Assignment 8

Ans 1. The **object** is a basic building block of an OOPs language. In Java, we cannot execute any program without creating an object.

Using the "**new"** keyword is the most popular way to create an object or instance of the class.

Class_name object = **new** Class_name();

Ans 2. The Java new keyword is used to create an instance of the class. it instantiates a class by allocating memory for a new object and returning a reference to that memory

Syntax:

NewExample obj=**new** NewExample();

- It is used to create the object.
- It allocates the memory at runtime.
- All objects occupy memory in the heap area.

Ans 3. A variable is a container which holds the value while the Java program is executed. A variable is assigned with a data type. Variable is a name of memory location.

There are three types of variables in java: local, instance and static.

1) Local Variable

A variable declared inside the body of the method is called local variable. We can use this variable only within that method and the other methods in the class aren't even aware that the variable exists.

A local variable cannot be defined with "static" keyword.

2) Instance Variable

A variable declared inside the class but outside the body of the method, is called an instance variable. It is not declared as static.

It is called an instance variable because its value is instance-specific and is not shared among instances.

3) Static variable

A variable that is declared as static is called a static variable. It cannot be local. We can create a single copy of the static variable and share it among all the instances of the class. Memory allocation for static

variables happens only once when the class is loaded in the memory.

Ans 4. Difference between instance variable and local variable:

Instance Variable	Local Variable
They are defined in class but outside the body of methods.	They are defined as a type of variable declared within programming blocks.
These variables are created when an object is instantiated and are accessible to all methods, or blocks in class.	These variables are created when a block, method is started and the variable will be destroyed once it exits the block, method.
These variables are destroyed when the object is destroyed.	These variables are destroyed when the method is existed.
It can be accessed throughout the class.	Its access is limited to the method in which it is declared.
They are used to reserving memory for data that the class needs and that too for the lifetime of the object.	They are used to decreasing dependencies between components I.e., the complexity of code is decreased.

Instance Variable	Local Variable
These variables are given a default value if it is not assigned by code.	These variables do not always have some value, so there must be a value assigned by code.
It is not compulsory to initialize instance variables before use.	It is important to initialize local variables before use.
It includes access modifiers such as private, public, protected, etc.	It does not include any access modifiers such as private, public, protected, etc.

Ans 5. **Stack** is a memory place where the methods and the **local variables** are stored.

Heap is a memory place where the objects and its **instance variable** are stored.

Ans 6.**Method overloading :** Method overloading is a feature of Java in which a class has more than one method of the same name and their parameters are different.