

## Description

`ustrupper(s [ , loc ])` converts the characters in Unicode string *s* to uppercase under the given locale *loc*. If *loc* is not specified, the `locale_functions` setting is used. The result can be longer or shorter than the input string; for example, the uppercase form of the German letter ß (code point `\u00df`) is two capital letters “SS”. The same *s* but different *loc* can produce different results; for example, the uppercase letter “i” is “I” in English, but it is “İ” with a dot in Turkish.

`ustrlower(s [ , loc ])` converts the characters in Unicode string *s* to lowercase under the given locale *loc*. If *loc* is not specified, the `locale_functions` setting is used. The result can be longer or shorter than the input Unicode string in bytes. The same *s* but different *loc* can produce different results; for example, the lowercase letter of “I” is “i” in English, but it is “ı” without a dot in Turkish. The same Unicode character can be mapped to different Unicode characters based on its surrounding characters; for example, Greek capital letter sigma, Σ, has two lowercase alternatives: σ or, if it is the final character of a word, ς.

`ustrtitle(s [ , loc ])` converts the Unicode words in string *s* to **titlecase**. Note that a Unicode word is different from the space-delimited words produced by function `word()`. A Unicode word is a language unit based on either a set of **word-boundary rules** or dictionaries for some languages (Chinese, Japanese, and Thai). The titlecase is also locale dependent and context sensitive; for example, lowercase “ij” in titlecase form is “IJ” in Dutch, but it is “Ij” in English. If *loc* is not specified, the `locale_functions` setting is used.

When *s* is not a scalar, these functions return element-by-element results.

## Syntax

*string matrix* `ustrupper(string matrix s [ , string scalar loc ])`

*string matrix* `ustrlower(string matrix s [ , string scalar loc ])`

*string matrix* `ustrtitle(string matrix s [ , string scalar loc ])`

## Remarks and examples

Use functions `strupper()` and `strlower()` to convert only ASCII letters to uppercase and lowercase.

## Conformability

`ustrupper(s [ , loc ])`, `ustrlower(s [ , loc ])`, `ustrtitle(s [ , loc ])`:

*s*:  $r \times c$   
*result*:  $r \times c$

## Diagnostics

`ustrupper(s[, loc])`, `ustrlower(s[, loc])`, and `ustrtitle(s[, loc])` return an empty string if an error occurs.

## Also see

[M-5] **strupper()** — Convert ASCII letter to uppercase (lowercase)

[M-4] **String** — String manipulation functions

[U] **12.4.2.2 Displaying Unicode characters**

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