Data Type Ranges

Visual Studio 2015

The latest version of this topic can be found at Data Type Ranges.

Visual 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
int	4	signed	–2,147,483,648 to 2,147,483,647
unsigned int	4	unsigned	0 to 4,294,967,295
__int8	1	char	–128 to 127
unsigned __int8	1	unsigned char	0 to 255
__int16	2	short, short int, signed short int	–32,768 to 32,767
unsigned __int16	2	unsigned short, unsigned short int	0 to 65,535
__int32	4	signed, signed int, int	–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	See Remarks later in this article
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 Fundamental 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
Fundamental Types