ArabXᴇTᴇX

An ArabTᴇX-like interface for typesetting languages in Arabic script with XᴇLᴬTᴇX

François Charette

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Contents

Abstract

This package provides a convenient ArabTEX-like user-interface for type-setting languages using the Arabic script in XƎLATEX, 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, ArabXETEX is really performant.

Contents

1   Introduction

Since the early 1990s, TEX users who wished to typeset in Arabic script have relied on Klaus Lagally's excellent ArabTEX system.[1] While ArabTEX's overall qualities and Lagally's masterful TEX-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 sofware (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 TEX's natural logic – is taken care of by means of TEX 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 TEX 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).

The introduction of Omega in *ca.* 1996, a TEX extension for multilingual, multidirectional typesetting based on Unicode, raised of course many hopes, but these

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[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.

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 ArabXǝTEX, 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 XǝTEX, users can now rely on a very up-to-date typesetting engine based on the integration of ε-TEX, Unicode, and modern font-rendering technology (AAT and ICU), without the complex hassle of font installation.[4]

2 Description

The ArabXǝTEX package consists of a set of **TECkit**[5] mappings for converting internally from ArabTEX'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 ArabTEX and its input convention the reader is referred to Lagally's detailed manual.[6] ArabXǝTEX introduces several additions, and a few minor modifications, to ArabTEX's conventions. These are documented in tabular form in Section 4. ArabXǝTEX relies on the package bidi which contains the macros necessary for bidirectional typesetting – using ε-TEX's \beginR ...\endR, \beginL ...\endL primitives. The main code in bidi.sty is essentially borrowed, with minor adaptations, 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, Kur-

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[2]Based on Omega 1.15 and ε-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. XǝTEX 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

dish, Jawi (Malay) and Uighur. ArabXƎTEX 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

`\textarab`
`\textfarsi`
`etc.`
For short insertions (say within a LR text), use `\text<language>[option]{...}` where <language> is one of the following (alternative names are given in brackets):
- `arab` (`Arabic`),[7]
- `farsi` (`persian`),

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[7]Since the command `\arabic` is already defined in LATEX, we chose the environment arab and the

- urdu,
- sindhi,
- pashto,
- ottoman (turk),
- kurdish,
- kashmiri,
- malay (jawi), and
- uighur.

`\begin{arab}`
`\begin{farsi}`
etc.

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.

Left-to-right insertions in Latin script within an Arabic environment can be made by means of the command \textLR{...}. ←[8] Emphasis in Arabic is traditionally indicated by overlining the text, and this can be achieved with the command \aemph:[9]

`\textLR`
→ 1.1.2: New!
`\aemph`

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command \textarab instead, but the equivalent environment Arabic and the command \textarabic are also available.

[8]In version 1.0 this was called \textlatin, which was renamed \textroman in version 1.1. But the former conflicted with Babel, and the latter with Beamer. Hopefully \textLR won't be as short-lived!

[9]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.

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

مثال: ٤٥ درجة

3.1 Font setup

\arabicfont ArabXeTeX 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 ArabXeTeX will attempt to load the font **Scheherazade** (designed by Bob Halissy and Jonathan Kew of SIL International).[10]

→ 1.1: New! 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}
```

So for example if the \texturdu command or the urdu environment is used, ArabXeTeX 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}
```

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

أَمَرٌّ، إِبِلٌ، أُخْتُ، أُخْت، أَوْقليدِيس، رَأْسٌ، أَرْأَسُ، رَأْسَ، سَأَلَ، قَرَأَ، بُؤْسُ، أَبْؤُسُ، رَؤُفَ، رُؤَسَاءُ، بِئْرُ،
أَسْئِلَةٌ، كَثِبَ، قَائِمٌ، رِآسَةٌ، سُئِلَ، سَمَاءُ، بَرِيءٌ، سَمَاءُ، بَدَءٌ، شَيْءٌ، شَيْءٍ، شَيْئًا، سَاءَلَ، مَسْأَلَةٌ، سَوْأَةٌ،
خَطِيئَةٌ، جَاءَ، رِدَاءٌ، رِدَاءًا، جِيءَ، رَدِيءٍ، سُوءٌ، ضَوْءٌ، فَيْءٍ، ظِمْئًا ، يَتَسَاءَلُونَ، أَعدَاءَكُمْ،
أَعدَاؤُكُمْ مَقرُوؤَةٌ، مُوئِبَات، تَوْأَمٌ، يَسْأَلُ، أَصدِقَآ أُهْ، يَجِيءُ، سُوِّئِلَ

3.2.2 Special orthographies

Some Arabic words, like *mi'a* "hundred", have irregular orthographies. ArabXᴇTᴇX recognizes them automatically.

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

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

3.2.3 Typesetting the Holy Qurʾān

High-quality typesetting of the Holy Qurʾān (القُرآن الكَرِيم) 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 Scheherazade, the various typographic features of a typical printed edition from Saudi Arabia.

In printed Qurʾāns, one frequently encounters typographical oddities that are not taken into account by Unicode, such as the *hamza* placed directly over the baseline instead as over the *alif*. But with a TᴇX macro it is possible to emulate this rather well:

```
\newcommand{\hamzaB}{\char"200D\char"0640\raise-.95ex\hbox{\char"0654}\char"200D}
```

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

'innamA yu'minu bi-\hamzaB a|"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 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 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}
```

مِنَ ٱلْقُرْآنِ ٱلْكَرِيمِ، سُورَةُ ٱلسَّجْدَةِ ١٥-١٦:
إِنَّمَا يُؤْمِنُ بِءَايَٰتِنَا ٱلَّذِينَ إِذَا ذُكِّرُوا بِهَا خَرُّوا سُجَّدًا وَسَبَّحُوا بِحَمْدِ رَبِّهِمْ وَهُمْ لَا يَسْتَكْبِرُونَ ﴿١٥﴾ تَتَجَافَىٰ جُنُوبُهُمْ عَنِ ٱلْمَضَاجِعِ يَدْعُونَ رَبَّهُمْ خَوْفًا وَطَمَعًا وَمِمَّا رَزَقْنَٰهُمْ يُنْفِقُونَ ﴿١٦﴾
سُورَةُ ٱلْبَقَرَةِ ٧١-٧٢:

قَالَ إِنَّهُ، يَقُولُ إِنَّهَا بَقَرَةٌ لَّا ذَلُولٌ تُثِيرُ ٱلْأَرْضَ وَلَا تَسْقِى ٱلْحَرْثَ مُسَلَّمَةٌ لَّا شِيَةَ فِيهَا قَالُوا ٱلْـَٰنَ جِئْتَ بِٱلْحَقِّ فَذَبَحُوهَا وَمَا كَادُّوا يَفْعَلُونَ ﴿٧١﴾ وَإِذْ قَتَلْتُمْ نَفْسًا فَٱدَّٰرَءْتُمْ فِيهَا وَٱللّٰهُ مُخْرِجٌ مَّا كُنْتُمْ تَكْتُمُونَ ﴿٧٢﴾

3.2.4 Farsi

These are some of the Persian examples in the ArabTEX documentation, typeset with the font IranNastaliq:

```
\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، خانه‌ها، کتاب، او، راه، تو، نامهٔ، من، بینیِ، آن، مرد، پای،
این، زن، بازوی، این، زن، دار، من، خوی، تو، نامه، سرمهٔ، گفته، کتابی، راهی، نامه‌ای، دانائی،

پاروئی، دانائیکہ، پاروئیکہ، رفتہ ام، رفتہ ایم، آنجاست، اوست، توست، کتابیست، بمن، بتو، بآن، باین،
بانسان، باو، باو، صاحب خانہ، پس نداز، نواموز

3.2.5 Urdu

An Urdu example, typeset with Hussaini Nastaleeq:[11]

```
\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 کس کا تصوّر ہے یہ کس کا فسانہ ہے
جو اشک ہے آنکھوں میں تسبیح کا دانا ہے

3.3 Transliteration

→ 1.1.2: New!

\SetTranslitConvention

\SetTranslitStyle

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{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.[12]

Transliteration is set in italics by default. This can be changed by declaring, e.g., \SetTranslitStyle{\upshape}. To transliterate proper nouns with capitals, prefix

---

[11]The example is borrowed from http://tabish.freeshell.org/u-trans/urducode.html

[12]It is suggested that you contact the author if you have such needs.

`\UC` 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-ʿālim Naṣīr al-Dīn al-Ṭūsī
Note that the article *al-* is automatically skipped. Note also that since the translit-
eration is coded in Unicode at the level of the font-mapping, it is necessary that the
font contains all required glyphs.[13]

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).[14] 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 ArabXᴇTᴇX.[15] See the ednotes documentation for more details.[16]

```
\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}{}
```

---

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

[14]The package ledmac has not been extensively tested with bidi yet, but our initial trials were not
successful.

[15]Of course if the edition is typed directly in UTF-8 encoding, the use of ArabXᴇTᴇX is by no means
compulsory. Yet see the remarks in § 2.1 above.

[16]http://www.ctan.org/tex-archive/macros/latex/contrib/ednotes/ednotugb.pdf. See also
http://www.webdesign-bu.de/uwe_lueck/critedltx.html.

```
\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{\lemmafmt}[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{\textlangle~{\dots}~\textrangle}}
\newcommand{\RESTOR}[1]{\textroman{\textrangle}#1\textroman{\textlangle}}
% to separate lemmas in different manuscripts:
\def\SEP{\enskip$\Vert$\enskip}
```

For a real-life example of how to use ednotes with ArabX⒣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 signicant 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	´ ـ 064E						ئا/ـا			
A	ا 0627						ئا/ـا			

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
. a								ء ٔ 0654		
. A								أ 0672		
_a	ـٰ 0670									
_A	ـٰى									
: a										ئە
b	ب 0628	ب	ب	ب	ب	ب	ب	ب	ب	ب
B	ـ 0640									
. b	ب 066E									
: b					ب 067B					
bh					ٻ 0680					
c					ڄ 0681	ج 062C			چ 0686	
, c				څ 0685		چ 0686	چ 0686			
^c	چ	چ 0686	چ	چ	چ	چ	چ	چ	چ	چ
^ch					ڇ 0687					
: c				ڂ 0682*						
. ^c	ڿ 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	ډ 0689	ڊ 068A					
. , d			ڋ 068B* a							
^d	ڮ 06EE*				ڎ 068E*					

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
_d	ذ 0630	ذ	ذ	ذ	ذ	ذ	ذ	ذ	ذ	
:d					ڏ 068F					
::d			ڐ 0690*							
dh					ڌ 068C					
,dh					ڍ 068D					
e		ِ	ٜ	ٜ 0659	ٜ		ئە/ه	ٚ 06D2+0658		ې 06D0
E		ِي	ے 06D2	ۍ 06D0			ئێ/یێ	ے 06D2		
ee				ئَ						
ae	يَ		ے	ئَ	يَ					
Ee				ێ 06CD						
_e		٘								
`e							ﻋﻪ			
'E			ۓ 06D3							
f	ف 0641	ف	ف	ف	ف	ف	ف	ف	ف	ف
.f	ڡ 06A1									
g		گ 06AF	گ	گ	گ	گ	گ	گ	ڱ 0762	گ
G				ګ 06AB						
.g	غ 063A	غ	غ	غ	غ	غ	غ	غ	غ	
:g					ڳ 06B3					
.:g					ڴ 06B4*					
,g	ڬ *b* 06AC									

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
^g	ج 062C	ج	ج	ج	ج	غ 06A0	غ 063A	ج	غ 06A0	غ 063A
gh					گھ					
h	ه 0647	ه	ھ 06BE	ه	ه	ه	ه	ه	ه	ه
H		ه 0647	ة 06C3	ه 0647						
.h	ح 062D	ح	ح	ح	ح	ح	ح	ح	ح	
,h			ہ 06C1					ہ		
_h	خ 062E	خ	خ	خ	خ	خ	خ	خ	خ	
i	ِ 0650									ِ 066E
I	ِي 064A	ِی 06CC	ِی	ِی	ِي	ِی	ئي اي	ى	ِي	
.I	ِی 06CC*									
_i	ٍ 0656									
j	ج 062C	ج	ج	ج	ج	ژ 0698	ژ 0698	ج	ج	ج
:j					ڄ 0684					
jh					جھ 06A9					
k	ك 0643	ك	ك	ك	ڪ 06AA	ك	ك	ك	ك	ك
.k	ک 06A9					ق 0642				
_k	غ 063A									
kh					ک					
l	ل 0644	ل	ل	ل	ل	ل	ل	ل	ل	ل
.l							ڶ 06B6*			
^l							ڵ 06B5			

14

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
m	م 0645	م	م	م	م	م	م	م	م	م
.mIN					۾ 06FE					
'|IN					ؽ 06FD					
n	ن 0646	ن	ن	ن	ن	ن	ن	ن	ن	ن
aN	ً 064B									
uN	ٌ 064C									
iN	ٍ 064D									
.n			ں 06BA							
..n					ڲ 06B2*					
,n				ڼ 06BC	ٻ 06BB					
^n					ڃ 0683				ڽ 06BD	ڭ 06AD
:n					ڱ 06B1					
o		ٗ	ٗ 0657			ۆ/ۊ	ۆ 06C6		و
0		و	و	ۄ	و		ۆ/ۊ	و		
ao			وَ		وَ					
.o								ۄ 06C4		
.0								وَا		
_o		ٗ								
_0		ـُو								
:o										ۆ/ۈ 06C6
:0	ۼ 06FC									

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code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
p		پ 067E	پ	پ	پ	پ	پ	پ	ڨ 06A8	پ
ph					ڦ 06A6					
q	ق 0642	ق	ق	ق	ق	ق	ق	ق	ق	ق
.q	ۏ 066F									
r	ر 0631	ر	ر	ر	ر	ر	ر	ر	ر	ر
.r	ڔ 0694*						ڕ 0695			
,r			ڑ 0691	ړ 0693	ڙ 0699		ڔ 0694*			
^r	ۯ 06EF*						ڒ 0692*			
:r	ڗ 0697* ᶜ									
s	س 0633	س	س	س	س	س	س	س	س	س
.s	ص 0635	ص	ص	ص	ص	ص	ص	ص	ص	
,s				ڜ 069A		ش 0634				
^s	ش 0634	ش	ش	ش	ش	ش	ش	ش	ش	ش
_s					ث 062B					
:s	ڛ 069B									
t	ت 062A	ت	ت	ت	ت	ت	ت	ت		ت
T	ة 062A							ة		
.t	ط 0637	ط	ط	ط	ط	ط	ط	ط	ط	
,t			ٹ 0679	ټ 067C	ٿ 067D					
_t	ث 062B	ث	ث		ث	ث	ث	ث	ث	
th					ٿ 067F					

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
,th					ت 067A					
u	◌ُ 064F	◌ُ -	◌ُ -	◌ُ -	◌ُ -	◌ُ -	ئو/ـو	◌ُ -	◌ُ -	ئۇ/ـۇ 06C7
U	◌ُو	◌ُو	◌ُو	◌ُو	◌ُو	◌ُو	ئوو/ـوو	ـاُوۇ 0648+0657	◌ُو	
.u								ء 0655		
.U								ـٕا 0673		
_u	◌ٔ 0657									
:u										ئۆ/ـۆ 06C8
:U	ۇ ^d 06C7									
v	ڤ ^e 06A4								ۏ 06CF	
w	و 0648	و	و	و	و	و	و	و	و	ۋ 06CB
W	وا									
^w	ۉ 06C9*									
:w	ۊ 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	ى 0649									
.y								ـۃ ه		
z	ز 0632	ز	ز	ز	ز	ز	ز	ز	ز	ز
.z	ظ 0638	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	
,z				ړ 0696		ض 0636				
^z		ژ 0698	ژ	ژ				ژ		ژ

code	ar	fa	ur	ps	sd	tr	ku	ks	ms	ug
_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 ک in Malay.
[c] For Dargwa (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 ڢ (U+06A2), ڧ (U+06A7), and پ (U+06A5), respectively.

5   Unicode-Encoding concordance

060B	ڋ	
060C	،	,
060D	ٍ	
060E	؎	
060F	؏	
0610	ؐ	
0611	ؑ	
0612	ؒ	
0613	ؓ	
0614	ؔ	
0615		

061B	؛	;
061E	؞	::/DOTS
061F	؟	?
0621	ء	|"' or context
0622	آ	A"' or context
0623	أ	a"' or context
0624	ؤ	w"' or context
0625	إ	i"' or context
0626	ئ	y"' or context
0627	ا	A
0628	ب	b

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0629	ة	T	0649	ى	Y
062A	ت	t	064A	ي	y
062B	ث	_t	064B	ً	aN
062C	ج	^g/j	064C	ٌ	uN
062D	ح	.h	064D	ٍ	iN
062E	خ	_h/x	064E	َ	a
062F	د	d	064F	ُ	u
0630	ذ	_d	0650	ِ	i
0631	ر	r	0651	ّ	
0632	ز	z	0652	ْ	" after a consonant or °
0633	س	s	0653	ٓ	^U
0634	ش	^s	0654	ء	'B
0635	ص	.s	0655	ٕ	.u *kashmiri*
0636	ض	.d	0656	ٖ	I *kashmiri*
0637	ط	.t	0657	ٗ	o *pashto*
0638	ظ	.z	0658	٘	see *kashmiri* e
0639	ع	`	0659	ٙ	e *pashto*
063A	غ	.g	065A	ٚ	
0640	ـ	B	065B	ٛ	
0641	ف	f	065C	ٜ	
0642	ق	q	065D	ٝ	
0643	ك	k	065E	ٞ	
0644	ل	l	0660	٠	0
0645	م	m	0661	١	1
0646	ن	n	0662	٢	2
0647	ه	h	0663	٣	3
0648	و	w	0664	٤	4

Code	Char	Translit	Code	Char	Translit
0665	٥	5	067F	ٿ	th
0666	٦	6	0680	ڀ	bh
0667	٧	7	0681	ځ	c
0668	٨	8	0682	ڂ	:c
0669	٩	9	0683	ڃ	^n
066A	٪. %	\^^A	0684	ڄ	:j
066B	،		0685	څ	,c
066C	،	,	0686	چ	^c, c *malay*
066D	★	*	0687	ڇ	^ch *sindhi*
066E	ٮ	.b, i *uighur*	0688	ڈ	,d
066F	ٯ	.f	0689	ډ	,d *pashto*
0670	ٰ	_a	068A	ڊ	,d *sindhi*
0671	ٱ	*automatic*	068B	ڋ	.,d
0672	ٲ	.A *kashmiri*	068C	ڌ	dh *sindhi*
0673	ٳ	.U *kashmiri*	068D	ڍ	,dh *sindhi*
0674	ٴ		068E	ڎ	^d *sindhi*
0675	ٵ		068F	ڏ	:d
0676	ٶ		0690	ڐ	::d *urdu*
0677	ٷ		0691	ڑ	,r
0678	ٸ		0692	ڒ	^r *kurdish*
0679	ٹ	,t	0693	ړ	,r *pashto*
067A	ٺ	,th	0694	ڔ	.r, ,r *kurdish*
067B	ٻ	:b	0695	ڕ	.r *kurdish*
067C	ټ	,t	0696	ږ	,z
067D	ٽ	,t	0697	ڗ	:r
067E	پ	p	0698	ژ	^z, j *ottoman*
			0699	ڙ	:s

Code	Glyph	Translit	Code	Glyph	Translit
069A	ݚ	, s	06B5	ڵ	^l
069B	ݛ	: s	06B6	ڶ	.l
069C	ݜ		06B7	ڷ	
069D	ݝ		06B8	ڸ	
069E	ݞ		06B9	ڹ	
069F	ݟ		06BA	ں	.n
06A0	ݠ	^g *ottoman+malay*	06BB	ڻ	,n *sindhi*
06A1	ڡ	.f	06BC	ڼ	,n
06A2	ڢ	f	06BD	ڽ	^n *malay*
06A3	ڣ		06BE	ھ	h *urdu*
06A4	ڤ	v, p *malay*	06BF	ڿ	.^c
06A5	ڥ	v *maghribi*	06C0	ۀ	h"' *or context*
06A6	ڦ	ph *sindhi*	06C1	ہ	,h
06A7	ڧ	q	06C2	ۂ	H– (+ *ezafe*)[17] *urdu*
06A8	ڨ	p	06C3	ۃ	H *urdu*
06A9	ک	.k	06C4	ۄ	.o *kashmiri*
06AA	ڪ	k	06C5	ۅ	
06AB	ګ	G	06C6	ۆ	o *kashmiri* , :o *uighur*
06AC	ڬ	,g	06C7	ۇ	:U, u *uighur*
06AD	ڭ	^n	06C8	ۈ	:u *uighur*
06AE	ڮ		06C9	ۉ	^w
06AF	گ	g	06CA	ۊ	:w
06B0	ڰ		06CB	ۋ	w *uighur*
06B1	ڱ	:n	06CC	ی	y/I *farsi, etc.*,
06B2	ڲ	..n *sindhi*			.I *arabic, sindhi, malay*
06B3	ڳ	:g	06CD	ۍ	Ee *pashto*
06B4	ڴ	.:g *sindhi*	06CE	ێ	

06CF	ۏ	v *malay*		06E9	۩	SAJDA
06D0	ې	E *pashto*, e *uighur*		06EA	۪	_STOP
06D1	ۑ			06EB	۫	^STOP
06D2	ے	E *urdu+kashmiri*		06EC	۬	^RSTOP
06D3	ۓ	'E *urdu*		06ED	ۭ	_MIM
06D4	۔	.. *urdu*		06EE	ۮ	^d
06D5	ە			06EF	ۯ	^r
06D6	ۖ	^SLY		06F0	۰	0 *persian, urdu, etc.*
06D7	ۗ	^QLY		06F1	۱	1 *persian, urdu, etc.*
06D8	ۘ	^MIM		06F2	۲	2 *persian, urdu, etc.*
06D9	ۙ	^LA		06F3	۳	3 *persian, urdu, etc.*
06DA	ۚ	^JIM		06F4	۴	4 *persian, urdu, etc.*
06DB	ۛ	^DOTS		06F5	۵	5 *persian, urdu, etc.*
06DC	ۜ	^SIN		06F6	۶	6 *persian, urdu, etc.*
06DD	۝	[[<digits>]]		06F7	۷	7 *persian, urdu, etc.*
06DE	۞	HIZB		06F8	۸	8 *persian, urdu, etc.*
06DF	۟	CIRCZERO		06F9	۹	9 *persian, urdu, etc.*
06E0	۠	RECTZERO		06FA	ۺ	
06E1	ۡ	^JAZM		06FB	ۻ	
06E2	ۢ	^MIM		06FC	ۼ	:O
06E3	ۣ	_SIN		06FD	۽	.|IN *sindhi*
06E4	ۤ	^MADDA		06FE	۾	.MIN *sindhi*
06E5	ۥ	WAW		06FF	ۿ	
06E6	ۦ	YEH		**Arabic Supplement**		
06E7	ۧ	^YEH		0750	ݐ	
06E8	ۨ	^NUN		0751	ݑ	
				0752	ݒ	

0753	�ﺕ		076B	ژ	
0754	ﻥ		076C	ﺅ	
0755	ﺏ		076D	ﺵ	

Presentation Forms

0756	ﺕ	FD3E	﴾	))
0757	ﺥ	FD3F	﴿	((
0758	ﺝ	FDF0	صلے	SALLASTOP
0759	ﮈ	FDF1	قلے	QALA
075A	ﺩ	FDF3	اكبر	AKBAR
075B	ﻭ	FDF4	محمد	MUHAMMAD
075C	ﺵ	FDF5	صلعم	SALAM
075D	ﻍ	FDF6	رسول	RASUL or RASOUL
075E	ﻍ	FDF7	عليه	ALAYHI or ALAYHE
075F	ﻍ	FDF8	وسلم	WASALLAM
0760	ﻱ	FDF9	صلی	SALLA
0761	ﻱ	FDFA	ﷺ	SLM
0762	ﻙ	g *malay*	FDFB	ﷻ	JALLA
0763	ﻚ	FDFC	ريال	RIYAL
0764	ﻚ	FDFD	بِسْمِ ٱللّٰهِ ٱلرَّحْمٰنِ ٱلرَّحِيمِ	BASMALA
0765	ﻡ		
0766	ﻡ	**Special Combinations**	
0767	ﻥ		
0768	ﻥ	الله	al-ll_ah or ALLAH
0769	ﻥ	لله	ll_ah or LLAH
076A	ﻝ	فَلله	FALILLAH

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

NB: This list is incomplete and has not been updated since 2007.
· 'Scheherazade' and 'Lateef' from SIL
· 'Adobe Arabic'
· Free fonts from Arabeyes.org
· ...
· Arabic fonts on Mac OS X: 'Geeza Pro', 'DecoType Naskh', ...more?
· '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.[18] NB: This list has not been updated since 2007.
· Gentium, Doulos, Charis: http://scripts.sil.org/FontDownloads
· Junicode: http://junicode.sourceforge.net/
· Libertine: http://linuxlibertine.sourceforge.net/
· DejaVu Serif / Sans / Sans Mono: http://dejavu.sourceforge.net/wiki/index.php/Main_Page
· Lucida Grande: Mac OS X
· TITUS Cyberbit Basic: http://titus.fkidg1.uni-frankfurt.de/unicode/tituut.asp
· Thryomanes: ftp://ftp.io.com/pub/usr/hmiller/fonts/Thryomanes12.zip
· jGaramond: http://www.janthor.de/jGaramond/
· Everson Mono Unicode (shareware): http://www.evertype.com/emono/
· Arial Unicode MS: Windows
· Microsoft Sans Serif: Windows
· FreeSerif / FreeSans / FreeMono: http://savannah.nongnu.org/projects/freefont/
· Roman Unicode: http://everywitchway.net/linguistics/fonts/roman.html
· Chrisanthi Unicode: http://everywitchway.net/linguistics/fonts/chrysuni.html
· HindSight Unicode (not very nice): http://dartcanada.tripod.com/Objets/Zips/HindUnic.zip
· AbRoman: http://www.languagegeek.com/font/fontdownload.html
· Garava: http://www.aimwell.org/Fonts/fonts.html

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[18]See this webpage for more details.

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

C   Implementation

```
1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{arabxetex}
3  [2010/03/04 v1.1.4 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}{} % deprecated
11 \DeclareOption{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 Scheherazade (so
34 \newfontfamily\arabicfont[Script=Arabic,Scale=1.5]{Scheherazade}\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 (ignor-
   ing
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}
```

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```
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
```

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```
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%
```

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```
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%
```

```latex
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
```

34

```
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][]{%
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
```

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```
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 \newcommand{\aemph}[1]{%
510   \edef\@tempb{\expandafter\noexpand\csname text\ax@lang\endcsname}%
511   $\overline{\text{\@tempb{#1}}}$}
```