnOwnLine: 2
```

There are a few things to note:

- in Listing 422 we have specified `cmhMath` within `lookForAlignDelims`; without this, the double back slash poly-switches would be ignored for this code block;
- the `DBSFinishesWithLineBreak` poly-switch has controlled the line breaks following the double back slashes;
- the `SpecialEndStartsOnOwnLine` poly-switch has controlled the addition of a comment symbol, followed by a line break, as it is set to a value of 2.

6.3.2.4 Double back slash poly-switches for optional and mandatory arguments

For clarity, we provide a demonstration of controlling the double back slash poly-switches for optional and mandatory arguments. We begin with the code in Listing 423.

LISTING 423: mycommand2.tex

```
\mycommand [
   1&2   &3\\ 4&5&6]{
7&8   &9\\ 10&11&12
}
```

Upon using the YAML settings in Listings 425 and 427, and running the command

```
cmh:~$ latexindent.pl -m mycommand2.tex -l DBS6.yaml
cmh:~$ latexindent.pl -m mycommand2.tex -l DBS7.yaml
```

then we receive the output given in Listings 424 and 426.

LISTING 424: mycommand2.tex using Listing 425

```
\mycommand [
   1 & 2 & 3 %
   \\%
   4 & 5 & 6]{
   7 & 8 & 9 \\ 10&11&12
}
```

LISTING 425: DBS6.yaml -m

```
lookForAlignDelims:
    mycommand: 1
modifyLineBreaks:
    optionalArguments:
        DBSStartsOnOwnLine: 2
        DBSFinishesWithLineBreak: 2
```

LISTING 426: mycommand2.tex using Listing 427

```
\mycommand [
   1&2   &3\\ 4&5&6]{
   7  & 8  & 9  %
   \\%
   10 & 11 & 12
}
```

LISTING 427: DBS7.yaml -m

```
lookForAlignDelims:
    mycommand: 1
modifyLineBreaks:
    mandatoryArguments:
        DBSStartsOnOwnLine: 2
        DBSFinishesWithLineBreak: 2
```

6.3.2.5 Double back slash optional square brackets

The pattern matching for the double back slash will also, optionally, allow trailing square brackets that contain a measurement of vertical spacing, for example `\\[3pt]`.

For example, beginning with the code in Listing 428

LISTING 428: pmatrix3.tex

```
\begin{pmatrix}
1 & 2 \\[2pt] 3 & 4 \\ [ 3 ex] 5&6\\[    4  pt   ] 7 & 8
\end{pmatrix}
```

and running the following command, using Listing 417,

```
cmh:~$ latexindent.pl -m pmatrix3.tex -l DBS3.yaml
```

then we receive the output given in Listing 429.

LISTING 429: pmatrix3.tex using Listing 417

```
\begin{pmatrix}
   1 & 2 \\[2pt]
   3 & 4 \\ [ 3 ex]
   5 & 6 \\[    4  pt   ]
   7 & 8
\end{pmatrix}
```

You can customise the pattern for the double back slash by exploring the *fine tuning* field detailed in Listing 494 on page 121.

6.3.3 Poly-switches for other code blocks

Rather than repeat the examples shown for the environment code blocks (in Section 6.3.1 on page 90), we choose to detail the poly-switches for all other code blocks in Table 3; note that each and every one of these poly-switches is *off by default*, i.e, set to 0.

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Note also that, by design, line breaks involving, `filecontents` and 'comment-marked' code blocks (Listing 76 on page 34) can *not* be modified using `latexindent.pl`. However, there are two poly-switches available for `verbatim` code blocks: environments (Listing 18 on page 23), commands (Listing 19 on page 23) and `specialBeginEnd` (Listing 125 on page 42).

TABLE 3: Poly-switch mappings for all code-block types

Code block	Sample		Poly-switch mapping
environment	`before words`♠ `\begin{myenv}`♡ `body of myenv`♢ `\end{myenv}`♣ `after words`	♠ ♡ ♢ ♣	BeginStartsOnOwnLine BodyStartsOnOwnLine EndStartsOnOwnLine EndFinishesWithLineBreak
ifelsefi	`before words`♠ `\if...`♡ `body of if/or statement`▲ `\or`▼ `body of if/or statement`★ `\else`□ `body of else statement`♢ `\fi`♣ `after words`	♠ ♡ ▲ ▼ ★ □ ♢ ♣	IfStartsOnOwnLine BodyStartsOnOwnLine OrStartsOnOwnLine OrFinishesWithLineBreak ElseStartsOnOwnLine ElseFinishesWithLineBreak FiStartsOnOwnLine FiFinishesWithLineBreak

optionalArguments	`...`♠
	`[`♡
	`value before comma`★`,`
	□
	`end of body of opt arg`♢
	`]`♣
	`...`
		♠
		♡
		★
		□
		♢
		♣
			LSqBStartsOnOwnLine[8]
			OptArgBodyStartsOnOwnLine
			CommaStartsOnOwnLine
			CommaFinishesWithLineBreak
			RSqBStartsOnOwnLine
			RSqBFinishesWithLineBreak

mandatoryArguments	`...`♠
	`{`♡
	`value before comma`★`,`
	□
	`end of body of mand arg`♢
	`}`♣
	`...`
		♠
		♡
		★
		□
		♢
		♣
			LCuBStartsOnOwnLine[9]
			MandArgBodyStartsOnOwnLine
			CommaStartsOnOwnLine
			CommaFinishesWithLineBreak
			RCuBStartsOnOwnLine
			RCuBFinishesWithLineBreak

commands	`before words`♠ `\mycommand`♡ ⟨*arguments*⟩	♠ ♡	CommandStartsOnOwnLine CommandNameFinishesWithLineBr
namedGroupingBracesBrackets	before words♠ myname♡ ⟨*braces/brackets*⟩	♠ ♡	NameStartsOnOwnLine NameFinishesWithLineBreak
keyEqualsValuesBracesBrackets	before words♠ key•=♡ ⟨*braces/brackets*⟩	♠ • ♡	KeyStartsOnOwnLine EqualsStartsOnOwnLine EqualsFinishesWithLineBreak
items	before words♠ `\item`♡ `...`	♠ ♡	ItemStartsOnOwnLine ItemFinishesWithLineBreak
specialBeginEnd	before words♠ `\[`♡ `body of special/middle`★ `\middle`□ body of special/middle ♢ `\]`♣ after words	♠ ♡ ★ □ ♢ ♣	SpecialBeginStartsOnOwnLine SpecialBodyStartsOnOwnLine SpecialMiddleStartsOnOwnLine SpecialMiddleFinishesWithLineBrea SpecialEndStartsOnOwnLine SpecialEndFinishesWithLineBreak
verbatim	before words♠`\begin{verbatim}`	♠	VerbatimBeginStartsOnOwnLine

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N: 2019-07-13

N: 2019-07-13

N: 2018-04-27

[8] LSqB stands for Left Square Bracket
[9] LCuB stands for Left Curly Brace

N: 2019-05-05

body of verbatim `\end{verbatim}`♣ after words	♣ VerbatimEndFinishesWithLineBreak

6.3.4 Partnering BodyStartsOnOwnLine with argument-based poly-switches

Some poly-switches need to be partnered together; in particular, when line breaks involving the *first* argument of a code block need to be accounted for using both `BodyStartsOnOwnLine` (or its equivalent, see Table 3 on the preceding page) and `LCuBStartsOnOwnLine` for mandatory arguments, and `LSqBStartsOnOwnLine` for optional arguments.

Let's begin with the code in Listing 430 and the YAML settings in Listing 432; with reference to Table 3 on the previous page, the key `CommandNameFinishesWithLineBreak` is an alias for `BodyStartsOnOwnLine`.

LISTING 430: `mycommand1.tex`

```
\mycommand
{
mand arg text
mand arg text}
{
mand arg text
mand arg text}
```

Upon running the command

```
cmh:~$ latexindent.pl -m -l=mycom-mlb1.yaml mycommand1.tex
```

we obtain Listing 431; note that the *second* mandatory argument beginning brace `{` has had its leading line break removed, but that the *first* brace has not.

LISTING 431: `mycommand1.tex` using Listing 432

```
\mycommand
{
   mand arg text
   mand arg text}{
   mand arg text
   mand arg text}
```

LISTING 432: `mycom-mlb1.yaml` `-m`

```
modifyLineBreaks:
    commands:
        CommandNameFinishesWithLineBreak: 0
    mandatoryArguments:
        LCuBStartsOnOwnLine: -1
```

Now let's change the YAML file so that it is as in Listing 434; upon running the analogous command to that given above, we obtain Listing 433; both beginning braces `{` have had their leading line breaks removed.

LISTING 433: `mycommand1.tex` using Listing 434

```
\mycommand{
   mand arg text
   mand arg text}{
   mand arg text
   mand arg text}
```

LISTING 434: `mycom-mlb2.yaml` `-m`

```
modifyLineBreaks:
    commands:
        CommandNameFinishesWithLineBreak: -1
    mandatoryArguments:
        LCuBStartsOnOwnLine: -1
```

Now let's change the YAML file so that it is as in Listing 436; upon running the analogous command to that given above, we obtain Listing 435.

LISTING 435: mycommand1.tex using Listing 436

```
\mycommand
{
   mand arg text
   mand arg text}
{
   mand arg text
   mand arg text}
```

LISTING 436: mycom-mlb3.yaml -m

```
modifyLineBreaks:
    commands:
        CommandNameFinishesWithLineBreak: -1
    mandatoryArguments:
        LCuBStartsOnOwnLine: 1
```

6.3.5 Conflicting poly-switches: sequential code blocks

It is very easy to have conflicting poly-switches; if we use the example from Listing 430 on the preceding page, and consider the YAML settings given in Listing 438. The output from running

```
cmh:~$ latexindent.pl -m -l=mycom-mlb4.yaml mycommand1.tex
```

is given in Listing 438.

LISTING 437: mycommand1.tex using Listing 438

```
\mycommand
{
   mand arg text
   mand arg text}{
   mand arg text
   mand arg text}
```

LISTING 438: mycom-mlb4.yaml -m

```
modifyLineBreaks:
    mandatoryArguments:
        LCuBStartsOnOwnLine: -1
        RCuBFinishesWithLineBreak: 1
```

Studying Listing 438, we see that the two poly-switches are at opposition with one another:

- on the one hand, LCuBStartsOnOwnLine should *not* start on its own line (as poly-switch is set to −1);
- on the other hand, RCuBFinishesWithLineBreak *should* finish with a line break.

So, which should win the conflict? As demonstrated in Listing 437, it is clear that LCuBStartsOnOwnLine won this conflict, and the reason is that *the second argument was processed after the first* – in general, the most recently-processed code block and associated poly-switch takes priority.

We can explore this further by considering the YAML settings in Listing 440; upon running the command

```
cmh:~$ latexindent.pl -m -l=mycom-mlb5.yaml mycommand1.tex
```

we obtain the output given in Listing 439.

LISTING 439: mycommand1.tex using Listing 440

```
\mycommand
{
   mand arg text
   mand arg text}
{
   mand arg text
   mand arg text}
```

LISTING 440: mycom-mlb5.yaml -m

```
modifyLineBreaks:
    mandatoryArguments:
        LCuBStartsOnOwnLine: 1
        RCuBFinishesWithLineBreak:
    -1
```

As previously, the most-recently-processed code block takes priority – as before, the second (i.e, *last*) argument. Exploring this further, we consider the YAML settings in Listing 442, which give associated output in Listing 441.

LISTING 441: mycommand1.tex using Listing 442

```
\mycommand
{
   mand arg text
   mand arg text}%
{
   mand arg text
   mand arg text}
```

LISTING 442: mycom-mlb6.yaml -m

```
modifyLineBreaks:
    mandatoryArguments:
        LCuBStartsOnOwnLine: 2
        RCuBFinishesWithLineBreak:
    -1
```

Note that a % *has* been added to the trailing first }; this is because:

- while processing the *first* argument, the trailing line break has been removed (RCuBFinishesWithLineBreak set to −1);
- while processing the *second* argument, latexindent.pl finds that it does *not* begin on its own line, and so because LCuBStartsOnOwnLine is set to 2, it adds a comment, followed by a line break.

6.3.6 Conflicting poly-switches: nested code blocks

Now let's consider an example when nested code blocks have conflicting poly-switches; we'll use the code in Listing 443, noting that it contains nested environments.

LISTING 443: nested-env.tex

```
\begin{one}
one text
\begin{two}
two text
\end{two}
\end{one}
```

Let's use the YAML settings given in Listing 445, which upon running the command

```
cmh:~$ latexindent.pl -m -l=nested-env-mlb1.yaml nested-env.tex
```

gives the output in Listing 444.

LISTING 444: nested-env.tex using Listing 445

```
\begin{one}
   one text
   \begin{two}
      two text\end{two}\end{one}
```

LISTING 445: nested-env-mlb1.yaml -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: -1
        EndFinishesWithLineBreak: 1
```

In Listing 444, let's first of all note that both environments have received the appropriate (default) indentation; secondly, note that the poly-switch EndStartsOnOwnLine appears to have won the conflict, as \end{one} has had its leading line break removed.

To understand it, let's talk about the three basic phases of latexindent.pl:

1. Phase 1: packing, in which code blocks are replaced with unique ids, working from *the inside to the outside*, and then sequentially – for example, in Listing 443, the two environment is found *before* the one environment; if the -m switch is active, then during this phase:
   - line breaks at the beginning of the body can be added (if BodyStartsOnOwnLine is 1 or 2) or removed (if BodyStartsOnOwnLine is −1);
   - line breaks at the end of the body can be added (if EndStartsOnOwnLine is 1 or 2) or removed (if EndStartsOnOwnLine is −1);

    - line breaks after the end statement can be added (if `EndFinishesWithLineBreak` is 1 or 2).
2. Phase 2: indentation, in which white space is added to the begin, body, and end statements;
3. Phase 3: unpacking, in which unique ids are replaced by their *indented* code blocks; if the -m switch is active, then during this phase,
    - line breaks before `begin` statements can be added or removed (depending upon `BeginStartsOnOwnLine`);
    - line breaks after *end* statements can be removed but *NOT* added (see `EndFinishesWithLineBreak`).

With reference to Listing 444, this means that during Phase 1:

- the `two` environment is found first, and the line break ahead of the `\end{two}` statement is removed because `EndStartsOnOwnLine` is set to −1. Importantly, because, *at this stage*, `\end{two}` *does* finish with a line break, `EndFinishesWithLineBreak` causes no action.
- next, the `one` environment is found; the line break ahead of `\end{one}` is removed because `EndStartsOnOwnLine` is set to −1.

The indentation is done in Phase 2; in Phase 3 *there is no option to add a line break after the `end` statements*. We can justify this by remembering that during Phase 3, the `one` environment will be found and processed first, followed by the `two` environment. If the `two` environment were to add a line break after the `\end{two}` statement, then `latexindent.pl` would have no way of knowing how much indentation to add to the subsequent text (in this case, `\end{one}`).

We can explore this further using the poly-switches in Listing 447; upon running the command

```
cmh:~$ latexindent.pl -m -l=nested-env-mlb2.yaml nested-env.tex
```

we obtain the output given in Listing 446.

LISTING 446: `nested-env.tex` using Listing 447

```
\begin{one}
   one text
   \begin{two}
      two text
   \end{two}\end{one}
```

LISTING 447: `nested-env-mlb2.yaml` `-m`

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 1
        EndFinishesWithLineBreak: -1
```

During Phase 1:

- the `two` environment is found first, and the line break ahead of the `\end{two}` statement is not changed because `EndStartsOnOwnLine` is set to 1. Importantly, because, *at this stage*, `\end{two}` *does* finish with a line break, `EndFinishesWithLineBreak` causes no action.
- next, the `one` environment is found; the line break ahead of `\end{one}` is already present, and no action is needed.

The indentation is done in Phase 2, and then in Phase 3, the `one` environment is found and processed first, followed by the `two` environment. *At this stage*, the `two` environment finds `EndFinishesWithLineBreak` is −1, so it removes the trailing line break; remember, at this point, `latexindent.pl` has completely finished with the `one` environment.

SECTION 7

The -r, -rv and -rr switches

N: 2019-07-13

You can instruct `latexindent.pl` to perform replacements/substitutions on your file by using any of the `-r`, `-rv` or `-rr` switches:

- the `-r` switch will perform indentation and replacements, not respecting verbatim code blocks;
- the `-rv` switch will perform indentation and replacements, and *will* respect verbatim code blocks;
- the `-rr` switch will *not* perform indentation, and will perform replacements not respecting verbatim code blocks.

We will demonstrate each of the `-r`, `-rv` and `-rr` switches, but a summary is given in Table 4.

TABLE 4: The replacement mode switches

switch	indentation?	respect verbatim?
`-r`	✔	✖
`-rv`	✔	✔
`-rr`	✖	✖

The default value of the `replacements` field is shown in Listing 448; as with all of the other fields, you are encouraged to customise and change this as you see fit. The options in this field will *only* be considered if the `-r`, `-rv` or `-rr` switches are active; when discussing YAML settings related to the replacement-mode switches, we will use the style given in Listing 448.

LISTING 448: `replacements` -r

```
604 replacements:
605   -
606     amalgamate: 1
607   -
608     this: 'latexindent.pl'
609     that: 'pl.latexindent'
610     lookForThis: 0
611     when: before
```

The first entry within the `replacements` field is `amalgamate`, and is *optional*; by default it is set to 1, so that replacements will be amalgamated from each settings file that you specify. As you'll see in the demonstrations that follow, there is no need to specify this field.

You'll notice that, by default, there is only *one* entry in the `replacements` field, but it can take as many entries as you would like; each one needs to begin with a `-` on its own line.

7.1 Introduction to replacements

Let's explore the action of the default settings, and then we'll demonstrate the feature with further examples. With reference to Listing 448, the default action will replace every instance of the text `latexindent.pl` with `pl.latexindent`.

Beginning with the code in Listing 449 and running the command

```
cmh:~$ latexindent.pl -r replace1.tex
```

gives the output given in Listing 450.

LISTING 449: replace1.tex

```
Before text, latexindent.pl,
after text.
```

LISTING 450: replace1.tex default

```
Before text, latexindent.pl,
after text.
```

If we don't wish to perform this replacement, then we can tweak the default settings of Listing 448 on the previous page by changing `lookForThis` to 0; we perform this action in Listing 452, and run the command

```
cmh:~$ latexindent.pl -r replace1.tex -l=replace1.yaml
```

which gives the output in Listing 451.

LISTING 451: replace1.tex using Listing 452

```
Before text, latexindent.pl,
after text.
```

LISTING 452: replace1.yaml -r

```
replacements:
  -
    amalgamate: 0
  -
    this: latexindent.pl
    that: pl.latexindent
    lookForThis: 0
```

Note that in Listing 452 we have specified `amalgamate` as 0 so that the default replacements are overwritten.

We haven't yet discussed the `when` field; don't worry, we'll get to it as part of the discussion in what follows.

7.2 The two types of replacements

There are two types of replacements:

1. *string*-based replacements, which replace the string in *this* with the string in *that*. If you specify `this` and you do not specify `that`, then the `that` field will be assumed to be empty.
2. *regex*-based replacements, which use the `substitution` field.

We will demonstrate both in the examples that follow.

`latexindent.pl` chooses which type of replacement to make based on which fields have been specified; if the `this` field is specified, then it will make *string*-based replacements, regardless of if `substitution` is present or not.

7.3 Examples of replacements

Example 11 We begin with code given in Listing 453

LISTING 453: colsep.tex

```
\begin{env}
1 2 3\arraycolsep=3pt
4 5 6\arraycolsep=5pt
\end{env}
```

Let's assume that our goal is to remove both of the `arraycolsep` statements; we can achieve this in a few different ways.

Using the YAML in Listing 455, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=colsep.yaml
```

then we achieve the output in Listing 454.

LISTING 454: colsep.tex using Listing 453

```
\begin{env}
   1 2 3
   4 5 6
\end{env}
```

LISTING 455: colsep.yaml -r

```
replacements:
  -
    this: \arraycolsep=3pt
  -
    this: \arraycolsep=5pt
```

Note that in Listing 455, we have specified *two* separate fields, each with their own '*this*' field; furthermore, for both of the separate fields, we have not specified 'that', so the that field is assumed to be blank by latexindent.pl;

We can make the YAML in Listing 455 more concise by exploring the substitution field. Using the settings in Listing 457 and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=colsep1.yaml
```

then we achieve the output in Listing 456.

LISTING 456: colsep.tex using Listing 457

```
\begin{env}
   1 2 3
   4 5 6
\end{env}
```

LISTING 457: colsep1.yaml -r

```
replacements:
  -
    substitution: s/\\arraycolsep=\d+pt//sg
```

The code given in Listing 457 is an example of a *regular expression*, which we may abbreviate to *regex* in what follows. This manual is not intended to be a tutorial on regular expressions; you might like to read, for example, [12] for a detailed covering of the topic. With reference to Listing 457, we do note the following:

- the general form of the substitution field is s/regex/replacement/modifiers. You can place any regular expression you like within this;
- we have 'escaped' the backslash by using \\
- we have used \d+ to represent *at least* one digit
- the s *modifier* (in the sg at the end of the line) instructs latexindent.pl to treat your file as one single line;
- the g *modifier* (in the sg at the end of the line) instructs latexindent.pl to make the substitution *globally* throughout your file; you might try removing the g modifier from Listing 457 and observing the difference in output.

You might like to see https://perldoc.perl.org/perlre.html#Modifiers for details of modifiers; in general, I recommend starting with the sg modifiers for this feature.

Example 12 We'll keep working with the file in Listing 453 on the preceding page for this example.

Using the YAML in Listing 459, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=multi-line.yaml
```

then we achieve the output in Listing 458.

LISTING 458: colsep.tex using Listing 459

```
multi-line!
```

LISTING 459: multi-line.yaml -r

```
replacements:
  -
    this: |-
     \begin{env}
     1 2 3\arraycolsep=3pt
     4 5 6\arraycolsep=5pt
     \end{env}
    that: 'multi-line!'
```

With reference to Listing 459, we have specified a *multi-line* version of `this` by employing the *literal* YAML style `|-`. See, for example, https://stackoverflow.com/questions/3790454/in-yaml-how-do-i-break-a-string-over-multiple-lines for further options, all of which can be used in your YAML file.

This is a natural point to explore the `when` field, specified in Listing 448 on page 106. This field can take two values: *before* and *after*, which respectively instruct `latexindent.pl` to perform the replacements *before* indentation or *after* it. The default value is `before`.

Using the YAML in Listing 461, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=multi-line1.yaml
```

then we achieve the output in Listing 460.

LISTING 460: colsep.tex using Listing 461

```
\begin{env}
   1 2 3\arraycolsep=3pt
   4 5 6\arraycolsep=5pt
\end{env}
```

LISTING 461: multi-line1.yaml -r

```
replacements:
  -
    this: |-
     \begin{env}
     1 2 3\arraycolsep=3pt
     4 5 6\arraycolsep=5pt
     \end{env}
    that: 'multi-line!'
    when: after
```

We note that, because we have specified `when: after`, that `latexindent.pl` has not found the string specified in Listing 461 within the file in Listing 453 on page 107. As it has looked for the string within Listing 461 *after* the indentation has been performed. After indentation, the string as written in Listing 461 is no longer part of the file, and has therefore not been replaced.

As a final note on this example, if you use the `-rr` switch, as follows,

```
cmh:~$ latexindent.pl -rr colsep.tex -l=multi-line1.yaml
```

then the `when` field is ignored, no indentation is done, and the output is as in Listing 458.

Example 13 An important part of the substitution routine is in *capture groups*.

Assuming that we start with the code in Listing 462, let's assume that our goal is to replace each occurrence of `$$...$$` with `\begin{equation*}...\end{equation*}`. This example is partly motivated by tex stackexchange question 242150.

LISTING 462: displaymath.tex

```
before text $$a^2+b^2=4$$ and $$c^2$$

$$
d^2+e^2 = f^2
$$
and also $$ g^2
$$ and some inline math: $h^2$
```

We use the settings in Listing 464 and run the command

```
cmh:~$ latexindent.pl -r displaymath.tex -l=displaymath1.yaml
```

to receive the output given in Listing 463.

LISTING 463: displaymath.tex using Listing 464

```
before text \begin{equation*}a^2+b^2=4\end{equation*}
    and \begin{equation*}c^2\end{equation*}

\begin{equation*}
   d^2+e^2 = f^2
\end{equation*}
and also \begin{equation*} g^2
\end{equation*} and some inline math: $h^2$
```

LISTING 464: displaymath1.yaml -r

```
replacements:
  -
    substitution: |-
     s/\$\$
       (.*?)
       \$\$/\\begin{equation*}$1\\end{equation*}/sgx
```

A few notes about Listing 464:

1. we have used the x modifier, which allows us to have white space within the regex;
2. we have used a capture group, `(.*?)` which captures the content between the `$$...$$` into the special variable, `$1`;
3. we have used the content of the capture group, `$1`, in the replacement text.

See https://perldoc.perl.org/perlre.html#Capture-groups for a discussion of capture groups.

The features of the replacement switches can, of course, be combined with others from the toolkit of `latexindent.pl`. For example, we can combine the poly-switches of Section 6.3 on page 89, which we do in Listing 466; upon running the command

```
cmh:~$ latexindent.pl -r -m displaymath.tex -l=displaymath1.yaml,equation.yaml
```

then we receive the output in Listing 465.

LISTING 465: displaymath.tex using Listings 464 and 466

```
before text%
\begin{equation*}%
   a^2+b^2=4%
\end{equation*}%
and%
\begin{equation*}%
   c^2%
\end{equation*}

\begin{equation*}
   d^2+e^2 = f^2
\end{equation*}
and also%
\begin{equation*}%
   g^2
\end{equation*}%
and some inline math: $h^2$
```

LISTING 466: equation.yaml -m

```
modifyLineBreaks:
    environments:
        equation*:
            BeginStartsOnOwnLine: 2
            BodyStartsOnOwnLine: 2
            EndStartsOnOwnLine: 2
            EndFinishesWithLineBreak: 2
```

Example 14 This example is motivated by tex stackexchange question 490086. We begin with the code in Listing 467.

LISTING 467: phrase.tex

```
phrase 1       phrase 2 phrase 3          phrase 100

phrase 1       phrase 2 phrase 3          phrase 100

phrase 1       phrase 2 phrase 3          phrase 100

phrase 1       phrase 2 phrase 3          phrase 100
```

Our goal is to make the spacing uniform between the phrases. To achieve this, we employ the settings in Listing 469, and run the command

```
cmh:~$ latexindent.pl -r phrase.tex -l=hspace.yaml
```

which gives the output in Listing 468.

LISTING 468: phrase.tex using Listing 469

```
phrase 1 phrase 2 phrase 3 phrase 100

phrase 1 phrase 2 phrase 3 phrase 100

phrase 1 phrase 2 phrase 3 phrase 100

phrase 1 phrase 2 phrase 3 phrase 100
```

LISTING 469: hspace.yaml -r

```
replacements:
  -
    substitution: s/\h+/ /sg
```

The \h+ setting in Listing 469 say to replace *at least one horizontal space* with a single space.

Example 15 We begin with the code in Listing 470.

LISTING 470: references.tex

```
equation \eqref{eq:aa} and Figure  \ref{fig:bb}
and table~\ref{tab:cc}
```

Our goal is to change each reference so that both the text and the reference are contained within one hyperlink. We achieve this by employing Listing 472 and running the command

```
cmh:~$ latexindent.pl -r references.tex -l=reference.yaml
```

which gives the output in Listing 471.

LISTING 471: references.tex using Listing 472

```
\hyperref{equation \ref*{eq:aa}} and \hyperref{Figure \ref*{fig:bb}}
and \hyperref{table \ref*{tab:cc}}
```

LISTING 472: reference.yaml -r

```
replacements:
  -
    substitution: |-
      s/(
        equation
        |
        table
        |
        figure
        |
        section
      )
      (\h|~)*
      \\(?:eq)?
      ref\{(.*?)\}/\\hyperref{$1 \\ref\*{$3}}/sgxi
```

Referencing Listing 472, the | means *or*, we have used *capture groups*, together with an example of an *optional* pattern, `(?:eq)?`.

Example 16 Let's explore the three replacement mode switches (see Table 4 on page 106) in the context of an example that contains a verbatim code block, Listing 473; we will use the settings in Listing 474.

LISTING 473: verb1.tex

```
\begin{myenv}
body of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
    body
        of
      verbatim
 text
\end{verbatim}
text
```

LISTING 474: verbatim1.yaml -r

```
replacements:
  -
    this: 'body'
    that: 'head'
```

Upon running the following commands,

```
cmh:~$ latexindent.pl -r verb1.tex -l=verbatim1.yaml -o=+mod1
cmh:~$ latexindent.pl -rv verb1.tex -l=verbatim1.yaml -o=+-rv-mod1
cmh:~$ latexindent.pl -rr verb1.tex -l=verbatim1.yaml -o=+-rr-mod1
```

we receive the respective output in Listings 475 to 477

LISTING 475: verb1-mod1.tex

```
\begin{myenv}
   head of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
    head
        of
      verbatim
 text
\end{verbatim}
text
```

LISTING 476: verb1-rv-mod1.tex

```
\begin{myenv}
   head of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
    body
        of
      verbatim
 text
\end{verbatim}
text
```

LISTING 477: verb1-rr-mod1.tex

```
\begin{myenv}
head of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
    head
        of
      verbatim
 text
\end{verbatim}
text
```

We note that:

1. in Listing 475 indentation has been performed, and that the replacements specified in Listing 474 have been performed, even within the verbatim code block;
2. in Listing 476 indentation has been performed, but that the replacements have *not* been performed within the verbatim environment, because the `rv` switch is active;
3. in Listing 477 indentation has *not* been performed, but that replacements have been performed, not respecting the verbatim code block.

See the summary within Table 4 on page 106.

Example 17 Let's explore the `amalgamate` field from Listing 448 on page 106 in the context of the file specified in Listing 478.

LISTING 478: amalg1.tex

```
one two three
```

Let's consider the YAML files given in Listings 479 to 481.

LISTING 479: amalg1-yaml.yaml -r

```
replacements:
  -
    this: one
    that: 1
```

LISTING 480: amalg2-yaml.yaml -r

```
replacements:
  -
    this: two
    that: 2
```

LISTING 481: amalg3-yaml.yaml -r

```
replacements:
  -
    amalgamate: 0
  -
    this: three
    that: 3
```

Upon running the following commands,

```
cmh:~$ latexindent.pl -r amalg1.tex -l=amalg1-yaml
cmh:~$ latexindent.pl -r amalg1.tex -l=amalg1-yaml,amalg2-yaml
cmh:~$ latexindent.pl -r amalg1.tex -l=amalg1-yaml,amalg2-yaml,amalg3-yaml
```

we receive the respective output in Listings 482 to 484.

LISTING 482: `amalg1.tex` using Listing 479

```
1 two three
```

LISTING 483: `amalg1.tex` using Listings 479 and 480

```
1 2 three
```

LISTING 484: `amalg1.tex` using Listings 479 to 481

```
one two 3
```

We note that:

1. in Listing 482 the replacements from Listing 479 have been used;
2. in Listing 483 the replacements from Listings 479 and 480 have *both* been used, because the default value of `amalgamate` is 1;
3. in Listing 484 *only* the replacements from Listing 481 have been used, because the value of `amalgamate` has been set to 0.

SECTION 8

The –lines switch

N: 2021-09-16

`latexindent.pl` can operate on a *selection* of lines of the file using the `-lines` or `-n` switch.

The basic syntax is `-lines MIN-MAX`, so for example

```
cmh:~$ latexindent.pl --lines 3-7 myfile.tex
cmh:~$ latexindent.pl -n 3-7 myfile.tex
```

will only operate upon lines 3 to 7 in `myfile.tex`. All of the other lines will *not* be operated upon by `latexindent.pl`.

The options for the `lines` switch are:

- line range, as in `-lines 3-7`
- single line, as in `-lines 5`
- multiple line ranges separated by commas, as in `-lines 3-5,8-10`
- negated line ranges, as in `-lines !3-5` which translates to `-lines 1-2,6-N`, where N is the number of lines in your file.

We demonstrate this feature, and the available variations in what follows. We will use the file in Listing 485.

LISTING 485: `myfile.tex`

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two}
      second block, first line
      second block, second line
      second block, third line
      second block, fourth line
   \end{two}
\end{one}
```

Example 18 We demonstrate the basic usage using the command

```
cmh:~$ latexindent.pl --lines 3-7 myfile.tex -o=+-mod1
```

which instructs `latexindent.pl` to only operate on lines 3 to 7; the output is given in Listing 486.

LISTING 486: myfile-mod1.tex

```
Before the environments
\begin{one}
first block, first line
first block, second line
first block, third line
\begin{two}
second block, first line
      second block, second line
      second block, third line
      second block, fourth line
   \end{two}
\end{one}
```

The following two calls to `latexindent.pl` are equivalent

```
cmh:~$ latexindent.pl --lines 3-7 myfile.tex -o=+-mod1
cmh:~$ latexindent.pl --lines 7-3 myfile.tex -o=+-mod1
```

as `latexindent.pl` performs a check to put the lowest number first.

Example 19 You can call the `lines` switch with only *one number* and in which case only that line will be operated upon. For example

```
cmh:~$ latexindent.pl --lines 5 myfile.tex -o=+-mod2
```

instructs `latexindent.pl` to only operate on line 5; the output is given in Listing 487.

LISTING 487: myfile-mod2.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
first block, third line
   \begin{two}
      second block, first line
      second block, second line
      second block, third line
      second block, fourth line
   \end{two}
\end{one}
```

The following two calls are equivalent:

```
cmh:~$ latexindent.pl --lines 5 myfile.tex
cmh:~$ latexindent.pl --lines 5-5 myfile.tex
```

Example 20 If you specify a value outside of the line range of the file then `latexindent.pl` will ignore the `lines` argument, detail as such in the log file, and proceed to operate on the entire file.

For example, in the following call

```
cmh:~$ latexindent.pl --lines 11-13 myfile.tex
```

`latexindent.pl` will ignore the `lines` argument, and *operate on the entire file* because Listing 485 only has 12 lines.

Similarly, in the call

```
cmh:~$ latexindent.pl --lines -1-3 myfile.tex
```

`latexindent.pl` will ignore the `lines` argument, and *operate on the entire file* because we assume that negatively numbered lines in a file do not exist.

Example 21 You can specify *multiple line ranges* as in the following

```
cmh:~$ latexindent.pl --lines 3-5,8-10 myfile.tex -o=+-mod3
```

which instructs `latexindent.pl` to operate upon lines 3 to 5 and lines 8 to 10; the output is given in Listing 488.

LISTING 488: `myfile-mod3.tex`

```
1  Before the environments
2  \begin{one}
3  first block, first line
4  first block, second line
5  first block, third line
6     \begin{two}
7        second block, first line
8  second block, second line
9  second block, third line
10 second block, fourth line
11    \end{two}
12 \end{one}
```

The following calls to `latexindent.pl` are all equivalent

```
cmh:~$ latexindent.pl --lines 3-5,8-10 myfile.tex
cmh:~$ latexindent.pl --lines 8-10,3-5 myfile.tex
cmh:~$ latexindent.pl --lines 10-8,3-5 myfile.tex
cmh:~$ latexindent.pl --lines 10-8,5-3 myfile.tex
```

as `latexindent.pl` performs a check to put the lowest line ranges first, and within each line range, it puts the lowest number first.

Example 22 There's no limit to the number of line ranges that you can specify, they just need to be separated by commas. For example

```
cmh:~$ latexindent.pl --lines 1-2,4-5,9-10,12 myfile.tex -o=+-mod4
```

has four line ranges: lines 1 to 2, lines 4 to 5, lines 9 to 10 and line 12. The output is given in Listing 489.

LISTING 489: myfile-mod4.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two}
      second block, first line
      second block, second line
   second block, third line
   second block, fourth line
   \end{two}
\end{one}
```

As previously, the ordering does not matter, and the following calls to `latexindent.pl` are all equivalent

```
cmh:~$ latexindent.pl --lines 1-2,4-5,9-10,12 myfile.tex
cmh:~$ latexindent.pl --lines 2-1,4-5,9-10,12 myfile.tex
cmh:~$ latexindent.pl --lines 4-5,1-2,9-10,12 myfile.tex
cmh:~$ latexindent.pl --lines 12,4-5,1-2,9-10 myfile.tex
```

as `latexindent.pl` performs a check to put the lowest line ranges first, and within each line range, it puts the lowest number first.

Example 23 You can specify *negated line ranges* by using `!` as in

```
cmh:~$ latexindent.pl --lines !5-7 myfile.tex -o=+-mod5
```

which instructs `latexindent.pl` to operate upon all of the lines *except* lines 5 to 7.

In other words, `latexindent.pl` *will* operate on lines 1 to 4, and 8 to 12, so the following two calls are equivalent:

```
cmh:~$ latexindent.pl --lines !5-7 myfile.tex
cmh:~$ latexindent.pl --lines 1-4,8-12 myfile.tex
```

The output is given in Listing 490.

LISTING 490: myfile-mod5.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two}
      second block, first line
   second block, second line
   second block, third line
   second block, fourth line
   \end{two}
\end{one}
```

Example 24 You can specify *multiple negated line ranges* such as

```
cmh:~$ latexindent.pl --lines !5-7,!9-10 myfile.tex -o=+-mod6
```

which is equivalent to:

```
cmh:~$ latexindent.pl --lines 1-4,8,11-12 myfile.tex -o=+-mod6
```

The output is given in Listing 491.

LISTING 491: myfile-mod6.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two}
      second block, first line
   second block, second line
      second block, third line
      second block, fourth line
   \end{two}
\end{one}
```

Example 25 If you specify a line range with anything other than an integer, then `latexindent.pl` will ignore the `lines` argument, and *operate on the entire file*.

Sample calls that result in the `lines` argument being ignored include the following:

```
cmh:~$ latexindent.pl --lines 1-x myfile.tex
cmh:~$ latexindent.pl --lines !y-3 myfile.tex
```

Example 26 We can, of course, use the `lines` switch in combination with other switches.

For example, let's use with the file in Listing 492.

LISTING 492: myfile1.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two} body \end{two}
\end{one}
```

We can demonstrate interaction with the `-m` switch (see Section 6 on page 69); in particular, if we use Listing 387 on page 94, Listing 371 on page 92 and Listing 372 on page 92 and run

```
cmh:~$ latexindent.pl --lines 6 myfile1.tex -o=+-mod1 -m -l env-mlb2,env-mlb7,env-mlb8 -o=+-mod1
```

then we receive the output in Listing 493.

LISTING 493: myfile1-mod1.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
\begin{two}
   body
\end{two}
\end{one}
```

SECTION 9

Fine tuning

N: 2019-07-13

`latexindent.pl` operates by looking for the code blocks detailed in Table 2 on page 46. The fine tuning of the details of such code blocks is controlled by the `fineTuning` field, detailed in Listing 494.

This field is for those that would like to peek under the bonnet/hood and make some fine tuning to `latexindent.pl`'s operating.

Warning!

Making changes to the fine tuning may have significant consequences for your indentation scheme, proceed with caution!

LISTING 494: `fineTuning`

```
615 fineTuning:
616     environments:
617       name: '[a-zA-Z@\*0-9_\\]+'
618     ifElseFi:
619       name: '(?!@?if[a-zA-Z@]*?\{)@?if[a-zA-Z@]*?'
620     commands:
621       name: '[+a-zA-Z@\*0-9_\:]+?'
622     items:
623       canBeFollowedBy: '(?:\[[^]]*?\])|(?:<[^>]*?>)'
624     keyEqualsValuesBracesBrackets:
625       name: '[a-zA-Z@\*0-9_\/.:\#-]+[a-zA-Z@\*0-9_\/.\h\{\}:\#-]*?'
626       follow: '(?:(?<!\\)\{)|,|(?:(?<!\\)\[)'
627     namedGroupingBracesBrackets:
628       name: '[0-9\.a-zA-Z@\*><]+?'
629       follow: '\h|\R|\{|\[|\$|\)|\('
630     UnNamedGroupingBracesBrackets:
631       follow: '\{|\[|,|&|\)|\(|\$'
632     arguments:
633       before: '(?:#\d\h*;?,?\/?)+|\<.*?\>'
634       between: '_|\^|\*'
635     trailingComments:
636       notPreceededBy: '(?<!\\)'
637     modifyLineBreaks:
638       betterFullStop:
    '(?:\.\)(?!\h*[a-z]))|(?:(?<!(?:(?:e\.g)|(?:E\.g)|(?:i\.e)|(?:I\.e)|(?:etc))))\.(?!(?:[a-z]|[A-Z]|\-|~|\,|[0-9]))'
639       doubleBackSlash: '\\\\(?:\h*\[\h*\d+\h*[a-zA-Z]+\h*\])?'
640       comma: ','
```

The fields given in Listing 494 are all *regular expressions*. This manual is not intended to be a tutorial on regular expressions; you might like to read, for example, [12] for a detailed covering of the topic.

We make the following comments with reference to Listing 494:

1. the `environments:name` field details that the *name* of an environment can contain:
   (a) `a-z` lower case letters
   (b) `A-Z` upper case letters
   (c) `@` the `@` 'letter'

(d) `\*` stars

(e) `0-9` numbers

(f) `_` underscores

(g) `\` backslashes

The `+` at the end means *at least one* of the above characters.

2. the `ifElseFi:name` field:
   (a) `@?` means that it *can possibly* begin with `@`
   (b) followed by `if`
   (c) followed by 0 or more characters from `a-z`, `A-Z` and `@`
   (d) the `?` the end means *non-greedy*, which means 'stop the match as soon as possible'
3. the `keyEqualsValuesBracesBrackets` contains some interesting syntax:
   (a) `|` means 'or'
   (b) `(?:(?<!\\)\{)` the `(?:...)` uses a *non-capturing* group – you don't necessarily need to worry about what this means, but just know that for the `fineTuning` feature you should only ever use *non*-capturing groups, and *not* capturing groups, which are simply `(...)`
   (c) `(?<!\\)\{)` means a `{` but it can *not* be immediately preceded by a `\`
4. in the `arguments:before` field
   (a) `\d\h*` means a digit (i.e. a number), followed by 0 or more horizontal spaces
   (b) `;?,?` means *possibly* a semi-colon, and possibly a comma
   (c) `\<.*?\>` is designed for 'beamer'-type commands; the `.*?` means anything in between `<...>`
5. the `modifyLineBreaks` field refers to fine tuning settings detailed in Section 6 on page 69. In particular:
   (a) `betterFullStop` is in relation to the one sentence per line routine, detailed in Section 6.2 on page 81
   (b) `doubleBackSlash` is in relation to the `DBSStartsOnOwnLine` and `DBSFinishesWithLineBreak` polyswitches surrounding double back slashes, see Section 6.3.2 on page 97
   (c) `comma` is in relation to the `CommaStartsOnOwnLine` and `CommaFinishesWithLineBreak` polyswitches surrounding commas in optional and mandatory arguments; see Table 3 on page 101

It is not obvious from Listing 494, but each of the `follow`, `before` and `between` fields allow trailing comments, line breaks, and horizontal spaces between each character.

Warning!

For the `fineTuning` feature you should only ever use *non*-capturing groups, such as `(?:...)` and *not* capturing groups, which are `(...)`

Example 27 As a demonstration, consider the file given in Listing 495, together with its default output using the command

```
cmh:~$ latexindent.pl finetuning1.tex
```

is given in Listing 496.

LISTING 495: finetuning1.tex

```
\mycommand{
    \rule{G -> +H[-G]CL}
    \rule{H -> -G[+H]CL}
    \rule{g -> +h[-g]cL}
    \rule{h -> -g[+h]cL}
}
```

LISTING 496: finetuning1.tex default

```
\mycommand{
\rule{G -> +H[-G]CL}
\rule{H -> -G[+H]CL}
\rule{g -> +h[-g]cL}
\rule{h -> -g[+h]cL}
}
```

It's clear from Listing 496 that the indentation scheme has not worked as expected. We can *fine tune* the indentation scheme by employing the settings given in Listing 498 and running the command

```
cmh:~$ latexindent.pl finetuning1.tex -l=fine-tuning1.yaml
```

and the associated (desired) output is given in Listing 497.

LISTING 497: finetuning1.tex using Listing 498

```
\mycommand{
   \rule{G -> +H[-G]CL}
   \rule{H -> -G[+H]CL}
   \rule{g -> +h[-g]cL}
   \rule{h -> -g[+h]cL}
}
```

LISTING 498: finetuning1.yaml

```
fineTuning:
    arguments:
      between:
    '_|\^|\*|\->|\-|\+|h|H|g|G'
```

Example 28 Let's have another demonstration; consider the file given in Listing 499, together with its default output using the command

```
cmh:~$ latexindent.pl finetuning2.tex
```

is given in Listing 500.

LISTING 499: finetuning2.tex

```
@misc{ wikilatex,
author = "{Wikipedia contributors}",
title = "LaTeX --- {Wikipedia}{,}",
note = "[Online; accessed 3-March-2020]"
}
```

LISTING 500: finetuning2.tex default

```
@misc{ wikilatex,
author = "{Wikipedia contributors}",
title = "LaTeX --- {Wikipedia}{,}",
note = "[Online; accessed 3-March-2020]"
}
```

It's clear from Listing 500 that the indentation scheme has not worked as expected. We can *fine tune* the indentation scheme by employing the settings given in Listing 502 and running the command

```
cmh:~$ latexindent.pl finetuning2.tex -l=fine-tuning2.yaml
```

and the associated (desired) output is given in Listing 501.

LISTING 501: finetuning2.tex using Listing 502

```
@misc{ wikilatex,
   author = "{Wikipedia contributors}",
   title = "LaTeX --- {Wikipedia}{,}",
   note = "[Online; accessed 3-March-2020]"
}
```

LISTING 502: finetuning2.yaml

```
fineTuning:
    NamedGroupingBracesBrackets:
      follow: '\h|\R|\{|\[|\$|\)|\(|"'
    UnNamedGroupingBracesBrackets:
      follow: '\{|\[|,|&|\)|\(|\$|"'
    arguments:
      between: '_|\^|\*|---'
```

In particular, note that the settings in Listing 502 specify that NamedGroupingBracesBrackets and UnNamedGroupingBracesBrackets can follow " and that we allow --- between arguments.

Example 29 You can tweak the fineTuning using the -y switch, but to be sure to use quotes appropriately. For example, starting with the code in Listing 503 and running the following command

```
cmh:~$ latexindent.pl -m
    -y='modifyLineBreaks:oneSentencePerLine:manipulateSentences:␣1,␣
    modifyLineBreaks:oneSentencePerLine:sentencesBeginWith:a-z:␣1,␣
    fineTuning:modifyLineBreaks:betterFullStop:␣
    "(?:\.|;|:(?![a-z]))|(?:(?<!(?:(?:e\.g)|(?:i\.e)|(?:etc))))\.(?!(?:[a-z]|[A-Z]|\-|
    issue-243.tex -o=+-mod1
```

gives the output shown in Listing 504.

LISTING 503: finetuning3.tex

```
We go; you see: this sentence \cite{tex:stackexchange} finishes here.
```

LISTING 504: finetuning3.tex using -y switch

```
We go;
you see:
this sentence \cite{tex:stackexchange} finishes here.
```

Example 30 We can tweak the fineTuning for how trailing comments are classified. For motivation, let's consider the code given in Listing 505

LISTING 505: finetuning4.tex

```
some before text
 \href{Handbook%20for%30Spoken%40document.pdf}{my document}
some after text
```

We will compare the settings given in Listings 506 and 507.

LISTING 506: href1.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: -1
        blocksEndBefore:
           verbatim: 0
        blocksFollow:
           verbatim: 0

removeTrailingWhitespace:
    beforeProcessing: 1
```

LISTING 507: href2.yaml -m

```
fineTuning:
    trailingComments:
      notPreceededBy:
    '(?:(?<!Handbook)(?<!for)(?<!Spoken))'

modifyLineBreaks:
    textWrapOptions:
        columns: -1
        blocksEndBefore:
           verbatim: 0
        blocksFollow:
           verbatim: 0

removeTrailingWhitespace:
    beforeProcessing: 1
```

Upon running the following commands

```
cmh:~$ latexindent.pl -m finetuning4.tex -o=+-mod1 -l=href1
cmh:~$ latexindent.pl -m finetuning4.tex -o=+-mod2 -l=href2
```

we receive the respective output in Listings 508 and 509.

LISTING 508: finetuning4.tex using Listing 506

```
some before text \href{Handbook some after text%20for%30Spoken%40document.pdf}{my document}
```

LISTING 509: finetuning4.tex using Listing 507

```
some before text \href{Handbook%20for%30Spoken%40document.pdf}{my document} some after text
```

We note that in:

- Listing 508 the trailing comments are assumed to be everything following the first comment symbol, which has meant that everything following it has been moved to the end of the line; this is undesirable, clearly!
- Listing 509 has fine-tuned the trailing comment matching, and says that % cannot be immediately preceeded by the words 'Handbook', 'for' or 'Spoken', which means that none of the % symbols have been treated as trailing comments, and the output is desirable.

Another approach to this situation, which does not use `fineTuning`, is to use `noIndentBlock` which we discussed in Listing 24 on page 24; using the settings in Listing 510 and running the command

```
cmh:~$ latexindent.pl -m finetuning4.tex -o=+-mod3 -l=href3
```

then we receive the same output given in Listing 509.

LISTING 510: href3.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: -1
        blocksEndBefore:
           verbatim: 0
        blocksFollow:
           verbatim: 0

noIndentBlock:
    href:
        begin: '\\href\{[^}]*?\}\{'
        body: '[^}]*?'
        end: '\}'
```

With reference to the body field in Listing 510, we note that the body field can be interpreted as: the fewest number of zero or more characters that are not right braces. This is an example of character class.

Example 31 We can use the fineTuning field to assist in the formatting of bibliography files.

Starting with the file in Listing 511 and running the command

```
cmh:~$ latexindent.pl bib1.tex -o=+-mod1
```

gives the output in Listing 512.

LISTING 511: bib1.bib

```
@online{paulo,
title="arararule,indent.yaml",
author="PauloCereda",
date={2013-05-23},
urldate={2021-03-19},
keywords={contributor},}
```

LISTING 512: bib1-mod1.bib

```
@online{paulo,
   title="arararule,indent.yaml",
   author="PauloCereda",
   date={2013-05-23},
   urldate={2021-03-19},
   keywords={contributor},}
```

Let's assume that we would like to format the output so as to align the = symbols. Using the settings in Listing 514 and running the command

```
cmh:~$ latexindent.pl bib1.bib -l bibsettings1.yaml -o=+-mod2
```

gives the output in Listing 513.

LISTING 513: bib1.bib using Listing 514

```
@online{paulo,
   title    = "arararule,indent.yaml",
   author   = "PauloCereda",
   date     = {2013-05-23},
   urldate  = {2021-03-19},
   keywords = {contributor},}
```

LISTING 514: bibsettings1.yaml

```
lookForAlignDelims:
   online:
      delimiterRegEx: '(=)'

fineTuning:
    keyEqualsValuesBracesBrackets:
      follow:
    '(?:(?<!\\)\{)|(?:(?<!\\)\[)'
    UnNamedGroupingBracesBrackets:
      follow: '\{|\[|,|&|\)|\(|\$|='
```

Some notes about Listing 514:

- we have populated the `lookForAlignDelims` field with the `online` command, and have used the `delimiterRegEx`, discussed in Section 5.5.4 on page 36;
- we have tweaked the `keyEqualsValuesBracesBrackets` code block so that it will *not* be found following a comma; this means that, in contrast to the default behaviour, the lines such as `date={2013-05-23}`, will *not* be treated as key-equals-value braces;
- the adjustment to `keyEqualsValuesBracesBrackets` necessitates the associated change to the `UnNamedGroupingBracesBrackets` field so that they will be searched for following = symbols.

Example 32 We can build upon Listing 514 for slightly more complicated bibliography files.

Starting with the file in Listing 515 and running the command

```
cmh:~$ latexindent.pl bib2.bib -l bibsettings1.yaml -o=+-mod1
```

gives the output in Listing 516.

LISTING 515: bib2.bib

```
@online{cmh:videodemo,
title="Videodemonstrationofpl.latexindentonyoutube",
url="https://www.youtube.com/watch?v=wo38aaH2F4E&spfreload=10",
urldate={2017-02-21},
}
```

LISTING 516: bib2-mod1.bib

```
@online{cmh:videodemo,
   title   = "Videodemonstrationofpl.latexindentonyoutube",
   url     = "https://www.youtube.com/watch?v               = wo38aaH2F4E&spfreload = 10",
   urldate = {2017-02-21},
}
```

The output in Listing 516 is not ideal, as the = symbol within the url field has been incorrectly used as an alignment delimiter.

We address this by tweaking the `delimiterRegEx` field in Listing 517.

LISTING 517: bibsettings2.yaml

```
lookForAlignDelims:
   online:
      delimiterRegEx: '(?<!v)(?<!spfreload)(=)'
```

Upon running the command

```
cmh:~$ latexindent.pl bib2.bib -l bibsettings1.yaml,bibsettings2.yaml -o=+-mod2
```

we receive the *desired* output in Listing 518.

LISTING 518: bib2-mod2.bib

```
@online{cmh:videodemo,
   title   = "Videodemonstrationofpl.latexindentonyoutube",
   url     = "https://www.youtube.com/watch?v=wo38aaH2F4E&spfreload=10",
   urldate = {2017-02-21},
}
```

With reference to Listing 517 we note that the `delimiterRegEx` has been adjusted so that `=` symbols are used as the delimiter, but only when they are *not preceeded* by either `v` or `spfreload`.

SECTION 10

Conclusions and known limitations

There are a number of known limitations of the script, and almost certainly quite a few that are *unknown*!

For example, with reference to the multicolumn alignment routine in Listing 52 on page 30, when working with code blocks in which multicolumn commands overlap, the algorithm can fail.

Another limitation is to do with efficiency, particularly when the `-m` switch is active, as this adds many checks and processes. The current implementation relies upon finding and storing *every* code block (see the discussion on page 104); I hope that, in a future version, only *nested* code blocks will need to be stored in the 'packing' phase, and that this will improve the efficiency of the script.

U: 2019-07-13

You can run `latexindent` on any file; if you don't specify an extension, then the extensions that you specify in `fileExtensionPreference` (see Listing 16 on page 21) will be consulted. If you find a case in which the script struggles, please feel free to report it at [14], and in the meantime, consider using a `noIndentBlock` (see page 24).

I hope that this script is useful to some; if you find an example where the script does not behave as you think it should, the best way to contact me is to report an issue on [14]; otherwise, feel free to find me on the `http://tex.stackexchange.com/users/6621/cmhughes`.

Section 11

References

11.1 perl-related links

[7] *CPAN: Comprehensive Perl Archive Network*. URL: http://www.cpan.org/ (visited on 01/23/2017).

[8] *Data Dumper demonstration*. URL: https://stackoverflow.com/questions/7466825/how-do-you-sort-the-output-of-datadumper (visited on 06/18/2021).

[9] *Data::Dumper module*. URL: https://perldoc.perl.org/Data::Dumper (visited on 06/18/2021).

[12] Jeffrey E. F. Friedl. *Mastering Regular Expressions*. ISBN: 0596002890.

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[33] *Text::Tabs Perl module*. URL: http://search.cpan.org/~muir/Text-Tabs+Wrap-2013.0523/lib.old/Text/Tabs.pm (visited on 07/06/2017).

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11.2 conda-related links

[3] *anacoda*. URL: https://www.anaconda.com/products/individual (visited on 12/22/2021).

[6] *conda forge*. URL: https://github.com/conda-forge/miniforge (visited on 12/22/2021).

[16] *How to install Anaconda on Ubuntu?* URL: https://askubuntu.com/questions/505919/how-to-install-anaconda-on-ubuntu (visited on 01/21/2022).

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11.3 VScode-related links

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[37] *VSCode YAML extension*. URL: https://marketplace.visualstudio.com/items?itemName=redhat.vscode-yaml (visited on 01/01/2022).

11.4 Other links

[1] *A Perl script for indenting tex files*. URL: http://tex.blogoverflow.com/2012/08/a-perl-script-for-indenting-tex-files/ (visited on 01/23/2017).

[14] *Home of latexindent.pl*. URL: https://github.com/cmhughes/latexindent.pl (visited on 01/23/2017).

[17] *How to use latexindent on Windows?* URL: https://tex.stackexchange.com/questions/577250/how-to-use-latexindent-on-windows (visited on 01/08/2022).

[28] *pre-commit: A framework for managing and maintaining multi-language pre-commit hooks.* URL: https://pre-commit.com/ (visited on 01/08/2022).

[35] *Video demonstration of latexindent.pl on youtube*. URL: https://www.youtube.com/watch?v=wo38aaH2F4E&spfreload=10 (visited on 02/21/2017).

[38] *Windows line breaks on Linux prevent removal of white space from end of line*. URL: https://github.com/cmhughes/latexindent.pl/issues/256 (visited on 06/18/2021).

11.5 Contributors

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[11] Jacobo Diaz. *Hiddenconfig*. July 21, 2014. URL: https://github.com/cmhughes/latexindent.pl/pull/18 (visited on 01/23/2017).

[13] Tom de Geus. *Adding Perl installation + pre-commit hook*. Jan. 21, 2022. URL: https://github.com/cmhughes/latexindent.pl/pull/322 (visited on 01/21/2022).

[18] Randolf J. *Alpine-linux instructions*. Aug. 10, 2020. URL: https://github.com/cmhughes/latexindent.pl/pull/214 (visited on 08/10/2020).

[19] jeanlego. *Search localSettings in CWD as well*. Sept. 15, 2020. URL: https://github.com/cmhughes/latexindent.pl/pull/221 (visited on 03/19/2021).

[20] Jason Juang. *add in PATH installation*. Nov. 24, 2015. URL: https://github.com/cmhughes/latexindent.pl/pull/38 (visited on 01/23/2017).

[21] Harish Kumar. *Early version testing*. Nov. 10, 2013. URL: https://github.com/harishkumarholla (visited on 06/30/2017).

[23] mlep. *One sentence per line*. Aug. 16, 2017. URL: https://github.com/cmhughes/latexindent.pl/issues/81 (visited on 01/08/2018).

[24] newptcai. *Update appendices.tex*. Feb. 16, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/221 (visited on 03/19/2021).

[25] John Owens. *Paragraph line break routine removal*. May 27, 2017. URL: https://github.com/cmhughes/latexindent.pl/issues/33 (visited on 05/27/2017).

[29] qiancy98. *Locale encoding of file system*. May 6, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/273 (visited on 05/06/2021).

[30] Alexander Regueiro. *Update help screen*. Mar. 18, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/261 (visited on 03/19/2021).

[36] Michel Voßkuhle. *Remove trailing white space*. Nov. 10, 2013. URL: https://github.com/cmhughes/latexindent.pl/pull/12 (visited on 01/23/2017).

[39] XuehaiPan. *-y switch upgrade*. Nov. 12, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/297 (visited on 11/12/2021).

[40] XuehaiPan. *Verbatim block upgrade*. Oct. 3, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/290 (visited on 10/03/2021).

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SECTION A

Required Perl modules

If you intend to use `latexindent.pl` and *not* one of the supplied standalone executable files, then you will need a few standard Perl modules – if you can run the minimum code in Listing 519 (`perl helloworld.pl`) then you will be able to run `latexindent.pl`, otherwise you may need to install the missing modules – see appendices A.1 and A.2.

LISTING 519: `helloworld.pl`

```
#!/usr/bin/perl

use strict;
use warnings;
use PerlIO::encoding;
use open ':std', ':encoding(UTF-8)';
use Text::Wrap;
use Text::Tabs;
use FindBin;
use YAML::Tiny;
use File::Copy;
use File::Basename;
use File::HomeDir;
use Encode;
use Getopt::Long;
use Data::Dumper;
use List::Util qw(max);

print "hello world";
exit;
```

A.1 Module installer script

N: 2018-01-13

`latexindent.pl` ships with a helper script that will install any missing `perl` modules on your system; if you run

```
cmh:~$ perl latexindent-module-installer.pl
```

or

```
C:\Users\cmh>perl latexindent-module-installer.pl
```

then, once you have answered `Y`, the appropriate modules will be installed onto your distribution.

A.2 Manually installing modules

Manually installing the modules given in Listing 519 will vary depending on your operating system and `Perl` distribution.

A.2.1 Linux

A.2.1.1 perlbrew

Linux users may be interested in exploring Perlbrew [26]; an example installation would be:

```
cmh:~$ sudo apt-get install perlbrew
cmh:~$ perlbrew init
cmh:~$ perlbrew install perl-5.28.1
cmh:~$ perlbrew switch perl-5.28.1
cmh:~$ sudo apt-get install curl
cmh:~$ curl -L http://cpanmin.us | perl - App::cpanminus
cmh:~$ cpanm YAML::Tiny
cmh:~$ cpanm File::HomeDir
```

A.2.1.2 Ubuntu/Debian

For other distributions, the Ubuntu/Debian approach may work as follows

```
cmh:~$ sudo apt install perl
cmh:~$ sudo cpan -i App::cpanminus
cmh:~$ sudo cpanm YAML::Tiny
cmh:~$ sudo cpanm File::HomeDir
```

or else by running, for example,

```
cmh:~$ sudo perl -MCPAN -e'install␣"File::HomeDir"'
```

A.2.1.3 Ubuntu: using the texlive from apt-get

Ubuntu users that install texlive using `apt-get` as in the following

```
cmh:~$ sudo apt install texlive
cmh:~$ sudo apt install texlive-latex-recommended
```

may need the following additional command to work with `latexindent.pl`

```
cmh:~$ sudo apt install texlive-extra-utils
```

A.2.1.4 Arch-based distributions

First install the dependencies

```
cmh:~$ sudo pacman -S perl cpanminus
```

then run the latexindent-module-installer.pl file located at helper-scripts/

A.2.1.5 Alpine

If you are using Alpine, some `Perl` modules are not build-compatible with Alpine, but replacements are available through `apk`. For example, you might use the commands given in Listing 520; thanks to [18] for providing these details.

LISTING 520: alpine-install.sh

```
# Installing perl
apk --no-cache add miniperl perl-utils

# Installing incompatible latexindent perl dependencies via apk
apk --no-cache add \
    perl-log-dispatch \
    perl-namespace-autoclean \
    perl-specio \
    perl-unicode-linebreak

# Installing remaining latexindent perl dependencies via cpan
apk --no-cache add curl wget make
ls /usr/share/texmf-dist/scripts/latexindent
cd /usr/local/bin && \
    curl -L https://cpanmin.us/ -o cpanm && \
    chmod +x cpanm
cpanm -n App::cpanminus
cpanm -n File::HomeDir
cpanm -n Params::ValidationCompiler
cpanm -n YAML::Tiny
```

Users of NixOS might like to see https://github.com/cmhughes/latexindent.pl/issues/222 for tips.

A.2.2 Mac

Users of the Macintosh operating system might like to explore the following commands, for example:

```
cmh:~$ brew install perl
cmh:~$ brew install cpanm
cmh:~$
cmh:~$ cpanm YAML::Tiny
cmh:~$ cpanm File::HomeDir
```

A.2.3 Windows

Strawberry Perl users on Windows might use `CPAN client`. All of the modules are readily available on CPAN [7].

`indent.log` will contain details of the location of the Perl modules on your system. `latexindent.exe` is a standalone executable for Windows (and therefore does not require a Perl distribution) and caches copies of the Perl modules onto your system; if you wish to see where they are cached, use the `trace` option, e.g

```
C:\Users\cmh>latexindent.exe -t myfile.tex
```

A.3 The GCString switch

N: 2022-03-25

If you find that the `lookForAlignDelims` (as in Section 5.5) does not work correctly for your language, then you may with to use the `Unicode::GCString` module .

This can be loaded by calling `latexindent.pl` with the `GCString` switch as in

```
cmh:~$ latexindent.pl --GCString myfile.tex
```

In this case, you will need to have the `Unicode::GCString` installed in your `perl` distribution by using, for example,

```
cmh:~$ cpanm YAML::Tiny
```

Note: this switch does *nothing* for `latexindent.exe` which loads the module by default. Users of `latexindent.exe` should not see any difference in behaviour whether they use this switch or not, as `latexindent.exe` loads the `Unicode::GCString` module.

SECTION B

Updating the path variable

`latexindent.pl` has a few scripts (available at [14]) that can update the `path` variables. Thank you to [20] for this feature. If you're on a Linux or Mac machine, then you'll want `CMakeLists.txt` from [14].

B.1 Add to path for Linux

To add `latexindent.pl` to the path for Linux, follow these steps:

1. download `latexindent.pl` and its associated modules, `defaultSettings.yaml`, to your chosen directory from [14] ;
2. within your directory, create a directory called `path-helper-files` and download `CMakeLists.txt` and `cmake_uninstall.cmake.in` from [14]/path-helper-files to this directory;
3. run

   ```
   cmh:~$ ls /usr/local/bin
   ```

   to see what is *currently* in there;
4. run the following commands

   ```
   cmh:~$ sudo apt-get update
   cmh:~$ sudo apt-get install --no-install-recommends cmake make # or any
       other generator
   cmh:~$ mkdir build && cd build
   cmh:~$ cmake ../path-helper-files
   cmh:~$ sudo make install
   ```
5. run

   ```
   cmh:~$ ls /usr/local/bin
   ```

   again to check that `latexindent.pl`, its modules and `defaultSettings.yaml` have been added.

To *remove* the files, run

```
cmh:~$ sudo make uninstall
```

B.2 Add to path for Windows

To add `latexindent.exe` to the path for Windows, follow these steps:

1. download `latexindent.exe`, `defaultSettings.yaml`, `add-to-path.bat` from [14] to your chosen directory;
2. open a command prompt and run the following command to see what is *currently* in your `%path%` variable;

```
C:\Users\cmh>echo %path%
```

3. right click on `add-to-path.bat` and *Run as administrator*;
4. log out, and log back in;
5. open a command prompt and run

   ```
   C:\Users\cmh>echo %path%
   ```

   to check that the appropriate directory has been added to your `%path%`.

To *remove* the directory from your `%path%`, run `remove-from-path.bat` as administrator.

SECTION C

Batches of files

N: 2022-03-25

You can instruct `latexindent.pl` to operate on multiple files. For example, the following calls are all valid

```
cmh:~$ latexindent.pl myfile1.tex
cmh:~$ latexindent.pl myfile1.tex myfile2.tex
cmh:~$ latexindent.pl myfile*.tex
```

We note the following features of the script in relation to the switches detailed in Section 3.

C.1 location of indent.log

If the `-c` switch is *not* active, then `indent.log` goes to the directory of the final file called.

If the `-c` switch *is* active, then `indent.log` goes to the specified directory.

C.2 interaction with -w switch

If the `-w` switch is active, as in

```
cmh:~$ latexindent.pl -w myfile*.tex
```

then files will be overwritten individually. Back-up files can be re-directed via the `-c` switch.

C.3 interaction with -o switch

If `latexindent.pl` is called using the `-o` switch as in

```
cmh:~$ latexindent.pl myfile*.tex -o=my-output-file.tex
```

and there are multiple files to operate upon, then the `-o` switch is ignored because there is only *one* output file specified.

More generally, if the `-o` switch does *not* have a `+` symbol at the beginning, then the `-o` switch will be ignored, and is turned it off.

For example

```
cmh:~$ latexindent.pl myfile*.tex -o=+myfile
```

will work fine because *each* `.tex` file will output to `<basename>myfile.tex`

Similarly,

```
cmh:~$ latexindent.pl myfile*.tex -o=++
```

will work because the 'existence check/incrementation' routine will be applied.

C.4 interaction with lines switch

This behaves as expected by attempting to operate on the line numbers specified for each file. See the examples in Section 8.

C.5 interaction with check switches

The exit codes for `latexindent.pl` are given in Table 1 on page 16.

When operating on multiple files with the check switch active, as in

```
cmh:~$ latexindent.pl myfile*.tex --check
```

then

- exit code 0 means that the text from *none* of the files has been changed;
- exit code 1 means that the text from *at least one* of the files been file changed.

The interaction with `checkv` switch is as in the check switch, but with verbose output.

C.6 when a file does not exist

What happens if one of the files can not be operated upon?

- if at least one of the files does not exist and `latexindent.pl` has been called to act upon multiple files, then the exit code is 3; note that `latexindent.pl` will try to operate on each file that it is called upon, and will not exit with a fatal message in this case;
- if at least one of the files can not be read and `latexindent.pl` has been called to act upon multiple files, then the exit code is 4; note that `latexindent.pl` will try to operate on each file that it is called upon, and will not exit with a fatal message in this case;
- if `latexindent.pl` has been told to operate on multiple files, and some do not exist and some cannot be read, then the exit code will be either 3 or 4, depending upon which it scenario it encountered most recently.

SECTION D

latexindent-yaml-schema.json

N: 2022-01-02

`latexindent.pl` ships with `latexindent-yaml-schema.json` which might help you when constructing your YAML files.

D.1 VSCode demonstration

To use `latexindent-yaml-schema.json` with VSCode, you can use the following steps:

1. download `latexindent-yaml-schema.json` from the `documentation` folder of [14], save it in whichever directory you would like, noting it for reference;
2. following the instructions from [15], for example, you should install the VSCode YAML extension [37];
3. set up your `settings.json` file using the directory you saved the file by adapting Listing 521; on my Ubuntu laptop this file lives at `/home/cmhughes/.config/Code/User/settings.json`.

LISTING 521: `settings.json`

```
{
  "yaml.schemas": {
    "/home/cmhughes/projects/latexindent/documentation/latexindent-yaml-schema.json":
    "/home/cmhughes/projects/latexindent/defaultSettings.yaml"
  },
  "redhat.telemetry.enabled": true
}
```

Alternatively, if you would prefer not to download the json file, you might be able to use an adapted version of Listing 522.

LISTING 522: `settings-alt.json`

```
{
  "yaml.schemas": {

    "https://raw.githubusercontent.com/cmhughes/latexindent.pl/main/documentation/latexindent-yaml-schema.json":
    "/home/cmhughes/projects/latexindent/defaultSettings.yaml"
  }
}
```

Finally, if your TeX distribution is up to date, then `latexindent-yaml-schema.json` *should* be in the documentation folder of your installation, so an adapted version of Listing 523 may work.

LISTING 523: `settings-alt1.json`

```
{
  "yaml.schemas": {
    "/usr/local/texlive/2021/texmf-dist/doc/support/latexindent/latexindent-yaml-schema.json":
    "/home/cmhughes/projects/latexindent/defaultSettings.yaml"
  }
}
```

If you have details of how to implement this schema in other editors, please feel encouraged to contribute to this documentation.

SECTION E

Using conda

If you use conda you'll only need

```
cmh:~$ conda install latexindent.pl -c conda-forge
```

this will install the executable and all its dependencies (including perl) in the activate environment. You don't even have to worry about `defaultSettings.yaml` as it included too, you can thus skip appendices A and B.

You can get a conda installation for example from [6] or from [3].

E.1 Sample conda installation on Ubuntu

On Ubuntu I followed the 64-bit installation instructions at [16] and then I ran the following commands:

```
cmh:~$ conda create -n latexindent.pl
cmh:~$ conda activate latexindent.pl
cmh:~$ conda install latexindent.pl -c conda-forge
cmh:~$ conda info --envs
cmh:~$ conda list
cmh:~$ conda run latexindent.pl -vv
```

I found the details given at [31] to be helpful.

SECTION F

pre-commit

N: 2022-01-21

Users of `.git` may be interested in exploring the `pre-commit` tool [28], which is supported by `latexindent.pl`. Thank you to [13] for contributing this feature.

To use the `pre-commit` tool, you will need to install `pre-commit`; sample instructions for Ubuntu are given in appendix F.1. Once installed, there are two ways to use `pre-commit`: using `CPAN` or using `conda`, detailed in appendix F.2 and appendix F.3 respectively.

F.1 Sample pre-commit installation on Ubuntu

On Ubuntu I ran the following command:

```
cmh:~$ python3 -m pip install pre-commit
```

I then updated my path via .bashrc so that it includes the line in Listing 524.

LISTING 524: `.bashrc` update

```
...
export PATH=$PATH:/home/cmhughes/.local/bin
```

F.2 pre-commit using CPAN

To use `latexindent.pl` with `pre-commit`, create the file `.pre-commit-config.yaml` given in Listing 525 in your git-repository.

LISTING 525: `.pre-commit-config.yaml` (cpan)

```
- repo: https://github.com/cmhughes/latexindent.pl
  rev: V3.17
  hooks:
  - id: latexindent
    args: [-s]
```

Once created, you should then be able to run the following command:

```
cmh:~$ pre-commit run --all-files
```

A few notes about Listing 525:

- the settings given in Listing 525 instruct `pre-commit` to use `CPAN` to get dependencies;
- this requires `pre-commit` and `perl` to be installed on your system;
- the `args` lists selected command-line options; the settings in Listing 525 are equivalent to calling

  ```
  cmh:~$ latexindent.pl -s myfile.tex
  ```

  for each `.tex` file in your repository;

- to instruct `latexindent.pl` to overwrite the files in your repository, then you can update Listing 525 so that `args: [-s, -w]`.

Naturally you can add options, or omit `-s` and `-w`, according to your preference.

F.3 pre-commit using conda

You can also rely on `conda` (detailed in appendix E) instead of `CPAN` for all dependencies, including `latexindent.pl` itself.

LISTING 526: `.pre-commit-config.yaml` (conda)

```
- repo: https://github.com/cmhughes/latexindent.pl
  rev: V3.17
  hooks:
  - id: latexindent-conda
    args: [-s]
```

Once created, you should then be able to run the following command:

```
cmh:~$ pre-commit run --all-files
```

A few notes about Listing 525:

- the settings given in Listing 526 instruct `pre-commit` to use `conda` to get dependencies;
- this requires `pre-commit` and `conda` to be installed on your system;
- the `args` lists selected command-line options; the settings in Listing 525 are equivalent to calling

  ```
  cmh:~$ conda run latexindent.pl -s myfile.tex
  ```

  for each `.tex` file in your repository;
- to instruct `latexindent.pl` to overwrite the files in your repository, then you can update Listing 525 so that `args: [-s, -w]`.

F.4 pre-commit example using -l, -m switches

Let's consider a small example, with local `latexindent.pl` settings in `.latexindent.yaml`.

Example 33 We use the local settings given in Listing 527.

LISTING 527: `.latexindent.yaml`

```
onlyOneBackUp: 1

modifyLineBreaks:
 oneSentencePerLine:
   manipulateSentences: 1
```

and `.pre-commit-config.yaml` as in Listing 528:

LISTING 528: `.pre-commit-config.yaml` (demo)

```
- repo: https://github.com/cmhughes/latexindent.pl
  rev: V3.17
  hooks:
  - id: latexindent
    args: [-l, -m, -s, -w]
```

Now running

```
cmh:~$ pre-commit run --all-files
```

is equivalent to running

```
cmh:~$ latexindent.pl -l -m -s -w myfile.tex
```

for each `.tex` file in your repository.

A few notes about Listing 528:

- the `-l` option was added to use the local `.latexindent.yaml` (where it was specified to only create one back-up file, as `git` typically takes care of this when you use `pre-commit`);
- `-m` to modify line breaks; in addition to `-s` to suppress command-line output, and `-w` to format files in place.

SECTION G

logFilePreferences

Listing 17 on page 22 describes the options for customising the information given to the log file, and we provide a few demonstrations here. Let's say that we start with the code given in Listing 529, and the settings specified in Listing 530.

LISTING 529: simple.tex

```
\begin{myenv}
  body of myenv
\end{myenv}
```

LISTING 530: logfile-prefs1.yaml

```
logFilePreferences:
    showDecorationStartCodeBlockTrace: "+++++"
    showDecorationFinishCodeBlockTrace: "-----"
```

If we run the following command (noting that `-t` is active)

```
cmh:~$ latexindent.pl -t -l=logfile-prefs1.yaml simple.tex
```

then on inspection of `indent.log` we will find the snippet given in Listing 531.

LISTING 531: indent.log

```
       +++++
TRACE: environment found: myenv
       No ancestors found for myenv
       Storing settings for myenvenvironments
       indentRulesGlobal specified (0) for environments, ...
       Using defaultIndent for myenv
       Putting linebreak after replacementText for myenv
       looking for COMMANDS and key = {value}
TRACE: Searching for commands with optional and/or mandatory arguments AND key =
    {value}
       looking for SPECIAL begin/end
TRACE: Searching myenv for special begin/end (see specialBeginEnd)
TRACE: Searching myenv for optional and mandatory arguments
       ... no arguments found
       -----
```

Notice that the information given about `myenv` is 'framed' using `+++++` and `-----` respectively.

SECTION H

Encoding indentconfig.yaml

In relation to Section 4 on page 17, Windows users that encounter encoding issues with `indentconfig.yaml`, may wish to run the following command in either `cmd.exe` or `powershell.exe`:

```
C:\Users\cmh>chcp
```

They may receive the following result

```
C:\Users\cmh>Active code page: 936
```

and can then use the settings given in Listing 532 within their `indentconfig.yaml`, where 936 is the result of the `chcp` command.

LISTING 532: `encoding` demonstration for `indentconfig.yaml`

```
encoding: cp936
```

Section I

dos2unix linebreak adjustment

`dos2unixlinebreaks`: ⟨*integer*⟩

N: 2021-06-19

If you use `latexindent.pl` on a dos-based Windows file on Linux then you may find that trailing horizontal space is not removed as you hope.

In such a case, you may wish to try setting `dos2unixlinebreaks` to 1 and employing, for example, the following command.

```
cmh:~$ latexindent.pl -y="dos2unixlinebreaks:1" myfile.tex
```

See [38] for further dertails.

SECTION J

Differences from Version 2.2 to 3.0

There are a few (small) changes to the interface when comparing Version 2.2 to Version 3.0. Explicitly, in previous versions you might have run, for example,

```
cmh:~$ latexindent.pl -o myfile.tex outputfile.tex
```

whereas in Version 3.0 you would run any of the following, for example,

```
cmh:~$ latexindent.pl -o=outputfile.tex myfile.tex
cmh:~$ latexindent.pl -o outputfile.tex myfile.tex
cmh:~$ latexindent.pl myfile.tex -o outputfile.tex
cmh:~$ latexindent.pl myfile.tex -o=outputfile.tex
cmh:~$ latexindent.pl myfile.tex -outputfile=outputfile.tex
cmh:~$ latexindent.pl myfile.tex -outputfile outputfile.tex
```

noting that the *output* file is given *next to* the `-o` switch.

The fields given in Listing 533 are *obsolete* from Version 3.0 onwards.

LISTING 533: Obsolete YAML fields from Version 3.0

```
alwaysLookforSplitBrackets
alwaysLookforSplitBrackets
checkunmatched
checkunmatchedELSE
checkunmatchedbracket
constructIfElseFi
```

There is a slight difference when specifying indentation after headings; specifically, we now write `indentAfterThisHeading` instead of `indent`. See Listings 534 and 535

LISTING 534: `indentAfterThisHeading` in Version 2.2

```
indentAfterHeadings:
    part:
       indent: 0
       level: 1
```

LISTING 535: `indentAfterThisHeading` in Version 3.0

```
indentAfterHeadings:
    part:
       indentAfterThisHeading: 0
       level: 1
```

To specify `noAdditionalIndent` for display-math environments in Version 2.2, you would write YAML as in Listing 536; as of Version 3.0, you would write YAML as in Listing 537 or, if you're using `-m` switch, Listing 538.

LISTING 536: noAdditionalIndent in Version 2.2

```
noAdditionalIndent:
    \[: 0
    \]: 0
```

LISTING 537: noAdditionalIndent for displayMath in Version 3.0

```
specialBeginEnd:
    displayMath:
        begin: '\\\['
        end: '\\\]'
        lookForThis: 0
```

LISTING 538: noAdditionalIndent for displayMath in Version 3.0

```
noAdditionalIndent:
    displayMath: 1
```

End

Listings

Index