

Fondamenti di Informatica I e Lab.

La libreria <ctype.h>

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Ultimo aggiornamento 01/10/2015

header

<ctype> (ctype.h)

Character handling functions

This header declares a set of functions to classify and transform individual characters.

Functions

These functions take the int equivalent of one character as parameter and return an int that can either be another character or a value representing a boolean value: an int value of 0 means false, and an int value different from 0 represents true.

```
int <function name> ( int c );
```

There are two sets of functions:

Character classification functions

They check whether the character passed as parameter belongs to a certain category:

isalnum	Check if character is alphanumeric (function)
isalpha	Check if character is alphabetic (function)
isblank	Check if character is blank (function)
iscntrl	Check if character is a control character (function)
isdigit	Check if character is decimal digit (function)
isgraph	Check if character has graphical representation (function)
islower	Check if character is lowercase letter (function)
isprint	Check if character is printable (function)
ispunct	Check if character is a punctuation character (function)
isspace	Check if character is a white-space (function)
isupper	Check if character is uppercase letter (function)
isxdigit	Check if character is hexadecimal digit (function)

Character conversion functions

Two functions that convert between letter cases:

tolower	Convert uppercase letter to lowercase (function)
toupper	Convert lowercase letter to uppercase (function)

For the first set, here is a map of how the original 127-character ASCII set is considered by each function (an x indicates that the function returns true on that character)

ASCII values	characters	isctrl	isblank	isspace	isupper	islower	isalpha	isdigit	isxdigit	isalnum	ispunct	isgraph	isprint
0x00 .. 0x08	NUL, (other control codes)	x											
0x09	tab ('\t')	x	x	x									
0x0A .. 0x0D	(white-space control codes: '\f', '\v', '\n', '\r')	x		x									
0x0E .. 0x1F	(other control codes)	x											
0x20	space (' ')		x	x									x
0x21 .. 0x2F	!"#\$%&'()*+,-./										x	x	x
0x30 .. 0x39	0123456789							x	x	x		x	x
0x3A .. 0x40	::<=>?@										x	x	x
0x41 .. 0x46	ABCDEFG				x		x		x	x		x	x
0x47 .. 0x5A	GHIJKLMNOPQRSTUVWXYZ				x		x			x		x	x
0x5B .. 0x60	[\] ^ _ `										x	x	x
0x61 .. 0x66	abcdef					x	x		x	x		x	x
0x67 .. 0x7A	ghijklmnopqrstuvwxyz					x	x			x		x	x
0x7B .. 0x7E	{ } ~										x	x	x
0x7F	(DEL)	x											

The characters in the extended character set (above 0x7F) may belong to diverse categories depending on the locale and the platform. As a general rule, `ispunct`, `isgraph` and `isprint` return true on these for the standard C locale on most platforms supporting extended character sets.