UNIT – 2

**INHERITANCE AND INTERFACES**

Question Bank

**PART – A**

**2 – Marks**

1. **What is inheritance?**

Inheritance in java is a mechanism in which one object acquires all the properties and behaviours of parent object. It helps reuse the code. It establishes parent child relationship among the classes. It implements IS-A relationship between the classes.

1. **Define super class and sub class.**

Super class: In inheritance super class always represents current classes’ parent class.

Sub class: In inheritance sub class always represents current classes’ child class.

1. **What is the role of protected member in class?**

* If a variable or method declared with access modifier protected then it is protected members
* Protected members are access able only with in the class and sub classes.
* Outside access only given through inheritance.
* We can access protected members from other packages but class must inherit the class which has a protected members.

1. **Write a short note on final class and final methods.**

***Final Class:*** A class can be declared as final. If it does then we can’t inherit or extend the class further more.

Eg; final class SportsBike { .... } we can’t extend more the SportBike class.

***Final Method:*** A method can be declared as final. If it does then we can’t override the method from sub classes.

Eg; class SportsBike { final startSportsBike() {....} } we can’t override the startSportsBike in following sub classes.

1. **Define abstract classes.**

* Abstract class is an incomplete class, because it contains abstract method members.
* Abstract methods don’t have method body.
* We can’t instantiate the abstract class [can’t create objects].
* Abstract classes need to extend with other classes and extending class must provide definitions for all the abstract methods which are declared in abstract class.

1. **What is dynamic binding?**

Dynamic binding also called dynamic dispatch is the process of linking procedure call to a specific sequence of code (method) at run-time. It means that the code to be executed for a specific procedure call is not known until run-time. Dynamic binding is also known as late binding or run-time binding.

1. **What is interface?**

Interface is reference types in java. It is similar to class but it only has the abstract methods. Interfaces are implemented by the class. A class must implement all the interface methods with out fail. Otherwise class will be considered as abstract classes. Interfaces also supports for inheritance [one interface can be extended with other interfaces].

***Eg:***

interface VehicleOperations {

voidStart();

voidRun();

voidStop();

}

1. **Write any two different between class and interface.**

|  |  |
| --- | --- |
| **Class** | **Interface** |
| It can contain instance members [data and methods]. | It contains abstract method members and constants. |
| It can be instantiated | We can’t instantiate the interfaces. It can be implemented by class and class can be instantiated. |

1. **Define Object class.**

The Object class, in the java.lang package, sits at the top of the class hierarchy tree. Every class is a descendant, direct or indirect, of the Object class. Every class you use or write inherits the instance methods of Object.

1. **What is object cloning?**

The object cloning is a way to create exact copy of an object. The clone() method of Object class is used to clone an object.

The java.lang.Cloneable interface must be implemented by the class whose object clone we want to create. If we don't implement Cloneable interface, clone() method generates CloneNotSupportedException.

1. **Differentiate shallow vs deep cloning.**

Shallow Cloning:

In shallow cloning only the main class objects are cloned. But main class may contain inner class objects those object are not cloned instead it shared among the main class objects.

Deep Cloning:

In this case the entire object structure cloned. There is no refrence sharing between objects.

1. **Write some uses of ArrayList class.**

ArrayList is an utility class provided by the java.util package. It provides dynamic arrays that grown for elements. It also provides the default list operations [add, delete, modify.., etc] provided as API’s. It is a viable replacement for standard fixed size arrays.

1. **Define String in java.**

In Java, a string is an object that represents a sequence of characters. It is immutable. String class provides lot of API’s to handle the strings. String are created as two types of objects that is String pool objects that is string literals and heap objects.

1. **What is inner class in java?**

If class contains as class as member then that member class is known as inner class. Inner classes can be declared with any of access modifiers [private, public, default, protected].

1. **Write a program that helps change the lower case text to upper case.**

import java.io.\*;

class Main {

public static void main(String[] args){

String data = "hello world";

String uData = data.toUpperCase();

System.out.println("Original Data: "+data);

System.out.println("Converted Data: "+uData);

}

}

***Output***

Original Data: hello world

Converted Data: HELLO WORLD

**13 – Marks**

1. Explain in details about types of inheritance supported by java.
2. Explain about Object and its importance in java.
3. Explain about interface concepts of java and compare with abstract class.
4. Explain about ArrayList class and its methods in java.
5. Explain about String class and its methods in java.
6. Write a program to that implements following inheritance concepts
7. Write a program that handles simple banking transaction system
   1. Receive and store user information’s like [Name, Address, Aadhar number, Mobile number]
   2. Generate an account number in sequence begins with 3036118900 to n
   3. Create an interface called CustomerOperations [contains debit and credit transaction methods].
   4. Maintain two types of account [Savings and Current].
   5. Differentiate customer operations based on the account type [Eg: Current user can withdraw money beyond balance available like over draft limit but Savings user cannot].