Gurmukhi for TEX*

User Manual

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Introduction

The purpose of the “Gurmukhi for TeX” software package is to convert the characters in a document from English Alphabet to Gurmukhi (script for the Punjabi language), utilizing the TeX[1][2] and METAFONT*[3] software packages. TeX is a typesetting system developed by the American Mathematical Society, used widely on Unix systems, and occassionally on other operating environments. METAFONT is a font generation tool supported by TeX. Both TeX and METAFONT are free software packages which can be downloaded from TeX archive sites[4]. A working knowledge of TeX will greatly help in using the ’Gurmukhi for TeX’ package.

This document provides information for preparing input text files and use of the ’Gurmukhi for TeX’ software. This is the first version of the software and it may undergo changes in the near future, so keep an eye out for enhanced future releases.

Acknowledgement

The Gurmukhi package was inspired by the Devanagari script generation package “Devanagari for TeX†” which is developed by Frans J. Velthuis and has been brought to you with his permission to support Gurmukhi script. I would also like to thank my mother for repeatedly prompting me to write a letter to her in Gurmukhi. Last, but not least, I would like to thank everyone who might use this software package.

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Preparing a Document for Trans-literation

A document is initially created using regular ASCII text. The text is then converted into Gurmukhi using simple transliteration rules, and most of TeX features from the initial document are passed to an ‘intermediate’ TeX file. The generated output can be sent to a printer or to the screen

This section describes what ASCII characters can be used to produce Gurmukhi characters, and the delimiters which are required to put together these characters to pass to TeX. Some control commands are presented which you might use to modify the behaviour of this tool to transform ASCII input text into Gurmukhi text. There is a macro file for TeX which should be included in your text file.

Characters

Table 1 presents the ASCII to Gurmukhi character set translation.

To maintain the simplicity of transliteration, more than one character may be used, for example; ’kh’ would be used to produce the Gurmukhi character ਖ. Depending upon the context of a vowel, between the word or beginning of a word, a sign (like ’ਿ’) or a character (like ’ੲ’) will appear. An exception to this rule will be two vowels appearing together. There is a very limited number of half-characters in Gurmukhi and they are for h, v and r.

There are more than one ASCII character sets which can be used in input text, for representation of some Gurmukhi characters, like ’kh’ and ’K’ can be used for ’ਖ’ and it is totally your choice to use any of them.

In Gurmukhi text mode digits will appear as :

੦ ੧ ੨ ੩ ੪ ੫ ੬ ੭ ੮ ੯

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† “Devanagari for TeX” is a copyright of Frans J. Vethuis

Table 1: ASCII Character sets for Gurmukhi characters

u	ਉ	k	ਕ	t	ਤ	sh, S or ”s	ਸ਼
uu	ਊ or ੂ	kh or K	ਖ	th or T	ਥ	.kh or .K	ਖ਼
U	ਊ or ੂ	g	ਗ	d	ਦ	.g	ਗ਼
a	ਅ or	gh or G	ਘ	dh or D	ਧ	z	ਜ਼
aa or A	ਆ or ਾ	”n	ਙ	n	ਨ	f	ਫ਼
i	ਇ or ਿ	c	ਚ	p	ਪ	N	ੰ ਟਿੱਪੀ
ii	ਈ or ੀ	ch or C	ਛ	ph or P	ਫ	.m or M	ਂ ਬਿੰਦੀ
I	ਈ or ੀ	j	ਜ	b	ਬ	/	ਁ ਚੰਦ੍ਰਬਿੰਦੂ
e	ਏ or ੇ	jh or J	ਝ	bh or B	ਭ	~a	ੱ ਅਧਕ
ai or E	ਐ or ੈ	~n	ਞ	m	ਮ	@	° (ਤੈੜ)
o	ਓ or ੋ	.t	ਟ	y	ਯ	|	। (ਡੰਡਾ)
oo	ਔ or ੌ	.th or .T	ਠ	r	ਰ	| |	॥
O	ਔ or ੌ	.d	ਡ	l	ਲ	.o	ੴ
s	ਸ	.dh or .D	ਢ	v	ਵ		
h	ਹ	.n	ਣ	R	ੜ		

Delimiters

All text appearing after % up to the end of the line, will be considered comments and will not generate any output.

All the text between '{*gm*' and '}' will be converted to Gurmukhi according to the character set shown in Table 1.

All the text between $ signs will be converted to Gurmukhi when the @dollars preprocessor command is given.

The following characters are allowed but do not change representation inside Gurmukhi delimiters:

! ‘ ’ ( ) * - : ; = ? , [ ] +

The following characters are not allowed inside Gurmukhi delimiters:

< > F L Q V W X Y Z ^ _ q w x

Obviously, characters outside Gurmukhi delimiters will not be changed to Gurmukhi and will be printed in English Alphabet or will follow the rules which you specify.

To change the pointsize of characters within '{*gm*' and '}' the following delimiters can be used, in incremental sizes, :

gmsmall	8 point font
gmnine	9 point font
gmnormal	10 point font
gmbig	10 point font, magnified at 1 step
gmlarge	10 point font, magnified at 2 steps
gmhuge	10 point font, magnified at 3 steps

Examples

Different character sets, following above mentioned rules, within Gurmukhi delimilters can produce desired output, like {*gm* paNjaab} and {*gm* pNjAb} will print ਪੰਜਾਬ.

Sometimes, you may have to type an extra ‘a’ to complete a syllable, even though it may not appear in the Gurmukhi representation of that word.

There are additional gm files other than the source of this document, which can be referred to for examples.

Control commands

At the start of input text, the following preprocessor commands can be used, to control the functionality of the preprocessor:

@obeylines To follow the line breaks which you type.

@dollars To activate $ as a special symbol such that text delimited by $ is converted to Gurmukhi.

@punjabi Does not do anything right now, but may be used when the tool supports other languages.

After the above preprocessor commands, insert the following command to include a macro file. This ia a very important step because without the macro file, TEX will not recognize the translated text generated by the preprocessor.

Transforming a Document

The "Gurmukhi for TEX" package consists of a preprocessor, font files and a macro file. See the file "readme" and "install.unix" for installation steps. Installation should be fairly easy, as there is no system dependent code. Wherever you can find TEX and metafont, you can very possibly install and use this package.

The Preprocessor

The job of the preprocessor is to find the correct representation of a character according to its context. When a vowel appears in a word, a syllable completes, and context changes to what it was at the beginning of a new word. It also finds possible half representation of characters. Output of this preprocessor is a TEX document.

Example session of commands

Lets assume that during installation you have prepared the preprocessor with name "gurmukhi" and have set paths in your environment to locate font and macro files. Lets also assume that you have an input file with the name "text.gm".

You would start the preprocessor on the file 'text.gm' as follows:

gurmukhi text	(to get a TEX file)

The TEX file produced here, text.tex, can be used as any other input file for TEX. After this a typical sequence of commands may be

tex text	(to get dvi file)
xdvi text	(to view dvi file)

Another sequence after this may be

dvips text	(to get postscript file text.ps from text.dvi)
gs text.ps	(to view postscript file)
ghostview text.ps	(another way to view postscript file)

Now it is time to send the postscript file to a postscript printer, and a command command for this may be:

lp text.ps

Devanagari

This section is presented for those who have used the Devanagari package or would also like to use the Devanagari package. There are not many differences between the two. In Devanagari, you create a text file in the same manner as with Gurmukhi, but you have slightly different character sets for representation and you will use a similar sequence of commands.

The differences in character sets in Gurmukhi and Devanagari are as follows:

In Gurmukhi, S and sh can also be used in addition to "s to produce ਸ਼ and N is used in Gurmukhi to print ੰ (ਟਿੱਪੀ) , ii produces ਇ and not ਈ, ~a produces ੱ.

The Devanagari software package allows many character sets such as .s, .h, H, q which are not valid in Gurmukhi.

What may be next:

Support for LaTeX
Porting to different systems and platforms
Combination of Devanagari and Gurmukhi.

Biblography

[1] Norman Walsh *Making TEX Work* O'Reilly & Associates, Inc. July 1994.
[2] Donald E. Knuth *The TEXbook* Addison Wesley Publishing Co. Sep 1993
[3] Donald E. Knuth it The METAFONT Book Addison Wesley,
[4] FTP Site for TEX and related softwares, including METAFONT, and Devanagri
ftp.shsu.edu/tex-archive
[5] Frans J. Velthuis *Devanagari for TEX* Version 1.2