# Experiment 5.1

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**Semester: 6th** **DOP: 21/02/25**
**Subject: PBLJ** **Subject Code:22CSH-359**

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

2. **Objective:** Demonstrate **autoboxing** and **unboxing** in Java by converting string numbers into Integer objects, storing them in a list, and computing their sum.

## 3. Algorithm:

**Step 1: Initialize the Program**

1. Start the program.
2. Import ArrayList and List classes.
3. Define the AutoboxingExample class.

**Step 2: Convert String Array to Integer List**

1. Define the method parseStringArrayToIntegers(String[] strings).
2. Create an empty ArrayList<Integer>.
3. Iterate through the string array:
   - Convert each string to an Integer using Integer.parseInt(str).
   - Add the integer to the list (**autoboxing** happens here).
4. Return the list of integers.

**Step 3: Calculate the Sum of Integers**

1. Define the method calculateSum(List<Integer> numbers).
2. Initialize a variable sum to 0.
3. Iterate through the list:
   - Extract each integer (**unboxing** happens here).
   - Add it to sum.
4. Return the total sum.

**Step 4: Execute Main Function**

1. Define main(String[] args).
2. Create a string array with numeric values.
3. Call parseStringArrayToIntegers() to convert it into a list of integers.
4. Call calculateSum() to compute the sum.
5. Print the result.

**Step 5: Terminate the Program**

1. End the execution.

## 4.Code:

```
import java.util.ArrayList;
import java.util.List;

public class AutoboxingExample {
    public static void main(String[] args) {
        String[] numberStrings = {"100", "30", "20", "110", "550"};
        List<Integer> numbers = parseStringArrayToIntegers(numberStrings);

        System.out.println("Anshu Kumar_22BCS16672");

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

    public static List<Integer> parseStringArrayToIntegers(String[] strings) {
        List<Integer> integerList = new ArrayList<>();
        for (String str : strings) {
            integerList.add(Integer.parseInt(str));
        }
        return integerList;
    }

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

## 5.Output:

```
Output

Anshu Kumar_22BCS16672
The sum of the numbers is: 810

=== Code Execution Successful ===
```

## 6.Learning Outcomes:

- Understand the concept of **autoboxing and unboxing** in Java and how primitive types are automatically converted to their wrapper classes and vice versa.
- Learn how to **convert string values into Integer objects** using Integer.parseInt() and store them in a list.
- Gain experience in **working with ArrayLists** to store and manipulate a collection of numbers dynamically.
- Develop proficiency in **iterating through collections** and performing arithmetic operations like summation.