Datatypes in C#

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Contents

1 Value Types

1.1 Numeric

1.1.1 Signed Integer

Type	Range	Size
`sbyte`	-128 to 127	Signed 8-bit integer
`short`	-32,768 to 32,767	Signed 16-bit integer
`int`	-2,147,483,648 to 2,147,483,647	Signed 32-bit integer
`long`	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807	Signed 64-bit integer

1.1.2 Unsigned Integer

Type	Range	Size
`byte`	0 to 255	Unsigned 8-bit integer
`ushort`	0 to 65,535	Unsigned 16-bit integer
`uint`	0 to 4,294,967,295	Unsigned 32-bit integer

Type	Range	Size
`ulong`	0 to 18,446,744,073,709,551,615	Unsigned 64-bit integer

1.1.3 Floating-point Numbers

Type	Approximate Range	Precision
`float`	±1.5e−45 to ±3.4e38	7 digits
`double`	±5.0e−324 to ±1.7e308	15–16 digits
`decimal`	(-7.9 x 1028 to 7.9 x 1028)/(100 to 1028)	28–29 significant digits

1.2 Logical

Type	Possible Values	Size
`bool`	`true`, `false`	8-bit

1.3 Character

Type	Range	Size
`char`	U+0000 to U+ffff	Unicode 16-bit character

2 Literals

Name	Corresponding datatype	Examples
Integer Literal	`int`	`40`, `-39`, `291838`, `0`, ...
Float Literal	`float`	`3.5F`, `-43.5f`, `309430.70006F`, ...
Double Literal	`double`	`28.98`, `239.0`, `-391.089`, `0.0`, ...
Decimal Literal	`decimal`	`8.95m`, `3283.9M`, `-30m`, ...
Boolean Literal	`bool`	`true`, `false`
Character Literal	`char`	`'Y'`, `'a'`, `'0'`, `'\n'`, `'\x0058'`, `'\u0058'`, ...

3 Compatibility

	Integer Literal	**Float Literal**	**Double Literal**	**Decimal Literal**
`int`	✓	✘	✘	✘
`float`	✓	✓	✘	✘
`double`	✓	✓	✓	✘
`decimal`	✓	✘	✘	✓

4 Result Type of Operations

	int	float	double	decimal
int	int	float	double	decimal
float	float	float	double	illegal
double	double	double	double	illegal
decimal	decimal	illegal	illegal	decimal

References

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