

1. What type would you choose for the following “numbers”?

A person's telephone number:

If standard US number(10 digit) then: INT/UINT

A person's height:

If looks like 175.8 cm then Double/Float

A person's age

If only take the whole year, for example no decimal, then UINT

A person's gender (Male, Female, Prefer Not To Answer)

String if the texts are stored.

A person's salary

Float or Double or Decimal (since it uses m in C# and m is for money)

A book's ISBN

ulong

A book's price

Float or Double or Decimal (since it uses m in C# and m is for money)

A book's shipping weight

Float or Double

A country's population

UINT

The number of stars in the universe

Ulong

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?

Value types would directly hold the value while reference will hold the memory/reference for the value. Values are stored in the stack memory and references are stored in the heap memory. Value type will not be collect by garbage collector but reference type will. Values type are created by struct or enum while reference are created by class, interface. Delegate or array. Value type can not accept null while reference type can

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

Managed heaps are organized by garbage collector while unmanaged heaps we need to call Dispose() on IDisposable interface.

3. What's the purpose of Garbage Collector in .NET?

Works as an automatic memory manager on the heap memory (managed heap), will release the memory used by no longer in use reference types. Works from generation from 0 to 2

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

Error CS0020 : Division by constant zero

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

+INF or -INF depending on the input

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

Error CS0220 : The operation overflows at compile time in checked mode

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

`x = y++` x equals to the y value before y is added 1;

`x = ++y` x equals to the y value after y is added 1;

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

Break: exit the loop upon execution;

Continue: skip to next iteration upon execution

Return: exit the loop with the returned thing.

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

Initiation: set a starting point, running once for example `int i = 0`;

Condition: checks before each loop iteration, loop runs if true

Iterator: run after the loop body typical used to change something that may cause the condition to become false exiting the loop

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

`=` assign variable a value;

`==` compares between two values;

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

Yes, this is an infinite loop

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

It stands for the default that matches anything

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

IEnumerable