

Poorman's Hangul Jamo Input Method

pmhanguljamo.sty

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1 Introduction

This \LaTeX package provides Hangul¹ *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’(ㅇ) or ‘Pan-Sios’(Δ) etc. can also be typeset.

X_Y \LaTeX or Lua \LaTeX is required. The legacy pdf \TeX is not supported. The Korean Language supporting packages such as `xetexko` and `luatexko` (in the `ko.TeX` bundle) or `polyglossia` package with Korean support 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[<options>]{pmhanguljamo}
```

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. `[method=pm]`. It is an original method of this package. In section 4 we will explain about it. If `method=` option is missing, this one will be activated.
2. `[method=rrk]` or `[rrk]`, `[RRK]`. The *Standard Korean Romanization Transliteration* input method. In section 5, we will explain about it.
3. `[method=frkim]` or `[frkim]`. A newly introduced rule. See section 6.

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

1. `pmfont=<fontname>`. The font that is used to typeset Hangul characters in the scope of `\jamoword` or `jamo`text. If this option missing, the Jamo-Hangul font is to be same as the *main font* of the document.
2. `pmfontfeature=<fontfeature>`. It is possible to provide *font features* to the font selected as `pmfont`.

¹Hangul is the Korean alphabet to write the Korean language. In both South and North Korea, the standard writing system uses Hangul.

2.3 Commands and Environment Provided

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

Input: `\jamoword{han/gvr/vi yeis i/rvm/vn hun/min/jeq/vm/i/da/.}`
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{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}
```

Result:

죽는 날까지 하늘을 우러러
한 점 부끄럼 없기를
앞새에 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`.

```
\usepackage{fontspec}
\usepackage[pmfont={Noto Serif KR}]{pmhanguljamo}
```

```
\jamoword{an/nyeq/ha/sei/yo}
```

안녕하세요

If you don't want to specify `pmfont` option, you should manually declare the proper font for Jamo Hangul with `Script=Hangul` option.²

```
\usepackage{fontspec}
\usepackage{pmhanguljamo}
\newfontfamily\mypmfont{Noto Serif KR}[Script=Hangul]
```

```
\mypmfont\jamoword{an/nyeq/ha/sei/yo}
```

안녕하세요

²See 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 T_EX 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.

```
\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}
```

아름다운 한글입니다.

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

Or the ko.T_EX package bundle can be used together.

```
\usepackage{kotex}
\usepackage[pmfont={NotoSerifKR-Regular.otf}]{pmhanguljamo}
```

```
\jamoword{na/ras/mar/ss@/mi}
```

나랏말싸미

When ko.T_EX is used, the fontspec command for Hangul is not \fontspec but \hangulfontspec. We recommend that you use 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 Hancor Inc., https://www.hancor.com/cs_center/csDownload.do, and their variants with GSUB tables by KTS (the Korean \TeX Society). <https://github.com/dohyunkim/hcr-lvt>

KoPub World free fonts by Korea Publisher Society. <https://www.kopus.org/biz-electronic-font2/>.

Malgun Gothic One of Windows 10 system fonts.

Nanum Yet Hangeul Two font families from Naver. Nanum Myeongjo Yet Hangeul and Nanum Barun Gothic Yet Hangeul. <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. <https://fonts.google.com>.

Un Batang UnBatang.ttf. on CTAN. <https://ctan.org/pkg/unfonts-core>

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

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

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

and then issue `\pmjamo font` command in the scope of Hangul to be typeset.⁴ But these processes will be done by the package itself when

```
\usepackage[pmfont={HCR Batang LVT}]{pmhangeuljamo}
```

is declared in the preamble.

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: (fontspec)
Font "batang" does not contain requested Script "Hangul".
```

However, when $X_{\text{La}}\text{TeX}$ 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.

³the option should be

```
[Script=Hangul,Renderer=Harfbuzz]
```

or

```
[Script=Hangul,Renderer=OpenType],
```

when the document is processed with LuaTeX .

⁴When `pmfont=` option is given, the `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 Hangeul syllable has *Tone Mark* which must be explicitly put at the end of it. Table 1 shows the input scheme of them.

Table 1: Tone Marks

input	description
/	for <i>PyeongSeong</i> , no dot
;	for <i>GeoSeong</i> , single dot on the left of a character, [U+302E]
:	for <i>SangSeong</i> , double dots on the left of a character, [U+302F]

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.

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.

Table 2: Consonants

ㄱ	g	ㄴ	n	ㄷ	d	ㄹ	r
ㅁ	m	ㅂ	b	ㅅ	s	ㅇ	q
ㅈ	j	ㅊ	c	ㅋ	k	ㅌ	t
ㅍ	p	ㅎ	h	ㅍ	f	ㅊ	z
ㅍ	x		w				

1. The corresponding letters “g, n, d, m, b, s, j, k, t, p, h” are the same as Korean Romanization Method (RRK).⁵
2. The letter for ‘ㄹ’ is allocated to r not l. 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 ‘ㅇ’.
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’, ㅃ , ㅍ in the Old Hangul can be input as ‘bq, pq, bbq, mq’.
7. The letters ‘l’ and ‘lr’ are prepared for very rare case. In the 15th century Korean, ‘ ㄹ ’ and ‘ ㄹ ’ 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. 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 ‘o’ will appear. You can write the leading ‘q’ of a syllable or not. For example, ‘\jamoword{qaaq}’ and ‘\jamoword{aaq}’ will generate the same result ‘양’.
10. The letter ‘w’ is chosen to present *Choseong Filler*. For example, ‘\jamoword{wan}’ renders ㅜ .

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 [compat=0.5] option in the \usepackage line. Then x will be rendered as ‘o’, q as ‘o’, and f as ‘o’.

4.2.2 Vowels

Table 3 shows the transliteration rule for vowels.

Table 3: Vowels

ㅏ a	ㅓ e	ㅗ o	ㅜ u	ㅡ v
ㅣ i	· @			
ㅑ ya	ㅕ ye	ㅛ yo	ㅠ yu	·· @@
ㅗ ay, ai	ㅓ ey, ei	ㅗ oy, oi	ㅜ uy, ui	ㅜ vy, vi
ㅑ yay, yai	ㅕ yey, yei	ㅛ yoi	ㅠ yui	ㅣ @i
ㅜ oa	ㅓ oay, oai	ㅜ ue	ㅓ uey, uei	*

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 ㅎ .

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 @ 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 ㅏ 와 비슷하게 읽는다
```

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}
dai/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/ !{\unskip :}
!{$a^2+b^2=c^2$}.
\end{jamotext}
```

Result:

인간이 폭정과 억압에 tyranny and oppression 대항하는 마지막 수단으로서 as a last resort 반란을 일으키도록 강요받지 않으려면
피타고라스의 정리: $a^2 + b^2 = c^2$.

The !{ mark must be located in the head of a word. (To remove the preceding space of a word, `\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 `method=pm` and `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
아름 따다 가실 길에 뿌리우리다.
가시는 걸음 걸음
놓인 그 꽃을
사뿐히 즈려밟고 가시옵소서
나 보기가 역겨워
가실 때에는
죽어도 아니 눈물 흘리우리다.

4.4.2 pre-1933 Hangul

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

```

\begin{korean}
\begin{jamotext}
na/ras;mar:ss@/mi;
中dyuf/國guig;ei; dar/a;
文mun/字jj@q;oa;ro; se/rv/ s@m@s/di; a/ni;h@r/ss@i;
i;ren jyen/c@;ro; e/rin; 百b@ig;姓syef;i;
ni/rv/go;jye; horx; bai; i/sye;do;
m@c@m;nai: jei bdv;dvr; si/re; pye/di; mod:h@rx no;mi; ha/ni;ra
\end{jamotext}
\end{korean}

```

나랏·말쑈·미 中·둥·國·궐·에 달·아 文·문·字·쥁·와·로 서르·스·뭇·디 아·니·힐
·씨 ·이·런·전·츠·로 어·린·百·빅·姓·성·이·니·르·고·져 ·흙·배·이·셔·도·므·츰
·내·제·뜨·들·시·러·퍼·디·몹·흙·노·미·하·니·라

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

```

\begin{verse}
\begin{korean}
\begin{jamotext}
g@/r@/mi p@/r@/ni sai de/ug h@i/o/,\\
moy/hi pe/re/h@/ni gos/ bi/ci bvr bvd/n@n d@s/do/da/.\\
ors bo/mi bon/d@in sdo di/na/ga/n@/ni \\
e/nv na/ri i do/ra/gar h@i/o/.
\end{jamotext}
\end{korean}
\end{verse}

```

구·르·미·푸·르·니·새·더·욱·히·오,
뫼·히·퍼·러·히·니·곳·비·치·블·블·는·뫼·도·다.
웁·보·미·본·뫼·쏘·디·나·가·느·니
어·느·나·리·이·도·라·갈·히·오.

5 The RRK Input Method: [method=rrk]

In chapter 3 section 8 of *Revised Romanization of Korean* (2000), the ‘transliteration method’ of Hangeul romanization is declared. It is exceptionally permitted when it is required to restore the original Hangeul 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 Hangeul’ 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

ㄱ	g	ㄲ	kk	ㅋ	k	ㄷ	d	ㅌ	tt	ㅌ	t
ㅃ	b	ㅍ	pp	ㅍ	p	ㅈ	j	ㅉ	jj	ㅊ	ch
ㅅ	s	ㅆ	ss	ㅎ	h						
ㄴ	n	ㅁ	m	ㅇ	ng	ㄹ	l				

Table 5: RRK Vowels

ㅏ	a	ㅑ	eo	ㅓ	o	ㅕ	u	ㅞ	eu	ㅣ	i
ㅙ	ae	ㅛ	e	ㅜ	oe	ㅠ	wi				
ㅟ	ya	ㅠ	yeo	ㅠ	yo	ㅠ	yu	ㅟ	yae	ㅟ	ye
ㅠ	wa	ㅡ	wae	ㅢ	wo	ㅣ	we	ㅤ	ui		

```
\jamoword{annyeonghase-yo} 안녕하세요
\jamoword{jung-ang jungang} 중앙 준강
\jamoword{ha-yeossseubnida} 하였습니다
```

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

```
\jamoword{haeb/ssal haeb-ssal} 햅쌀 햅쌀
```

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

```
\jamoword{a! malg-eun haneul, si-wonhan baram.}
```

아! 맑은 하늘, 시원한 바람.

The L^AT_EX 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,

```
\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.

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

```
\jamoword{noraereul nolaeleul} 노래를 노래를
```

- 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., ㄹ should be input by ‘x@’. If the syllable has trailing consonants or is part of a word, just @ is good.

```
\jamoword{h@ngeul @@nam-eun} 한글 ㄹ남은.
```

5.2 Example of RRK method

The text is one of the most famous poem in Korean, 진달래꽃 *Azalea* by Kim Sowol.⁶ In section 4.4.1, we showed default way of inputting the poem. The *korean* environment and font settings are the same as in section 4.4.

```
\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 kkoch \\
aleum ttada gasil gil-e ppuli-ulida.

gagineun geol-eum geol-eum \\
noh-in geu kkoch-eul \\
sappunhi jeulyeobalbgo gasi-obseseo

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

```
나 보기가 역겨워
가실 때에는
말 없이 고이 보내 드리우리다.

영변에 약산
진달래 꽃
아름 따다 가실 길에 뿌리우리다.

가시는 걸음 걸음
놓인 그 꽃을
사뿐히 즈려밟고 가시옵소서

나 보기가 역겨워
가실 때에는
죽어도 아니 눈물 흘리우리다.
```

6 Fukui Rei's Transliteration Rule: [method=frkim]

The `frkim` stands for “Fukui Rei's k_TE_X” and “input method”. Prof. Fukui Rei (Tokyo University) proposed his own transliteration rules of Hangul romanization, and wrote a T_EX macro package named *hangulTeX* in 1993, with which it was possible to typeset Hangul by roman-alphabet inputs.

⁶An English translation of this poem can be read in Wikipedia, 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 6: The transliteration rule of `hangulTeX`

Consonants									
ㄱ	g	ㄴ	n	ㄷ	d	ㄹ	r	ㅁ	m
ㅂ	b	ㅅ	s	ㅇ	' x	ㅇ	q	ㅈ	j
ㅊ	c	ㅋ	k	ㅌ	t	ㅍ	p	ㅎ	h
ㄱ	G	ㄴ	D	ㅂ	B	ㅅ	S	ㅈ	J
ㅇ	v	ㅁ	z	ㅇ	Q	ㅇ	X		

Vowels							
ㅏ	a	ㅓ	e	ㅗ	o	ㅜ	u
ㅑ	y	ㅕ	i	ㅛ	@	ㅛ	ia
ㅗ	ie	ㅛ	io	ㅛ	iu	ㅛ	ai
ㅛ	ei	ㅛ	iai	ㅛ	iei	ㅛ	oa
ㅛ	oai	ㅛ	oi	ㅛ	ue	ㅛ	uei
ㅛ	ui	ㅛ	yi	ㅛ	@i		

1. The leading zero-consonant (ㅇ) 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'e\rq\rq}` “국어”. `\zeroisx\hg{{`}`}gugxe{''}` “국어”.
2. The trailing I-Eung (ㅇ) is made by q, and the lost character Yes-I-Eung (ㅇ) 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 ommited.
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 dispicting 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}` 뿌메; `\hg{gy-bsgyi'iei}` ㄱㅑ예.

- The command `\AddRule` overrides the previous key-letter assignments. Therefore, the user can define his own key-def's for the Hangul Jamos. Read the Korean manual (`kdoc`) carefully.

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.)

```
\hangul
nydas'ebs'i hoiram'i morgo'on pamun'yn 'yi'oiro simgaghan
ges'i'ese goanrigoa samusir'yi 'ohu najer'yr 'oanjenhi
gierDannai noh'aSda. goanrigoa jig'uendyr'i GiriGiri mo'ie
juqgunanbaq'yro Sod'a noh'yn mardyr'yn doro ju'uedam'a
bomien daicug 'ui'oa gat'yn nai'ioq'i doigeiSnyndei,
murron gy ga'undeinyn mindosig'i Siburiedain burpieqdo
saqdaq bubun'yr cajihago 'iS'eSda.
```

```
mindosig'yn juro 'os'i nargairanyn jenrai'yi sogdam'yr
dyr'e gyren joqriu'yi nargairyr dargonyn seisaq'yr huerhuer
nar'adanir su 'ebs'ym'yr nunu'i gaqjohanyn pien'i'eSda.
gy'yi mar'yn sasaiqhoar'i 'ebs'ejinyn seim'iranyn coqgag
sa'uen 'ugihuan'yi jujaqgoa majbaro toqhaiSda.
\endhangul
```

느닷없이 회람이 몰고온 파문은 의외로 심각한 것이어서 관리과 사무실의 오후 나절을 완전히 결판내 놓았다. 관리과 직원들이 끼리끼리 모여 중구난방으로 쏟아 놓은 말들은 도로 주워담아 보면 대충 위와 같은 내용이 되겠는데, 물론 그 가운데는 민도식이 씨부려댄 불평도 상당 부분을 차지하고 있었다.

민도식은 주로 옷이 날개라는 전래의 속담을 들어 그런 종류의 날개를 달고는 세상을 훨훨 날아다닐 수 없음을 누누이 강조하는 편이었다. 그의 말은 사생활이 없어지는 셈이라는 총각 사원 우기환의 주장과 맞바로 통했다.

And another example:

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

baramdo jamdyn supsog, jamdyn hiensasinamudyr tumieqhan
murgoanman Gai'e iS'eSji'io. gajaq kygo uramhan sasinamu
mit'ei daqsin'yn memcu'eSji'io. daqsin'i namuduqci'ei
dyq'yr gidaija biroso nun'i nairigi sijaghaiSji'io.
edi'eidyn dahgiman hamien nog'abinyn nun.
gyDaiJym haise Gocnun'i Gai'enaSgeiSji'io.
\end{jamotext}
```

책을 한권 가지고 있었지요. 까만 표지에 손바닥만한 작은 책이지요. 첫장을 넘기면 눈이 내리곤 하지요.

바람도 잠든 숲속, 잠든 현사시나무들 투명한 물관만 깨어 있었지요. 가장 크고 우람한 사시나무 밑에 당신은 멈추었지요. 당신이 나무등치에 등을 기대자 비로소 눈이 내리기 시작했지요. 어디에든 닿기만 하면 녹아버리는 눈. 그때쯤 해서 꽃눈이 깨어났겠지요.

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

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

직각삼각형 $\triangle ABC$ 의 세 변 a, b, c 사이에 $a^2 + b^2 = c^2$ 인 관계가 성립한다.

The font can be changed with `\setpmhangulfont` command.

```
\hg{iuquhan iegsa'oa jentoq'ei bicnanyin}
\setpmhangulfont{Noto Sans CJK KR}
\hg{uri daihangugmin'yn}
```

유구한 역사와 전통에 빛나는 우리 대한국민은

6.2.2 Old Hangul

```
\jamoword{nagpo'yi sdar'irnienni bando jinsaq oggieq gasda
goaqhanjien'yisie jiegssoqja masna mijinjieqhoi
h@'orca'yi simanh@mi joiga doi'ia siaqjiei d@irohasa
jintoi'yi n@icisim@i gar ba'yr mornadeni du'iusan
sir'ieqgieisie bu'in-sd@ig'yro jisih@giro oassa'oni
e'iebbi iegisosie}
```

낙포의 쌀일넌니 반도 진상 옥경 갖다 광한전의셔 적송자 맛나 미진정회
 흥올차의 시만흥미 죄가 되야 상제 디로하사 진퇴의 니치시미 갈 바을
 몰나더니 두유산 실영계셔 부인씩으로 지시흥기로 왓사오니 어엽비
 여기소서

The Tone-Marks (*BangJeom*) are not supported in itself. But it is easy to facilitate them. See the following case.

```
\catcode`\:=\active \catcode`\;=\active
\def:{\char"302F}\def;{\char"302E}
\hg{naras;mar:S@mi; 中diuQ國guig;'ei; dar'a;
  文mun字J@q;'oa;ro; sery s@m@sdi; ani;h@rS@i;
  i;ren jienc@;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.}
```

나·랏·말·쓰·미 中·둥·國·국·에 달·아 文·문·字·중·와·로 서·르·스·뭇·디 아·니·힐
 ·씩·이·런·전·초·로 어·린·百·빅·姓·성·이·니·르·고·져·흙·배·이·셔·도·무·춤·내
 제·쁘·들·사·러·퍼·디·몸·흙·노·미·하·니·라.

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.”⁷

⁷http://www.ktug.org/xe/index.php?mid=KTUG_open_board&document_srl=240134