

assoccnt.sty

Associate counters stepping simultaneously

Version 0.3

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1 Introduction

The aim of this package is to provide some additional support for example for a package like `totcount`.

For example, the total number of pages in a document could be achieved by using

```
%
\regtotcounter{page}
...
The number of pages in the document is \number\totvalue{page} page(s).

... The number of pages in the document is 17 page(s).
```

This will work, as long there is no reset of the page counter, as it might happen in the case of `\setcounter` or `\pagenumbering` being applied in the document. The result is a false page counter total value.

This package provides associate counters, i.e. counters that are increased simultaneously with a driver counter and are not influenced by a resetting of the driver counter, as long as not being added to the reset list by definition of the counter or explicitly by `\@addtoreset`.

This package defines some macros to handle associated counters. The only interception to the standard behaviour is within the redefined commands `\stepcounter` and `\refstepcounter`. The usual commands still work, as there is code added to their definition.

Internally, the associated counters are stored in one list per counter – it is not recommended to operate on those lists directly.

2 Documentation of Macros

All macros have the general rule, that the driver counter is specified as 1st argument to the macro.

2.1 Associated counters commands

`\DeclareAssociatedCounters`[*options*]{*driver counter*}{*associated counters list*}

This command is the main macro of the package. It declares the counter names being specified in comma - separated - list (CSV) which should be stepped simultaneously when the driver counter is increased by `\stepcounter`.

Description of arguments of command `\DeclareAssociatedCounters`

- #1 [*options*]: As of 0.3, the optional argument [*options*] is not used so far, but is reserved for later purposes.
- #2 {*driver counter*}
Holds the name of the driver counter to which the list of counters should be associated
- #3 {*associated counters list*}
A comma separated list of counter names that should be associated to the driver counter

- This command will be a preamble command in future
- This command should be used as early as possible, i.e. in the preamble of the document, since the driven counters are not increased as long as they are not associated to the driver counter. On the hand, it is possible, to control the starting point of the association at any position in the body of the document, when the association should start later on.

*%%% The association of another totalpages in this example just takes place here, ↵
 ↳so the stepping of the counter will start from here and providing a 'wrong' ↵
 ↳value.*

%%%

`\DeclareAssociatedCounters{page}{totalpages,another totalpages}%`

This document has `\number\totvalue{totalpages}` (note: ↵

`\number\totvalue{another totalpages}`) pages.

This document has 16 (note: 4) pages.

- Current version state:
 - No checking whether the 2nd and 3rd arguments hold counter names is applied.
 - No check is done whether two (or more) associated counters are mutually associated.
- A self-association of the driver counter to itself is ignored internally as this would lead to inconsistent counter values.
- The order of the specification of associated counters in the 2nd arguments is of no importance.

- Specifying an associated counter name multiple times has no effect, only the first occurrence of the name will be used.

`\AddAssociatedCounters` [*options*] {*driver counter*} {*associated counters list*}

This command adds some counters to the associated counter list for a specific driver counter – if this list does not exist, the L^AT_EX run will be stopped. You have to use `\DeclareAssociatedCounters`^{P.3} first, to set up the driver counter hook.

Description of arguments of command `\AddAssociatedCounters`

#1 [*options*]: As of 0.3, the optional argument [*options*] is not used so far, but is reserved for later purposes.

#2 {*driver counter*}

Holds the name of the driver counter to which the list of counters should be associated

#3 {*associated counters list*}

A comma separated list of counter names that should be associated to the driver counter

`\RemoveAssociatedCounter` {*driver counter*} {*associated counter*}

This command removes a counter from the existing list for a driver counter, i.e. the counter will not be increased any longer by `\stepcounter`. It can be increased however manually, of course.

```
\RemoveAssociatedCounter{page}{anothertotalpages}
This document has \number\totvalue{totalpages} (beware: 2
\&\number\totvalue{anothertotalpages}) pages.
```

This document has 16 (beware: 4) pages.

`\RemoveAssociatedCounters` {*driver counter*} {*list of associated counters*}

This command removes the comma-separated-value list of counters from the existing list for a driver counter, i.e. the counters will not be increased any longer by `\stepcounter`. They can be increased however manually, of course.

Take care not to confuse the commands `\RemoveAssociatedCounters` and `\RemoveAssociatedCounter`

`\ClearAssociatedCounters`{ $\langle driver\ counter \rangle$ }

This command clears the internal list for all counters associated to the $\{\langle driver\ counter \rangle\}$. The counters will not be increased automatically.

2.2 Driver counter commands

`\AddDriverCounter` [*options*] {*driver counter name*}

Description of arguments of command `\AddDriverCounter`

#1 [*options*]: As of 0.3, the optional argument [*options*] is not used so far, but is reserved for later purposes.

#2 {*driver counter name*}

Holds the name of the driver counter that should be added to the list of driver counters.

`\ClearDriverCounter` [*options*]

This clears completely the list of driver counters, such that no counters are regarded as being associated – i.e. no driver is hold as being a driver counter.

The optional argument is not used as of version 0.3.

2.3 Commands for queries

Sometimes it might be necessary to get information, whether a counter is regarded as a driver or as an associated counter. This section describes some query macros in order to obtain this information.

`\IsAssociatedToCounter` {*driver counter*} {*associated counter*} {*True branch*} {*False branch*}

This macro checks, whether a counter is associated to a particular given driver counter and expands the corresponding branch. If the internal driver counter list does not exist, the false branch will be used, since this also means, that the possibly associated counter is not associated at all.

Description of arguments of command `\IsAssociatedToCounter`

#1 $\{\langle driver\ counter\rangle\}$

Holds the name of the driver counter to which $\{\langle associated\ counter\rangle\}$ the could possibly be associated.

#2 $\{\langle associated\ counter\rangle\}$

Contains the name of the possibly associated counter.

#3 $\{\langle True\ branch\rangle\}$

This code is expanded if the counter is associated to the driver, otherwise it is ignored.

#4 $\{\langle True\ branch\rangle\}$

This code is expanded if the counter is **not** associated to the driver, otherwise it is ignored.

```
% Remove associated counter first for demonstration purposes
\RemoveAssociatedCounter{page}{anothertotalpages}
\IsAssociatedToCounter{page}{totalpages}{Yes, totalpages is associated}{No, }
    {totalpages is not associated}

\IsAssociatedToCounter{page}{anothertotalpages}{Yes, anothertotalpages is }
    {associated}{No, anotherpages is not associated}
```

Yes, totalpages is associated
No, anotherpages is not associated

See also

- `\IsAssociatedCounter`^{→P.9} for checking whether a counter is associated
- `\IsDriverCounter`^{→P.10} in order to check whether a counter is a driver.
- `\GetDriverCounter` returns the driver counter name for a given associated counter name

`\GetDriverCounter` $\{\langle counter\ name\rangle\}$

This commands returns the driver counter to which the counter name of the first argument is connected to. If the counter is not defined, the macro returns nothing.

- No check whether the counter name is defined is performed

- No check whether the counter is associated at all is performed. Usage of this command in conjunction with `\IsAssociatedCounter`^{→P.9} is strongly encouraged.

```
%
totalpages is associated to the \
    {\textcolor{blue}{\textbf{\GetDriverCounter{totalpages}}}} counter.
% Try with an undefined counter name
humptydumpty is associated to the \
    {\textcolor{blue}{\textbf{\GetDriverCounter{humptydumpty}}}} counter.
```

totalpages is associated to the **page** counter. humptydumpty is associated to the counter.

`\IsAssociatedCounter{<counter name>}{<True branch>}{<False branch>}`

This commands tests, whether a given counter name is an associated counter and expands correspondingly the true or the false branch. The command does not tell to which driver the counter it is associated – this information can be obtained by `\GetDriverCounter`^{→P.8}.

Description of arguments of command `\IfAssociatedCounter`

#1 `{<counter name>}`

Contains the name of the possibly associated counter

#2 `{<True branch>}`

This code is expanded if the counter is associated to a driver, otherwise it is ignored

#3 `{<True branch>}`

This code is expanded if the counter is **not** associated a driver, otherwise it is ignored

```
\IsAssociatedCounter{section}{Yes, section is an associated counter}{No, section \
    {counter does not have the associated counter properties}}
\IsAssociatedCounter{totalpages}{Yes, totalpages is an associated counter}{No, \
    {totalpages counter does not have the associated counter properties}}
```

No, section counter does not have the associated counter properties Yes, totalpages is an associated counter

`\IsDriverCounter`{*<driver counter name>*}{*<True branch>*}{*<False branch>*}

This command tests, whether a given counter name is a driver counter and expands correspondingly the true or the false branch.

Description of arguments of command `\IfDriverCounter`

#1 {*<driver counter name>*}

Contains the name of the possible driver counter

#2 {*<True branch>*}

This code is expanded if the counter is a driver, otherwise it is ignored

#3 {*<True branch>*}

This code is expanded if the counter is **not** a driver, otherwise it is ignored

```
\IsDriverCounter{section}{Yes, section is a driver counter}{No, section counter }
    {does not have driver properties}
```

Yes, section is a driver counter

3 Internals commands

Basically spoken, all internal commands use `\@@assoccnt@@` as prefix and are designed to be used only within the package. There is no need to call them in a document directly. Nevertheless, the macros are described for completeness. The direct usage is discouraged, however, if needed, they have to be included in a `\makeatletter ... \makeatother` pair¹.

`\@@assoccnt@@removefromlist`{*<list name>*}{*<entry name>*}

This command removes an entry (i.e. a counter name) from a general list – it is not connected to the associated counter features at all.

¹Well, `\makeatother` could be omitted, but it is not advised to do so

Description of arguments of command `\@@assocnt@@removefromlist`

#1 `{\langle list command sequence name \rangle}`

Contains the name of the list

#2 `{\langle entry name \rangle}`

This argument should contain the name to be removed from the list. If this name is not present, the original list is maintained unchanged.

`\@@assocnt@@generateboundtounterslist``{\langle associated counter name \rangle}`

This command generates a list for each associated counter, holding the counter names to which this counter is associated to. As of version 0.3 this list can contain only **one** entry, since a counter cannot not be associated to multiple driver counters.

The only argument `{\langle associated counter name \rangle}` holds the name of the associated counter name. The list name is managed internally and should not be redefined.

```
\@@assocnt@@generateboundtounterslist{totalpages}%
```

```
totalpages@@boundtounterslist
```

`\@@assocnt@@addassociatedcounter``[{\langle option \rangle}]{\langle associated counters list name \rangle}{\langle associated counter name \rangle}`

This is the low level command, that

1. adds a single counter as an associated one to the appropriate list and prevents a multiple addition to this list
2. adds a driver counter to the list of driver counters
3. prevents multiple addition of the associated counter to other lists

Use the wrapper command `\AddAssociatedCounter` for proper usage.

Description of arguments of command `\@@assocnt@@addassociatedcounter`

#1 [*<driver counter name>*]

Contains the name of driver counter

#2 {*<associated counters list name>*}

This argument should contain the list name for the per driver counter list of associated counters, i.e. use `\@@assocnt@@generatelistname` for this argument

#3 {*<associated counter name>*}

The name of the counter to be associated.

`\@@assocnt@@associatedcounterslistsuffix`

This command holds the name of the suffix for the associated counters list. It should not be redefined.

`\@@assocnt@@generatelistname`{*<driver counter name>*}

This macro generates a list from the driver counter name and the driver counter list suffix (see `\@@assocnt@@associatedcounterslistsuffix`)

```
\@@assocnt@@generatelistname{page}
```

```
@@page@@AssociatedCountersList
```

4 To do list

- Check the existence of driver and associated counters
- Improve documentation

5 Acknowledgments

I would like to express my gratitudes to the developpers of fine L^AT_EX packages and of course to the users at tex.stackexchange.com, especially to

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A special gratitude goes to Prof. Dr. Dr. Thomas Sturm for providing the wonderful `tcolorbox` package which was used to write this documentation.

A Example: Total number of sections

In this example, all sections of this document are counted, i.e. the current one as well as all following ones.

```
\DeclareAssociatedCounters{section}{totalsections}%
This document has \number\totvalue{totalsections} section(s)%
```

This document has 8 section(s)

B Example: Total number of subsections with suspension

In this example, the subsections of this document are counted but later on, the associatedcounter is removed from the list, so it is frozen.

```
\newtotcounter{totalsubsections}%
\DeclareAssociatedCounters{subsection}{totalsubsections}%

\subsection{First dummy subsection}
SubSection counter: \thesubsection~-- \number\totvalue{totalsubsections}
\subsection{Second dummy subsection}
SubSection counter: \thesubsection~-- \number\totvalue{totalsubsections}

\RemoveAssociatedCounter{subsection}{totalsubsections}

\subsection{Third dummy subsection after removing the associated counter}
SubSection counter: \thesubsection~-- \number\totvalue{totalsubsections}
```

B.1 First dummy subsection

SubSection counter: B.1 – 2

B.2 Second dummy subsection

SubSection counter: B.2 – 2

B.3 Third dummy subsection after removing the associated counter

SubSection counter: B.3 – 2

C Example: Total number of proofs

```
% \usepackage{amsthm} is needed
\newcounter{proof}%
\newtheorem{Proof}[proof]{Proof}%
\DeclareAssociatedCounters{proof}{totalproofs}
\begin{Proof}
It's trivial.
\end{Proof}

\begin{Proof}[On Brontosaurus]
See excavations!
\end{Proof}

%%% Manipulate the counter
\setcounter{proof}{17}

\begin{Proof}[Yet another proof]
\begin{align*}
E &= m c^2
\end{align*}
\end{Proof}

This document has \number\totvalue{totalproofs} proofs %
```

Proof 1. *It's trivial.*

Proof 2 (On Brontosaurus). *See excavations!*

Proof 18 (Yet another proof).

$$E = mc^2$$

This document has 3 proofs

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