**Class Work**

**Day-10**

1.

**package** org.example.demo2;

**class** Base{

//reference

**private** **int** num1;

**private** **int** num2;

**public** Base() {

**this**.num1 = 10;

**this**.num2 = 20;

}

**public** **void** printRecord( ) {

System.***out***.println("Num1 : "+**this**.num1);

System.***out***.println("Num2 : "+**this**.num2);

}

}

**class** Derived **extends** Base{

**private** **int** num3;

**public** Derived() {

**this**.num3 = 30;

}

@Override

**public** **void** printRecord( ) {

**super**.printRecord();

System.***out***.println("Num3 : "+**this**.num3);

}

}

**public** **class** Program {

**public** **static** **void** main(String[] args) {

Base base = **new** Derived(); //Upcasting

base.printRecord(); //Dynamic Method Dispatch

}

**public** **static** **void** main2(String[] args) {

Derived derived = **new** Derived();

derived.printRecord();

}

**public** **static** **void** main1(String[] args) {

Base base = **new** Base( );

base.printRecord();

}

}

2.

**package** org.example.demo6;

**import** java.util.Scanner;

**class** Shape{

**protected** **float** area;

**public** Shape() {

}

**public** **void** calculateArea( ) {

}

**public** **float** getArea() {

**return** **this**.area;

}

}

**class** Rectangle **extends** Shape{

**private** **float** length;

**private** **float** breadth;

**public** Rectangle() {

}

**public** **void** setLength(**float** length) {

**this**.length = length;

}

**public** **void** setBreadth(**float** breadth) {

**this**.breadth = breadth;

}

**public** **void** calculateArea( ) {

**this**.area = **this**.length \* **this**.breadth;

}

}

**class** Circle **extends** Shape{

**private** **float** radius;

**public** Circle() {

}

**public** **void** setRadius(**float** radius) {

**this**.radius = radius;

}

**public** **void** calculateArea( ) {

**this**.area = (**float**) (Math.***PI*** \* Math.*pow*(radius, 2));

}

}

**public** **class** Program {

**private** **static** Scanner *sc* = **new** Scanner(System.***in***);

**private** **static** **void** acceptRecord(Shape shape) {

**if**( shape **instanceof** Rectangle ) {

Rectangle rect = (Rectangle) shape; //Downcasting

System.***out***.print("Length : ");

rect.setLength(*sc*.nextFloat());

System.***out***.print("Breadth : ");

rect.setBreadth(*sc*.nextFloat());

}**else** {

Circle c = (Circle) shape; //Downcasting

System.***out***.print("Radius : ");

c.setRadius(*sc*.nextFloat());

}

}

**private** **static** **void** printRecord(Shape shape) {

System.***out***.println("Area : "+shape.getArea());

}

**public** **static** **int** menuList( ) {

System.***out***.println("0.Exit");

System.***out***.println("1.Rectangle");

System.***out***.println("2.Circle");

System.***out***.print("Enter choice : ");

**return** *sc*.nextInt();

}

**public** **static** **void** main(String[] args) {

**int** choice;

**while**( ( choice = Program.*menuList*( ) ) != 0 ) {

Shape shape = **null**;

**switch**( choice ) {

**case** 1:

shape = **new** Rectangle(); //Upcasting

**break**;

**case** 2:

shape = **new** Circle();//Upcasting

**break**;

}

**if**( shape != **null** ) {

Program.*acceptRecord*( shape );

shape.calculateArea(); //Dynamic method dispatch

Program.*printRecord*( shape );

}

}

}

}