Exercise 1: E2E Application development

Description

Develop a simple CRUD application containing a web portal consuming a service layer using a database to store the data.

Evaluation

Code should be shared using public github repository.

Application will be run execution the command *"docker-compose up"* and it should be accessible from url "*http://localhost:8080*"

Exercise 2: Problem solving case

Description

There is a csv file that keeps a record of *n* order details for orders made at an online shopping website. The file has a .csv extension.

Each line contains a single record with the following columns, in order:

- Id of the order placed
- Area where the order was delivered
- Name of the product
- Quantity of the product delivered in that order
- Brand of the ordered product

Create two csv files named *0_input_file_name* and *1_input_file_name* where *input_file_name* is the name of the input file given in the input including the .csv extension. Each file must contain *r* rows where *r* is the number of distinct products. Data should be comma delimited, and the row order does not matter.

The structure of each file is as follows:

1. *0_input_file_name* - In the first column, list the product Name. The second column should contain the average quantity of the product purchased per order.
2. *1_input_file_name* - In the first column, list the product Name. The second column should be the most popular Brand for that product. Most popular is defined as the brand with the most total orders for the item, not the quantity purchased. If two or more brands have the same popularity for a product, include any one.

The value of the average quantity will be considered correct if the absolute difference between your answer and the jury's answer is less than 1e-3 (0.001)

Example:

There are four total orders in *input_example.csv*:

```
ID1,Minneapolis,shoes,2,Air

ID2,Chicago,shoes,1,Air

ID3,Central Department Store,shoes,5,BonPied

ID4,Quail Hollow,forks,3,Pfitzcraft
```

The orders for shoes are 2 pairs of Air brand, 1 pair of Air, and 5 pairs of BonPied. The most popular shoe brand is Air because there were two orders versus one for BonPied. The total shoes sold is 2 + 1 + 5 = 8, and there are 4 total orders. The average shoes per order is 8/4 = 2. There is one order for 3 forks made for Pfitzcraft. The average number of forks per order is 3/4 = 0.75. The files should each contain two lines:

0_input_example.csv:

```
shoes,2

forks,0.75
```

1_input_example.csv:

```
shoes,Air

forks,Pfitzcraft
```

Program Description

Create a program using your favorited. It must create the two files described above.

The program will receive the value of *input_file_name*: the name of the input file

Input from stdin will be processed as follows and passed to the program:

The only line of the input contains a string representing the name of the input file.

Constraints

$1 \leq$ number of rows of data $\leq 10^4$

Sample Case

Sample stdin Input:

order_log00.csv

Sample program result:

Creates file *0_order_log00.csv* with content

> Intelligent Copper Knife,2.4
>
> Small Granite Shoes,0.8

Creates file 1_order_log00.csv with content

> Intelligent Copper Knife,Hilll-Gorczany
>
> Small Granite Shoes,Rowe and Legros

Sample Explanation

The *order_log00.csv* file contains the following records.

> ID944806,Willard Vista,Intelligent Copper Knife,3,Hilll-Gorczany
>
> ID644525,Roger Centers,Intelligent Copper Knife,1,Kunze-Bernhard
>
> ID348204,Roger Centers,Small Granite Shoes,4,Rowe and Legros
>
> ID710139,Roger Centers,Intelligent Copper Knife,4,Hilll-Gorczany
>
> ID426632,Willa Hollow,Intelligent Copper Knife,4,Hilll-Gorczany

File *0_order_log00.csv* is created based on the following:

- There are 4 orders for Intelligent Copper Knife products that total 12 items.
- There is 1 order for Small Granite Shoes totaling 4 items.

There are 5 total orders, so the average per order is 12/5 = 2.4 for Intelligent Copper Knife, and 4/5 = 0.8 for Small Granite Shoes.

File *1_order_log00.csv* is created based on the following:

- There are 4 orders for Intelligent Copper Knife,
  - 3 branded Hilll-Gorczany and
  - 1 branded Kunze-Bernhard.
- There is 1 order for Small Granite Shoes made by Rowe and Legros.

Hilll-Gorczany and Rowe and Legros are the most popular brands for each item.

Evaluation

Code should be shared using public github repository.

Repository must contain a README with the instructions to compile (if require) and run the program, simplicity will be valued.

Code will be reviewed and the existence of unit test will be valued. Instructions to run unit tests should be detailed in the README.