Degree in Software Engineering – Computing Basics

Unit 2.6 Exercises: Files

This document includes a collection of exercises from Unit 2.6: Files. It is recommended that you try doing the exercises without looking at the solutions first, and then you check your answers.

For these exercises, assume there is a file called input.csv in the same directory of the developed programs, which contains the population data of the Spanish provinces in CSV format. The first field represents the province name, the second field the number of men, and the third field the number of women, on January 1st, 2018, according to the National Statistics Institute. The content of the file is the following:

```
A Coruña,536637,582714
Albacete,194158,194628
Alicante,911097,927722
Almería,361319,348021
Álava,162175,166693
Asturias,490738,537506
Ávila,79538,78960
Badajoz,334636,341740
Islas Baleares,561803,567105
Barcelona,2733466,2875884
Bizkaia,554879,594749
Burgos,178337,178733
Cáceres,196619,199868
Cádiz,611357,627357
Cantabria,281564,298665
Castellón,286359,290539
Ciudad Real,246656,252444
Córdoba,385085,400155
Cuenca,98999,98223
Gipuzkoa,351696,368896
Girona,380690,381257
Granada,449318,462757
Guadalajara,128854,125454
Huelva,257713,262219
Huesca,110599,108746
Jaén,315549,322550
```



```
La Rioja,155758,159917
Las Palmas,552555,556620
León,225646,238100
Lleida,219509,213357
Lugo,160647,170680
Madrid,3147872,3430207
Málaga,804858,836263
Murcia,740143,738366
Navarra,320469,327085
Ourense,148426,160867
Palencia,80323,81712
Pontevedra,454899,486873
Salamanca,161065,170408
Santa Cruz de Tenerife,501477,517033
Segovia,76979,76363
Sevilla,948699,991188
Soria,44800,43800
Tarragona,396661,399241
Teruel,68060,66512
Toledo,345532,341859
Valencia,1248927,1299059
Valladolid,253356,266495
Zamora,86319,88230
Zaragoza,466839,487972
Ceuta,43177,41967
Melilla,43765,42619
```


Exercise 1

Write a function that takes a string as a parameter according to the line format of the file above, and returns a list in which the first element is the province name (string), the second element is the number of men (numerical value) and the third element is the number of women (numerical value).

Write a main program that reads the input file line by line and transforms each field using the above function.

Example:

```
['A Coruña', 536637, 582714]
['Albacete', 194158, 194628]
...
['Melilla', 43765, 42619]
```

Exercise 2

Modify the main program of Exercise 1 to define a list that contains the names of the provinces in which the number of women is greater than the number of men. After that, show its content on screen.

Example:

```
There are 39 provinces with greater number of women than men:
A Coruña
Albacete
...
Zaragoza
```

Exercise 3

Using the function defined in Exercise 1, write a main program that reads the file `input.csv` line by line and writes into an equivalent file, called `output.csv`, the name of each province and its total population in CSV format.

Expected content of file `output.csv`:

```
A Coruña,1119351
Albacete,388786
Alicante,1838819
Almería,709340
Álava,328868
Asturias,1028244
Ávila,158498
Badajoz,676376
Islas Baleares,1128908
Barcelona,5609350
Bizkaia,1149628
Burgos,357070
Cáceres,396487
Cádiz,1238714
Cantabria,580229
Castellón,576898
Ciudad Real,499100
Córdoba,785240
Cuenca,197222
Gipuzkoa,720592
Girona,761947
Granada,912075
Guadalajara,254308
Huelva,519932
Huesca,219345
Jaén,638099
```



```
La Rioja,315675
Las Palmas,1109175
León,463746
Lleida,432866
Lugo,331327
Madrid,6578079
Málaga,1641121
Murcia,1478509
Navarra,647554
Ourense,309293
Palencia,162035
Pontevedra,941772
Salamanca,331473
Santa Cruz de Tenerife,1018510
Segovia,153342
Sevilla,1939887
Soria,88600
Tarragona,795902
Teruel,134572
Toledo,687391
Valencia,2547986
Valladolid,519851
Zamora,174549
Zaragoza,954811
Ceuta,85144
Melilla,86384
```