**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).

* **Cities by Continent and Country**

Create a program that reads **continents**, **countries,** and their **cities** put them in a **nested dictionary** and **prints** them.

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 9  Europe Bulgaria Sofia  Asia China Beijing  Asia Japan Tokyo  Europe Poland Warsaw  Europe Germany Berlin  Europe Poland Poznan  Europe Bulgaria Plovdiv  Africa Nigeria Abuja  Asia China Shanghai | Europe:  Bulgaria -> Sofia, Plovdiv  Poland -> Warsaw, Poznan  Germany -> Berlin  Asia:  China -> Beijing, Shanghai  Japan -> Tokyo  Africa:  Nigeria -> Abuja |
| 3  Europe Germany Berlin  Europe Bulgaria Varna  Africa Egypt Cairo | Europe:  Germany -> Berlin  Bulgaria -> Varna  Africa:  Egypt -> Cairo |
| 8  Africa Somalia Mogadishu  Asia India Mumbai  Asia India Delhi  Europe France Paris  Asia India Nagpur  Europe Germany Hamburg  Europe Poland Gdansk  Europe Germany Danzig | Africa:  Somalia -> Mogadishu  Asia:  India -> Mumbai, Delhi, Nagpur  Europe:  France -> Paris  Germany -> Hamburg, Danzig  Poland -> Gdansk |

**Hints**

* Use a **nested** **dictionary** (**string** (**Dictionary List<string>)**)
* Check if the continent exists before adding the country. If it doesn’t, add it to the dictionary.
* Check if the country exists, before adding the city. If it doesn’t, add it to the dictionary.
* Pass through all **key-value pairs** in the dictionary and the values’ key-value pairs and print the results.
* **Sets**
* **Record Unique Names**

Create a program, which will take a list of **names** and print **only** the **unique** names in the list.

**Examples**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **Input** | **Output** |
| 8  John  Alex  John  Sam  Alex  Alice  Peter  Alex | John  Alex  Sam  Alice  Peter |  | 7  Lyle  Bruce  Alice  Easton  Shawn  Alice  Shawn  Peter | Lyle  Bruce  Alice  Easton  Shawn |  | 6  Roki  Roki  Roki Roki  Roki  Roki | Roki |

**Hints**

You can store the names in a **HashSet<string>** to extract only the unique ones.