

1. Describe abstract class: Shape which has 3 subclasses: Triangle, Rectangle and Circle. Define an abstract method area() in the abstract class and override this Area() method in these 3 subclasses to calculate the area of specific object.

```
abstract class Shape{
    static final float PI = 3.14f;
    abstract void area();
}

class Circle extends Shape{
    float radius;
    Circle(){
        radius = 1f;
    }
    Circle(int radius){
        this.radius = radius;
    }
    void area(){
        float area = PI * radius * radius;
        System.out.println("Area of circle: " + area);
    }
}

class Rectangle extends Shape{
    float height,width;
    Rectangle(){
        height = 1f; width = 1f;
    }
    Rectangle(float height,float width){
        this.height = height;
        this.width = width;
    }
    void area(){
        float area = height * width;
        System.out.println("Area of rectangle: " + area);
    }
}

class Triangle extends Shape{
    float height,base;
    Triangle(){
        height = 1f;
        base = 1f;
    }
}
```

```

    }
    Triangle(float base,float height){
        this.height = height;
        this.base = base;
    }
    void area(){
        float area = (1f/2f) * height * base;
        System.out.println("Area of triangle: " + area);
    }
}

class ShapeImplementation{
    public static void main(String args[]){
        System.out.println("Creating a Triangle with: Height = 1, Base
= 1");
        Triangle t = new Triangle();
        t.area();
        System.out.println("Creating a Circle with: Radius = 1");
        Circle c = new Circle();
        c.area();
        System.out.println("Creating a Rectangle with: Height = 1,
Width = 1");
        Rectangle r = new Rectangle();
        r.area();
    }
}

```

Output:

```
D:\Learn\Sem-5\Java\Assignments\Assignment-3\Shape>javac Shape.java
```

```

D:\Learn\Sem-5\Java\Assignments\Assignment-3\Shape>java ShapeImplementation
Creating a Triangle with: Height = 1, Base = 1
Area of triangle: 0.5
Creating a Circle with: Radius = 1
Area of circle: 3.14
Creating a Rectangle with: Height = 1, Width = 1
Area of rectangle: 1.0

```