C# Basics

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LECTURE 2

C# Program Structure

A C# program consists of the following parts:

- Namespace declaration
- A Class
- Class methods
- Class attributes
- A Main method
- Statements and Expressions
- Comments

Some Important Basic Elements

The using Keyword: (using System)

The using keyword is used for including the namespaces in the program. A program can include multiple using statements.

Class:

The class keyword is used for declaring a class.

Comments in C#:

//This is a comment

Or

/*This is a comment*/

Variables

A variable is a location in memory that can hold values of a certain data types.

Each variable must be declared before it is used.

The declaration allocates a location in memory to hold values of this type.

Variables Example

```
using System;
class Program
{
    public static void Main()
    {
    int x;
    x = 3;
    Console.WriteLine(x);
    x  = 4;
    Console.WriteLine (x);
    }
}
```

Data Types

The variables in C#, are categorized into the following types:

- Value types

  That stores values directly in the storage memory.

- Reference types

  Reference type variables store the address of the object containing the data.

  For example:

  A a=new A();

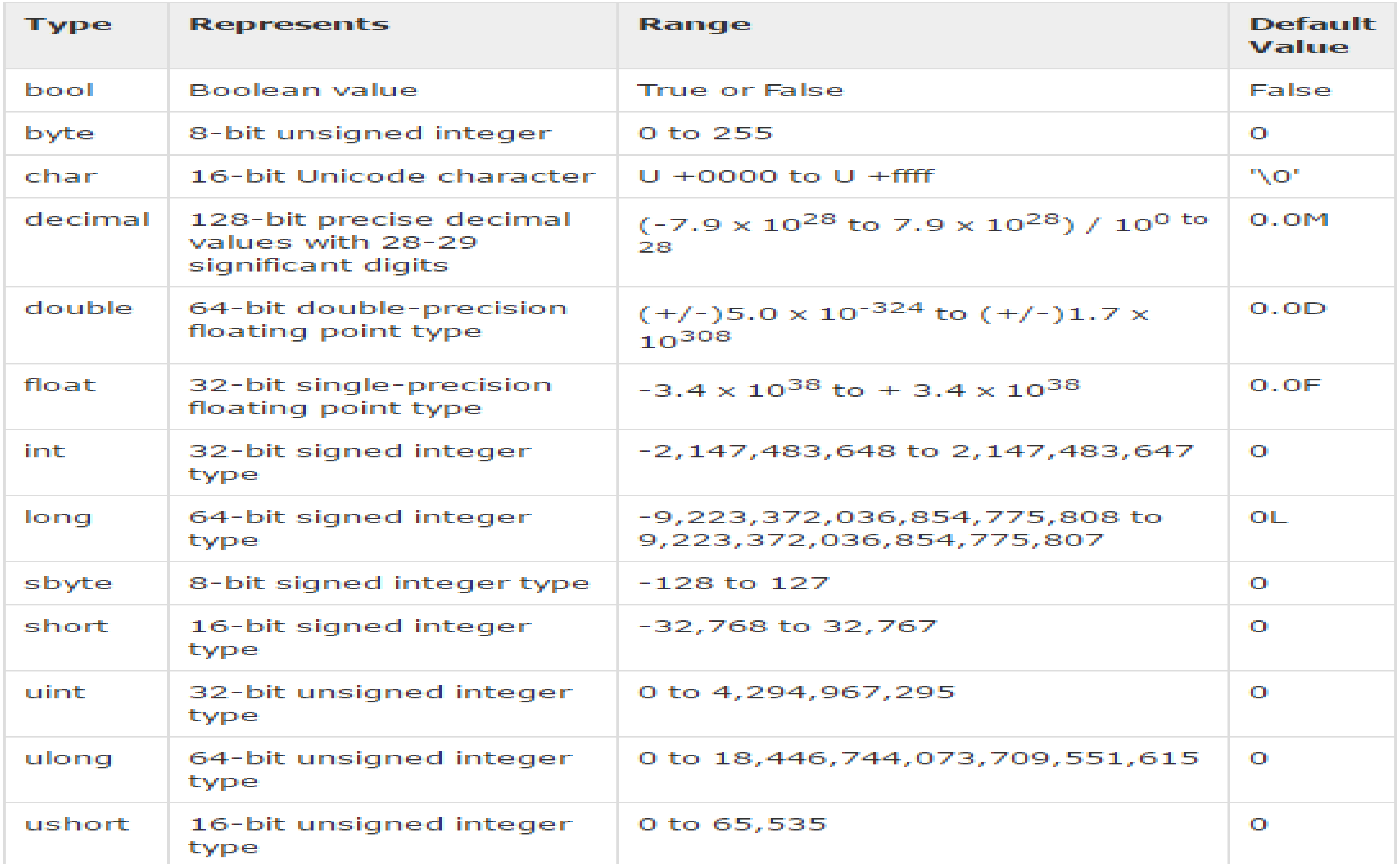
- Pointer types

Value Types

Value type variables can be assigned a value directly. They are derived from the class **System.ValueType**.

The value types directly contain data. Some examples are **int, char, and float**, which stores numbers, alphabets, and floating point numbers, respectively. When you declare an **int** type, the system allocates memory to store the value.

There are following Value Types in C#:



Type	Represents	Range	Default Value
bool	Boolean value	True or False	False
byte	8-bit unsigned integer	0 to 255	0
char	16-bit Unicode character	U +0000 to U +ffff	'\0'
decimal	128-bit precise decimal values with 28-29 significant digits	$(-7.9 \times 10^{28}$ to $7.9 \times 10^{28}) / 10^{0}$ to 28	0.0M
double	64-bit double-precision floating point type	$(+/-)5.0 \times 10^{-324}$ to $(+/-)1.7 \times 10^{308}$	0.0D
float	32-bit single-precision floating point type	-3.4×10^{38} to $+ 3.4 \times 10^{38}$	0.0F
int	32-bit signed integer type	-2,147,483,648 to 2,147,483,647	0
long	64-bit signed integer type	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807	0L
sbyte	8-bit signed integer type	-128 to 127	0
short	16-bit signed integer type	-32,768 to 32,767	0
uint	32-bit unsigned integer type	0 to 4,294,967,295	0
ulong	64-bit unsigned integer type	0 to 18,446,744,073,709,551,615	0
ushort	16-bit unsigned integer type	0 to 65,535	0

Global Variables and Constants

There are no such global variables in C# as we were having in C++.

But there is a way, that you can use static keyword for using a variable as a global variable.

For Example:

```
static int var=2;
```

We can also make constants in C# using const keyword.

For Example:

```
const int VAR=5;
```

Input / Output (I/O)

To output in C# we will use following syntax:

Console.WriteLine(“Hello”);

To input a value in C# we will use following syntax:

String s;

s=Console.ReadLine();

C# Code Example

Running Demo