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CLASS PROBLEMS

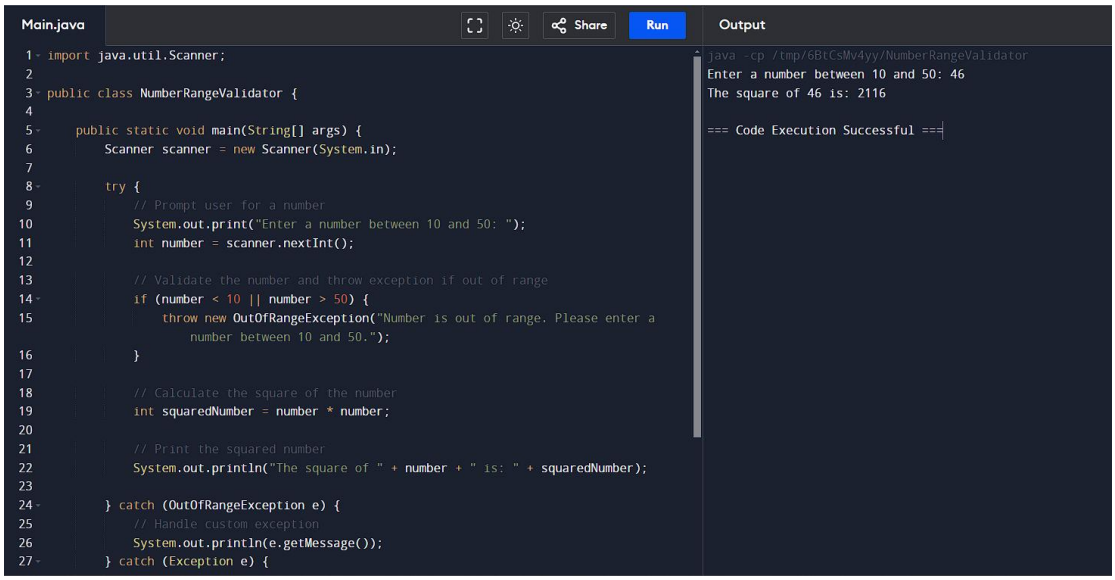
Question 1:

write java program number less than 10 and greater than 50 exception throws out of range and it should square number use scanner class (valid range 10to50)

Code:

```
import java.util.Scanner;

public class NumberRangeValidator {

   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      try {
         // Prompt user for a number
         System.out.print("Enter a number between 10 and 50: ");
         int number = scanner.nextInt();

         // Validate the number and throw exception if out of range
         if (number < 10 || number > 50) {
            throw new OutOfRangeException("Number is out of range. Please enter a number between 10 and 50.");
         }

         // Calculate the square of the number
         int squaredNumber = number * number;

         // Print the squared number
         System.out.println("The square of " + number + " is: " + squaredNumber);

      } catch (OutOfRangeException e) {
         // Handle custom exception
         System.out.println(e.getMessage());
      } catch (Exception e) {
         // Handle any other exceptions
         System.out.println("Invalid input. Please enter an integer.");
      } finally {
         // Close the scanner
         scanner.close();
      }
   }
}
```

```
// Custom exception class for out of range errors
class OutOfRangeException extends Exception {
    public OutOfRangeException(String message) {
        super(message);
    }
}
```



Question 2:

create box class with data members width,height,depth.create two subclasses boxweight with weight as data member and ship man with cost data members

Code:

```
// Base class
class Box {
    // Data members for Box class
    double width;
    double height;
    double depth;

    // Constructor for Box class
    public Box(double width, double height, double depth) {
        this.width = width;
        this.height = height;
        this.depth = depth;
    }

    // Method to compute volume of the box
    public double volume() {
        return width * height * depth;
```

```
    }

    // Method to display box dimensions
    public void displayDimensions() {
        System.out.println("Width: " + width);
        System.out.println("Height: " + height);
        System.out.println("Depth: " + depth);
    }
}

// Subclass of Box that includes weight
class BoxWeight extends Box {
    // Data member for weight
    double weight;

    // Constructor for BoxWeight class
    public BoxWeight(double width, double height, double depth, double
weight) {
        super(width, height, depth); // Call the constructor of the base class
        this.weight = weight;
    }

    // Method to display weight
    public void displayWeight() {
        System.out.println("Weight: " + weight);
    }
}

// Subclass of Box that includes shipping cost
class ShipMan extends Box {
    // Data member for cost
    double cost;

    // Constructor for ShipMan class
    public ShipMan(double width, double height, double depth, double cost) {
        super(width, height, depth); // Call the constructor of the base class
        this.cost = cost;
    }

    // Method to display shipping cost
    public void displayCost() {
        System.out.println("Shipping Cost: " + cost);
    }
}

// Main class to test the functionality
public class BoxTest {
    public static void main(String[] args) {
        // Create an instance of BoxWeight
        BoxWeight boxWeight = new BoxWeight(10, 20, 15, 25);
        System.out.println("BoxWeight Details:");
```

```
        boxWeight.displayDimensions();
        boxWeight.displayWeight();
        System.out.println("Volume: " + boxWeight.volume());

        // Create an instance of ShipMan
        ShipMan shipMan = new ShipMan(12, 24, 18, 50);
        System.out.println("\nShipMan Details:");
        shipMan.displayDimensions();
        shipMan.displayCost();
        System.out.println("Volume: " + shipMan.volume());
    }
}
```