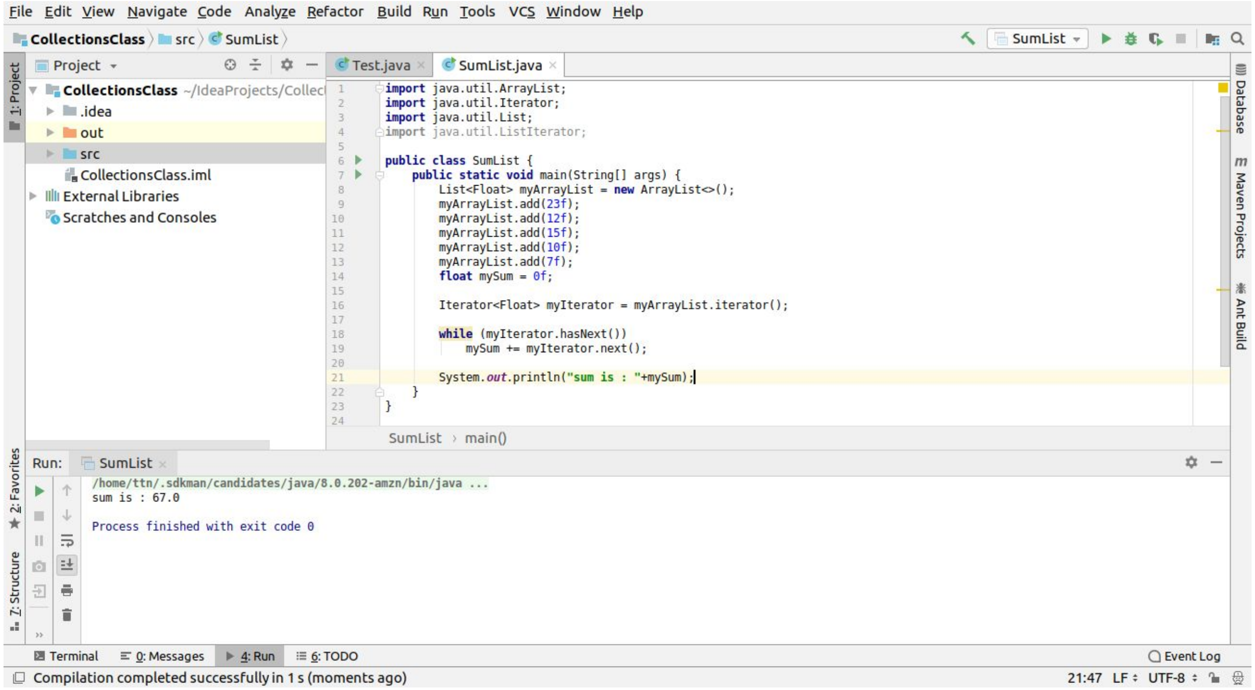
Collections Assignment

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.**



```java
import java.util.ArrayList;
import java.util.Iterator;
import java.util.List;
import java.util.ListIterator;

public class SumList {
    public static void main(String[] args) {
        List<Float> myArrayList = new ArrayList<>();
        myArrayList.add(23f);
        myArrayList.add(12f);
        myArrayList.add(15f);
        myArrayList.add(10f);
        myArrayList.add(7f);
        float mySum = 0f;

        Iterator<Float> myIterator = myArrayList.iterator();

        while (myIterator.hasNext())
            mySum += myIterator.next();

        System.out.println("sum is : "+mySum);
    }
}
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
sum is : 67.0

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```

```
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```
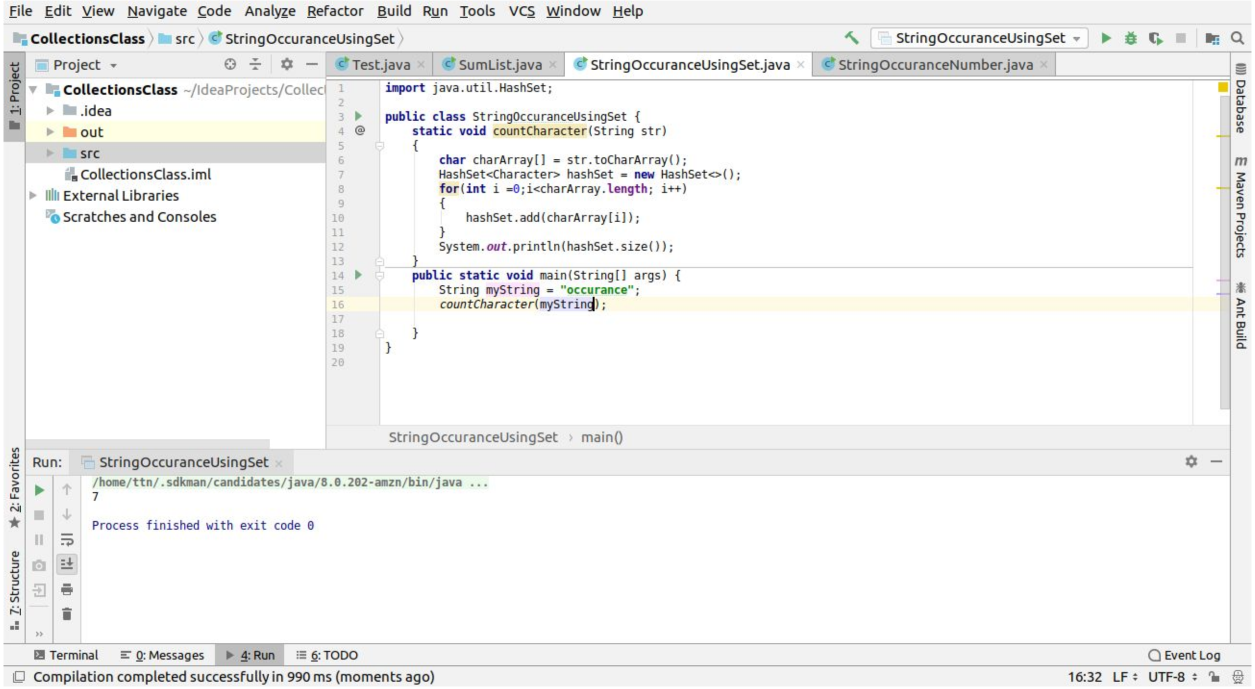

2. **Write a method that takes a string and returns the number of unique characters in the string.**


File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
CollectionsClass 〉 src 〉 StringOccuranceUsingSet 〉
StringOccuranceUsingSet
Project
CollectionsClass ~/IdeaProjects/Collec
.idea
out
src
CollectionsClass.iml
External Libraries
Scratches and Consoles
Test.java
SumList.java
StringOccuranceUsingSet.java
StringOccuranceNumber.java
StringOccuranceUsingSet › main()
Run: StringOccuranceUsingSet
Terminal
0: Messages
4: Run
6: TODO
Event Log
1: Project
2: Favorites
Z: Structure
Database
Maven Projects
Ant Build
16:32 LF ÷ UTF-8 ÷

```java
import java.util.HashSet;

public class StringOccuranceUsingSet {
    static void countCharacter(String str)
    {
        char charArray[] = str.toCharArray();
        HashSet<Character> hashSet = new HashSet<>();
        for(int i =0;i<charArray.length; i++)
        {
            hashSet.add(charArray[i]);
        }
        System.out.println(hashSet.size());
    }
    public static void main(String[] args) {
        String myString = "occurance";
        countCharacter(myString);

    }
}
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
7

Process finished with exit code 0
```

```
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```
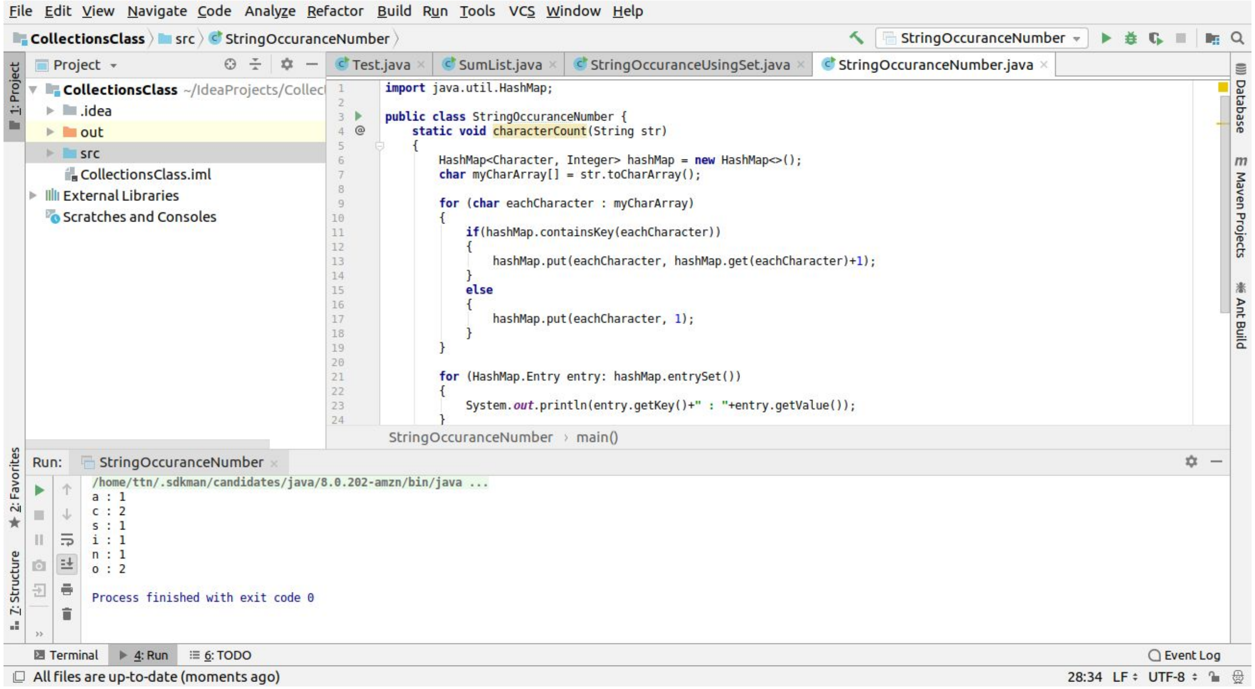

3. Write a method that takes a string and print the number of occurrence of each character characters in the string.


File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
CollectionsClass › src › StringOccuranceNumber
StringOccuranceNumber
Project
CollectionsClass ~/IdeaProjects/Collect
.idea
out
src
CollectionsClass.iml
External Libraries
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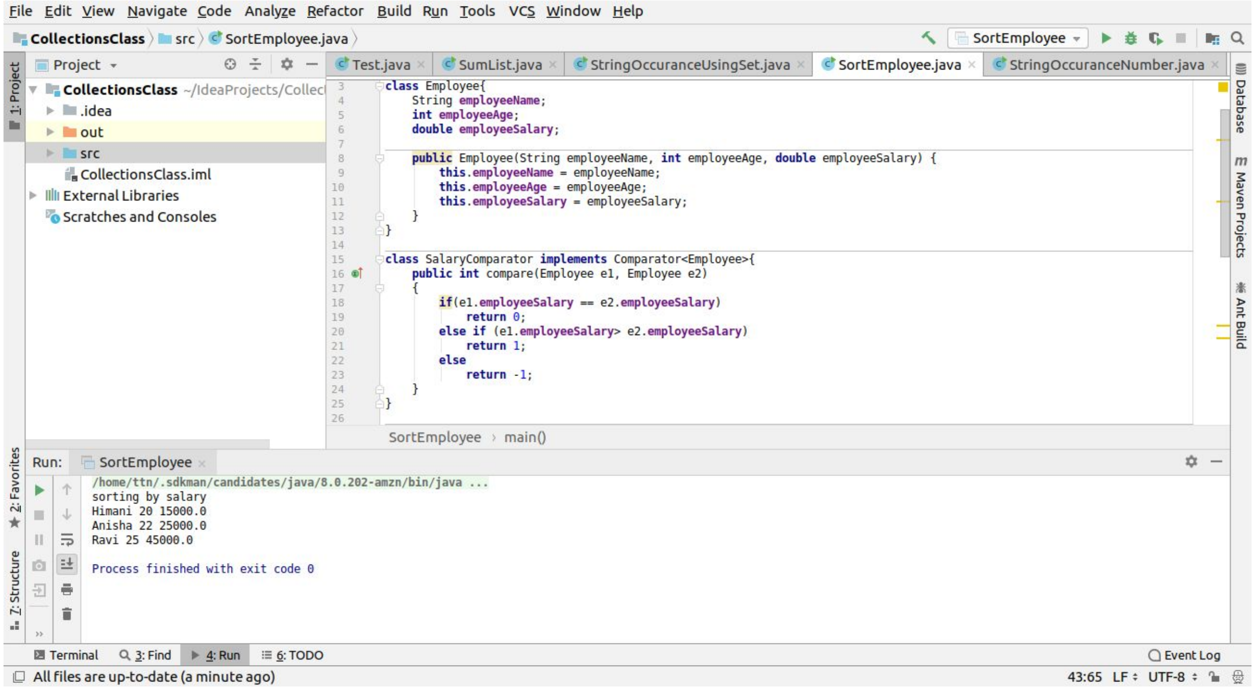
Test.java
SumList.java
StringOccuranceUsingSet.java
StringOccuranceNumber.java
StringOccuranceNumber › main()
Run: StringOccuranceNumber
Terminal
4: Run
6: TODO
Event Log
All files are up-to-date (moments ago)
28:34 LF UTF-8
1: Project
2: Favorites
7: Structure
Database
Maven Projects
Ant Build

```java
import java.util.HashMap;

public class StringOccuranceNumber {
    static void characterCount(String str)
    {
        HashMap<Character, Integer> hashMap = new HashMap<>();
        char myCharArray[] = str.toCharArray();

        for (char eachCharacter : myCharArray)
        {
            if(hashMap.containsKey(eachCharacter))
            {
                hashMap.put(eachCharacter, hashMap.get(eachCharacter)+1);
            }
            else
            {
                hashMap.put(eachCharacter, 1);
            }
        }

        for (HashMap.Entry entry: hashMap.entrySet())
        {
            System.out.println(entry.getKey()+" : "+entry.getValue());
        }
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
a : 1
c : 2
s : 1
i : 1
n : 1
o : 2

Process finished with exit code 0
```

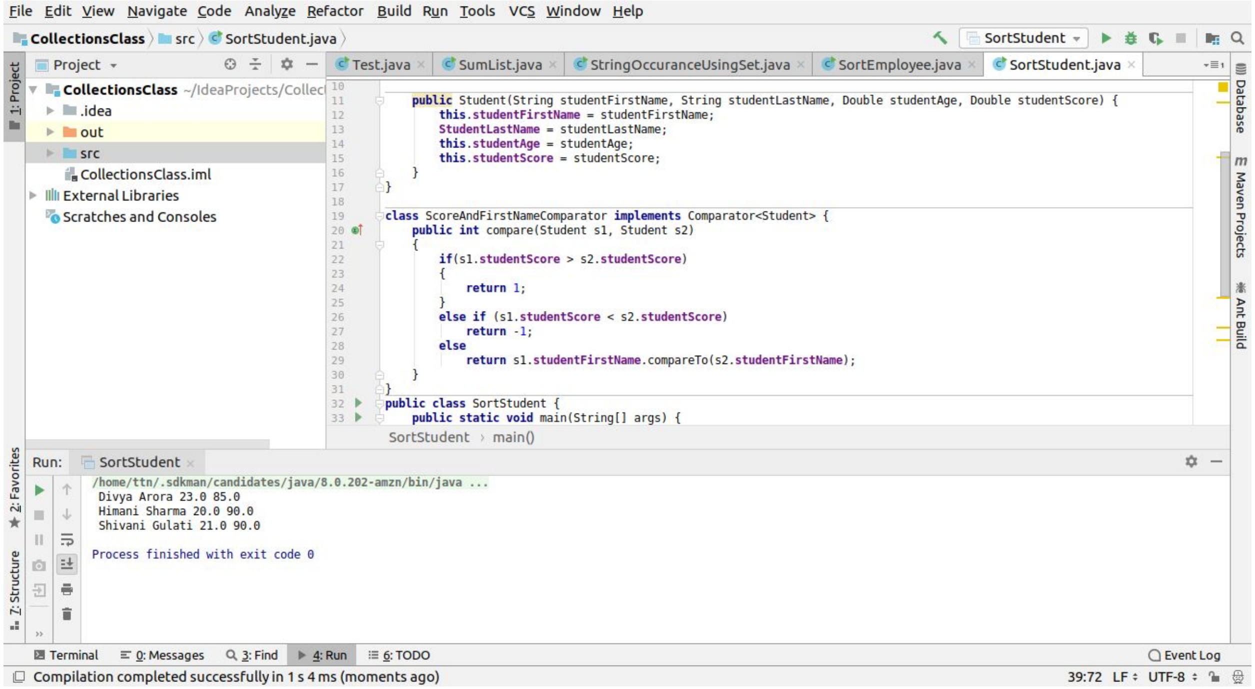
4. Write a program to sort Employee objects based on highest salary using Comparator. Employee class{ Double Age; Double Salary; String Name



```java
class Employee{
    String employeeName;
    int employeeAge;
    double employeeSalary;

    public Employee(String employeeName, int employeeAge, double employeeSalary) {
        this.employeeName = employeeName;
        this.employeeAge = employeeAge;
        this.employeeSalary = employeeSalary;
    }
}

class SalaryComparator implements Comparator<Employee>{
    public int compare(Employee e1, Employee e2)
    {
        if(e1.employeeSalary == e2.employeeSalary)
            return 0;
        else if (e1.employeeSalary> e2.employeeSalary)
            return 1;
        else
            return -1;
    }
}
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
sorting by salary
Himani 20 15000.0
Anisha 22 25000.0
Ravi 25 45000.0

Process finished with exit code 0
```

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



```java

    public Student(String studentFirstName, String studentLastName, Double studentAge, Double studentScore) {
        this.studentFirstName = studentFirstName;
        StudentLastName = studentLastName;
        this.studentAge = studentAge;
        this.studentScore = studentScore;
    }
}

class ScoreAndFirstNameComparator implements Comparator<Student> {
    public int compare(Student s1, Student s2)
    {
        if(s1.studentScore > s2.studentScore)
        {
            return 1;
        }
        else if (s1.studentScore < s2.studentScore)
            return -1;
        else
            return s1.studentFirstName.compareTo(s2.studentFirstName);
    }
}
public class SortStudent {
    public static void main(String[] args) {
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
 Divya Arora 23.0 85.0
 Himani Sharma 20.0 90.0
 Shivani Gulati 21.0 90.0

Process finished with exit code 0
```

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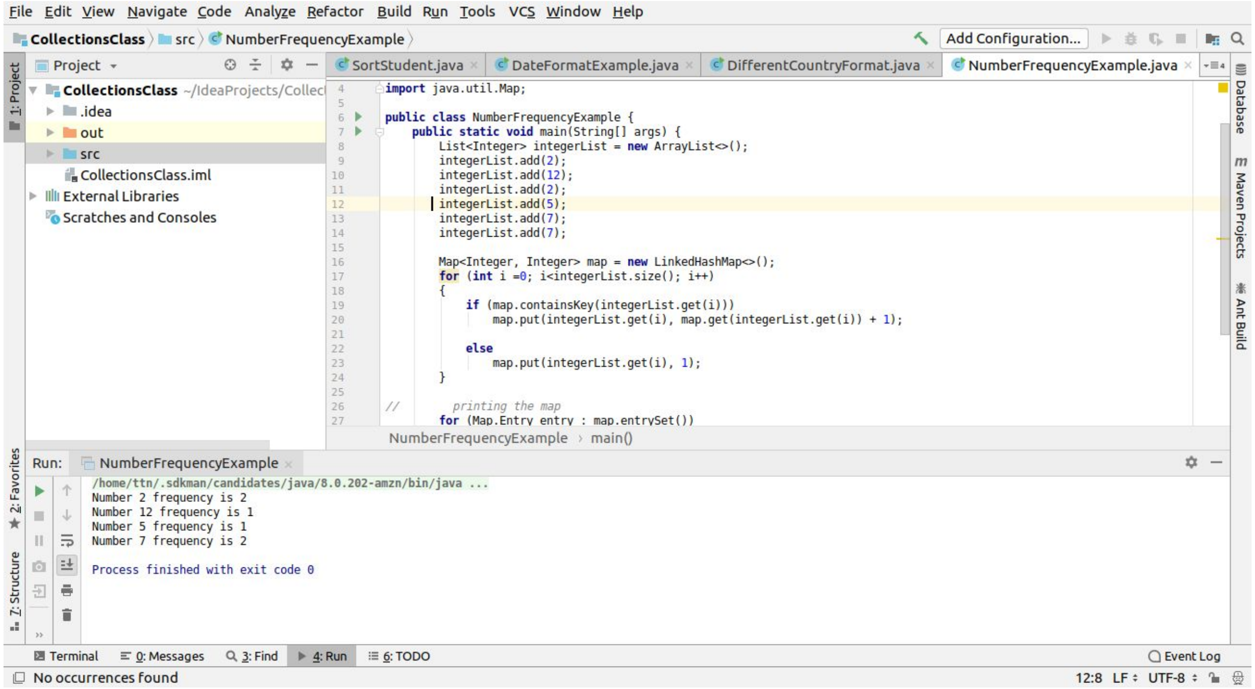
6. Print the elements of an array in the decreasing frequency if 2 numbers have same frequency then print the one which came first.

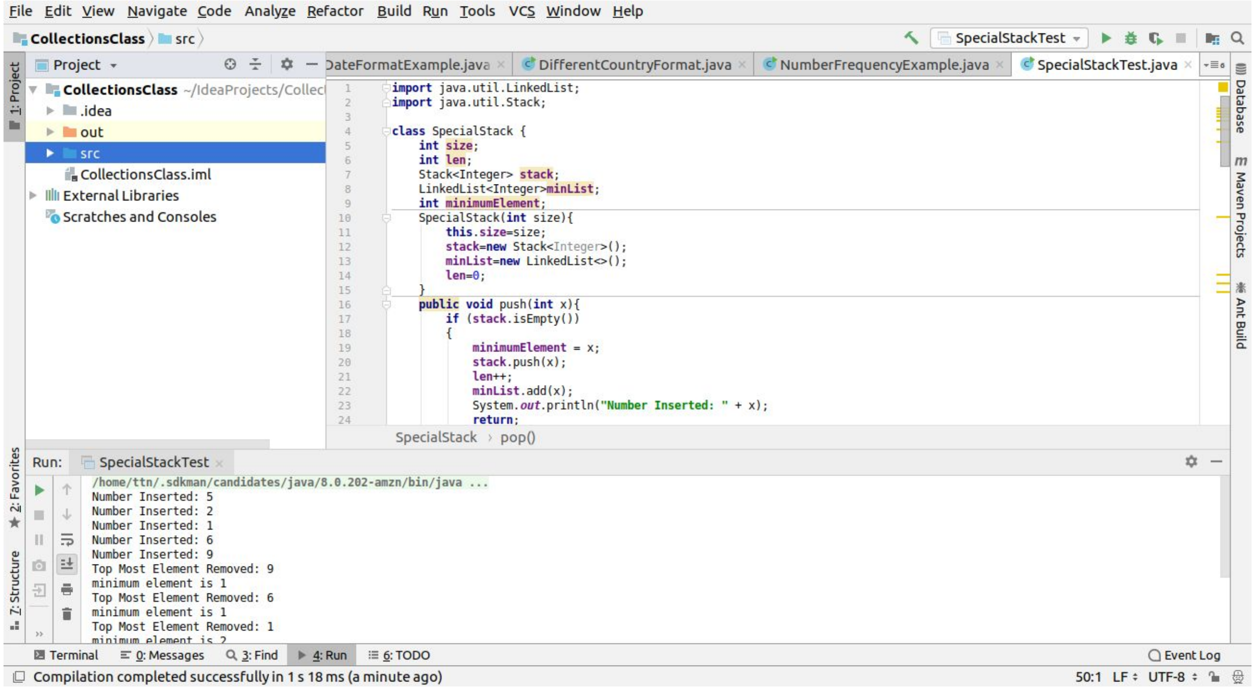


```java
import java.util.Map;

public class NumberFrequencyExample {
    public static void main(String[] args) {
        List<Integer> integerList = new ArrayList<>();
        integerList.add(2);
        integerList.add(12);
        integerList.add(2);
        integerList.add(5);
        integerList.add(7);
        integerList.add(7);

        Map<Integer, Integer> map = new LinkedHashMap<>();
        for (int i =0; i<integerList.size(); i++)
        {
            if (map.containsKey(integerList.get(i)))
                map.put(integerList.get(i), map.get(integerList.get(i)) + 1);

            else
                map.put(integerList.get(i), 1);
        }

//          printing the map
        for (Map.Entry entry : map.entrySet())
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
Number 2 frequency is 2
Number 12 frequency is 1
Number 5 frequency is 1
Number 7 frequency is 2

Process finished with exit code 0
```

No occurrences found

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 minimum element from the SpecialStack. (Expected complexity O(1))



```java
import java.util.LinkedList;
import java.util.Stack;

class SpecialStack {
    int size;
    int len;
    Stack<Integer> stack;
    LinkedList<Integer>minList;
    int minimumElement;
    SpecialStack(int size){
        this.size=size;
        stack=new Stack<Integer>();
        minList=new LinkedList<>();
        len=0;
    }
    public void push(int x){
        if (stack.isEmpty())
        {
            minimumElement = x;
            stack.push(x);
            len++;
            minList.add(x);
            System.out.println("Number Inserted: " + x);
            return;
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
Number Inserted: 5
Number Inserted: 2
Number Inserted: 1
Number Inserted: 6
Number Inserted: 9
Top Most Element Removed: 9
minimum element is 1
Top Most Element Removed: 6
minimum element is 1
Top Most Element Removed: 1
minimum element is 2
```

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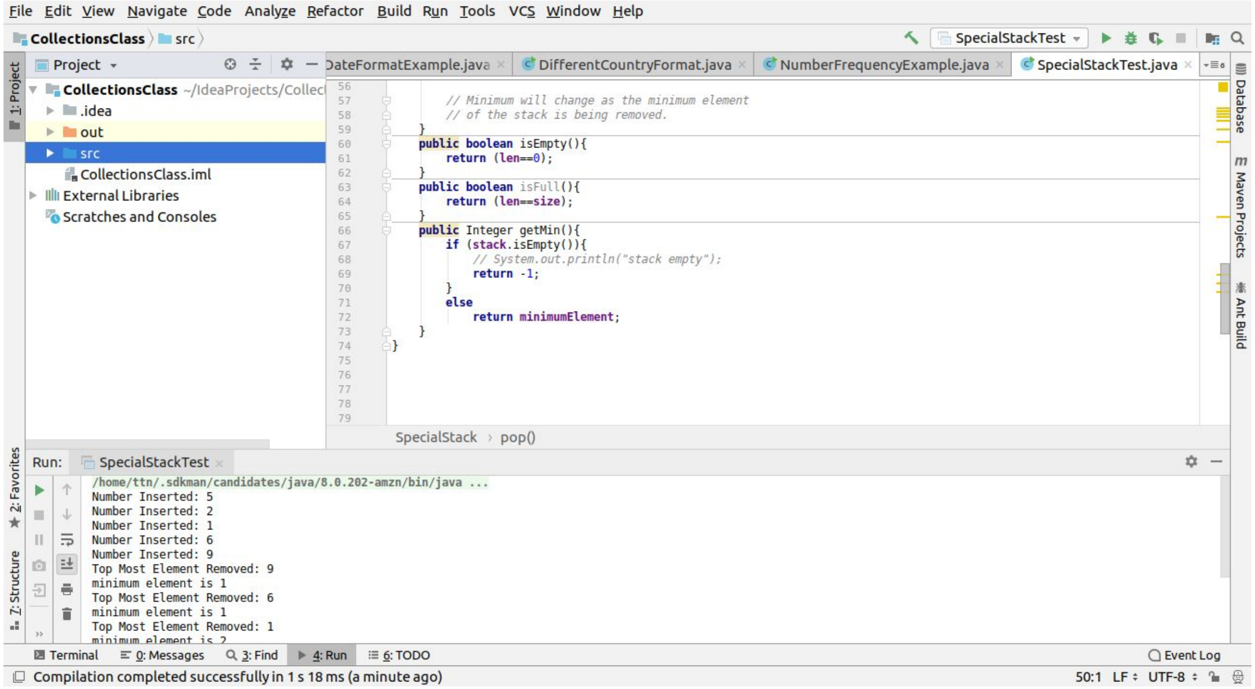
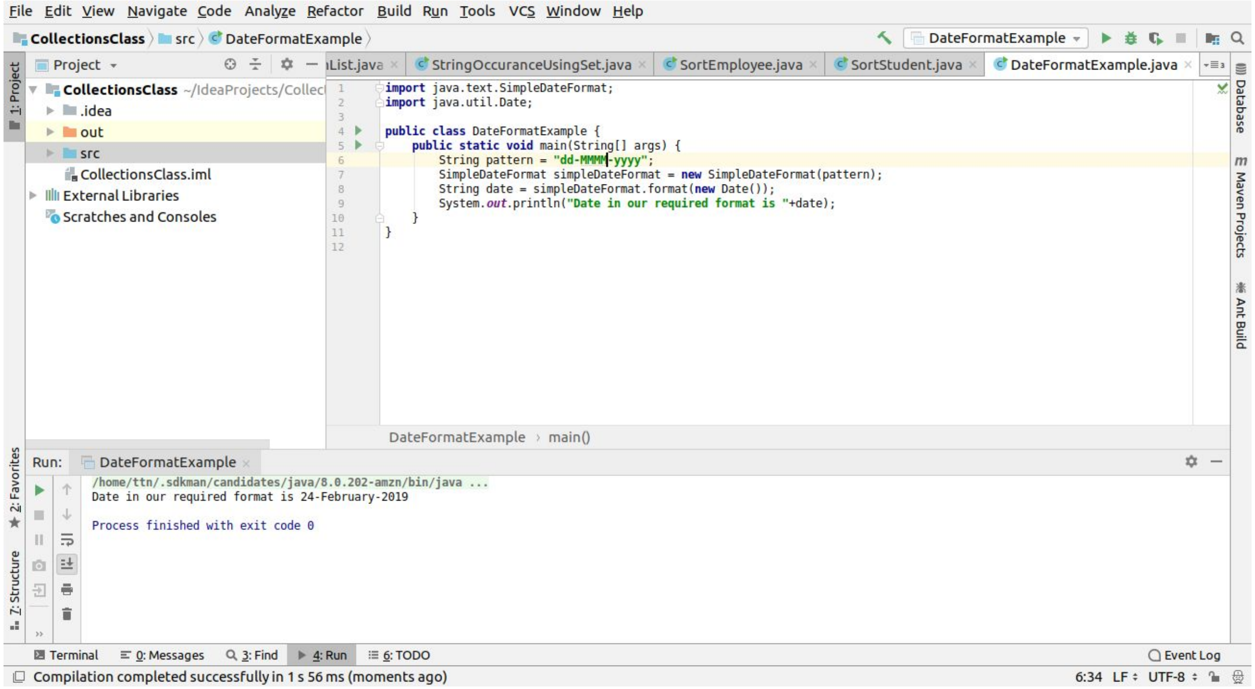


```java

            // Minimum will change as the minimum element
            // of the stack is being removed.
        }
    public boolean isEmpty(){
        return (len==0);
    }
    public boolean isFull(){
        return (len==size);
    }
    public Integer getMin(){
        if (stack.isEmpty()){
            // System.out.println("stack empty");
            return -1;
        }
        else
            return minimumElement;
    }
}
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
Number Inserted: 5
Number Inserted: 2
Number Inserted: 1
Number Inserted: 6
Number Inserted: 9
Top Most Element Removed: 9
minimum element is 1
Top Most Element Removed: 6
minimum element is 1
Top Most Element Removed: 1
minimum element is 2
```

Compilation completed successfully in 1 s 18 ms (a minute ago)

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

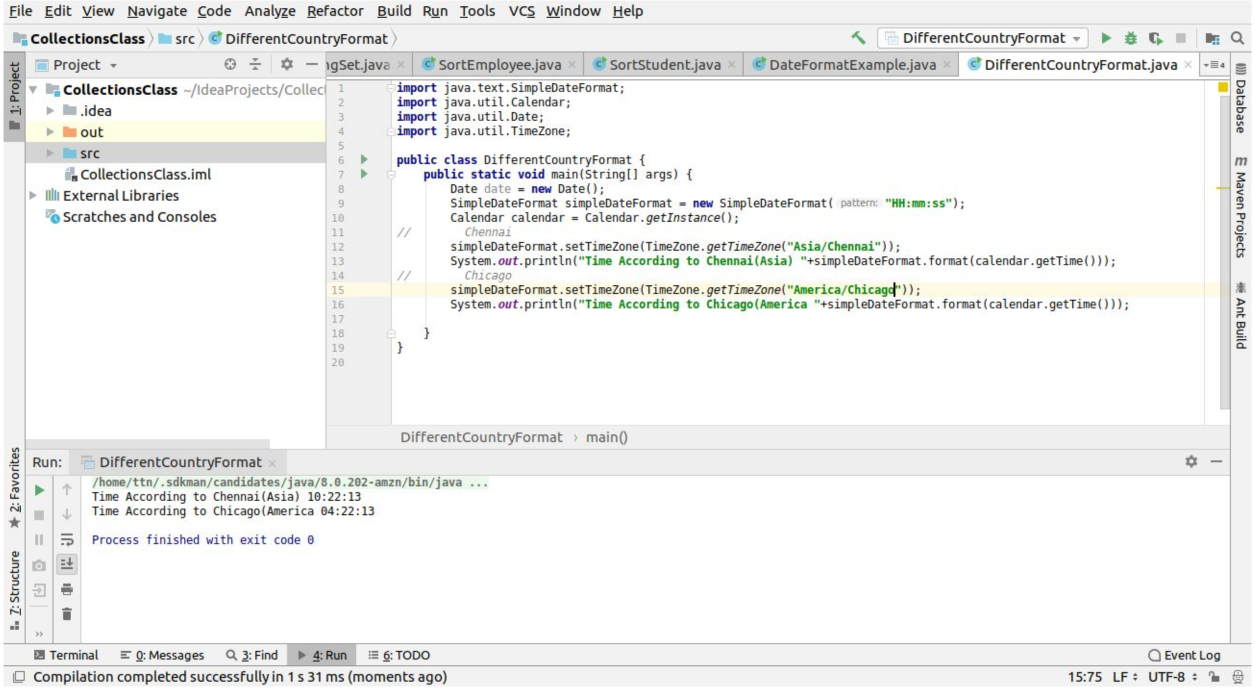


```java
import java.text.SimpleDateFormat;
import java.util.Date;

public class DateFormatExample {
    public static void main(String[] args) {
        String pattern = "dd-MMMM-yyyy";
        SimpleDateFormat simpleDateFormat = new SimpleDateFormat(pattern);
        String date = simpleDateFormat.format(new Date());
        System.out.println("Date in our required format is "+date);
    }
}
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
Date in our required format is 24-February-2019

Process finished with exit code 0
```

Compilation completed successfully in 1 s 56 ms (moments ago)

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



```java
import java.text.SimpleDateFormat;
import java.util.Calendar;
import java.util.Date;
import java.util.TimeZone;

public class DifferentCountryFormat {
    public static void main(String[] args) {
        Date date = new Date();
        SimpleDateFormat simpleDateFormat = new SimpleDateFormat( pattern: "HH:mm:ss");
        Calendar calendar = Calendar.getInstance();
//        Chennai
        simpleDateFormat.setTimeZone(TimeZone.getTimeZone("Asia/Chennai"));
        System.out.println("Time According to Chennai(Asia) "+simpleDateFormat.format(calendar.getTime()));
//        Chicago
        simpleDateFormat.setTimeZone(TimeZone.getTimeZone("America/Chicago"));
        System.out.println("Time According to Chicago(America "+simpleDateFormat.format(calendar.getTime()));

    }
}
```

```
/home/ttn/.sdkman/candidates/java/8.0.202-amzn/bin/java ...
Time According to Chennai(Asia) 10:22:13
Time According to Chicago(America 04:22:13

Process finished with exit code 0
```

Compilation completed successfully in 1 s 31 ms (moments ago)