



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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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 perform 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:

```
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;
        }
    }
```



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```
        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);
```



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```
        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:

```
PS C:\Users\hp.pc\Desktop\programming languages\java> cd "c:\Users\hp.pc\Desktop\programming languages\java"
ArrayList.java ; if ($?) { java ArrayList }
Enter 1-5 for :
1-Insert
2-Delete
3-Display
4-Search
5-Exit
1
Enter index where you want to insert:
0
Enter value you want to insert:
2
Value added successfully
Enter 1-5 for :
1-Insert
2-Delete
3-Display
4-Search
5-Exit
1
Enter index where you want to insert:
1
Enter value you want to insert:
3
Value added successfully
```

```
Enter 1-5 for :
1-Insert
2-Delete
3-Display
4-Search
5-Exit
3
Data: [2, 3]
Enter 1-5 for :
1-Insert
2-Delete
3-Display
4-Search
5-Exit
2
Enter value you want to delete:
3
Value deleted successfully
```



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```
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