Poorman’s Hangul Jamo Input Method
pmhanguljamo.sty
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Contents

1 Introduction 1

2 Usage 2
   2.1 Loading the package 2
   2.2 Commands and Environment Provided 2
   2.3 Preamble of Document 3

3 Transliteration Rule 4
   3.1 Tone Marks and Syllable Separator 4
   3.2 Consonants 4
   3.3 Vowels 5
   3.4 Compatibility Jamos 5

4 Proper Fonts 6

5 Examples 7
   5.1 Modern Hangul 7
   5.2 pre-1933 Hangul 8

6 The RRK input method 8
   6.1 Transliteration Rule of RRK 9
   6.2 Examples of RRK method 10

7 Further Information 10

8 Acknowledgement 11

1 Introduction

This \LaTeX{} package provides Hangul\footnote{Hangul is the Korean alphabet to write the Korean language. In both South and North Korea, the standard writing system uses Hangul.} transliteration input method, which allows to typeset Korean Letters (Hangul) with the help of proper fonts. The name comes from “Poorman’s Hangul Jamo Input Method.” It is mainly for the people who have a system without Korean keyboard IM, but want to typeset Hangul in their document.
modern Hangul, but so-called “Old Hangul” characters that uses the lost letters such as ‘Arae-A’ (ㆍ), ‘Yet Ieung’ (ㆁ) or ‘Pan-Sios’ (ㅿ) etc. can also be typeset.

XELATEX or LuaTEX is required. The legacy pdFTEX is not supported. The Korean Language supporting packages such as xetexko or luatexko (in the ko.FTEX bundle) or polyglossia under XELATEX are recommended, but without them typesetting Hangul is of no problem with this package pmhanguljamo.

2 Usage

2.1 Loading the package

Put the following line in your preamble:

\usepackage{pmhanguljamo}

The option [RRK] or [rrk] can be fed, in which case the Standard Korean Romanization Transliteration input method is activated. In section 6, we will explain about it. Without option, the default input method of this package is used, that is explained in sections 3–5. They are incompatible with each other.

2.2 Commands and Environment Provided

The main command to typeset Hangul is \jamoword.

Input: \jamoword{myec dan/e/ga or su iss/svb/ni/da/.}
Result: 몇 단어가 올 수 있습니다.

The argument of the command consists of roman alphabets and a few marks that represent the transliteration of Hangul Jamo. The transliteration rule will be explained in the section 3 (page 4).

And an environment named jamotext is provided. In the environment, multiple paragraphs can be located. So, it is suitable to typeset longer text stuffs. For example,

\begin{jamotext}
jug/nvn nar/gga/ji ha/nvr/vr u/re/re \\ han jem bu/ggv/rem ebs/gi/rvr \\ ip/sai/ei i/nvn ba/ram/ei/do \\ na/nvn goi/ro/ue/haiss/da/.
\end{jamotext}

The result will be like:

죽는날까지하늘을우러러 
한점부끄럼없기를 
잎새에이는바람에도 
나는괴로웠다.

2
2.3 Preamble of Document

Without any other packages, you can type Hangul. Be sure that proper fonts should be declared for Hangul, utilizing fontspec.

\documentclass{article}
\usepackage{fontspec}
\usepackage{pmhanguljamo}

\begin{document}
\fontspec[Script=Hangul]{UnBatang.ttf}
jamoword{an/nyex/ha/sei/yo}
\end{document}

UnBatang.ttf is a font shipped in unfonts-core package of \TeX\ Live. Not all Korean fonts can be available to typeset so-called ‘Old Hangul’, because they happen to lack the feature of composing Korean Syllables from conjoining Jamo codes. Fortunately, we have a few more fonts besides UnBatang that are proper and freely available, which are listed in the section 4. In \TeX\ Live distribution, UnBatang is the only proper one.

The polyglossia package provides Korean language support. This package pmhanguljamo can be used with it. The following is an example.

\documentclass{article}
\usepackage{polyglossia}
\setmainlanguage{english}
\setotherlanguage{korean}
\newfontfamily\hangulfont{UnBatang.ttf}[Script=Hangul]
\usepackage{pmhanguljamo}

\begin{document}
\begin{korean}
jamoword{han/gvr/vr si/hem/hab/ni/da/}
\end{korean}
\end{document}

Or the ko.\TeX\ package bundle can be used together.

\documentclass{article}
\usepackage{kotex}
\usepackage{pmhanguljamo}
\setmainhanguelfont{UnBatang.ttf}[Script=Hangul]

\begin{document}
jamoword{na/ras/mar/ss@/mi}
\end{document}

In any case, the option [Script=Hangul] should be given to the font settings for Hangul. For more information, see section 4.

The Korean writing system does not have hyphenation rules. The line breaking can occur just after almost every syllable. Therefore, without Korean language supporting packages the line breaking and justification of paragraphs will not be satisfactory.
However when just single or a few Hangul characters are needed, for example in the case of typesetting the author’s name in Hangul, this package provides a casual way to print them out.

3 Transliteration Rule

3.1 Tone Marks and Syllable Serapator

This package assumes that every Hangul syllable has Tone Mark which must be explicitly put at the end of it. Table 1 shows the input scheme of them.

<table>
<thead>
<tr>
<th>input</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>for <em>PyeongSeong</em>, no dot</td>
</tr>
<tr>
<td>;</td>
<td>for <em>GeoSeong</em>, single dot on the left of a character, [U+302E]</td>
</tr>
<tr>
<td>:</td>
<td>for <em>SangSeong</em>, double dots on the left of a character, [U+302F]</td>
</tr>
</tbody>
</table>

The tone marks were used in the 15th century, but in the modern Korean they are out of use. Nevertheless the / mark in this package is also used in order to depict the completion of composing a syllable — i.e., syllable separator. So DO NOT miss it.

However, it is possible to omit ‘/’ mark at the end of a word, i.e., just before <space>, or at the end of the argument of \jamoword. Note that before the punctuation mark — period, comma, etc., omitting / is not permitted.

3.2 Consonants

Table 2 shows the transliteration rule for the consonants which are used in the leading and trailing position of a syllable.

<table>
<thead>
<tr>
<th>₩ g</th>
<th>ℓ n</th>
<th>₩ d</th>
<th>℘ r</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ m</td>
<td>△ b</td>
<td>△ s</td>
<td>△ x</td>
</tr>
<tr>
<td>≫ j</td>
<td>≫ c</td>
<td>≫ k</td>
<td>≫ t</td>
</tr>
<tr>
<td>≫ p</td>
<td>≫ h</td>
<td>◐ q</td>
<td>◐ z</td>
</tr>
<tr>
<td>◐ f</td>
<td>w</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The corresponding letters “g, n, d, m, b, s, j, k, t, p, h” are the same as Korean Romanization Method (RRK).³

2. The letter for ‘ㄹ’ is allocated to r not l. The latter is reserved for another purpose, cf. item 7.

3. The letter ‘ cq’ is for ‘cr’. In the RRK, it is ‘ch’ there.

4. Note that the letter for ‘-chief’ is x, which is a bit strange, but commonly accepted ‘ng’ was not to be chosen. It should be reserved for ‘S’.

³The Revised Romanization of Korean 1995:2000 is the official Korean language romanization system in South Korea.
5. And the letters ‘q, z, f’ are more freely selected. These letters are the lost ones in Modern Korean.

6. The letter ‘w’ is chosen to present Chooseong Filler.

7. The letters ‘l’ and ‘lr’ are prepared for very rare case. In the 15th century Korean, ‘ᄼᅡ’ and ‘ᄾᅡ’ were distinguishable. ‘sl’ is chosen for the SIOS with left branch being longer, and ‘slr’ means right branch longer. The same is the case ‘ssl’, ‘sslr’, ‘jl’, ‘jlr’ etc.

8. The ‘light labial consonants’, ㅸ, ㆄ in the Old Hangul can be input as ‘bx, px, bbx, mx’.

9. In the Modern Korean, only ‘gg, dd, bb, ss, jj’ are additionally permitted in the leading consonant position, But in the Old Hangul this limitation was not applied. So Chooseong can have multiple consonants, e.g., ‘bsg’, ‘bsd’, ‘ss’, ‘sd’ etc.

10. The leading ‘zero consonant’ can be omitted. So if a syllable begins with vowel, then the leading ‘ㅇ’ will appear. You can write the leading ‘x’ of a syllable or not. For example, ‘\jamoword{xax}’ and ‘\jamoword{ax}’ will generate the same result ‘앙’.

3.3 Vowels

Table 3 shows the transliteration rule for vowels.

<table>
<thead>
<tr>
<th>ㅏ a</th>
<th>ㅓ e</th>
<th>ㅗ o</th>
<th>ㅜ u</th>
<th>ㅡ v</th>
</tr>
</thead>
<tbody>
<tr>
<td>ㅏ</td>
<td>ㅏ</td>
<td>ㅗ</td>
<td>ㅗ</td>
<td>ㅗ</td>
</tr>
<tr>
<td>ㅓ</td>
<td>ㅓ</td>
<td>ㅜ</td>
<td>ㅜ</td>
<td>ㅜ</td>
</tr>
<tr>
<td>ㅗ</td>
<td>ㅗ</td>
<td>ㅡ</td>
<td>ㅡ</td>
<td>ㅡ</td>
</tr>
<tr>
<td>ㅜ</td>
<td>ㅜ</td>
<td>ㅣ</td>
<td>ㅣ</td>
<td>ㅣ</td>
</tr>
<tr>
<td>ㅡ</td>
<td>ㅡ</td>
<td>ㆍ</td>
<td>ㆍ</td>
<td>ㆍ</td>
</tr>
</tbody>
</table>

1. The rule for vowels may look unfamiliar. But it is simple and easily rememberable.

2. The letter ‘v’ is never considered to be a vowel. But this package determined it to stand for the vowel ‘ㅡ’. In fact, the roman alphabets fall short of the vowels. This allocation is arbitrary.

3. The lost ‘Arae-A’ is allocated to ‘@’, and the rare ‘Double Arae-A’ to ‘@@’, which are forgotten vowels in Modern Korean.

3.4 Compatibility Jamos

The compatibility Jamo block in Unicode contains several Hangul Jamo characters, which cannot be used to compose Hangul syllables, and are considered independent Jamo characters respectively.

To input the compatibility Jamos in the arguments of \jamoword or jamotext, you are to type them in their capital letters (upper cases). And every compatibility Jamo has
to be separated with syllable separator — /. Because the @ character has no upper case, write W instead of @ to display compatibility ‘Arae-A’.

Here is an example:

```
\jamoword{W/nvn a/rai/a/ra/go bu/rv/go A/oa bi/svs/ha/gei irg/nvn/da}
```

는 아래아라고 부르고 꼴과 비슷하게 읽는다

### 4 Proper Fonts

In order to typeset Hangul characters successfully with the input method of this package, the help of the proper font is crucial. What we call proper font is the font that has the Opentype feature of ‘Script Hangul’, that is, the feature of conjoining jamo characters. A Truetype font may have this Opentype feature. Otherwise, it is regarded as an improper font.

Not so many fonts are proper. The fonts or font families listed in the following lines are what we know proper. They can be downloaded from the url and used freely. And note that UnBatang is already installed in your \TeX{} Live installation.

- **Hamchorom LVT** Hamchorom fonts by Hancom Inc., and their variants with GSUB tables by KTS (the Korean \TeX{} Society). [https://github.com/dohyunkim/hcr-lvt](https://github.com/dohyunkim/hcr-lvt)
- **Malgun Gothic** One of Windows 10 system font.
- **Noto CJK** Google’s Noto CJK fonts. Or Adobe’s Source Han fonts. [https://www.google.com/get/noto/help/cjk/](https://www.google.com/get/noto/help/cjk/)
- **Un Batang** UnBatang.ttf. on CTAN. [https://ctan.org/pkg/unfonts-core](https://ctan.org/pkg/unfonts-core)

To use one of these fonts, do not forget to provide the \[Script=Hangul\] option. For example, you can specify Hamchorom Batang LVT font as:

```
\newfontfamily{pmjamofont}{HCR Batang LVT}\[Script=Hangul\]
```

and then issue \jmathfont command in the scope of Hangul to be typeset. It is recommended that the proper font should be used consistently.

In case the font you take is not proper, you are to meet the warning message at the console and log file,

```
Package fontspec Warning: \texttt{\fontspec{}\Font "batang" does not contain requested \texttt{Script "Hangul".}}
```

3If the document is processed with Lua\TeX{}, [\texttt{[Script=Hangul,Renderer=Harfbuzz]}] or [\texttt{[Script=Hangul,Renderer=OpenType]}] is recommended. The \texttt{Lua\TeX{}} version should be over 1.11, that is, the \texttt{\LaTeX} format of Lua\TeX{} is needed.
However, when \TeX\ is concerned, it is known that the Modern Korean Characters (Hangul Precomposed Syllables in the Unicode block [U+AC00] – [U+D7A3]) can be rendered with this kind of font, in spite of the warning message.

5 Examples

Now, we will show a few practical examples, where the korean environment of polyglossia package is used. The preamble is like this:

\usepackage{pmhanguljamo}
\usepackage{polyglossia}
\setotherlanguage{korean}
\newfontfamily\hangulfont{UnBatang.ttf}[Script=Hangul]

5.1 Modern Hangul

\begin{verse}
\begin{korean}
\begin{jamotext}
na bo/gi ga yeg/gye/ue \=
 ga/sir ddai/ei/nvn \=
mar ebs/i go/i bo/nai dv/ri/u/ri/da/.
yex/byen/ei yag/san \=
 jin/dar/rai ggoc \=
a/rvm dda/da ga/sir gir/ei bbu/ri/u/ri/da/.
\end{jamotext}
\end{korean}
\end{verse}

나보기가역겨워
가실때에는
말없이고이보내드려우리다.
영변에약산
진달래꽃
아름따다가실길에뿌리우리다.
가시는걸음걸음
놓인그꽃을
사뿐히저밟고가시옵소서
나보기가역겨워
가실때에는
5.2 pre-1933 Hangul

A 15th century text with tone marks (BangJeom).

\begin{korean}
\begin{jamotext}
나랏말씀이 동궁에 달아 문중와로 서로 스모디 아니 يول şiir 이런 간호로 어린 백성을 나르고셔 홀 베 아서도 보름새 세 냥들 시리 써디 몫ᄒᆞᆫ노미하나라.
\end{jamotext}
\end{korean}

And another example of 17th century, from 두시언해, Selected Translations of Du Fu’s Poems, without tone marks.

\begin{verse}
\begin{korean}
\begin{jamotext}
化进程니새더욱ᄒᆡ오,
뫼히퍼러ᄒᆞ니곳비치블 сниженᄃᆞᆺ도다.
鸵보미본ᄃᆡᆫᄯᅩ디나가ᄂᆞ니
어ᄂᆞ나리이도라갈ᄒᆡ오.
\end{jamotext}
\end{korean}
\end{verse}

6 The RRK input method

In chapter 3 section 8 of Revised Romanization of Korean (2000), the ‘transliteration method’ of Hangul romanization is declared. It is exceptionally permitted when it is required to restore the original Hangul writings, while the phonetic transcription method is standard. So we can make use of it as an input method.

If the package option [RRK] or [rrk] is given, the RRK method is activated. In this case, only ‘Modern Hangul’ can be available.
Table 4: RRK Consonants

<table>
<thead>
<tr>
<th>RRK Code</th>
<th>Consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td>ㄱ</td>
<td>g</td>
</tr>
<tr>
<td>ㄲ</td>
<td>kk</td>
</tr>
<tr>
<td>ㅋ</td>
<td>k</td>
</tr>
<tr>
<td>ㄷ</td>
<td>d</td>
</tr>
<tr>
<td>ㄸ</td>
<td>tt</td>
</tr>
<tr>
<td>ㅌ</td>
<td>t</td>
</tr>
<tr>
<td>ㅂ</td>
<td>b</td>
</tr>
<tr>
<td>ㅃ</td>
<td>pp</td>
</tr>
<tr>
<td>ㅍ</td>
<td>p</td>
</tr>
<tr>
<td>ㅈ</td>
<td>j</td>
</tr>
<tr>
<td>ㅉ</td>
<td>jj</td>
</tr>
<tr>
<td>ㅊ</td>
<td>ch</td>
</tr>
<tr>
<td>ㅅ</td>
<td>s</td>
</tr>
<tr>
<td>ㅆ</td>
<td>ss</td>
</tr>
<tr>
<td>ㅎ</td>
<td>h</td>
</tr>
<tr>
<td>ㄴ</td>
<td>n</td>
</tr>
<tr>
<td>ㅁ</td>
<td>m</td>
</tr>
<tr>
<td>ㅇ</td>
<td>ng</td>
</tr>
<tr>
<td>ㄹ</td>
<td>l</td>
</tr>
</tbody>
</table>

Table 5: RRK Vowels

<table>
<thead>
<tr>
<th>RRK Code</th>
<th>Vowel</th>
</tr>
</thead>
<tbody>
<tr>
<td>ㅏ</td>
<td>a</td>
</tr>
<tr>
<td>ㅓ</td>
<td>eo</td>
</tr>
<tr>
<td>ㅗ</td>
<td>o</td>
</tr>
<tr>
<td>ㅜ</td>
<td>u</td>
</tr>
<tr>
<td>ㅡ</td>
<td>eu</td>
</tr>
<tr>
<td>ㅣ</td>
<td>i</td>
</tr>
<tr>
<td>ㅐ</td>
<td>ae</td>
</tr>
<tr>
<td>ㅔ</td>
<td>e</td>
</tr>
<tr>
<td>ㅚ</td>
<td>oe</td>
</tr>
<tr>
<td>ㅟ</td>
<td>wi</td>
</tr>
<tr>
<td>ㅑ</td>
<td>ya</td>
</tr>
<tr>
<td>ㅕ</td>
<td>yeo</td>
</tr>
<tr>
<td>ㅛ</td>
<td>yo</td>
</tr>
<tr>
<td>ㅠ</td>
<td>yu</td>
</tr>
<tr>
<td>ㅒ</td>
<td>yae</td>
</tr>
<tr>
<td>ㅖ</td>
<td>ye</td>
</tr>
<tr>
<td>ㅘ</td>
<td>wa</td>
</tr>
<tr>
<td>ㅙ</td>
<td>wae</td>
</tr>
<tr>
<td>ㅝ</td>
<td>wo</td>
</tr>
<tr>
<td>ㅞ</td>
<td>we</td>
</tr>
<tr>
<td>ㅢ</td>
<td>ui</td>
</tr>
</tbody>
</table>

6.1 Transliteration Rule of RRK

Table 4 and 5 show the RRK transliteration rule.

1. When the leading consonant ‘ㅇ’ is placed at the head of a word, it can be omitted. Otherwise the hyphen character (-) should be put. For example,
   \texttt{\jamoword{annyeonghase-yo}} 안녕하세요
   \texttt{\jamoword{jung-ang jungang}} 중앙 준강
   \texttt{\jamoword{ha-yeossseubnida}} 합시다

2. The hyphen character - can be used to forcibly separate syllables. And the special character / is taken as another syllable separator. They are exchangeable.
   \texttt{\jamoword{haeb/ssal haeb-ssal}} 햅쌀 햅쌀

3. The six punctuation marks, . , ! ? ; : can be located in the Hangul scope. The others are not allowed.
   \texttt{\jamoword{a! malg-eun haneul, si-wonhan baram.}} 아! 맑은 하늘, 시원한 바람.
   The LATEX quotes, ` `, ` `, ` ` and ` ` cannot be used within Hangul input scope. They should be located outside. However you can use unicode quotes, " and ", which can be input with syllable separator. For example,
   \texttt{\jamoword{"/hangeul"/ilan hangug-eoleul jeogneun geul-ida.}} "한글"이란 한국어를 적는 글이다.
   In this case, the syllable separator / cannot be replaced by hyphen character.

4. The leading consonant ‘ㄹ’ is written with either 1 or r, while the trailing one should be 1.
   \texttt{\jamoword{noraereul nolaeleul}} 노래를 노래를

5. We made it possible to use ‘Arae-A’ with the RRK method. Though it is not present in Modern Hangul writing system, typesetting ‘Jeju language’ or some pre-1933 Korean texts will be made easy with this. The ‘Arae-A’ is to be input as ‘@’ character, and the ‘Double Arae-A’ ‘@@’. There is one exception. The one word with one letter that has only leading ‘@’, i.e., @ should be input by ‘@@’. If the syllable has trailing consonants or is part of a word, just @ is good.
   \texttt{\jamoword{hangeul @@nam-eun}} 홍불 @님.

9
6.2 Examples of RRK method

The text is one of the most famous poems in Korean, 진달래꽃 Azalea by Kim So-wol. In section 5.1, we showed default way of inputting the poem. The korean environment and font settings are the same as in section 5.

\begin{verse}
\begin{korean}
\begin{jamotext}
na bogiga yeoggyeo-wo \ \
gasil ttae-eneun \ \\
mal eobs-i go-i bonae deuli-ulida.

yeongbyeon-e yagsan \ \
jindallae kko \ \\
aleum ttada gasil gil-e ppuli-ulida.

gasineun geol-eum geol-eum \ \
noh-in geu kko-eul \ \\
sappunhi jeulyeobalbgo gasi-obsseo

na bogiga yeoggyeo-wo \ \
gasil ttae-eneun \ \\
jug-eodo ani nunmul heulli-ulida.
\end{jamotext}
\end{korean}
\end{verse}

7 Further Information

For more examples and information about this package, please read the documentation pmhanguljamo-kdoc.pdf (in Korean).

\footnote{An English translation of this poem can be read in Wikipedia, \url{https://en.wikipedia.org/wiki/Kim_Sowol}.}
Acknowledgement

Thanks go to yihoze at the KTUG board, there he commented, “The IMs I’ve tried such as Korean Windows Old Hangul IM or Saenaru IM were all somewhat inconvenient. … In my opinion, for the foreign scholar who studies Korean language, especially Middle Age Korean language, this kind of transliteration method may be much more convenient and confident way of typesetting Korean than the IM solutions.”