



Experiment-3

Student Name: Sanampreet Singh

Branch: CSE

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Subject Name: PBJL

UID: 23BCS13053

Section/Group: KRG-2B

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1. Aim:

To write a Java program to calculate the square root of a number entered by the user. Use try-catch handle invalid inputs (e.g., negative numbers or non-numeric values).

2. Objective

- To understand how to handle invalid input using try-catch blocks in Java.
- To learn exception handling using NumberFormatException and custom exceptions.
- To validate numeric inputs and prevent program crashes.
- To gain practical knowledge of Java exception handling in user input scenarios.

3. Procedure

Step1: Prompt the user to input a number.

Step2: Convert input to a number type using Scanner.

Step3: Use a try-catch block to handle NumberFormatException and check for negative values.

Step4: If the number is negative, manually throw an exception.

Step5: If the number is valid, calculate and print the square root.

4. JAVA Script :

```
import java.util.Scanner;
```

```
public class Main {
```

```
    public static void main(String[] args) {
```

```
        Scanner sc = new Scanner(System.in);
```

```
        try {
```

```
            System.out.print("Enter a number:");           double num = sc.nextDouble();           if (num < 0) {               throw new IllegalArgumentException("Cannot calculate the square root of a negative number");           }
```

```
            double result = Math.sqrt(num);
```

```
            System.out.println("Square root: " + result);
```

```
} catch (IllegalArgumentException e) {
```



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```
        System.out.println("Error: " + e.getMessage());  
    } catch (Exception e) {  
        System.out.println("Error: Invalid input. Please enter a valid number.");  
    }  
}
```

5. Output:

Enter a number: -10000

Error: Cannot calculate the square root of a negative number

Process finished with exit code 0

6. Learning Outcomes:

- Successfully implemented exception handling in Java.
- Understood how to use try-catch blocks for error handling.
- Learned to validate user input to prevent invalid calculations.
- Practiced throwing and catching exceptions in Java.
- Improved problem-solving skills by handling runtime errors effectively.