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

```
package org.collection.assignment;

import java.util.*;

public class LinkedListDuplicates {

	public static void duplicateList(List<Integer> list) {

		List<Integer> duplicates = new ArrayList<>();

		for(int i=0; i< list.size(); i++) {

			Integer iElement = list.get(i);
			for(int j=i+1; j<list.size(); j++) {
				Integer jElement = list.get(j);
				if(iElement.equals(jElement)) {
					if(!duplicates.contains(iElement))
						duplicates.add(iElement);
					break;
				}
			}
		}

		System.out.println("\nDuplicate Elements are :  ");
		for(Integer dupl : duplicates)
			System.out.print(dupl + "  ");
	}

	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);

		List<Integer> list = new ArrayList<Integer>();

		System.out.println("Enter elements of list : ");
		list.add(sc.nextInt());
		list.add(sc.nextInt());
		list.add(sc.nextInt());
		list.add(sc.nextInt());
		list.add(sc.nextInt());
```

```
                System.out.print("\nList elements are :  ");
                for(Integer element : list)
                        System.out.print(element + "  ");

                // List of Duplicate Integers
                duplicateList(list);

        }
}
```

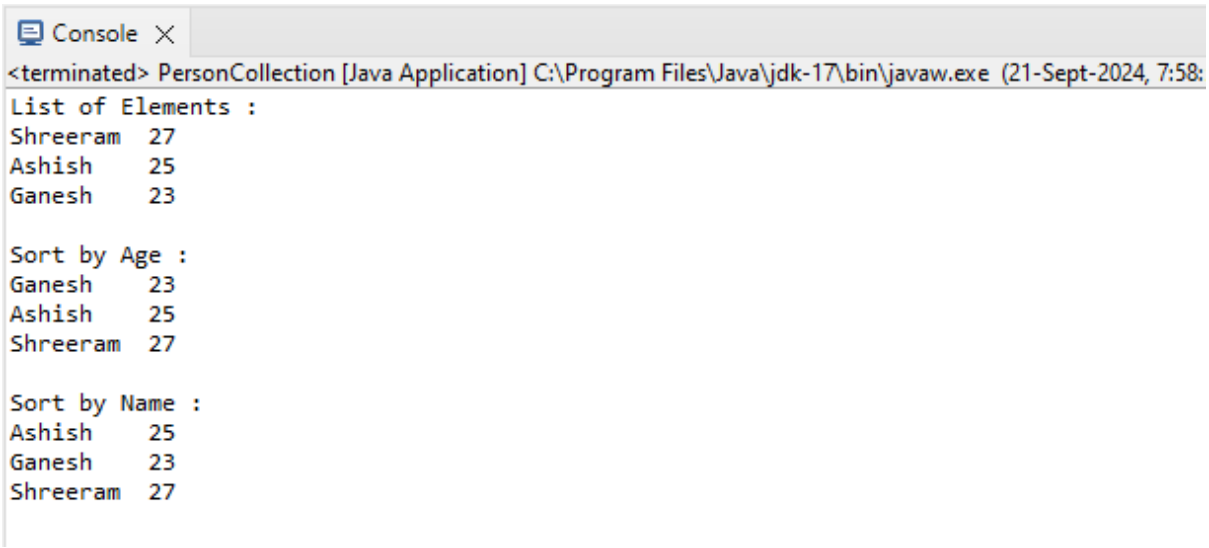
```
Enter elements of list :
10
20
10
20
20

List elements are :  10  20  10  20  20
Duplicate Elements are :
10  20
```

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 org.collection.assignment;
import java.util.*;

class Person{

        String name;
        int age;

        public Person() {

        }
        public Person(String name, int age) {
                this.name = name;
                this.age = age;
        }

        public String toString() {
                return String.format("%-10s%-3d", this.name, this.age);
        }
}
```

```
class AgeComparator implements Comparator<Person>{

	public int compare(Person p1, Person p2) {
		return p1.age - p2.age;
	}

}

class NameComparator implements Comparator<Person>{

	public int compare(Person p1, Person p2) {
		return p1.name.compareTo(p2.name);
	}
}


public class PersonCollection {

	public static void display(Collection<?> list) {
		for (Object p : list) {
			System.out.println(p.toString());
		}
	}

	public static void main(String args[]) {

		List<Person> list = new ArrayList<>();

		Person p1 = new Person("Shreeram", 27);
		Person p2 = new Person("Ashish", 25);
		Person p3 = new Person("Ganesh", 23);


		list.add(p1);
		list.add(p2);
		list.add(p3);

		System.out.println("List of Elements : ");
		for(Person p: list)
			System.out.printf("%-10s%-3d\n", p.name, p.age);
```

```
                System.out.println("\nSort by Age : ");
                Collections.sort(list, new AgeComparator());
                display(list);


                System.out.println("\nSort by Name : ");
                Collections.sort(list, new NameComparator());
                display(list);
        }
}
```



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

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

```
class ques3 {


   public static int firstUniqeChar(String s)
   {
      int n = s.length();

      for (int i = 0; i < n; ++i) {
         boolean found = true;
```

```
        for (int j = 0; j < n; ++j) {
          if (i != j && s.charAt(i) == s.charAt(j)) {
            found = false;
            break;
          }
        }

        if (found) {
          return i;
        }
      }

      return -1;
    }

    public static void main(String[] args)
    {
      String s = " aabbccddeffg ";
      System.out.println(firstUniqeChar(s));
    }
}
```

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

```
package org.collection.assignment;
import java.util.*;

public class SortedArray {

        public static void display(Collection<?> list) {
                for(Object element : list)
                        System.out.print(element + "  ");
        }

        public static void main(String[] args) {

                List<Integer> list1 = new ArrayList<>();

                list1.add(100);
```

```
        list1.add(80);
        list1.add(20);
        list1.add(60);
        list1.add(40);

        List<Integer> list2 = new ArrayList<>();

        list2.add(70);
        list2.add(30);
        list2.add(90);
        list2.add(10);
        list2.add(50);

        System.out.println("Sorted List1");
        Collections.sort(list1);
        display(list1);

        System.out.println("\nSorted List 2");
        Collections.sort(list2);
        display(list2);

        list1.addAll(list2);
        System.out.println("\nSorted Combined List Elements :");
        Collections.sort(list1);
        display(list1);

    }

}
```