Experiment - 3

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

Objective: To understand how to handle invalid inputs using try-catch blocks in java.
Input Used: Java exception classes, try-catch block and Scanner class for input.
Procedure:

1. Prompt the user to input a number.
2. Convert input to a number type using Scanner.
3. Use a try-catch block to handle NumberFormatException and check for negative values.
4. If number is negative, throw exception.
5. If number is valid, print its square root.

Sample Input -
Enter a number: -19
Sample Output -
Error: Cannot calculate square root of a negative number.

Code –

```
package Experiment_Codes;
import java.util.List;
import java.util.Scanner;
import java.util.ArrayList;

class Notvalidinput extends Exception{
    public Notvalidinput(String msg) {
        super(msg);
    }
}


public class exp3 {
```

```
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter num: ");
        int x = sc.nextInt();

        try {
            if (x < 0) {
                throw new Notvalidinput("square root not valid for negatives");
            }

            int low = 1, high = x, ans = 0;
            while (low <= high) {
                int mid = (low + high) / 2;

                if (mid * mid > x) {
                    high = mid - 1;
                } else if (mid * mid < x) {
                    ans = mid;
                    low = mid + 1;
                } else {
                    System.out.println(mid);
                    return;
                }
            }
            System.out.println(ans);
        } catch (Notvalidinput e) {
            System.out.println("error: " + e.getMessage());
        }
    }
}
```

Output -

```
PS C:\Users\gupta\OneDrive\Desktop\Sem 5\PBLJ>  c:; cd 'c:\Users\g
ble-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\U
redhat.java\jdt_ws\PBLJ_6bf3720e\bin' 'Experiment_Codes.exp3'
Enter num:
-1
error: square root not valid for negatives
PS C:\Users\gupta\OneDrive\Desktop\Sem 5\PBLJ>  c:; cd 'c:\Users\g
ble-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\U
redhat.java\jdt_ws\PBLJ_6bf3720e\bin' 'Experiment_Codes.exp3'
Enter num:
16
4
```