

C and C++ Integer Limits

10/21/2019 • 2 minutes to read • 

In this article

[Limits on Integer Constants](#)

[See also](#)

Microsoft Specific

The limits for integer types in C and C++ are listed in the following table. These limits are defined in the C standard header file `<limits.h>`. The C++ Standard Library header `<limits>` includes `<climits>`, which includes `<limits.h>`.

Microsoft C also permits the declaration of sized integer variables, which are integral types of size 8-, 16-, 32- or 64-bits. For more information on sized integers in C, see [Sized Integer Types](#).

Limits on Integer Constants

Constant	Meaning	Value
CHAR_BIT	Number of bits in the smallest variable that is not a bit field.	8
SCHAR_MIN	Minimum value for a variable of type signed char .	-128
SCHAR_MAX	Maximum value for a variable of type signed char .	127
UCHAR_MAX	Maximum value for a variable of type unsigned char .	255 (0xff)
CHAR_MIN	Minimum value for a variable of type char .	-128; 0 if /J option used
CHAR_MAX	Maximum value for a variable of type char .	127; 255 if /J option used
MB_LEN_MAX	Maximum number of bytes in a multicharacter constant.	5

Constant	Meaning	Value
SHRT_MIN	Minimum value for a variable of type short .	-32768
SHRT_MAX	Maximum value for a variable of type short .	32767
USHRT_MAX	Maximum value for a variable of type unsigned short .	65535 (0xffff)
INT_MIN	Minimum value for a variable of type int .	-2147483647 - 1
INT_MAX	Maximum value for a variable of type int .	2147483647
UINT_MAX	Maximum value for a variable of type unsigned int .	4294967295 (0xffffffff)
LONG_MIN	Minimum value for a variable of type long .	-2147483647 - 1
LONG_MAX	Maximum value for a variable of type long .	2147483647
ULONG_MAX	Maximum value for a variable of type unsigned long .	4294967295 (0xffffffff)
LLONG_MIN	Minimum value for a variable of type long long .	-9,223,372,036,854,775,807 - 1
LLONG_MAX	Maximum value for a variable of type long long .	9,223,372,036,854,775,807
ULLONG_MAX	Maximum value for a variable of type unsigned long long .	18,446,744,073,709,551,615 (0xffffffffffffffff)

If a value exceeds the largest integer representation, the Microsoft compiler generates an error.

END Microsoft Specific

See also

[C Integer Constants](#)