

Value Types (Built-in Structs)

Integral Types

|  |  |  |
| --- | --- | --- |
| Type | Size (Bit) | Range |
| sbyte | 8 | -128 to 127 |
| byte | 8 | 0 to 255 |
| short | 16 | -32768 to 32767 |
| ushort | 16 | 0 to 65535 |
| int | 32 | -231 to 231-1  -2147483648 to 2147483647  ±2 Billion – 9 zeros)  (10 digits) |
| uint  U  u | 32 | 0 to 232-1  0 to 4294967295  (0 to 4 Billion – 9 zeros)  (10 digits) |
| long  L  l | 64 | -263 to 263-1  -9223372036854775808 to 9223372036854775807  (±9 Quintillion – 18 zeros)  (19 digits) |
| ulong  UL  ul | 64 | 0 to 264-1  0 to 18446744073709551615  (0 to 18 Quintillion – 18 zeros)  (19 digits) |
| char | 16  (Unicode)  (unsigned) | U+0000 to U+ffff  (0 to 65535) |

Floating Point Types

|  |  |  |  |
| --- | --- | --- | --- |
| Type | Size (Bit) | precision | Range |
| float  F  f | 32 | 7 digits  (excluding point and F) | ±1.5e−45 to ±3.4e38  (±1.5 x 10-45 to ±3.4 x 1038 )  (39 digits) |
| double  D / .0  d | 64 | 15-16 digits  (excluding point and D) | ±5.0e−324 to ±1.7e308  (±5.0 x 10-324 to ±1.7 x 10308)  (309 digits) |

Decimal Type

|  |  |  |  |
| --- | --- | --- | --- |
| Type | Size (Bit) | precision | Range |
| decimal  M  m | 128 | 28-29 digits  (excluding point and M) | ±1.0 × 10e−28 to ±7.9 × 10e28  (±1.0 x 10-28to ±7.9 x 1028)  (±0.0000000000000000000000000001M to  ±79228162514264337593543950335M)  (±79 Octillion – 27 zeros)  (29 digits) |

Boolean Type

|  |  |  |
| --- | --- | --- |
| Type | Size (Bit) | Range |
| bool | 8 | true, false |

Reference Types (Built-in Types)

String Type

|  |  |  |
| --- | --- | --- |
| Type | Size (Bit) | Range |
| string | 160+ | 0 to approximately 2 billion characters |

Object Type

|  |  |  |
| --- | --- | --- |
| Type | Size (Bit) | Range |
| object | 64+ | All types including value types and excluding pointer types can be stored in a variable, as all types except pointer types inherit from [object](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/93f60c0b-e17a-40a9-9362-cca5fb77b0e7.htm) |

Value Types (Built-in Structs)

Integral Types

|  |  |
| --- | --- |
| C# Type | .NET Framework Type |
| sbyte | System.SByte |
| byte | System.Byte |
| short | System.Int16 |
| ushort | System.UInt16 |
| int | System.Int32 |
| uint | System.UInt32 |
| long | System.Int64 |
| ulong | System.UInt64 |
| char | System.Char |

Floating Point Types

|  |  |
| --- | --- |
| Type | .NET Framework Type |
| float | System.Single |
| double | System.Double |

Decimal Type

|  |  |
| --- | --- |
| Type | .NET Framework Type |
| decimal | System.Decimal |

Boolean Type

|  |  |
| --- | --- |
| Type | .NET Framework Type |
| bool | System.Boolean |

Reference Types (Built-in Types)

String Type

|  |  |
| --- | --- |
| Type | .NET Framework Type |
| string | System.String |

Object Type

(Base Type of all Types including Value Types)

|  |  |
| --- | --- |
| Type | .NET Framework Type |
| object | System.Object |

Value Types (Built-in Structs)

|  |  |
| --- | --- |
| Integral Types | |
| Type | Default Value |
| [sbyte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a9c7b48-73d1-4d33-b485-c4faf0a816bc.htm) | 0 |
| [byte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/111f1db9-ca32-4f0e-b497-4783517eda47.htm) | 0 |
| [short](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/04c10688-e51a-4a87-bfec-83f7fb42ff11.htm) | 0 |
| [ushort](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a7dbaae-b7a0-4111-872a-c88a6d3981ac.htm) | 0 |
| [int](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/212447b4-5d2a-41aa-88ab-84fe710bdb52.htm) | 0 |
| [uint](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/e93e42c6-ec72-4b0b-89df-2fd8d36f7a7b.htm) | 0U |
| [long](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f9b24319-1f39-48be-a42b-d528ee28a7fd.htm) | 0L |
| [ulong](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f2ece624-837a-40cf-92c5-343e7f33397c.htm) | 0UL |
| [char](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b51cf4fb-124c-4067-af48-afbac122b228.htm) | ‘\0’ |

Floating Point Types

|  |  |
| --- | --- |
| Type | Default Value |
| [float](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1e77db7b-dedb-48b7-8dd1-b055e96a9258.htm) | 0.0F |
| [double](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/0980e11b-6004-4102-abcf-cfc280fc6991.htm) | 0.0D |

Decimal Type

|  |  |
| --- | --- |
| Type | Default Value |
| [decimal](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b6522132-b5ee-4be3-ad13-3adfdb7de7a1.htm) | 0.0M |

Boolean Type

|  |  |
| --- | --- |
| Type | Default Value |
| [bool](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/551cfe35-2632-4343-af49-33ad12da08e2.htm) | false |

Value Types (User-defined Structs)

|  |  |
| --- | --- |
| Type | Default Value |
| [struct](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/ff3dd9b7-dc93-4720-8855-ef5558f65c7c.htm) | The value produced by setting all value-type fields to their default values and all reference-type fields to null. |

Value Types (Enumerations) (User-defined)

|  |  |
| --- | --- |
| Type | Default Value |
| [enum](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/bbeb9a0f-e9b3-41ab-b0a6-c41b1a08974c.htm) | The value produced by the expression (E)0, where E is the enum identifier |

The C# typing system contains the following categories:

* [Value types](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/471eb994-2958-49d5-a6be-19b4313f80a3.htm)
* [Reference types](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/801cf030-6e2d-4a0d-9daf-1431b0c31f47.htm)
* [Pointer types](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/3319faf9-336d-4148-9af2-1da2579cdd1e.htm)

Variables of the value types store data, while those of the reference types store references to the actual data. Reference types are also referred to as objects. Pointer types can be used only in [unsafe](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/7e818009-1c6e-4b9e-b769-3728a01586a0.htm) mode.

The value types consist of two main categories:

* [Structs](http://msdn2.microsoft.com/en-us/library/ah19swz4(VS.80).aspx)
* [Enums](http://msdn2.microsoft.com/en-us/library/sbbt4032(VS.80).aspx)

Structs fall into these categories:

* Numeric types
* [Integral types](http://msdn2.microsoft.com/en-us/library/exx3b86w(VS.80).aspx)
* [Floating-point types](http://msdn2.microsoft.com/en-us/library/9ahet949(VS.80).aspx)
* [decimal](http://msdn2.microsoft.com/en-us/library/364x0z75(VS.80).aspx)
* [bool](http://msdn2.microsoft.com/en-us/library/c8f5xwh7(VS.80).aspx)
* User defined Structs

Value Types (Built-in Structs)

|  |  |
| --- | --- |
| Integral Types | |
| Type | Category |
| [sbyte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a9c7b48-73d1-4d33-b485-c4faf0a816bc.htm) | Signed, numeric, integral |
| [byte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/111f1db9-ca32-4f0e-b497-4783517eda47.htm) | Unsigned, numeric, integral |
| [short](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/04c10688-e51a-4a87-bfec-83f7fb42ff11.htm) | Signed, numeric, integral |
| [ushort](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a7dbaae-b7a0-4111-872a-c88a6d3981ac.htm) | Unsigned, numeric, integral |
| [int](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/212447b4-5d2a-41aa-88ab-84fe710bdb52.htm) | Signed, numeric, integral |
| [uint](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/e93e42c6-ec72-4b0b-89df-2fd8d36f7a7b.htm) | Unsigned, numeric, integral |
| [long](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f9b24319-1f39-48be-a42b-d528ee28a7fd.htm) | Signed, numeric, integral |
| [ulong](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f2ece624-837a-40cf-92c5-343e7f33397c.htm) | Unsigned, numeric, integral |
| [char](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b51cf4fb-124c-4067-af48-afbac122b228.htm) | Unsigned, numeric, integral |

Floating Point Types

|  |  |
| --- | --- |
| Type | Category |
| [float](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1e77db7b-dedb-48b7-8dd1-b055e96a9258.htm) | Numeric, floating-point |
| [double](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/0980e11b-6004-4102-abcf-cfc280fc6991.htm) | Numeric, floating-point |

Decimal Type

|  |  |
| --- | --- |
| Type | Category |
| [decimal](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b6522132-b5ee-4be3-ad13-3adfdb7de7a1.htm) | Numeric, decimal |

Boolean Type

|  |  |
| --- | --- |
| Type | Category |
| [bool](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/551cfe35-2632-4343-af49-33ad12da08e2.htm) | Boolean |

Value Types (User-defined Structs)

|  |  |
| --- | --- |
| Type | Category |
| [struct](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/ff3dd9b7-dc93-4720-8855-ef5558f65c7c.htm) | User-defined structure |

Value Types (Enumerations) (User-defined)

|  |  |
| --- | --- |
| Type | Category |
| [enum](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/bbeb9a0f-e9b3-41ab-b0a6-c41b1a08974c.htm) | Enumeration |

Variables of reference types, referred to as objects, store references to the actual data. User-defined reference types:

* [class](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b95d8815-de18-4c3f-a8cc-a0a53bdf8690.htm)
* [interface](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/7da38e81-4f99-4bc5-b07d-c986b687eeba.htm)
* [delegate](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/0bb8cb6d-2f87-47c7-9d1f-d65c1cd01e9f.htm)

Built-in reference types:

* dynamic
* [object](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/93f60c0b-e17a-40a9-9362-cca5fb77b0e7.htm)
* [string](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/3037e558-fb22-494d-bca1-a15ade11b11a.htm)

It is possible to convert a value type to a reference type, and back again to value types, by using [boxing and unboxing](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/8da9bbf4-bce9-4b08-b2e5-f64c11c56514.htm). With the exception of a boxed value types, you cannot convert a reference type to a value type.

Value types are also nullable, which means they can store an addition non-value state.

In an unsafe context, a type may be a pointer type as well as a value type or a reference type. A pointer type declaration takes one of the following forms:

|  |
| --- |
| unmanaged type\* identifier;  void\* identifier; |

Parameters

unmanaged type

One of the following:

* [sbyte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a9c7b48-73d1-4d33-b485-c4faf0a816bc.htm), [byte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/111f1db9-ca32-4f0e-b497-4783517eda47.htm), [short](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/04c10688-e51a-4a87-bfec-83f7fb42ff11.htm), [ushort](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a7dbaae-b7a0-4111-872a-c88a6d3981ac.htm), [int](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/212447b4-5d2a-41aa-88ab-84fe710bdb52.htm), [uint](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/e93e42c6-ec72-4b0b-89df-2fd8d36f7a7b.htm), [long](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f9b24319-1f39-48be-a42b-d528ee28a7fd.htm), [ulong](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f2ece624-837a-40cf-92c5-343e7f33397c.htm), [char](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b51cf4fb-124c-4067-af48-afbac122b228.htm), [float](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1e77db7b-dedb-48b7-8dd1-b055e96a9258.htm), [double](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/0980e11b-6004-4102-abcf-cfc280fc6991.htm), [decimal](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b6522132-b5ee-4be3-ad13-3adfdb7de7a1.htm), or [bool](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/551cfe35-2632-4343-af49-33ad12da08e2.htm).
* Any [enum](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/bbeb9a0f-e9b3-41ab-b0a6-c41b1a08974c.htm) type
* Any pointer type
* Any user-defined struct type that contains fields of unmanaged types only

identifier

The pointer variable name.

Pointer types do not inherit from [object](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/93f60c0b-e17a-40a9-9362-cca5fb77b0e7.htm) and no conversions exist between pointer types and object. Also, boxing and unboxing do not support pointers. However, you can convert between different pointer types and between pointer types and integral types.

The following table shows the predefined implicit numeric conversions. Implicit conversions might occur in many situations, including method invoking and assignment statements.

|  |  |
| --- | --- |
| From | To |
| [sbyte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a9c7b48-73d1-4d33-b485-c4faf0a816bc.htm) | short, int, long, float, double, or decimal |
| [byte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/111f1db9-ca32-4f0e-b497-4783517eda47.htm) | short, ushort, int, uint, long, ulong, float, double, or decimal |
| [short](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/04c10688-e51a-4a87-bfec-83f7fb42ff11.htm) | int, long, float, double, or decimal |
| [ushort](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a7dbaae-b7a0-4111-872a-c88a6d3981ac.htm) | int, uint, long, ulong, float, double, or decimal |
| [int](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/212447b4-5d2a-41aa-88ab-84fe710bdb52.htm) | long, float, double, or decimal |
| [uint](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/e93e42c6-ec72-4b0b-89df-2fd8d36f7a7b.htm) | long, ulong, float, double, or decimal |
| [long](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f9b24319-1f39-48be-a42b-d528ee28a7fd.htm) | float, double, or decimal |
| [char](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b51cf4fb-124c-4067-af48-afbac122b228.htm) | ushort, int, uint, long, ulong, float, double, or decimal |
| [float](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1e77db7b-dedb-48b7-8dd1-b055e96a9258.htm) | double |
| [ulong](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f2ece624-837a-40cf-92c5-343e7f33397c.htm) | float, double, or decimal |

The conversions from int, uint, or long to float and from long to double may cause a loss of precision, but not a loss of magnitude.

There are no implicit conversions to the char type.

There are no implicit conversions between floating-point types and the decimal type.

A constant expression of type int can be converted to sbyte, byte, short, ushort, uint, or ulong, provided the value of the constant expression is within the range of the destination type.

Explicit numeric conversion is used to convert any numeric type to any other numeric type, for which there is no implicit conversion, by using a cast expression. The following table shows these conversions.

|  |  |
| --- | --- |
| From | To |
| [sbyte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a9c7b48-73d1-4d33-b485-c4faf0a816bc.htm) | byte, ushort, uint, ulong, or char |
| [byte](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/111f1db9-ca32-4f0e-b497-4783517eda47.htm) | sbyte or char |
| [short](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/04c10688-e51a-4a87-bfec-83f7fb42ff11.htm) | sbyte, byte, ushort, uint, ulong, or char |
| [ushort](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1a7dbaae-b7a0-4111-872a-c88a6d3981ac.htm) | sbyte, byte, short, or char |
| [int](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/212447b4-5d2a-41aa-88ab-84fe710bdb52.htm) | sbyte, byte, short, ushort, uint, ulong, or char |
| [uint](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/e93e42c6-ec72-4b0b-89df-2fd8d36f7a7b.htm) | sbyte, byte, short, ushort, int, or char |
| [long](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f9b24319-1f39-48be-a42b-d528ee28a7fd.htm) | sbyte, byte, short, ushort, int, uint, ulong, or char |
| [ulong](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/f2ece624-837a-40cf-92c5-343e7f33397c.htm) | sbyte, byte, short, ushort, int, uint, long, or char |
| [char](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b51cf4fb-124c-4067-af48-afbac122b228.htm) | sbyte, byte, or short |
| [float](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/1e77db7b-dedb-48b7-8dd1-b055e96a9258.htm) | sbyte, byte, short, ushort, int, uint, long, ulong, char, or decimal |
| [double](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/0980e11b-6004-4102-abcf-cfc280fc6991.htm) | sbyte, byte, short, ushort, int, uint, long, ulong, char, float, or decimal |
| [decimal](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.VisualStudio.v80.en/dv_csref/html/b6522132-b5ee-4be3-ad13-3adfdb7de7a1.htm) | sbyte, byte, short, ushort, int, uint, long, ulong, char, float, or double |

The explicit numeric conversion may cause loss of precision or result in throwing exceptions.

When you convert a decimal value to an integral type, this value is rounded towards zero to the nearest integral value. If the resulting integral value is outside the range of the destination type, an OverflowException is thrown.

When you convert from a double or float value to an integral type, the value is truncated. If the resulting integral value is outside the range of the destination value, the result depends on the overflow checking context. In a checked context, an OverflowException is thrown, while in an unchecked context, the result is an unspecified value of the destination type.

When you convert double to float, the double value is rounded to the nearest float value. If the double value is too small or too large to fit into the destination type, the result will be zero or infinity.

When you convert float or double to decimal, the source value is converted to decimal representation and rounded to the nearest number after the 28th decimal place if required.

Depending on the value of the source value, one of the following results may occur:

If the source value is too small to be represented as a decimal, the result becomes zero.

If the source value is NaN (not a number), infinity, or too large to be represented as a decimal, an OverflowException is thrown.

When you convert decimal to float or double, the decimal value is rounded to the nearest double or float value.