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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