

# ArabX<sub>Ǝ</sub>T<sub>Ǝ</sub>X

## An ArabT<sub>Ǝ</sub>X-like interface for typesetting languages in Arabic script with X<sub>Ǝ</sub>L<sub>Ǝ</sub>T<sub>Ǝ</sub>X

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2015/09/04     v1.2.1

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Abstract

This package provides a convenient ArabTeX-like user-interface for typesetting languages using the Arabic script in Xe<sub>La</sub>TeX, 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 T<sub>E</sub>Ckit mappings, ArabXe<sub>La</sub>TeX is really performant.

## Contents

### 1 Introduction

Since the early 1990s,<sup>1</sup> T<sub>E</sub>X users who wished to typeset in Arabic script have relied on Klaus Lagally’s excellent ArabTeX system.<sup>2</sup> While ArabTeX’s overall qualities and Lagally’s masterful T<sub>E</sub>X-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 ArabTeX 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<sub>E</sub>X’s natural logic – is taken care of by means of T<sub>E</sub>X macro programming. Thus before the availability of relatively fast Pentium processors, ArabTeX 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<sub>E</sub>X code that constitutes the ArabTeX 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 only fair to state, however, that Prof. Lagally has been extremely responsive to ideas, suggestions and wishes by users in the past).

After completion of the initial alpha version of ArabXe<sub>La</sub>TeX, I came across the package Arabi by Youssef Jabri on CTAN.<sup>3</sup> This is a pure LaTeX/Babel approach to Arabic typesetting which makes use of TFM hackery (by means of complex sequences

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<sup>1</sup>This introduction reflects the state of things in 2007 when ArabXe<sub>La</sub>TeX was initially released.

<sup>2</sup><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.

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

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 Xe<sub>La</sub>TeX, users can now rely on a very up-to-date typesetting engine based on the integration of  $\epsilon$ -TeX, Unicode, and modern font-rendering technology, without the complex hassle of font installation.<sup>4</sup>

## 2 Description

The ArabXe<sub>La</sub>TeX package consists of a set of **TECkit**<sup>5</sup> mappings for converting internally from ArabTeX’s ASCII input convention to Unicode, and a L<sup>A</sup>TeX style file (arabxetex.sty) that provides a convenient user interface for typesetting in those languages. For details on ArabTeX and its input convention the reader is referred to Lagally’s detailed manual.<sup>6</sup> ArabXe<sub>La</sub>TeX introduces several additions, and a few minor modifications, to ArabTeX’s conventions. These are documented in tabular form in Section 4. ArabXe<sub>La</sub>TeX relies on the package bidi which contains the macros necessary for bidirectional typesetting.

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. ArabXe<sub>La</sub>TeX 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:<sup>7</sup>

“ArabTeX is an excellent extension to TeX/LaTeX designed for typesetting the right-to-left scripts of the Orient. It comes up with very

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<sup>4</sup><http://xetex.sourceforge.net>.

<sup>5</sup><http://scripts.sil.org/TECkit>

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

<sup>7</sup>[http://search.cpan.org/~smrz/Encode-Arabic/lib/Encode/Arabic/ArabTeX.pm#](http://search.cpan.org/~smrz/Encode-Arabic/lib/Encode/Arabic/ArabTeX.pm#DESCRIPTION)

DESCRIPTION. See also <http://ufal.mff.cuni.cz/~smrz/ICFP2006/icfp-encode.pdf>.

intuitive and comprehensible lower ASCII transliterations, the expressive power of which is even better than that of the scripts.”

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

<code>\textarab</code> <code>\textfarsi</code> etc.	For short insertions (say within a LR text), use <code>\text&lt;language&gt;[option]{...}</code> where <code>&lt;language&gt;</code> is one of the following (alternative names are given in brackets): <ul style="list-style-type: none"> <li>• arab (arabic),<sup>8</sup></li> <li>• farsi (persian),</li> <li>• urdu,</li> <li>• sindhi,</li> <li>• pashto,</li> <li>• ottoman (turk),</li> <li>• kurdish,</li> <li>• kashmiri,</li> <li>• malay (jawi), and</li> <li>• ighur.</li> </ul>
<code>\begin{arab}</code> <code>\begin{farsi}</code> etc.	For typesetting whole paragraphs in Arabic script, use <pre> \begin{&lt;language&gt;}[option] ... \end{&lt;language&gt;} </pre>

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

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<sup>8</sup>Since the command `\arabic` is already defined in L<sup>A</sup>T<sub>E</sub>X, we chose the environment `arab` and the command `\textarab` instead, but the equivalent environment `Arabic` and the command `\textarabic` are also available.

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.

Left-to-right insertions in Latin script within an Arabic environment can be made by means of the command `\textLR{...}`. Emphasis in Arabic is traditionally indicated by overlining the text, and this can be achieved with the command `\aemph`:<sup>9</sup>

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

مثال: ٤٥ درجة

### 3.1 Font setup

`\arabicfont` ArabX<sub>g</sub>TeX requires the user to define 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 a warning is issued and ArabX<sub>g</sub>TeX will attempt to load the font **Amiri** (by Khaled Hosny).<sup>10</sup> You can also define specific fonts for all other languages, by similarly defining `<language>font`, such as for example:

```
\newfontfamily\urdufont[Script=Arabic]{Hussaini Nastaleeq}
```

<sup>9</sup>This 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 dependency by emulating `\overline` directly.

<sup>10</sup>Available from <http://www.amirifont.org>. Prior to version 1.2.0, the default font was **Scheherazade** (designed by Bob Halissy and Jonathan Kew of SIL International), available from <http://scripts.sil.org/ArabicFonts>. For typesetting Sindhi and Kashmiri, the font **Lateef**, available at the same place, is also recommended.

So for example if the `\texturdu` command or the `urdu` environment is used, `ArabXqTeX` will use the `\urdufont` if it is defined, and the `\arabicfont` if not. In the same manner one can define `\maghribifont`, `\ottomanfont`, `\uighurfont`, etc.

## 3.2 Examples

### 3.2.1 Contextual analysis of *hamza*

As with `ArabTeX`, a contextual analysis of the input encoding is performed (at the font-mapping level) to automatically determine the carrier of the *hamza*, as illustrated by the following examples:

```
\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}
```

أَمْرٌ، إِبِلٌ، أُخْتُ، أُخْتُ، أَوْقَلِيدِيسَ، رَأْسٌ، أَرَأْسٌ، سَأَلَ، قَرَأَ، بُوْسٌ، أَبُوْسٌ، رُوْفٌ، رُوْسَاءُ، بُوْرٌ،  
أَسْئَلَةٌ، كَتَبَ، قَائِمٌ، رَأْسَةٌ، سُئِلَ، سَمَاءٌ، بَرِيءٌ، سُوءٌ، بَدِءٌ، شَيْءٌ، شَيْءٌ، شَيْئًا، سَاءَلَ، مَسْأَلَةٌ، سَوَاءٌ،  
خَطِئْتُ، جَاءَ، رَدَاءٌ، رَدَاءًا، جِيءَ، رَدِيءٌ، سُوءٌ، ضَوْءٌ، فَيءٌ، ظِمْنًا، يَتَسَاءَلُونَ، أَعْدَاءُكُمْ، أَعْدَائِكُمْ،  
أَعْدَاؤُكُمْ مَقْرُوءَةٌ، مُوْبَاتٌ، تَوَامٌ، يَسْأَلُ، أَصْدِقَاؤُهُ، يَجِيءُ، سُوئِلَ

### 3.2.2 Special orthographies

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

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

مِائَةٌ ، مِائَتَانِ ، سَبْعِمِائَةٍ

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

### 3.2.3 Typesetting the Holy Qur'an

High-quality typesetting of the Holy Qur'an (الْقُرْآنُ الْكَرِيمُ) is a most complex and demanding task, which probably should be left to professional typesetters. Nevertheless, with Open Type fonts that cover the full Unicode range for the Arabic script, it is possible to achieve pretty decent results. The following examples represent my attempt to reproduce, with the font Amiri, the various typographic features of a typical printed edition (disregarding those that cannot be achieved by means of Unicode, such as putting the *hamza* directly over the baseline).<sup>11</sup>

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

'innamA yu'minu bi-'AyAtinA '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 razaqn_ahum yunfiqUna [[16]]
\end{arab}

\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 fIH| ^JIM qAluW" 'l-'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 fIH|^SLY wa-al-ll_ahu mu_hrijuN mmA
kun"tum taktumUna [[72]]
\end{arab}
```

سُورَةُ السَّجْدَةِ، ١٥-١٦:

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

سُورَةُ الْبَقَرَةِ، ٧١-٧٢:

قَالَ إِنَّهُ، يَقُولُ إِنَّهَا بَقَرَةٌ لَا ذَلُولٌ تُثِيرُ الْأَرْضَ وَلَا تَسْقِي الْحَرْثَ مُسَلَّمَةٌ لَا شِيَةَ فِيهَا قَالُوا الْآنَ جِئْتَ بِالْحَقِّ ﴿٧١﴾ فَذَبَحُوهَا وَمَا كَادُوا يَفْعَلُونَ ﴿٧٢﴾ وَإِذْ قَتَلْتُمْ نَفْسًا فَادَّارَءْتُمْ فِيهَا وَاللَّهُ مُخْرِجٌ مَّا كُنْتُمْ تَكْتُمُونَ ﴿٧٣﴾

<sup>11</sup>In the previous version of the manual, I attempted to mimic that behaviour with a TeX macro `\hamzaB`, which happened to work more or less well with the font Scheherazade. With Amiri it does not and I have reverted to standard spellings.

### 3.2.4 Farsi

These are some of the Persian examples in the ArabT<sub>E</sub>X documentation, typeset with the font IranNastaliq:<sup>12</sup>

```
\begin{farsi}[novoc]
_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}
```

خواب، خویش، خود، چه، نه، یله، خانه، خانه‌ها، کتاب، او، راه، تو، نامه، من، مینی، آن، مرد، پای،  
این، زن، بازوی، این، زن، دار، من، خوی، تو، نامه، سرمه، گفته، کتابی، راهی، نامه‌ای، دانائی،  
پاروئی، دانائیکه، پارونیکه، رفته‌ام، رفته‌ایم، آنجاست، اوست، توست، کتابیست، بمن، بتو، بان، باین،  
بانسان، باو، باو، صاحب‌خانه، پس‌نذار، نواموز

### 3.2.5 Urdu

An Urdu example, typeset with Hussaini Nastaleeq:<sup>13</sup>

```
\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}
```

<sup>12</sup><http://www.scict.ir/portal/File/ShowFile.aspx?ID=29bc4b98-bfd0-428d-b56b-63e36de8c9b5>

<sup>13</sup><https://github.com/khaledhosny/hussaini-nastaleeq>. The example is borrowed from <http://tabish.freeshell.org/u-trans/urducode.html>



ہم عشق کے ماروں کا اتنا ہی فسانہ ہے  
 رونے کو نہیں کوئی بننے کو زمانہ ہے  
 یہ کس کا تصور ہے یہ کس کا فسانہ ہے  
 جواشک ہے آنکھوں میں تسبیح کا دانا ہے

### 3.3 Transliteration

At the moment transliteration mappings are provided for Arabic, Persian, Urdu, Sindhi and Pashto. The rest may be provided in a future version. As a rule the default conventions provided are those of the Library of Congress. For Arabic the alternative transliteration of the [Deutsche Morgenländische Gesellschaft](#) is also available (but should be still considered experimental). You can set it with the command `\SetTranslitConvention` `\SetTranslitConvention{dmg}`. To switch back to the Library of Congress transliteration, type `\SetTranslitConvention{loc}`. Additional conventions for other languages, as with ArabTeX, e.g., Encyclopedia of Islam, Encyclopedia Iranica, etc., might be added later.<sup>14</sup>

Transliteration is set in italics by default. This can be changed by declaring, e.g., `\SetTranslitStyle` `\SetTranslitStyle{\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.

### 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).<sup>15</sup> The direction of each level of footnotes can be controlled by means of `\SetFootnoteHook{\setRL}`

<sup>14</sup>It is suggested that you contact the author if you have such needs.

<sup>15</sup>The package *ledmac* has not been extensively tested with *bidi* yet, but our initial trials were not successful.

(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<sub>g</sub>TeX.<sup>16</sup> See the ednotes documentation for more details.<sup>17</sup>

```
\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 linenumbering 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$-##2}}}%
\renewcommand*{\linesfmt}[1]{\raisebox{1ex}{\linenumberfont #1}~}%
\renewcommand{\lemmafnt}[1]{#1~[ ]}%
%Custom macros to enter variants, additions, omissions, illegible passages,
% text above the line, marginal notes, lacunae, and restorations:
\newcommand{\VAR}[2]{\Anote{\textarab{#1}}{\textarab{#2}}}
\newcommand{\ADD}{\textroman{\textbf{+}}\,}% or \textarab{zAyid fI}\
\newcommand{\OM}{\textroman{\textbf{\char"2013}}\,}% or \textarab{nAqi.s fI}\
\newcommand{\ILLEG}{\textarab{.gayr maqrU' fI}\ }
\newcommand{\BLANK}{\textarab{bayA.d fI}\ }
\newcommand{\SUPERLIN}{\textarab{ta.ht al-sa.tr fI}\ }
\newcommand{\MARG}{\textarab{bi-al-hAmi^s fI}\ }
\newcommand{\LACUNA}{\textroman{\texttriangle~{\dots}~\texttriangle}}
\newcommand{\RESTOR}[1]{\textroman{\texttriangle}#1\textroman{\texttriangle}}
% to separate lemmas in different manuscripts:
\def\SEP{\enskip$\Vert$\enskip}
```






















<sup>16</sup>Of course if the edition is typed directly in UTF-8 encoding, the use of ArabX<sub>g</sub>TeX is by no means compulsory. Yet see the remarks in § 2.1 above.

<sup>17</sup><http://www.ctan.org/tex-archive/macros/latex/contrib/ednotes/ednotugb.pdf>. See also [http://www.webdesign-bu.de/uwe\\_lueck/criteditx.html](http://www.webdesign-bu.de/uwe_lueck/criteditx.html).

For a real-life example of how to use ednotes with ArabX<sub>q</sub>TeX, 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								ا		
.A								ا		
_a	 0670									
_A	 0627									
:a										ا
b	 0628									
B	 0640									
.b	 066E									
:b					 067B					
bh					 0680					
c					 0681	 062C			 0686	

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
,c				ح 0685		چ 0686	چ 0686			
^c	ع 0686	ع 0686	ع	ع	ع	ع	ع	ع	ع	ع
^ch					چ 0687					
:c				ح 0682*						
.^c	ج 06BF*									
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 0688*							
^d	ڌ 06EE*				ڌ 068E*					
_d	ذ 0638	ذ	ذ	ذ	ذ	ذ	ذ	ذ	ذ	
:d					ڌ 068F					
::d			ڌ 0698*							
dh					ڌ 068C					
,dh					ڌ 068D					
e		ه 06D2	ه	ه 0659	ه		ه/ه	ه 06D2+0658		ه 06D8
E		ه 06D2	ه 06D2	ه 06D8	ه 06D8		ه/ه	ه 06D2		
ee				ه 06D8	ه 06D8					
ae	ه 06D2		ه 06D2	ه 06D8	ه 06D8					
Ee				ه 06CD	ه 06CD					
_e		ه 06D2								

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
`e							ﻩﻉ			
'E			ﻩﻩ 0603							
f	ﻑ 0641	ﻑ	ﻑ	ﻑ	ﻑ	ﻑ	ﻑ	ﻑ	ﻑ	ﻑ
.f	ﻑ 06A1									
g		ﮒ 06AF	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ 0762	ﮒ
G				ﮒ 06AB						
.g	ﮒ 063A	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	
:g					ﮒ 0683					
.:g					ﮒ 0684*					
g	ﮒ 06AC									
^g	ﮒ 062C	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ 06A0	ﮒ 063A	ﮒ	ﮒ 06A0	ﮒ 063A
gh					ﮒ					
h	ﮒ 0647	ﮒ	ﮒ 068E	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ
H		ﮒ 0647	ﮒ 06C3	ﮒ 0647						
.h	ﮒ 062D	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	
,h			ﮒ 06C1					ﮒ		
_h	ﮒ 062E	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ	
i	ﮒ 0650									ﮒ 066E
I	ﮒ 064A	ﮒ 06CC	ﮒ	ﮒ	ﮒ	ﮒ	ﮒ/ﮒ	ﮒ	ﮒ	
.I	ﮒ 06CC*									
_i	ﮒ 0656									

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
j	ج 062C	ج	ج	ج	ج	ژ 0698	ژ 0698	ج	ج	ج
:j					ج 0684					
jh					جھ 06A9					
k	ك 0643	ك	ك	ك	ڪ 06AA	ك	ك	ك	ك	ك
.k	ڪ 06A9					ق 0642				
_k	ڪ 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	ن 064B									
uN	ن 064C									
iN	ن 064D									
.n			ن 06BA							
. .n					ن 06B2*					
,n				ن 06BC	ن 06BB					
^n					ج 0683				ن 06BD	ن 06AD

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
:n					ڻي 06B1					
o		و		و 0657			تو/و	و 06C6		و
O		و	و	و	و		تو/و	و		
ao			و	و	و					
.o								و 06C4		
.O								و		
_o		و								
_O		و								
:o										تو/و 06C6
:O	غ 06FC									
p		پ 067E	پ	پ	پ	پ	پ	پ	في 06A8	پ
ph					في 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			
،r			ر 0691	ر 0693	ر 0699		ر 0694*			
^r	ر 06EF*						ر 0692*			
:r	ر 0697* <sup>c</sup>									
s	س 0633	س	س	س	س	س	س	س	س	س
.s	ص 0635	ص	ص	ص	ص	ص	ص	ص	ص	

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
,s				ش 069A		ش 0634				
^s	ش 0634	ش	ش	ش	ش	ش	ش	ش	ش	ش
_s					ث 062B					
:s	س 0698									
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	ت 067C	ت 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 و	و	و	و	و	و	ئو/وو	و 0648+0657	و	
.u								ء 0655		
.U								أ 0673		
_u	و 0657									
:u										ئو/و 06C8
:U	و 06C7									
v	ف 06A4								و 06CF	
w	و 0648	و	و	و	و	و	و	و	و	و 06CB
W	وا									



code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
^w	و٠ 06C9*									
:w	و٠ 06CA*									
x	خ٠ 062E	خ	خ	خ	خ	خ	خ	خ	خ	خ
y	ي٠ 064A	ی 06CC	ی	ی	ی	ی	ی	ی	ی	ی
Y	ي٠ 0649									
.y								ي٠ 0649		
z	ز٠ 0632	ز	ز	ز	ز	ز	ز	ز	ز	ز
.z	ظ٠ 0638	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	
,z				ز٠ 0696		ض٠ 0636				
^z		ز٠ 0698	ز٠	ز٠				ز٠		ز٠
_z	ذ٠ <sup>f</sup> 0630									
:z								ض٠ 0636		
'	ء٠ 0621	ء	ء	ء	ء	ء	ء	ء	ء	ء
`	ع٠ 0639	ع	ع	ع	ع	ع	ع	ع	ع	

<sup>a</sup> For Western Punjabi (Lahnda).

<sup>b</sup> Alternative form of ی in Malay.

<sup>c</sup> For Dargwa (language of Dagestan).

<sup>d</sup> For Kirgiz (and Uighur).

<sup>e</sup> To transliterate dialects and foreign words.

<sup>f</sup> Alternative to \_d.

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

## 5 Unicode-Encoding concordance

060B	ف		062C	ج	^g/j
060C	،	د	062D	ح	.h
060D	ر		062E	خ	_h/x
060E	ع		062F	د	d
060F	غ		0630	ذ	_d
0610	ص		0631	ر	r
0611	ع		0632	ز	z
0612	س		0633	س	s
0613	ض		0634	ش	^s
0614	ص		0635	ص	.s
0615	ط		0636	ض	.d
061B	؛	;	0637	ط	.t
061E	ء	:/DOTS	0638	ظ	.z
061F	؟	?	0639	ع	`
0621	ء	" ' or context	063A	غ	.g
0622	آ	A" ' or context	0640	-	B
0623	أ	a" ' or context	0641	ف	f
0624	ؤ	w" ' or context	0642	ق	q
0625	إ	i" ' or context	0643	ك	k
0626	ئ	y" ' or context	0644	ل	l
0627	ا	A	0645	م	m
0628	ب	b	0646	ن	n
0629	ة	T	0647	ه	h
062A	ت	t	0648	و	w
062B	ث	_t	0649	ى	Y

064A	ي	y	0666	٦	6
064B	ا	aN	0667	٧	7
064C	ا	uN	0668	٨	8
064D	ا	iN	0669	٩	9
064E	ا	a	066A	٪	\^^A
064F	ا	u		%	
0650	ا	i	066B	،	
0651	ا		066C	،	
0652	ا	" after a consonant or °	066D	★	*
0653	ا	^U	066E	ب	.b, i uighur
0654	ا	'B	066F	ف	.f
0655	ا	.u kashmiri	0670	ا	_a
0656	ا	I kashmiri	0671	ا	automatic
0657	ا	o pashto	0672	ا	.A kashmiri
0658	ا	see kashmiri e	0673	ا	.U kashmiri
0659	ا	e pashto	0674	ا	
065A	ا		0675	ا	
065B	ا		0676	و	
065C	ا		0677	و	
065D	ا		0678	ئ	
065E	ا		0679	ٹ	,t
0660	ا	0	067A	ٹ	,th
0661	ا	1	067B	ب	:b
0662	ا	2	067C	ت	,t
0663	ا	3	067D	ٹ	,t
0664	ا	4	067E	پ	p
0665	ا	5	067F	ٹ	th

0680	پ	bh	069B	پس	:s
0681	خ	c	069C	پش	
0682	خ	:c	069D	ص	
0683	چ	^n	069E	ض	
0684	چ	:j	069F	ظ	
0685	خ	,c	06A0	غ	^g ottoman+malay
0686	چ	^c, c malay	06A1	ف	.f
0687	چ	^ch sindbi	06A2	ب	f
0688	ڈ	,d	06A3	فب	
0689	د	,d pashto	06A4	ف	v, p malay
068A	د	,d sindbi	06A5	پ	v maghribi
068B	ڈ	.,d	06A6	ف	ph sindbi
068C	ذ	dh sindbi	06A7	ف	q
068D	ذ	,dh sindbi	06A8	فی	p
068E	ذ	^d sindbi	06A9	ک	.k
068F	ذ	:d	06AA	ک	k
0690	ذ	: :d urdu	06AB	ک	G
0691	ڑ	,r	06AC	ک	,g
0692	ڑ	^r kurdish	06AD	ک	^n
0693	ر	,r pashto	06AE	ک	
0694	ر	.r, ,r kurdish	06AF	گ	g
0695	ر	.r kurdish	06B0	گی	
0696	ز	,z	06B1	گی	:n
0697	ز	:r	06B2	گی	. .n sindbi
0698	ڑ	^z, j ottoman	06B3	گ	:g
0699	ڑ	:s	06B4	گی	. :g sindbi
069A	س	,s	06B5	ل	^1

06B6	ل	.l	06D0	ې	E <i>pashto</i> , e <i>uighur</i>
06B7	ښ		06D1	ي	
06B8	پ		06D2	ے	E <i>urdu+kashmiri</i>
06B9	ښ		06D3	ئ	'E <i>urdu</i>
06BA	ن	.n	06D4	-	.. <i>urdu</i>
06BB	ڻ	,n <i>sindhi</i>	06D5	ه	
06BC	ښ	,n	06D6	ط	^SLY
06BD	ڻ	^n <i>malay</i>	06D7	ق	^QLY
06BE	ه	h <i>urdu</i>	06D8	م	^MIM
06BF	چ	.^c	06D9	لا	^LA
06C0	ه	h'' or context	06DA	ج	^JIM
06C1	ه	,h	06DB	ء	^DOTS
06C2	ه	H- (+ <i>ezafe</i> ) <sup>18</sup> <i>urdu</i>	06DC	س	^SIN
06C3	ه	H <i>urdu</i>	06DD	ٲٲٲٲ	[[<digits>]]
06C4	و	.o <i>kashmiri</i>	06DE	*	HIZB
06C5	و		06DF	°	CIRCZERO
06C6	و	o <i>kashmiri</i> , :o <i>uighur</i>	06E0	°	RECTZERO
06C7	و	:U, u <i>uighur</i>	06E1	°	^JAZM
06C8	و	:u <i>uighur</i>	06E2	°	^MIM
06C9	و	^w	06E3	س	_SIN
06CA	و	:w	06E4	ا	^MADDA
06CB	و	w <i>uighur</i>	06E5	و	WAW
06CC	ی	y/I <i>farsi</i> , etc., .I <i>arabic</i> , <i>sindhi</i> , <i>malay</i>	06E6	ه	YEH
06CD	ی	Ee <i>pashto</i>	06E7	ه	^YEH
06CE	ی		06E8	ن	^NUN
06CF	و	v <i>malay</i>	06E9	س	SAJDA

06EA		_STOP	0754	پ
06EB	◊	^STOP	0755	ب
06EC	•	^RSTOP	0756	ت
06ED	◌	_MIM	0757	تخ
06EE	ذ	^d	0758	چ
06EF	ر	^r	0759	ڇ
06F0	۰	0 persian, urdu, etc.	075A	ڊ
06F1	۱	1 persian, urdu, etc.	075B	و
06F2	۲	2 persian, urdu, etc.	075C	س
06F3	۳	3 persian, urdu, etc.	075D	غ
06F4	۴	4 persian, urdu, etc.	075E	غ
06F5	۵	5 persian, urdu, etc.	075F	غ
06F6	۶	6 persian, urdu, etc.	0760	ف
06F7	۷	7 persian, urdu, etc.	0761	پ
06F8	۸	8 persian, urdu, etc.	0762	ک g malay
06F9	۹	9 persian, urdu, etc.	0763	کشی
06FA	ش		0764	کپی
06FB	ض		0765	م
06FC	غ	:0	0766	م
06FD	ء	.   IN sindbi	0767	ن
06FE	م	. MIN sindbi	0768	ن
06FF	ھ		0769	ن
<b>Arabic Supplement</b>			076A	ل
0750	پ		076B	ز
0751	ب		076C	ر
0752	پ		076D	س
0753	ت			

## Presentation Forms

FD3E	﴿	)
FD3F	﴾	((
FDF0	صلی	SALLASTOP
FDF1	قلی	QALA
FDF3	اکبر	AKBAR
FDF4	محمد	MUHAMMAD
FDF5	صلعم	SALAM
FDF6	رسول	RASUL or RASOUL
FDF7	علیه	ALAYHI or ALAYHE

FDF8	وسلم	WASALLAM
FDF9	صلی	SALLA
FDFA	ﷺ	SLM
FDFB	جل	JALLA
FDFC	ریال	RIYAL
FDFD	بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ	BASMALA

## Special Combinations

الله	a1-11_ah or ALLAH
لله	11_ah or LLAH or LLH
فَلله	FALILLAH

## 6 Implementation

```

1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{arabxetex}
3 [2015/09/04 v1.2.1 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@mode{fdf2alif}} % deprecated
11 \DeclareOption{fdf2noalif}{\def\ax@mode{fdf2noalif}} % deprecated
12 \newif\ifmirror@punct\mirror@punctfalse
13 \DeclareOption{mirrorpunct}{\mirror@puncttrue}
14 \ExecuteOptions{novoc}
15 \ProcessOptions
16 \def\ax@mode@fullvoc{fullvoc}
17 \def\ax@mode@voc{voc}
18 \def\ax@mode@novoc{novoc}
19 \def\ax@mode@trans{trans}
20 \def\ax@mode@utf{utf}
21 \newif\ifax@mode@defined
22 \def\ax@ismode@defined#1{%
23 \ifcsname ax@mode@#1\endcsname%
24 \ax@mode@definedtrue%

```

```

25 \else
26 \ax@mode@definedfalse%
27 \fi}
28 \def\ax@lang{arab}%default language (for macros like \aemph)
29 \RequirePackage{amsmath}%because of macro \overline used in \aemph
30 \RequirePackage{fontspec}
31 \RequirePackage{bidi}
32 \AtBeginDocument{\ifdefined\arabicfont\relax\else
33 \PackageWarning{arabxetex}{\string\arabicfont\ is not defined!^^JI will try to load Amiri}%
34 \newfontfamily\arabicfont[Script=Arabic]{Amiri}\fi}%
35 \def\ax@trans@style{\itshape}%
36 \newcommand{\SetTranslitStyle}[1]{\def\ax@trans@style{#1}}
37 \newcommand{\SetTranslitConvention}[1]{\def\ax@trans@convention{#1}}
38 \def\ax@trans@convention{loc}% Library of Congress is default
39 \newcommand{\SetAllahWithAlif}{} % deprecated
40 \newcommand{\SetAllahWithoutAlif}{} % deprecated
41 \def\utf@fontfeature{\ifmirror@punct\addfontfeature{Mapping=mirrorpunct}\else\relax\fi}
42 \def\arabtex@codes{\catcode`^=11\relax\catcode`_ =11\relax}
43 \def\UC{\char"E000} % This is used to capitalize the following letter (ig-
    noring
44 % article al-) in transliteration mode
45 %%%Font setup
46 \def\ax@farsi@font{\ifdefined\farsifont\farsifont\else\arabicfont\fi}
47 \def\ax@urdu@font{\ifdefined\urdufont\urdufont\else\arabicfont\fi}
48 \def\ax@pashto@font{\ifdefined\pashtofont\pashtofont\else\arabicfont\fi}
49 \def\ax@maghribi@font{\ifdefined\maghribifont\maghribifont\else\arabicfont\fi}
50 \def\ax@sindhi@font{\ifdefined\sindhifont\sindhifont\else\arabicfont\fi}
51 \def\ax@kashmiri@font{\ifdefined\kashmirifont\kashmirifont\else\arabicfont\fi}
52 \def\ax@ottoman@font{\ifdefined\ottomanfont\ottomanfont\else\arabicfont\fi}
53 \def\ax@kurdish@font{\ifdefined\kurdishfont\kurdishfont\else\arabicfont\fi}
54 \def\ax@malay@font{\ifdefined\malayfont\malayfont\else\arabicfont\fi}
55 \def\ax@uighur@font{\ifdefined\uighurfont\uighurfont\else\arabicfont\fi}
56 \def\ax@urdu@font{\ifdefined\urdufont\urdufont\else\arabicfont\fi}
57
58 \newenvironment{arab}[1][\ax@mode]%
59 {\edef\@tempa{#1}%
60 \def\ax@lang{arab}%
61 \ax@ismode@defined{\@tempa}%
62 \ifax@mode@defined%
63 \ifx\@tempa\ax@mode@trans%
64 \par\arabtex@codes\ax@trans@style%
65 \addfontfeature{Mapping=arabtex-trans-\ax@trans@convention}%
66 \else

```



```

67 \ifx\@tempa\ax@mode@utf%
68 \par\setRL\arabicfont\utf@fontfeature%
69 \else
70 \par\setRL\arabicfont\arabtex@codes%
71 \addfontfeature{Mapping=arabtex-\@tempa}%
72 \fi\fi
73 \else
74 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
75 \par\setRL\arabicfont\arabtex@codes%
76 \addfontfeature{Mapping=arabtex-\ax@mode}%
77 \fi}
78 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
79 \let\Arabic=\arab%
80 %%
81 \newenvironment{maghribi}[1][\ax@mode]%
82 {\edef\@tempa{#1}%
83 \def\ax@lang{maghribi}%
84 \ax@ismode@defined{\@tempa}%
85 \ifax@mode@defined%
86 \ifx\@tempa\ax@mode@trans%
87 \par\arabtex@codes\ax@trans@style%
88 \addfontfeature{Mapping=arabtex-trans-\ax@trans@convention}%
89 \else
90 \ifx\@tempa\ax@mode@utf%
91 \par\setRL\ax@maghribi@font\utf@fontfeature%
92 \else
93 \par\setRL\ax@maghribi@font\arabtex@codes%
94 \addfontfeature{Mapping=arabtex-maghribi-\@tempa}%
95 \fi\fi
96 \else
97 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
98 \par\setRL\ax@maghribi@font\arabtex@codes%
99 \addfontfeature{Mapping=arabtex-maghribi-\ax@mode}%
100 \fi}
101 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
102 %%
103 \newenvironment{farsi}[1][\ax@mode]%
104 {\edef\@tempa{#1}%
105 \def\ax@lang{farsi}%
106 \ax@ismode@defined{\@tempa}%
107 \ifax@mode@defined%
108 \ifx\@tempa\ax@mode@trans%
109 \par\arabtex@codes\ax@trans@style%

```

```

110 \addfontfeature{Mapping=arabtex-farsi-trans-\ax@trans@convention}%
111 \else
112 \ifx\@tempa\ax@mode@utf%
113 \par\setRL\ax@farsi@font\utf@fontfeature%
114 \else
115 \par\setRL\ax@farsi@font\arabtex@codes%
116 \addfontfeature{Mapping=arabtex-farsi-\@tempa}%
117 \fi\fi
118 \else
119 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
120 \par\setRL\ax@farsi@font\arabtex@codes%
121 \addfontfeature{Mapping=arabtex-farsi-\ax@mode}%
122 \fi}
123 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
124 \let\persian=\farsi
125 %%%
126 \newenvironment{urdu}[1][\ax@mode]%
127 {\edef\@tempa{#1}%
128 \def\ax@lang{urdu}%
129 \ax@ismode@defined{\@tempa}%
130 \ifax@mode@defined%
131 \ifx\@tempa\ax@mode@trans%
132 \par\arabtex@codes\ax@trans@style%
133 \addfontfeature{Mapping=arabtex-urdu-trans-\ax@trans@convention}%
134 \else
135 \ifx\@tempa\ax@mode@utf%
136 \par\setRL\ax@urdu@font\addfontfeature{Language=Urdu}%Mapping=arabtex-utf}%
137 \else
138 \par\setRL\ax@urdu@font\arabtex@codes%
139 \addfontfeature{Mapping=arabtex-urdu-\@tempa}%
140 \fi\fi
141 \else
142 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
143 \par\setRL\ax@urdu@font\arabtex@codes%
144 \addfontfeature{Mapping=arabtex-urdu-\ax@mode}%
145 \fi}
146 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
147 %%%
148 \newenvironment{pashto}[1][\ax@mode]%
149 {\edef\@tempa{#1}%
150 \def\ax@lang{pashto}%
151 \ax@ismode@defined{\@tempa}%
152 \ifax@mode@defined%

```

```

153 \ifx\@tempa\ax@mode@trans%
154 \par\arabtex@codes\ax@trans@style%
155 \addfontfeature{Mapping=arabtex-pashto-trans-\ax@trans@convention}%
156 \else
157 \ifx\@tempa\ax@mode@utf%
158 \par\setRL\ax@pashto@font\utf@fontfeature%
159 \else
160 \par\setRL\ax@pashto@font\arabtex@codes%
161 \addfontfeature{Mapping=arabtex-pashto-\@tempa}%
162 \fi\fi
163 \else
164 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
165 \par\setRL\ax@pashto@font\arabtex@codes%
166 \addfontfeature{Mapping=arabtex-pashto-\ax@mode}%
167 \fi}
168 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
169 %%%
170 \newenvironment{sindhi}[1][\ax@mode]%
171 {\edef\@tempa{#1}%
172 \def\ax@lang{sindhi}%
173 \ax@ismode@defined{\@tempa}%
174 \ifax@mode@defined%
175 \ifx\@tempa\ax@mode@trans%
176 \par\arabtex@codes\ax@trans@style%
177 \addfontfeature{Mapping=arabtex-sindhi-trans-\ax@trans@convention}%
178 \else
179 \ifx\@tempa\ax@mode@utf%
180 \par\setRL\ax@sindhi@font\addfontfeature{Language=Sindhi}%Mapping=arabtex-
    utf}%
181 \else
182 \par\setRL\ax@sindhi@font\arabtex@codes%
183 \addfontfeature{Mapping=arabtex-sindhi-\@tempa,Language=Sindhi}%
184 \fi\fi
185 \else
186 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
187 \par\setRL\ax@sindhi@font\arabtex@codes%
188 \addfontfeature{Mapping=arabtex-sindhi-\ax@mode,Language=Sindhi}%
189 \fi}
190 {\ifx\@tempa\ax@mode@trans\relax\else\unsetRL\fi\par}
191 %%%
192 \newenvironment{ottoman}[1][\ax@mode]%
193 {\edef\@tempa{#1}%
194 \def\ax@lang{ottoman}%

```

```

195 \ax@ismode@defined{\@tempa}%
196 \ifax@mode@defined%
197 %\ifx\@tempa\ax@mode@trans%
198 % \par\arabtex@codes\ax@trans@style%
199 % \addfontfeature{Mapping=arabtex-turk-trans-\ax@trans@convention}%
200 %\else
201 \ifx\@tempa\ax@mode@utf%
202 \par\setRL\ax@ottoman@font\utf@fontfeature%
203 \else
204 \par\setRL\ax@ottoman@font\arabtex@codes%
205 \addfontfeature{Mapping=arabtex-turk-\@tempa}%
206 \fi%\fi
207 \else
208 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
209 \par\setRL\ax@ottoman@font\arabtex@codes%
210 \addfontfeature{Mapping=arabtex-turk-\ax@mode}%
211 \fi}
212 {%\ifx\@tempa\ax@mode@trans\relax\else
213 \unsetRL%\fi
214 \par}
215 \let\turk=\ottoman
216 %%%
217 \newenvironment{kurdish}[1][ ]%
218 {\def\ax@lang{kurdish}%
219 %\edef\@tempa{#1}%
220 %\ifx\@tempa\ax@mode@trans%
221 % \par\arabtex@codes\ax@trans@style%
222 % \addfontfeature{Mapping=arabtex-kurdish-trans-\ax@trans@convention}%
223 %\else
224 \ifx\@tempa\ax@mode@utf%
225 \par\setRL\ax@kurdish@font\addfontfeature{Language=Kurdish}%Mapping=arabtex-
    utf}%
226 \else
227 \par\setRL\ax@kurdish@font\arabtex@codes%
228 \addfontfeature{Mapping=arabtex-kurdish,Language=Kurdish}%
229 \fi}
230 {%\ifx\@tempa\ax@mode@trans\relax\else
231 \unsetRL%\fi
232 \par}
233 %%%
234 \newenvironment{kashmiri}[1][\ax@mode]%
235 {\edef\@tempa{#1}%
236 \def\ax@lang{kashmiri}%

```

```

237 \ax@ismode@defined{\@tempa}%
238 \ifax@mode@defined%
239 %\ifx\@tempa\ax@mode@trans%
240 % \par\arabtex@codes\ax@trans@style%
241 % \addfontfeature{Mapping=arabtex-kashmiri-trans-\ax@trans@convention}%
242 %\else
243 \ifx\@tempa\ax@mode@utf%
244 \par\setRL\ax@kashmiri@font\utf@fontfeature%
245 \else
246 \par\setRL\ax@kashmiri@font\arabtex@codes%
247 \addfontfeature{Mapping=arabtex-kashmiri-\@tempa}%
248 \fi%\fi
249 \else
250 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
251 \par\setRL\ax@kashmiri@font\arabtex@codes%
252 \addfontfeature{Mapping=arabtex-kashmiri-\ax@mode}%
253 \fi}
254 {%\ifx\@tempa\ax@mode@trans\relax\else
255 \unsetRL%\fi
256 \par}
257 %%%
258 \newenvironment{malay}[1][\ax@mode]%
259 {\edef\@tempa{#1}%
260 \def\ax@lang{malay}%
261 \ax@ismode@defined{\@tempa}%
262 \ifax@mode@defined%
263 %\ifx\@tempa\ax@mode@trans%
264 % \par\arabtex@codes\ax@trans@style%
265 % \addfontfeature{Mapping=arabtex-malay-trans-\ax@trans@convention}%
266 %\else
267 \ifx\@tempa\ax@mode@utf%
268 \par\setRL\ax@malay@font\utf@fontfeature%
269 \else
270 \par\setRL\ax@malay@font\arabtex@codes%
271 \addfontfeature{Mapping=arabtex-malay-\@tempa}%
272 \fi%\fi
273 \else
274 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
275 \par\setRL\ax@malay@font\arabtex@codes%
276 \addfontfeature{Mapping=arabtex-malay-\ax@mode}%
277 \fi}
278 {%\ifx\@tempa\ax@mode@trans\relax\else
279 \unsetRL%\fi

```

```

280 \par}
281 \let\jawi=\malay
282 %%%
283 \newenvironment{uighur}[1]%
284 {%\edef\@tempa{#1}%
285 \def\ax@lang{uighur}%
286 %\ifx\@tempa\ax@mode@trans%
287 % \par\arabtex@codes\ax@trans@style%
288 % \addfontfeature{Mapping=arabtex-uighur-trans-\ax@trans@convention}%
289 %\else
290 \ifx\@tempa\ax@mode@utf%
291 \par\setRL\ax@uighur@font\utf@fontfeature%
292 \else
293 \par\setRL\ax@uighur@font\arabtex@codes%
294 \addfontfeature{Mapping=arabtex-uighur}%
295 \fi}
296 {%\ifx\@tempa\ax@mode@trans\relax\else
297 \unsetRL%\fi
298 \par}
299 %%%
300 \def\textarab{\bgroup\arabtex@codes\text@arab}
301 \let\textarabic=\textarab
302 \def\textmaghribi{\bgroup\arabtex@codes\text@maghribi}
303 \def\textfarsi{\bgroup\arabtex@codes\text@farsi}
304 \let\textpersian=\textfarsi
305 \def\texturdu{\bgroup\arabtex@codes\text@urdu}
306 \def\textsindhi{\bgroup\arabtex@codes\text@sindhi}
307 \def\textpashto{\bgroup\arabtex@codes\text@pashto}
308 \def\textottoman{\bgroup\arabtex@codes\text@ottoman}
309 \let\textturk=\textottoman
310 \def\textkurdish{\bgroup\arabtex@codes\text@kurdish}
311 \def\textkashmiri{\bgroup\arabtex@codes\text@kashmiri}
312 \def\textmalay{\bgroup\arabtex@codes\text@malay}
313 \let\textjawi=\textmalay
314 \def\textuighur{\bgroup\arabtex@codes\text@uighur}
315 \newcommand\text@arab[2][\ax@mode]{%
316 \edef\@tempa{#1}%
317 \def\ax@lang{arab}%
318 \ax@ismode@defined{\@tempa}%
319 \ifax@mode@defined%
320 \ifx\@tempa\ax@mode@trans%
321 {\ax@trans@style\addfontfeature{Mapping=arabtex-trans-\ax@trans@convention}\scantokens{#2\noexpand
322 \else

```

```

323 \ifx\@tempa\ax@mode@utf%
324 \RL{\arabicfont\utf@fontfeature #2}%
325 \else
326 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\@tempa}\scantokens{#2\noexpand}}%
327 \fi\fi
328 \else
329 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
330 \RL{\arabicfont\addfontfeature{Mapping=arabtex-\ax@mode}\scantokens{#2\noexpand}}%
331 \fi\egroup}
332 \newcommand\text@maghribi[2][\ax@mode]{%
333 \edef\@tempa{#1}%
334 \def\ax@lang{maghribi}%
335 \ax@ismode@defined{\@tempa}%
336 \ifax@mode@defined%
337 \ifx\@tempa\ax@mode@trans%
338 {\ax@trans@style\addfontfeature{Mapping=arabtex-trans-\ax@trans@convention}#2}%
339 \else
340 \ifx\@tempa\ax@mode@utf%
341 \RL{\ax@maghribi@font\utf@fontfeature #2}%
342 \else
343 \RL{\ax@maghribi@font%
344 \addfontfeature{Mapping=arabtex-maghribi-\@tempa}#2}%
345 \fi\fi
346 \else
347 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
348 \RL{\ax@maghribi@font\addfontfeature{Mapping=arabtex-maghribi-\ax@mode}#2}%
349 \fi\egroup}
350 \newcommand\text@farsi[2][\ax@mode]{%
351 \edef\@tempa{#1}%
352 \def\ax@lang{farsi}%
353 \ax@ismode@defined{\@tempa}%
354 \ifax@mode@defined%
355 \ifx\@tempa\ax@mode@trans%
356 {\ax@trans@style\addfontfeature{Mapping=arabtex-farsi-trans-\ax@trans@convention}#2}%
357 \else
358 \ifx\@tempa\ax@mode@utf%
359 \RL{\ax@farsi@font\utf@fontfeature #2}%
360 \else
361 \RL{\ax@farsi@font%
362 \addfontfeature{Mapping=arabtex-farsi-\@tempa}#2}%
363 \fi\fi
364 \else
365 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%

```

```

366 \RL{\ax@farsi@font\addfontfeature{Mapping=arabtex-farsi-\ax@mode}#2}%
367 \fi\egroup}
368 \newcommand\text@urdu[2][\ax@mode]{%
369 \edef\@tempa{#1}%
370 \def\ax@lang{urdu}%
371 \ax@ismode@defined{\@tempa}%
372 \ifax@mode@defined%
373 \ifx\@tempa\ax@mode@trans%
374 {\ax@trans@style\addfontfeature{Mapping=arabtex-urdu-trans-\ax@trans@convention}#2}%
375 \else
376 \ifx\@tempa\ax@mode@utf%
377 \RL{\ax@urdu@font\addfontfeature{Language=Urdu}#2}%eventually Mapping=arabtex-
utf
378 \else
379 \RL{\ax@urdu@font%
380 \addfontfeature{Mapping=arabtex-urdu-\@tempa,Language=Urdu}#2}%
381 \fi\fi
382 \else
383 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
384 \RL{\ax@urdu@font\addfontfeature{Mapping=arabtex-urdu-\ax@mode,Language=Urdu}#2}%
385 \fi\egroup}
386 \newcommand\text@sindhi[2][\ax@mode]{%
387 \edef\@tempa{#1}%
388 \def\ax@lang{sindhi}%
389 \ax@ismode@defined{\@tempa}%
390 \ifax@mode@defined%
391 \ifx\@tempa\ax@mode@trans%
392 {\ax@trans@style\addfontfeature{Mapping=arabtex-sindhi-trans-\ax@trans@convention}#2}%
393 \else
394 \ifx\@tempa\ax@mode@utf%
395 \RL{\ax@sindhi@font\addfontfeature{Language=Sindhi} #2}%eventually Mapping=arabtex-
utf
396 \else
397 \RL{\ax@sindhi@font%
398 \addfontfeature{Mapping=arabtex-sindhi-\@tempa,Language=Sindhi}#2}%
399 \fi\fi
400 \else
401 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
402 \RL{\ax@sindhi@font\addfontfeature{Mapping=arabtex-sindhi-\ax@mode,Language=Sindhi}#2}%
403 \fi\egroup}
404 \newcommand\text@pashto[2][\ax@mode]{%
405 \edef\@tempa{#1}%
406 \def\ax@lang{pashto}%

```



```

407 \ax@ismode@defined{\@tempa}%
408 \ifax@mode@defined%
409 \ifx\@tempa\ax@mode@trans%
410 {\ax@trans@style\addfontfeature{Mapping=arabtex-pashto-trans-\ax@trans@convention}#2}%
411 \else
412 \ifx\@tempa\ax@mode@utf%
413 \RL{\ax@pashto@font\utf@fontfeature #2}%
414 \else
415 \RL{\ax@pashto@font%
416 \addfontfeature{Mapping=arabtex-pashto-\@tempa}#2}%
417 \fi\fi
418 \else
419 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
420 \RL{\ax@pashto@font\addfontfeature{Mapping=arabtex-pashto-\ax@mode}#2}%
421 \fi\egroup}
422 \newcommand\text@ottoman[2][\ax@mode]{%
423 \edef\@tempa{#1}%
424 \def\ax@lang{ottoman}%
425 \ax@ismode@defined{\@tempa}%
426 \ifax@mode@defined%
427 % UNCOMMENT when transliteration mapping is done
428 %\ifx\@tempa\ax@mode@trans%
429 % {\ax@trans@style\addfontfeature{Mapping=arabtex-turk-trans-\ax@trans@convention}#2}%
430 %\else
431 %\ifx\@tempa\ax@mode@utf%
432 %\RL{\ax@ottoman@font\utf@fontfeature #2}%
433 %\else
434 %\RL{\ax@ottoman@font%
435 %\addfontfeature{Mapping=arabtex-turk-\@tempa}#2}%
436 %\fi%\fi
437 %\else
438 %\PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
439 %\RL{\ax@ottoman@font\addfontfeature{Mapping=arabtex-turk-\ax@mode}#2}%
440 %\fi\egroup}
441 \newcommand\text@kurdish[2][\ax@mode]{%
442 \edef\@tempa{#1}%
443 \def\ax@lang{kurdish}%
444 % UNCOMMENT when transliteration mapping is done
445 %\ifx\@tempa\ax@mode@trans%
446 % {\ax@trans@style\addfontfeature{Mapping=arabtex-kurdish-trans-\ax@trans@convention}#2}%
447 %\else
448 %\ifx\@tempa\ax@mode@utf%
449 %\RL{\ax@kurdish@font\utf@fontfeature #2}%

```

```

450 \else
451 \RL{\ax@kurdish@font%
452 \addfontfeature{Mapping=arabtex-kurdish,Language=Kurdish}#2}%
453 \fi%\fi
454 \egroup}
455 \newcommand\text@kashmiri[2][\ax@mode]{%
456 \edef\@tempa{#1}%
457 \def\ax@lang{kashmiri}%
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-kashmiri-trans-\ax@trans@convention}#2}%
463 %\else
464 \ifx\@tempa\ax@mode@utf%
465 \RL{\ax@kashmiri@font\utf@fontfeature #2}%
466 \else
467 \RL{\ax@kashmiri@font%
468 \addfontfeature{Mapping=arabtex-kashmiri-\@tempa}#2}%
469 \fi%\fi
470 \else
471 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
472 \RL{\ax@kashmiri@font\addfontfeature{Mapping=arabtex-kashmiri-\ax@mode}#2}%
473 \fi\egroup}
474 \newcommand\text@malay[2][\ax@mode]{%
475 \edef\@tempa{#1}%
476 \def\ax@lang{malay}%
477 \ax@ismode@defined{\@tempa}%
478 \ifax@mode@defined%
479 % UNCOMMENT when transliteration mapping is done
480 %\ifx\@tempa\ax@mode@trans%
481 % {\ax@trans@style\addfontfeature{Mapping=arabtex-malay-trans-\ax@trans@convention}#2}%
482 %\else
483 \ifx\@tempa\ax@mode@utf%
484 \RL{\ax@malay@font\utf@fontfeature #2}%
485 \else
486 \RL{\ax@malay@font%
487 \addfontfeature{Mapping=arabtex-malay-\@tempa}#2}%
488 \fi%\fi
489 \else
490 \PackageWarning{arabxetex}{Mode \@tempa\ not defined, defaulting to \@ax@mode}%
491 \RL{\ax@malay@font\addfontfeature{Mapping=arabtex-malay-\ax@mode}#2}%
492 \fi\egroup}

```

```

493 \newcommand\text@uighur[2][\]{%
494 \edef\@tempa{#1}%
495 \def\ax@lang{uighur}%
496 % UNCOMMENT when transliteration mapping is done
497 %\ifx\@tempa\ax@mode@trans%
498 % {\ax@trans@style\addfontfeature{Mapping=arabtex-uighur-trans-\ax@trans@convention}#2}%
499 %\else
500 \ifx\@tempa\ax@mode@utf%
501 \RL{\ax@uighur@font\utf@fontfeature #2}%
502 \else
503 \RL{\ax@uighur@font%
504 \addfontfeature{Mapping=arabtex-uighur}#2}%
505 \fi%\fi
506 \egroup}
507 %
508 \newcommand{\textLR}[1]{\LR{\rmfamily #1}}
509 \providecommand*\aemph[1]{%
510   \edef\@tempb{\expandafter\noexpand\csname text\ax@lang\endcsname}%
511   $\overline{\text{\@tempb{#1}}}$}

```