FULL STACK DEVELOPMENT – WORKSHEET 4

Q1.Write in brief about OOPS Concept in java with Examples. (In your own words)

Ans:

Object-Oriented Programming (OOP) is a fundamental programming paradigm in Java. It's based on the concept of "objects," which are instances of classes that represent real-world entities. OOP promotes code organization, reusability, and maintainability. There are four main pillars of OOP in Java:

Encapsulation

Encapsulation: Encapsulation involves bundling data (attributes) and methods (functions) that operate on that data into a single unit called a class. It restricts access to some data while exposing other parts of the class, promoting data integrity.

Inheritance

Inheritance: Inheritance allows a class to inherit properties and behaviors (fields and methods) from another class. It encourages code reuse and supports the creation of class hierarchies.

Polymorphism

Polymorphism: Polymorphism means "many forms" and enables objects of different classes to be treated as objects of a common superclass. It supports dynamic method invocation and method overriding.

Abstraction

Abstraction: Abstraction simplifies complex reality by modeling classes based on essential properties and behaviors while hiding non-essential details. It allows developers to focus on what an object does rather than how it does it.

Q1. Which of the following is used to make an Abstract class?

Ans: A. Making at least one member function as pure virtual function

Q2. Which of the following is true about interfaces in java.

Ans: (A) 1, 3 and 4

Q3. When does method overloading is determined?

Ans: (B) At compile time

Q4. What is the number of parameters that a default constructor requires?

Ans: (A) 0

Q5. To access data members of a class, which of the following is used?

Ans: (A) Dot Operator

Q6. Objects are the variables of the type ____?

Ans: (C) Class

Q7. A non-member function cannot access which data of the class?

Ans: (A) Private data

Q8. Predict the output of following Java program

```
class Test {
 int i;
 }
 class Main { public static void main(String args[]) {
 Test t = new Test();
System.out.println(t.i);
 }
 }
```

Ans: (B) 0

Q9. Which of the following is/are true about packages in Java?

Ans: (A) Only 1, 2 and 3

Q10.Predict the Output of following Java Program.

```
class Base { public void show()
{
 System.out.println("Base::show() called");
}
 }
 class Derived extends Base { public void show() {
 System.out.println("Derived::show() called");
 }
 }
 public class Main { public static void main(String[] args)
 {
 Base b = new Derived();;
b.show();
}
 }
```

Ans: Derived::show() called

Q11. What is the output of the below Java program?

```
 class Base {
final public void show() {
 System.out.println("Base::show() called");
}
 }
 class Derived extends Base {
 public void show() {
System.out.println("Derived::show() called");
 }
 }
 class Main {
 public static void main(String[] args) {
 Base b = new Derived();;
 b.show();
}
}
```

Ans: Derived::show() called

Q12.Find output of the program.

```
class Base {
 public static void show() {
 System.out.println("Base::show() called");
 }
 }
class Derived extends Base {
public static void show()
 {
 System.out.println("Derived::show() called");
 }
 }
 class Main {
 public static void main(String[] args) {
 Base b = new Derived();
 b.show();
 }
 }
```

Ans: Base::show() called

Q13.What is the output of the following program?

```
class Derived {
 public void getDetails()
 {
 System.out.printf("Derived class ");
 }
 }
public class Test extends Derived
 {
 public void getDetails()
 {
 System.out.printf("Test class ");
 super.getDetails();
 }
 public static void main(String[] args) {
 Derived obj = new Test();
 obj.getDetails();
 }
 }
```

Ans: Test class Derived class

Q14. What is the output of the following program?

```
class Derived {
public void getDetails(String temp) {
System.out.println("Derived class " + temp);
}
 }
 public class Test extends Derived {
```

```
 public int getDetails(String temp)
 {
 System.out.println("Test class " + temp);
return 0;
}
 public static void main(String[] args) {
 Test obj = new Test();
obj.getDetails("Name");
}
}
```

Ans: Test class Name

Q15.What will be the output of the following Java program?

```
 class test
 {
 public static int y = 0;
 }
 class HasStatic
{
 private static int x = 100;
 public static void main(String[] args) {
 HasStatic hs1 = new HasStatic();
 hs1.x++;
 HasStatic hs2 = new HasStatic();
 hs2.x++;
 hs1 = new HasStatic();
 hs1.x++;
HasStatic.x++;
 System.out.println("Adding to 100, x = " + x);
 test t1 = new test();
 t1.y++;
test t2 = new test();
 t2.y++;
 t1 = new test();
 t1.y++;
System.out.print("Adding to 0, ");
 System.out.println("y = " + t1.y + " " + t2.y + " " + test.y);
 }
 }
```

Ans: Adding to 100, x=104

Adding to 0, y=3 3 3

Q16.Predict the output

```
class San {
 public void m1 (int i,float f)
{
 System.out.println(" int float method");
}
 public void m1(float f,int i);
 {
 System.out.println("float int method");
 }
public static void main(String[]args) {
 San s=new San();
s.m1(20,20);
}
 }
```

Ans: Error

Q17.What is the output of the following program?

```
 public class Test {
 public static void main(String[] args) {
 int temp = null;
 Integer data = null;
 System.out.println(temp + " " + data);
}
}
```

Ans: compilation error

Q18.Find output

```
class Test {
protected int x, y;
 }
 class Main {
 public static void main(String args[]) {
 Test t = new Test();
System.out.println(t.x + " " + t.y);
}
```

Ans: 0 0

Q19.Find output

```
 // filename: Test2.java
class Test1 {
 Test1(int x)
 {
 System.out.println("Constructor called " + x);
 }
 }
 class Test2 {
 Test1 t1 = new Test1(10);
 Test2(int i) {
 t1 = new Test1(i);
 }
 public static void main(String[] args) {
Test2 t2 = new Test2(5);
}
}
```

Ans: constructor called 10

          constructor called 5

Q20.What will be the output of the following Java program?

```
class Main {
 public static void main(String[] args) {
```

```
 int []x[] = {{1,2}, {3,4,5}, {6,7,8,9}};
 int [][]y = x;
System.out.println(y[2][1]);
 }
 }
```

Ans: 7

Q21.What will be the output of the following Java program?

```
 class A {
int i; public void display()
{
 System.out.println(i);
 }
 }
class B extends A {
 int j;
 public void display() {
System.out.println(j);
 }
 }
 class Dynamic_dispatch {
 public static void main(String args[]) {
 B obj2 = new B();
obj2.i = 1;
obj2.j = 2;
A r;
 r = obj2;
 r.display();
 }
 }
```

Ans: 2

Q22. What will be the output of the following Java code?

```
class A {
 int i;
void display() {
 System.out.println(i);
 }
 }
  class B extends A {
 int j;
 void display() {
System.out.println(j);
 }
}
 class method_overriding {
public static void main(String args[]) {
 B obj = new B();
obj.i=1;
obj.j=2;
```

```
 obj.display();
 }
 }
```

Ans: 2

Q23.What will be the output of the following Java code?

```
class A {
 public int i;
 protected int j;
}
class B extends A {
 int j;
 void display() {
 super.j = 3;
System.out.println(i + " " + j);
 }
 }
 class Output {
 public static void main(String args[]) {
 B obj = new B();
obj.i=1;
obj.j=2;
obj.display();
 }
}
```

Ans: 1 2

Q24.What will be the output of the following Java program?

```
class A {
public int i;
 public int j;
  A()
{
 i = 1;
 j = 2;
 }
 }
class B extends A {
 int a;
 B() { super();
 }
}
 class super_use {
 public static void main(String args[]) {
 B obj = new B();
System.out.println(obj.i + " " + obj.j)
}
}
```

Ans: 1 2

Q 25. Find the output of the following program.

```
 class Test {
 int a = 1;
int b = 2;
 Test func(Test obj) {
 Test obj3 = new Test();
 obj3 = obj;
 obj3.a = obj.a++ + ++obj.b;
obj.b = obj.b;
 return obj3;
 }
 public static void main(String[] args) {
Test obj1 = new Test();
 Test obj2 = obj1.func(obj1);
System.out.println("obj1.a = " + obj1.a + " obj1.b = " + obj1.b);
System.out.println("obj2.a = " + obj2.a + " obj1.b = " + obj2.b);
}
}
```

```
Ans:   obj1.a = 4 obj1.b = 3
       obj2.a = 4 obj1.b = 3
```