WEEK-04

book.java > BookStore > main(String[])

```java
import java.util.Scanner;

class Book {
    // Members of the Book class
    private String name;
    private String author;
    private double price;
    private int numPages;

    // Constructor to initialize the book details
    public Book(String name, String author, double price, int numPages) {
        this.name = name;
        this.author = author;
        this.price = price;
        this.numPages = numPages;
    }

    // Getter and Setter methods for each member
    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getAuthor() {
        return author;
    }

    public void setAuthor(String author) {
        this.author = author;
    }

    public double getPrice() {
        return price;
    }

    public void setPrice(double price) {
        this.price = price;
    }

    public int getNumPages() {
        return numPages;
    }

    public void setNumPages(int numPages) {
        this.numPages = numPages;
    }
```

```java
    // toString method to return the details of the book
    @Override
    public String toString() {
        return "Book Name: " + name + "\n" +
               "Author: " + author + "\n" +
               "Price: $" + price + "\n" +
               "Number of Pages: " + numPages;
    }
}

class BookStore
{
Run | Debug
public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Asking the user how many books they want to create
        System.out.print("Enter the number of books: ");
        int n = scanner.nextInt();
        scanner.nextLine(); // consume the newline character

        // Array to store Book objects
        Book[] books = new Book[n];

        // Creating n books based on user input
        for (int i = 0; i < n; i++) {
            System.out.println("\nEnter details for book " + (i + 1) + ":");

            // Collecting book details from the user
            System.out.print("Enter book name: ");
            String name = scanner.nextLine();

            System.out.print("Enter author name: ");
            String author = scanner.nextLine();

            System.out.print("Enter price: ");
            double price = scanner.nextDouble();

            System.out.print("Enter number of pages: ");
            int numPages = scanner.nextInt();
            scanner.nextLine(); // consume the newline character
```

```
            // Create a new Book object and store it in the array
            books[i] = new Book(name, author, price, numPages);
        }

        // Displaying details of each book
        System.out.println("\nDetails of the books:");
        for (int i = 0; i < n; i++) {
            System.out.println("\nBook " + (i + 1) + " Details:");
            System.out.println(books[i].toString());
        }

        scanner.close();
    }
}
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

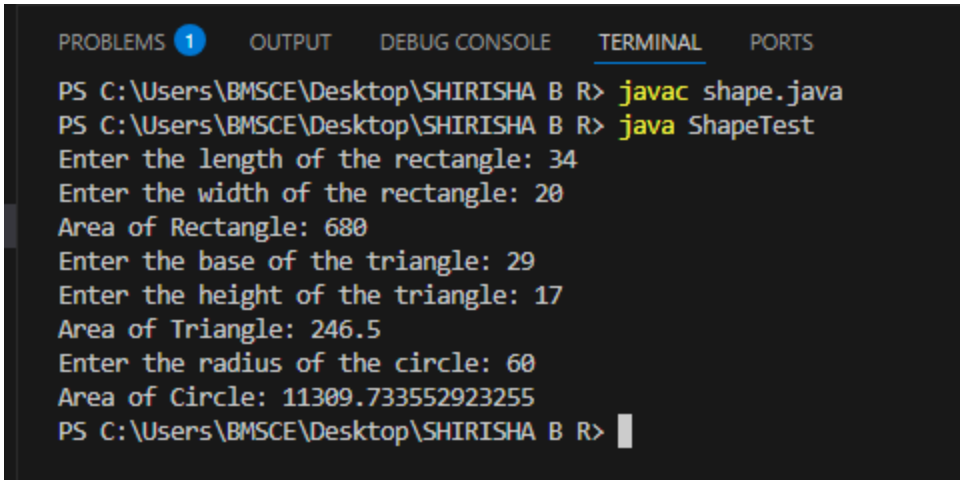
```
PS C:\Users\BMSCE\Desktop\SHIRISHA B R> javac book.java
PS C:\Users\BMSCE\Desktop\SHIRISHA B R> java BookStore
Enter the number of books: 2

Enter details for book 1:
Enter book name: java
Enter author name: james gosling
Enter price: 500
Enter number of pages: 200

Enter details for book 2:
Enter book name: python
Enter author name: guido van rossum
Enter price: 1000
Enter number of pages: 300

Details of the books:

Book 1 Details:
Book Name: java
Author: james gosling
Price: $500.0
Number of Pages: 200

Book 2 Details:
Book Name: python
Author: guido van rossum
Price: $1000.0
Number of Pages: 300
PS C:\Users\BMSCE\Desktop\SHIRISHA B R>
```

Shape.java > ShapeTest > main(String[])

```java
import java.util.Scanner;

// Abstract class Shape
abstract class Shape {
    // Two integers to represent the dimensions of a shape (e.g., length, width, radius, etc.)
    protected int dimension1;
    protected int dimension2;

    // Abstract method to print the area of the shape
    abstract void printArea();
}

// Rectangle class extending Shape
class Rectangle extends Shape {
    // Constructor to initialize dimensions for the rectangle
    public Rectangle(int length, int width) {
        this.dimension1 = length;
        this.dimension2 = width;
    }

    // Overriding the printArea method to calculate and print the area of a rectangle
    @Override
    void printArea() {
        int area = dimension1 * dimension2;
        System.out.println("Area of Rectangle: " + area);
    }
}

// Triangle class extending Shape
class Triangle extends Shape {
    // Constructor to initialize dimensions for the triangle (base, height)
    public Triangle(int base, int height) {
        this.dimension1 = base;
        this.dimension2 = height;
    }

    // Overriding the printArea method to calculate and print the area of a triangle
    @Override
    void printArea() {
        double area = 0.5 * dimension1 * dimension2;
        System.out.println("Area of Triangle: " + area);
    }
}
```

Shape.java > ShapeTest > main(String[])

```java
// Circle class extending Shape
class Circle extends Shape {
    // Constructor to initialize radius for the circle
    public Circle(int radius) {
        this.dimension1 = radius;
        this.dimension2 = 0; // Second dimension is not needed for a circle
    }

    // Overriding the printArea method to calculate and print the area of a circle
    @Override
    void printArea() {
        double area = Math.PI * dimension1 * dimension1; // area = π * r^2
        System.out.println("Area of Circle: " + area);
    }
}
// Main class to test the shapes
 class ShapeTest {
    Run | Debug
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Input for Rectangle
        System.out.print("Enter the length of the rectangle: ");
        int length = scanner.nextInt();
        System.out.print("Enter the width of the rectangle: ");
        int width = scanner.nextInt();
        Shape rectangle = new Rectangle(length, width); // Creating a Rectangle object
         // Printing the area for each shape
        rectangle.printArea();

        // Input for Triangle
        System.out.print("Enter the base of the triangle: ");
        int base = scanner.nextInt();
        System.out.print("Enter the height of the triangle: ");
        int height = scanner.nextInt();
        Shape triangle = new Triangle(base, height); // Creating a Triangle object
         // Printing the area for each shape
         triangle.printArea();

        // Input for Circle
        Syst int radius - ShapeTest.main(String[]) ircle: ");
        int radius = scanner.nextInt();
        Shape circle = new Circle(radius); // Creating a Circle object
         // Printing the area for each shape
         circle.printArea();

        scanner.close();
    }
}
```


PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
PS C:\Users\BMSCE\Desktop\SHIRISHA B R> javac shape.java
PS C:\Users\BMSCE\Desktop\SHIRISHA B R> java ShapeTest
Enter the length of the rectangle: 34
Enter the width of the rectangle: 20
Area of Rectangle: 680
Enter the base of the triangle: 29
Enter the height of the triangle: 17
Area of Triangle: 246.5
Enter the radius of the circle: 60
Area of Circle: 11309.733552923255
PS C:\Users\BMSCE\Desktop\SHIRISHA B R>