**Core Java - Assignment**

**Module - 1**

**7.Constructors and Destructor in Java**

**Theory : -**

1. Constructor Types (Default, Parametrized):

-> **Constructors** in object-oriented programming are special methods that initialize objects of a class. They have the same name as the class and are invoked automatically when an object is created.

-> Default Constructor : A constructor that takes no arguments.

-> Parametrized Constructor : only constructor which is called when during object creation parameters are passed.

1. Copy Constructor (Emulated in Java):

-> A special type of constructor that creates a new object as a copy of an existing object of the same class.

1. Constructor Overloading :

->Constructor overloading is a fundamental concept in object-oriented programming that allows a class to have multiple constructors with the same name but different parameters. This provides flexibility in how objects of the class are created and initialized.

1. Object Life Cycle and Garbage Collection :

-> 1. creation : An object is created using the new keyword, allocating memory for its instance variables.

1. Initialization : The object's constructor is called to initialize its instance variables with default or specified values.
2. **Usage:** The object is used in the program, its methods are called, and its data is accessed or modified.
3. **Reachability:** As long as there are references to the object from other objects or variables, it is considered reachable and remains in memory.
4. **Unreachability :** When all references to an object are lost, it becomes unreachable.

6. **Garbage Collection:** The garbage collector identifies unreachable objects and reclaims their memory space.

**-> Garbage Collection :**

**-> Automatic Memory Management:** In Java, garbage collection is an automatic process that reclaims memory occupied by objects that are no longer in use.

**-> Reachability Analysis:** The garbage collector determines which objects are reachable by traversing the object graph, starting from root objects like local variables and static variables.

**-> Memory Reclamation:** Unreachable objects are identified and their memory is reclaimed, making it available for future object creation.