**10. Interfaces and Abstract Classes**

• **Theory:**

1. **. Abstract Classes and Methods:-**

* **Abstract Classes:-** An abstract class is a class that cannot be instantiated directly. It is declared with the abstract keyword.
* **Abstract Methods**:- An abstract method is a method that is declared without an implementation. It is also marked with the abstract keyword.

**2.Interfaces: Multiple Inheritance in Java:-** An interface is declared using the interface keyword.All methods in an interface are implicitly public and abstract (unless they are default or static).A class can implement multiple interfaces, allowing for a form of multiple inheritance.Interfaces can have default methods that provide a default implementation.

**Syntax:-** interface InterfaceName {

// Abstract method

returnType methodName(parameters);

// Default method

default returnType defaultMethodName(parameters) {

// Default implementation }

// Static method static

returnType staticMethodName(parameters) {

// Static implementation

}

}

**3.Implementing Multiple Interfaces:-** Interfaces are declared using the interface keyword and can contain abstract methods, default methods, and static methods. A class can implement multiple interfaces by using a comma-separated list in the implements clause. When a class implements multiple interfaces, it must provide implementations for all abstract methods defined in those interfaces.

**Syntax:-** interface InterfaceName1 {

// Abstract method

returnType methodName(parameters);

}

interface InterfaceName2 {

// Abstract method

returnType methodName(parameters);

}