Experiment 4

Student Name: Jannat Walia **UID: 22BCS14905**
Branch: BE-CSE **Section/Group: 640 B**
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Subject Name: Project Based Learning in Java with Lab **Subject Code: 22CSH-359**

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.ArrayList;
import java.util.Scanner;

public class StringListOperations {

    private static ArrayList<String> list = new ArrayList<>();

    public static void insertItem(String item) {
        list.add(item);
    }

    public static void deleteItem(String item) {
        if (list.contains(item)) {
            list.remove(item);
            System.out.println(item + " has been removed.");
        } else {
            System.out.println(item + " not found in the list.");
        }
    }

    public static void displayList() {
        if (list.isEmpty()) {
            System.out.println("The list is empty.");
```

```
        } else {
            System.out.println("List items: " + list);
        }
    }

    public static void searchItem(String item) {
        if (list.contains(item)) {
            System.out.println(item + " is found in the list.");
        } else {
            System.out.println(item + " is not found in the list.");
        }
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int choice;

        do {
            System.out.println("\nSelect an operation:");
            System.out.println("1. Insert Item");
            System.out.println("2. Delete Item");
            System.out.println("3. Display List");
            System.out.println("4. Search Item");
            System.out.println("5. Exit");
            choice = sc.nextInt();
            sc.nextLine();

            switch (choice) {
                case 1:
                    System.out.print("Enter item to insert: ");
                    String insertItem = sc.nextLine();
                    insertItem(insertItem);
                    break;
                case 2:
                    System.out.print("Enter item to delete: ");
                    String deleteItem = sc.nextLine();
                    deleteItem(deleteItem);
                    break;
                case 3:
                    displayList();
                    break;
                case 4:
                    System.out.print("Enter item to search: ");
                    String searchItem = sc.nextLine();
                    searchItem(searchItem);
                    break;
                case 5:
```

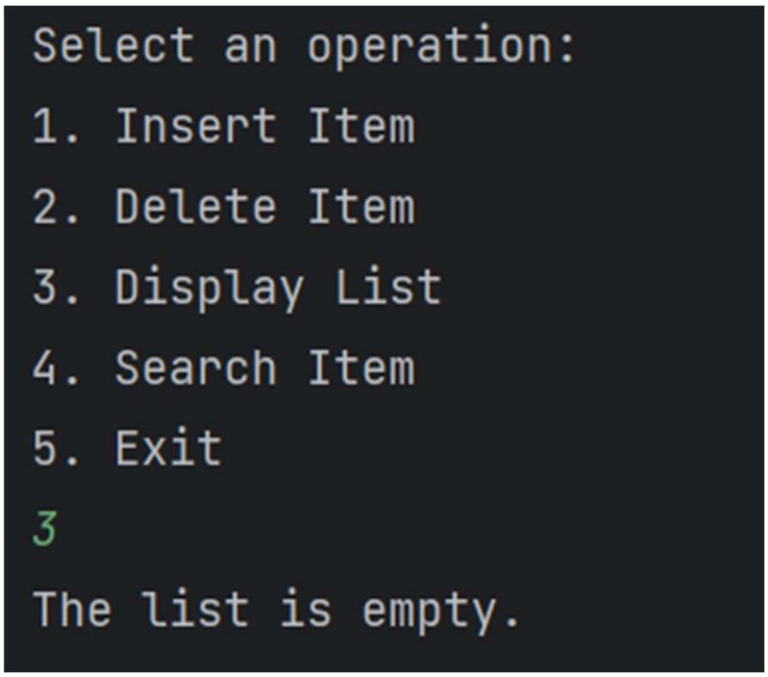
```
                System.out.println("Exiting program.");
                break;
            default:
                System.out.println("Invalid choice! Please choose a valid option.");
        }
    } while (choice != 5);

    sc.close();
}
}
```

4. **Output:**

```
Select an operation:
1. Insert Item
2. Delete Item
3. Display List
4. Search Item
5. Exit
1
Enter item to insert: Apple

Select an operation:
1. Insert Item
2. Delete Item
3. Display List
4. Search Item
5. Exit
2
Enter item to delete: Apple
Apple has been removed.
```



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.