

Typesetting Bengali in Ω using Velthuis Transliteration or Unicode Text

Lakshmi K. Raut
(rautsoft@yahoo.com)

Contents

1 Introduction	2
2 Transliteration scheme	3
3 Example	5
4 Obtaining and Installing the Package	7
4.1 Requirements	7
4.2 Where to Get It	7
4.3 Installation	8

© Copyright 2006 Lakshmi K. Raut, RautSoft Inc. This document can be freely redistributed.

Typesetting Bengali in Ω using Velthuis Transliteration or Unicode Text

Version 1.0

Lakshmi K. Raut
rautsoft@yahoo.com

October 1, 2006

1 Introduction

Unicode is the new standard to represent all the languages in the world. Velthuis scheme has been used widely to type Sanskrit texts. Using the *Bengali-Omega for T_EX* (Bengali) package, you can type Bengali using Velthuis transliteration scheme, or Unicode text directly. For Unicode text, you must have a text editor which can type Unicode Bengali. Notepad under Windows XP or Microsoft word under Windows XP or free text editor Yudit can be used.

Easiest is to use the transliteration method to write your Bengali. You can use any text editor to type your code, and then save the file as a text-file. In this tex file, you should have a line in the preamble of the document (i.e., between the line

```
\documentclass[....
```

at the top your text document and the line

```
\begin{document}) a few lines later) the following command:
```

```
\usepackage{obeng}
```

You can use bengali tex tags as follows:

```
{\bengali and type your transliterated text} e.g.,  
{\bengali aami baa.mlaa bhaalobaasi.}
```

When you process this document it will produce আমি বাংলা ভালোবাসি।

To use unicode Bengali text together with English text, you have to use a unicode enabled text editor such as Microsoft Word under Windows XP or Notepad under Windows XP, and then type you texts including any tex formatting command and then save the document as an utf-8 text document.

The bengali part of the unicode document should have the tex tag in any of the following two forms:

```
\beng or {\beng your text...}
```

You also need to add the following line in the preamble of the tex document:

```
\usepackage{beng-uni}
```

If you use the first tag, everything following this command will be treated as Unicode Bengali. In the second case, only the text within the bengali tag delimited by the curly bracket `{}` will be treated as Bengali Unicode text. Outside this tag the text will be treated as English.

The advantage of this bengali-omega package over the existing Bengali-tex packages: I tried to make inputting of Bengali standardized to Velthuis transliteration scheme so that there are not many different schemes that one has to remember for typing Bengali or Hindi. Second advantage is that you do not have to run any preprocessor. You directly process the input file. Third advantage is that you are able to use Unicode Text directly in your tex document.

You do not need any intermediate preprocessor to transform your document to a Tex document as for instance is the case with Bengali Latex package of Ansuman Pandey. Palas Baran Pal also has an excellent bengali tex package which uses similar transliteration scheme, but the commands are not standardized. This is the first tex-package that can read bengali directly from a unicode text file, which is the main contribution of the omega extension of the Donald Knuth's Tex processing engine by Yannis Haralambous and John Plaice.

To process your document say `exampleV.tex` with either type or both types of text, you type at the dos prompt `"lambda exampleV"`. This will create a dvi file `exampleV.dvi` which you can view and print. If you want to create a pdf file, type

```
dvipdfm exampleV
```

2 Transliteration scheme

You must consult these tables to be familiarized with what english letters represent what bengali letters. The general rule is simple: To type কি which is ka + i, you drop the letter a after k, and then type the letter i, i.e. type ki (i is for independent vowel ি). By doing that you have combined those two bengali letters. Similarly, to type কা you drop the letter a after k and aa (aa is for independent vowel ং, see the transliteration chart). There is one important exception. Suppose you want to type বই if you type bai the last two letters will be treated as the vowel ai. So to break this symbiotic

relationship between a and i you have to use a curly brackets like this bai. This applies in other situations as well.

How to get জুক্ত বর্ণ: If you write two consonants together without the letter a between them, then those two consonants will be treated as জুক্ত বর্ণ। For instance if you like to combine ka + ta you type kta. The letter a breaks their conjunction. Thus kta becomes one jukta barna. You can treat it like any other consonant. If you want ক্তি you again drop the letter a from kta and add i like this kti. Now you are all set to be a Bengali writer in the tradition of Vidyasagar, Bankim Chandra, Sarat Chandra and Tagore.

Vowels					
a	অ	aa	আ	i	ই
u	উ	uu	ঊ	.r	ঋ
ai	এ	o	ও	au	ঔ
oi	ঐ	/	ও	ou	঒
~m	মে	.h	ঃ	H	ঃ
				.m	ং

Consonants					
ka	ক	kha	খ	ga	গ
ca	চ	cha	ছ	ja	জ
.ta	ট	.tha	ঠ	.da	ড
ta	ত	tha	থ	da	দ
pa	প	pha	ফ	ba	ব
				bha	ভ
				na	ন
				~na	ঞ
				.na	ণ
				ma	ম

Semi-vowels					
ya	য	.ya	য়	ra	র
				la	ল
				ba	ব

Sibilants					
"sa	শ	.sa	ষ	sa	স

Aspirate	
ha	হ

Flaps			
Ra	ড়	Rha	ঢ়

Numerals							
0	০	1	১	2	২	3	৩
4	৪	5	৫	6	৬	7	৭
8	৮	9	৯				

Assamese Variants	
~ra	ৰ
va	ব

Special Characters			
.m	ং	anusvāra	~m
		dāmṛī	candrabindu
			.h
			ঃ
			visarga
			T
			ং
			khaṇḍa ta

/	a	aa	i	ii	u	uu	.r	e	ai	o	au
k	ক	কা	কি	কী	কু	কূ	ক্	কে	কৈ	কো	কৌ
kh	খ	খা	খি	খী	খু	খূ	খ্	খে	খৈ	খো	খৌ
R	ড়	ড়া	ড়ি	ড়ী	ডু	ডূ	—	ড়ে	ড়ৈ	ডো	ডৌ
Rh	ঢ়	ঢ়া	ঢ়ি	ঢ়ী	ঢ়ু	ঢ়ূ	—	ঢ়ে	ঢ়ৈ	ঢ়ো	ঢ়ৌ

"nja	জ্ঞ	k.sa	ক্ষ	ncha	ছ	.s.na	ষ
stra	স্ত্র	k.sma	ক্ষ্ম	n.dra	ড্র	hm	ক্ষ্ম
"sra	শ্র	hla	হ্ল	jjba	জ্জ	mba	ষ
ktra	ক্ত্র	kta	ক্ত	.t.ta	ট্ট	.n.tha	ষ্ঠ

I am going to now write a personal example. Since I brought you this far, you may like to read the rest.

3 Example

গল্প নয়
- লক্ষ্মী কান্ত রাউৎ

আমার জন্ম পশ্চিম বঙ্গের এক গ্রামে। আমার গ্রামের নাম ধনেশ্বর পুর। অনেক কষ্টে আমার গ্রামের High School এ আমি পড়াশুনা করি। দু বছর আমাকে তিন মাইল হেঁটে স্কুলে যেতে হ'ত। একদিন প্রচণ্ড বর্ষা। মাঠে প্রচুর জল। মাঠের চারদিকে জলে ভরা জমির মধ্য দিয়ে একটা সরু রাস্তা দিয়ে স্কুলে যেতে হয়। আমি খুব হস্ত-দন্ত হয়ে এক মনে হেঁটে চলেছি স্কুলের যাতে না দেরি হয়ে যায়। হঠাৎ স-স-স-স শব্দ শুনে পিছন ফিরে দেখি, একটা কোব্রা সাপ তার মণি-ভূষন-ফণি তুলে আমাকে আলিঙ্গন করছে। প্রায় এক হাত দূর থেকে। এক মিনিট নিশ্বাস বন্ধ করে রইলাম দাড়িয়ে। তারপর কোনো দিকে না তাকিয়ে দিলাম ছুট। সেবারের মত বেঁচে গেছি।

পরে আমি নরেন্দ্রপুর রামকৃষ্ণ মিসনে Statistics Honors পড়ার সুযোগ পাই। With lots of luck and hard work, নরেন্দ্রপুর এ scholarship পাই। নরেন্দ্রপুরে পড়ার ফলে, আমি পরবর্তি জীবনে অন্যান্য অনেক ভালো জায়গাতে পড়ার সুযোগ পাই। আমি এই জন্য নরেন্দ্রপুরের বিশেষ কয়েকজন মহারাজের (বিশেষতঃ রঞ্জন-দা ও সত্য-দা) উপর চির কৃতজ্ঞ।

যদিও আমি সুযোগ পেয়েছি খুব বড় বড় জায়গাতে পড়াশুনা করার, আমার গ্রামের অনেক ছেলে মেয়েরা, অনেক বুদ্ধি থাকা সত্ত্বেও, তারা সেই গ্রামেই পড়ে রয়ে গেল। হয়ত লোকে বলবে, তাদের পড়াশুনার খুব ইচ্ছা, মানে motivation ছিল না, তাই তারা গ্রাম ছেড়ে কোথাও যেতে পারল না। আমি এই মতে একমত নই। আমি পরে অনেক economics এ গবেষণা করে দেখেছি এর মূল কারণটা কি। আমার মতে: The kids in the villages and from disadvantaged families should be taught in English medium school starting at an early age, and they should have preschool experience in a formal day-care center where they can learn many skills such as social, motivational, communication skills which are very useful for the later learning and earning abilities. So I have decided to start such a place in my village.

If you are still curious, তার পর, তার পর... keep in touch.

The above is obtained by doing the following: Create a file say exampleV.tex with the following text.

```
\documentclass[10pt]{article}
\usepackage{obeng}
\begin{document}
```

```
\begin{center}
{\Large \bengali galpa na.y}
```

```
{\bengali - lak.smii kaanta raa{ }uT}
\end{center}
```

```
{\bengali aamaar janma pa"scim banger ek graame. aamaar graamer naam
dhane"sbar pur. anek ka.s.te aamaar graamer } High School {\bengali e aami
paRaa"sunaa kari. du bachar aamaake tin maa{ }il he~m.te skule yete h't.
ekadin pracan.da bar.saa. maa.the pracur jal. maa.ther caaradike jale bharaa
jamir madhya di.ye eka.taa saru raastaa di.ye skule yete ha.y. aami khub
hanta-danta ha.ye ek mane he~m.te calechi skuler yaate naa deri ha.ye yaa.y.
h.thaaT sa-sa-sa-sa "sabda "sune pichan phire dekhi, eka.taa kobraa saap
taar ma.ni-bhU.san-pha.ni tule aamaake aalingan karache. praa.y ek haat dur
theke. ek mini.t ni"sbaas bandha kare ra{ }ilaam daa~Ri.ye. taarapar kono dike
naa taaki.ye dilaam chu.t. sebaarer mata be~mce gechi. }
```

```
{\bengali pare aami narendrapur raamak.r.s.na misane} Statistics Honors
{\bengali paRaar suyog paa{ }i. } With lots of luck and hard work, {\bengali
narendrapur e } scholarship {\bengali paa{ }i. narendrapure paRaar phale,
aami parabarti jiibane anyaanna anek bhaalo jaa.yagaate paRaar suyog paa{ }i.
```

```
aami ei janya narendrapurer bi"se.s ka.yekajan mahaaraajer (bi"se.sat.h
ranjan-daa o satya-daa) upar cira k.rta"nja. }
```

```
{\bengali yadio aami suyog pe.yechi khub baRa baRa jaa.yagaate paRaa"sunaa karaar,
aamaar graamer anek chele me.yeraa, anek buddhi thaakaa satbeo, taaraa sei
graame{}i paRe ra.ye gela. ha.yata loke balabe, taader paRaa"sunaar khub
icchaa, maane } motivation {\bengali chila naa, taa{}i taaraa graam cheRe
kothaao yete paarala naa. aami ei mate ekamat na{}i. aami pare anek }
economics {\bengali e gabe.sa.naa kare dekhechi er mul kaarana.taa ki.
aamaar mate}: The kids in the villages and from disadvantaged families
should be taught in English medium school starting at an early age,
and they should have preschool experience in a formal day-care center where they
can learn many skills such as social, motivational, communication skills
which are very useful for the later learning and earning abilities. So I
have decided to start such a place in my village.
```

```
If you are still curious, {\bengali taar par, taar par}... keep in touch.
\end{document}
```

To process your document `exampleV.tex` using `lambda` typesetting, type the following command

```
lambda exampleV
```

This will produce a dvi file `exampleV.dvi` which you can view or print using a suitable dvi viewer that is included in your `tex` Package. To create a pdf file, type

```
dvipdfm exampleV
```

This will transform the dvi file into pdf file. Here is how the output will look like:

4 Obtaining and Installing the Package

4.1 Requirements

I have tested it on Windows XP operating system using MikTeX distribution. It should work under other systems as well. You can download and install the free MikTeX distribution. I assume that you have MikTeX installed on your system.

4.2 Where to Get It

The primary distribution site for the package is:

[http://www2.hawaii.edu/~ lakshmi/software/bengali-omega](http://www2.hawaii.edu/~lakshmi/software/bengali-omega)

4.3 Installation

1. unzip bengali-omega.zip file in a directory which will be a root directory. Then use MikTeX settings utility program (if you cannot find it, it is in the

```
R:\MiKTeX 2.5\miktex\bin
```

, called mo.exe where R is the root directory of your MikTeX installation (2.5 is the version number which might be different for your distribution. Once you run this program, you will see a window with menus. Choose the Roots tab, and add the root directory where you unzipped bengali-omega.zip.

2. At a dos-prompt, type "initexmf --edit-config-file updmap" it will show-up a file. In that file type

```
Map bang.map \fonts\map\Bangla\bang.map
```

. Save the file. From the dos-prompt type "initexmf --mkmaps".

3. Go back to the mo.exe program, and click on the General tab, and then click on the tab Refresh FNDB.
4. To test your installation, go to the example directory of the bengali-omega installation and from the dos prompt type "lambda exampleV". This will create a exampleV.dvi file, which you can view or you can then issue the command dvipdfm exampleV which will create a pdf file which you can view, print or share with your friends.

Send your comments and bug reports to rautsoft@yahoo.com or you can google my current email address.

Acknowledgements: This package uses the metafont files of Palas Baran Pal. and type-1 bang.pfb file.