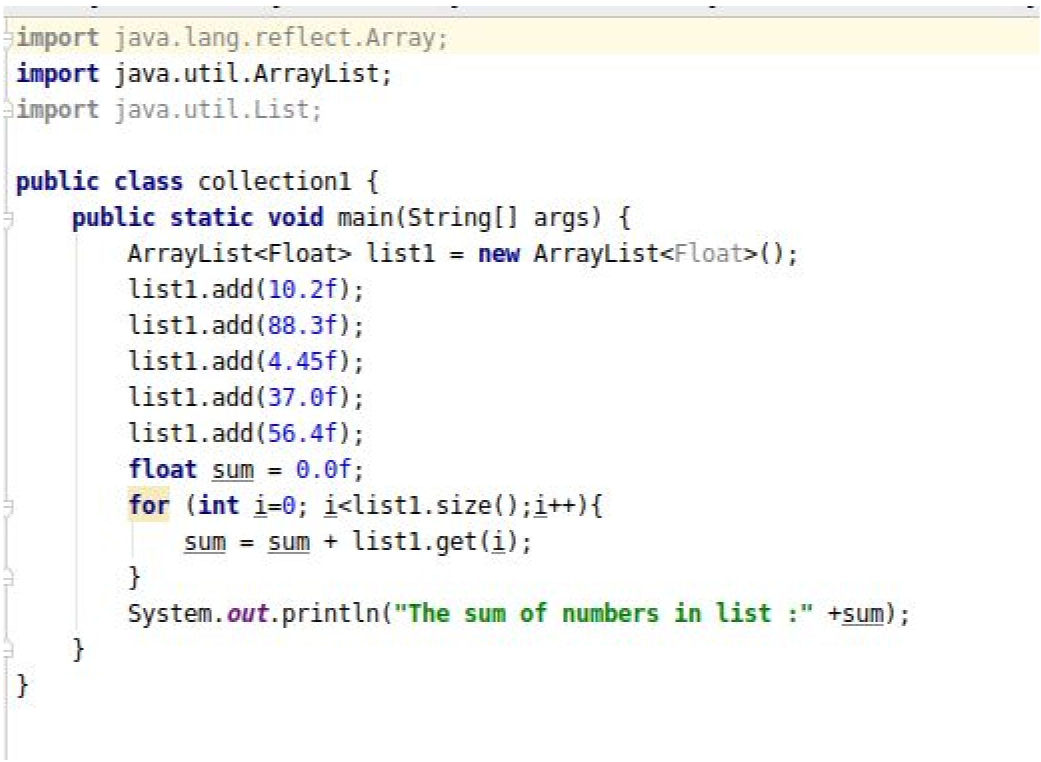
Q1Write Java code to define List . Insert 5 floating point numbers in List, and using an iterator, find the sum of the numbers in List.

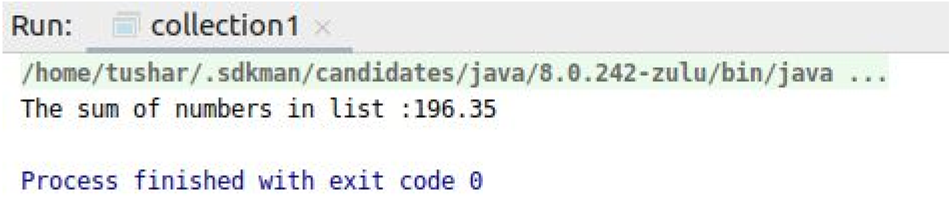
Code-



```
import java.lang.reflect.Array;
import java.util.ArrayList;
import java.util.List;

public class collection1 {
    public static void main(String[] args) {
        ArrayList<Float> list1 = new ArrayList<Float>();
        list1.add(10.2f);
        list1.add(88.3f);
        list1.add(4.45f);
        list1.add(37.0f);
        list1.add(56.4f);
        float sum = 0.0f;
        for (int i=0; i<list1.size();i++){
            sum = sum + list1.get(i);
        }
        System.out.println("The sum of numbers in list :" +sum);
    }
}
```

Output-

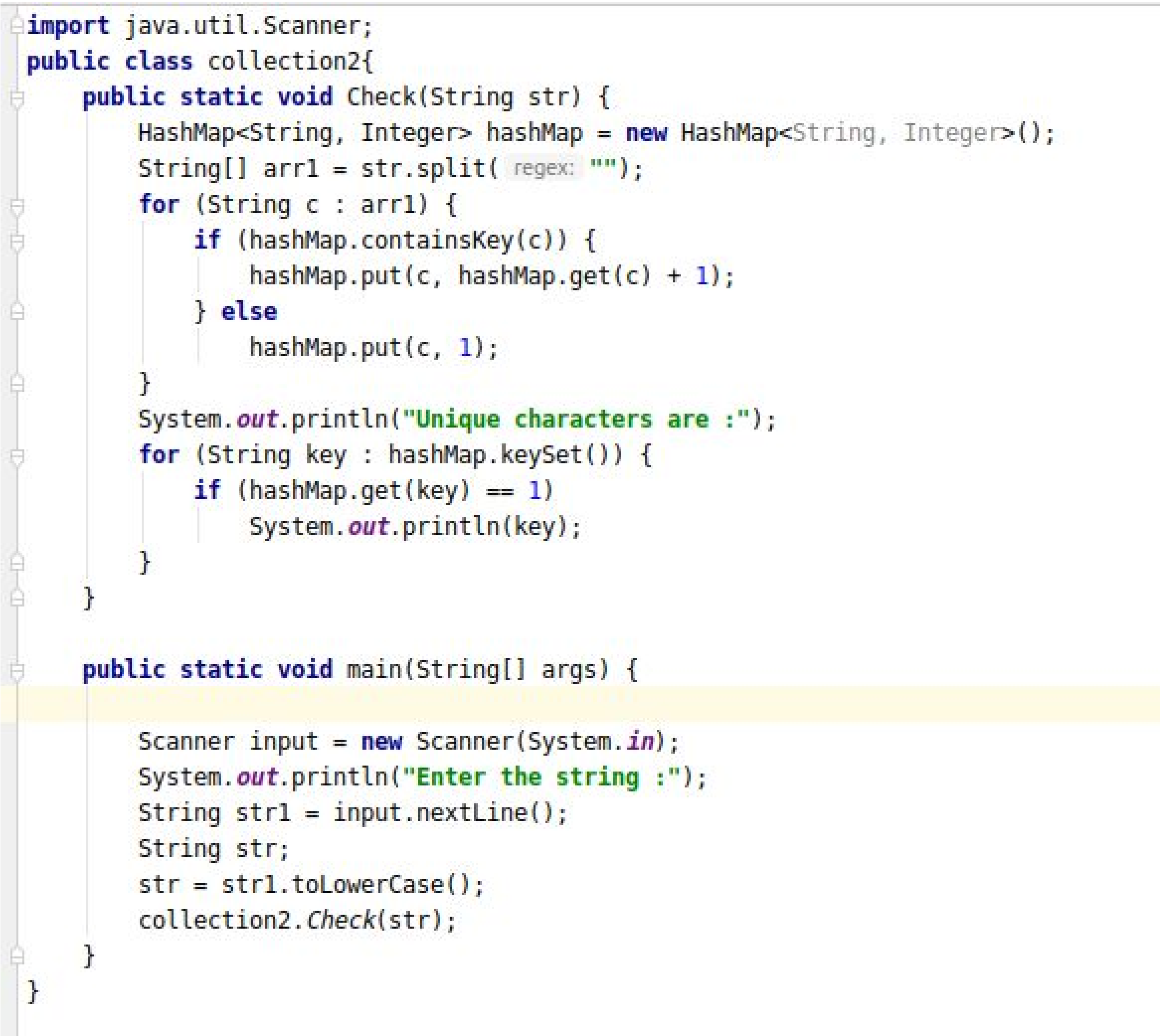


```
/home/tushar/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
The sum of numbers in list :196.35

Process finished with exit code 0
```

Q2 Write a method that takes a string and returns the number of unique characters in the string.

Code-

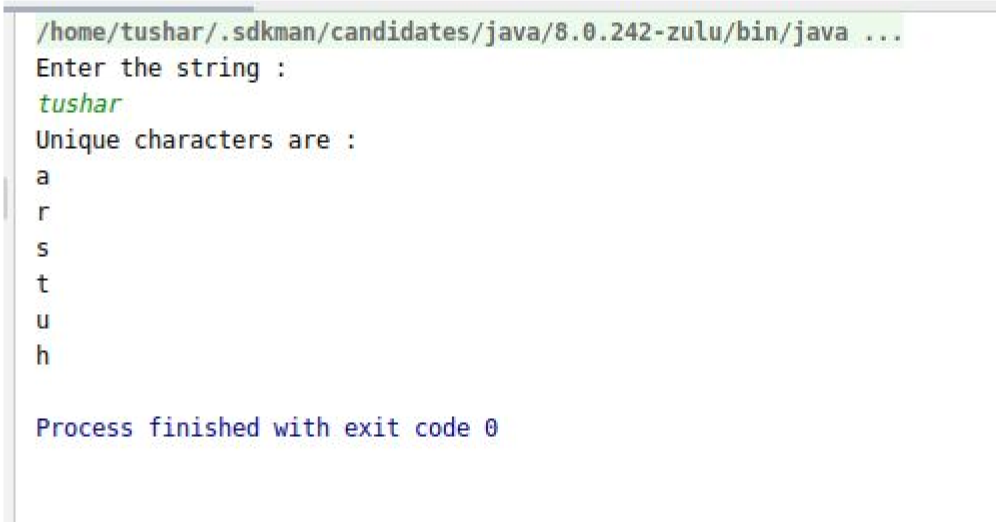


```
import java.util.Scanner;
public class collection2{
    public static void Check(String str) {
        HashMap<String, Integer> hashMap = new HashMap<String, Integer>();
        String[] arr1 = str.split( regex: "");
        for (String c : arr1) {
            if (hashMap.containsKey(c)) {
                hashMap.put(c, hashMap.get(c) + 1);
            } else
                hashMap.put(c, 1);
        }
        System.out.println("Unique characters are :");
        for (String key : hashMap.keySet()) {
            if (hashMap.get(key) == 1)
                System.out.println(key);
        }
    }

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in);
        System.out.println("Enter the string :");
        String str1 = input.nextLine();
        String str;
        str = str1.toLowerCase();
        collection2.Check(str);
    }
}
```

Output-

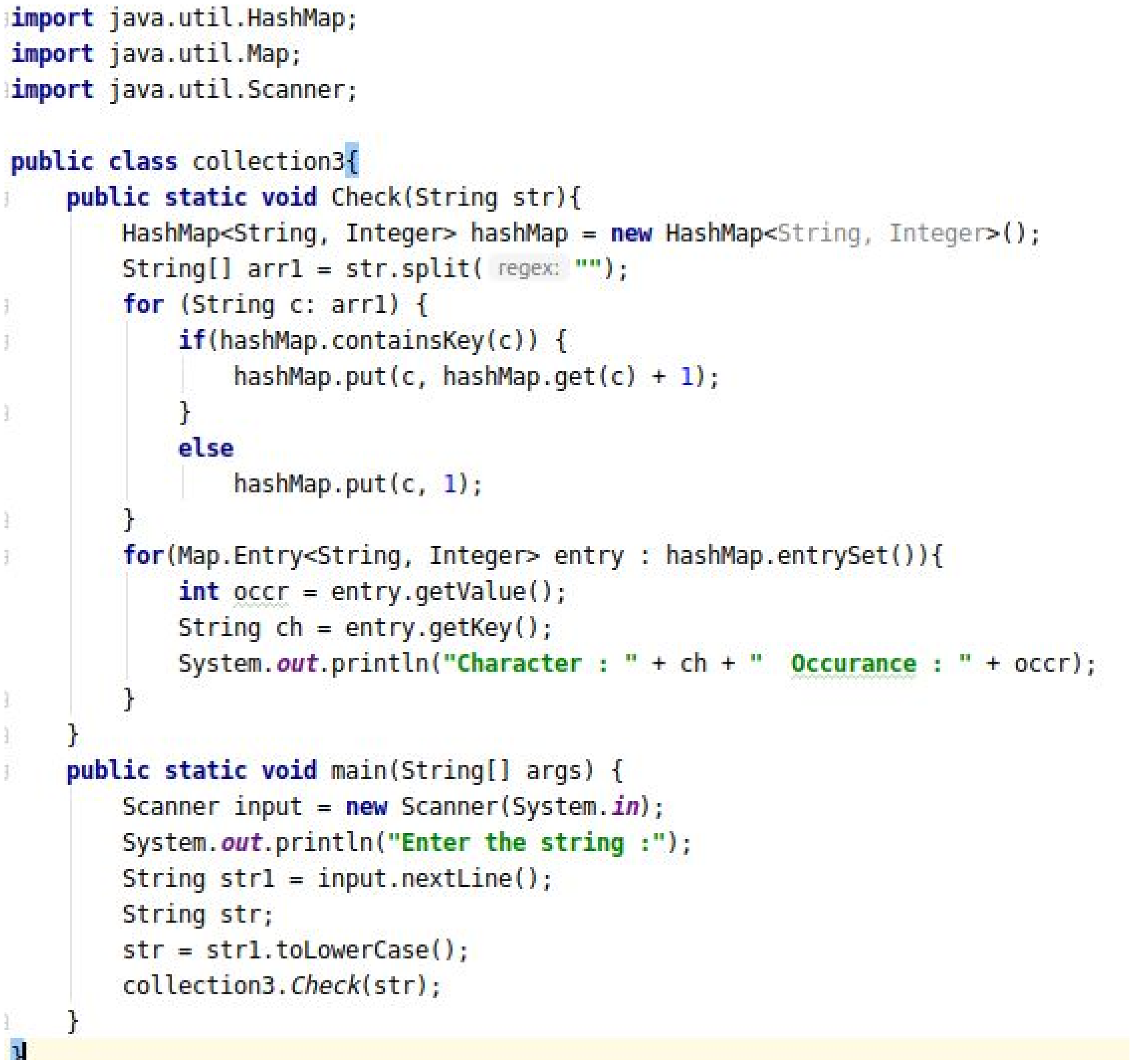


```
/home/tushar/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
Enter the string :
tushar
Unique characters are :
a
r
s
t
u
h

Process finished with exit code 0
```

Q3 Write a method that takes a string and print the number of occurrence of each character characters in the string.

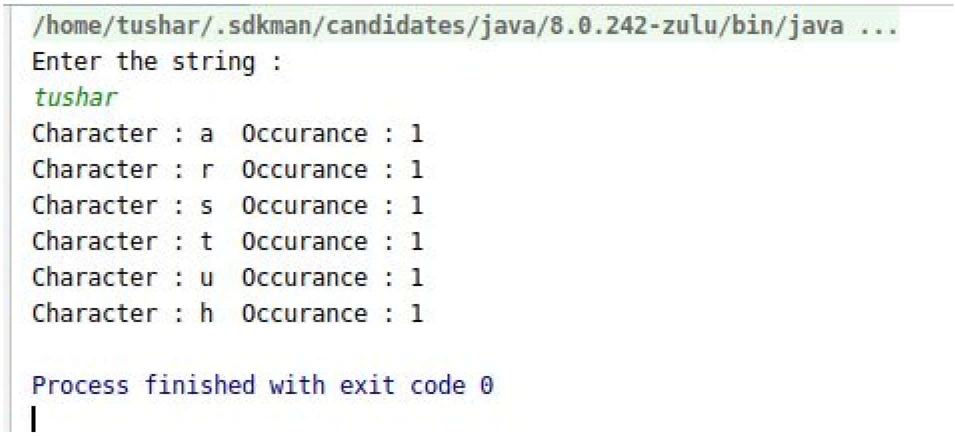
Code-



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

public class collection3{
    public static void Check(String str){
        HashMap<String, Integer> hashMap = new HashMap<String, Integer>();
        String[] arr1 = str.split( regex: "");
        for (String c: arr1) {
            if(hashMap.containsKey(c)) {
                hashMap.put(c, hashMap.get(c) + 1);
            }
            else
                hashMap.put(c, 1);
        }
        for(Map.Entry<String, Integer> entry : hashMap.entrySet()){
            int occr = entry.getValue();
            String ch = entry.getKey();
            System.out.println("Character : " + ch + "  Occurance : " + occr);
        }
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter the string :");
        String str1 = input.nextLine();
        String str;
        str = str1.toLowerCase();
        collection3.Check(str);
    }
}
```

Output -

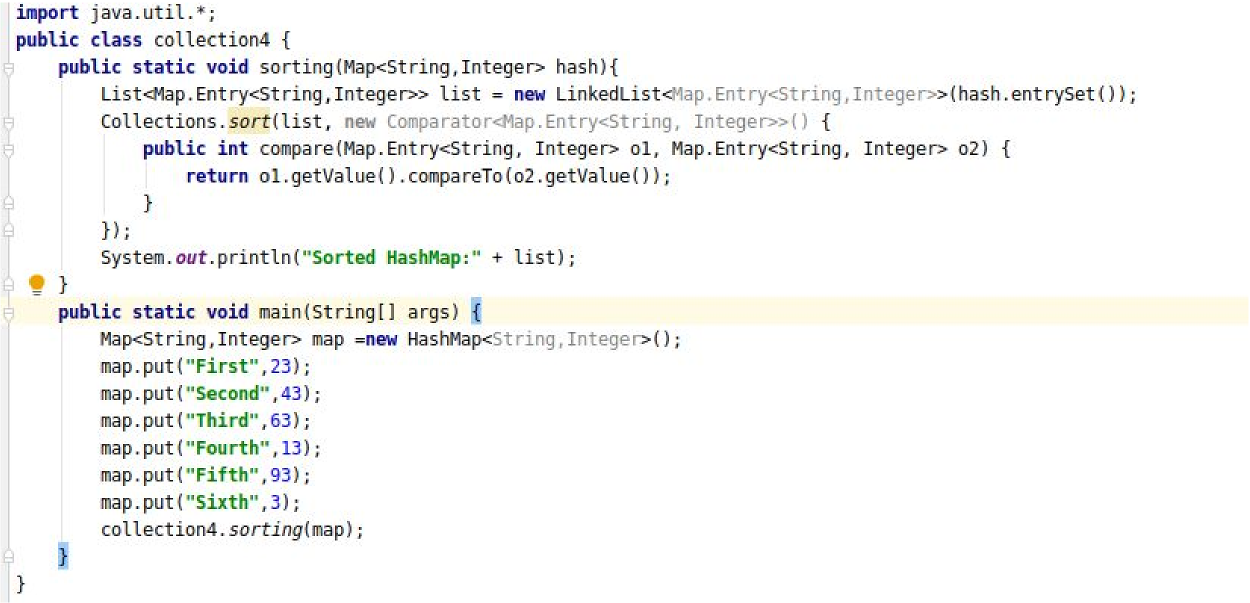


```
/home/tushar/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
Enter the string :
tushar
Character : a  Occurance : 1
Character : r  Occurance : 1
Character : s  Occurance : 1
Character : t  Occurance : 1
Character : u  Occurance : 1
Character : h  Occurance : 1

Process finished with exit code 0
```

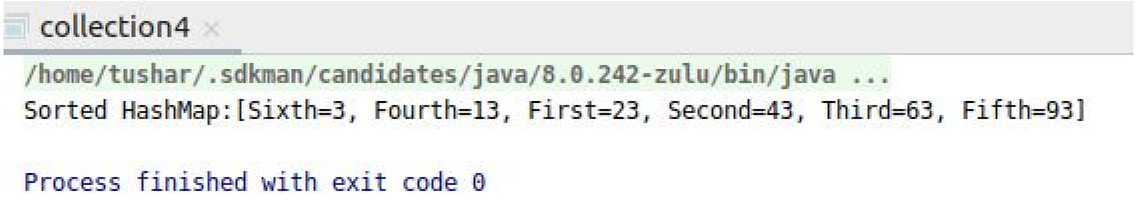
Q4 Write a program to sort HashMap by value.

Code-



```java
import java.util.*;
public class collection4 {
    public static void sorting(Map<String,Integer> hash){
        List<Map.Entry<String,Integer>> list = new LinkedList<Map.Entry<String,Integer>>(hash.entrySet());
        Collections.sort(list, new Comparator<Map.Entry<String, Integer>>() {
            public int compare(Map.Entry<String, Integer> o1, Map.Entry<String, Integer> o2) {
                return o1.getValue().compareTo(o2.getValue());
            }
        });
        System.out.println("Sorted HashMap:" + list);
    }
    public static void main(String[] args) {
        Map<String,Integer> map =new HashMap<String,Integer>();
        map.put("First",23);
        map.put("Second",43);
        map.put("Third",63);
        map.put("Fourth",13);
        map.put("Fifth",93);
        map.put("Sixth",3);
        collection4.sorting(map);
    }
}
```

Output-



```
/home/tushar/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
Sorted HashMap:[Sixth=3, Fourth=13, First=23, Second=43, Third=63, Fifth=93]

Process finished with exit code 0
```

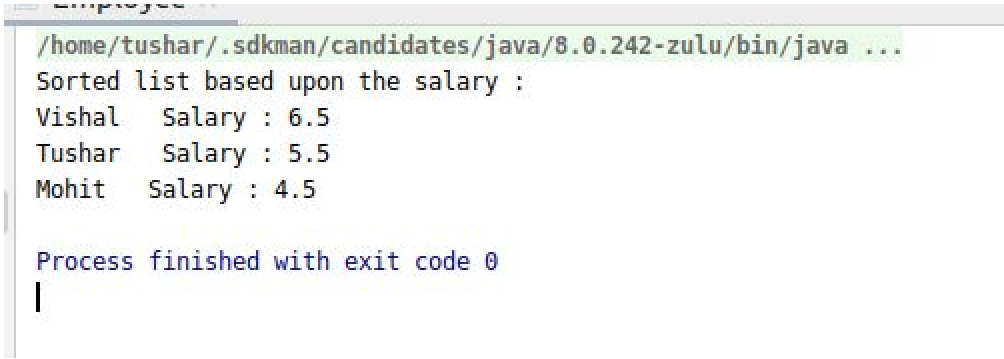
Q5 Write a program to sort Employee objects based on highest salary using Comparator. Employee class{ Double Age; Double Salary; String Name

Code-

```
import java.util.*;
public class Employee {
  private double salary;
  private String name;
  private double age;
  public double getSalary() {
    return salary;
  }
  public void setSalary(double salary) {
    this.salary = salary;
  }
  public String getName() {
    return name;
  }
  public void setName(String name) {
    this.name = name;
  }
  public double getAge() {
    return age;
  }
  public void setAge(double age) {
    this.age = age;
  }
  public static void main(String[] args) {
    Employee employee = new Employee();
    Employee employee1 =new Employee();
    Employee employee2 = new Employee();
    employee.setName("Mohit");
    employee.setAge(22);
    employee.setSalary(4.5);
    employee1.setName("Tushar");
    employee1.setSalary(5.5);
    employee1.setAge(30);
    employee2.setName("Vishal");
    employee2.setSalary(6.5);
    employee2.setAge(25);
    List<Employee> list = new ArrayList<Employee>();
    list.add(employee);
    list.add(employee1);
    list.add(employee2);
    Collections.sort(list, new Comparator<Employee>() {
      public int compare(Employee e1, Employee e2) {
        if(e1.getSalary()>e2.getSalary()){
          return   -1;
        }
```

```
                else if(e1.getSalary()<e2.getSalary()){
                    return 1;
                }
                return  0;
            }
        });
        System.out.println("Sorted list based upon the salary :");
        for(Employee e:list){
            System.out.println(e.getName()+"   Salary : "+e.getSalary());
        }
    }
}
```

Output -



```
/home/tushar/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
Sorted list based upon the salary :
Vishal   Salary : 6.5
Tushar   Salary : 5.5
Mohit   Salary : 4.5

Process finished with exit code 0
```

Q6 Write a program to sort the Student objects based on Score , if the score are same then sort on First Name . Class Student{ String Name; Double Score; Double Age.

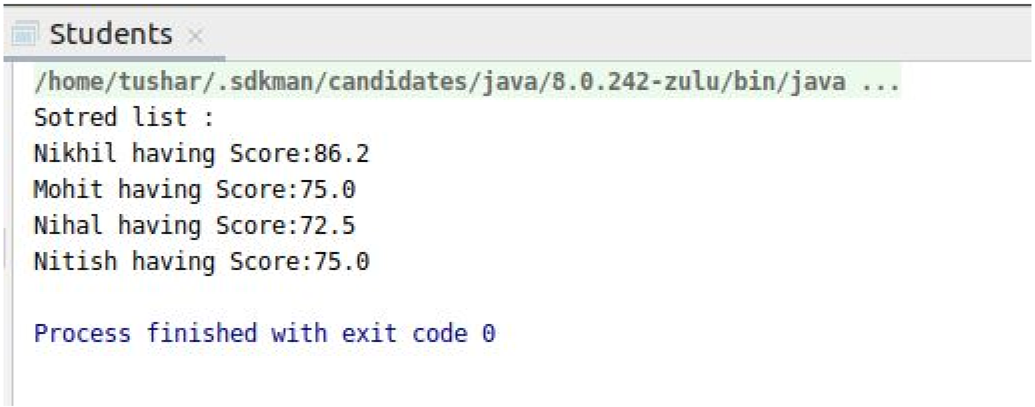
Code-

```
import java.util.*;
public class Students {
  private String name;
  private double age;
  private double score;
  public String getName() {
    return name;
  }
  public void setName(String name) {
    this.name = name;
  }
  public double getAge() {
    return age;
  }
  public void setAge(double age) {
    this.age = age;
  }
  public double getScore() {
    return score;
  }
  public void setScore(double score) {
    this.score = score;
  }

  public static void main(String[] args) {
    Students s1 = new Students();
    Students s2 = new Students();
    Students s3 = new Students();
    Students s4 = new Students();
    s1.setName("Mohit");
    s1.setAge(22);
    s1.setScore(75.0);
    s2.setName("Nikhil");
    s2.setAge(20);
    s2.setScore(86.2);
    s3.setName("Nitish");
    s3.setAge(23);
    s3.setScore(75.0);
    s4.setName("Nihal");
    s4.setAge(23);
    s4.setScore(72.5);
    List<Students> list = new ArrayList<Students>();
    list.add(s1);
    list.add(s2);
    list.add(s3);
    list.add(s4);
    Collections.sort(list, new Comparator<Students>() {
      public int compare(Students o1, Students o2) {
        if (o1.getScore() > o2.getScore()) {
          return -1;
        } else if (o1.getScore() < o1.getScore()) {
          return 1;
        } else {
          return o1.getName().compareTo(o2.getName());

        }
      }
    });
    System.out.println("Sotred list :");
    for (Students s : list) {
      System.out.println(s.getName() + " having Score:" + s.getScore());
    }
  }
}
```

Output



```
/home/tushar/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
Sotred list :
Nikhil having Score:86.2
Mohit having Score:75.0
Nihal having Score:72.5
Nitish having Score:75.0

Process finished with exit code 0
```

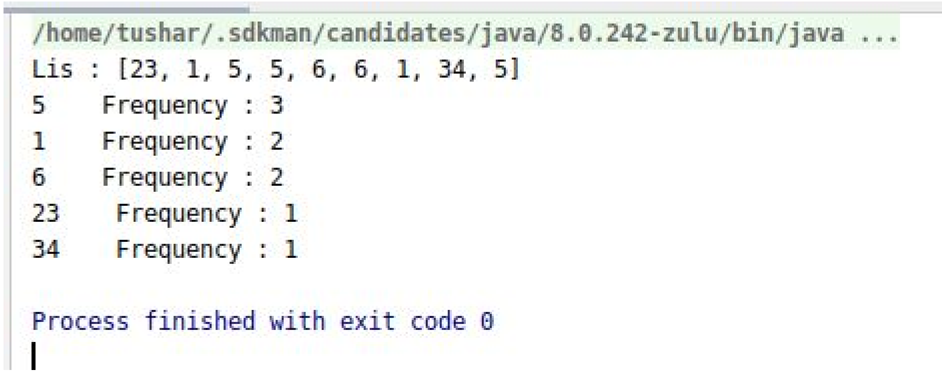
Q7 Print the elements of an array in the decreasing frequency if 2 numbers have same frequency then print the one which came first.

Code-

```
import java.util.*;
public class collection7 {
  public static void main(String[] args) {
    List<Integer> list = new ArrayList<Integer>();
    list.add(23);
    list.add(1);
    list.add(5);
    list.add(5);
    list.add(6);
    list.add(6);
    list.add(1);
    list.add(34);
```

```
        list.add(5);
        System.out.println("Lis : " +list);
        Map<Integer, Integer> map = new LinkedHashMap<Integer, Integer>();
        for (int i = 0; i < list.size(); i++) {
            int count = 1;
            for (int j = i + 1; j < list.size(); j++) {
                if (list.get(i) == list.get(j)) {
                    count++;
                    list.remove(j);
                    j--;
                }
            }
            map.put(list.get(i), count);
        }
        List<Map.Entry<Integer, Integer>> ls = new LinkedList<Map.Entry<Integer, Integer>>(map.entrySet());
        Collections.sort(ls, new Comparator<Map.Entry<Integer,Integer>>() {
            public int compare(Map.Entry<Integer, Integer> o1, Map.Entry<Integer, Integer> o2) {
                if(o1.getValue()>o2.getValue()){
                    return  -1;
                }
                else if(o1.getValue()<o2.getValue()){
                    return 1;
                }
                else{
                    return 0;
                }
            }
        });
        for(Map.Entry<Integer,Integer> mp:ls){
            System.out.println(mp.getKey()+"    Frequency : "+mp.getValue());
        }
    }
}
```

Output-



```
/home/tushar/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
Lis : [23, 1, 5, 5, 6, 6, 1, 34, 5]
5    Frequency : 3
1    Frequency : 2
6    Frequency : 2
23    Frequency : 1
34    Frequency : 1

Process finished with exit code 0
```