01 Introduction to C# and Data Types

Understanding Data Types

Test your knowledge

1. What type would you choose for the following “numbers”?  
-A person’s telephone number --int  
-A person’s height --int  
-A person’s age --int  
-A person’s gender (Male, Female, Prefer Not To Answer) --char  
-A person’s salary --int  
-A book’s ISBN --string  
-A book’s price --int  
-A book’s shipping weight --int  
-A country’s population --int  
-The number of stars in the universe --int  
-The number of employees in each of the small or medium businesses in the United Kingdom (up to about 50,000 employees per business) –int

2. What are the difference between value type and reference type variables? What is boxing and unboxing?

1) Value type will directly hold the value, while reference type will hold the memory address or reference for its value.

2) Value type will be stored in stack memory while reference type will be stored in heap memory.

3) Value type will not be collected by garbage collector, while reference type will be collected by garbage collector.

4) Value type can be created by Struct or Enum, while reference type can be created by classes, interfaces, delegates, array.

5) Value type cannot accept null values but reference types can accept null values.

Boxing: convert a value type into a reference type.

Unboxing: convert a reference type back to value type.

3. What is meant by the terms managed resource and unmanaged resource in .NET

--Managed resources are those that are pure . NET code and managed by the runtime and are under its direct control. Unmanaged resources are those that are not.

4. What’s the purpose of Garbage Collector in .NET?

--To automatic memory manager.

-- Benefits:

--Don’t need to manually release memory

--Allocates objects on managed heap efficiently

Controlling Flow and Converting Types

Test your Knowledge

1. What happens when you divide an int variable by 0?

-- Dividing by zero is an operation that has no meaning in ordinary arithmetic and is, therefore, undefined.

2. What happens when you divide a double variable by 0?

3. What happens when you overflow an int variable, that is, set it to a value beyond its range?

-- If an integer addition overflows, then the result is the low-order bits of the mathematical sum as represented in some sufficiently large two's-complement format. If overflow occurs, then the sign of the result is not the same as the sign of the mathematical sum of the two operand values.

4. What is the difference between x = y++; and x = ++y;?

--The prefix increment returns the value of a variable after it has been incremented.

--The postfix increment returns the value of a variable before it has been incremented.

5. What is the difference between break, continue, and return when used inside a loop statement?

-- Break will terminate the current loop, and continue execution at the first line after the loop ends, return will return a certain value from that loop.

6. What are the three parts of a for statement and which of them are required?

-- A For loop consists of three parts: the keyword For that starts the loop, the condition being tested, and the EndFor keyword that terminates the loop.

7. What is the difference between the = and == operators?

-- ‘=’ gives a value to a data type, ‘==’ is a boolean type to check the value of 2 data is equal or not.

8. Does the following statement compile? for ( ; true; ) ;

-- no, need to use ‘For() {

}’

9. What does the underscore \_ represent in a switch expression?

-- The underscore (\_) character replaces the default keyword to signify that it should match anything if reached.

10. What interface must an object implement to be enumerated over by using the for each statement?

-- The IEnumerable interface permits enumeration by using a foreach loop.