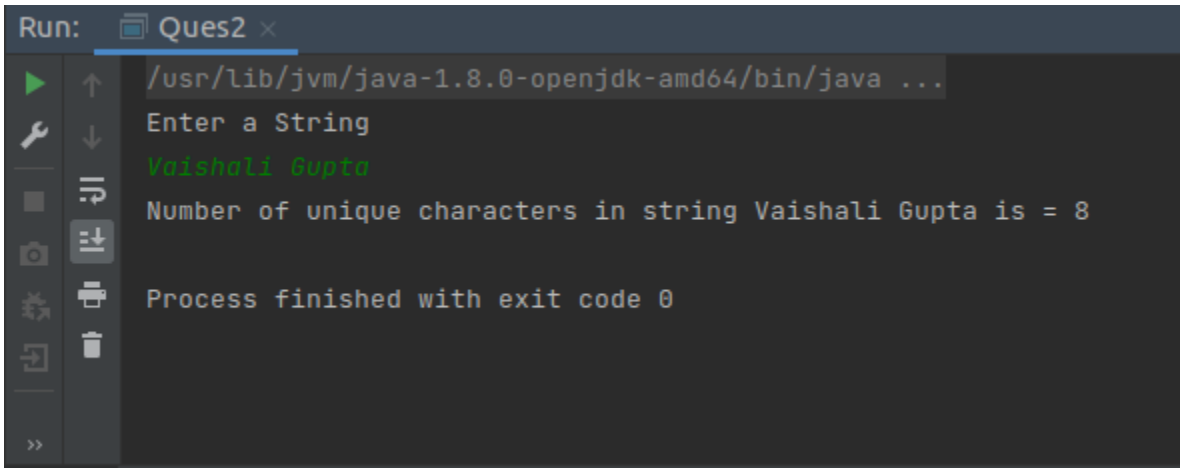
1. Write Java code to define List . Insert 5 floating point numbers in List, and using an iterator, find the sum of the numbers in List.

```
import java.util.Iterator;

import java.util.LinkedList;
import java.util.List;

public class Ques1 {
  public static void main(String[] args) {
    List<Float> numbers = new LinkedList<>();

    numbers.add(3.5f);
    numbers.add(4.7f);
    numbers.add(2.9f);
    numbers.add(3.567f);
    numbers.add(23.45f);

    float sum = 0;
    Iterator<Float> it = numbers.iterator();
    while(it.hasNext()){
      sum = sum + it.next();
    }
    System.out.println("Sum = " + sum);
  }
}
```

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

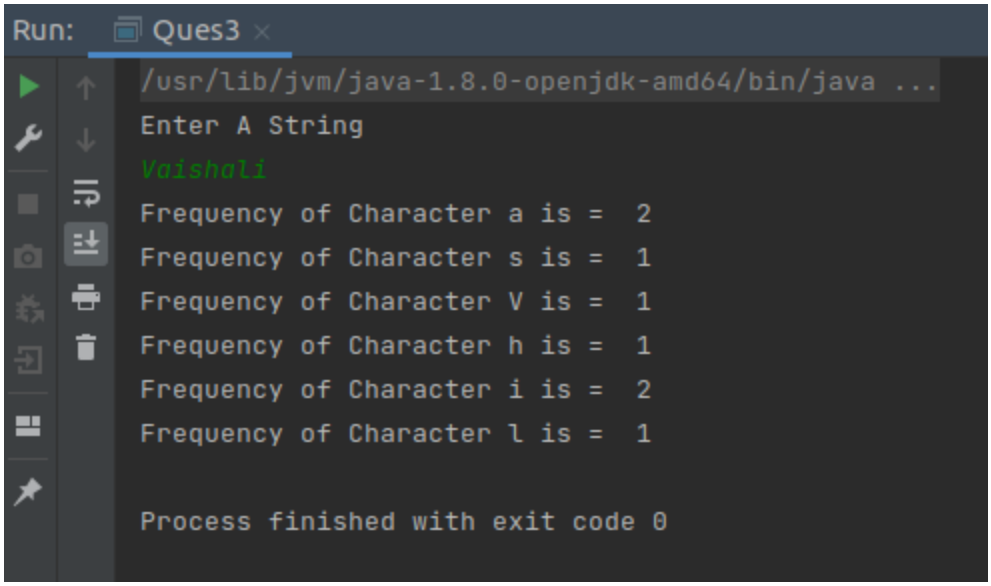
```
import java.util.HashSet;
```

```
import java.util.Scanner;
import java.util.Set;

public class Ques2 {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter a String");
      String str = sc.nextLine();

      System.out.println("Number of unique characters in string " + str + " is = "
   + countUniqueChar(str));
   }

   static int countUniqueChar(String str){
      int count = 0;
      Set<Character> set = new HashSet<>();
      for(int i = 0;i<str.length();i++){
         if(!set.contains(str.charAt(i))){
            set.add(str.charAt(i));
            count++;
         }
         else
            count--;
      }
      return count;
   }
}
```



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

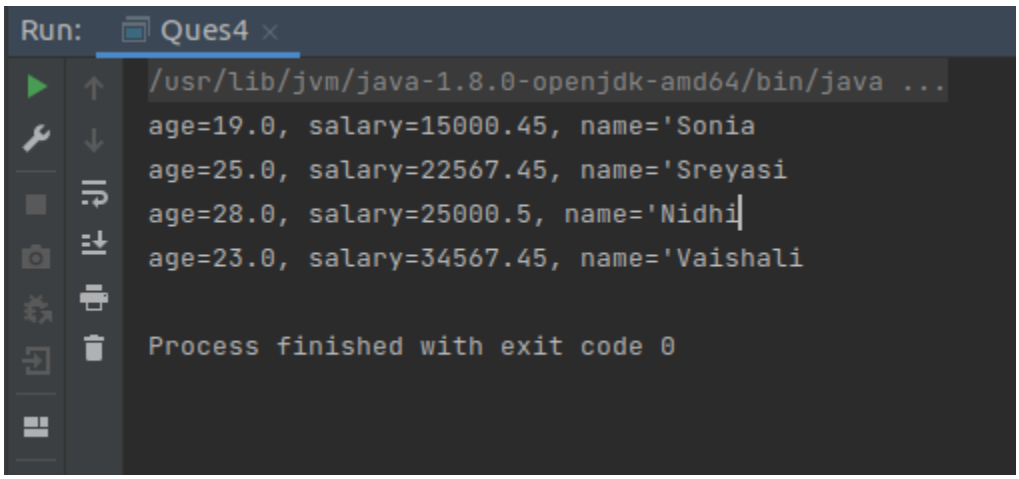
```
import java.util.HashMap;

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

public class Ques3 {
  public static void main(String[] args) {
     Scanner sc =  new Scanner(System.in);
     System.out.println("Enter A String");
     String str = sc.nextLine();

     Map<Character,Integer> mp;
     mp = countFrequency(str);

     mp.forEach((key,val) -> System.out.println("Frequency of Character " +  key + " is =
" +  val));
  }

  static Map<Character,Integer> countFrequency(String str){
     Map<Character,Integer> mp = new HashMap<>();
     for(int i=0;i<str.length();i++){
        char ch = str.charAt(i);
        if(!mp.containsKey(ch))
           mp.put(ch,1);
        else{
           int val = mp.get(ch);
           mp.put(ch,++val);
        }
     }
     return mp;
  }

}
```



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

```
import java.util.ArrayList;

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

public class Ques4 {
  public static void main(String[] args) {
    List<Employee> employees = new ArrayList<>();
    employees.add(new Employee(23,34567.45,"Vaishali"));
    employees.add(new Employee(28,25000.50,"Nidhi"));
    employees.add(new Employee(19,15000.45,"Sonia"));
    employees.add(new Employee(25,22567.45,"Sreyasi"));

    Collections.sort(employees, new Comparator<Employee>() {
      @Override
      public int compare(Employee e1, Employee e2) {
        if(e1.getSalary() > e2.getSalary() )
          return 1;
        else if(e1.getSalary() < e2.getSalary())
          return -1;
        return 0;
      }
    });
```

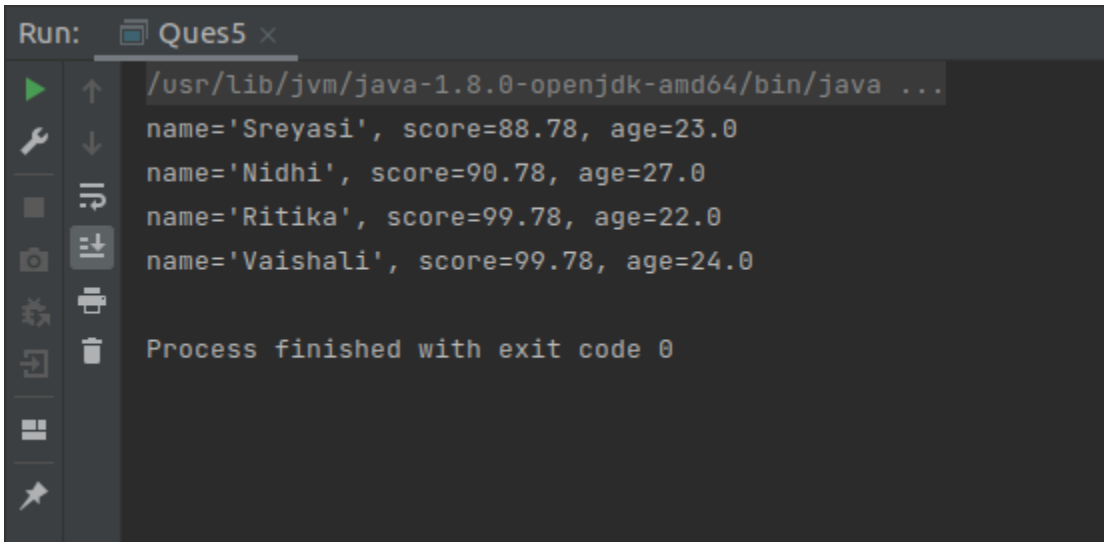
```
        for(Employee emp:employees){
            System.out.println(emp);
        }
    }
}

class Employee{
    private double age;
    private double salary;
    private String name;

    Employee(){}

    public Employee(double age, double salary, String name) {
        this.age = age;
        this.salary = salary;
        this.name = name;
    }

    public double getSalary() {
        return salary;
    }

    @Override
    public String toString() {
        return "age=" + age +
                ", salary=" + salary +
                ", name='" + name ;
    }
}
```



5. 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.

```
import java.util.Collections;

import java.util.Comparator;
import java.util.LinkedList;
import java.util.List;

public class Ques5 {
  public static void main(String[] args) {
    List<Student> students = new LinkedList<>();
    students.add(new Student("Vaishali",99.78,24));
    students.add(new Student("Nidhi",90.78,27));
    students.add(new Student("Sreyasi",88.78,23));
    students.add(new Student("Ritika",99.78,22));

    Collections.sort(students, (s1, s2) -> {
      if(s1.getScore() > s2.getScore())
        return 1;
      else if(s1.getScore() < s2.getScore())
        return -1;
      else
        return s1.getName().compareTo(s2.getName());
    });

    for(Student student:students){
      System.out.println(student);
    }
  }
}

class Student{
  private String name;
  private double score;
  private double age;

  public Student(String name, double score, double age) {
    this.name = name;
    this.score = score;
    this.age = age;
  }

  public String getName() {
```

```
        return name;
    }

    public double getScore() {
        return score;
    }

    @Override
    public String toString() {
        return "name='" + name + '\'' +
                ", score=" + score +
                ", age=" + age;
    }
}
```

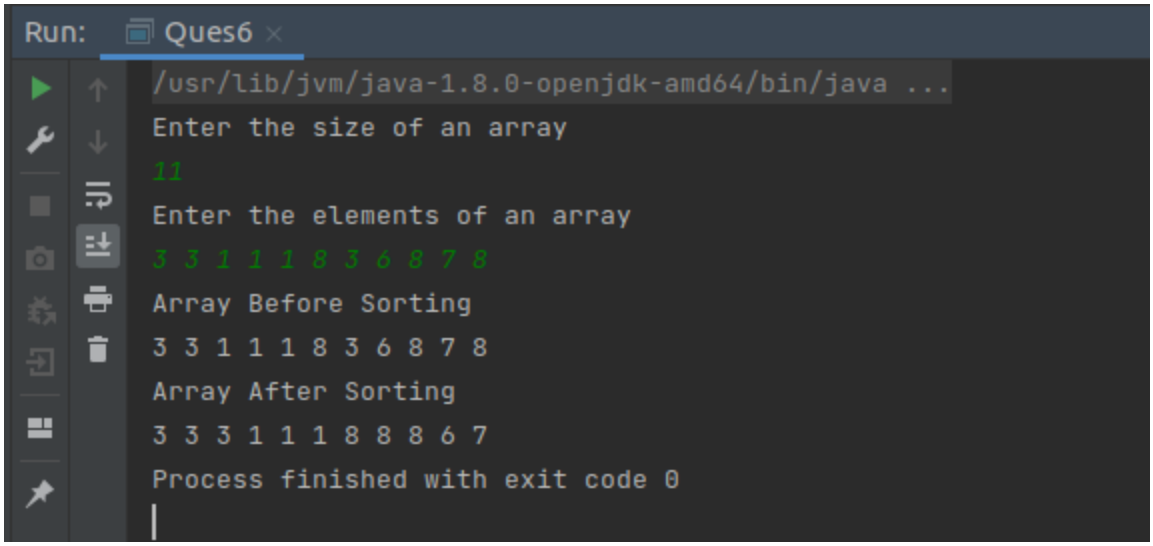


6. Print the elements of an array in the decreasing frequency if 2 numbers have same frequency then print the one which came first.

```
import java.util.*;

import java.util.stream.Collectors;

public class Ques6 {
    // Custom sort by element's frequency and index
    public static void sortByFrequencyAndIndex(int[] arr)
    {
        if (arr == null || arr.length < 2) {
```

```
        return;
    }

    // insert frequency of each array element into the map
    // and index of its first occurrence in the array
    Map<Integer, Data> hm = new HashMap<>();
    for (int i = 0; i < arr.length; i++)
    {
        if(!hm.containsKey(arr[i])){
            hm.put(arr[i],new Data(arr[i],1,i));
        }
        else{
            int index = hm.get(arr[i]).index;
            hm.put(arr[i],new Data(arr[i],++(hm.get(arr[i]).count),index));
        }
    }

    // sort the values based on a custom comparator
    List<Data> values = hm.values().stream()
            .sorted()
            .collect(Collectors.toList());


    int k = 0;
    for (Data data: values)
    {
        for (int j = 0; j < data.count; j++) {
            arr[k++] = data.value;
        }
    }
}

public static void main(String[] args)
{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the size of an array");
    int n = sc.nextInt();
    int[] arr = new int[n];
    System.out.println("Enter the elements of an array");
    for (int i = 0; i < n; i++) {
        arr[i] = sc.nextInt();
    }
    System.out.println("Array Before Sorting");
    for (Integer i : arr) {
```

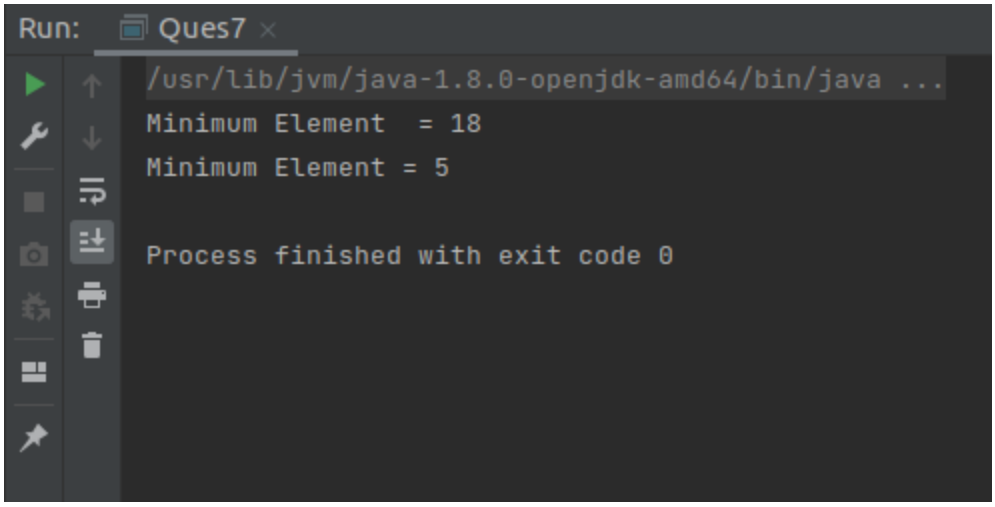
```
            System.out.print(i + " ");
        }
        System.out.println();

        sortByFrequencyAndIndex(arr);

        System.out.println("Array After Sorting");
        for (Integer i : arr) {
            System.out.print(i + " ");
        }
    }
}

class Data implements Comparable<Data>
{
    int value, count, index;

    public Data(int value, int count, int index)
    {
        this.value = value;
        this.count = count;
        this.index = index;
    }

    public int compareTo(Data obj)
    {
        // If two elements have different frequencies, then
        // the one which has more frequency should come first
        if (this.count != obj.count) {
            return obj.count - this.count;
        }

        // If two elements have the same frequencies, then the
        // one which has less index should come first
        return this.index - obj.index;
    }
}
```



7. Design a Data Structure SpecialStack that supports all the stack operations like push(), pop(), isEmpty(), isFull() and an additional operation getMin() which should return a minimum element from the SpecialStack. (Expected complexity O(1)).

```
package Ques7;


import java.util.Stack;

class SpecialStack extends Stack {
  Stack<Integer> minStack = new Stack<>();
  void push(int x){
    if(isEmpty()){
      super.push(x);
      minStack.push(x);
    }
    else{
      super.push(x);
      if(x < minStack.peek()){
        minStack.push(x);
      }
      else{
        minStack.push(minStack.peek());
      }
    }
  }
```

```
  public Integer pop(){
     int x = (int)super.pop();
     minStack.pop();
     return x;
  }

  public int getMin(){
     int x = minStack.pop();
     return x;
  }

  public boolean empty(){
     return super.empty();
  }
}


public class Ques7 {
  public static void main(String[] args) {
     SpecialStack s = new SpecialStack();
     s.push(23);
     s.push(19);
     s.push(18);
     s.push(32);
     s.push(20);

     System.out.println("Minimum Element  = " + s.getMin());
     s.push(5);
     System.out.println("Minimum Element = " + s.getMin());
  }
}
```

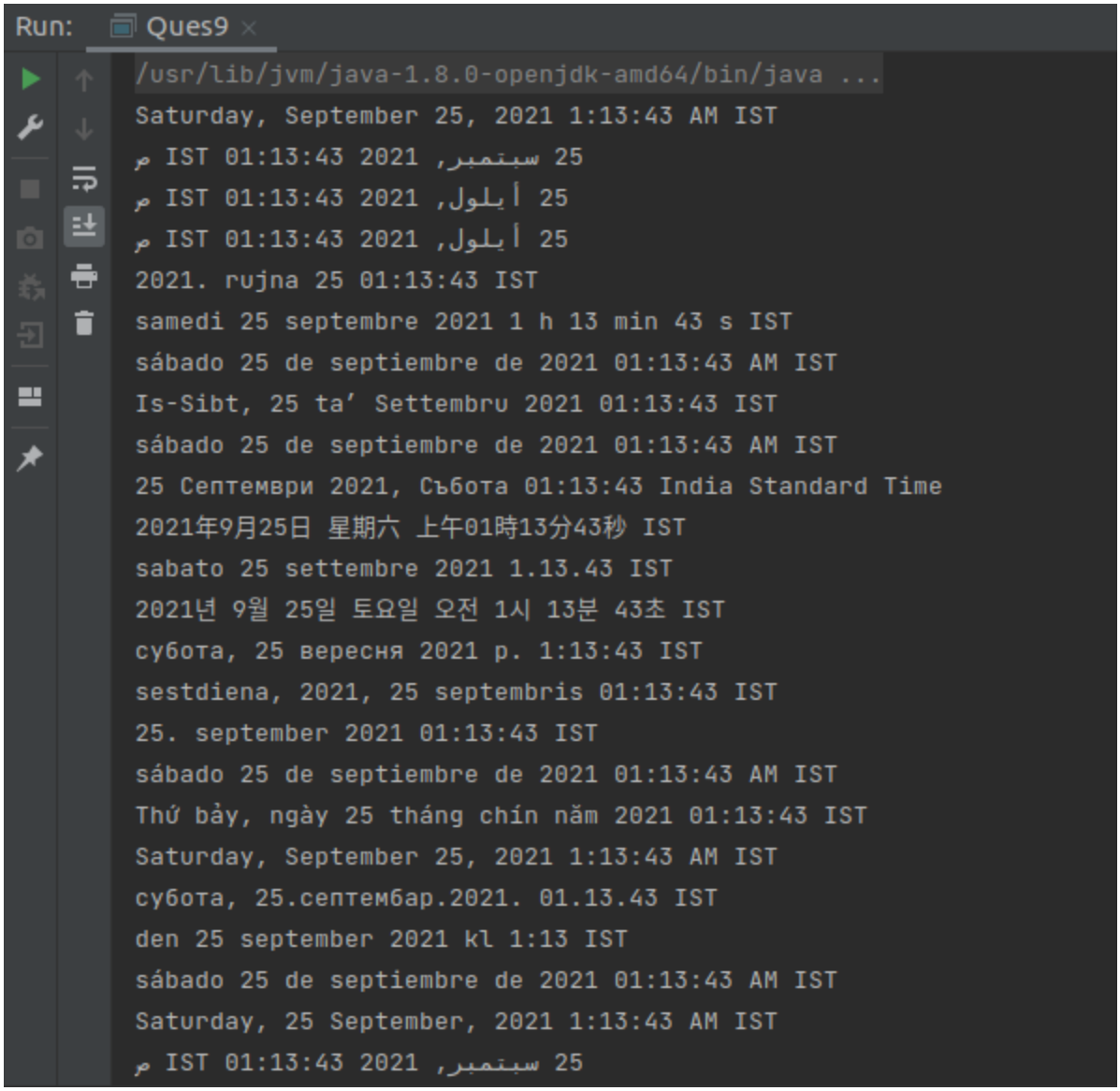


8. Write a program to format date as example "21-March-2016".

```
import java.text.SimpleDateFormat;

import java.util.Date;

public class Ques8 {
   public static void main(String[] args) {
      Date today = new Date();

      SimpleDateFormat formatter = new SimpleDateFormat("dd-MMMM-YYYY");
      System.out.println(formatter.format(today));
   }
}
```

9. Write a program to display times in different country format.

```
import java.text.DateFormat;
import java.util.Date;
import java.util.Locale;

public class Ques9 {
  public static void main(String[] args) {
     Date d = new Date();
     Locale list[] = DateFormat.getAvailableLocales();
     for (Locale aLocale : list) {
        DateFormat df = DateFormat.getDateInstance(DateFormat.FULL, aLocale);
        DateFormat df1 = DateFormat.getTimeInstance(DateFormat.FULL, aLocale);
        System.out.print(df.format(d) + " ");
        System.out.println(df1.format(d));
     }
  }
}
```


Run:
Ques9
/usr/lib/jvm/java-1.8.0-openjdk-amd64/bin/java ...
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