Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

Academic Year: 2022-2023

Name – Prerna Sunil Jadhav **SAP ID - 60004220127**

Experiment No – 08

AIM: To implement Abstract classes (CO4)

THEORY:

In this below given program we have implemented concepts like data encapsulation , constructor overloading. Encapsulation in Java is a mechanism of wrapping the data (variables) and code acting on the data (methods) together as a single unit. In encapsulation, the variables of a class will be hidden from other classes and can be accessed only through the methods of their current class. Abstract class called Shape has three subclasses say Triangle, Rectangle, Circle. Method area() in the abstract class and override this area() in these three subclasses to calculate for specific object i.e., Area() of Triangle subclass should calculate area of triangle etc. Same for Rectangle and Circle. An abstract class is like a blueprint/format about the minimum required functions. A method which is declared as abstract and does not have implementation is known as an abstract method.

CODE (i): Write a abstract class program to calculate area of circle, rectangle and triangle

Code1_Abstract.java

Exp8 > Code1_Abstract.java > ...

```java
package Exp8;
import java.lang.Math;
abstract class Shape {
    abstract void area();
    double area;
}
class Triangle extends Shape {
    double b = 50, h = 15;
    void area() {
        area = (b * h) / 2;
        System.out.println("area of Triangle -->" + area);
    }
}
class Rectangle extends Shape {
    double w = 70, h = 20;
    void area() {
        area = w * h;
        System.out.println("area of Rectangle -->" + area);
    }
}
```

```java
class Circle extends Shape {
    double r = 5;
    void area() {
        area = Math.PI * r * r;
        System.out.println("area of Circle -->" + area);
    }
}
class Exp8_Abstract {
    Run | Debug
    public static void main(String[] args) {
        System.out.println(x: "Prerna Jadhav 60004220127");
        Triangle t = new Triangle();
        Rectangle r = new Rectangle();
        Circle c = new Circle();
        t.area();
        r.area();
        c.area();
    }
}
```

OUTPUT:

```
Prerna Jadhav 60004220127
area of Triangle -->375.0
area of Rectangle -->1400.0
area of Circle -->78.53981633974483
```

CONCLUSION: Thus, we implemented Abstract classes.