Classes and Objects

Create a simple application in which User can store the details of the hotel and rooms available in it. There are two major domains Hotel and Room.  
  
**Requirement 1:**  
Let’s start off by creating two **Room** objects and check whether they are equal.  
  
1. Create a class **Room** with the following attributes:

|  |  |
| --- | --- |
| **Member Field Name** | **Type** |
| \_number | int |
| \_floor | int |
| \_type | string |
| \_capacity | int |
| \_bookedTime | DateTime |
| \_price | double |

2. Mark all the attributes as private.  
  
3. Create / Generate appropriate properties.  
  
4. Add a default constructor and a parameterized constructor to take in all attributes in the given order:   
**Room(int \_number, int \_floor, string \_type, int \_capacity,DateTime \_bookedTime, double \_price)**  
  
5. When the “room” object is printed, it should display the following details: **[Override the ToString method]**  
**Print format:**  
Number: "\_number"  
Floor: "\_floor"  
Type: "\_type"  
Capacity: "\_capacity"  
Booked Time: "\_bookedTime"  
Price: "\_price"  
  
6. Two rooms are considered same if they have the same floor, number, and type. Implement the logic in the appropriate function. (Case – Insensitive)  
**[Override the Equals method]**  
  
Create **Program** class with **Main** method. Get the room details,it is used to access the above class and its method.  
All the input and output operations are done in this method.  
     The input format consists of room details separated by comma in the below order,  
**\_number,\_floor,\_type,\_capacity,\_bookedTime,\_price**  
  
The Input to your program would be details of two rooms, you need to display their details as given in "5th point(refer above)" and compare the two rooms and display whether they are same or different.  
  
**Problem Overview:**  
The first two line of input consist of a string, that corresponds to the room details(which is comma seperated). Refer above input format.  
Display the two room details in Main method using **ToString** method(Refer above format).  
And also check if the two rooms are same or different(Use Equals method to compare the two objects).  
Equals method return bool value to Main method(true or false).  
If the Equals method returns true, then print "**Room 1 is same as Room 2**".  
If the method returns false, then print "**Room 1 and Room 2 are different**".

**Note:**There is an empty line between display statements. Print the empty lines in the Main method.  
Display one decimal place for double datatype.  
  
**Sample INPUT & OUTPUT 1:**   
Enter room 1 detail:  
**112,1,Villa,5,27-01-2018 15:00:00,15000**  
Enter room 2 detail:  
**112,1,Villa,5,27-01-2018 15:00:00,15000**  
  
Room 1:  
Number: 112  
Floor: 1  
Type: Villa  
Capacity: 5  
Booked Time: 27-01-2018 15:00:00  
Price: 15000.0  
  
Room 2:  
Number: 112  
Floor: 1  
Type: Villa  
Capacity: 5  
Booked Time: 27-01-2018 15:00:00  
Price: 15000.0  
  
Room 1 is same as Room 2  
  
  
**Sample INPUT & OUTPUT 2:**   
Enter room 1 detail:  
**112,1,Villa,5,27-01-2018 15:00:00,15000**  
Enter room 2 detail:  
**201,2,Quad,4,11-05-2018 13:30:00,7000**  
  
Room 1:  
Number: 112  
Floor: 1  
Type: Villa  
Capacity: 5  
Booked Time: 27-01-2018 15:00:00  
Price: 15000.0  
  
Room 2:  
Number: 201  
Floor: 2  
Type: Quad  
Capacity: 4  
Booked Time: 11-05-2018 13:30:00  
Price: 7000.0  
  
Room 1 and Room 2 are different

2. In this requirement, develop a feature to list the rooms that have to be checked out within the specified stipulated time. The check-out time will be one day after the bookedTime.  
  
a)Create a class **Room** with the following attributes: 

|  |  |
| --- | --- |
| **Member Field Name** | **Type** |
| \_number | int |
| \_floor | int |
| \_type | string |
| \_capacity | int |
| \_bookedTime | DateTime |
| \_price | double |

Mark all the attributes as private.  
Create / Generate appropriate properties.  
  
Add a default constructor and a parameterized constructor to take in all attributes in the given order:   
**Room(int \_number,int \_floor, string \_type, int \_capacity, DateTime \_bookedTime, double \_price).**  
Override **ToString** method for print the Room details.  
  
b) Create the following static method in Room class,

|  |  |
| --- | --- |
| **Method Name** | **Description** |
| public List<Room>CheckoutRooms(List<Room>roomList,DateTimecheckoutTime) | This method accepts a list of rooms and checkoutTime as argument. If the given checkoutTime exceeds the bookedTime of the room by a day or more add them to a list and return it. |

Create **Program** class with **Main**method. Get the number of rooms and details for the corresponding number of rooms.  
The input format consists of room details separated by comma in the below order,  
**\_number,\_floor,\_type,\_capacity,\_bookedTime,\_price**  
  
 If the returned list is empty print "**No rooms to checkout"**, else print the rooms as given in below format  
  
**Problem Overview:**  
First get the number of rooms from the user n.  
Then get the n number of lines of input(which is comma seperated), Split that string and create a room object and add that room to the room list.  
The main theme of this problem is filter the room by the below constraints.  
Get the checkout time from the user. Compare the checkout time with the hotel booked time, If the difference between the user entered checkout time and room's booked time is greater then or equal to 1(24 hours), then that will be add to the filtered list and display the filtered room list.  
The above constraint will also consider the time also.  
  
  
When the “room” object is printed, it should display the following format  
Print format:  
**Console.WriteLine("{0,-7} {1,-7} {2,-20} {3,-10} {4,-20} {5,-10}", "Number","Floor","Type","Capacity","Bookedtime","Price");**  
  
**Note:** The above print statements should be present in the Main method.  
Display one decimal place for double datatype.  
  
**Sample Input and Output: 1**   
Enter number of rooms   
**4**   
Enter Rooms details   
**329,3,President Suite,1,27-01-2018 06:30:00,25000  
417,4,Suite,2,27-01-2018 07:00:00,11000  
101,1,Cabana,6,27-01-2018 18:00:00,20000  
517,5,Twin,2,27-01-2018 11:15:00,6000**   
Enter checkout time   
**28-01-2018 23:01:00**   
Rooms to be checkedout

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number | Floor | Type | Capacity | Booked time | Price |
| 329 | 3 | President Suite | 1 | 27-01-18 06:30:00 | 25000.0 |
| 417 | 4 | Suite | 2 | 27-01-18 07:00:00 | 11000.0 |
| 101 | 1 | Cabana | 6 | 27-01-18 18:00:00 | 20000.0 |
| 517 | 5 | Twin | 2 | 27-01-18 11:15:00 | 6000.0 |

3. Power Pairs -- Arrays

Your friend challenges you to play a game, in which you have to find the number of Power pairs in a series of numbers. A Power pair is formed when a number-b is divisible by another number-a that occurs before the number-b in the given sequence. You can easily win the challenge by developing a program to find it.

Input Format

First Line of the input contains a single integer that denotes the size of the array - n.

Second line consists of n space separated integers that denote the array values.

Output Format

The output consists a single integer that denotes the number of Power pairs in the given sequence.

Sample Input 1:

3

1 3 2

Sample Output 1:

2

Explanation :

For sequence = [1, 3, 2]

The sorted pairs are: (1, 3), (1, 2).

So output should be 2.

Sample Input 2:

3

2 4 8

Sample Output 2:

3

4. Nikitha is very interested in programming with arrays, she tries to exhange the positions of the elements by swapping the element and the number at the place which it occupies.

For Example,

Consider the array elements.

1 3 4 2

The element 1 in given array , is at position 1, so 1 is placed at position 1 in output array

The element 3 in given array , is at position 2, so 2 is placed at position 3 in output array

The element 4 in given array , is at position 3, so 3 is placed at position 4 in output array

The element 2 in given array , is at position 4, so 4 is placed at position 2 in output array

The output array becomes 1,4,2,3

Develop a program to help Nikitha.

Input Format:

First Line of the input contains a single integer that denotes the size of the array n

Second  line consists of n space separated integer array values.  The input array values will always be a permutation of numbers from 1 to n.

Output Format:

The output consists of n space separated integers that denote the output array values.

Sample Input 1:

4

1 3 4 2

Sample Output 1:

1 4 2 3

Sample Input 2:

3

1 2 3

Sample Output 2:

1 2 3

5. In this requirement, you need to validate the registrationNumber of the Cab.  
  
a)Create a class **Program**with the Main method and the following static methods:

|  |  |
| --- | --- |
| **Method Name** | **Description** |
| static Boolean ValidateRegistrationNumber(string registrationNumber) | Validate the registrationNumber based on the rules given below. Returns **true**ifregistrationNumber is valid else return **false** |

b) While validating a registrationNumber follow the below rules.  
  
1.The first 2 UPPERCASE letters indicate the state or Union Territory to which the cab is registered.  
2. The second part contains 1-2 digit numbers which are the sequential number of a district.  
3. Third part could contains 0-2 uppercase letters.  
4. The fourth part contains 1-4 digit number which is unique to each number plate.  
5. Each part is separated by space.  
6.Number will be greater than zero.

Valid Format:**TS 01 K 1562**  
  
**Note:** Print "**Registration Number is valid**" if registrationNo is valid else print "**Registration Number is invalid**".  
            All the above print statements are present in the Main method.  
  
**[All text in bold corresponds to input]**  
**Sample Input and Output 1:**  
  
Enter the registration number to be validated:  
**TS 02 AB 9651**  
Registration Number is valid  
  
**Sample Input and Output 2:**  
  
Enter the registration number to be validated:  
**UP 458 H 5462**  
Registration Number is invalid  
  
**Sample Input and Output 3:**  
Enter the registration number to be validated:  
**TS 02 9651**  
Registration Number is valid

6. Write a program to read a string and return a modified string based on the following rules.

Return the String without the first 2 chars except when

1.   keep the first char if it is 'j'

2.   keep the second char if it is 'b'.

Include a class UserMainCode with a static method **getString** which accepts a string. The return type (string) should be the modified string based on the above rules. Consider all letters in the input to be small case.

**Input and Output Format:**

Input consists of a string with maximum size of 100 characters.

Output consists of a string.

Refer sample output for formatting specifications.

**Sample Input 1:**

hello

**Sample Output 1:**

llo

**Sample Input 2:**

java

**Sample Output 2:**

jva

7. Write a program to read a non-negative integer n, compute the sum of its digits. If sum is greater than 9 repeat the process and calculate the sum once again until the final sum comes to single digit.Return the single digit.  
Include a class with a static method **getDigitSum** which accepts the integer value. The return type is integer.  
  
**Input and Output Format:**  
Input consists of a integer.  
Output consists of integer.  
Refer sample output for formatting specifications.  
  
**Sample Input 1:**  
9999  
**Sample Output 1:**  
9  
  
**Sample Input 2:**  
698  
**Sample Output 2:**  
5

8. Given an int array and a number as input, write a program to add all the elements in the array greater than the given number. Finally reverse the digits of the obtained sum and print it.

Include a class with a static method “**addAndReverse**” that accepts 2 arguments and returns an integer.The first argument corresponds to the integer array and the second argument corresponds to the number.

**Example:**

Input Array = {10,15,20,25,30,100}

Number = 15

sum = 20 + 25 + 30 + 100 = 175

output = 571

**Input and Output Format:**

The first line of the input consists of an integer that corresponds to the number of elements in the array.

The next n lines of the input consists of integers that correspond to the elements in the array.

The last line of the input consists of an integer that corresponds to the number.

Output consists of a single integer.

**Sample Input**

6

10

15

20

25

30

100

15

**Sample Output**

571

9. Write a program to read a two strings and one int value(N). check if Nth character of first String from start and Nth character of second String from end are same or not. If both are same return true else return false.  
Check need not be Case sensitive  
Include a class with a static method **isEqual** which accepts the two strings and a integer n. The return type is the TRUE / FALSE.  
  
  
**Input and Output Format:**  
Input consists of two strings and an integer.  
Output consists of TRUE / FALSE .  
Refer sample output for formatting specifications.  
  
**Sample Input 1:**  
AAAA  
abab  
2  
  
**Sample Output 1:**  
TRUE  
  
**Sample Input 2:**  
MNOP  
QRST  
3  
  
**Sample Output 2:**  
FALSE

10. Write a program to read a integer array, Remove the duplicate elements and display sum of even numbers in the output. If input array contain only odd number then return -1.  
Include a class UserMainCode with a static method **sumElements** which accepts the integer array. The return type is integer.  
  
**Input and Output Format:**  
Input consists of an integer n which is the number of elements followed by n integer values.  
Output consists of integer.  
Refer sample output for formatting specifications.  
  
**Sample Input 1:**  
7  
2  
3  
54  
1  
6  
7  
7  
**Sample Output 1:**  
62  
  
**Sample Input 2:**  
6  
3  
7  
9  
13  
17  
21  
**Sample Output 2:**  
-1

11. Given an array, , of size  distinct elements, sort the array in *ascending* order using the *Bubble Sort* algorithm above. Once sorted, print the following  lines:

1. Array is sorted in numSwaps swaps.   
   where  is the number of swaps that took place.
2. First Element: firstElement   
   where  is the *first* element in the sorted array.
3. Last Element: lastElement   
   where  is the *last* element in the sorted array.

**Hint:** To complete this challenge, you will need to add a variable that keeps a running tally of *all* swaps that occur during execution.

**Input Format**

The first line contains an integer, , denoting the number of elements in array .   
The second line contains  space-separated integers describing the respective values of .

**Constraints**

* , where .

**Output Format**

Print the following three lines of output:

1. Array is sorted in numSwaps swaps.   
   where  is the number of swaps that took place.
2. First Element: firstElement   
   where  is the *first* element in the sorted array.
3. Last Element: lastElement   
   where  is the *last* element in the sorted array.

**Sample Input 0**

3

1 2 3

**Sample Output 0**

Array is sorted in 0 swaps.

First Element: 1

Last Element: 3

12. Given a method with two strings as input. Write code to count the common and unique letters in the two strings.

Note:

- Space should not be counted as a letter.

- Consider letters to be case sensitive. ie, "a" is not equal to "A".

The return type of the output is the count of all common and unique characters in the two strings.

**Input and Output Format:**

Input consists of two strings.

Output is an integer.

Refer sample output for formatting specifications.

**Sample Input 1:**

a black cow

battle ship

**Sample Output 1:**

2  
  
**Sample Input 2:**

australia

sri lanka

**Sample Output 2:**

4

13. A manufacturing company have received multiple Boxes of raw materials. Write a program to store the box details into a Set.

**Problem Constraint:**

1. Create a class named Box with attributes length, width and height. All attributes should be of type double. Implement 3 argument constructor, setter / getters and toString() method.
2. Create a Set to store details of multiple Boxes.
3. The Set should have Boxes with unique volume.
4. When adding a Box into the Set, if there is a Box already present with the same volume in the Set, then it should not be added to the Set. Override equals() method in Box to achieve this functionality.

**Sample Input and Output :**  
Enter the number of Box   
**5**  
Enter the Box 1 details   
Enter Length   
**2.1**  
Enter Width   
**1.2**   
Enter Height   
**2.1**  
Enter the Box 2 details   
Enter Length   
**3.2**  
Enter Width   
**2.3**   
Enter Height   
**3.2**  
Enter the Box 3 details   
Enter Length   
**1.2**   
Enter Width   
**2.1**  
Enter Height   
**1.2**  
Enter the Box 4 details   
Enter Length   
**3.2**  
Enter Width   
**2.3**  
Enter Height   
**3.2**   
Enter the Box 5 details   
Enter Length   
**3.3**   
Enter Width   
**2.2**  
Enter Height   
**1.1**   
Unique Boxes in the Set are   
Length =1.2 Width =2.1 Height =1.2 Volume =3.02   
Length =2.1 Width =1.2 Height =2.1 Volume =5.29   
Length =3.3 Width =2.2 Height =1.1 Volume =7.99

Length =3.2 Width =2.3 Height =3.2 Volume =23.55

14. Write a program to display the name of the player who has scored the maximum runs in a cricket tournament.

The player name and number of runs scored by the player are to be stored in a HashMap<String, Long>.

* Key = playerName of type String
* Value = runs of type Long

**Input and Output Format:**

Refer sample input and output for formatting specifications.

All text in bold corresponds to input and the rest corresponds to output.

**Sample Input and Output:**

Enter the number of players

**4**

Enter the details of the player 1

**Mathew**

**572**

Enter the details of the player 2

**Adam**

**495**

Enter the details of the player 3

**Akil**

**465**

Enter the details of the player 4

**Suresh**

**434**

Mathew

15. Write a program to read a string and a positive integer n as input and construct a string with first n and last n characters in the given string.

Include a class  with a static method **formNewWord** which accepts a string and positive integer .

The return type of the output should be a string (value) of first n character and last n character.

**Input and Output Format:**

Input consists of a string of even length.

Output is a string .

Note: The given string length must be >=2n.

Refer sample output for formatting specifications.

**Sample Input 1:**

California

3

**Sample Output 1:**

Calnia

**Sample Input2:**

this

1

**Sample Output 2:**

ts

16. Write a program that construts a hashmap with “state” as key and “capital” as its value. If the next input is a state, then it should return capital$state in lowercase.

Include a class with a static method **getCapital** which accepts a hashmap. The return type is the string as given in the above statement

**Input and Output Format:**

Input consists of 2n+2 values. The first value corresponds to size of the hashmap. The next n pair of numbers contains the state and capital. The last value consists of the “state” input.

Output consists of a string as mentioned in the problem statement.

Refer sample output for formatting specifications.

**Sample Input 1:**

3

Karnataka

Bangaluru

Punjab

Chandigarh

Gujarat

Gandhinagar

Punjab

**Sample Output 1:**

chandigarh$punjab

17. Write a program to read a string containing date in DD/MM/YYYY format and check if its a leap year. If so, return true else return false.  
  
Include a class with a static method **isLeapYear** which accepts the string. The return type is the boolean indicating TRUE / FALSE.  
  
  
**Input and Output Format:**  
  
Input consists of a string.  
  
Output consists of TRUE / FALSE.  
  
Refer sample output for formatting specifications.  
  
**Sample Input 1:**  
  
23/02/2012  
  
**Sample Output 1:**  
  
TRUE  
  
**Sample Input 2:**  
  
12/12/2011  
  
**Sample Output 2:**  
  
FALSE

18. T20 IPL conducts contests for audience during the match. The contest contains 4 players and asked the audience to guess the player of the match(man of the match) . The contest also contained a clue that the first and lastIndex of character ‘a’ in the player name should be same for player of the match.Write a program to guess the player of the match.

[ALL Text in bold are inputs]

Sample Input/Output 1:

Enter the number of players

4

Ravichandran Ashwin

Harbhajan Singh

Rohit Sharma

Michael Hussey

Player of the Match:

Michael Hussey

Sample Input/Output 2:

Enter the number of players

3

Suresh Raina

Maxwell

Harbhajan Singh

Player of the Match:

Maxwell

19. Banking firm needs to calculate the loan EMI start date for its customers who have defaulted EMI payment.   
Write a program to calculate the loan EMI start date, which is 20 months before the given date.    
   
Create a class  with a static method displayDate(), which accepts the given date as String in format yyyy-MM-dd and displays the calculated date in the format yyyy-MM-dd as shown in the sample output.

**Note:**

Use Calendar class to calculate the required date.   
**Input and Output Format:**  
Input consists of a string.    
Refer sample output for formatting specifications.    
   
**Sample Input :**  
2014-04-28    
   
**Sample Output :**

20 months before 2014-04-28 will be 2012-08-28

20. A Company wants to give away bonus to its employees. You have been assigned as the programmer to automate this process. You would like to showcase your skills by creating a quick prototype. The prototype consists of the following steps:

1.   Read Employee details from the User. The details would include id, DOB (date of birth) and salary in the given order. The datatype for id is integer, DOB is string and salary is integer.

2.   You decide to build two hashmaps. The first hashmap contains employee id as key and DOB as value, and the second hashmap contains same employee ids as key and salary as value.

3.   If the age of the employee in the range of 25 to 30 years (inclusive), the employee should get bonus of 20% of his salary and in the range of 31 to 60 years (inclusive) should get 30% of his salary. store the result in TreeMap in which Employee ID as key and revised salary as value. Assume the age is caculated based on the date 01-09-2014. (Typecast the bonus to integer).

4.   Other Rules:

a. If Salary is less than 5000 store -100.

b. If the age is less than 25 or greater than 60 store -200.

c. a takes more priority than b i.e both if a and b are true then store -100.

5.   You decide to write a function **calculateRevisedSalary** which takes the above hashmaps as input and returns the treemap as output.

**Input and Output Format:**

Input consists of employee details. The first number indicates the size of the employees. The next three values indicate the employee id, employee DOB and employee salary. The Employee DOB format is “dd-mm-yyyy”

Output consists of a single string.

Refer sample output for formatting specifications.

**Sample Input 1:**

2

1010

20-12-1987

10000

2020

01-01-1985

14400

**Sample Output 1:**

1010

12000

2020

17280

21. Given a String , write a program to find whether it is a valid password or not.

Validation Rule:

Atleast 8 characters

Atleast 1 number(1,2,3...)

Atleast 1 special character(@,#,%...)

Atleast 1 alphabet(a,B...)

Include a class  with a static method “**validatePassword**” that accepts a String argument and returns a boolean value. The method returns true if the password is acceptable. Else the method returns false.

**Input and Output Format:**

Input consists of a String.

Output consists of a String that is either “Valid” or “Invalid”.

**Sample Input 1:**

abc@1010

**Sample Output 1:**

Valid

**Sample Input 2:**

punitha3

**Sample Output 2:**

Invalid

22. Given a date as a string input in the format dd-mm-yy, write a program to extract the month and to print the month name in upper case.

Include a class  with a static method “**getMonthName**” that accepts a String argument and returns a String that corresponds to the month name.

The month names are {JANUARY, FEBRUARY, MARCH, APRIL, MAY, JUNE, JULY, AUGUST, SEPTEMBER, OCTOBER, NOVEMBER, DECEMBER}

**Input and Output Format:**

Input consists of a String.

Output consists of a String.

**Sample Input:**

01-06-82

**Sample Output:**

JUNE

23. Write a code to read two int array lists of size 5 each as input and to merge the two arrayLists, sort the merged arraylist in ascending order and fetch the elements at 2nd, 6th and 8th index into a new arrayList and return the final ArrayList.

Include a class  with a static method **sortMergedArrayList** which accepts 2 ArrayLists.

The return type is an ArrayList with elements from 2,6 and 8th index position .Array index starts from position 0.

**Input and Output Format:**

Input consists of two array lists of size 5.

Output is an array list .

Note - The first element is at index 0.

Refer sample output for formatting specifications.

**Sample Input 1:**

**3**

**1**

**17**

**11**

**19**

**5**

**2**

**7**

**6**

**20**

**Sample Output 1:**

**3**

**11**

**19**

**Sample Input 2:**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**10**

**Sample Output 2:**

**3**

**7**

**9**

24. Now we are gonna start creating a notebook and add notes to it. Start with creating a notebook and use menu-driven approach to add, remove, display details of the note in the notebook.  
  
a)Create a Class **Note** with the following attributes:

|  |  |
| --- | --- |
| **Member Field Name** | **Type** |
| \_name | string |
| \_content | string |
| \_size | double |
| \_createdDate | DateTime |
| \_priorityLevel | double |

Mark all the attributes as private.  
Include appropriate properties.  
Override **ToString()** method to display details in tabular form.  
Add a default constructor and a parameterized constructor to take in all attributes in the given order:  **public Note(string \_name, string \_content, double \_size, DateTime \_createdDate,double \_priorityLevel)**  
  
b)Create a Class **Notebook** with the following attributes:

|  |  |
| --- | --- |
| **Member Field Name** | **Type** |
| \_name | string |
| \_noteList | List<Note> |

Mark all the attributes as private.  
Include appropriate properties.  
Add a default constructor and a parameterized constructor to take in all attributes in the given order:**Notebook(string \_name, List<Note> \_noteList).**  
In constructor pass the noteList value as an empty list. Only one notebook will be present at a time.  
  
c) Create the following static method in **Note**class,

|  |  |
| --- | --- |
| **Method Name** | **Description** |
| public static Note CreateNote(string detail) | This method accepts a string which contains note details separated by commas. Split the detail and create a note object from the details and return it. |

The note details should be given as a comma-separated value in the below order,  
**\_name,\_content,\_size,\_createdDate,\_priorityLevel**  
  
d) Create the following methods in **Notebook**class,

|  |  |
| --- | --- |
| **Method Name** | **Description** |
| public void AddNoteToBook(Note note) | This method accepts a note object and adds the note to the note list of the current notebook. |
| public bool RemoveNoteFromBook(string name) | This method will get the name of the note and delete the note with the specified name from the current notebook.  If a note with the given name found, delete the note and return **true**to Main method, and print "**Note successfully deleted**".  If a note with the name is not found return **false**to Main method and print "**Note not found in the Book**".  The book name are unique. |
| public void DisplayNotes() | This method will display the note list in the current notebook. If the note list is empty display "**No notes to show"**, else display "Notes in [notebook name]" and display all the note details in the specified format. Where [notebook name] specifies the name of the notebook. |

After deletion, if true is returned print "**Note successfully deleted**", else print "**Note not found in the Book**". After adding note to the notebook, print "**Note successfully added**".  
  
Create a class named as **Program**, which contains **Main** method. All the input and output operations are done in this method.  
It is used to access the above classes and its method to do this requirement.  
  
**Note:** The above print statements should be present in the Main method.  
  
**Problem Overview.**  
This requirement contains the menu driven,  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
  
If the user select  choice-1, then get the Note details from the user(which is comma seperated). Split that note detail and create a Note object(use CreateNote method). And add that Note to \_noteList( which is is Book ). Use AddNoteToBook method.  
If the note created and added to the noteList, then print "Note successfully added".  
  
If the user select choice-2, then get the note name from the user. Search that note from the book's note list(using note name). If the note is found and then remove the note from the note list and then print "**Note successfully deleted**". If the note is not found, then print "**Note not found in the Book**".  
  
If the user select option-3, then display the note details by following format. Refer sample input and output.

When the “note” object is printed, it should display the following format  
Print format:  
**Console.WriteLine("{0,-15}{1,-25}{2,-10}{3,-15}{4,-10}", "Name", "Content", "Size", "Created Date", "Priority Level");**  
  
**Sample Input and Output:**  
  
Enter the name of the book:  
**Party Preparation**  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**3**  
No notes to show  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**1**  
Enter the details of note in CSV format:  
**Food Items** **,Buy** **Food and bevarages** **,10,05-02-2018,3**  
Note successfully added  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**1**  
Enter the details of note in CSV format:  
**Decorations,Buy decoration materials,2,06-02-2018,4**  
Note successfully added  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**1**  
Enter the details of note in CSV format:  
**Invite,Invite Friends,15,04-02-2018,2**  
Note successfully added  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**3**  
Notes in :Party Preparation  
Name           Content                  Size      Created Date   Priority Level  
Food Items     Buy Food and bevarages    10.0      05-02-2018     3.0         
Decorations    Buy decoration materials 2.0       06-02-2018     4.0         
Invite         Invite Friends           15.0      04-02-2018     2.0         
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**1**  
Enter the details of note in CSV format:  
**Alarm,Wake up on time,5,01-02-2018,1**  
Note successfully added  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**2**  
Enter the name of the note to be deleted:  
**alarm**  
Note not found in the Book  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**2**  
Enter the name of the note to be deleted:  
**Alarm**  
Note successfully deleted  
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**3**  
Notes in :Party Preparation  
Name           Content                  Size      Created Date   Priority Level  
Food Items     Buy Food and bevarages    10.0      05-02-2018     3.0         
Decorations    Buy decoration materials 2.0       06-02-2018     4.0         
Invite         Invite Friends           15.0      04-02-2018     2.0         
1.Add Note  
2.Delete Note  
3.Display Notes  
4.Exit  
Enter your choice:  
**4**

25.a)Create a Class **Program**with the following static methods:

|  |  |  |
| --- | --- | --- |
| **Sno** | **Method name** | **Method description** |
| 1 | static bool ValidateName(string name) | Validate the name based on the rules given below. Returns **true**ifname is valid else return **false** |
| 2 | static boo ValidateContent(string content) | Validate the content based on the rules given below. Returns **true**ifcontent is valid else return **false** |

b) While validating name follow the below rules,  
   
1. The name should start only with alphabets(either uppercase or lowercase).  
2. The name should not contain any special characters.  
  
c) While validating content follow the below rules,  
  
1.The content should not contain any special characters other than**" . ", ","**and**" \_ "**.  
2.The content should not exceed the size of 40 characters excluding spaces.  
  
**Note:** Print "**Name is valid**" if name is valid else print "**Name is invalid**". Print "**Content is valid**" if email is spam else print "**Content is invalid**".  
            All the above print statements are present in the main method.  
  
That Program class also contains **Main**method. It is used to access the above methods to do this requirement.  
  
**Problem Overview:**  
This requirement contains the menu driven,  
Menu:  
1.Validate Name  
2.Validate Content  
  
If the user select option-1, then get the name of the note and validate the name( use ValidateName method). That method returns bool type (either true or false).  
If the name is validated, then returns true, then print "**Name is valid**", If the name is not valid and that method returns **false** to Main method and print "**Name is invalid**".  
  
If the user select option-2, then get the content for the note from the user and validate the content ( use  ValidateContent method). This method returns bool return type( either true or false ). If the content is validated successfully, then returns **true**to the Main function and print "**Content is valid**", If the content is not valid and that method return **false**to Main method and print "**Content is invalid**".  
  
All the input and output operations are done in **Main**method.

**Sample Input and Output 1:**  
  
1.Validate Name  
2.Validate Content  
Enter your choice:  
**1**  
Enter the name to be validated:  
**Jane1**  
Name is valid  
  
**Sample Input and Output 2:**  
  
1.Validate Name  
2.Validate Content  
Enter your choice:  
**1**  
Enter the name to be validated:  
**Jane\_1**  
Name is invalid  
  
**Sample Input and Output 3:**  
  
1.Validate Name  
2.Validate Content  
Enter your choice:  
**2**  
Enter the content to be validated:  
**Buy the groceries,necessities.**  
Content is valid  
  
**Sample Input and Output 4:**  
  
1.Validate Name  
2.Validate Content  
Enter your choice:  
**2**  
Enter the content to be validated:  
**Buy Groceries in "The mall".**  
Content is invalid

26.In this requirement, given a list of songs you need to find the number of songs present in each domain using SortedDictionary.  
  
a) Create a Class **Song**with the following attributes:

|  |  |
| --- | --- |
| **Member Field Name** | **Type** |
| \_name | string |
| \_artist | string |
| \_songType | string |
| \_dateDownloaded | DateTime |
| \_rating | double |
| \_numberOfDownloads | int |

Mark all the attributes as private.  
Include appropriate properties.  
 Add a default constructor and a parameterized constructor to take in all attributes in the given order: Song(String name, String artist, String songType, Date dateDownloaded, Double rating ,Integer numberOfDownloads).  
  
b) Create the following static methods in the Song class,

|  |  |
| --- | --- |
| **Method Name** | **Description** |
| static SortedDictionary<string,int> CalculateTypeCount(List<Song> list) | This method accepts a list of Songs as arguments and returns a SortedDictionary with the songType as key and number of songs for the particular songType as value and return the sortedDictionary. |

In the SortedDictionary have the songType as key and Count the number of songs for the type and keep the number of songs for the type as value. Print the value sorted by the songType.  
  
The song details should be given as a comma separated value in the below order,  
\_name, \_artist, \_songType, \_dateDownloaded, \_rating, \_numberOfDownloads  
  
Print format:  
**Console.WriteLine("{0} {1,15}","Song type","Count");**  
  
**Sample Input and Output 1:**  
  
Enter the number of songs  
**4  
Shape of you,Ed sheeran,Pop,20-01-2018,4.5,150000  
Sorry,Justin Bieber,Pop,15-12-2017,4.7,10000  
We will rock you,Queen,Rock,11-01-2010,4.8,500000  
Losing sleep,Chris,Country,12-09-2017,4,10000**

|  |  |
| --- | --- |
| Song type | Count |
| Country | 1 |
| Pop | 2 |
| Rock | 1 |

1. Ram and Mohan are two brothers. They are not good in maths. So their father decided to give some assignment as a game so that they can enjoy as well as they can learn the concept of number systems. So he gave two numbers to them. One is the sum of two numbers, x and y, and another is the product of same two numbers. Help them to write a code to find x and y.

**Note:** The two numbers should be printed in ascending order

**Input format:**

The input contains two integers in the same line separated by space, that denotes the sum of x and y and the product of x and y, respectively.

**Output format:**

The output consists of two numbers separated by space which corresponds to x and y in ascending order.

**Sample Input 1:**

5 6

**Sample Output 1:**

2 3

**Sample Input 2:**

15 50

**Sample Output 2:**

5 10

1. In summer vacation time, the students of ABC school went for a team outing. One day the instructor decided to find one funny game so that student can enjoy. So he told them to take one integer N and arrange the digits of the integer in incremental order from right to left. Help students by writing a code.

**Input Format:**

The first line contains a single integer that denotes the given number N.

**Output format:**

The output is an integer in which the digits of N are arranged in incremental order from right to left.

**Sample Input 1:**

231

**Sample output 1:**

321

1. The Team Leader of Testing team of XYZ company decided to assess the team members by organizing a programming event. So he gave the team a task. The task is given an array of size N, find the number if distinct elements in the array and print them in ascending order. Those members who answer, will get some reward. Write a program to help the Team Leader to evaluate the solutions of the team members.

**Input format:**

The first line contains a single integer that denotes the size of the array, N.

The second line contains N space separated integer values of the array.

**Output format:**

The first line is an integer that denotes the number of the distinct elements in the array.

The second line is a series of integers separated by space that denotes the distinct elements.

**Sample Input 1:**

5

1 2 1 2 1

**Sample Output 1:**

2

1 2

1. Anuska has created a robot that will take instructions and work accordingly. Due to budget problem, she has set the memory low. To overcome that, she has to encode the instructions. Given the instruction S, count the consecutive characters and each character will be followed by its frequency. For example, if the instruction is “aaaabb”, the enclosed instruction is “a4b2”.

**Note:** If the frequency is one, the count need not be printed.

**Input format:**

The first input is a string that denotes the instruction, S.

**Output format:**

Output is a string that denotes the encoded string.

**Sample Input 1:**

aaaabb

**Sample Output 1:**

a4b2

**Sample Input 2:**

sggvvvgss

**Sample Output 2:**

sg2v3gs2

1. As part of the picnic events, the families from ABC apartment plan to organize some games for their kids so that they can learn some thing during leisure time also. The task is as follows. Given a string S, find the string which has only the distinct character in S. The characters should be presented in the descending order of its occurrence. If the occurrence count of two characters is same, then the order for those two characters should be the same as it is in the input string.

**Input format:**

The input is a string that denotes the S.

**Note:** The String is case-sensitive.

**Output format:**

The output is a string that denotes the modified string.

**Sample input 1:**

HelloWorld

**Sample output 1:**

loHeWrd

Sample input 2:

Entertainment

Sample output 2:

nteEraim

32.Tharun wants to become a mathematician. He tries different combination of numbers and keeps playing with them. Once he found a different kind of numbers and named them as Smooth Prime. A number N is said to be smooth prime if the 2 adjacent numbers (N+1 and N-1) are prime.  Given an integer N,write a program to find whether the given number N is smooth prime or not. If true print both the N+1 and N-1 numbers.

Input format :

Input is an integer that denotes the N value.

Output format:

Output is a string,print "True" if its a smooth prime else print "False".

If True print the two numbers in the next line separated by a space.

Sample input 1:

4

Sample output 1:

True

3 5

Sample input 2:

100

Sample output 2:

False

33.Raj Kumar bought an array of size N which was in sorted order. His son collapsed all the values in the array and it was modified. Given an array of integers of size N. Write a program to help Raj Kumar find the indices of the array elements after which the array is sorted.

Note:

The array may also contain duplicates.In this case print the index of  the duplicate elements in sorted order.

Input Format:

First input is an integer that denotes the N value,size of the array.

Second input is a series of integers seperated by a space that denotes the array values.

Output format:

Output is a series of integers seperated by space that denotes the indices of the array elements after which the array is sorted.

Sample Input 1:

6

7 3 8 9 13 2

Sample Output 1:

2 1 3 4 5 0

Explanation:

After sorting the array elements would like [2 3 7 8 9 13],their indices in this array is [2 1 3 4 5 0].

Sample Input 2:

5

7 1 2 7 7

Sample Output 2:

2 0 1 3 4

34.There are certain number of coins in in M\*N boxes .  These boxes are arranged in matrix form. You are given a and b values where a denotes the row number and b denotes the column number. Given a matrix of size M\*N, consider the union of the ath row and the bth column of the matrix,write a program to find the sum of coins that you can collect from ath row and bth column.

Input Format:

First input is an integer that denotes the M value, row size of the matrix.

Second input is an integer that denotes the N value, column size of the matrix.

Next M lines of the input consist of N space separated integers in each line, that denotes the array values.

Next input is an integer that denotes the a value.

Last input is an integer that denotes the b value.

Assume: All input values are valid.

Output Format:

Output is an integer value that denotes the sum of ath row and bth column.

Sample Input 1:

3

3

1 3 5

2 6 9

3 6 9

0

2

Sample Output 1:

27

Explanation:

Sum of 0th row = 1+3+5.

Sum of 2nd coumn = 9+9 [5 is excluded since it has been already taken into account].

Total Sum=27

Sample Input 2:

3

5

1 3 5 1 5

2 6 9 6 2

3 6 9 2 4

1

3

Sample Output 2:

28

35.Subbu a very active and smart boy always thinks of doing some insane operations on numbers.One day he got an idea to form a twisted array.

Twisted array means that first k elements of the resultant array should be exactly the same as they will be in the sorted array and the rest of the elements should go in the same order as they occur in the original array. Given an array of integers of length N and k value,write a program to help Subbu to form the twisted array.

Input format:

First input is an integer that denotes the N value,size of the array.  N is always greater than or equal to k.

Second input is a series of integers separated by a space that denotes the array values.

Third input is an integer that denotes the k value.

Output format:

Output is a series of integers separated by space that denotes the modified array values.

Sample Input 1:

5

5 4 3 2 1

2

Sample Output 1:

1 2 5 4 3

Explanation:

The sorted array is 1,2,3,4,5

The first 2 elements in sorted array is 1,2

The Resulting array has first two elements same as the sorted array and the remaining elements are maintained in the given order.

So the resultant array is [ 1,2,5,4,3 ]

Sample Input 2:

7

4 9 1 32 12 6 10

3

Sample Output 2:

1 4 6 9 32 12 10

1. Janani is in the middle of a programming competition and she needs to solve the final question to be named as the competition’s winner. Her final question is to find if a given number is mysterious number or not. A number n is considered to be mysterious if.
2. It’s a positive integer
3. It’s not prime
4. It does not belong to the Fibonacci sequence

Given a number k, write a program to find the k-th mysterious number when counting up from 1.

**Input format:**

First line consists of a single integer that denotes n

**Output format:**

A single integer that denotes the k-th mysterious number

**Sample input 1:**

1

**Sample output 1:**

4

1. Suriya loves playing with numbers. He comes up with  a new game idea of creating a greater number than the given number by changing exactly one digit. Now he has to find the number of ways in which this is possible. Help Suriya to develop a program to find the number of ways to obtain a bigger number.

Input format:

Input contains a single integer that denotes the given number.

Output format:

The output contains a single integer that denotes the number of ways.

Sample Input 1:

10

Sample Output 1:

17

Sample Input 2:

32310

Sample output 2:

36

Explanation:

First digit 3 can be changed into 4,5,6,7,8,9 so 6 possibilities

Second digit 2 can be changed into 3,4,5,6,7,8,9 so 7 possibilities

Third digit 3 can be changed into 4,5,6,7,8,9 so 6 possibilities

Fourth digit 1 can be changed into 2,3,4,5,6,7,8,9 so 8 possibilities

Fifth digit 0 can be changed into 1,2,3,4,5,6,7,8,9 so 9 possibilities

Total

6+7+6+8+9 = 36

1. Sapna has learnt about prime numbers and Greatest common divisor. Now she experiments by finding the greatest common prime divisor.

Help her develop a program by combining her knowledge in both the concepts to find the greatest common prime divisor(gcpd).

Given two numbers, write a program to find the greatest common prime divisor.

Note :

    If there is no such numbers, print -1.

Input Format:

First Line of the input contains a single integer that denotes the first number.

Second Line of the input contains a single integer that denotes the second number.

Output Format:

The output contains a single integer that denotes the gcpd of the two inputs

Sample Input 1:

12

18

Sample Output 1:

3

Sample Input 2:

12

13

Sample Output 2:

-1

1. Your friend challenges you to play a game, in which you have to find the number of Power pairs in a series of numbers. A Power pair is formed when a number-b is divisible by another number-a that occurs before the number-b in the given sequence. You can easily win the challenge by developing a program to find it.

Input Format

First Line of the input contains a single integer that denotes the size of the array - n.

Second line consists of n space separated integers that denote the array values.

Output Format

The output consists a single integer that denotes the number of Power pairs in the given sequence.

Sample Input 1:

3

1 3 2

Sample Output 1:

2

Explanation :

For sequence = [1, 3, 2]

The sorted pairs are: (1, 3), (1, 2).

So output should be 2.

Sample Input 2:

3

2 4 8

Sample Output 2:

3

1. Nikitha is very interested in programming with arrays, she tries to exhange the positions of the elements by swapping the element and the number at the place which it occupies.

For Example,

Consider the array elements.

1 3 4 2

The element 1 in given array , is at position 1, so 1 is placed at position 1 in output array

The element 3 in given array , is at position 2, so 2 is placed at position 3 in output array

The element 4 in given array , is at position 3, so 3 is placed at position 4 in output array

The element 2 in given array , is at position 4, so 4 is placed at position 2 in output array

The output array becomes 1,4,2,3

Develop a program to help Nikitha.

Input Format:

First Line of the input contains a single integer that denotes the size of the array n

Second  line consists of n space separated integer array values.  The input array values will always be a permutation of numbers from 1 to n.

Output Format:

The output consists of n space separated integers that denote the output array values.

Sample Input 1:

4

1 3 4 2

Sample Output 1:

1 4 2 3

Sample Input 2:

3

1 2 3

Sample Output 2:

1 2 3

1. Roshan just found out that matrix can be implemented using 2d arrays. He is good in programming. So he tries to develop  a program to do his math homework. Help Roshan to write a program to do his math homework.

In his math home work, a square matrix of size N is given. He needs to calculate the absolute difference between the sums of its diagonals.

Help Roshan by writing a program.

Input Format:

The first line contains a single integer denotes the size of the matrix, N.

The next N  lines denote the matrix's rows, with each line containing N space-separated integers describing the columns.

Output Format:

Print the absolute difference between the two sums of the matrix's diagonals as a single integer.

Sample Input 1:

3

11 2 4

4 5 6

10 8 -12

Sample Output 1:

15

Explanation:

The primary diagonal elements are:

11 5 -12

Sum across the primary diagonal: 11 + 5 - 12 = 4

The secondary diagonal elements are:

4 5 10

Sum across the secondary diagonal: 4 + 5 + 10 = 19

Absolute Difference = |4 - 19| = 15.

1. You're travelling in a boat, the water currents sometimes favours you and sometimes they slow you down. You need to calculate the time to reach the destination knowing the boat speed and the water current speed.

A boat moves at a constant speed of x kmph without water flow. The water flow also affects the speed boat.

Given the ideal boat speed and the water flow speed, write a program to find the time required to reach a given distance.

Input format:

First Line of the input contains a single integer value that denotes the ideal boat speed in kmph.

Second Line of the input contains a single integer value that denotes the water flow speed in kmph.(+ve when it favours the boat and -ve when it disfavours the boat)

Third Line of the input contains a single integer value that denotes the distance to be covered in km.

Output format:

A single Integer value that denotes the time taken to reach the given distance.

Assume: The time taken will always be an integer.

Sample input 1:

20

5

100

Sample Output 1:

4

Sample input 2:

25

-5

100

Sample output 2:

5

1. Write a utility program that reads memberCar details in the given format and builds an arraylist.  
   Assumption: In your template code, the member and car details would be prefilled to you. You can assume only those members and cars would be used for evaluation.  
   Currently you have three arraylists, one of type member objects (prefilled in template code), one of type car objects (prefilled in template code) and the membercar arraylist constructed by you.  
   -          Write a function groupByColor which takes all three arraylists and returns a hashmap with car color as key and list of menberCars as value.  
     
   **Pre-filled member details:**  
   1,joe,root,joe.root@a.com,1234567890,AH1,12-12-2001,12-12-2010  
   2,ben,stokes,ben.stokes@a.com,2345678901,AH2,12-12-2002,12-12-2011  
   3,virat,kohli,virat.kohli@a.com,3456789012,AH3,12-12-2003,12-12-2012  
     
   **Pre-filled car details:**  
   1,i10,sports,2007,Hyundai,8  
   2,alto,kx1,2008,Maruti,6  
   3,polo,topline,2010,Volks,5  
   4,kwid,lxi,2010,Renault,5  
     
     
   **Sample Input and Output:**  
   **[All text in bold corresponds to input and the rest corresponds to output.]**  
     
   Color to search  
   **white**  
   Number of member cars  
   **3**  
   Enter the member car details  
   **1,1,2,TN66AB4214,brown  
   2,1,1,TN38BR9689,white  
   3,2,4,TN61EB4004,white**  
   white car registration numbers:  
   TN38BR9689  
   TN61EB4004
2. With all the software systems that are being built, one of the widely used utilities in the financial sector is payments through various channels. The widely used channels are OnlineBanking, CreditCard and Wallet. The banks generate revenue by charging a small margin as part of the usage. Create a class called PaymentUtil. Overload a method “makePayment” as given below in the specification and calculate the total payment amount.

Create a class named as **PaymentUtil**, which contains following Overload methods,

|  |  |  |
| --- | --- | --- |
| **No** | **Method Name** | **Method Description** |
| 1 | public Double makePayment(Map<String,Float> bankTax,String bankName,Double amount) | This method calculates the total amount (amount + service tax amount). Here the tax percent gets varied depending on the bank. Fetch the corresponding service tax from a map collection by bank name. Map<String bankName, Float serviceTax> This map is prefilled. Only banks present in the map would be part of input. |
| 2 | public Double makePayment(Double amount) | This method calculates the total amount (include service tax and value added tax(VAT). First, calculate the service tax amount and then calculate the VAT amount. [ VAT % is applied on total amount+service tax ] |
| 3 | public Double makePayment(Double amount, Float discountPercent) | This method calculates the total amount, which is a discount from the amount with parameterized discount percentage. |

Create the class named as **Main**, which contains the main method. Input and output operations will be done in the main method.  
It calls various methods in PaymentUtil class to perform the task.  
  
The following data will be placed inside the static block in the **Main** class

onlineBankingMap.put("ICICI", 4.2f);

onlineBankingMap.put("IBRD", 3f);

onlineBankingMap.put("IFC", 4.9f);

onlineBankingMap.put("HSBC", 3.9f);  
  
That data will provide in template code.

**Problem Specification:**  
Overload a method “makePayment” as given in the specification and calculate the total payment amount.  
The bank name is case insensitive.  
The service tax for credit card is 5.2%.  
The VAT for the credit card is 2.3%.  
The discount  percentege for Wallet is 20.2%.  
  
**Input and Output format:**  
Refer Sample Input and Output.  
  
**Sample Input and Output:**

1. Online banking

2. Credit card

3. Wallet

Enter the choice:

**1**

Enter the user name:

**ICICI74484**

Enter the password:

**Mu7485**

Enter the amount:

**12560**

Enter the bank name:

**icici**

Total amount(Inclusive of Service Tax): 13087.52  
  
**Sample Input and Output 2:**

1. Online banking

2. Credit card

3. Wallet

Enter the choice:

**2**

Enter the account number:

**8458 9665 7485 2256**

Enter the pin:

**8451**

Enter the amount:

**16300**

Total amount(Inclusive of Service Tax and VAT): 17541.99  
  
Sample Input and Output 3:

1. Online banking

2. Credit card

3. Wallet

Enter the choice:

**3**

Enter the user name:

**HSBC7457**

Enter the password:

**Yu67488**

Enter the amount:

**28500**

Discounted amount: 22743.00

1. There are always typical human entry errors that need to be validated so that the data saved in the system are valid and can be used for later processing. Simple Rules that need to be taken care:

Create a Class named as **Main**, which contains the following methods,

|  |  |
| --- | --- |
| **No** | **Method Name** |
| 1 | public static void parseName(BufferedReader br) |
| 2 | public static void isValidEmail(BufferedReader br) |
| 3 | public static void playContactNumber(BufferedReader br) |
| 4 | public  static void userLifeTime(BufferedReader br) |

**parseName ( ):**  
The customer name contains first name and last name separated by any “special character”. Given a name, display the first and last name.  
Examples of Special character like: **' , '** , **'@'** , **'#' , . . . . . (NOTE: There can be any special character).**  
  
**isValidEmail ( ):**  
Check if the email address entered is valid. A Valid email address would end with 3 domains (com, org, net) and would contain a “@”.  
  
**playContactNumber ( ):**  
Every contact number would be in the format (ISD Code-STD Code-Number). The size of the fields would be (3 digits – 4 digits – 10 digits). Given a contact number, find the sum of last 10 digits until it reaches to a single digit. Print the digit.  
  
**userLifeTime ( ):**  
Given a “createdOn” Date, print number of minutes before which the user was created. Assume the current date to be ‘28-07-2017 09:00’.  
Date format : "**dd/MM/yyyy HH:mm**";  
  
**Example for LifeTime calculation:**  
If the createdOn date is "28-07-2017 08:20", then the life time is 40 minutes.

**Sample Input and Output:**

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**1**

Enter name:

**John%Abraham\*Lincoln**

John Abraham Lincoln

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**1**

Enter name:

**Marc;Farnando**

Marc Farnando

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**2**

Enter E-mail id:

**john.com**

Email is invalid

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**2**

Enter E-mail id:

**john@.com**

Email is invalid

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**2**

Enter E-mail id:

**john@a.com**

Email id is valid

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**3**

Enter contact number:

**844-7485-44784578459**

Contact number invalid

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**3**

Enter contact number:

**58-847-8547123654**

Contact number invalid

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**3**

Enter contact number:

**847-7845-9557898865**

Sum of contact number: 7

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**4**

Enter Created on date(dd-MM-yyyy HH:mm):

**25-07-2017 10:30**

Life time is: 4230 minutes

Menu

1. Parse Name

2. Valid Email

3. Play Contact Number

4. User Lifetime

5. Exit

**5**

1. Write a program to read a string and a character, and reverse the string and convert it in a

format such that each character is separated by the given character. Print the final string.

Include a class  with a static method reshape which accepts a string and a

character. The return type (String) should return the final string.

**Input and Output Format:**

Input consists of a string and a character.

Output consists of a string (the final string).

Refer sample output for formatting specifications.

**Sample Input:**

Rabbit

-

**Sample Output:**

t-i-b-b-a-R

1. Create a class named as **Customer**, which contains following private variable/ attributes,

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **Member Field name** | **Type** | | id | Long | | name | String | | gender | Character (M/F) | | email | String | | contactNumber | String | | createdOn | Date (time in 24 hrs clock) dd/MM/yyyy HH:mm:ss | | address | Address | |

Mark all the attributes as private

Create / Generate appropriate Getters & Setters.

Add a default constructor and a parameterized constructor to take in all attributes.

Implement the following methods in the Customer class:

|  |  |  |
| --- | --- | --- |
| **No** | **Method Name** | **Method Description** |
| 1 | public Customer findCustomerById(List<Customer> customerList, Long id) | In this method, that takes up an id and returns a matching customer object. If the object is not found then return null. |
| 2 | public List<Customer> findCustomerListByState(List<Customer> customerList, String state) | In this method, given a state as a parameter, print the list of customers who belong to the state. |

Create a class named as **Address**, which contains following private variable/ attributes,

|  |  |
| --- | --- |
| **Member Field name** | **Type** |
| street | String |
| city | String |
| state | String |
| country | String |
| zipCode | Integer |

Include appropriate getters and setters.

Add a default constructor and a parameterized constructor to take in all attributes.

The customer details will be populated in a static block in this class(provide in the template code).  
Refer Sample Input and Output.  
Use the following format for specified output.  
**"%-15s %-20s %-15s %-15s %s\n", "Name", "Email", "City", "Country", "Zipcode"**  
  
**Problem Specification:**  
If the customer with the id is not found then print "**No Customer with that id**" without quotes.  
If none of the customer belongs to the state then print "**No customer belongs that state**" without quotes.  
  
**Sample Input and Output 1:**

Menu

1. Find customer by id

2. Find customer by states

Enter the choice:

**1**

Enter the Id to find customer:

**5**

Customer Name: Tedmond

Gender: M

Email: tedmond@a.com

Contact Number: +88-7844-8854799658

Street: Port Townsend

City: Tacoma

State: Washington

Country: USA

Zip code: 98412

**Sample Input and Output 2:**

Menu

1. Find customer by id

2. Find customer by states

Enter the choice:

**2**

Enter the state:

**Texas**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name | Email | Contact no | Street | City | Country | Zipcode |
| Aekerman | aekerman@a.com | +78-7485-9555874846 | Avenue | Plano | USA | 75025 |
| Madeleine | madeleine@a.com | +78-9855-7488742136 | Parc St | Lubbock | USA | 79404 |
| Raymond | raymond@a.com | +89-7748-8859112478 | Wall Street | Texas City | USA | 77591 |

1. Usually, As part of batch processing jobs, a CSV or TXT file is read, relevant objects are created and database is populated with CSV contents.  
   Create the list of customer objects with the CSV content provided in the sample IO.

Create a class named as **Customer**, which contains following private variable/ attributes,   

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **Member Field name** | **Type** | | id | Long | | name | String | | gender | Character (M/F) | | email | String | | contactNumber | String | | createdOn | Date (time in 24 hrs clock) dd/MM/yyyy HH:mm:ss | |  |

Mark all the attributes as private

Create / Generate appropriate Getters & Setters.

Add a default constructor and a parameterized constructor to take in all attributes.

In the Customer class, implement the following methods.

|  |  |  |
| --- | --- | --- |
| **No** | **Method Name** | **Method Description** |
| 1 | public static List<Customer> populateCustomers(List<String> csvList) | In this method, given parameter is the list of customer details in a string format where each data is separated by a comma. Parse the string and create a customer arrayList. |
| 2 | public static List<Customer> findCustomerNameFromList(List<Customer> customers, String subString) | In this method, given part of customer name, search the customer list based on name and return the customer list with matching names. |

**Input format:**  
The first input consists of an integer that corresponds  to the number of customer  n.  
The next n line of the input consists of a string that corresponds to the customer details, which is separated  by a comma.  
Input sequence:  
**id, name, gender, email, contactNumber, createdOn.**  
The last input is the substring that used to search the specified customers.  
  
**Output format:**  
Refer Sample Input and Output.  
  
HINT:  
The implementation can either be done in the BO class or static method in the customer class.  
In real time projects, its done in the BO Class and a fallback is given the customer class as static method.  
Ensure the static methods in the Customer class is present.  
The implementation can be in the BO layer with the static methods calling the methods in BO layer.  
  
Main - Customer class static methods - CustomerBO methods.  
  
  
  
  
**Sample Input and Output:**

Enter the number of customer:

**5**

Enter the customer 1 detail:

**12,John Smith,M,johnsmith@a.com,+85-7489-8596478596,12/12/2016 12:30:00**

Enter the customer 2 detail:

**15,Tedmond,M,tedmond@a.com,+45-9857-5266987485,14/01/2017 04:30:00**

Enter the customer 3 detail:

**11,Dalton,M,dalton@a.com,+48-8967-7485947558,12/02/2017 20:00:00**

Enter the customer 4 detail:

**5,Raymond,M,raymond@a.com,+88-8745-8554712569,28/01/2017 10:30:00**

Enter the customer 5 detail:

**9,Ruford,M,ruford@a.com,+88-4859-7714589633,01/04/2017 17:45:00**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Id | Name | Gender | Email | Contact no | Created on |
| 12 | John Smith | M | johnsmith@a.com | +85-7489-8596478596 | 12/12/2016 12:30:00 |
| 15 | Tedmond | M | tedmond@a.com | +45-9857-5266987485 | 14/01/2017 04:30:00 |
| 11 | Dalton | M | dalton@a.com | +48-8967-7485947558 | 12/02/2017 20:00:00 |
| 5 | Raymond | M | raymond@a.com | +88-8745-8554712569 | 28/01/2017 10:30:00 |
| 9 | Ruford | M | ruford@a.com | +88-4859-7714589633 | 01/04/2017 17:45:00 |

Enter the substring to search from customer list:

**mon**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Id | Name | Gender | Email | Contact no | Created on |
| 15 | Tedmond | M | tedmond@a.com | +45-9857-5266987485 | 14/01/2017 04:30:00 |
| 5 | Raymond | M | raymond@a.com | +88-8745-8554712569 | 28/01/2017 10:30:00 |

1. Write a program to read an integer array and remove all 10s from the array, shift the other

elements towards left and fill the trailing empty positions by 0 so that the modified array is

of the same length of the given array.

Include a class with a static method removeTens which accepts the number

of elements and an integer array. The return type (Integer array) should return the final

array.

**Input and Output Format:**

Input consists of n+1 integers, where n corresponds to size of the array followed by n

elements of the array.

Output consists of an integer array (the final array).

Refer sample output for formatting specifications.

**Sample Input :**

5

1

10

20

10

2

**Sample Output :**

1

20

1. Write a program that construts a hashmap and returns the value corresponding to the

largest key.

Include a class with a static method getMaxKeyValue which accepts a string.

The return type (String) should be the value corresponding to the largest key.

**Input and Output Format:**

Input consists of 2n+1 values. The first value corresponds to size of the hashmap. The next n

pair of numbers equals the integer key and value as string.

Output consists of a string which is the value of largest key.

Refer sample output for formatting specifications.

**Sample Input 1:**

3

12

amron

9

Exide

7

SF

**Sample Output 1:**

Amron

1. Write a program to read a date as string (MM-dd-yyyy) and return the day of week on that

date.

Include a class with a static method getDay which accepts the string. The

return type (string) should be the day of the week.

**Input and Output Format:**

Input consists of a string.

Output consists of a string.

Refer sample output for formatting specifications.

**Sample Input 1:**

07-13-2012

**Sample Output 1:**

Friday

1. There are always typical human entry errors that need to be validated so that the data being saved in the system is valid and can be used for later processing. Lets define some simple rules so that data being collected are valid.

Create a class named as **Main**, which contains following static methods.

a) Create a method validateLicenceNumber(String licenceNumber)  which takes a license number(String) and returns boolean (true or false),based on the below rules.   
A licence Number is valid if all the below rules are true.

2 chars-state name. ( 2 characters A to Z)

2 numbers-branch code (integers) - valid range between 10 - 50

4 numbers-licence issued year - valid range between - (2005 to 2016) inclusive of both years.

7 numbers -profile id (Any digit should not contain 0).

 eg:**MH1420116662821**is a valid licence number.

b) Write a method isExperiencedDriver(String licenceNumber) which takes a license number(String) and returns a boolean.  
This function checks for experience of a driver with respect to licence Number. The year of the licence issue starts from 5 th chacter (yyyy determines the year).  
If year of license issued is equal to or greater than 5 years from current year then return true ,else return false. Assume today’s date as 28-11-2017. If the method returns true, then the driver is termed as experienced. If its less than 5 years, then print as Not Experienced Driver.

Menu:

1) Validate licence Number  
2) Check Driver Experience  
  
**Sample Input and Output 1:**

Enter license number:

**MH1420110062821**

Menu:

1) Validate licence Number

2) Check Driver Experience

Enter choice:

**1**

License number is not valid

**Sample Input and Output 2:**

Enter license number:

**tn482018547585**

Menu:

1) Validate licence Number

2) Check Driver Experience

Enter choice:

**1**

License number is not valid

**Sample Input and Output 3:**

Enter license number:

**TN5920151122556**

Menu:

1) Validate licence Number

2) Check Driver Experience

Enter choice:

**1**

License number is not valid

**Sample Input and Output 4:**

Enter license number:

**KL2620044451236**

Menu:

1) Validate licence Number

2) Check Driver Experience

Enter choice:

**1**

License number is not valid

**Sample Input and Output 5:**

Enter license number:

**TN4520124482563**

Menu:

1) Validate licence Number

2) Check Driver Experience

Enter choice:

**1**

License number is valid

**Sample Input and Output 6:**

Enter license number:

**KA1220112235647**

Menu:

1) Validate licence Number

2) Check Driver Experience

Enter choice:

2

Experienced Driver

**Sample Input and Output 7:**

Enter license number:

**TN5420154485263**

Menu:

1) Validate licence Number

2) Check Driver Experience

Enter choice:

**2**

Not Experienced Driver

54.Create a custom checked Exception “InvalidEmailException” with custom error message: "Invalid Email for the user".  
Read member details from Input (Console). One line would consist details relating one customer in comma separated format. Create customer objects for each line and add it to an arraylist.

a) Create a Customer Class with the following attributes:

|  |  |
| --- | --- |
| **Member Field Name** | **Type** |
| customerId | Long |
| firstName | String |
| lastName | String |
| gender | String |
| email | String |
| phoneNumber | String |
| address | String |

b) Mark all the attributes as private

c) Create / Generate appropriate Getters & Setters

d) Add a default constructor and a parameterized constructor to take in all attributes in the given order: Customer(Long customerId, String firstName, String lastName, String gender, String email, String phoneNumber, String address)

e) A valid email has an @ and ends with “.com / .org”.

Create a method validateEmail in customer class with return type as void and check for valid email . During the parse, if an email id is invalid, Raise the custom exception(InvalidEmailException) and dont add the customer into the list. Print messege "Invalid Email for the user" for the exception.

f) Write a Comparator class named CustomerComparator implementing Comparator Interface. This comparator should sort the customers based on firstname.   
After reading all the inputs, Apply the comparator on the inputlist read and display the result.  
  
The output format should be System.out.format("%-5s %-15s %-15s %-15s %-15s %s\n","Id","First Name","Last Name","Gender","Email","Phone");  
  
**Sample Input and Output:**

Enter customer details:  
**1,Vel,Murugan,Male,vel@mail.com,9876543210,Coimbatore**  
Do you want to continue?  
**yes**  
Enter customer details:  
**2,Mani,Gandan,male,mani@mail.org,9873216540,CBE**  
Do you want to continue?  
**yes**  
Enter customer details:  
**3,Thana,Rathanam,male,thana@mail.in,9783210456,Karur**  
InvalidEmailException: Invalid Email for the user  
Do you want to continue?  
**yes**  
Enter customer details:  
**4,Karthi,Keyan,male,keyan@mail.edu,9632587410,Tirupur**  
InvalidEmailException: Invalid Email for the user  
Do you want to continue?  
**yes**  
Enter customer details:  
**5,Soori,yaa,male,yaa@yaa.co.in,9875321460,Chennnai**  
InvalidEmailException: Invalid Email for the user  
Do you want to continue?  
**no**  
Id    First Name      Last Name       Gender          Email                           Phone  
2      Mani                    Gandan              male                mani@mail.org     9873216540  
1      Vel                         Murugan            Male                vel@mail.com        9876543210

1. Given the list of bookings, you would like to calculate the amount of revenue generated by each service engineer. For convenience sake, the customer and car references in the booking class is replaced by their respective ids alone.

a)Create a Booking Class with the following attributes:

|  |  |
| --- | --- |
| **Member Field Name** | **Type** |
| bookingId | Long |
| dateTimeOfService | Date(java.util) |
| paymentMode | String |
| customerId | Long |
| carId | Long |
| amount | Double |
| serviceEngineer | String |

B )Mark all the attributes as private. Create / Generate appropriate Getters & Setters. Add a default constructor and a parameterized constructor to take in all attributes in order Booking(Long bookingId, Date dateTimeOfService, String paymentMode, Long customerId, Long carId, Double amount, String serviceEngineer).

c)The input format  consists of all booking details seperated by comma in the below order,  
(bookingId,dateTimeOfService,paymentMode,customerId,carId,amount,serviceEngineer)

d) Create static method **organizeBookings** in **Booking** class which takes **List<Booking>** as input parameter and return a **Map<String,List<Booking>>.**The key of the map is "serviceEngineer" and the value is the list of all the bookings handled by the service engineer. This method should loop thorough the list of bookings and create multiple smaller lists of booking for each service engineer (value of the hashmap). Add each of the smaller lists to the map and return the same.

e) Create a static method **findBestServiceEngineer** in **Booking** class which takes **Map<String,List<Booking>>** as parameters and **List<String>** as return type.   
This method takes up the organisedbooking for each service engineer and computes the total amount generated by each engineer. The list is sorted based on the maximum amount generated by engineer. The list of the service engineer names are returned from the method.  
  
  
In output print the serviceEngineer name and number bookings for the service engineer ssorted based on the maximum amount generated by engineer. The output format should be System.out.format("%-15s %s\n","Name","No of Booking");

**Sample Input and Output:**  
Enter a booking detail:  
**1,06-01-2015,CC,11,1001,100,John**  
Do you want to add another booking detail:  
**yes**  
Enter a booking detail:  
**2,01-06-2017,CC,12,1002,200,Peter**  
Do you want to add another booking detail:  
**yes**  
Enter a booking detail:  
**3,28-02-2015,DC,13,1003,150,Peter**  
Do you want to add another booking detail:  
**yes**  
Enter a booking detail:  
**4,24-06-2015,CC,14,1004,250,John**  
Do you want to add another booking detail:  
**yes**  
Enter a booking detail:  
**5,14-06-2016,DC,15,1005,75,John**  
Do you want to add another booking detail:  
**yes**  
Enter a booking detail:  
**6,12-05-2017,DC,16,1006,125,Peter**  
Do you want to add another booking detail:  
**yes**  
Enter a booking detail:  
**7,24-12-2011,CC,17,1007,185,Peter**  
Do you want to add another booking detail:  
**no**  
Name            No of Booking  
Peter              4  
John              3

1. Write a program to read a number , calculate the sum of squares of even digits (values)

present in the given number.

Include a class  with a static method sumOfSquaresOfEvenDigits which

accepts a positive integer . The return type (integer) should be the sum of squares of the

even digits.

**Input and Output Format:**

Input consists of a positive integer n.

Output is a single integer .

Refer sample output for formatting specifications.

**Sample Input 1:**

56895

**Sample Output 1:**

100

1. Create a Class Item with the following attributes:

|  |  |
| --- | --- |
| **Member Field Name** | **Type** |
| id | Long |
| name | String |
| itemCode | String |
| cost | Double |

b) Mark all the attributes as private  
  
c) Create / Generate appropriate Getters & Setters  
  
d) Add a default constructor and a parameterized constructor to take in all attributes in the given order: Item(Long id, String name, String itemCode, Double cost)  
When the “item” object is printed, it should display the following details  
Print format:  
**System.out.format("%-10s %-10s %s\n", "Name", "Code", "Cost");**  
  
e) Create the following static methods in the Item class

|  |  |
| --- | --- |
| **Method Name** | **Description** |
| static Item createItem(String itemDetail) | Split the string and create the item object using the splitted values and return the item object. |
| static Item searchItemByName(String itemName, List<Item> itemList) | Search the list with the given item name and return the item object with the given name. Assume there will be unique items in the list. |
| static List<Item> findAllItemByPriceRange(List<Item> itemList, Double minRate, Double maxRate) | The method takes a item list, minimum rate and maximum rate as parameter and then filter all the items between the price range and return the list of items between the range. (both minrate and maxrate inclusive) |

The input format  consists of item details seperated by comma in the below order,  
(id,name,itemCode,cost)   
  
**Sample INPUT & OUTPUT 1:**   
1. Add items  
2. Search item by name  
3. Get item between price range  
4. Exit  
Enter your choice:  
**1**  
Enter the number of items:  
**3  
1,Bat,ITM01,2500.0  
2,Ball,ITM02,200.0  
3,Stump,ITM03,420**  
1. Add items  
2. Search item by name  
3. Get item between price range  
4. Exit  
Enter your choice:  
**2**  
Enter the name:  
**Bat**  
Item Detail  
Item name: Bat  
Item code: ITM01  
Item Cost: 2500.0  
1. Add items  
2. Search item by name  
3. Get item between price range  
4. Exit  
Enter your choice:  
**2**  
Enter the name:  
**Cat**  
Item Cat not found  
1. Add items  
2. Search item by name  
3. Get item between price range  
4. Exit  
Enter your choice:  
**3**  
Enter the min and max cost:  
**100  
500**  
Name       Code       Cost  
Ball       ITM02      200.0  
Stump      ITM03      420.0  
1. Add items  
2. Search item by name  
3. Get item between price range  
4. Exit  
Enter your choice:  
**1**  
Enter the number of items:  
**1  
4,Byles,ITM04,75.0**  
1. Add items  
2. Search item by name  
3. Get item between price range  
4. Exit  
Enter your choice:  
**2**  
Enter the name:  
**Byles**  
Item Detail  
Item name: Byles  
Item code: ITM04  
Item Cost: 75.0  
1. Add items  
2. Search item by name  
3. Get item between price range  
4. Exit  
Enter your choice:  
**3**  
Enter the min and max cost:  
**50  
450**  
Name       Code       Cost  
Ball       ITM02      200.0  
Stump      ITM03      420.0  
Byles      ITM04      75.0  
1. Add items  
2. Search item by name  
3. Get item between price range  
4. Exit  
Enter your choice:  
**4**

1. Given an input as string and write code to encrypt the given string using following rules and

return the encrypted string:

1. Replace the characters at odd positions by next character in alphabet.

2. Leave the characters at even positions unchanged.

Note:

- If an odd position charater is &#39;z&#39; replace it by &#39;a&#39;.

- Assume the first character in the string is at position 1.

Include a class with a static method encrypt which accepts a string.

The return type of the output is the encrypted string.

**Input and Output Format:**

Input is a string .

Output is a string.

**Sample Input 1:**

curiosity

**Sample Output 1:**

dusipsjtz

**Sample Input 2:**

zzzz

**Sample Output 2:**

Azaz

1. Given a method taking an int array having size more than or equal to 1 as input. Write code

to return the difference between the largest and smallest elements in the array. If there is

only one element in the array return the same element as output.

Include a class  with a static method getBigDiff which accepts a integer array as input.

The return type of the output is an integer which is the difference between the largest and

smallest elements in the array.

**Input and Output Format:**

Input is an integer array.First element in the input represents the number of elements in an

array.

Size of the array must be &gt;=1

Output is an integer which is the difference between the largest and smallest element in an

array.

**Sample Input 1:**

4

3

6

2

1

**Sample Output 1:**

5

**Sample Input 2:**

4

5

3

7

2

**Sample Output 2:**

5

1. Given a method with a HashMap&lt;Integer,string&gt; as input. Write code to remove all the entries having keys multiple of 4 and return the size of the final hashmap.

Include a class  with a static method sizeOfResultandHashMap which

accepts hashmap as input.

The return type of the output is an integer which is the size of the resultant hashmap.

**Input and Output Format:**

First input corresponds to the size of the hashmap.

Input consists of a hashmap<integer,string>

Output is an integer which is the size of the hashmap.

Refer sample output for formatting specifications.

**Sample Input 1:**

3

2

hi

4

hello

12

hello world

**Sample Output 1:**

1

**Sample Input 2:**

3

2

hi

4

sdfsdf

3

asdf

**Sample Output 2:**

2

1. Write a program to input a String and swap the every 2 characters in the string. If size is an odd number then keep the last letter as it is. Print the final swapped string.

Include a class with a static method swapCharacter which accepts a string.

The return type (String) should return the character swapped string.

**Input and Output Format:**

Input consists of a string.

Output consists of a string.

Refer sample output for formatting specifications.

**Sample Input 1:**

TRAINER

**Sample Output 1:**

RTIAENR

**Sample Input 2:**

TOM ANDJERRY

**Sample output 2:**

OT MNAJDREYR

1. Given a method with a HashMap&lt;int, float&gt; as input. Write code to find out avg of all

values whose keys are even numbers. Round the average to two decimal places and return

as output.

[Hint : If the average is 5.901, the rounded average value is 5.9 . It the average is 6.333, the

rounded average value is 6.33 . ]

Include a class  with a static method avgOfEven which

accepts a HashMap<int, float> as input.

The return type of the output is a floating point value which is the average of all values

whose key elements are even numbers.

**Input and Output Format:**

Input consists of the number of elements in the HashMap and the HashMap<int, float>.

Output is a floating point value that corresponds to the average.

Refer sample output for formatting specifications.

**Sample Input 1:**

3

1

2.3

2

4.1

6

6.2

**Sample Output 1:**

5.15

**Sample Input 2:**

3

9

3.1

4

6.3

1

2.6

**Sample Output 2:**

6.3