

**NAME**

isalnum, isalpha, isascii, isblank, iscntrl, isdigit, isgraph, islower, isprint, ispunct, isspace, isupper, isxdigit, isalnum\_l, isalpha\_l, isascii\_l, isblank\_l, iscntrl\_l, isdigit\_l, isgraph\_l, islower\_l, isprint\_l, ispunct\_l, isspace\_l, isupper\_l, isxdigit\_l - character classification functions

**SYNOPSIS**

```
#include <ctype.h>

int isalnum(int c);
int isalpha(int c);
int iscntrl(int c);
int isdigit(int c);
int isgraph(int c);
int islower(int c);
int isprint(int c);
int ispunct(int c);
int isspace(int c);
int isupper(int c);
int isxdigit(int c);

int isascii(int c);
int isblank(int c);

int isalnum_l(int c, locale_t locale);
int isalpha_l(int c, locale_t locale);
int isblank_l(int c, locale_t locale);
int iscntrl_l(int c, locale_t locale);
int isdigit_l(int c, locale_t locale);
int isgraph_l(int c, locale_t locale);
int islower_l(int c, locale_t locale);
int isprint_l(int c, locale_t locale);
int ispunct_l(int c, locale_t locale);
int isspace_l(int c, locale_t locale);
int isupper_l(int c, locale_t locale);
int isxdigit_l(int c, locale_t locale);

int isascii_l(int c, locale_t locale);
```

Feature Test Macro Requirements for glibc (see [feature\\_test\\_macros\(7\)](#)):

```
isascii():
    _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE

isblank():
    _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L;
    or cc -std=c99

isalnum_l(), isalpha_l(), isblank_l(), iscntrl_l(), isdigit_l(), isgraph_l(), islower_l(),
isprint_l(), ispunct_l(), isspace_l(), isupper_l(), isxdigit_l():
    Since glibc 2.10:
        _XOPEN_SOURCE >= 700
    Before glibc 2.10:
        _GNU_SOURCE

isascii_l():
    Since glibc 2.10:
        _XOPEN_SOURCE >= 700 && (_SVID_SOURCE || _BSD_SOURCE)
    Before glibc 2.10:
        _GNU_SOURCE
```

## DESCRIPTION

These functions check whether *c*, which must have the value of an *unsigned char* or **EOF**, falls into a certain character class according to the specified locale. The functions without the `_l` suffix perform the check based on the current locale.

The functions with the `_l` suffix perform the check based on the locale specified by the locale object *locale*. The behavior of these functions is undefined if *locale* is the special locale object **LC\_GLOBAL\_LOCALE** (see [duplocale\(3\)](#)) or is not a valid locale object handle.

The list below explains the operation of the functions without the `_l` suffix; the functions with the `_l` suffix differ only in using the locale object *locale* instead of the current locale.

### **isalnum()**

checks for an alphanumeric character; it is equivalent to **(isalpha(*c*) || isdigit(*c*))**.

### **isalpha()**

checks for an alphabetic character; in the standard **C** locale, it is equivalent to **(isupper(*c*) || islower(*c*))**. In some locales, there may be additional characters for which **isalpha()** is true—letters which are neither uppercase nor lowercase.

### **isascii()**

checks whether *c* is a 7-bit *unsigned char* value that fits into the ASCII character set.

### **isblank()**

checks for a blank character; that is, a space or a tab.

### **isctrl()**

checks for a control character.

### **isdigit()**

checks for a digit (0 through 9).

### **isgraph()**

checks for any printable character except space.

### **islower()**

checks for a lowercase character.

### **isprint()**

checks for any printable character including space.

### **ispunct()**

checks for any printable character which is not a space or an alphanumeric character.

### **isspace()**

checks for white-space characters. In the **C** and **POSIX** locales, these are: space, form-feed (**f**), newline (**n**), carriage return (**r**), horizontal tab (**t**), and vertical tab (**v**).

### **isupper()**

checks for an uppercase letter.

### **isxdigit()**

checks for hexadecimal digits, that is, one of  
**0 1 2 3 4 5 6 7 8 9 a b c d e f A B C D E F**.

## RETURN VALUE

The values returned are nonzero if the character *c* falls into the tested class, and zero if not.

## ATTRIBUTES

### Multithreading (see [pthreads\(7\)](#))

The **isalnum()**, **isalpha()**, **isascii()**, **isblank()**, **isctrl()**, **isdigit()**, **isgraph()**, **islower()**, **isprint()**, **ispunct()**, **isspace()**, **isupper()**, and **isxdigit()** functions are thread-safe.

## VERSIONS

`isalnum_l()`, `isalpha_l()`, `isblank_l()`, `isctrl_l()`, `isdigit_l()`, `isgraph_l()`, `islower_l()`, `isprint_l()`, `ispunct_l()`, `isspace_l()`, `isupper_l()`, `isxdigit_l()`, and `isascii_l()` are available since glibc 2.3.

## CONFORMING TO

C89 specifies `isalnum()`, `isalpha()`, `isctrl()`, `isdigit()`, `isgraph()`, `islower()`, `isprint()`, `ispunct()`, `isspace()`, `isupper()`, and `isxdigit()`, but not `isascii()` and `isblank()`. POSIX.1-2001 also specifies those functions, and also `isascii()` (as an XSI extension) and `isblank()`. C99 specifies all of the preceding functions, except `isascii()`.

POSIX.1-2008 marks `isascii()` as obsolete, noting that it cannot be used portably in a localized application.

POSIX.1-2008 specifies `isalnum_l()`, `isalpha_l()`, `isblank_l()`, `isctrl_l()`, `isdigit_l()`, `isgraph_l()`, `islower_l()`, `isprint_l()`, `ispunct_l()`, `isspace_l()`, `isupper_l()`, and `isxdigit_l()`.

`isascii_l()` is a GNU extension.

## NOTES

The details of what characters belong to which class depend on the locale. For example, `isupper()` will not recognize an A-umlaut ( ) as an uppercase letter in the default **C** locale.

## SEE ALSO

[iswalnum\(3\)](#), [iswalphabet\(3\)](#), [iswblank\(3\)](#), [iswcntrl\(3\)](#), [iswdigit\(3\)](#), [iswgraph\(3\)](#), [iswlower\(3\)](#), [iswprint\(3\)](#), [iswpunct\(3\)](#), [iswspace\(3\)](#), [iswupper\(3\)](#), [iswxdigit\(3\)](#), [newlocale\(3\)](#), [setlocale\(3\)](#), [uselocale\(3\)](#), [toascii\(3\)](#), [tolower\(3\)](#), [toupper\(3\)](#), [ascii\(7\)](#), [locale\(7\)](#)

## COLOPHON

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