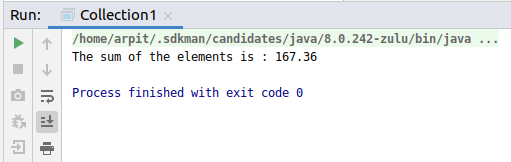
Collections

Exercise

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.



Code:

**package** Collection;

**import** java.util.ArrayList;

**import** java.util.ListIterator;

**public class** Collection1

{

**public static void** main(String[] args) {

**float** result = (**float**) 0.0;

ArrayList<Float> list1 = **new** ArrayList<>();

list1.add((**float**) 13.43);

list1.add((**float**) 23.34);

list1.add((**float**) 10.93);

list1.add((**float**) 29.33);

list1.add((**float**) 90.33);

ListIterator<Float> iterator = list1.listIterator();

**while** (iterator.hasNext()){

result = result + iterator.next();

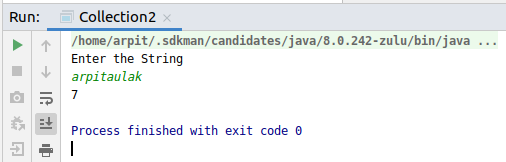
}

System.***out***.println(**"The sum of the elements is : "**+result);

}

}

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



Code:

**package** Collection;

**import** java.util.HashMap;

**import** java.util.Map;

**import** java.util.Scanner;

**public class** Collection2 {

**static void** countOccurences(String inputString)

{

HashMap<Character, Integer> occurenses = **new** HashMap<Character, Integer>();

**int** count = 0;

**char**[] strArray = inputString.toCharArray();

**for** (**char** c : strArray) {

**if** (occurenses.containsKey(c)) {

occurenses.put(c, occurenses.get(c) + 1);

}

**else** {

occurenses.put(c, 1);

}

}

**for** (Map.Entry entry : occurenses.entrySet()) {

**if**(entry.getValue().equals(1)){

count++;

}

}

System.***out***.println(count);

}

**public static void** main(String[] args)

{

System.***out***.println(**"Enter the String"**);

Scanner sc = **new** Scanner(System.***in***);

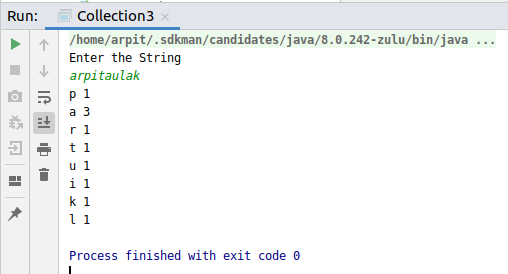
String str = sc.nextLine();

*countOccurences*(str);

}

}

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



Code:

**package** Collection;

**import** java.util.HashMap;

**import** java.util.Map;

**import** java.util.Scanner;

**public class** Collection3 {

**static void** countOccurences(String inputString)

{

HashMap<Character, Integer> occurenses = **new** HashMap<Character, Integer>();

**char**[] strArray = inputString.toCharArray();

**for** (**char** c : strArray) {

**if** (occurenses.containsKey(c)) {

occurenses.put(c, occurenses.get(c) + 1);

}

**else** {

occurenses.put(c, 1);

}

}

**for** (Map.Entry entry : occurenses.entrySet()) {

System.***out***.println(entry.getKey() + **" "** + entry.getValue());

}

}

**public static void** main(String[] args)

{

System.***out***.println(**"Enter the String"**);

Scanner sc = **new** Scanner(System.***in***);

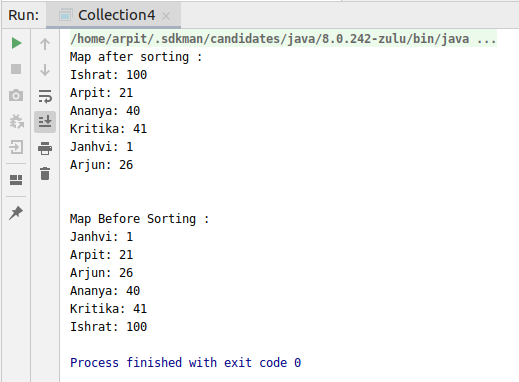
String str = sc.nextLine();

*countOccurences*(str);

}

}

1. Write a program to sort HashMap by value.



Code:

**package** Collection;

**import** java.util.\*;

**public class** Collection4 {

**public static**

Map<String, Integer> *map* = **new** HashMap<String, Integer>();

**public static void** main(String[] args) {

*map*.put(**"Arpit"**, 21);

*map*.put(**"Ishrat"**, 100);

*map*.put(**"Ananya"**, 40);

*map*.put(**"Janhvi"**, 1);

*map*.put(**"Kritika"**, 41);

*map*.put(**"Arjun"**, 26);

System.***out***.println(**"Map after sorting :"**);

*printMap*(*map*);

System.***out***.println(**"\n"**);

*sortMap*(*map*);

System.***out***.println(**"Map Before Sorting :"**);

*printMap*(*sortMap*(*map*));

}

**private static** HashMap<String, Integer> sortMap(Map<String, Integer> map) {

List<Map.Entry<String, Integer>> list = **new** LinkedList<Map.Entry<String, Integer>>(map.entrySet());

Collections.*sort*(list, **new** Comparator<Map.Entry<String, Integer>>() {

@Override

**public int** compare(Map.Entry<String, Integer> o1, Map.Entry<String, Integer> o2) {

**return** o1.getValue().compareTo(o2.getValue());

}

});

HashMap<String, Integer> sortedMap = **new** LinkedHashMap<String, Integer>();

**for** (Map.Entry<String, Integer> map1 : list){

sortedMap.put(map1.getKey(), map1.getValue());

}

**return** sortedMap;

}

**private static void** printMap(Map map) {

Iterator<String> keyIterator = map.keySet().iterator();

Iterator<Integer> valueIterator = map.values().iterator();

**while** (keyIterator.hasNext()&&valueIterator.hasNext()){

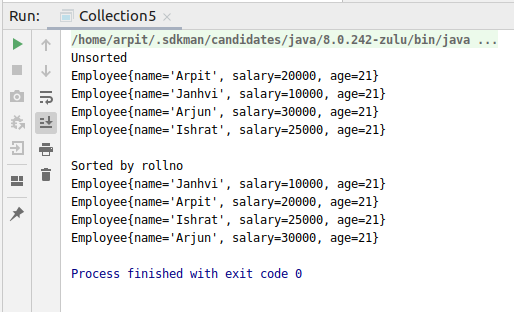
System.***out***.println(keyIterator.next()+**": "**+valueIterator.next());

}

}

}

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



Code:

**package** Collection;

**import** java.util.ArrayList;

**import** java.util.Collections;

**import** java.util.Comparator;

**class** Employee{

String **name**;

**int salary**;

**int age**;

**public** Employee(String name, **int** salary, **int** age) {

**this**.**name** = name;

**this**.**salary** = salary;

**this**.**age** = age;

}

@Override

**public** String toString() {

**return "Employee{"** +

**"name='"** + **name** + **'\''** +

**", salary="** + **salary** +

**", age="** + **age** +

**'}'**;

}

}

**class** SortBySalary **implements** Comparator<Employee>{

@Override

**public int** compare(Employee o1, Employee o2) {

**return** o1.**salary** - o2.**salary**;

}

}

**public class** Collection5 {

**public static void** main(String[] args) {

ArrayList<Employee> list = **new** ArrayList<Employee>();

list.add(**new** Employee(**"Arpit"**, 20000, 21));

list.add(**new** Employee(**"Janhvi"**, 10000, 21));

list.add(**new** Employee(**"Arjun"**, 30000, 21));

list.add(**new** Employee(**"Ishrat"**, 25000, 21));

System.***out***.println(**"Unsorted"**);

**for** (**int** i=0; i<list.size(); i++)

System.***out***.println(list.get(i));

Collections.*sort*(list, **new** SortBySalary());

System.***out***.println(**"\nSorted by rollno"**);

**for** (**int** i=0; i<list.size(); i++)

System.***out***.println(list.get(i));

}

}

1. 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:

**package** Collection;

**import** java.util.ArrayList;

**import** java.util.Collections;

**import** java.util.Comparator;

**class** Student{

String **Name**;

**int Score**;

**int age**;

**public** Student(String name, **int** score, **int** age) {

**Name** = name;

**Score** = score;

**this**.**age** = age;

}

@Override

**public** String toString() {

**return "Student{"** +

**"Name='"** + **Name** + **'\''** +

**", Score="** + **Score** +

**", age="** + **age** +

**'}'**;

}

}

**class** Sort **implements** Comparator<Student>{

@Override

**public int** compare(Student o1, Student o2) {

**if** (o1.**Score** == o2.**Score**){

**return** o1.**Name**.compareTo(o2.**Name**);

}**else**

**return** o1.**Score** - o2.**Score**;

}

}

**public class** Collection6 {

**public static void** main(String[] args) {

ArrayList<Student> list = **new** ArrayList<Student>();

list.add(**new** Student(**"Arpit"**, 95, 21));

list.add(**new** Student(**"Janhvi"**, 80, 21));

list.add(**new** Student(**"Arjun"**, 90, 21));

list.add(**new** Student(**"Ishrat"**, 90, 21));

list.add(**new** Student(**"Chirag"**, 90, 21));

System.***out***.println(**"Student List: "**);

**for** (**int** i = 0; i < list.size(); i++) {

System.***out***.println(list.get(i));

}

System.***out***.println(**"\n"**);

Collections.*sort*(list, **new** Sort());

System.***out***.println(**"Student List after sorting: "**);

**for** (**int** i = 0; i < list.size(); i++) {

System.***out***.println(list.get(i));

}

}

}

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