Experiment 5

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Subject: Java Lab **Subject Code: 22CSH-359**

Aim: writing a Java program to calculate the sum of a list of integers using autoboxing and unboxing, along with methods to parse strings into their respective wrapper classes (e.g., Integer.parseInt()).

Objective: The objective of this Java program is to demonstrate the use of autoboxing and unboxing while performing operations on a list of integers.

Algorithm:

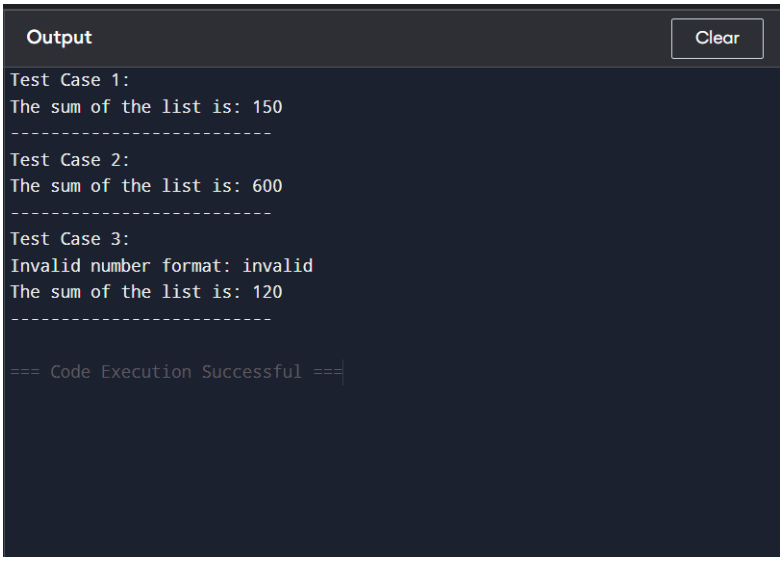
1. Create a List of Integers: Initialize a List<Integer> to hold the integers.
2. Autoboxing: Use autoboxing to convert primitive int values to Integer objects automatically when adding to the list.
3. Unboxing: Use unboxing to convert Integer objects back to int for sum calculation.
4. Parse Strings: Create a utility method to parse strings to integers using Integer.parseInt().
5. Calculate the Sum: Use a loop or Java 8 streams to calculate the sum of the list.

Code:

```
import java.util.*;

public class SumCalculator {


   public static Integer parseStringToInteger(String str) {
      try {
         return Integer.parseInt(str);
      } catch (NumberFormatException e) {
         System.out.println("Invalid number format: " + str);
         return null;
      }
   }

   public static int calculateSum(List<Integer> numbers) {
      int sum = 0;
      for (Integer num : numbers) {
         if (num != null) {
            sum += num;
         }
      }
      return sum;
   }
```

```
    public static void main(String[] args) {
        List<String[]> testCases = new ArrayList<>();
        testCases.add(new String[]{"10", "20", "30", "40", "50"}); // Test Case 1
        testCases.add(new String[]{"100", "200", "300"}); // Test Case 2
        testCases.add(new String[]{"50", "invalid", "70"}); // Test Case 3

        for (int i = 0; i < testCases.size(); i++) {
            List<Integer> numbers = new ArrayList<>();
            System.out.println("Test Case " + (i + 1) + ":");
            for (String input : testCases.get(i)) {
                Integer parsedNumber = parseStringToInteger(input);
                if (parsedNumber != null) {
                    numbers.add(parsedNumber);
                }
            }

            int sum = calculateSum(numbers);
            System.out.println("The sum of the list is: " + sum);
            System.out.println("-------------------------");
        }
    }
}
```

Output:



Learning Outcomes:

- Understand autoboxing and unboxing in Java.
- Learn string-to-integer parsing with exception handling.
- Implement collections (List<Integer>) for data storage.
- Apply test cases for validation and debugging.