



# C Library - <ctype.h>

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The **ctype.h** header file of the C Standard Library declares several functions that are useful for testing and mapping characters.

All the functions accepts **int** as a parameter, whose value must be EOF or representable as an unsigned char.

All the functions return non-zero (true) if the argument *c* satisfies the condition described, and zero(false) if not.

## Library Functions

Following are the functions defined in the header *ctype.h* –

S.N.	Function & Description
1	<b>int isalnum(int c)</b>  This function checks whether the passed character is alphanumeric.
2	<b>int isalpha(int c)</b>  This function checks whether the passed character is alphabetic.
3	<b>int iscntrl(int c)</b>  This function checks whether the passed character is control character.
4	<b>int isdigit(int c)</b>  This function checks whether the passed character is decimal digit.
5	<b>int isgraph(int c)</b>

This function checks whether the passed character has graphical representation using locale.

6 **int islower(int c)**

This function checks whether the passed character is lowercase letter.

7 **int isprint(int c)**

This function checks whether the passed character is printable.

8 **int ispunct(int c)**

This function checks whether the passed character is a punctuation character.

9 **int isspace(int c)**

This function checks whether the passed character is white-space.

10 **int isupper(int c)**

This function checks whether the passed character is an uppercase letter.

11 **int isxdigit(int c)**

This function checks whether the passed character is a hexadecimal digit.

The library also contains two conversion functions that accepts and returns an "int".

S.N.	Function & Description
1	<b>int tolower(int c)</b> This function converts uppercase letters to lowercase.
2	<b>int toupper(int c)</b> This function converts lowercase letters to uppercase.

# Character Classes

S.N.	Character Class & Description
1	<b>Digits</b> This is a set of whole numbers { 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 }.
2	<b>Hexadecimal digits</b> This is the set of { 0 1 2 3 4 5 6 7 8 9 A B C D E F a b c d e f }.
3	<b>Lowercase letters</b> This is a set of lowercase letters { a b c d e f g h i j k l m n o p q r s t u v w x y z }.
4	<b>Uppercase letters</b> This is a set of uppercase letters { A B C D E F G H I J K L M N O P Q R S T U V W X Y Z }.
5	<b>Letters</b> This is a set of lowercase and uppercase letters.
6	<b>Alphanumeric characters</b> This is a set of Digits, Lowercase letters and Uppercase letters.
7	<b>Punctuation characters</b> This is a set of ! " # \$ % & ' ( ) * + , - . / : ; < = > ? @ [ \ ] ^ _ ` {   } ~
8	<b>Graphical characters</b> This is a set of Alphanumeric characters and Punctuation characters.
9	<b>Space characters</b> This is a set of tab, newline, vertical tab, form feed, carriage return, and space.
10	<b>Printable characters</b> This is a set of Alphanumeric characters, Punctuation characters and Space characters.
11	<b>Control characters</b> In ASCII, these characters have octal codes 000 through 037, and 177 (DEL).

12	<b>Blank characters</b> These are spaces and tabs.
13	<b>Alphabetic characters</b> This is a set of Lowercase letters and Uppercase letters.
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