

Data Type Ranges

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The Microsoft C++ 32-bit and 64-bit compilers recognize the types in the table later in this article.

- `int` (`unsigned int`)
- `__int8` (`unsigned __int8`)
- `__int16` (`unsigned __int16`)
- `__int32` (`unsigned __int32`)
- `__int64` (`unsigned __int64`)
- `short` (`unsigned short`)
- `long` (`unsigned long`)
- `long long` (`unsigned long long`)

If its name begins with two underscores (`__`), a data type is non-standard.

The ranges that are specified in the following table are inclusive-inclusive.

Type Name	Bytes	Other Names	Range of Values
<code>int</code>	4	<code>signed</code>	-2,147,483,648 to 2,147,483,647
<code>unsigned int</code>	4	<code>unsigned</code>	0 to 4,294,967,295
<code>__int8</code>	1	<code>char</code>	-128 to 127
<code>unsigned __int8</code>	1	<code>unsigned char</code>	0 to 255
<code>__int16</code>	2	<code>short</code> , <code>short int</code> , <code>signed short int</code>	-32,768 to 32,767
<code>unsigned __int16</code>	2	<code>unsigned short</code> , <code>unsigned short int</code>	0 to 65,535
<code>__int32</code>	4	<code>signed</code> , <code>signed int</code> , <code>int</code>	-2,147,483,648 to 2,147,483,647

Type Name	Bytes	Other Names	Range of Values
unsigned __int32	4	unsigned, unsigned int	0 to 4,294,967,295
__int64	8	long long, signed long long	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
unsigned __int64	8	unsigned long long	0 to 18,446,744,073,709,551,615
bool	1	none	false or true
char	1	none	-128 to 127 by default 0 to 255 when compiled by using /J
signed char	1	none	-128 to 127
unsigned char	1	none	0 to 255
short	2	short int, signed short int	-32,768 to 32,767
unsigned short	2	unsigned short int	0 to 65,535
long	4	long int, signed long int	-2,147,483,648 to 2,147,483,647
unsigned long	4	unsigned long int	0 to 4,294,967,295
long long	8	none (but equivalent to __int64)	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
unsigned long long	8	none (but equivalent to unsigned __int64)	0 to 18,446,744,073,709,551,615
enum	varies	none	
float	4	none	3.4E +/- 38 (7 digits)
double	8	none	1.7E +/- 308 (15 digits)
long double	same as double	none	Same as double
wchar_t	2	__wchar_t	0 to 65,535

Depending on how it's used, a variable of `__wchar_t` designates either a wide-character type or multibyte-character type. Use the `L` prefix before a character or string constant to designate the wide-character-type constant.

signed and **unsigned** are modifiers that you can use with any integral type except **bool**. Note that **char**, **signed char**, and **unsigned char** are three distinct types for the purposes of mechanisms like overloading and templates.

The **int** and **unsigned int** types have a size of four bytes. However, portable code should not depend on the size of **int** because the language standard allows this to be implementation-specific.

C/C++ in Visual Studio also supports sized integer types. For more information, see [__int8](#), [__int16](#), [__int32](#), [__int64](#) and [Integer Limits](#).

For more information about the restrictions of the sizes of each type, see [Built-in types](#).

The range of enumerated types varies depending on the language context and specified compiler flags. For more information, see [C Enumeration Declarations](#) and [Enumerations](#).

See also

[Keywords](#)

[Built-in types](#)