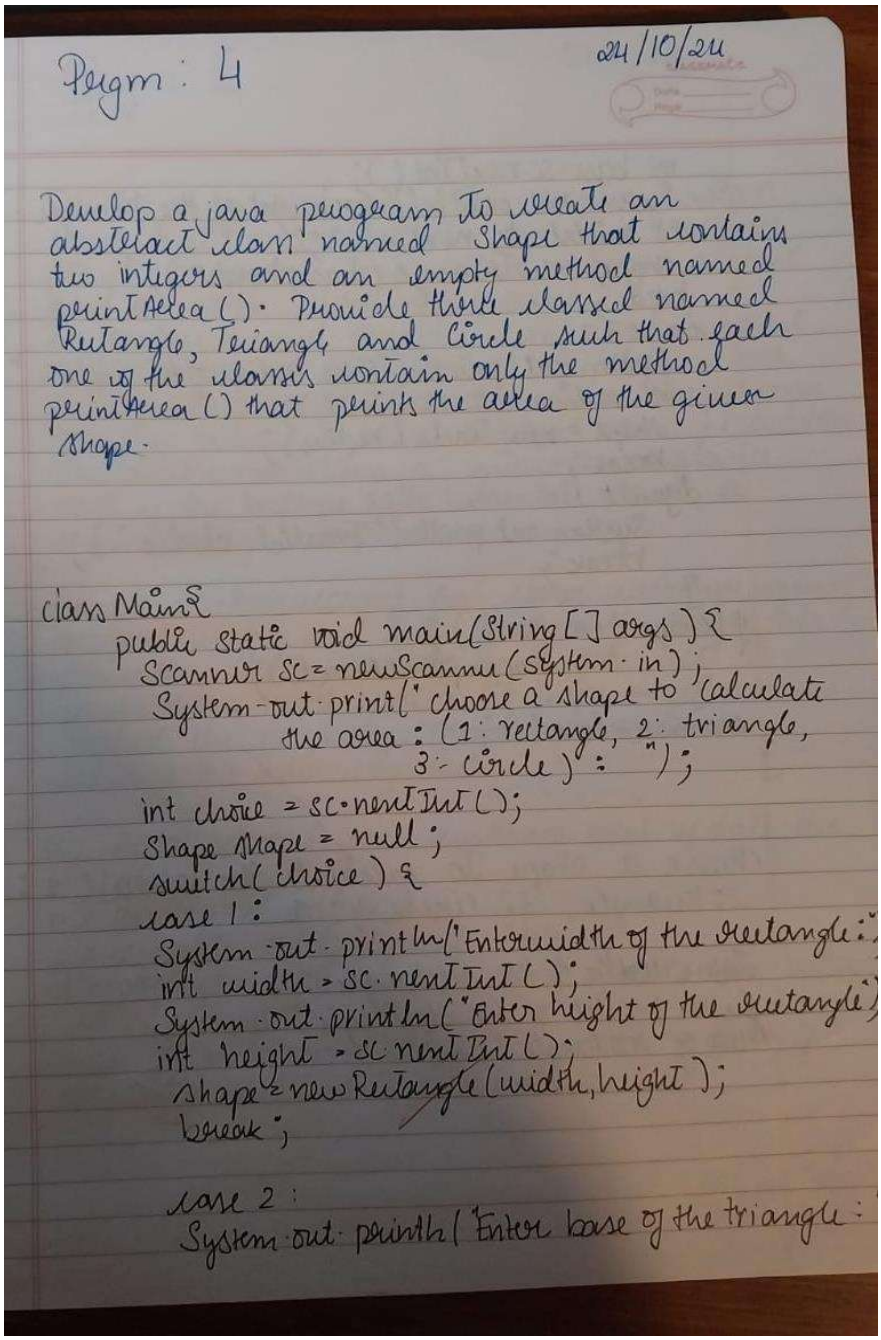
WEEK 4 :

Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea( ). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea( ) that prints the area of the given shape.



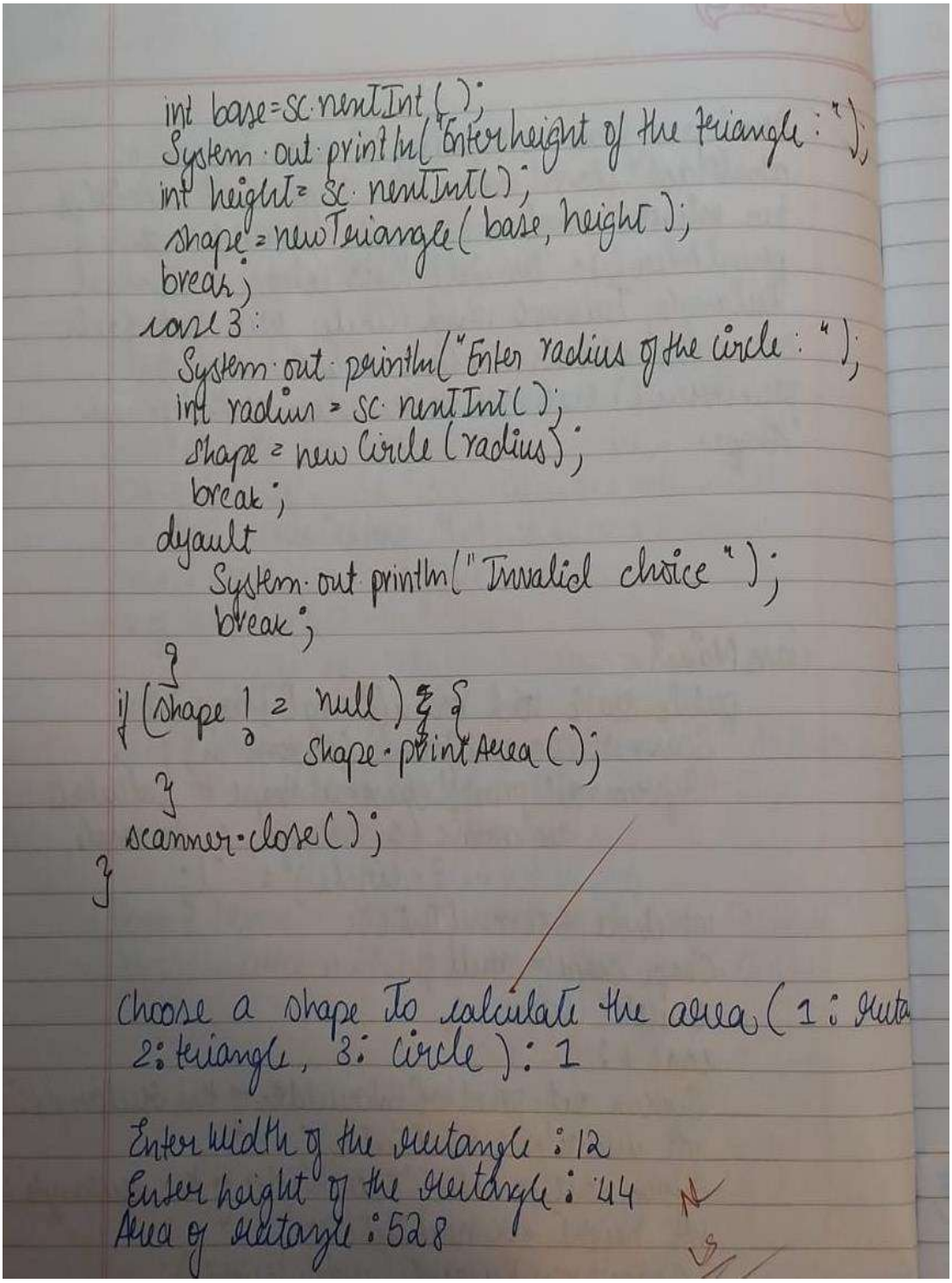
Pgm : 4

24/10/24

Develop a java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes contain only the method printArea() that prints the area of the given shape.

```
class Main{
    public static void main(String[] args){
    Scanner sc = new Scanner(System.in);
     System.out.print("choose a shape to calculate
                the area : (1: rectangle, 2: triangle,
                        3: circle) : ");
    int choice = sc.nextInt();
    Shape shape = null;
    switch(choice){
    case 1:
     System.out.println("Enter width of the rectangle:");
     int width = sc.nextInt();
     System.out.println("Enter height of the rectangle");
     int height = sc.nextInt();
      shape = new Rectangle(width, height);
      break;

     case 2:
     System.out.println("Enter base of the triangle:
```



```
        int base=sc.nextInt();
        System.out.println("Enter height of the Triangle:");
        int height=sc.nextInt();
        shape=new Triangle(base, height);
        break;
      case 3:
        System.out.println("Enter radius of the circle:");
        int radius=sc.nextInt();
        shape=new Circle(radius);
        break;
      default
        System.out.println("Invalid choice");
        break;
    }
    if(shape!=null){
        shape.printArea();
    }
    scanner.close();
}
```

```
Choose a shape To calculate the area (1: Rectangle
2: Triangle, 3: Circle): 1

Enter Width of the Rectangle: 12
Enter height of the Rectangle: 44
Area of Rectangle: 528
```

```
import java.util.Scanner;

abstract class Shape {
    int dim1;
    int dim2;
    Shape(int dim1, int dim2) {
        this.dim1 = dim1;
        this.dim2 = dim2;}
    abstract void printArea();}
class Rectangle extends Shape {
    Rectangle(int length, int width) {
        super(length, width);
    }


    @Override
    void printArea() {
        int area = dim1 * dim2;
        System.out.println("Area of Rectangle: " + area);
```

```
    }
}class Triangle extends Shape {
    Triangle(int base, int height) {
        super(base, height);
    }    @Override
    void printArea() {
        double area = 0.5 * dim1 * dim2;
        System.out.println("Area of Triangle: " + area);
    }
}class Circle extends Shape {
    Circle(int radius) {
        super(radius, 0);
    }@Override
    void printArea() {
        double area = Math.PI * dim1 * dim1;
        System.out.println("Area of Circle: " + area);
    }
```

```
}

public class Shapes1 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter length and width for Rectangle:");

        int length = sc.nextInt();

        int width = sc.nextInt();

        Rectangle a1 = new Rectangle(length, width);

        a1.printArea();

        System.out.println("Enter base and height for Triangle:");

        int base = sc.nextInt();

        int height = sc.nextInt();

        Triangle a2 = new Triangle(base, height);

        a2.printArea();

       System.out.println("Enter radius for Circle:");

        int radius = sc.nextInt();

        Circle a3 = new Circle(radius);
```

```
        a3.printArea();

    }

}
```