

Assignment - 1

Title - Interface and Packages.

Problem Statement -

Write a JAVA program which demonstrates interfaces and packages. In this assignment, use of customized interfaces and packages for specific application are expected.

Objective -

To be able to implement interfaces in JAVA.
To use packages for different applications.

S/W & H/W Requirement -

64 bit Fedora, Eclipse IDE, Intel i5 Processor,
Keyboard, Monitor.

Theory -

Interface -

An interface is a blueprint of a class. It has static constants and abstract methods and no method body.

E.g -

```
public interface SLL {  
    public void addnode(data);  
    public void deletenode(data);  
    public void display();  
}
```

Package-

A JAVA package is a group of similar type of classes, interfaces and packages. They have properties.

- contains classes / interfaces.
- Provide access information
- stored in hierarchical manner and imported using using keyword "import".
- Provides maintainability and avoids conflict.

Pseudo code -

package Definition;

import Declaration; Interface;

import java.util.Scanner;

class node {

public int data;

public node next;

node () { data = 0; }

node (int d) {

data = d; next = NULL;

}

}

public class SLL implements Interface

{ node head;

node tail;

int size;

SLL () {

head = null; tail = null; size = 0;

}

public void insert (int x) {

node temp = new node (x);


```
size ++;
```

```
if (head == null)
```

```
{ head = temp;
```

```
tail = temp;
```

```
}
```

```
else { tail.next = temp;
```

```
tail = temp;
```

```
}
```

```
}
```

```
public int cnt-size() {
```

```
return size;
```

```
}
```

```
public int isEmpty() {
```

```
if (head == null)
```

```
return 0;
```

```
else
```

```
return 1;
```

```
}
```

```
public void display() {
```

```
if (head == null)
```

```
System.out.println("List is Empty!");
```

```
node temp = head;
```

```
while (temp != NULL) {
```

```
System.out.print(temp.data + "<=>");
```

```
temp = temp.next;
```

```
}
```

```
}
```

```
public void delete(int x) {
```

```
    int flag = 0;
```

```
    if (head.data == x) {
```

```
        node temp = head;
```

```
        head = head.next;
```

```
        temp = null;
```

```
        system.gc();
```

```
    }
```

```
    else { node p = head; node q = head;
```

```
        while (p.data != x) {
```

```
            q = p;
```

```
            p = p.next;
```

```
            if (p == null) {
```

```
                flag = 1;
```

```
                break;
```

```
            }
```

```
        }
```

```
        if (flag == 1)
```

```
            system.out.println("Data not found!!");
```

```
        else {
```

```
            size--;
```

```
            q.next = p.next;
```

```
            p = null;
```

```
            system.gc();
```

```
        }
```

```
    }
```

```
}
```

Test Cases -

	<u>Case</u>	<u>Expected O/P</u>	<u>Actual O/P</u>
1.	Add 4 1 2 3	1 2 3 4	Success
2.	Remove 2	1 3 4	Success
3.	Size of List	3	Success
4.	Display List	1 3 4	Success

Conclusion -

We learnt packages and interfaces of JAVA and successfully implemented the same.