

# The akshar package

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## Abstract

This package provides tools to deal with special characters in a Devanagari string.

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## 1 Introduction

When dealing with processing strings in the Devanagari script, normal  $\LaTeX$  commands usually find some difficulties in distinguishing “normal” characters, like क, and “special” characters, for example ् or ी. Let’s consider this example code:

```
1 \ExplSyntaxOn
2 \tl_set:Nn \l_tmpa_tl { की}
3 \tl_count:N \l_tmpa_tl \c_space_token tokens.
4 \ExplSyntaxOff
```

2 tokens.

The output is 2, but the number of characters in it is only one! The reason is quite simple: the compiler treats ी as a normal character, and it shouldn’t do so.

To tackle that, this package provides expl3 functions to “convert” a given string, written in the Devanagari script, to a sequence of token lists. each of these token lists is a “true” Devanagari character. You can now do anything you want with this sequence; and this package does provide some front-end macros for some simple actions on the input string.

## 2 User manual

### 2.1 $\LaTeX$ 2<sub>ε</sub> macros

---

`\aksharStrLen` `\aksharStrLen {<token list>}`

---

Return the number of Devanagari characters in the <token list>.

There are 4 characters in नमस्कार.  
expl3 returns 7, which is wrong.

```
1 There are \aksharStrLen{ नमस्कार} characters in नमस्कार.\par
2 \ExplSyntaxOn
3 \pkg{expl3}~returns~\tl_count:n { नमस्कार},~which~is~wrong.
4 \ExplSyntaxOff
```



(End definition for \l\_\_akshar\_tmp\_tl and \l\_\_akshar\_tmp\_seq.)

`\tl_if_in:NoTF` When we get to a character which is not the joining one, we need to know if it is a diacritic. The current character is stored in a variable, so an expanded variant is needed. We only need it to expand only once.

```
12 \prg_generate_conditional_variant:Nnn \tl_if_in:Nn { No } { TF }
```

(End definition for `\tl_if_in:NoTF`. This function is documented on page ??.)

`\akshar_convert:Nn` This converts #2 to a sequence of true Devanagari characters. The sequence is set to #1, which should be a sequence variable. The assignment is local.

`\akshar_convert:cn`  
`\akshar_convert:Nx`  
`\akshar_convert:cx`

```
13 \cs_new:Npn \akshar_convert:Nn #1 #2
14 {
```

Clear anything stored in advance. We don't want different calls of the function to conflict with each other.

```
15 \seq_clear:N \l__akshar_char_seq
16 \bool_set_false:N \l__akshar_prev_joining_bool
```

Loop through every token of the input.

```
17 \tl_map_variable:NNn {#2} \l__akshar_map_tl
18 {
19 \tl_if_in:NoTF \c__akshar_diacritics_tl {\l__akshar_map_tl}
20 {
```

It is a diacritic. We append the current diacritic to the last item of the sequence instead of pushing the diacritic to a new sequence item.

```
21 \seq_pop_right:NN \l__akshar_char_seq \l__akshar_tmp_tl
22 \seq_put_right:Nx \l__akshar_char_seq
23 { \l__akshar_tmp_tl \l__akshar_map_tl }
24 }
25 {
26 \tl_if_eq:NNTF \l__akshar_map_tl \c__akshar_joining_tl
27 {
```

In this case, the character is the joining character, ङ. What we do is similar to the above case, but `\l__akshar_prev_joining_bool` is set to true so that the next character is also appended to this item.

```
28 \seq_pop_right:NN \l__akshar_char_seq \l__akshar_tmp_tl
29 \seq_put_right:Nx \l__akshar_char_seq
30 { \l__akshar_tmp_tl \l__akshar_map_tl }
31 \bool_set_true:N \l__akshar_prev_joining_bool
32 }
33 {
```

Now the character is normal. We see if we can push to a new item or not. It depends on the boolean variable.

```
34 \bool_if:NTF \l__akshar_prev_joining_bool
35 {
36 \seq_pop_right:NN \l__akshar_char_seq \l__akshar_tmp_tl
37 \seq_put_right:Nx \l__akshar_char_seq
38 { \l__akshar_tmp_tl \l__akshar_map_tl }
39 \bool_set_false:N \l__akshar_prev_joining_bool
40 }
41 {
42 \seq_put_right:Nx \l__akshar_char_seq { \l__akshar_map_tl }
43 }
44 }
45 }
46 }
```

Set #1 to `\l__akshar_char_seq`. The assignment is local, and I have not found a way to automatically pick `\seq_set_eq` or `\seq_gset_eq` based on the name of the sequence variable.

```
47 \seq_set_eq:NN #1 \l__akshar_char_seq
48 }
```

Generate variants that might be helpful for some.

```
49 \cs_generate_variant:Nn \akshar_convert:Nn { cn, Nx, cx }
```

(End definition for `\akshar_convert:Nn`. This function is documented on page 2.)

Time for some front-end macros that can be used directly in the  $\text{\LaTeX}2_{\epsilon}$  context.

**\aksharStrLen** Expands to the length of the string.

```
50 \NewExpandableDocumentCommand \aksharStrLen {m}
51 {
52   \akshar_convert:Nn \l__akshar_tmp_seq {#1}
53   \seq_count:N \l__akshar_tmp_seq
54 }
```

(End definition for `\aksharStrLen`. This function is documented on page 1.)

**\aksharStrChar** Returns the  $n$ -th character of the string.

```
55 \NewExpandableDocumentCommand \aksharStrChar {mm}
56 {
57   \akshar_convert:Nn \l__akshar_tmp_seq {#1}
58   \seq_item:Nn \l__akshar_tmp_seq {#2}
59 }
```

(End definition for `\aksharStrChar`. This function is documented on page 1.)

```
60 \endpackage
```

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