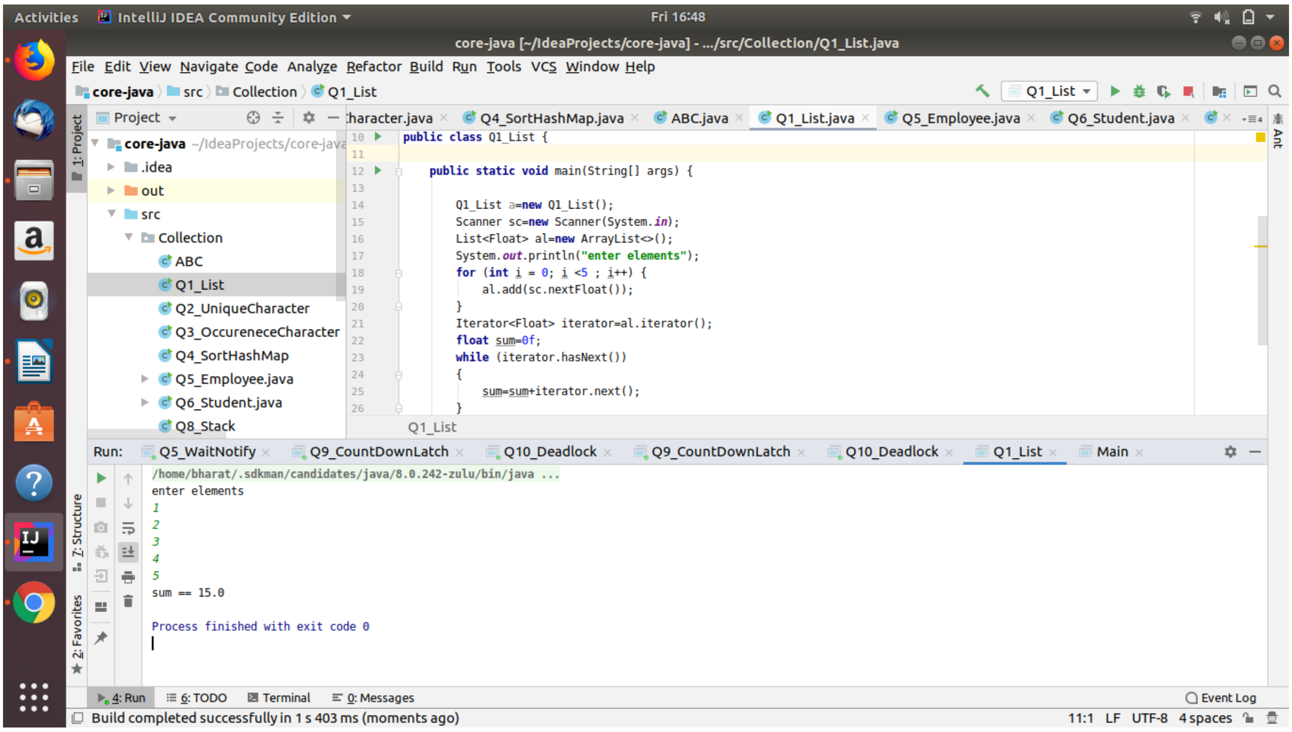
Q.1 Write Java code to define List . Insert 5 floating point numbers in List, and using an iterator, find the sum of the numbers in List.

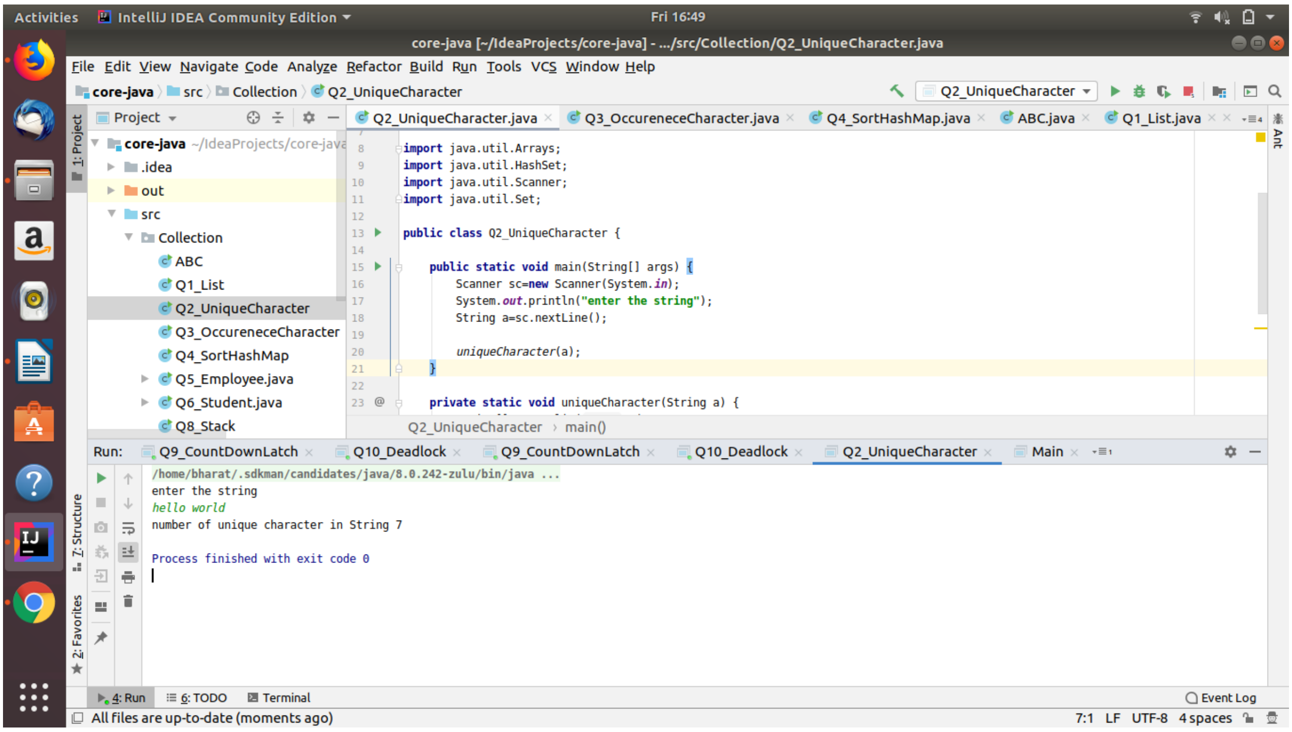


```java
public class Q1_List {

    public static void main(String[] args) {

        Q1_List a=new Q1_List();
        Scanner sc=new Scanner(System.in);
        List<Float> al=new ArrayList<>();
        System.out.println("enter elements");
        for (int i = 0; i <5 ; i++) {
            al.add(sc.nextFloat());
        }
        Iterator<Float> iterator=al.iterator();
        float sum=0f;
        while (iterator.hasNext())
        {
            sum=sum+iterator.next();
        }
```

```
/home/bharat/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
enter elements
1
2
3
4
5
sum == 15.0

Process finished with exit code 0
```

Build completed successfully in 1 s 403 ms (moments ago)

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

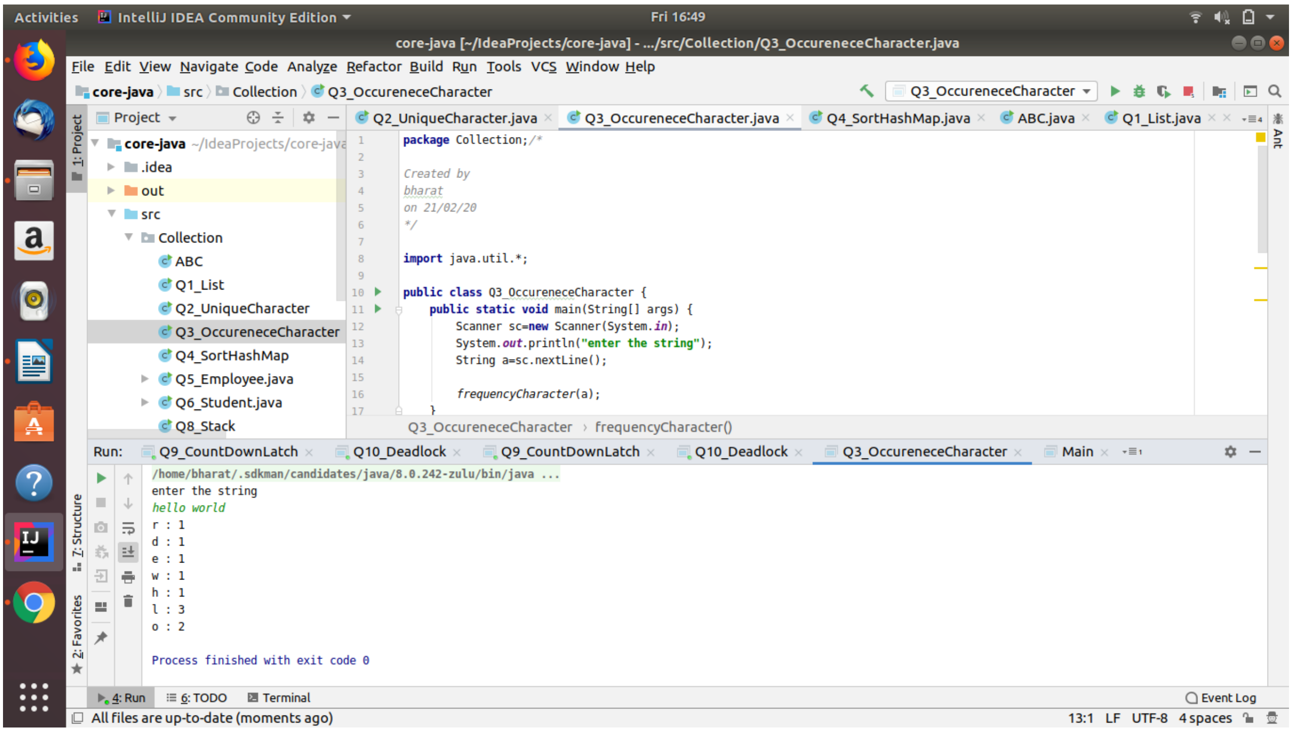


```java
import java.util.Arrays;
import java.util.HashSet;
import java.util.Scanner;
import java.util.Set;

public class Q2_UniqueCharacter {

    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the string");
        String a=sc.nextLine();

        uniqueCharacter(a);
    }

    private static void uniqueCharacter(String a) {
```

```
/home/bharat/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
enter the string
hello world
number of unique character in String 7

Process finished with exit code 0
```

All files are up-to-date (moments ago)

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

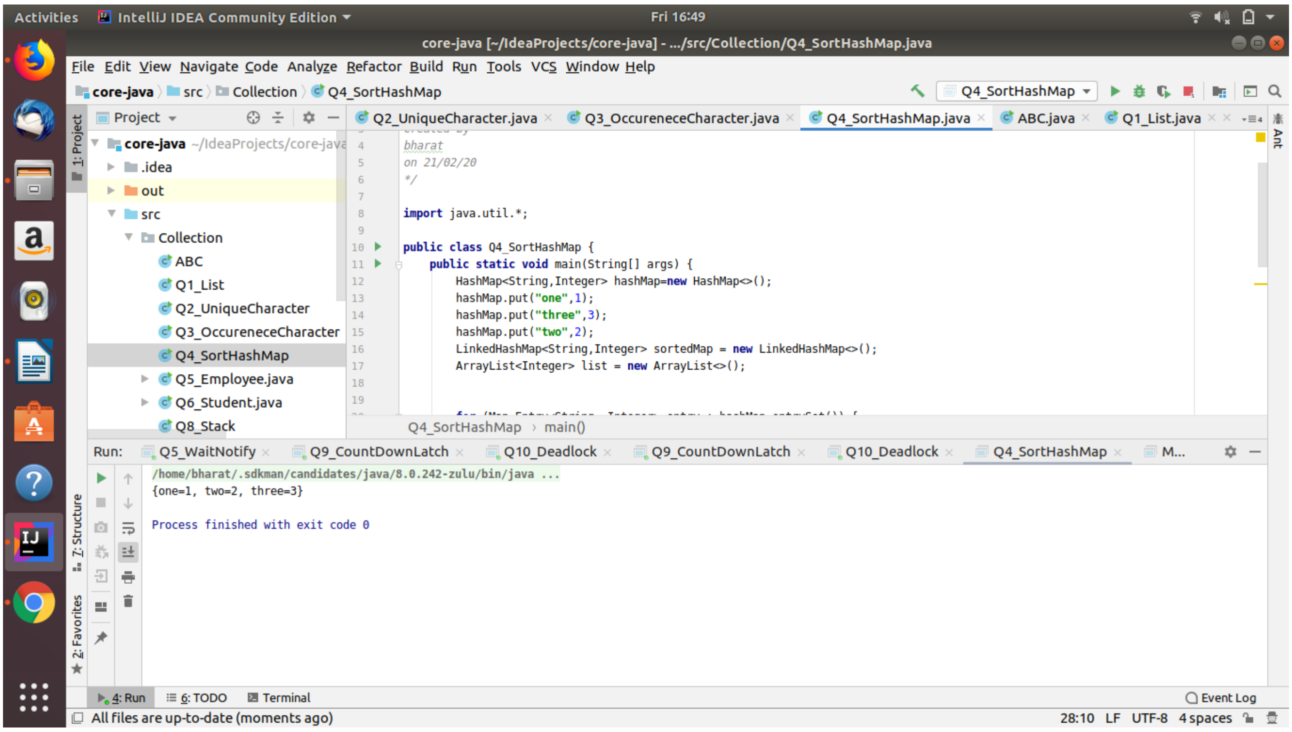


```
package Collection;/*

Created by
bharat
on 21/02/20
*/

import java.util.*;

public class Q3_OccureneceCharacter {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the string");
        String a=sc.nextLine();

        frequencyCharacter(a);
    }
```

```
/home/bharat/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
enter the string
hello world
r : 1
d : 1
e : 1
w : 1
h : 1
l : 3
o : 2

Process finished with exit code 0
```

core-java [~/IdeaProjects/core-java] - .../src/Collection/Q3_OccureneceCharacter.java
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
Q3_OccureneceCharacter › frequencyCharacter()
All files are up-to-date (moments ago)

Q.4 Write a program to sort HashMap by value.

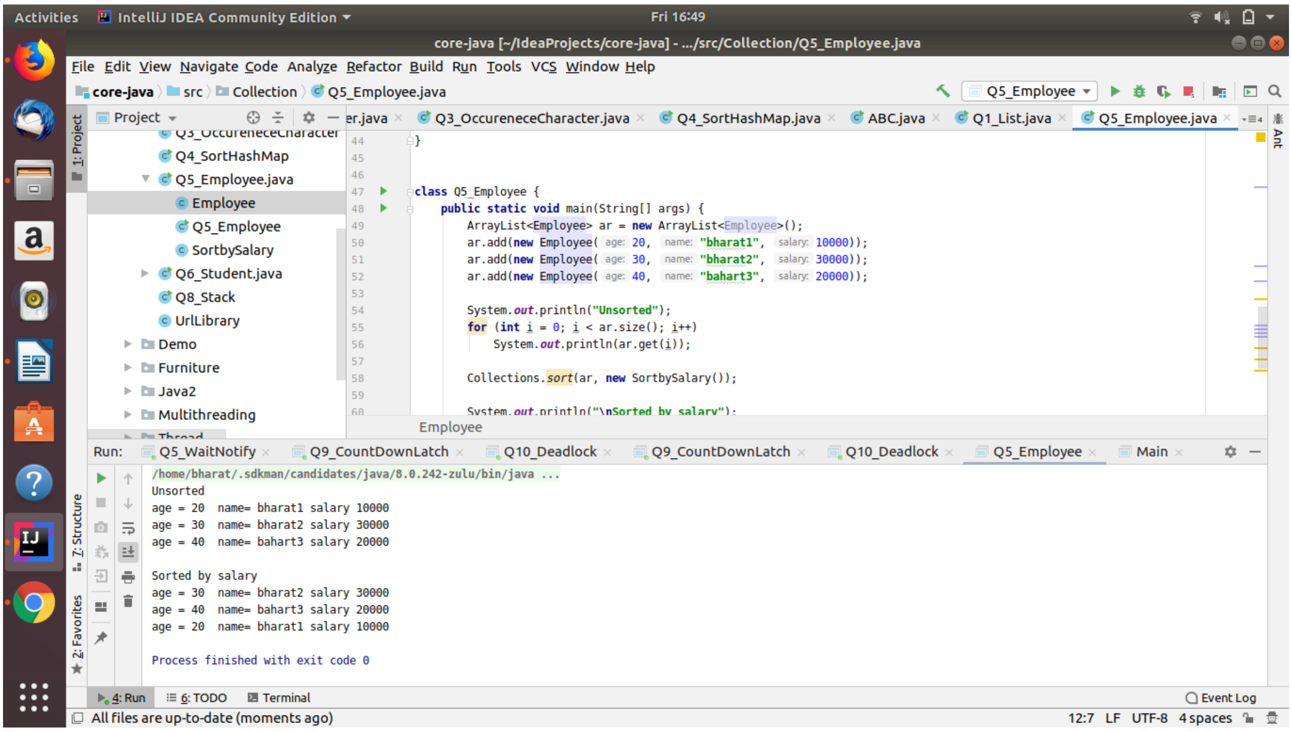


```
bharat
on 21/02/20
*/

import java.util.*;

public class Q4_SortHashMap {
    public static void main(String[] args) {
        HashMap<String,Integer> hashMap=new HashMap<>();
        hashMap.put("one",1);
        hashMap.put("three",3);
        hashMap.put("two",2);
        LinkedHashMap<String,Integer> sortedMap = new LinkedHashMap<>();
        ArrayList<Integer> list = new ArrayList<>();
```

```
/home/bharat/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
{one=1, two=2, three=3}

Process finished with exit code 0
```

core-java [~/IdeaProjects/core-java] - .../src/Collection/Q4_SortHashMap.java
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
Q4_SortHashMap › main()
All files are up-to-date (moments ago)

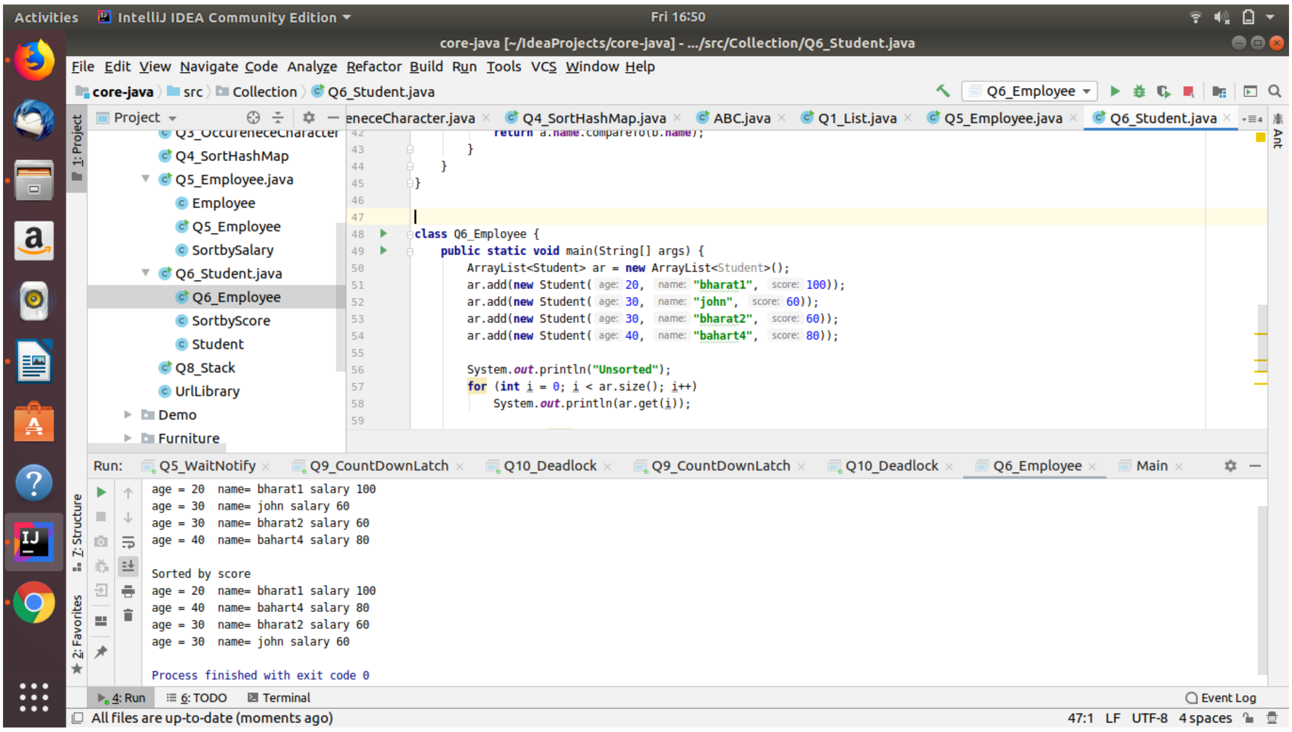
Q.5 Write a program to sort Employee objects based on highest salary using Comparator. Employee class{ Double Age; Double Salary; String Name



```java
}


class Q5_Employee {
    public static void main(String[] args) {
        ArrayList<Employee> ar = new ArrayList<Employee>();
        ar.add(new Employee( age: 20,  name: "bharat1",  salary: 10000));
        ar.add(new Employee( age: 30,  name: "bharat2",  salary: 30000));
        ar.add(new Employee( age: 40,  name: "bahart3",  salary: 20000));

        System.out.println("Unsorted");
        for (int i = 0; i < ar.size(); i++)
            System.out.println(ar.get(i));

        Collections.sort(ar, new SortbySalary());

        System.out.println("\nSorted by salary");
```

```
/home/bharat/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
Unsorted
age = 20  name= bharat1 salary 10000
age = 30  name= bharat2 salary 30000
age = 40  name= bahart3 salary 20000

Sorted by salary
age = 30  name= bharat2 salary 30000
age = 40  name= bahart3 salary 20000
age = 20  name= bharat1 salary 10000

Process finished with exit code 0
```

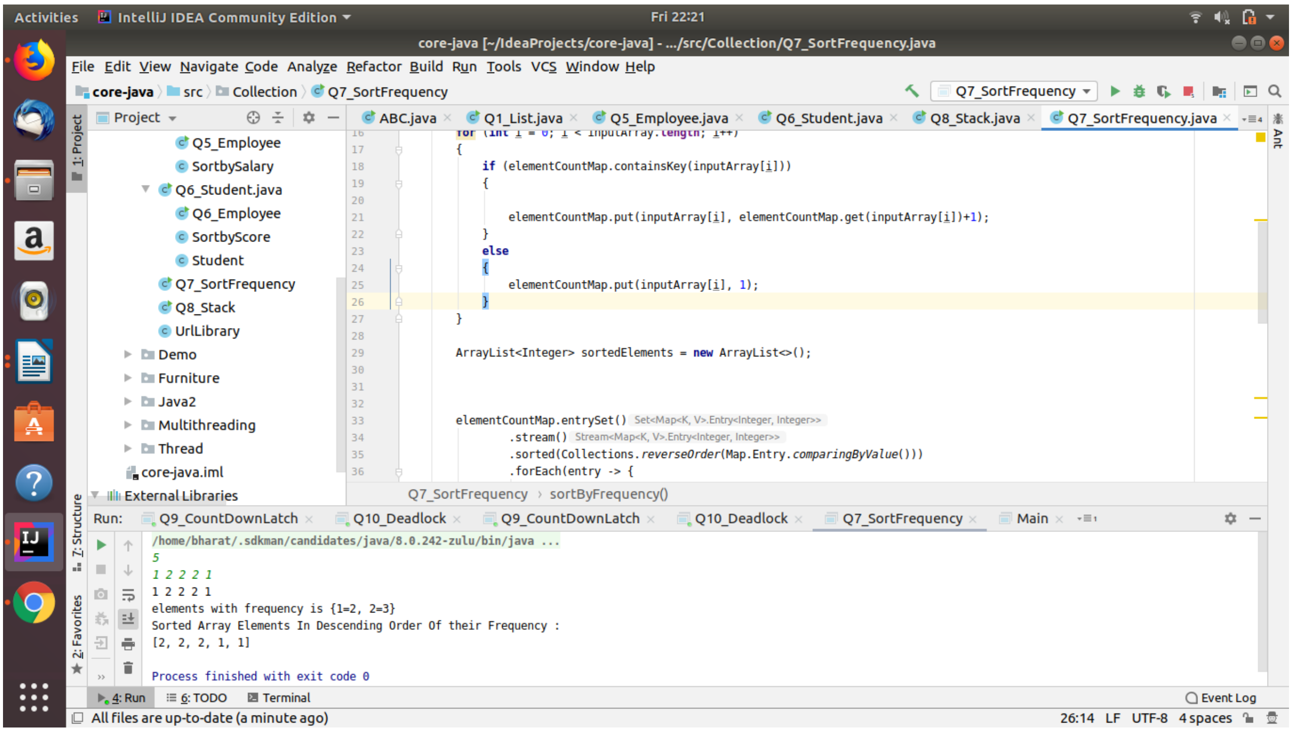
Q.6 Write a program to sort the Student objects based on Score , if the score are same then sort on First Name . Class Student{ String Name; Double Score; Double Age



```java
            return a.name.compareTo(b.name);
        }
    }
}


class Q6_Employee {
    public static void main(String[] args) {
        ArrayList<Student> ar = new ArrayList<Student>();
        ar.add(new Student( age: 20,  name: "bharat1",  score: 100));
        ar.add(new Student( age: 30,  name: "john",  score: 60));
        ar.add(new Student( age: 30,  name: "bharat2",  score: 60));
        ar.add(new Student( age: 40,  name: "bahart4",  score: 80));

        System.out.println("Unsorted");
        for (int i = 0; i < ar.size(); i++)
            System.out.println(ar.get(i));
```

```
age = 20  name= bharat1 salary 100
age = 30  name= john salary 60
age = 30  name= bharat2 salary 60
age = 40  name= bahart4 salary 80

Sorted by score
age = 20  name= bharat1 salary 100
age = 40  name= bahart4 salary 80
age = 30  name= bharat2 salary 60
age = 30  name= john salary 60

Process finished with exit code 0
```

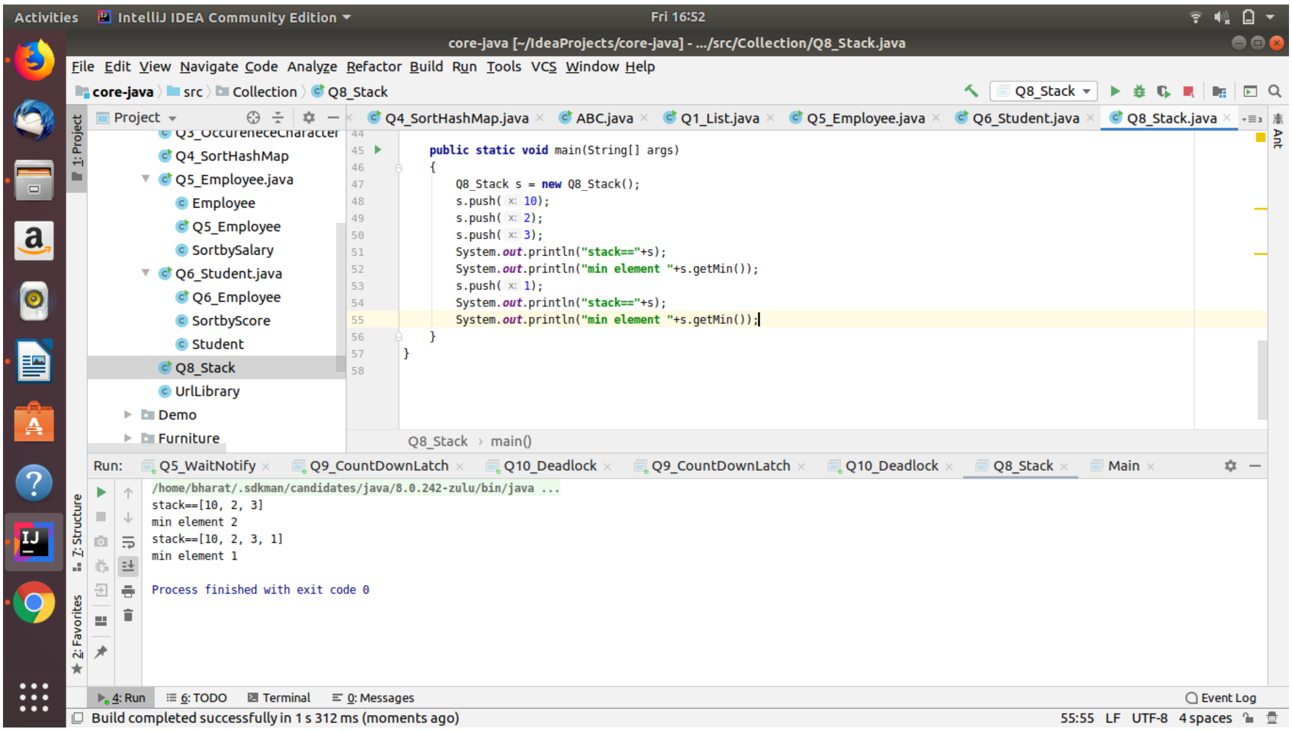
Q.7 Print the elements of an array in the decreasing frequency if 2 numbers have same frequency then print the one which came first.



```
        for (int i = 0; i < inputArray.length; i++)
        {
            if (elementCountMap.containsKey(inputArray[i]))
            {

                elementCountMap.put(inputArray[i], elementCountMap.get(inputArray[i])+1);
            }
            else
            {
                elementCountMap.put(inputArray[i], 1);
            }
        }

        ArrayList<Integer> sortedElements = new ArrayList<>();



        elementCountMap.entrySet()
                .stream()
                .sorted(Collections.reverseOrder(Map.Entry.comparingByValue()))
                .forEach(entry -> {
```

```
/home/bharat/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
5
1 2 2 2 1
1 2 2 2 1
elements with frequency is {1=2, 2=3}
Sorted Array Elements In Descending Order Of their Frequency :
[2, 2, 2, 1, 1]

Process finished with exit code 0
```

Q.8 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))



```
    public static void main(String[] args)
    {
        Q8_Stack s = new Q8_Stack();
        s.push(10);
        s.push(2);
        s.push(3);
        System.out.println("stack=="+s);
        System.out.println("min element "+s.getMin());
        s.push(1);
        System.out.println("stack=="+s);
        System.out.println("min element "+s.getMin());
    }
}
```

```
/home/bharat/.sdkman/candidates/java/8.0.242-zulu/bin/java ...
stack==[10, 2, 3]
min element 2
stack==[10, 2, 3, 1]
min element 1

Process finished with exit code 0
```