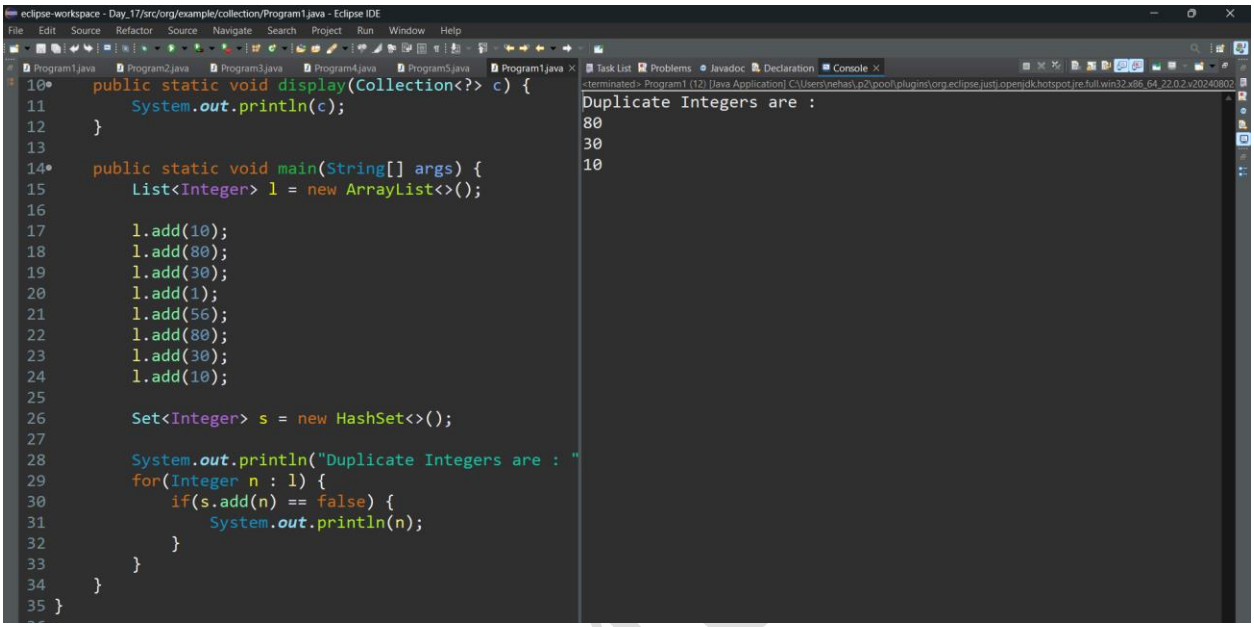
PG-DAC AUGUST 24 BATCH

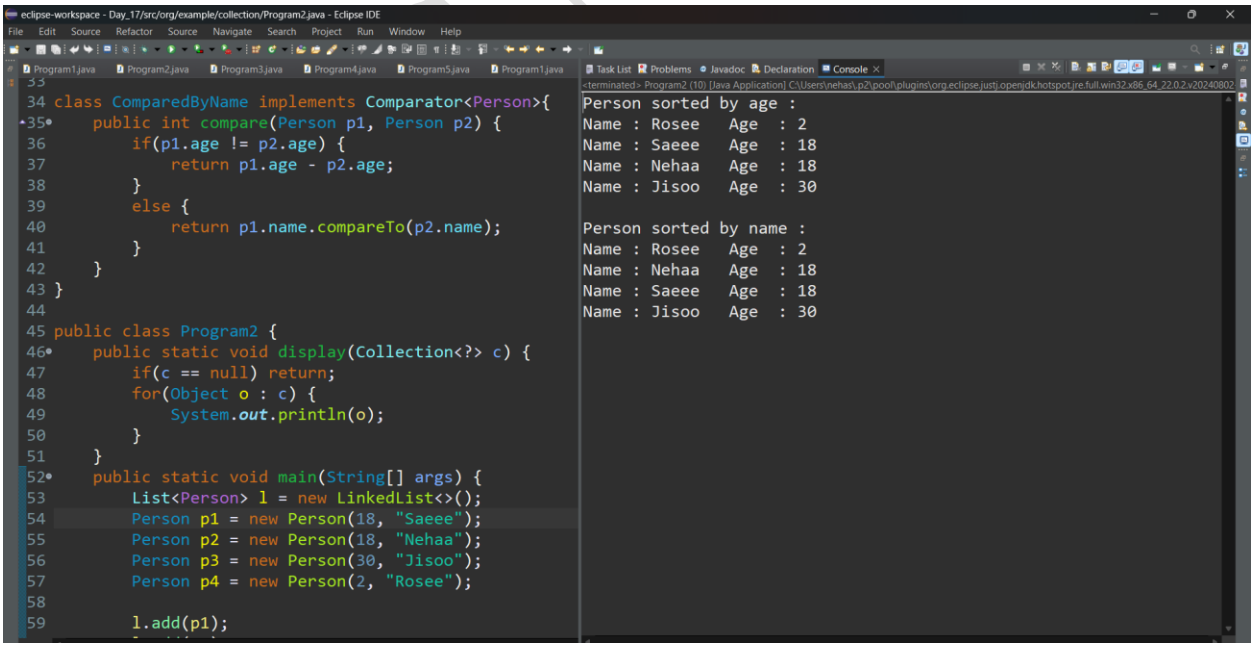
1)Write a Java program that takes a list of integers as input and returns a list of duplicate integers.



```
public static void display(Collection<?> c) {
    System.out.println(c);
}

public static void main(String[] args) {
    List<Integer> l = new ArrayList<>();

    l.add(10);
    l.add(80);
    l.add(30);
    l.add(1);
    l.add(56);
    l.add(80);
    l.add(30);
    l.add(10);

    Set<Integer> s = new HashSet<>();

    System.out.println("Duplicate Integers are : "
    for(Integer n : l) {
        if(s.add(n) == false) {
            System.out.println(n);
        }
    }
}
}
```

```
Duplicate Integers are :
80
30
10
```

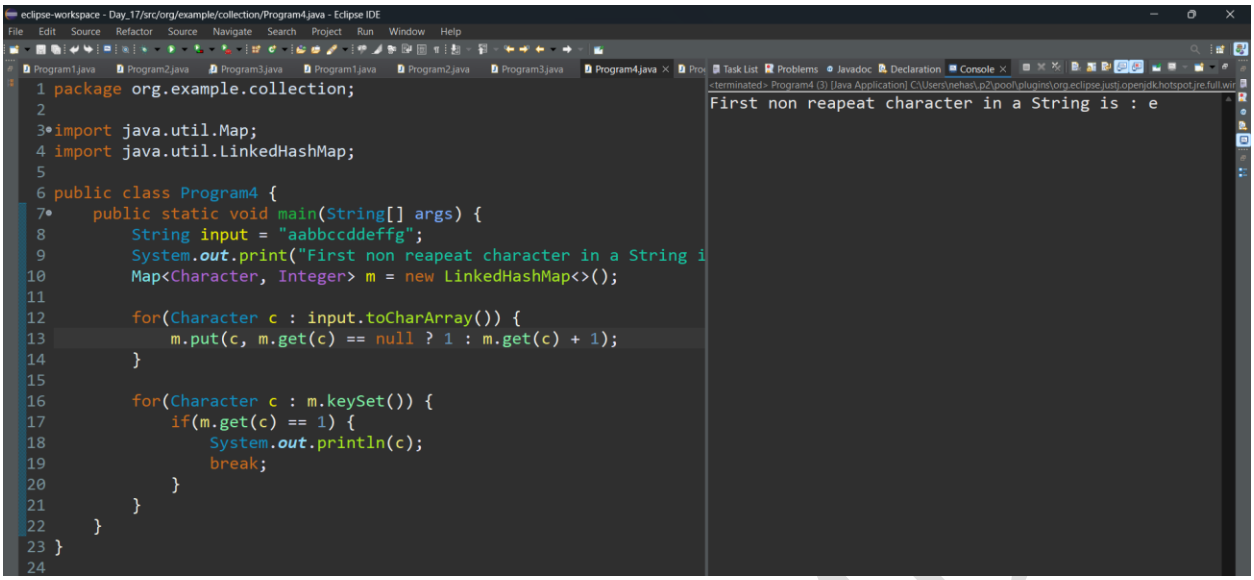
2)Create a Person class with attributes name and age. Write a Java program that sorts a list of Person objects first by age and then by name if the ages are equal.



```
class ComparedByName implements Comparator<Person>{
    public int compare(Person p1, Person p2) {
        if(p1.age != p2.age) {
            return p1.age - p2.age;
        }
        else {
            return p1.name.compareTo(p2.name);
        }
    }
}

public class Program2 {
    public static void display(Collection<?> c) {
        if(c == null) return;
        for(Object o : c) {
            System.out.println(o);
        }
    }
    public static void main(String[] args) {
        List<Person> l = new LinkedList<>();
        Person p1 = new Person(18, "Saeee");
        Person p2 = new Person(18, "Nehaa");
        Person p3 = new Person(30, "Jisoo");
        Person p4 = new Person(2, "Rosee");

        l.add(p1);
```

```
Person sorted by age :
Name : Rosee   Age  : 2
Name : Saeee   Age  : 18
Name : Nehaa   Age  : 18
Name : Jisoo   Age  : 30

Person sorted by name :
Name : Rosee   Age  : 2
Name : Nehaa   Age  : 18
Name : Saeee   Age  : 18
Name : Jisoo   Age  : 30
```

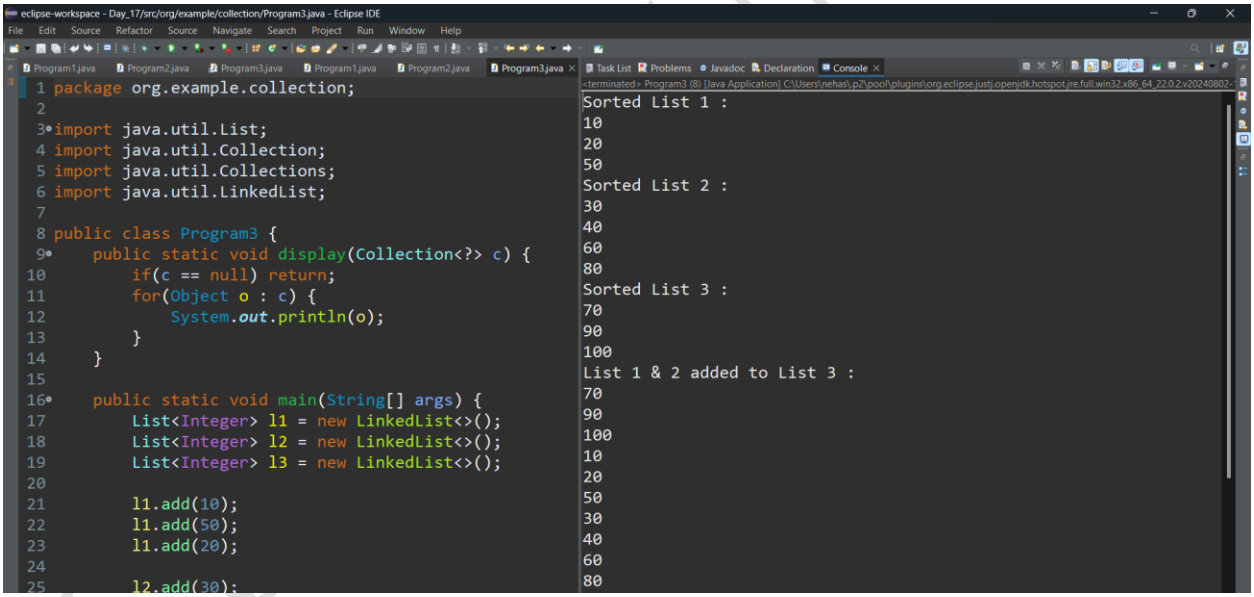
3)Write a Java program to find the first non-repeated character in a string using a HashMap.
String input = "aabbccddeffg"; Expected output = 'e'



```java
package org.example.collection;

import java.util.Map;
import java.util.LinkedHashMap;

public class Program4 {
    public static void main(String[] args) {
        String input = "aabbccddeffg";
        System.out.print("First non reapeat character in a String i
        Map<Character, Integer> m = new LinkedHashMap<>();

        for(Character c : input.toCharArray()) {
            m.put(c, m.get(c) == null ? 1 : m.get(c) + 1);
        }

        for(Character c : m.keySet()) {
            if(m.get(c) == 1) {
                System.out.println(c);
                break;
            }
        }
    }
}
```

```
First non reapeat character in a String is : e
```

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



```java
package org.example.collection;

import java.util.List;
import java.util.Collection;
import java.util.Collections;
import java.util.LinkedList;

public class Program3 {
    public static void display(Collection<?> c) {
        if(c == null) return;
        for(Object o : c) {
            System.out.println(o);
        }
    }

    public static void main(String[] args) {
        List<Integer> l1 = new LinkedList<>();
        List<Integer> l2 = new LinkedList<>();
        List<Integer> l3 = new LinkedList<>();

        l1.add(10);
        l1.add(50);
        l1.add(20);

        l2.add(30);
```

```
Sorted List 1 :
10
20
50
Sorted List 2 :
30
40
60
80
Sorted List 3 :
70
90
100
List 1 & 2 added to List 3 :
70
90
100
10
20
50
30
40
60
80
```