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

-string

A person’s height

-float or double

A person’s age

-int

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

* Enum or string

A person’s salary

* decimal

A book’s ISBN

-string

A book’s price

* decimal

A book’s shipping weight

-float or double

A country’s population

-long

The number of stars in the universe

-BigInteger

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 type variables store data in memory(stack)

- Reference type variable store the reference in stack but the actual data in heap

- Boxing means converting a value type to object

- Unboxing means extracting value type from an object

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

- **Managed resources**: Memory and objects managed by the .NET runtime (e.g., arrays, strings, lists).

- **Unmanaged resources**: OS-level resources not handled by the CLR, like file handles, database connections, network sockets

4. Whats the purpose of Garbage Collector in .NET?

-Automatically reclaims memory used by **unreferenced managed objects**.

- Prevents memory leaks and dangling pointers.

-Improves memory efficiency without requiring manual deallocation.

Test your Knowledge

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

-Throws DivideByZero Exception at runtime

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

- returns Infinity for non-zero

- NaN is numerator is zero

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

range?

- Overflow exception

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

- Post-increment: assign y to x, then increment y

- Pre-increment: increment y, then assign it to x

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

statement?

- break: Exits the current loop entirely

-continue: Skips the current iteration and moves to the next loop cycle

- return: Exits the method (or returns a value) immediately

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

- for (initialization; condition; increment)

Only condition is required

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

- = : Assignment

- ==: Equality check

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

- Yes. Results in infinite loop

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

- discard/default case

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

statement?

**IEnumerable** or **IEnumerable<T>** (for generics).