Experiment 4

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Subject: Project Based Learning in Java   Subject Code: 22CSP-359

1. **Aim:** To implement a menu-driven program using a switch case that allows the user to p
the following operations on an ArrayList:

   ☒ Insertion – Add elements to the ArrayList based on user input.☒

   ☒ Deletion – Remove a specified element from the ArrayList.☒

   ☒ Search – Find an element in the ArrayList and display its index.☒

   ☒ Display – Show all elements of the ArrayList.☒

2. **Objective:**

   ☒   To enable dynamic insertion, deletion, searching, and displaying of elements based on user input.☒

   ☒   To enhance problem-solving skills by utilizing ArrayList functions effectively.☒

3. **Implementation/Code:**

```java
import java.util.*;
public class Arraylist{

    static void insert(ArrayList<Integer> a,int idx,int val){
        if (idx<0||idx>a.size()) {
            System.out.println("Invalid index");
            return;
        }
        System.out.println("Value added successfully");
        a.add(idx,val);
    }
    static void delete(ArrayList<Integer> a,int val){
        if(a.isEmpty()) {
        System.out.println("ArrayList is empty");
        return;
        }
```

```java
        int idx=a.indexOf(val);
        if(idx==-1) {
          System.out.println("No such value");
          return;
        }
        System.out.println("Value deleted successfully");
        a.remove(idx);
    }
    static void display(ArrayList<Integer> a){
        System.out.println("Data: "+ a);
    }
    static int Search(ArrayList<Integer> a,int val){
        if(a.isEmpty()) {
          System.out.println("ArrayList is empty");
          return -1;
        }
        int idx=a.indexOf(val);
        if(idx!=-1) return idx+1;
        System.out.println("Value not Found");
        return -1;
    }
    public static void main(String[] args) {
        ArrayList<Integer> list = new ArrayList<Integer>();
        Scanner sc=new Scanner(System.in);
        do{
          System.out.println("Enter 1-5 for :");
          System.out.println("1-Insert\n2-Delete\n3-Display\n4-Search\n5-Exit");
          int n=sc.nextInt();
        switch (n) {
        case 1:
            System.out.println("Enter index where you want to insert: ");
            int idx=sc.nextInt();
            System.out.println("Enter value you want to insert: ");
            int val=sc.nextInt();
            insert(list,idx,val);
            break;
        case 2:
            System.out.println("Enter value you want to delete: ");
            int d=sc.nextInt();
            delete(list, d);
```

```
                break;
            case 3:
                display(list);
                break;
            case 4:
            System.out.println("Enter val you want to search: ");
            int i=sc.nextInt();
            System.out.println("Your value is at position: "+Search(list, i));
                break;
            case 5:
             System.out.println("Goodbye...");
             sc.close();
             return;
            default:
                break;
            }
        } while(true);
    }
}
```

4. Output:

```
Enter val you want to search:
3
Value not Found
Your value is at position: -1
Enter 1-5 for :
1-Insert
2-Delete
3-Display
4-Search
5-Exit
4
Enter val you want to search:
2
Your value is at position: 1
Enter 1-5 for :
1-Insert
2-Delete
3-Display
4-Search
5-Exit
5
Goodbye...
PS C:\Users\hp.pc\Desktop\programming languages\java\javaClass>
```

5. Learning Outcomes

- ⊠ Understand and apply the concept of ArrayList for dynamic storage management.⊠

- ⊠ Implement switch-case statements to manage user-driven operations efficiently.⊠

- ⊠ Develop skills in performing insertion, deletion, searching, and displaying elements dynamically.⊠

- ⬚ Gain hands-on experience in handling user input, exceptions, and edge cases in Java pro