

ArabX_YTEX عرب زينغ

An ArabT_EX-like interface for typesetting languages
in Arabic script with X_YL^AT_EX

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Abstract

This package provides a convenient ArabTeX-like user-interface for typesetting languages using the Arabic script in X_YL^ATeX, with flexible access to font features. Input in ArabTeX notation can be set in three different vocalization modes or in roman transliteration. Direct UTF-8 input is also supported. Since most of the ‘real work’ – namely parsing and converting ArabTeX input to Unicode – is done at the level of TECKit mappings, ArabX_YTeX is really performant.

Contents

1 Introduction

Since the early 1990s, T_EX users who wished to typeset in Arabic script have relied on Klaus Lagally’s excellent ArabT_EX system.¹ While ArabT_EX’s overall qualities and Lagally’s masterful T_EX-programming abilities are undeniable, the system can hardly hide its 15-odd years of existence. Or to state it otherwise, it is now slowly becoming an archaic piece of software (which as a historian who has used ArabT_EX for more than eleven years I find a sad thing to admit). First of all, it is monolithic and idiosyncratic, in the sense that everything – from parsing the input encoding, to doing contextual analysis, to assembling all elements of the script and placing them on the page from right to left, in defiance of T_EX’s natural logic – is taken care of by means of T_EX macro programming. Thus before the availability of relatively fast Pentium processors, ArabT_EX was really slow, but this is less of an issue nowadays. Another disadvantage is that one is inexorably bound to use the custom Naskh font, which without being necessarily ugly does not meet the standards of fine typesetting. Finally, the collection of very sophisticated T_EX code that constitutes the ArabT_EX package is not documented at all, which means that even though it is now licensed under the LPPL, its internals are extremely difficult to understand in depth. (It is

¹<ftp://ftp.informatik.uni-stuttgart.de/pub/arabtex/arabtex.htm>. Version 2.00 was released in April 1992 and version 3.00 in November of the following year. The latest stable version (dated 2 July 2006) is 3.11s. Since version 3.02 the Hebrew language is also supported.

only fair to state, however, that Prof. Lagally has been extremely responsive to ideas, suggestions and wishes by users in the past).

The introduction of Omega in *ca.* 1996, a \TeX extension for multilingual, multidirectional typesetting based on Unicode, raised of course many hopes, but these have by now completely dissipated since the project has been moribund for several years and is now probably defunct. Aleph, a more humble attempt to reach some of the goals set by Omega, has been equally unsuccessful.² Both engines suffered of numerous bugs and never reached a stable and usable state, *at least according to my own subjective experience.*

After completion of the initial alpha version of Arab \XTeX , I came across the package Arabi by Youssef Jabri on CTAN.³ This is a pure LaTeX/Babel approach to Arabic typesetting which makes use of TFM hackery (by means of complex sequences of ligature rules) to provide custom contextual analysis for individual fonts. Thus the Arabi only works in combination with the fonts for which support is built in the package.

With the availability of Jonathan Kew's \XTeX , users can now rely on a very up-to-date typesetting engine based on the integration of $\varepsilon\text{-}\TeX$, Unicode, and modern font-rendering technology (AAT and ICU), without the complex hassle of font installation.⁴

2 Description

The Arab \XTeX package consists of a set of **TECkit**⁵ mappings for converting internally from Arab \TeX 's ASCII input convention to Unicode, and a LaTeX style file (arabxetex.sty) that provides a convenient user interface for typesetting in those languages. For details on Arab \TeX and its input convention the reader is referred to Lagally's detailed manual.⁶ Arab \XTeX introduces several additions, and a few minor modifications, to Arab \TeX 's conventions. These are documented in tabular form in Section 4. Arab \XTeX relies on the package bidi which contains the macros necessary for bidirectional typesetting – using $\varepsilon\text{-}\TeX$'s `\beginR ... \endR`, `\beginL ... \endL` primitives. The main code in bidi.sty is essentially borrowed, with minor adaptations,

²Based on Omega 1.15 and $\varepsilon\text{-}\TeX$, Aleph attempted to provide a usable and stable branch. See <http://www.tug.org/TUGboat/Articles/tb25-1/bilotta.pdf>. Unfortunately the project is currently dormant.

³<http://www.ctan.org/tex-archive/language/arabic/arabi/>

⁴<http://scripts.sil.org/xetex>. \XTeX was originally developed for the Mac OS X platform, but Linux and WIN32 ports are now available.

⁵<http://scripts.sil.org/TECkit>

⁶<http://129.69.218.213/arabtex/doc/arabdoc.pdf>

from the file `rlbabel.def` in the Babel distribution (where it serves for typesetting Hebrew). Some improvements in the beta version were inspired by Youssef Jabri's Arabi.

Languages supported at present are the same as in ArabTeX, namely: Arabic, Maghribi Arabic, Farsi (Persian), Urdu, Sindhi, Kashmiri, Ottoman Turkish, Kurdish, Jawi (Malay) and Uighur. ArabX_ΓTeX adds support for several additional Unicode characters, so that some more languages are probably supported de-facto as well (such as Western Punjabi).

2.1 The ArabTeX input encoding

Why would one need to type those languages by means of an old-fashioned ASCII representation? Native speakers have access to keyboards that allow to input them directly in Unicode, while non-native scholars who need to type them can use keymaps or keyboard utilities to achieve the same, so why bother? An expert in Arabic mathematical linguistic and author of the Perl module `Encode::Arabic::ArabTeX`, Otakar Srmž, has this to say about the virtues of ArabTeX ASCII encoding:

“ArabTeX is an excellent extension to TeX/LaTeX designed for typesetting the right-to-left scripts of the Orient. It comes up with very intuitive and comprehensible lower ASCII transliterations, the expressive power of which is even better than that of the scripts.”[Source: <http://search.cpan.org/~smrz/Encode-Arabic-1.16/ArabTeX/ArabTeX.pm#DESCRIPTION>. See also <http://ufal.mff.cuni.cz/~smrz/ICFP2006/icfp-encode.pdf>]

There are indeed several advantages in using ArabTeX input convention for typesetting in the Arabic script, besides ease and legibility. First it is possible and even trivial to switch between a representation of the data in the Arabic script and its romanized transliteration, without having to modify it. Second, despite the increasing availability of good Unicode editors that support bidirectionality, editing (La)TeX source files with bidirectional content can be a real pain, for it leads to confusion and distraction. Also, with complex multi-layer documents such as critical editions, where footnotes and annotations abound, the advantage of dealing with a plain ASCII encoding cannot be overstated. Finally, such an input convention allows far greater control of typographical details.

3 Usage

For short insertions (say within a LR text), use `\text<language>[option]{...}` where `<language>` is one of the following:

- arab (Arabic),⁷
- farsi (persian),
- urdu,
- sindhi,
- pashto,
- turk (ottoman),
- kurdish,
- kashmiri,
- malay (jawi), and
- uighur.

For typesetting whole paragraphs in Arabic script, use

```
\begin{<language>}[option]
...
\end{<language>}
```

Most languages can be typeset in one of four modes: non-vocalized, vocalized, fully-vocalized, and transliterated, exactly as in ArabTeX, and these are switched by means of the options `novoc`, `voc`, `fullvoc` and `trans`, respectively. Note that Kurdish and Uighur only have one vocalization mode. The mode can be determined either globally as an option to the `arabxetex` package, or as a local option of either the `\text<language>` commands or `\begin{<language>} ... \end{<language>}` environments. When no option is set locally, the global option is chosen. The default global option is always *non-vocalized* mode.

There is also an option `utf` for input in plain UTF-8 encoding. Note that it is also possible to mix ArabTeX input convention and UTF-8 characters, since the latter will not be affected by the font-mapping (except of course in transliteration mode, unless your roman font also contains Arabic characters). There are also advantages of choosing an ArabTeX mapping (*i.e.*, one of the `novoc`, `voc` and `fullvoc` modes) even with UTF-8 encoding, as it provides easy access to special glyphs and some useful features. See further below.

⁷Since the command `\arabic` is already defined in L^AT_EX, we chose the environment `arab` and the command `\textarab` instead, but the equivalent environment `Arabic` and the command `\textarabic` are also available.

Latin (LR) insertions within Arabic environment can be made by means of the command `\textlatin{...}`. Emphasis in Arabic is traditionally indicated by overlining the text, and this can be achieved with the command `\aemph`:⁸

```
\begin{arab}[novoc]
mi_tAl: \aemph{45} darajaT
\end{arab}
```

مثال: ٤٥ درجة

Important: ArabX_qTEX requires that the user has defined an `\arabicfont` in the preamble. The recommended procedure by means of `fontspec` is to define it as follows:

```
\newfontfamily\arabicfont[Script=Arabic]{<fontname>}
```

If not, then the font **Scheherazade** (designed by Bob Halissy and Jonathan Kew of SIL International) is taken as default.⁹

NB: In a later version we may define more general and flexible font commands, perhaps by having individual font families for each language (`\farsifont`, `\urdufont`, etc.)

3.1 Examples

THIS SECTION IS INCOMPLETE

3.1.1 Contextual analysis of *hamza*

```
\begin{arab}
'amruN, 'ibiluN, 'u_htuN, ''u_ht"uN, '"Uql"Id"Is, ra'suN, 'ar'asu,
sa'ala, qara'a, bu'suN, 'ab'usuN, ra'ufa, ru'asA'u, bi'ruN, 'as'ilaTuN,
ka'iba, qA'imuN, ri'AsaTuN, su'ila, samA'uN, barI'uN, sU'uN, bad'uN,
^say'uN, ^say'iN, ^say'aN, sA'ala, mas'alaTuN, saw'aTuN, _ha.tI'aTuN,
jA'a, ridA'uN, ridA'aN, jI'a, radI'iN, sU'uN, .daw'uN, qay'iN, .zim'aN
, yatasA'alUna, 'a'dA'akum, 'a'dA'ikum, 'a'dA'ukum maqrU'aT, mU'ibAt,
taw'am, yas'alu, 'a.sdiq^A$;$'uh_u, ya^g^I'u, s^U'ila
\end{arab}
```

⁸This macro makes use of the mathematical command `\overline`, which explains why `arabxetex` requires the `amsmath` package. I welcome any suggestion that would make it possible to circumvent this by emulating `\overline` directly.

⁹Available from <http://scripts.sil.org/ArabicFonts>. For typesetting Sindhi and Kashmiri the font **Lateef**, available at the same place, is also recommended.

أَمْرٌ، إِبِلٌ، أُخْتُ، أُخْتُ، أَوْقَلِيدِيسَ، رَأْسٌ، أَرَأْسٌ، سَأَلَ، قَرَأَ، بُؤْسٌ، أَبُؤْسٌ، رُؤْفَ، رُؤْسَاءُ،
 بَثْرٌ، أَسْئَلَةٌ، كَيْتَبٌ، قَائِمٌ، رَأْسَةٌ، سُئِلَ، سَمَاءٌ، بَرِيءٌ، سُوءٌ، بَدِءٌ، شَيْءٌ، شَيْءٌ، شَيْئاً،
 سَاءَلَ، مَسْأَلَةٌ، سَوَاءٌ، خَطِيبَةٌ، جَاءَ، رَدَاءٌ، رَدَاءٌ، جَبِيءٌ، رَدِيءٌ، سُوءٌ، ضَوْءٌ، قَيِّءٌ، ظُمناً
 ، يَتَسَاءَلُونَ، أَعْدَاءُكُمْ، أَعْدَائِكُمْ، أَعْدَاؤُكُمْ مَقْرُوءَةٌ، مُؤْتَبَاتٌ، تَوَامٌ، يَسْأَلُ، أَصْدَقاً أَهْ،
 يَجِيءُ، سُؤِلَ

3.1.2 Special orthographies

Some Arabic words, like *mi'a* “hundred”, have irregular orthographies. ArabX_qTEX recognizes them automatically.

```
\begin{arab}[voc]
mi'aT , mi'at"An , sab'ami'"aT
\end{arab}
```

مائة ، مائتان ، سَبْعِمِائَة

NB: For the time being only *mi'a* is supported, but more irregular constructs should be added in later versions.

3.1.3 Typesetting the Holy Qur'an

```
\begin{arab}[fullvoc]
mina 'l-qur'Ani 'l-karImi, sUraTu 'l-ssajdaTi 15--16:

'innamA yu'minu bi-B"'Ay_atinA 'lla_dIna 'i_dA _dukkirUA bihA _harrUA
sujjadaN wa-sabba.hUA bi-.hamdi rabbihim wa-hum lA yastakbirUna SAJDA [[15]]
tatajAfY_a junUbuhum 'ani 'l-ma.dAji'i yad'Una rabbahum _hawfaN wa-.tama'aN
wa-mimmA razagn_ahum yunfiqUna [[16]]
\end{arab}
```

مِنَ الْقُرْآنِ الْكَرِيمِ، سُورَةُ السَّجْدَةِ ١٥-١٦:

إِنَّمَا يُؤْمِنُ بِآيَاتِنَا الَّذِينَ إِذَا ذُكِّرُوا بِهَا خَرُّوا سُجَّدًا وَسَبَّحُوا بِحَمْدِ رَبِّهِمْ وَهُمْ لَا يَسْتَكْبِرُونَ
 ﴿١٥﴾ تَتَجَافَى جُنُوبُهُمْ عَنِ الْمَضَاجِعِ يَدْعُونَ رَبَّهُمْ خَوْفًا وَطَمَعًا وَمِمَّا رَزَقْنَاهُمْ يُنفِقُونَ ﴿١٦﴾

```
\newcommand{\hamzaB}{\char"200D\char"0640\raise-.95ex\hbox{\char"0654}\char"200D}
\begin{arab}[fullvoc]
sUraTu 'l-baqaraTi 71--72:
```

```
qAla 'innahu, yaqUlu 'innahA baqaraTuN lla _dalUluN tu_tIru 'l-'ar.da wa-lA
```

```
tasq.I 'l-.har_ta musallamaTuN lla ^siyaTa fIhA|^JIM qAluW" 'l-\hamzaB a___ana
ji'ta bi-'l-.haqqi|^JIM fa_daba.hUha wa-mA kAdduW" yaf'alUna [[71]] wa-'i_d
qataltum nafsaN fa-udda$, $_ara|'|_i"tum fIhA|^SLY wa-al-ll_ahu mu_hrijuN mma
kun"tum taktumUna [[72]]
\end{arab}
```

سُورَةُ الْبَقَرَةِ ٧١-٧٢:

قَالَ إِنَّهُ، يَقُولُ إِنَّهَا بَقَرَةٌ لَا ذَلُولٌ تُثِيرُ الْأَرْضَ وَلَا تَسْقِي الْحَرْثَ مُسَلَّمَةٌ لَا شِئَةَ فِيهَا قَالُوا
 آلَنْ جِئْتَ بِالْحَقِّ فَذَبَحُوهَا وَمَا كَادُوا يَفْعَلُونَ ﴿٧١﴾ وَإِذْ قَتَلْتُمْ نَفْسًا فَادَّارَءْتُمْ فِيهَا وَاللَّهُ مُخْرِجٌ
 مِمَّا كُنْتُمْ تَكْتُمُونَ ﴿٧٢﴾

3.1.4 Farsi

These are some of the Persian examples in the ArabTeX documentation:

```
\begin{farsi}[voc]
_hwAb, xwI^s, _hwod, ^ceH, naH, yal_aH, _hAneH, _hAneHhA, _hAneH-hA,
ketAb-e, U, rAh-e, t_U, nAmeH-i, man, bInI-e, An, mard, pA-i, In,
zan, bAzU-i, In, zan, dAr-_i, man, _hU-_i, t_U, nAmeH-_i, sormeH-_i,
gofteH-_i, ketAb-I, rAh-I, nAmeH-I, dAnA-I, pArU-I, dAnA-I-keH,
pArU-I-keH, rafteH-am, rafteH-Im, AnjA-st, U-st, t_U-st, ketAb-I-st,
be-man, be-t_U, be-An, be-In, be-insAn, beU, be-U, .sA.heb"|_hAneH,
pas"|andAz, naw"|AmUz
\end{farsi}
```

خَوَاب، خَوِش، خُود، چِه، نَه، يَلَه، خَانِه، خَانِهْهَا، خَانِهْهَا، كِتَاب، اُو، رَاو، تُو،
 نَامِهْ، مَن، بِنِي، آن، مَرْد، پَاي، اَيْن، زَن، بَازُوِي، اَيْن، زَن، دَار، مَن، خُوِي، تُو، نَامِهْ،
 سُرْمِهْ، كُفْتِهْ، كِتَابِي، رَاهِي، نَامِهْ اِي، دَانَايِي، پَارُوِي، دَانَايِكِه، پَارُوِيَكِه، رَفْتِهْ اَم،
 رَفْتِهْ اِيْم، اَنجَاسْت، اُوسْت، تُوَسْت، كِتَابِيَسْت، بَمَن، بَتُو، بَان، بَاين، يَانَسَان، بَاو،
 بَاو، صَاحِبْ خَانِه، پَس نَدَاز، نَو اَمُوز

3.1.5 Urdu

Urdu example:¹⁰

¹⁰Borrowed from <http://tabish.freeshell.org/u-trans/urducode.html>


```

\begin{urdu}[novoc]
,ham 'i^sq kE mArO.n kA itnA ,hI fasAna,h ,hae
rOnE kO na,hI.n kO'I ,ha.nsnE kO zamAna,h ,hae

ya,h kiskA ta.sawwur ,hae ya,h kiskA fasAna,h ,hae
jO a^sk ,hae A.nkhO.n mE.n tasbI.h kA dAnA ,hae
\end{urdu}

```

ہم عشق کے ماروں کا اتنا ہی فسانہ ہے
 رونے کو نہیں کوئی ہنسنے کو زمانہ ہے
 یہ کسکا تصوّر ہے یہ کسکا فسانہ ہے
 جو اشک ہے آنکھوں میں تسبیح کا دانا ہے

3.2 Special considerations

3.2.1 The name of God

The glyph FDF2, defined as ‘ARABIC LIGATURE ALLAH ISOLATED FORM’ by the Unicode Consortium, is a source of great confusion. It is displayed in the Unicode Book with an initial alif and thus represents the name of God, Allāh, which in Arabic is always written as a special ligature (*i.e.*, الله and not اللہ).¹¹

However, the majority of real-world fonts rather represent that ligature *without* the initial alif.¹² The confusion probably has to do with Unicode’s omission to include the ALLAH ligature without the initial alif, which is imperatively required for typesetting expressions like *al-ḥamdu li-llāh* الحمد لله. Many fonts code the ligature لله in the Private Use Area and make it accessible as a default ligature for the sequence *lām-lām-hā’*. In such a case it can be generated from the input `\textarab{lllh}` (the vertical bar here tells ArabX_{TEX} not to interpret the sequence `ll` as *lām* with

¹¹The glyph الله is taken from the font Traditional Arabic. In Scheherazade its design is rather suboptimal: الله.

¹²My research on Arabic fonts available or known to me yields the following picture: The fonts that do not display the initial alif in the ligature FDF2 include those provided by Linotype; the great majority of those licensed to or developed by Microsoft (I could verify it for Times New Roman, Arial, Courier New, Microsoft Sans Serif, Arabic Transparent, Simplified Arabic, Simplified Arabic Fixed, WinSoft Serif Pro, Traditional Arabic, Andalus, Old Antic Bold, Old Antic Decorated and Farsi Simple Bold); the fonts distributed by Arabeyes.org; SIL’s Lateef; and the fonts developed by CRULP in Pakistan. The Unicode-conformant fonts, on the other hand, are: SIL’s Scheherazade, Adobe Arabic (distributed with the Middle-Eastern version of the latest Adobe Reader 7), Arial Unicode MS, and Arabic Typesetting (distributed with VOLT and with Microsoft Office Proofing Tools 2003).

shadda).¹³ Besides not being a standard ArabTeX input sequence, the trouble is that there is no way to know a priori whether the font provides the glyph ﷲ at all, and whether it is defined as a default ligature from the above input.

To solve this problem with ArabX_ΓTeX, we had no choice but provide two classes of font mappings, one for each of the above two categories of Arabic fonts.¹⁴ By default we assume the canonical situation where U+FD_F2 corresponds to ﷲ, but the user can change this by choosing one of the package options `fdf2alif` or `fdf2noalif`; it can also be changed locally by means of the commands `\SetAllahWithAlif` and `\SetAllahWithoutAlif` *before* making use of `\arabicfont`. In a future version we hope to implement a database of Arabic fonts within ArabX_ΓTeX, so that this would work automatically in the most common cases.

The font Adobe Arabic has in addition the ligature *fā-li-llāb*: *fā fathā lām kasra lām hā* → ﷲ, which can be entered in ArabTeX notation as `\textarab{falilh}`. In this particular case we also provide the input convention `FALILLAH`.

3.3 Transliteration

At the moment transliteration mappings are provided for Arabic, Persian, Urdu, Sindhi and Pashto. The rest will be provided in a forthcoming version. It is also planned to implement alternative transliteration conventions for each language, as with ArabTeX, *e.g.*, ZDMG, Encyclopedia Iranica, etc. Transliteration is set in italics by default. This can be changed by declaring, *e.g.*, `\SetTransliterationStyle{\upshape}`. To transliterate proper nouns with capitals, prefix the words to be capitalized with `\UC`:

```
\begin{arab}[trans]
al-^say_h al-'Alim \UC na.sIr \UC al-dIn \UC al-.tUsI
\end{arab}
```

al-shaykh al-‘ālim Naṣīr al-Dīn al-Ṭūsī

Note that the article *al-* is automatically skipped. Note also that since the transliteration is coded in Unicode at the level of the font-mapping, it is necessary that the font contains all required glyphs.¹⁵

¹³This currently does not work with Scheharazade, but the developers are aware of the problem.

¹⁴This has the unfortunate consequence of doubling the number of mappings shipped with ArabX_ΓTeX. But since their size is small, it is more an esthetic annoyance than a practical one.

¹⁵See Appendix B for a list of recommended Unicode fonts that cover the full LATIN EXTENDED ADDITIONAL plane.

3.4 Typesetting critical editions with ednotes

In conjunction with bidi, the ednotes package makes it wonderfully easy to typeset critical editions of texts in Arabic script (or other RTL scripts).¹⁶ The direction of each level of footnotes can be controlled by means of `\SetFootnoteHook{\setRL}` (or `\setLR`) right before the declaration `\DeclareNewFootnote{X}[...]`. Here is an example preamble that might be used for typesetting a critical edition with ednotes and ArabX_{ET}¹⁷. See the ednotes documentation for more details.¹⁸

```
\usepackage[modulo,perpage,para*]{ednotes}%this calls manyfoot.sty and lineno.sty
\usepackage{arabxetex}

% make \footnoterule of \textwidth
\makeatletter%
\renewcommand{\footnoterule}{\kern-3\p@
  \hrule width \textwidth \kern 2.6\p@}
\makeatother

\modulolinenumbers[5]
% this is to set linenumbers in Arabic:
\renewcommand{\linenumberfont}{\arabicfont\addfontfeature{Mapping=arabicdigits}\tiny}

\renewcommand{\extrafootnoterule}{}
\SelectFootnoteRule[0]{extra}
\SetFootnoteHook{\unsetRL}%--> must appear immediately before \DeclareNewFootnote
%% For ednotes the command \PrecedeLevelWith{X}{hook} is available
\DeclareNewFootnote{B}[fnsymbol]
\renewcommand*{\differentlines}[2]{\linesfmt{\RL{#1$-#2}}}%
\renewcommand*{\linesfmt}[1]{\raisebox{1ex}{\linenumberfont #1}\~}%
\renewcommand{\lemmafnt}[1]{#1~[ ]}%
%Custom macros to enter variants, additions, omissions, illegible passages,
% text above the line, marginal notes, lacunae, and restorations:
\newcommand{\VAR}[2]{\Anote{\textarab{#1}}{\textarab{#2}}}
\newcommand{\ADD}{\textlatin{\textbf{+}}\,,}% or \textarab{zAyid fI}\
\newcommand{\OM}{\textlatin{\textbf{\char"2013}}\,,}% or \textarab{nAqi.s fI}\
\newcommand{\ILLEG}{\textarab{.gayr maqrU' fI}\ }
```

¹⁶The package `ledmac` has not been extensively tested with bidi yet, but our initial trials were not successful.

¹⁷Of course if the edition is typed directly in UTF-8 encoding, the use of ArabX_{ET} is by no means compulsory. Yet see the remarks in § 2.1 above.

¹⁸<http://www.ctan.org/tex-archive/macros/latex/contrib/ednotes/ednotugb.pdf>. See also http://www.webdesign-bu.de/uwe_lueck/criteditx.html.

```

















\newcommand{\BLANK}{\textarab{bayA.d fI}\ }
\newcommand{\SUPERLIN}{\textarab{ta.ht al-sa.tr fI}\ }
\newcommand{\MARG}{\textarab{bi-al-hAmi^s fI}\ }
\newcommand{\LACUNA}{\textlatin{\texttriangle~{\dots}~\texttriangle}}
\newcommand{\RESTOR}[1]{\textlatin{\texttriangle}#1\textlatin{\texttriangle}}
% to separate lemmas in different manuscripts:
\def\SEP{\enskip$\Vert$\enskip}

```

For a real-life example of how to use ednotes with ArabX_qTeX, see the file ednotes_example.tex which comes with this package.

4 Tabular overview of ArabTeX encoding conventions

The table is arranged alphabetically following the most significant letter of the ASCII input code. Color convention: red means that the glyph is the default for the given input code, and that it is available in all languages except those where different glyphs are shown (in black). That default glyph is also displayed in light gray under each language in which it is featured. Glyphs in blue are archaic forms (*e.g.*, old Urdu). An asterisk after the Unicode number means that the character was not available with ArabTeX. Green glyphs are special: either they are used to represent defective writing or they provide characters for other languages. Those shown in the column for Arabic are available by default. See the relevant notes at the end.

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
a	 064E						ا/آ			
A	 0627						ا/آ			
.a								 0654		
.A								 0672		
_a	 0670									
_A										
:a										اَ
b	 0628									

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
B	ب 0640									
.b	ب 066E									
:b					ب 067B					
bh					پ 0680					
c					چ 0681	چ 062C			چ 0686	
,c				خ 0685		چ 0686	چ 0686			
^c	چ 0686	چ 0686	چ	چ	چ	چ	چ	چ	چ	چ
^ch					چ 0687					
:c				خ 0682*						
.^c	چ 068F*									
d	د 062F	د	د	د	د	د	د	د	د	د
.d	ض 0636	ض	ض	ض	ض	ض	ض	ض	ض	ض
,d			ڈ 0688	ڊ 0689	ڊ 068A					
. ,d			ڊ 068B*							
^d	ڊ 06EE*				ڊ 068E*					
_d	ذ 0630	ذ	ذ	ذ	ذ	ذ	ذ	ذ	ذ	
:d					ذ 068F					
::d			ڙ 0690*							
dh					ڙ 068C					
,dh					ڙ 068D					
e		ه 0640	ه	ه 0659	ه 0659		ه 0640	ه 06D2+0658		ه 06D0

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
E		ی	ے 06D2	ی 06D0			ئی/ی 06D2			
ee				ئی						
ae	ی		ے	ی	ی					
Ee				ی 06CD						
_e		ِ								
'e							ه			
'E			ے 06D3							
f	ف 0641	ف	ف	ف	ف	ف	ف	ف	ف	ف
.f	ف 06A1									
g		گ 06AF	گ	گ	گ	گ	گ	گ	گی 0762	گ
G				گ 06AB						
.g	غ 063A	غ	غ	غ	غ	غ	غ	غ	غ	
:g					گ 06B3					
.:g					گی 06B4*					
,g	گ 06AC									
^g	ج 062C	ج	ج	ج	ج	ج 06A0	ج 063A	ج	ج 06A0	ج 063A
gh					گھ					
h	ه 0647	ه	ه 06BE	ه	ه	ه	ه	ه	ه	ه
H		ه 0647	ه 06C3	ه 0647						
.h	ح 062D	ح	ح	ح	ح	ح	ح	ح	ح	
,h			ه 06C1					ه		

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
_h	خ 062E	خ	خ	خ	خ	خ	خ	خ	خ	ه 066E
i	ي 0650									
I	ي 064A	ي 06CC	ی	ی	ی	ی	ئي / ي	ی	ی	
.I	ي 06CC*									
_i	آ 0656									
j	ج 062C	ج	ج	ج	ج	ژ 0698	ج	ج	ج	ج
:j					ج 0684					
jh					جه 06A9					
k	ك 0643	ك	ك	ك	ك 06AA	ك	ك	ك	ك	ك
.k	ك 06A9					ق 0642				
_k	غ 063A									
kh					ک					
l	ل 0644	ل	ل	ل	ل	ل	ل	ل	ل	ل
.l							ل 06B6*			
^l							ل 06B5			
m	م 0645	م	م	م	م	م	م	م	م	م
.mIN					م 06FE					
' IN					م 06FD					
n	ن 0646	ن	ن	ن	ن	ن	ن	ن	ن	ن
aN	أ 0648									
uN	أ 064C									

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
iN	ٲ 064D									
.n			ن 06BA							
. . n					گ 06B2*					
,n				ن 06BC	ٹ 06BB					
^n					ج 06B3				ن 06BD	ك 06AD
:n					گي 06B1					
o		ـ 0657		ـ 0657			ئو/ئو	و 06C6		و
0		و	و	و			ئو/ئو	و		
ao			و		و					
.o								و 06C4		
.0								و		
_o		ـ 0657								
_0		و								
:o										ئو/ئو 06C6
:0	غ 06FC									
p		پ 067E	پ	پ	پ	پ	پ	پ	ق 06A8	پ
ph					ق 06A6					
q	ق 0642	ق	ق	ق	ق	ق	ق	ق	ق	ق
.q	ق 066F									
r	ر 0631	ر	ر	ر	ر	ر	ر	ر	ر	ر
.r	ر 0694*						ر 0695			

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
,r			ر 0691	ر 0693	ر 0699		ر 0694*			
^r	ر 06EF*						ر 0692*			
:r	ر ^c 0697*									
s	س 0633	س	س	س	س	س	س	س	س	س
.s	ص 0635	ص	ص	ص	ص	ص	ص	ص	ص	
,s				ش 069A		ش 0634				
^s	ش 0634	ش	ش	ش	ش	ش	ش	ش	ش	ش
_s					ث 062B					
:s	س 069B									
t	ت 062A	ت	ت	ت	ت	ت	ت	ت	ت	ت
T	ة 062A							ة		
.t	ط 0637	ط	ط	ط	ط	ط	ط	ط	ط	
,t			ث 0679	ث 067C	ث 067D					
_t	ث 062B	ث	ث		ث	ث	ث	ث	ث	
th					ث 067F					
,th					ث 067A					
u	و 064F	و	و	و	و	و	ئو/و	و	و	ئو/و 06C7
U	و 064F	و	و	و	و	و	ئو/و	ئاو 0648+0657	و	
.u								ء 0655		
.U								ا 0673		
_u	ء 0657									

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
:u										ئۇ/و 06C8
:U	ؤ ^d 06C7									
v	ف ^e 06A4								ف 06CF	
w	و 0648	و	و	و	و	و	و	و	و	ؤ 06CB
W	وا									
^w	ؤ 06C9*									
:W	ق 06CA*									
x	خ 062E	خ	خ	خ	خ	خ	خ	خ	خ	خ
y	ي 064A	ی 06CC	ی	ی	ي	ی	ي	ی	ي	ي
Y	ی 0649									
.y								پ		
z	ز 0632	ز	ز	ز	ز	ز	ز	ز	ز	ز
.z	ظ 0638	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	
,z				ڙ 0696		ض 0636				
^z		ژ 0698	ژ	ژ				ژ		ژ
_z	ذ ^f 0630									
:z								ض 0636		
'	ء 0621	ء	ء	ء	ء	ء	ء	ء	ء	ئ
`	ع 0639	ع	ع	ع	ع	ع	ع	ع	ع	

^a For Western Punjabi (Lahnda).

^b Alternative form of ی in Malay.

^c For Darwa (language of Dagestan).

^d For Kirgiz (and Uighur).

^e To transliterate dialects and foreign words.

^f Alternative to _d.

Maghribi Arabic is identical to Arabic except for the three letters f, q and v which yield the glyphs ف (U+06A2), في (U+06A7), and في (U+06A5), respectively.

5 Unicode-Encoding concordance

060B	ف		0628	ب	b
060C	،	,	0629	ة	T
060D	ر		062A	ت	t
060E	س		062B	ث	_t
060F	ع		062C	ج	^g/j
0610	م		062D	ح	.h
0611	ء		062E	خ	_h/x
0612	ز		062F	د	d
0613	ض		0630	ذ	_d
0614	ر		0631	ر	r
0615	ط		0632	ز	z
061B	؛	;	0633	س	s
061E	ٲ	::/DOTS	0634	ش	^s
061F	؟	?	0635	ص	.s
0621	ء	" ' or context	0636	ض	.d
0622	آ	A" ' or context	0637	ط	.t
0623	أ	a" ' or context	0638	ظ	.z
0624	ؤ	w" ' or context	0639	ع	'
0625	إ	i" ' or context	063A	غ	.g
0626	ئ	y" ' or context	0640	-	B
0627	ا	A	0641	ف	f

0642	ق	q	065D	ء	
0643	ك	k	065E	ڤ	
0644	ل	l	0660	۰	0
0645	م	m	0661	۱	1
0646	ن	n	0662	۲	2
0647	ه	h	0663	۳	3
0648	و	w	0664	۴	4
0649	ى	Y	0665	۵	5
064A	ي	y	0666	۶	6
064B	="	aN	0667	۷	7
064C	ء	uN	0668	۸	8
064D		iN	0669	۹	9
064E	="	a	066A	٪	\^^A
064F	ء	u	%		
0650		i	066B	ر	
0651	ء		066C	,	,
0652	ء	" after a consonant or °	066D	★	*
0653	ء	^U	066E	ب	.b, i uighur
0654	ء	'B	066F	ف	.f
0655	ء	.u kashmiri	0670	ا	_a
0656	ا	I kashmiri	0671	آ	automatic
0657	ء	o pashto	0672	أ	.A kashmiri
0658	ء	see kashmiri e	0673	إ	.U kashmiri
0659	ء	e pashto	0674	ء	
065A	ء		0675	أ	
065B	ء		0676	ؤ	
065C	ء		0677	ؤ	

0678	ئ		0693	ړ	,r <i>pashto</i>
0679	ٹ	, t	0694	ر	.r, ,r <i>kurdish</i>
067A	ث	, th	0695	ړ	.r <i>kurdish</i>
067B	پ	:b	0696	ږ	,z
067C	ت	, t	0697	ژ	:r
067D	ث	, t	0698	ژ	^z, j <i>ottoman</i>
067E	پ	p	0699	ژ	:s
067F	ث	th	069A	ښ	,s
0680	پ	bh	069B	پښ	:s
0681	ع	c	069C	پښ	
0682	خ	:c	069D	ص	
0683	ج	^n	069E	ض	
0684	ج	:j	069F	ظ	
0685	خ	,c	06A0	غ	^g <i>ottoman+malay</i>
0686	چ	^c, c <i>malay</i>	06A1	ف	.f
0687	چ	^ch <i>sindhi</i>	06A2	ف	f
0688	ڌ	,d	06A3	ف	
0689	ډ	,d <i>pashto</i>	06A4	ف	v, p <i>malay</i>
068A	ڊ	,d <i>sindhi</i>	06A5	ف	v <i>maghribi</i>
068B	ڊ	. ,d	06A6	ف	ph <i>sindhi</i>
068C	ڌ	dh <i>sindhi</i>	06A7	ف	q
068D	ڌ	,dh <i>sindhi</i>	06A8	ف	p
068E	ڌ	^d <i>sindhi</i>	06A9	ک	.k
068F	ڌ	:d	06AA	ک	k
0690	ڌ	: :d <i>urdu</i>	06AB	گ	G
0691	ر	,r	06AC	گ	,g
0692	ر	^r <i>kurdish</i>	06AD	گ	^n

06AE	پ		06C9	و	^w
06AF	گ	g	06CA	ق	:w
06B0	گ		06CB	ؤ	w uighur
06B1	گ	:n	06CC	ی	y/I farsi, etc.,
06B2	گ	. . n sindhi			. I arabic, sindhi, malay
06B3	گ	:g	06CD	ی	Ee pashto
06B4	گ	. : g sindhi	06CE	ئ	
06B5	ل	^l	06CF	ف	v malay
06B6	ل	. l	06D0	ې	E pashto, e uighur
06B7	ل		06D1	پ	
06B8	پ		06D2	ے	E urdu+kashmiri
06B9	ب		06D3	ئے	'E urdu
06BA	ب	. n	06D4	.	. . urdu
06BB	ٹ	, n sindhi	06D5	ہ	
06BC	پ	, n	06D6	ط	^SLY
06BD	ٹ	^n malay	06D7	ظ	^QLY
06BE	ھ	h urdu	06D8	م	^MIM
06BF	چ	. ^c	06D9	لا	^LA
06C0	ہ	h'' ' or context	06DA	ج	^JIM
06C1	ہ	, h	06DB	.	^DOTS
06C2	ہ	H- (+ ezafe) ¹⁹ urdu	06DC	س	^SIN
06C3	ہ	H urdu	06DD	۞	[[<digits>]]
06C4	و	. o kashmiri	06DE	۞	HIZB
06C5	و		06DF	.	CIRCZERO
06C6	و	o kashmiri , : o uighur	06E0	.	RECTZERO
06C7	ۇ	:U, u uighur	06E1	ح	^JAZM
06C8	ۇ	:u uighur	06E2	م	^MIM

06E3	س ا	_SIN	06FE	م	.MIN <i>sindhi</i>
06E4		^MADDA	06FF	ھ	
06E5	و	WAW	Arabic Supplement		
06E6	ے	YEH	0750	پ	
06E7	ے	^YEH	0751	ث	
06E8	ن	^NUN	0752	پ	
06E9	ا	SAJDA	0753	ت	
06EA	و	_STOP	0754	ن	
06EB	و	^STOP	0755	ب	
06EC	و	^RSTOP	0756	ن	
06ED	م	_MIM	0757	ت	
06EE	د	^d	0758	چ	
06EF	ر	^r	0759	ٹ	
06F0	و	0 <i>persian, urdu, etc.</i>	075A	د	
06F1	۱	1 <i>persian, urdu, etc.</i>	075B	و	
06F2	۲	2 <i>persian, urdu, etc.</i>	075C	ش	
06F3	۳	3 <i>persian, urdu, etc.</i>	075D	غ	
06F4	۴	4 <i>persian, urdu, etc.</i>	075E	تغ	
06F5	۵	5 <i>persian, urdu, etc.</i>	075F	غ	
06F6	۶	6 <i>persian, urdu, etc.</i>	0760	ف	
06F7	۷	7 <i>persian, urdu, etc.</i>	0761	پ	
06F8	۸	8 <i>persian, urdu, etc.</i>	0762	ک	<i>g malay</i>
06F9	۹	9 <i>persian, urdu, etc.</i>	0763	ک	
06FA	ش		0764	ک	
06FB	ض		0765	م	
06FC	غ	:0	0766	م	
06FD	ء	. IN <i>sindhi</i>	0767	ن	

0768	ط	FDF4	محمد	MUHAMMAD
0769	ن	FDF5	صلعم	SALAM
076A	ل	FDF6	رسول	RASUL or RASOUL
076B	ز	FDF7	عليه	ALAYHI or ALAYHE
076C	ر	FDF8	وسلم	WASALLAM
076D	س	FDF9	صلى	SALLA
Presentation Forms *		FDFA	ﷺ	SLM
FD3E	ﻻ	FDFB	ﻻﻻ	JALLA
FD3F	ﻻﻻ	FDFC	ريال	RIYAL
FDF0	صلى	FDFD	ﷺ	BASMALA
FDF1	قاله	Non-Unicode Ligatures		
FDF2	الله		الله	1l_ah or LLAH **
FDF3	اكبر		قالله	FALILLAH ***

Notes

* Since most of these glyphs are not present in Scheherazade (and, with a few exceptions, are very rarely featured in other fonts), for illustration purposes we have taken FDF0, FDF1, FDF3–FDF9 and FDFB from Arial Unicode MS, FDFA from Adobe Arabic, and FDFD from AGA Arabesque.

** See § 3.2.1

*** Specific to the font Adobe Arabic

A Notes on available free and commercial fonts for the Perso-Arabic script

TO BE COMPLETED

- ‘Scheherazade’ and ‘Lateef’ from SIL
- ‘Adobe Arabic’
- Free fonts from Arabeyes.org:
- ...
- Arabic fonts on Mac OS X: ‘Geeza Pro’, ‘DecoType Naskh’, ...more?
→ Help needed to test those fonts!
- ‘Arabic Typesetting’ and other Arabic fonts licensed to Microsoft
- Commercial fonts by vendors:
 - Linotype GmbH:
 - AGFA Monotype:
 - ParaType:
 - ...

B Recommended Unicode fonts for transliterating Oriental languages

Here follows a list of open source and freeware fonts with full LATIN EXTENDED ADDITIONAL coverage.²⁰

- Gentium, Doulos, Charis: <http://scripts.sil.org/FontDownloads>
- Junicode: <http://junicode.sourceforge.net/>
- jGaramond: <http://www.janthor.de/jGaramond/>
- LinuxLibertine: <http://linuxlibertine.sourceforge.net/>
- Roman Unicode: <http://everywitchway.net/linguistics/fonts/roman.html>
- Chrisanthi Unicode: <http://everywitchway.net/linguistics/fonts/chrysuni.html>
- DejaVu Serif / Sans / Sans Mono: http://dejavu.sourceforge.net/wiki/index.php/Main_Page
- Lucida Grande: Mac OS X
- FreeSerif / FreeSans / FreeMono: <http://savannah.nongnu.org/projects/freefont/>
- Thryomanes: <ftp://ftp.io.com/pub/usr/hmiller/fonts/Thryomanes12.zip>
- HindSight Unicode (not very nice): <http://dartcanada.tripod.com/Objets/Zips/HindUnic.zip>
- TITUS Cyberbit Basic: <http://titus.fkidg1.uni-frankfurt.de/unicode/tituut.asp>
- AbRoman: <http://www.languagegeek.com/font/fontdownload.html>
- Everson Mono Unicode (shareware): <http://www.evertype.com/emono/>
- Arial Unicode MS: Windows
- Microsoft Sans Serif: Windows

²⁰See this [webpage](#) for more details.

- Garava: <http://www.aimwell.org/Fonts/fonts.html>
- Verajja (based on Bitstream Vera Sans, so very similar to DejaVu Sans): <http://www.aimwell.org/Fonts/fonts.html>
- Legendum (by Rogier van Dalen): <http://home.kabelfoon.nl/~slam/fonts/fonts.html>
- Code2000 (shareware): <http://www.code2000.net>

C Implementation

```

1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{arabxetex}
3 [2007/04/14 v1.0 ArabTeX-like interface for XeLaTeX]
4 %
5 \DeclareOption{fullvoc}{\def\ax@mode{fullvoc}}
6 \DeclareOption{voc}{\def\ax@mode{voc}}
7 \DeclareOption{novoc}{\def\ax@mode{novoc}}
8 \DeclareOption{trans}{\def\ax@mode{trans}}
9 \DeclareOption{utf}{\def\ax@mode{utf}}
10 \DeclareOption{fdf2alif}{\def\ax@font@allah{fdf2alif}}
11 \DeclareOption{fdf2noalif}{\def\ax@font@allah{fdf2noalif}}
12 \ExecuteOptions{novoc,fdf2alif}
13 \ProcessOptions
14 \def\ax@mode@fullvoc{fullvoc}
15 \def\ax@mode@voc{voc}
16 \def\ax@mode@novoc{novoc}
17 \def\ax@mode@trans{trans}
18 \def\ax@mode@utf{utf}
19 \newif\ifax@mode@defined
20 \def\ax@ismode@defined#1{%
21 \ifcsname ax@mode@#1\endcsname%
22 \ax@mode@definedtrue%
23 \else%
24 \ax@mode@definedfalse%
25 \fi}
26 \def\ax@lang{arab}%default language (for macros like \aemph)
27 \RequirePackage{bidi}
28 \RequirePackage{amsmath}%because of macro \overline used in \aemph
29 \RequirePackage{fontspec}
30 \AtBeginDocument{\ifdefined\arabicfont\relax\else%
31 \newfontfamily\arabicfont[Script=Arabic,Scale=2]{Scheherazade}\fi}%
32 \def\ax@trans@style{\itshape}%
33 \newcommand{\SetTransliterationStyle}[1]{\def\ax@trans@style{#1}}
34 \newcommand{\SetAllahWithAlif}{\def\ax@font@allah{fdf2alif}}

```

```

35 \newcommand{\SetAllahWithoutAlif}{\def\ax@font@allah{fdf2noalif}}
36 \def\arabtex@codes{\catcode'^=11\relax\catcode'_=11\relax}
37 \def\UC{\char"E000} % this is used to capitalize the following letter (ig-
    noring article al-) in transliteration
38 %%%
39 \newenvironment{arab}[1][\ax@mode]%
40 {\edef\@tempa{#1}%
41 \def\ax@lang{arab}%
42 \ax@ismode@defined{\@tempa}%
43 \ifax@mode@defined%
44 \ifx\@tempa\ax@mode@trans%
45 \par\arabtex@codes\ax@trans@style%
46 \addfontfeature{Mapping=arabtex-trans}%
47 \else%
48 \ifx\@tempa\ax@mode@utf%
49 \par\setRL\arabicfont\addfontfeature{Mapping=arabicfixes}%
50 \else%
51 \par\setRL\arabicfont\arabtex@codes%
52 \addfontfeature{Mapping=arabtex-\ax@font@allah-\@tempa}%
53 \fi\fi%
54 \else%
55 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
56 \par\setRL\arabicfont\arabtex@codes%
57 \addfontfeature{Mapping=arabtex-\ax@font@allah-\ax@mode}%
58 \fi}
59 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
60 \let\Arabic=\arab%
61 %%%
62 \newenvironment{maghribi}[1][\ax@mode]%
63 {\edef\@tempa{#1}%
64 \def\ax@lang{maghribi}%
65 \ax@ismode@defined{\@tempa}%
66 \ifax@mode@defined%
67 \ifx\@tempa\ax@mode@trans%
68 \par\arabtex@codes\ax@trans@style%
69 \addfontfeature{Mapping=arabtex-trans}%
70 \else%
71 \ifx\@tempa\ax@mode@utf%
72 \par\setRL\arabicfont\addfontfeature{Mapping=arabicfixes}%
73 \else%
74 \par\setRL\arabicfont\arabtex@codes%
75 \addfontfeature{Mapping=arabtex-\ax@font@allah-maghribi-\@tempa}%
76 \fi\fi%

```

```

77 \else%
78 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
79 \par\setRL\arabicfont\arabtex@codes%
80 \addfontfeature{Mapping=arabtex-\ax@font@allah-maghribi-\ax@mode}%
81 \fi}
82 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
83 %%
84 \newenvironment{farsi}[1][\ax@mode]%
85 {\edef\@tempa{#1}%
86 \def\ax@lang{farsi}%
87 \ax@ismode@defined{\@tempa}%
88 \ifax@mode@defined%
89 \ifx\@tempa\ax@mode@trans%
90 \par\arabtex@codes\ax@trans@style%
91 \addfontfeature{Mapping=arabtex-farsi-trans}%
92 \else%
93 \ifx\@tempa\ax@mode@utf%
94 \par\setRL\arabicfont\addfontfeature{Mapping=arabicfixes}%
95 \else%
96 \par\setRL\arabicfont\arabtex@codes%
97 \addfontfeature{Mapping=arabtex-\ax@font@allah-farsi-\@tempa}%
98 \fi\fi%
99 \else%
100 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
101 \par\setRL\arabicfont\arabtex@codes%
102 \addfontfeature{Mapping=arabtex-\ax@font@allah-farsi-\ax@mode}%
103 \fi}
104 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
105 \let\persian=\farsi
106 %%
107 \newenvironment{urdu}[1][\ax@mode]%
108 {\edef\@tempa{#1}%
109 \def\ax@lang{urdu}%
110 \ax@ismode@defined{\@tempa}%
111 \ifax@mode@defined%
112 \ifx\@tempa\ax@mode@trans%
113 \par\arabtex@codes\ax@trans@style%
114 \addfontfeature{Mapping=arabtex-urdu-trans}%
115 \else%
116 \ifx\@tempa\ax@mode@utf%
117 \par\setRL\arabicfont\addfontfeature{Language=Urdu}%Mapping=arabtex-utf}%
118 \else%
119 \par\setRL\arabicfont\arabtex@codes%

```

```

120 \addfontfeature{Mapping=arabtex-\ax@font@allah-urdu-\@tempa}%
121 \fi\fi%
122 \else%
123 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
124 \par\setRL\arabicfont\arabtex@codes%
125 \addfontfeature{Mapping=arabtex-\ax@font@allah-urdu-\ax@mode}%
126 \fi}
127 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
128 %%
129 \newenvironment{pashto}[1][\ax@mode]%
130 {\edef\@tempa{#1}%
131 \def\ax@lang{pashto}%
132 \ax@ismode@defined{\@tempa}%
133 \ifax@mode@defined%
134 \ifx\@tempa\ax@mode@trans%
135 \par\arabtex@codes\ax@trans@style%
136 \addfontfeature{Mapping=arabtex-pashto-trans}%
137 \else%
138 \ifx\@tempa\ax@mode@utf%
139 \par\setRL\arabicfont\addfontfeature{Mapping=arabicfixes}%
140 \else%
141 \par\setRL\arabicfont\arabtex@codes%
142 \addfontfeature{Mapping=arabtex-\ax@font@allah-pashto-\@tempa}%
143 \fi\fi%
144 \else%
145 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
146 \par\setRL\arabicfont\arabtex@codes%
147 \addfontfeature{Mapping=arabtex-\ax@font@allah-pashto-\ax@mode}%
148 \fi}
149 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
150 %%
151 \newenvironment{sindhi}[1][\ax@mode]%
152 {\edef\@tempa{#1}%
153 \def\ax@lang{sindhi}%
154 \ax@ismode@defined{\@tempa}%
155 \ifax@mode@defined%
156 \ifx\@tempa\ax@mode@trans%
157 \par\arabtex@codes\ax@trans@style%
158 \addfontfeature{Mapping=arabtex-sindhi-trans}%
159 \else%
160 \ifx\@tempa\ax@mode@utf%
161 \par\setRL\arabicfont\addfontfeature{Language=Sindhi}%Mapping=arabtex-utf}%
162 \else%

```

```

163 \par\setRL\arabicfont\arabtex@codes%
164 \addfontfeature{Mapping=arabtex-\ax@font@allah-sindhi-\@tempa,Language=Sindhi}%
165 \fi\fi%
166 \else%
167 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
168 \par\setRL\arabicfont\arabtex@codes%
169 \addfontfeature{Mapping=arabtex-\ax@font@allah-sindhi-\ax@mode,Language=Sindhi}%
170 \fi}
171 {%\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
172 %%
173 \newenvironment{turk}[1][\ax@mode]%
174 {\edef\@tempa{#1}%
175 \def\ax@lang{turk}%
176 \ax@ismode@defined{\@tempa}%
177 \ifax@mode@defined%
178 %\ifx\@tempa\ax@mode@trans%
179 % \par\arabtex@codes\ax@trans@style%
180 % \addfontfeature{Mapping=arabtex-turk-trans}%
181 %\else%
182 \ifx\@tempa\ax@mode@utf%
183 \par\setRL\arabicfont\addfontfeature{Mapping=arabicfixes}%
184 \else%
185 \par\setRL\arabicfont\arabtex@codes%
186 \addfontfeature{Mapping=arabtex-\ax@font@allah-turk-\@tempa}%
187 \fi%\fi%
188 \else%
189 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
190 \par\setRL\arabicfont\arabtex@codes%
191 \addfontfeature{Mapping=arabtex-\ax@font@allah-turk-\ax@mode}%
192 \fi}
193 {%\ifx\@tempa\ax@mode@trans\relax\else
194 \unsetRL%\fi
195 \par}
196 \let\ottoman=\turk
197 %%
198 \newenvironment{kurdish}[1][]%
199 {\def\ax@lang{kurdish}%
200 %\edef\@tempa{#1}%
201 %\ifx\@tempa\ax@mode@trans%
202 % \par\arabtex@codes\ax@trans@style%
203 % \addfontfeature{Mapping=arabtex-kurdish-trans}%
204 %\else%
205 \ifx\@tempa\ax@mode@utf%

```

```

206 \par\setRL\arabicfont\addfontfeature{Language=Kurdish}%Mapping=arabtex-utf}%
207 \else%
208 \par\setRL\arabicfont\arabtex@codes%
209 \addfontfeature{Mapping=arabtex-\ax@font@allah-kurdish,Language=Kurdish}%
210 \fi}
211 {%\ifx\@tempa\ax@mode@trans\relax\else
212 \unsetRL%\fi
213 \par}
214 %%
215 \newenvironment{kashmiri}[1][\ax@mode]%
216 {\edef\@tempa{#1}%
217 \def\ax@lang{kashmiri}%
218 \ax@ismode@defined{\@tempa}%
219 \ifax@mode@defined%
220 %\ifx\@tempa\ax@mode@trans%
221 % \par\arabtex@codes\ax@trans@style%
222 % \addfontfeature{Mapping=arabtex-\ax@font@allah-kashmiri-trans}%
223 %\else%
224 \ifx\@tempa\ax@mode@utf%
225 \par\setRL\arabicfont\addfontfeature{Mapping=arabicfixes}%
226 \else%
227 \par\setRL\arabicfont\arabtex@codes%
228 \addfontfeature{Mapping=arabtex-\ax@font@allah-kashmiri-\@tempa}%
229 \fi%\fi%
230 \else%
231 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
232 \par\setRL\arabicfont\arabtex@codes%
233 \addfontfeature{Mapping=arabtex-\ax@font@allah-kashmiri-\ax@mode}%
234 \fi}
235 {%\ifx\@tempa\ax@mode@trans\relax\else
236 \unsetRL%\fi
237 \par}
238 %%
239 \newenvironment{malay}[1][\ax@mode]%
240 {\edef\@tempa{#1}%
241 \def\ax@lang{malay}%
242 \ax@ismode@defined{\@tempa}%
243 \ifax@mode@defined%
244 %\ifx\@tempa\ax@mode@trans%
245 % \par\arabtex@codes\ax@trans@style%
246 % \addfontfeature{Mapping=arabtex-malay-trans}%
247 %\else%
248 \ifx\@tempa\ax@mode@utf%

```

```

249 \par\setRL\arabicfont\addfontfeature{Mapping=arabicfixes}%
250 \else%
251 \par\setRL\arabicfont\arabtex@codes%
252 \addfontfeature{Mapping=arabtex-\ax@font@allah-malay-\@tempa}%
253 \fi%\fi%
254 \else%
255 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
256 \par\setRL\arabicfont\arabtex@codes%
257 \addfontfeature{Mapping=arabtex-\ax@font@allah-malay-\ax@mode}%
258 \fi}
259 {%\ifx\@tempa\ax@mode@trans\relax\else
260 \unsetRL%\fi
261 \par}
262 \let\jawi=\malay
263 %%
264 \newenvironment{uighur}[1]%
265 {%\edef\@tempa{#1}%
266 \def\ax@lang{uighur}%
267 %\ifx\@tempa\ax@mode@trans%
268 % \par\arabtex@codes\ax@trans@style%
269 % \addfontfeature{Mapping=arabtex-uighur-trans}%
270 %\else%
271 %\ifx\@tempa\ax@mode@utf%
272 \par\setRL\arabicfont\addfontfeature{Mapping=arabicfixes}%
273 \else%
274 \par\setRL\arabicfont\arabtex@codes%
275 \addfontfeature{Mapping=arabtex-\ax@font@allah-uighur}%
276 \fi}
277 {%\ifx\@tempa\ax@mode@trans\relax\else
278 \unsetRL%\fi
279 \par}
280 %%
281 \def\textarab{\bgroup\arabtex@codes\text@arab}
282 \let\textarabic=\textarab
283 \def\textmaghribi{\bgroup\arabtex@codes\text@maghribi}
284 \def\textfarsi{\bgroup\arabtex@codes\text@farsi}
285 \let\textpersian=\textfarsi
286 \def\texturdu{\bgroup\arabtex@codes\text@urdu}
287 \def\textsindhi{\bgroup\arabtex@codes\text@sindhi}
288 \def\textpashto{\bgroup\arabtex@codes\text@pashto}
289 \def\textturk{\bgroup\arabtex@codes\text@turk}
290 \let\textottoman=\textturk
291 \def\textkurdish{\bgroup\arabtex@codes\text@kurdish}

```



```

292 \def\textkashmiri{\bgroup\arabtex@codes\text@kashmiri}
293 \def\textmalay{\bgroup\arabtex@codes\text@malay}
294 \let\textjawi=\textmalay
295 \def\textuighur{\bgroup\arabtex@codes\text@uighur}
296 \newcommand\text@arab[2][\ax@mode]{%
297 \edef\@tempa{#1}%
298 \def\ax@lang{arab}%
299 \ax@ismode@defined{\@tempa}%
300 \ifax@mode@defined%
301 \ifx\@tempa\ax@mode@trans%
302 {\ax@trans@style\addfontfeature{Mapping=arabtex-trans}#2}%
303 \else%
304 \ifx\@tempa\ax@mode@utf%
305 \RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}
306 \else%
307 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-\@tempa}#2}%
308 \fi\fi
309 \else%
310 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
311 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-\ax@mode}#2}%
312 \fi\egroup}
313 \newcommand\text@maghribi[2][\ax@mode]{%
314 \edef\@tempa{#1}%
315 \def\ax@lang{maghribi}%
316 \ax@ismode@defined{\@tempa}%
317 \ifax@mode@defined%
318 \ifx\@tempa\ax@mode@trans%
319 {\ax@trans@style\addfontfeature{Mapping=arabtex-trans}#2}%
320 \else%
321 \ifx\@tempa\ax@mode@utf%
322 \RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}%\evtl {\Mapping=arabtex-
    utf}
323 \else%
324 \RL{\arabicfont%
325 \addfontfeature{Mapping=arabtex-\ax@font@allah-maghribi-\@tempa}#2}%
326 \fi\fi%
327 \else%
328 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
329 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-maghribi-\ax@mode}#2}%
330 \fi\egroup}
331 \newcommand\text@farsi[2][\ax@mode]{%
332 \edef\@tempa{#1}%
333 \def\ax@lang{farsi}%

```

```

334 \ax@ismode@defined{\@tempa}%
335 \ifax@mode@defined%
336 \ifx\@tempa\ax@mode@trans%
337 {\ax@trans@style\addfontfeature{Mapping=arabtex-farsi-trans}#2}%
338 \else%
339 \ifx\@tempa\ax@mode@utf%
340 \RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}%\evtl {Mapping=arabtex-
    utf}
341 \else%
342 \RL{\arabicfont%
343 \addfontfeature{Mapping=arabtex-\ax@font@allah-farsi-\@tempa}#2}%
344 \fi\fi%
345 \else%
346 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
347 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-farsi-\ax@mode}#2}%
348 \fi\egroup}
349 \newcommand\text@urdu[2][\ax@mode]{%
350 \edef\@tempa{#1}%
351 \def\ax@lang{urdu}%
352 \ax@ismode@defined{\@tempa}%
353 \ifax@mode@defined%
354 \ifx\@tempa\ax@mode@trans%
355 {\ax@trans@style\addfontfeature{Mapping=arabtex-urdu-trans}#2}%
356 \else%
357 \ifx\@tempa\ax@mode@utf%
358 \RL{\arabicfont\addfontfeature{Language=Urdu}#2}%eventually Mapping=arabtex-
    utf
359 \else%
360 \RL{\arabicfont%
361 \addfontfeature{Mapping=arabtex-\ax@font@allah-urdu-\@tempa,Language=Urdu}#2}%
362 \fi\fi%
363 \else%
364 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
365 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-urdu-\ax@mode,Language=Urdu}#2}%
366 \fi\egroup}
367 \newcommand\text@sindhi[2][\ax@mode]{%
368 \edef\@tempa{#1}%
369 \def\ax@lang{sindhi}%
370 \ax@ismode@defined{\@tempa}%
371 \ifax@mode@defined%
372 \ifx\@tempa\ax@mode@trans%
373 {\ax@trans@style\addfontfeature{Mapping=arabtex-sindhi-trans}#2}%
374 \else%

```

```

375 \ifx\@tempa\ax@mode=utf%
376 \RL{\arabicfont\addfontfeature{Language=Sindhi} #2}%eventually Mapping=arabtex-
    utf
377 \else%
378 \RL{\arabicfont%
379 \addfontfeature{Mapping=arabtex-\ax@font@allah-sindhi-\@tempa,Language=Sindhi}#2}%
380 \fi\fi%
381 \else%
382 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
383 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-sindhi-\ax@mode,Language=Sindhi}#2}%
384 \fi\egroup}
385 \newcommand\text@pashto[2][\ax@mode]{%
386 \edef\@tempa{#1}%
387 \def\ax@lang{pashto}%
388 \ax@ismode@defined{\@tempa}%
389 \ifax@mode@defined%
390 \ifx\@tempa\ax@mode@trans%
391 {\ax@trans@style\addfontfeature{Mapping=arabtex-pashto-trans}#2}%
392 \else%
393 \ifx\@tempa\ax@mode=utf%
394 \RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}%evtl {Mapping=arabtex-
    utf}
395 \else%
396 \RL{\arabicfont%
397 \addfontfeature{Mapping=arabtex-\ax@font@allah-pashto-\@tempa}#2}%
398 \fi\fi%
399 \else%
400 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
401 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-pashto-\ax@mode}#2}%
402 \fi\egroup}
403 \newcommand\text@turk[2][\ax@mode]{%
404 \edef\@tempa{#1}%
405 \def\ax@lang{turk}%
406 \ax@ismode@defined{\@tempa}%
407 \ifax@mode@defined%
408 % UNCOMMENT when transliteration mapping is done
409 %\ifx\@tempa\ax@mode@trans%
410 % {\ax@trans@style\addfontfeature{Mapping=arabtex-turk-trans}#2}%
411 %\else%
412 \ifx\@tempa\ax@mode=utf%
413 \RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}%evtl {Mapping=arabtex-
    utf}
414 \else%

```

```

415 \RL{\arabicfont%
416 \addfontfeature{Mapping=arabtex-\ax@font@allah-turk-\@tempa}#2}%
417 \fi%\fi%
418 \else%
419 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
420 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-turk-\ax@mode}#2}%
421 \fi\egroup}
422 \newcommand\text@kurdish[2][\ax@mode]{%
423 \edef\@tempa{#1}%
424 \def\ax@lang{kurdish}%
425 % UNCOMMENT when transliteration mapping is done
426 %\ifx\@tempa\ax@mode@trans%
427 % {\ax@trans@style\addfontfeature{Mapping=arabtex-kurdish-trans}#2}%
428 %\else%
429 \ifx\@tempa\ax@mode@utf%
430 \RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}%\evtl {Mapping=arabtex-
  utf}
431 \else%
432 \RL{\arabicfont%
433 \addfontfeature{Mapping=arabtex-\ax@font@allah-kurdish,Language=Kurdish}#2}%
434 \fi%\fi%
435 \egroup}
436 \newcommand\text@kashmiri[2][\ax@mode]{%
437 \edef\@tempa{#1}%
438 \def\ax@lang{kashmiri}%
439 \ax@ismode@defined{\@tempa}%
440 \ifax@mode@defined%
441 % UNCOMMENT when transliteration mapping is done
442 %\ifx\@tempa\ax@mode@trans%
443 % {\ax@trans@style\addfontfeature{Mapping=arabtex-kashmiri-trans}#2}%
444 %\else%
445 \ifx\@tempa\ax@mode@utf%
446 \RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}%\evtl {Mapping=arabtex-
  utf}
447 \else%
448 \RL{\arabicfont%
449 \addfontfeature{Mapping=arabtex-\ax@font@allah-kashmiri-\@tempa}#2}%
450 \fi%\fi%
451 \else%
452 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
453 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-kashmiri-\ax@mode}#2}%
454 \fi\egroup}
455 \newcommand\text@malay[2][\ax@mode]{%

```

```

456 \edef\@tempa{#1}%
457 \def\ax@lang{malay}%
458 \ax@ismode@defined{\@tempa}%
459 \ifax@mode@defined%
460 % UNCOMMENT when transliteration mapping is done
461 %\ifx\@tempa\ax@mode@trans%
462 % {\ax@trans@style\addfontfeature{Mapping=arabtex-malay-trans}#2}%
463 %\else%
464 %\ifx\@tempa\ax@mode@utf%
465 %\RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}%\evtl {Mapping=arabtex-
    utf}
466 %\else%
467 %\RL{\arabicfont%
468 %\addfontfeature{Mapping=arabtex-\ax@font@allah-malay-\@tempa}#2}%
469 %\fi%\fi%
470 %\else%
471 %\PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \ax@mode}%
472 %\RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@font@allah-malay-\ax@mode}#2}%
473 %\fi\egroup}
474 %\newcommand\text@uighur[2][]{%
475 %\edef\@tempa{#1}%
476 %\def\ax@lang{uighur}%
477 % UNCOMMENT when transliteration mapping is done
478 %\ifx\@tempa\ax@mode@trans%
479 % {\ax@trans@style\addfontfeature{Mapping=arabtex-uighur-trans}#2}%
480 %\else%
481 %\ifx\@tempa\ax@mode@utf%
482 %\RL{\arabicfont\addfontfeature{Mapping=arabicfixes} #2}%\evtl {Mapping=arabtex-
    utf}
483 %\else%
484 %\RL{\arabicfont%
485 %\addfontfeature{Mapping=arabtex-\ax@font@allah-uighur}#2}%
486 %\fi%\fi%
487 %\egroup}
488 %
489 %\newcommand{\textlatin}[1]{\LR{\rmfamily #1}}
490 %\newcommand{\aemph}[1]{\overline{\text{\textarab{#1}}}} %TODO generalize to all languages
491 % implement a parameter \ax@lang
492 %\newcommand{\aemph}[1]{%
493 %\edef\@tempb{\expandafter\noexpand\csname text\ax@lang\endcsname}%
494 %\overline{\text{\@tempb{#1}}}}%
495 %

```

```

496 % experimental: this surely does not work!
497 % this would make possible to define commands that accept args contain-
    ing \arabtex@codes
498 %\def\newarabxetexcommand#1#2{%
499 % \edef\ax@tcomm@nd{\expandafter\relax\csname #1@\endcsname}
500 % \expandafter\def\string#1{%
501 % \bgroup\arabtex@codes\ax@tcomm@nd}
502 % \def\ax@tcomm@nd{#2\egroup}}

```

C.1 Some notes on the TECKit mappings

To be done ...