PG-DAC AUGUST 24 BATCH

1)Write a Java program that takes a list of integers as input and returns a list of duplicate integers.

```
package assignment;

import java.util.List;
import java.util.ArrayList;
import java.util.Collections;
import java.util.Scanner;

public class Program {
  static  Scanner sc=new Scanner(System.in);
  public static List<Integer> getList(int size){
        List<Integer> arr=new ArrayList<Integer>();
        for(int i=0;i<size;++i) {
        arr.add(sc.nextInt());
        }
        return arr;
  }
  public static  void isRep(List<Integer> arr) {
        List<Integer> ar=new ArrayList<>();
        Collections.sort(arr);
        Integer temp=0;
        for(int i =0 ;i<arr.size()-1;++i) {
        temp=arr.get(i);
        if(temp==arr.get(i+1)) {
        ar.add(temp);
        }
        }
        System.out.println(ar.toString());
        }
        public static void main(String[] args) {
        // TODO Auto-generated method stub
        List<Integer> arr=getList(sc.nextInt());
        isRep(arr);
        }

}
```

2)Create a Person class with attributes name and age. Write a Java program that sorts a list of Person objects first by age and then by name if the ages are equal.

```
package assignment;

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

```
class Person implements Comparable<Person>{
	private String name;
	private int age;
	public Person(String name,int age){
	this.name=name;
	this.age=age;
	}
	public int getAge() {
	return age;
	}
	public String getName() {
	return name;
	}
	@Override
	public String toString() {
	// TODO Auto-generated method stub
	return this.name+" "+ this.age;
	}
	@Override
	public int compareTo(Person o) {
	// TODO Auto-generated method stub
	if(this.age==o.age) {
	return this.name.compareTo(o.name);
	}
	else
	return this.age-o.age;
	}
}
public class Program1 {

	public static void main(String[] args) {
	// TODO Auto-generated method stub
	List<Person> arr=new ArrayList<>();
	arr.add(new Person("ayush",23));
	arr.add(new Person("bara",23));
	arr.add(new Person("caha",20));
	arr.add(new Person("caha",23));
	Collections.sort(arr);
	for(Person element:arr)
	System.out.println(element);

	}

}
```

3)Write a Java program to find the first non-repeated character in a string using a HashMap.

String input = "aabbccddeffg";
Expected output = 'e';

```
package assignment;

import java.util.HashMap;
import java.util.Map;
import java.util.Scanner;

public class Program3 {
	public static void Unique( Map<Integer,Character> c) {
	Map<Integer,Character> m1=new HashMap<>();
	Character c1;
	for(int i=0;i<c.size();++i) {
	c1=c.get(i);
	if(i<c.size()-1) {
	if(c1.compareTo(c.get(i+1))==0){
	m1.put(i, c.get(i));
	}
	else {
	if(m1.containsValue(c.get(i))!=true) {
		System.out.println(c.get(i));
		return ;
	}
	}

	}
	else {
	System.out.println(c.get(i));
	}
	}
	}
	static Scanner sc=new Scanner(System.in);
	public static void main(String[] args) {
	// TODO Auto-generated method stub
	String s=sc.next();
	Map<Integer,Character> myMap=new HashMap<>();
	for(int i=0;i<s.length();++i)
	myMap.put(i,s.charAt(i));
	Unique(myMap);

	}

}
```

4) Write a Java program that merges two sorted lists of integers into a single sorted list.

```
package assignment;
```

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

public class Program4 {
 static Scanner sc=new Scanner(System.in);
	public static void main(String[] args) {
	// TODO Auto-generated method stub
	int size1=sc.nextInt();
	int size2=sc.nextInt();
	List<Integer> arr=getList(size1);
	List<Integer> arr1=getList(size2);
	merge(arr,arr1);

	}private static void merge(List<Integer> arr,List<Integer> arr1) {
	// TODO Auto-generated method stub
	Collections.sort(arr);
	Collections.sort(arr1);
	arr.addAll(arr1);
	Collections.sort(arr);
	System.out.println(arr);
	}



	private static List<Integer> getList(int size) {
	// TODO Auto-generated method stub
	List<Integer> arr=new ArrayList<>();
	for(int i=0;i<size;++i) {
	arr.add(sc.nextInt());
	}
	return arr;
	}

}
```