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Practical-9

Introduction to Collection Framework

1)Create an Array List and perform following operations for that:

a) Add
b) Update
c) Delete
d) Convert in to array
e) Display using iterator()

Code:-

```
import java.util.ArrayList;
import java.util.Iterator;
public class Lab7_3
{
	public static void main(String[] args)
	{
		ArrayList<String> cars = new ArrayList<String>();
		System.out.println("ArrayList:");
		cars.add("I-20");
		cars.add("Dzire");
		cars.add("Baleno");
		cars.add("GrandI-10");
		System.out.println(cars);
		System.out.println("");
		System.out.println("Arraylist After Removing One Element :");
		cars.remove(3);
		System.out.println("Arraylist now :" + cars);
		System.out.println("");
		cars.set( cars.indexOf("Baleno") , "MG-Hector");
		System.out.println(cars);
		System.out.println("");
```

```
            Object[] objects = cars.toArray();
            System.out.println("Array List into Array:");
            for (Object obj : objects)
            {
                  System.out.print(obj + " ");
            }
            System.out.println("");
            System.out.println("");
            Iterator <String> it = cars.iterator();
            System.out.println("arrayList:");
            while (it.hasNext())
            {
                  System.out.println(it.next());
            }
      }
}
```

Output:-

```
ArrayList:
[I-20, Dzire, Baleno, GrandI-10]

Arraylist After Removing One Element :
Arraylist now :[I-20, Dzire, Baleno]

[I-20, Dzire, MG-Hector]

Array List into Array:
I-20 Dzire MG-Hector

arrayList:
I-20
Dzire
MG-Hector
Press any key to continue . . .
```

3)Create a LinkedList and perform following operations for that:

a) Insert at first
b) Insert at last
c) Delete from first
d) Delete from last
e) Update specific index node value
f) Remove from specific index
g) Display using iterator()

Code:-

```
import java.util.*;
import java.io.*;
public class Lab7_4
{
	public static void main(String args[]){
	String data;
	Scanner s=new Scanner(System.in);
	int choice;
	LinkedList<String> ll=new LinkedList<String>();
	while(true)
	{
		System.out.println("Press 1. For Add At First Posotion");
		System.out.println("Press 2. For Add At Last  Posotion");
		System.out.println("Press 3. For Delete From First Posotion");
		System.out.println("Press 4. For Delete From Last Posotion");
		System.out.println("Press 5. For Update specific index node value");
		System.out.println("Press 6. For Remove from specific index");
		System.out.println("Press 7. For Display Using Iterator");
		System.out.println("Press 8. For Exit");
		System.out.print("Enter Choice:");
		choice=s.nextInt();

		switch(choice)
```

```
{
        case 1:
                System.out.println("Enter Data:");
                data=s.next();
                ll.addFirst(data);
                break;
        case 2:
                System.out.println("Enter Data:");
                data=s.next();
                ll.addLast(data);
                break;
        case 3:
                ll.removeFirst();
                break;
        case 4:
                ll.removeLast();
                break;
        case 5:
                String datau;
                int index;
                System.out.println("Enter Index:");
                index=s.nextInt();
                System.out.println("Enter Update Data:");
                datau=s.next();
                ll.set(index,datau);
                break;
        case 6:
                int dindex;
                System.out.println("Enter Index:");
                dindex=s.nextInt();
```

```
                    ll.remove(dindex);
                    break;
                case 7:
                    Iterator<String> iter= ll.iterator();

                    System.out.println("\nThe iterator values"+ " of list
                    are: ");
                    while (iter.hasNext())
                    {
                        System.out.print(iter.next() + " \t\t");
                    }
                    System.out.println("");
                    break;
                case 8:
                    return;

            }
            }
        }
}
```

Output:-

```
Press 1. For Add At First Posotion
Press 2. For Add At Last  Posotion
Press 3. For Delete From First Posotion
Press 4. For Delete From Last Posotion
Press 5. For Update specific index node value
Press 6. For Remove from specific index
Press 7. For Display Using Iterator
Press 8. For Exit
Enter Choice:1
Enter Data:
Rahul
Press 1. For Add At First Posotion
Press 2. For Add At Last  Posotion
Press 3. For Delete From First Posotion
Press 4. For Delete From Last Posotion
Press 5. For Update specific index node value
Press 6. For Remove from specific index
Press 7. For Display Using Iterator
Press 8. For Exit
Enter Choice:2
Enter Data:
Motiyani
Press 1. For Add At First Posotion
Press 2. For Add At Last  Posotion
Press 3. For Delete From First Posotion
Press 4. For Delete From Last Posotion
Press 5. For Update specific index node value
Press 6. For Remove from specific index
Press 7. For Display Using Iterator
Press 8. For Exit
Enter Choice:7

The iterator values of list are:
Rahul           Motiyani
```

```
Press 1. For Add At First Posotion
Press 2. For Add At Last  Posotion
Press 3. For Delete From First Posotion
Press 4. For Delete From Last Posotion
Press 5. For Update specific index node value
Press 6. For Remove from specific index
Press 7. For Display Using Iterator
Press 8. For Exit
Enter Choice:3
Press 1. For Add At First Posotion
Press 2. For Add At Last  Posotion
Press 3. For Delete From First Posotion
Press 4. For Delete From Last Posotion
Press 5. For Update specific index node value
Press 6. For Remove from specific index
Press 7. For Display Using Iterator
Press 8. For Exit
Enter Choice:7

The iterator values of list are:
Motiyani
```

1. Create a HashSet and perform following operations for that:
   a) Insert
   b) Update
   c) Delete
   d) Display using iterator()

Code:-

```
import java.util.*;
```

```
public class Lab7_5
{
 public static void main(String args[])
{
        Scanner s=new Scanner(System.in);
        int choice;
        HashSet<Integer> hs=new HashSet<Integer>();
        while(true)
        {
                System.out.println("Press 1. For Insert");
                System.out.println("Press 2. For Update");
                System.out.println("Press 3. For Delete");
                System.out.println("Press 4. For Display Using Iterator");
                System.out.println("Press 5. For Exit");
                System.out.print("Enter Your Choice:");
                choice=s.nextInt();
                switch(choice)
                {
                        case 1:
                                        int data;
                                        System.out.println("Enter Data:");
                                        data=s.nextInt();
                                        hs.add(data);
                                        break;
                        case 2:
                                        int d1,d2;
                                        System.out.println("Enter old data:");
                                        d1=s.nextInt();
                                        System.out.println("Enter Update Data:");
```

```
                    d2=s.nextInt();
                    hs.remove(d1);
                    hs.add(d2);
                    break;
                case 3:
                    int dindex;
                    System.out.println("Enter Data Value:");
                    dindex=s.nextInt();
                    hs.remove(dindex);
                    break;
                case 4:
                    Iterator<Integer> iter= hs.iterator();

                    System.out.println("\nThe iterator values"+ " of set
                    are: ");
                    while (iter.hasNext())
                    {
                        System.out.print(iter.next() + "\t\t");
                    }
                    System.out.println("");
                    break;
                case 0:
                    return;

            }
            }
        }
}
```

Output:-

```
Press 1. For Insert
Press 2. For Update
Press 3. For Delete
Press 4. For Display Using Iterator
Press 5. For Exit
Enter Your Choice:1
Enter Data:
11
Press 1. For Insert
Press 2. For Update
Press 3. For Delete
Press 4. For Display Using Iterator
Press 5. For Exit
Enter Your Choice:1
Enter Data:
22
Press 1. For Insert
Press 2. For Update
Press 3. For Delete
Press 4. For Display Using Iterator
Press 5. For Exit
Enter Your Choice:4

The iterator values of set are:
22              11
```

4)Create a HashMap and perform following operations for that:

a) Insert
b) Update
c) Delete
d) Display using iterator()

Code:-

```
import java.util.*;
import javax.lang.model.util.ElementScanner6;
public class Lab7_6
{
	public static void main(String args[])
	{

	Scanner s=new Scanner(System.in);
	int choice;
	HashMap<Integer,String> hm=new HashMap<Integer,String>();
	while(true)
	{
		System.out.println("Press 1. For Insert");
		System.out.println("Press 2. For Update");
```

```
System.out.println("Press 3. For Delete");
System.out.println("Press 4. For Display Using Iterator");
System.out.println("Press 5. For Exit");
System.out.print("Enter Choice:");
choice=s.nextInt();

switch(choice)
{
        case 1:
                        int index;
                        String data;
                        System.out.println("Enter Integer Index:");
                        index=s.nextInt();
                        System.out.println("Enter String Data:");
                        data=s.next();
                        hm.put(index,data);
                        break;
        case 2:
                        int flag=0;
                        int uindex;
                        String udata;
                        System.out.println("Enter Integer Index:");
                        uindex=s.nextInt();
                        Iterator hmIte = hm.entrySet().iterator();


                        while (hmIte.hasNext())
                        {
                                Map.Entry mapElement =
                                (Map.Entry)hmIte.next();
```

```
                if(uindex==(int)mapElement.getKey())
                        flag=1;
            }
            if(flag==1)
            {
                System.out.println("Enter String Data:");
                udata=s.next();
                hm.put(uindex,udata);
            }
            else
            {
                System.out.println("Index Not found");
            }
            break;
case 3:
            int dindex;
            System.out.println("Enter Index Value:");
            dindex=s.nextInt();
            hm.remove(dindex);
            break;
case 4:
            Iterator hmIterator = hm.entrySet().iterator();



            while (hmIterator.hasNext())
            {
                Map.Entry mapElement =
                (Map.Entry)hmIterator.next();
                System.out.println(mapElement.getKey() + "
                : " + mapElement.getValue());
            }
```

```
                    break;
                case 0:
                    return;

            }

            }
        }
}
```

Output:-