Learn Java Coding

Java Collections Programs

Program: Basic ArrayList Operations.

```
import java.util.ArrayList;

public class MyBasicArrayList {

    public static void main(String[] a){

        ArrayList<String> al = new ArrayList<String>();

        //add elements to the ArrayList
        al.add("JAVA");
        al.add("C++");
        al.add("PERL");
        al.add("PHP");
        System.out.println(al);

        //get elements by index
        System.out.println("Element at index 1: "+al.get(1));
        System.out.println("Does list contains JAVA? "+al.contains("JAVA"));

        //add elements at a specific index
        al.add(2,"PLAY");
        System.out.println(al);
        System.out.println("Is arraylist empty? "+al.isEmpty());
        System.out.println("Index of PERL is "+al.indexOf("PERL"));
        System.out.println("Size of the arraylist is: "+al.size());
    }
}
```

Output:

```
[JAVA, C++, PERL, PHP]
Element at index 1: C++
Does list contains JAVA? true
[JAVA, C++, PLAY, PERL, PHP]
Is arraylist empty? false
Index of PERL is 3
Size of the arraylist is: 5
```

Program: How to read all elements in ArrayList by using iterator?

```
import java.util.ArrayList;
import java.util.Iterator;

public class ArrayListIterator
{

    public static void main(String a[])
{
        ArrayList<String> arrl = new ArrayList<String>();
        //adding elements to the end
        arrl.add("First");
```

```
        arrl.add("Second");
        arrl.add("Third");
        arrl.add("Random");
        Iterator<String> itr = arrl.iterator();
        while(itr.hasNext()){
            System.out.println(itr.next());
        }
    }
}
```

Output:

```
First
Second
Third
Random
```

Program: How to copy or clone a ArrayList?

```
public class MyArrayListClone {

    public static void main(String a[]){
        ArrayList<String> arrl = new ArrayList<String>();
        //adding elements to the end
        arrl.add("First");
        arrl.add("Second");
        arrl.add("Third");
        arrl.add("Random");
        System.out.println("Actual ArrayList:"+arrl);
        ArrayList<String> copy = (ArrayList<String>) arrl.clone();
        System.out.println("Cloned ArrayList:"+copy);
    }
}
```

Output:

```
Actual ArrayList:[First, Second, Third, Random]
Cloned ArrayList:[First, Second, Third, Random]
```

Program: How to add all elements of a list to ArrayList?

```
import java.util.ArrayList;
import java.util.List;

public class MyArrayListNewCollection {

    public static void main(String a[]){
        ArrayList<String> arrl = new ArrayList<String>();
        //adding elements to the end
        arrl.add("First");
        arrl.add("Second");
        arrl.add("Third");
        arrl.add("Random");
        System.out.println("Actual ArrayList:"+arrl);
        List<String> list = new ArrayList<String>();
        list.add("one");
        list.add("two");
        arrl.addAll(list);
        System.out.println("After Copy: "+arrl);
    }
```

```
}
```

Output:

```
Actual ArrayList:[First, Second, Third, Random]
After Copy: [First, Second, Third, Random, one, two]
```

Program: How to delete all elements from my ArrayList?

```
import java.util.ArrayList;

public class ClearMyArrayList
 {

    public static void main(String a[])
    {
        ArrayList<String> arrl = new ArrayList<String>();
        //adding elements to the end
        arrl.add("First");
        arrl.add("Second");
        arrl.add("Third");
        arrl.add("Random");
        System.out.println("Actual ArrayList:"+arrl);
        arrl.clear();
        System.out.println("After clear ArrayList:"+arrl);
    }
}
```

Output:

```
Actual ArrayList:[First, Second, Third, Random]
After clear ArrayList:[]
```

Program: How to find does ArrayList contains all list elements or not?

```
import java.util.ArrayList;
import java.util.List;

public class MyElementCheck
{

    public static void main(String a[])
    {
        ArrayList<String> arrl = new ArrayList<String>();
        arrl.add("First");
        arrl.add("Second");
        arrl.add("Third");
        arrl.add("Random");
        List<String> list = new ArrayList<String>();
        list.add("Second");
        list.add("Random");
        System.out.println("Does ArrayList contains all list elements?: "
                    +arrl.containsAll(list));
        list.add("one");
        System.out.println("Does ArrayList contains all list elements?: "
                    +arrl.containsAll(list));
```

```
    }
}
```

Output:

```
Does ArrayList contains all list elements?: true
Does ArrayList contains all list elements?: false
```

Program: How to copy ArrayList to array?

```
import java.util.ArrayList;

public class MyArrayListArray {

    public static void main(String a[]){
        ArrayList<String> arrl = new ArrayList<String>();
        arrl.add("First");
        arrl.add("Second");
        arrl.add("Third");
        arrl.add("Random");
        System.out.println("Actual ArrayList:"+arrl);
        String[] strArr = new String[arrl.size()];
        arrl.toArray(strArr);
        System.out.println("Created Array content:");
        for(String str:strArr){
            System.out.println(str);
        }
    }
}
```

Output:

```
Actual ArrayList:[First, Second, Third, Random]
Created Array content:
First
Second
Third
Random
```

Program: How to get sub list from ArrayList?

```
import java.util.ArrayList;
import java.util.List;

public class MyArrayListSubRange {

    public static void main(String a[]){
        ArrayList<String> arrl = new ArrayList<String>();
        //adding elements to the end
        arrl.add("First");
        arrl.add("Second");
        arrl.add("Third");
        arrl.add("Random");
        arrl.add("Click");
        System.out.println("Actual ArrayList:"+arrl);
        List<String> list = arrl.subList(2, 4);
        System.out.println("Sub List: "+list);
    }
```

```
}
```

Output:

```
Actual ArrayList:[First, Second, Third, Random, Click]
Sub List: [Third, Random]
```

Program: How to sort ArrayList using Comparator?

```
import java.util.ArrayList;
import java.util.Collections;
import java.util.Comparator;
import java.util.List;

public class MyArrayListSort {

    public static void main(String a[]){

        List<Empl> list = new ArrayList<Empl>();
        list.add(new Empl("Ram",3000));
        list.add(new Empl("John",6000));
        list.add(new Empl("Crish",2000));
        list.add(new Empl("Tom",2400));
        Collections.sort(list,new MySalaryComp());
        System.out.println("Sorted list entries: ");
        for(Empl e:list){
            System.out.println(e);
        }
    }
}

class MySalaryComp implements Comparator<Empl>{

    @Override
    public int compare(Empl e1, Empl e2) {
        if(e1.getSalary() < e2.getSalary()){
            return 1;
        } else {
            return -1;
        }
    }
}

class Empl{

    private String name;
    private int salary;

    public Empl(String n, int s){
        this.name = n;
        this.salary = s;
    }

    public String getName() {
        return name;
    }
    public void setName(String name) {
        this.name = name;
```

```
    }
    public int getSalary() {
        return salary;
    }
    public void setSalary(int salary) {
        this.salary = salary;
    }
    public String toString(){
        return "Name: "+this.name+"-- Salary: "+this.salary;
    }
}
```

Output:

```
Sorted list entries:
Name: John-- Salary: 6000
Name: Ram-- Salary: 3000
Name: Tom-- Salary: 2400
Name: Crish-- Salary: 2000
```

Program: How to reverse ArrayList content?

```
import java.util.ArrayList;
import java.util.Collections;

public class MyArrayListReverse {

    public static void main(String a[]){
        ArrayList<String> list = new ArrayList<String>();
        list.add("Java");
        list.add("Cric");
        list.add("Play");
        list.add("Watch");
        list.add("Glass");
        Collections.reverse(list);
        System.out.println("Results after reverse operation:");
        for(String str: list){
            System.out.println(str);
        }
    }
}
```

Output:

```
Results after reverse operation:
Glass
Watch
Play
Cric
Java
```

Program: How to shuffle elements in ArrayList?

```
import java.util.ArrayList;
import java.util.Collections;

public class MyArrayListShuffle {
```

```
    public static void main(String a[]){
        ArrayList<String> list = new ArrayList<String>();
        list.add("Java");
        list.add("Cric");
        list.add("Play");
        list.add("Watch");
        list.add("Glass");
        list.add("Movie");
        list.add("Girl");

        Collections.shuffle(list);
        System.out.println("Results after shuffle operation:");
        for(String str: list){
            System.out.println(str);
        }

        Collections.shuffle(list);
        System.out.println("Results after shuffle operation:");
        for(String str: list){
            System.out.println(str);
        }
    }
}
```

Output:

```
Results after shuffle operation:
Movie
Girl
Watch
Glass
Java
Cric
Play
Results after shuffle operation:
Glass
Watch
Play
Girl
Cric
Movie
Java
```

Program: How to swap two elements in a ArrayList?

```
import java.util.ArrayList;
import java.util.Collections;

public class MyArrayListSwap {

    public static void main(String a[]){
        ArrayList<String> list = new ArrayList<String>();
        list.add("Java");
        list.add("Cric");
        list.add("Play");
        list.add("Watch");
        list.add("Glass");
```

```
        list.add("Movie");
        list.add("Girl");

        Collections.swap(list, 2, 5);
        System.out.println("Results after swap operation:");
        for(String str: list){
            System.out.println(str);
        }
    }
}
```

Output:

```
Results after swap operation:
Java
Cric
Movie
Watch
Glass
Play
Girl
```

Program: How to convert list to csv string format?

```
import java.util.ArrayList;
import java.util.List;

public class MyListToCsvString {

    public String getListAsCsvString(List<String> list){

        StringBuilder sb = new StringBuilder();
        for(String str:list){
            if(sb.length() != 0){
                sb.append(",");
            }
            sb.append(str);
        }
        return sb.toString();
    }

    public static void main(String a[]){

        List<String> li1 = new ArrayList<String>(){
            {
                this.add("animal");
                this.add("nuts");
                this.add("java");
            }
        };
        MyListToCsvString mtc = new MyListToCsvString();
        System.out.println(mtc.getListAsCsvString(li1));
        List<String> li2 = new ArrayList<String>(){
            {
                this.add("java");
                this.add("unix");
                this.add("c++");
```

```
            }
        };
        System.out.println(mtc.getListAsCsvString(li2));
    }
}
```

Output:

```
animal,nuts,java
java,unix,c++
```