**Lab: Sets and Dictionaries Advanced**

Problems for exercises and homework for the ["C# Advanced" course @ HYPERLINK "https://softuni.bg/trainings/3584/csharp-advanced-january-2022"SoftUni HYPERLINK "https://softuni.bg/trainings/3584/csharp-advanced-january-2022".](https://softuni.bg/trainings/3584/csharp-advanced-january-2022)

You can check your solutions in [Judge](https://judge.softuni.org/Contests/1465/Sets-and-Dictionaries-Advanced-Lab).

* **Dictionaries**
* **Count Same Values in Array**

Create a program that counts in a given array of double values the number of occurrences of each value.

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| -2.5 4 3 -2.5 -5.5 4 3 3 -2.5 3 | -2.5 - 3 times  4 - 2 times  3 - 4 times  -5.5 - 1 times |
| 2 4 4 5 5 2 3 3 4 4 3 3 4 3 5 3 2 5 4 3 | 2 - 3 times  4 - 6 times  5 - 4 times   * - 7 times |

* **Average Student Grades**

Create a program, which reads a **name** of a student and his/her **grades** and **adds** them to the **student record**, then **prints** **the** students' **names** with their **grades** and their **average grade**.

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 7  John 5.20  Maria 5.50  John 3.20  Maria 2.50  Sam 2.00  Maria 3.46  Sam 3.00 | John -> 5.20 3.20 (avg: 4.20)  Maria -> 5.50 2.50 3.46 (avg: 3.82)  Sam -> 2.00 3.00 (avg: 2.50) |
| 4  Vlad 4.50  Peter 3.00  Vlad 5.00  Peter 3.66 | Vlad -> 4.50 5.00 (avg: 4.75)  Peter -> 3.00 3.66 (avg: 3.33) |
| 5  George 6.00  George 5.50  George 6.00  John 4.40  Peter 3.30 | George -> 6.00 5.50 6.00 (avg: 5.83)  John -> 4.40 (avg: 4.40)  Peter -> 3.30 (avg: 3.30) |

**Hints**

* Use a **dictionary** (**string** **List<decimal>**)
* Check if the name **exists** before adding the grade. If it doesn’t, add it to the dictionary.
* Pass through all **key-value pairs** in the dictionary and print the results. You can use the**.Average()** method to quickly calculate the average value from a list.
* **Largest 3 Numbers**

Read a **list of integers** and **print the largest 3 of them**. If there are less than 3, print all of them.

**Examples**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |
| 10 30 15 20 50 5 | 50 30 20 | 20 30 | 30 20 |

**Hints**

* Read an array of integers
* **Order the array using a LINQ query**



* **Print top 3 numbers with for loop**
* **Product Shop**

Create a program that prints information about **food shops** in Sofia and the **products** they **store**. Until the "**Revision**" command is received, you will be receiving input in the format: **"{shop}, {product}, {price}"**. Keep in mind that if you receive a **shop** you already **have** **received**, you must **collect** its **product** **information**.

Your output must be **ordered** by shop **name** and must be in the format:

**"{shop}->**

**Product: {product}, Price: {price}"**

**Note:** The price **should not** be rounded or formatted.

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| lidl, juice, 2.30  fantastico, apple, 1.20  kaufland, banana, 1.10  fantastico, grape, 2.20  Revision | fantastico->  Product: apple, Price: 1.2  Product: grape, Price: 2.2  kaufland->  Product: banana, Price: 1.1  lidl->  Product: juice, Price: 2.3 |
| tmarket, peanuts, 2.20  GoGrill, meatballs, 3.30  GoGrill, HotDog, 1.40  tmarket, sweets, 2.20  Revision | GoGrill->  Product: meatballs, Price: 3.3  Product: HotDog, Price: 1.4  tmarket->  Product: peanuts, Price: 2.2  Product: sweets, Price: 2.2 |