

About Baishakhi Inscript Keyboard (বৈশাখী ইন্সক্রিপ্ট কি-বোর্ড)

The Inscript (Indian Script) keyboard layout was first standardized by DOE in 1986. ("Report of the Committee for Standardization of Keyboard Layout for Indian Script Based Computers", Electronics-Information & Planning Journal, Voi. 14, No.1 October 1986). Later, it was upgraded in 1991 (Bureau of Indian Standard)

InScript (Indian Script) is a touch-typing keyboard layout scheme for inputting Indic text on computer. Baishakhi Inscript maintains the layout with the additional feature of using the J and NJ keys for ZWJ and ZWNJ respectively, in order to make it UNICODE 5.0 compatible.

Some observations about Inscript:

InScript is not fully Unicode 5.0 compatible. Though every keystroke generates the corresponding single UTF-8 code according to the Unicode 5.0 standard, but some special keys like ZWJ and ZWNJ are not available in this script.

As there is no use of some special keys like ZWJ(**Zero-Width-Joiner**) and ZWNJ(**Zero-Width-Non-Joiner**) in this layout, some special words like র (code for 'ra') <code for Zero-Width Joiner ><code for 'halant' ><code for 'ya'>) in র্যাপার, র্যাদা cannot be typed. The word উদ্গার cannot also be typed (<উ><দ> <্> <code of ZWNJ > <গ><া><র>) .

Some Salient features of Baishakhi InScript Keyboard Layout(Bengali):-

1. Inscript has kept four conjugates (অ্যা, ্র, র্, জ্, ত্, ঞ্, শ্) as separate keys. However, these can be written using component keys by following Unicode specified rules. Accordingly Baishakhi Inscript does not keep such separate keys.
2. The InScript for Baishakhi Linux has been customized to make it fully UNICODE 5.0 compatible. In this customized InScript Layout there is an addition of two special keys (ZWJ and ZWNJ) denoted as J and NJ (Top left corner, ` and ~ respectively, below Esc)

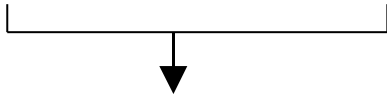
Use of Zero-Width-Joiner: According to the unicode standard writing any consonants followed by ‘ya-phala’ would be <code for ‘consonant’> <code for ‘halant’> <code for ‘ya’>. But there had been a persistent problem of writing ‘ra’ followed by ‘ya-phala’ as in **র্যাঁদা**. Normally, **র্য** would be written as <code for ‘ra’> <code for ‘halant’> <code for ‘ya’>. But it would have direct conflict with the code sequence for ‘ref’ as in **আর্ষ**(<code for ‘আ’><code for ‘র’> <code for ‘্’> <code for ‘ষ’>).

To avoid this conflict, in unicode 5.0 a special character(Zero-Width – Joiner) has been inserted between <code for ‘ra’> and <code for ‘halant’ >. Thus the following code sequence for typing ‘ra’ followed by ‘ya-phala’ would be

<code for ‘ra’> <code for Zero-Width –Joiner ><code for ‘halant’ ><code for ‘ya’>.

As an example, the typing sequence to type **র্যাঁদা** would be

< র > <Z-W-J> < ্ > < য > < া > < ঁ > <দ> <া> = **র্যাঁদা**



র্য

On the other hand, in order to type **আর্ষ**, we have to type

<আ><র>< ্ > < য > = **আর্ষ**

Use of Zero-Width-Non-Joiner: Normally 'halant' is used to create dead consonants that are, in turn, combined with subsequent consonants to form conjuncts.

This behavior usually results in halant sign not being depicted visually. Occasionally, this default behavior is not desired when a dead consonant should be excluded from conjunct formation, in which case the halant sign is visibly rendered. To accomplish this goal, the Unicode Standard adopts the convention of placing the character Zero-Width-Non-Joiner immediately after the encoded dead consonant that is to be excluded from conjunct formation.

The word **উদ্গার** is an example case. To type such explicit halants, the Zero-Width-Non-Joiner key should be used as shown below.

দগা = <দ> < ্ > < NJ > <গ><া>

Thus,

উদ্গার = <উ><দ> < ্ > < NJ > <গ><া><র>

Similarly,

<ত>< ্ > < NJ ><ত> = **ত্‌ত**

<ত>< ্ > <ত> = **ভ** as in **ভিত্ত**

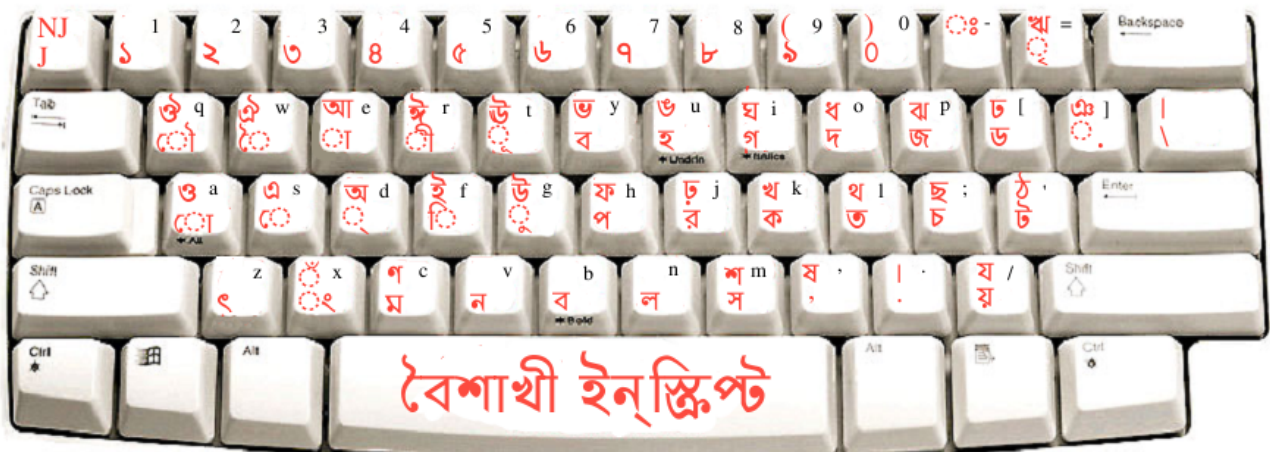
3. The Inscript layout contains characters required for all the Indian scripts, as defined by the ISCII character set. The Indian script alphabet has a logical structure, derived from the phonetic properties. The Inscript layout mirrors this logical structure. The Inscript layout, used in most of Linux distributions has been designed according to Unicode 5.0 standard i.e only one code should be generated with every keystroke. These are noted below:
 - a) For আ, Shift + e is to be pressed. Pressing Shift + d for অ followed by pressing e for া matra is not allowed.
 - b) For ‘ra-phala’ (as in মাত্রা) the codes should be <code for ‘halant’ (্)> followed by < code for ‘ra’ (র) >. Accordingly, InScript in linux does not keep any single key for ‘ref’, as is the practice in Bangla typewriters.
 - c) Similarly, for ‘ya-phala’ (as in ব্য), no single key has been kept, the code sequence should be <code for ‘ba’ (ব) > <code for halant > <code for ‘ya’ (য) >. Hence, for typing ব্য in the Inscript keyboard, one has to type <d><shift+>.
4. Inscript(linux) is a 2-layer keyboard, with Normal, Shift modes, designed to accommodate the Bangla alphabets and signs.
5. The layout of the keys has been arranged through the following considerations:
 - a) The layout is divided into two parts: the vowel pad on the left hand side, and the consonant pad on the right hand side.
 - b) Within the vowel pad the vowels are given in the shift positions of the corresponding Matras. All the five main short vowels (অ,এ,ই,ও,উ) are given in the home row (middle row of the keyboard) while their longer counterparts (আ,ঐ,ঋ,ঌ,ঔ) are kept on the corresponding keys just above them. Since the vowel অ does not have a corresponding Matra, the vowel- omission sign, Halant (্), is given in the unshifted position. Halant (্) is used for forming conjuncts, when it is typed in between con-sonants. Hence, for typing ক্ত using Inscript Keyboard, one has to type <ক><্><ত>.
 - c) Alternate hand action (generally left hand) is used in typing of a conjunct; as Halant is typed from the left pad, while most of the consonants are typed from the right pad. Similarly alternate hand action occurs while typing a Matra after most of the consonants. This considerably speeds up typing of a syllable.

- d) In the consonant pad all the primary characters of the 5 Vargs are included in the home row. The aspirated consonants are kept in the shift positions of their unaspirated counterparts. The non-nasal consonants of each Varg are contained in a pair of vertically adjacent keys.
- e) The main nasal consonants of the Vargs are contained in the bottom row of the left pad, along with the related Anuswar and Chandrabindu. The other non-Varg consonants are kept in the remaining positions of the right pad, according to their logical relations, and usage frequencies.
- f) All the characters needed for touch typing are contained in the bottom 3 rows. The top row contains some conjuncts meant for ease in sight typing. The conjunct character keys actually send out the corresponding basic characters.
- g) The Inscript layout can be used on any QWERTY keyboard.

6. **Use Of Nukta Character:** According to the revision done in 1988 by a DOE committee, it was decided to use a separate Nukta character for deriving some characters using this character. Thus substitution of the Nukta character is substituted in place of the earlier "Transform" key. As an example for typing ড় the code sequence would be <code for ড> <code for ্.>. Thus the consonant ড় is derived from ড with nukta. Besides this in Bangla there is no alphabet corresponding to the pronunciation of Z. This phenomenon is visible in quite a few foreign loan words. Nukta is in use in many Indian languages, such as Hindi. To write Hindi word in Bengali according to pronunciation Nukta character has also been used.

Thus “buzzer” can now be written as বাজ়ার instead of বাজার as
 <ব><া><জ><়.><া><র>

The Key Map Table



English Letter (Normal Mode)	English Letter (Shift Mode)	Bengali Letter (Normal Mode)	Bengali Letter (Shift Mode)	Comments
`	~	J	NJ	
1	!	১		
2	@	২		
3	#	৩		
4	\$	৪		
5	%	৫		
6	^	৬		
7	&	৭		
8	*	৮		
9	(৯	(
0)	০)	
-	_	-	ং	
=	+	=	ু	
a	A	ো	ও	
i	I	গ	ঘ	
u	U	হ	ঙ	
e	E	া	আ	
o	O	দ	ধ	
k	K	ক	খ	
g	G	ু	গ	
c	C	ম	ন	
j	J	র	ত	
t	T	ু	ড	
q	Q	ৌ	তু	
f	F	ি	ফ	
d	D	্	ড	
n	N	ল		
p	P	জ	ঝ	
b	B	ব		
m	M	স	শ	

y	Y	ব	ভ	
r	R	ঐ	ঋ	
l	L	ল	঳	
s	S	স	শ	
x	X	ং	ঙ	
z	Z	ৎ		
w	W	ঔ	ঘ	
v	V	ন		
/	?	য়	য	
h	H	প	ফ	
.	>	.		
[{	ড	ঢ	
]	}	়	ড়	
;	:	চ	ছ	
'	“	জ	ঝ	
,	<	,	ষ	