Experiment 4

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1. **Aim: Write a Program to perform the basic operations like insert, delete, display and search in list. List contains String object items where these operations are to be performed.**
2. **Objective: The objective of this program is to implement basic operations (insert, delete, display, and search) on a List containing String objects. The program will demonstrate how to manipulate a list using common list operations in Java, providing functionality to manage and interact with data stored in the list.**
3. **Implementation/Code:**

```
import java.util.*;

public class StringListOperations {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        List<String> stringList = new ArrayList<>();

        while (true) {
            System.out.println("\nChoose an operation:");
            System.out.println("1. Insert");
            System.out.println("2. Delete");
            System.out.println("3. Display");
            System.out.println("4. Search");
            System.out.println("5. Exit");
            System.out.print("Enter your choice: ");
            int choice = scanner.nextInt();
            scanner.nextLine(); // consume newline
```

```
switch (choice) {
            case 1:
                System.out.print("Enter string to insert: ");
                String item = scanner.nextLine();
                stringList.add(item);
                System.out.println("Inserted successfully!");
                break;

            case 2:
                System.out.print("Enter string to delete: ");
                String toDelete = scanner.nextLine();
                if (stringList.remove(toDelete)) {
                    System.out.println("Deleted successfully!");
                } else {
                    System.out.println("Item not found!");
                }
                break;

            case 3:
                System.out.println("List contents: " + stringList);
                break;

            case 4:
                System.out.print("Enter string to search: ");
                String toSearch = scanner.nextLine();
                if (stringList.contains(toSearch)) {
                    System.out.println("Item found!");
                } else {
                    System.out.println("Item not found!");
                }
                break;

            case 5:
                System.out.println("Exiting program...");
                scanner.close();
                return;

            default:
                System.out.println("Invalid choice! Please try again.");
        }
```

4. **Output:**

```
Choose an operation:
1. Insert
2. Delete
3. Display
4. Search
5. Exit
Enter your choice: 1
Enter string to insert: Amit Kumar
Inserted successfully!

Choose an operation:
1. Insert
2. Delete
3. Display
4. Search
5. Exit
Enter your choice: 3
List contents: [Amit Kumar]

Choose an operation:
1. Insert
2. Delete
3. Display
4. Search
5. Exit
Enter your choice: 4
Enter string to search:  Ayesha
Item not found!
```

```
Choose an operation:
1. Insert
2. Delete
3. Display
4. Search
5. Exit
Enter your choice: 2
Enter string to delete: Amit Kumar
Deleted successfully!

Choose an operation:
1. Insert
2. Delete
3. Display
4. Search
5. Exit
Enter your choice: 5
Exiting program...
```

5. **Learning Outcomes:**
   1. Learn how to perform basic **CRUD (Create, Read, Update, Delete)** operations on a **List** of **String** objects in Java.
   2. Understand how to use the **ArrayList** class for dynamically storing and manipulating a collection of items.
   3. Practice handling **user input** using the **Scanner** class for interaction with the program.
   4. Implement methods for **searching**, **deleting**, and **displaying** items in a list efficiently.
   5. Gain familiarity with **control flow** and **loops** to allow for continuous user interaction until the program is exited.