Poorman’s Hangul Jamo Input Method

pmhanguljamo.sty

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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. Not only modern Hangul, but so-called “Old Hangul” characters that uses the lost letters such as ‘Arae-A’ (ㆍ), ‘Yes-Ieung’ (ㆁ) or ‘Pan-Sios’ (ㅿ) etc. can also be typeset. \LaTeX{} or \LuaLaTeX{} is required. The legacy pdf\LaTeX{} is not supported. The Korean Language supporting packages such as \texttt{xetexko} and \texttt{luatexko} (in the ko.TeX bundle) or \texttt{polyglossia} package with Korean support are recommended, but without them typesetting Hangul is of no problem with this package \texttt{pmhanguljamo}.

2 Usage

2.1 Loading the package

Put the following line in your preamble:

\begin{verbatim}
\usepackage[<options>]{pmhanguljamo}
\end{verbatim}

2.2 Package options

The package provides three kinds of Hangul input methods. You should select one of them with the package option. And you have to specify just one of them. Mixing ways of transliteration is not allowed.

1. [\texttt{method=pm}]. It is an original method of this package. In section 4 we will explain about it. If \texttt{method=} option is missing, this one will be activated.

2. [\texttt{method=rrk}] or [\texttt{rrk}], [\texttt{RRK}]. The Standard Korean Romanization Transliteration input method. In section 5, we will explain about it.

3. [\texttt{method=frkim}] or [\texttt{frkim}]. A newly introduced rule. See section 6.

Whatever method you selected, the following basic options are common.

1. \texttt{pmfont=<fontname>}. The font that is used to typeset Hangul characters in the scope of \texttt{\jamoword} or \texttt{\jamotext}. If this option missing, the Jamo-Hangul font is to be same as the \texttt{main font} of the document.

2. \texttt{pmfontfeature=<fontfeature>}. It is possible to provide \texttt{font features} to the font selected as \texttt{pmfont}.
2.3 Commands and Environment Provided

The main command to typeset Hangul is `\jamoword`.

\begin{verbatim}
\jamoword{han/gvr/vi yeis i/rvm/vn hun/min/jeq/vm/i/da/}
\end{verbatim}

Result: 한글의 옛 이름은 훈민정음이다.

The argument of the command consists of roman alphabets and a few marks that represent Hangul Jamo. In the example we showed the `[method=pm]` way which is explained in the section 4. But with any other rule it will make the same result.

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

\begin{verbatim}
\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}
\end{verbatim}

Result: 죽는 날까지 하늘을 우러러
한 점 부끄럼 없기를
잎새에 이는 바람에도
나는 괴로워했다.

2.4 Setting up in your Preamble

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

\begin{verbatim}
usepackage[pmfont={Noto Serif KR}]{pmhanguljamo}
\jamoword{an/nyeq/ha/sei/yo}
\end{verbatim}

\begin{verbatim}
usepackage[pmfont={Noto Serif KR}]{pmhanguljamo}
newfontfamily{mypmfont}{Noto Serif KR}[Script=Hangul]
ymymfont\jamoword{an/nyeq/ha/sei/yo}
\end{verbatim}

If you don’t want to specify `pmfont` option, you should manually declare the proper font for Jamo Hangul with `Script=Hangul` option.\footnote{See section 3.}
Not all Korean fonts are 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 3. In \TeX Live distribution, UnBatang is the only proper one.

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

\begin{verbatim}
\usepackage{polyglossia}
\setmainlanguage{english}
\setotherlanguage{korean}
\newfontfamily\hangulfont{Noto Serif KR}[Script=Hangul]
\usepackage{pmhanguljamo}

\begin{korean}
\jamoword{a/rvm/da/un han/gvr/ib/ni/da/}
\end{korean}
\end{verbatim}

아름다운 한글입니다.

In this example, the Korean language is set as ‘other language’, and the default font for Korean is declared as \texttt{\hangulfont}. In the \texttt{korean} environment, the \texttt{\hangulfont} will be used for Hangul.

Or the \texttt{kotex} package bundle can be used together.

\begin{verbatim}
\usepackage{kotex}
\usepackage[pmfont={NotoSerifKR-Regular.otf}]{pmhanguljamo}
\jamoword{na/ras/mar/ss@/mi}
\end{verbatim}

나랏말씀미

When \texttt{kotex} is used, the fonts package for Hangul is not \texttt{\fontspec} but \texttt{\hangulfont}. We recommend that you use \texttt{pmfont=} option to avoid the complicated situation.

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 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. But the author recommends the Noto Korean fonts for this purpose.

Hamchorom or Hamchorom-LVT Hamchorom fonts by Hancom Inc., \url{https://www.hancom.com/cs_center/csDownload.do}, and their variants with GSUB tables by KTS (the Korean \TeX Society). \url{https://github.com/dohyunkim/hcr-lvt}

KoPub World free fonts by Korea Publisher Society. \url{https://www.kopus.org/biz-electronic-font2/}.

Malgun Gothic One of Windows 10 system fonts.

Nanum Yet Hangul Two font families from Naver. Nanum Myeongjo Yet Hangeul and Nanum Barun Gothic Yet Hangeul. \url{https://hangeul.naver.com/2014/archaicword}

Noto Korean or Source Han Google’s Noto Korean fonts — Noto Serif Korean, Noto Sans Korean. Or Adobe’s Source Han fonts. \url{https://fonts.google.com}.

Un Batang UnBatang.ttf on CTAN. \url{https://ctan.org/pkg/unfonts-core}

To conjoining Jamos to build a syllable with one of these fonts, it is necessary to provide the \[\text{[Script=Hangul]}\] option.\(^3\) But when the package option \[\text{[pmfont=]}\] is given, that will be done by the package automatically.

For example, you can specify Hamchorom Batang LVT font by yourself as like:

\begin{verbatim}
\newfontfamily\pmjamofont{HCR Batang LVT}[Script=Hangul]
\end{verbatim}

and then issue \texttt{\pmjamofont} command in the scope of Hangul to be typeset.\(^4\) But these processes will be done by the package itself when

\begin{verbatim}
usepackage[pmfont={HCR Batang LVT}]{pmhanguljamo}
\end{verbatim}

is declared in the preamble.

It is recommended that the \textit{proper} font should be used consistently.

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

\begin{verbatim}
Package fontspec Warning: (fontspec)
Font "batang" does not contain requested Script "Hangul".
\end{verbatim}

However, when \texttt{Xe\TeX} is concerned, it is known that the \textit{Modern} Korean Characters \textit{(Hangul Precomposed Syllables} in the Unicode block \[\text{[U+AC00} \text{– [U+D7A3]}\]) can be rendered with this kind of font, in spite of the warning message.\(^5\)

\(^3\)the option should be \[\text{[Script=Hangul,Renderer=Harfbuzz]}\] or \[\text{[Script=Hangul,Renderer=OpenType]}\], when the document is processed with \texttt{Lua\TeX}.

\(^4\)When \texttt{pmfont=} option is given, the \texttt{Script=Hangul} is automatically activated by the package.
4 Transliteration Rule of This Package: [method=pm]

4.1 Tone Marks and Syllable Serapator

This method 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 PyeongSeong, no dot</td>
</tr>
<tr>
<td>;</td>
<td>for GeoSeong, single dot on the left of a character, [U+302E]</td>
</tr>
<tr>
<td>:</td>
<td>for SangSeong, 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 \jamosword. Note that before the punctuation mark — period, comma, etc., omitting / is not permitted.

4.2 Transliteration rules

4.2.1 Consonants

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

| Consonants | ㄱ | ㄴ | ㄷ | ㄹ | ㅁ | ㅂ | ㅅ | ㅇ | ㅈ | ㅊ | ㅋ | ㅌ | ㅍ | ㅎ | ㅏ | ㅓ | ㅗ | ㅜ | ㅡ | ㅣ | ㅐ | ㅔ | ㅖ | ㅒ | ㅚ | ㅟ | ㅢ |
| ㄱ | ㄲ | ㄳ | ㄴ | ㄶ | ㄷ | ㄸ | ㄹ | ㄺ | ㄻ | ㄼ | ㄽ | ㄾ | ㄿ | ㅄ | ㅅ | ㅆ | ㅇ | ㅈ | ㅉ | ㅊ | ㅋ | ㅌ | ㅍ | ㅎ |
| ㅃ | ㅄ | ㅄ | ㅅ | ㅆ | ㅇ | ㅈ | ㅉ | ㅊ | ㅋ | ㅌ | ㅍ | ㅎ | ㅏ | ㅓ | ㅗ | ㅜ | ㅡ | ㅣ | ㅐ | ㅔ | ㅖ | ㅒ | ㅚ | ㅟ | ㅢ |

1. The corresponding letters “g, n, d, m, b, s, j, k, t, p, h” are the same as Korean Romanization Method (RRK).
2. The letter for ‘ㅀ’ is allocated to r not 1. The latter is reserved for another purpose, cf. item 7.
3. The letter ‘c’ is for ‘ㅊ’. In the RRK, it is ‘ch’ there.
4. The letter for ‘ㅇ’ is q, which is a bit strange, but commonly accepted ‘ng’ was not to be chosen. It is reserved for another consonant ‘ㅈ’.
5. The letters ‘f, z, x’ are more freely selected. These letters are the lost ones in Modern Korean.

5The Revised Romanization of Korean 1995:2000 is the official Korean language romanization system in South Korea.
6. The ‘light labial consonants’, Ⱡ, Ᵽ in the Old Hangul can be input as ‘bq, pq, bbq, mq’.

7. The letters ‘ɪ’ and ‘ɪr’ are prepared for very rare case. In the 15th century Korean, ‘ṣa’ and ‘ṣ’ were distinguishable. ‘ṣl’ is chosen for the SIOS with left branch being longer, and ‘ṣlr’ means right branch longer. The same is the case ‘ssl’, ‘sslr’, ‘jl’, ‘jlr’ etc.

8. 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 Choseong can have multiple consonants, e.g., ‘bsg’, ‘bsd’, ‘ss’, ‘sd’ etc.

9. The leading ‘zero consonant’ can be omitted. So if a syllable begins with vowel, then the leading ‘ォ’ will appear. You can write the leading ‘q’ of a syllable or not. For example, ‘\jamoword{qaq}’ and ‘\jamoword{aq}’ will generate the same result ‘앙’.

10. The letter ‘w’ is chosen to present Choseong Filler. For example, ‘\jamoword{wan}’ renders ❍.

compatibility The letters that ‘x’, ‘q’, and ‘f’ corresponds to are changed from version 1.0. If the style of former version is needed, put [$\texttt{compat=0.5}$] option in the `\usepackage` line. Then x will be rendered as ‘ォ’, q as ‘ォ’, and f as ‘ォ’.

4.2.2 Vowels

Table 3 shows the transliteration rule for vowels.

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

1. The rule for vowels may look a bit 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.

4. The Jungseong Filler ([$U+1160$]) can be input with *. For example, ‘\jamoword{h*n}’ renders ❍.
4.2.3 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 Ø character has no upper case, write W instead of Ø to display compatibility ‘Arae-A’.

Here is an example:

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

・는아래라고부르고ঔ와비슷하게읽는다

4.3 ASCII-Escaping Trick

Sometimes it is needed to locate a few math materials or ASCII stuffs in the midst of Jamo Hangul texts. The tricky syntax

\{<ASCII stuffs>\}

makes it possible to insert non-Jamo ASCII characters into \jamotext context. Note that it is not allowed in the arguments of \jamoword.

\begin{jamotext}

in/gan/i pog/jeq/goa eg/ab/ei
\{tyranny and oppression\}
da/i haq/ha/nvn ma/ji/mag su/dan/v/ro/se
\{as a last resort\}
ban/ran/vr ir/v/ki/do/rog gaq/yo/bad/ji
anh/v/rye/myen

pi/ta/go/ra/sv/vi jeq/ri/ !\{\texttt{unskip} :\}
!\{\texttt{$a^2+b^2=c^2$}\}.
\end{jamotext}

Result:
인간이폭정과억압에tyranny and oppression대항하는마지막수단으로서as a last resort반란을일으키도록강요받지않으려면
피타고라스의정리: $a^2+b^2=c^2$.

The \{ mark must be located in the head of a word. (To remove the preceding space of a word, \texttt{\unskip} is used in the example.) This trick will be useful when using math equations, \LaTeX macros, or English words along with long Jamo Hangul texts.

By the time this ASCII-escaping trick is available with \texttt{method=pm} and \texttt{method=frkim}. And do not forget that it can be used only in the \jamotext environment.
4.4 Examples: method=pm

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{Noto Serif KR}[Script=Hangul]

4.4.1 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/.

yeq/byen/ei yag/san \ \
jin/dar/rai ggoc \ \
a/rvm dda/da ga/sir gir/ei bbu/ri/u/ri/da/.

ga/si/nvn ger/vm ger/vm \ \
noh/in gv ggoc/vr \ \
sa/bbun/hi jv/rye/barb/go ga/si/ob/so/se

na bo/gi/ga yeg/gye/ue \ \
ga/sir ddai/ei/nvn \ \
jug/e/do a/ni nun/mur hvr/ri/u/ri/da/.
\end{jamotext}
\end{korean}
\end{verse}

나 보기가 역겨워
가실 때에는
말 없이 고이 보내 드리우리다.
영변에 약산
진달래 꽃
아름다 가실 길에 뿌리우리다.
가시는 걸음 걸음
농인 그 꽃을
사뿐히 즐리밥고 가시웃소서
나 보기가 역겨워
가실 때에는
죽어도 아니 눈물 흘리우리다.

4.4.2 pre-1933 Hangul

A 15th century text with tone marks (BangJeom).
And another example of 17th century, from 두시언해, Selected Translations of Du Fu's Poems, without tone marks.

5 The RRK Input Method: [method=rrk]

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 standard is the phonetic transcription one. So we can make use of the former as an input method.

If the package option [method=rrk] is given, the RRK method is activated. With this rule, only 'Modern Hangul' can be typeset. You can give the option by the abbreviation form [rrk] or [RRK].

5.1 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 exist. For example,
Table 4: RRK Consonants

<table>
<thead>
<tr>
<th>ᄂ</th>
<th>ᄃ</th>
<th>ᄄ</th>
<th>ᄅ</th>
<th>ᄆ</th>
<th>ᄇ</th>
<th>ᄈ</th>
<th>ᄉ</th>
<th>ᄊ</th>
<th>ᄋ</th>
</tr>
</thead>
<tbody>
<tr>
<td>ᄃ</td>
<td>ᄄ</td>
<td>ᄅ</td>
<td>ᄆ</td>
<td>ᄇ</td>
<td>ᄈ</td>
<td>ᄉ</td>
<td>ᄊ</td>
<td>ᄋ</td>
<td>ᄌ</td>
</tr>
<tr>
<td>ᄄ</td>
<td>ᄅ</td>
<td>ᄆ</td>
<td>ᄇ</td>
<td>ᄈ</td>
<td>ᄉ</td>
<td>ᄊ</td>
<td>ᄋ</td>
<td>ᄌ</td>
<td>ᄍ</td>
</tr>
<tr>
<td>ᄅ</td>
<td>ᄆ</td>
<td>ᄇ</td>
<td>ᄈ</td>
<td>ᄉ</td>
<td>ᄊ</td>
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<td>ᄌ</td>
<td>ᄍ</td>
<td>ᄎ</td>
</tr>
<tr>
<td>ᄆ</td>
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<td>ᄎ</td>
<td>ᄏ</td>
<td>ᄐ</td>
<td>ᄑ</td>
<td>ᄒ</td>
<td>ᄓ</td>
</tr>
</tbody>
</table>

Table 5: RRK Vowels

<table>
<thead>
<tr>
<th>ᄃ</th>
<th>ᄄ</th>
<th>ᄅ</th>
<th>ᄆ</th>
<th>ᄇ</th>
<th>ᄈ</th>
</tr>
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<tbody>
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<td>ᄋ</td>
<td>ᄌ</td>
<td>ᄍ</td>
<td>ᄎ</td>
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</tr>
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<td>ᄋ</td>
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<tr>
<td>ᄌ</td>
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<td>ᄎ</td>
<td>ᄏ</td>
<td>ᄐ</td>
<td>ᄑ</td>
</tr>
</tbody>
</table>

2. The hyphen character - can also be used to forcibly separate syllables. And the special character / is taken as another syllable separator. They are exchangeable.

3. The six punctuation marks, . , ! ? ; : can be located in the Hangul scope. The others are not allowed.

4. The leading consonant ‘ᄅ’ is written with either l or r, while the trailing one should be l.

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 ‘ хр’. If the syllable has trailing consonants or is part of a word, just @ is good.
5.2 Example of RRK method

The text is one of the most famous poem in Korean, 진달래꽃 Azalea by Kim So-wol. In section 4.4.1, we showed default way of inputting the poem. The \textit{korean} environment and font settings are the same as in section 4.4.

\begin{verse}
\begin{korean}
\begin{jamotext}
나 보기가 역겨워  
가실 때에는  
말 없이 고이 보내 드리우리다.
영변에 약산  
진달래 꽃  
아름 따다 가실 길에 뿌리우리다.
가시는 걸음 걸음  
농인 그 꽃을  
사뿐히 즐여밥고 가시음소서
나 보기가 역겨워  
가실 때에는  
죽어도 아니 눈물 흘리우리다.
\end{jamotext}
\end{korean}
\end{verse}

6 Fukui Rei’s Transliteration Rule: \texttt{[method=frkim]}

The \texttt{frkim} stands for “Fukui Rei’s \texttt{kT\textTeX}” and “input method”. Prof. Fukui Rei (Tokyo University) proposed his own transliteration rules of Hangul romanization, and wrote a \texttt{T\textTeX} macro package named \texttt{hangulT\textTeX} in 1993, with which it was possible to typeset Hangul by roman-alphabet inputs.

\footnote{An English translation of this poem can be read in Wikipedia, \url{https://en.wikipedia.org/wiki/Kim_Sowol}.}
To select this rule, give `[method=frkim]` option to the package.

6.1 The rule

Table 6 shows the rule of hangulTeX. All the rules can be used with this package.

<table>
<thead>
<tr>
<th>Consonants</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ㄱ</td>
<td>ㄴ</td>
<td>ㄷ</td>
<td>ㄹ</td>
<td>ㅁ</td>
<td>ㅂ</td>
<td>ㅅ</td>
<td>ㅇ</td>
<td>ㅈ</td>
<td>ㅊ</td>
</tr>
<tr>
<td>ㅋ</td>
<td>ㅌ</td>
<td>ㅍ</td>
<td>ㅎ</td>
<td>ㄲ</td>
<td>ㄸ</td>
<td>ㅃ</td>
<td>ㅆ</td>
<td>ㅉ</td>
<td>ㅸ</td>
</tr>
<tr>
<td>ㅿ</td>
<td>ㆁ</td>
<td>ㆆ</td>
<td>ㅏ</td>
<td>ㅓ</td>
<td>ㅗ</td>
<td>ㅜ</td>
<td>ㅡ</td>
<td>ㅣ</td>
<td>ㆍ</td>
</tr>
<tr>
<td>ㅑ</td>
<td>ㅕ</td>
<td>ㅛ</td>
<td>ㅠ</td>
<td>ㅖ</td>
<td>ㅒ</td>
<td>ㅘ</td>
<td>ㅙ</td>
<td>ㅚ</td>
<td>ㅝ</td>
</tr>
<tr>
<td>ㅞ</td>
<td>ㅟ</td>
<td>ㅢ</td>
<td>ㅏ</td>
<td>ㅐ</td>
<td>ㅔ</td>
<td>ㅖ</td>
<td>ㅔ</td>
<td>ㅐ</td>
<td>ㅒ</td>
</tr>
<tr>
<td>ㅕ</td>
<td>ㅛ</td>
<td>ㅠ</td>
<td>ㅜ</td>
<td>ㅔ</td>
<td>ㅖ</td>
<td>ㅒ</td>
<td>ㅔ</td>
<td>ㅐ</td>
<td>ㅒ</td>
</tr>
</tbody>
</table>

1. The leading zero-consonant (〇) can be input with ‘’ (right quote) or x. The default is ‘’ and \zeroisx macro switches this action. And the macros \rq can be used in the position of ‘’ (closing quote) when ‘zero’ is ‘\zeroisrq’. For example, `\hg{""}gug\rq\rq` “국어”. `\zeroisx\hg{""}gugx{'}\{'\} “국어”.

2. The trailing I-Eung (〇) is made by q, and the lost character Yes-I-Eung (ㆁ) is by Q.

3. Apart from hangulTeX, with this package it is permitted to omit the leading zero-consonant in the position of the head of a word. That is, ‘annieq and annieq are identical. But if the letter is in the midst of a word, it can not be omitted.

4. The hangulTeX commands \hg, \hangul, and \endhangul are provided. And \jamoword is the same as \hg, and \jamotext environment can be used with.

5. We extended the Old-Hangul feature of this input method. The plural consonants in the leading position were not implemented in the hangulTeX, which can be done by dispiecting the starting position of the plural leading consonants with - (dash). Moreover, in the heading position of a word, this mark can be left out. For example, `\hg{bsumei} 냥메; `\hg{gy-bagy'i'iei} 그의 예.
6.2 Examples

6.2.1 Modern Hangul

The following example text was taken from hangulTeX manual (1994). (All the heading ‘s in every word can be left out now.)

\begin{hangul}
nydas'eb'i hoiram'i morgo'on pamun'yn 'yi'oiro simgaghan
ges'i'ese goanrigoa samusir'yi 'obu najer'yr 'oanjenhi
gieRannaJi noha'SSa. goanrigoa jig'urendyr'yi GiriGiri mo'ie
juqunanbaq'yro Sod'a noha'y nardy'yn doro ju'uedam'a
bomien daicuq 'ui'oa gat'y nai'ioq'i doiGeiSnynde, murron
gy ga'undeinyn mindosig'i Siburedain burpieqdo
saqdaq bubun'yr cajihago 'iS'eSSa.
\end{hangul}

\begin{jamotext}
caig'yr hanguen gajigo iS'eSji'io. Gaman pioji'ei
sonbadagmanhan jag'yn caig'iji'io. cesjaq'yr nemgimien
nu'n i nairigon haji'io.

baramdo jamdyn supsog, jamdyn hiensasinamudyr tumieqhan
murgaoman Gai'e iS'eSji'io. gajaq kygo uramhan saiSannu
mit'e'i daqs'in'yn memcu'eSji'io. daqs'in'i namuduqci'ei
dyq'yr gidaija biroso nu'n i nairigi sijaghaiSji'io.
edi'eidyn dahgiman hamien nog'aberinyn nu'n.
gyDaiJym haise Gocnun'i Gai'enaSgeiSji'io.
\end{jamotext}
에 등을 기대자 비로소 눈이 내리기 시작했지요. 어디에도 닦기만 하면 눈이 녹아버리는 눈. 그때쯤 해서 눈이 깨어났겠지요.

The following example shows ‘ASCII-escaping trick’ in jamotext environment.

\begin{jamotext}
jiggagsamaghieq !(\$\triangle ABC$)'yi sei bien !(\$a,b,c\$
) sa'i'ei !(\$a^2+b^2=c^2\$)'in goangieiga seqribhanda.
\end{jamotext}

직각각형 $\triangle ABC$의 세 변 $a,b,c$ 사이에 $a^2 + b^2 = c^2$인 관계가 성립 한다.

The font can be changed with \setpmhangulfont command.

\begin{verbatim}
\setpmhangulfont{Noto Sans CJK KR}
\end{verbatim}

유구한 역사와 전통에 빛나는 우리 대한민국은

6.2.2 Old Hangul

\begin{verbatim}
\catcode`:=\active \catcode`;=\active \def:;\char"302F}\def:;\char"302E\
\hgl{naras;mar:S@mi; 中diuQ\國guig;'ei; dar'a;
文mun字J@q;'oa;ro; sery s@m@ndi; anih@rS@i; i;ren jiec@;ro; erin; 百b@ig;姓sieQ;'i nirygo;jie;
horX; bai; isie;do m@c@m;nai; jei bdy;dyr
sire; piedi; mod:h@rX no;mi; hani;ra.}\n\end{verbatim}

나랏·말쓰·미中등국·국에 달아 文문字·중·와로서서스·못디·아·니흥·석·여린전·추로아린 닭·먹·생이니르·고·겨·홀·배아서도무·즘·내
제·부들시·력·파·디·문·홀·노·미·하나라.

7 Further Information

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

Thanks go to yihoze at the KTUG board, there he commented, “The IM apps 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 keyboard IM solutions.”