



VNIVERSITAT ID VALÈNCIA

STRUCTURES Laboratory

DATA AND ALGORITHMS

Degree in Data Science (1st)

Academic year 2023-24

Practice No. 3: Object-oriented programming

Classroom exercise (L1)

(It is assumed that the previous work indicated in the script has been done: implementation and verification of the class `Airport`).

A program must be written, called "pr3_final.py", that allows for a country review of airports around the world. For this, the file "airports.csv", which contains the real data of 7,698 international airports. The file data must be loaded into a list (of `Airports`). Each line of this file contains information about an airport in the format:

ID;Name;City;Country;IATA;ICAO;Latitude;Longitude;Altitude;Timezone;DST

As always happens when dealing with real data, there are almost 200 lines in the file with some type of validation failure (see practice script). Therefore, the file must be read in such a way that the airports that meet all the validation criteria are stored in the list, but those that contain an error are not stored. To carry out this process the function will be of great help `AssignValues`, included in the program "pr3_test.py", which allows generating an airport from a line of text with the indicated format and which throws an exception when it detects a format error (if the class has been implemented correctly).

Very important: Make sure the string (file line) passed to the function `AssignValues` does not contain the end-of-line character. If you don't do this, a DST field validation error will be thrown.

Once the data is loaded into the list, the program must request the name of a country (the data is in English) and generate a list with the airports of that country. The program must display the number of airports found on the screen and record them in a file.csv the data for those airports, with the same format as the data file (including the header). The file name will be the string "country_" followed by the name of the country. For example, if the country name is "Spain", the file name will be "country_Spain.csv".

(Test bank on next page)

The first line is an informational header.

Test bank for country = "Spain"

- Airports read correctly:7,527
- Number of airports in Spain:64
- First and last lines of the file "country_Spain.csv":

```
ID;Name;City;Country;IATA;ICAO;Latitude;Longitude;Altitude;Timezone;DST 1051;Fuerteventura
Airport;Fuerteventura;Spain;FUE;GCFV;28.45269966;-13.86380005;85.0;0.0;E 1052;Hierro
Airport;Hierro ;Spain;VDE;GCHI;27.81480026;-17.88710022;103.0;0.0;E
1053;La Palma Airport;Santa Cruz De La Palma;Spain;SPC;GCLA;28.626499;-17.7556;107.0;0.0;E 1054;Gran
Canaria Airport;Gran Canaria;Spain;LPA;GCLP;27.93190002;-15.38659954;78.0; 0.0;E 1055;Lanzarote
Airport;Arrecife;Spain;ACE;GCRR;28.945499;-13.6052;46.0;0.0;E 1056;Tenerife South
Airport;Tenerife;Spain;TFS;GCTS;28.04450035;-16.57250023;209.0;0.0;E 1057;Tenerife Norte
Airport;Tenerife;Spain;TFN;GCXO;28.48270035;-16.34149933;2076.0;0.0;E 1058;Melilla
Airport;Melilla;Spain;MLN;GEML;35.27980042;-2.956259966;156.0;1.0; E 1211;Albacete -Los Llanos
Airport;Albacete;Spain;ABC;LEAB;38.94850159;-1.863520026;2302.0; 1.0;E

1212;Alicante International Airport;Alicante;Spain;ALC;LEAL;38.28219986;-0.558156013;142.0; 1.0;E

...

7488;Huesca/Pirineos Airport;Huesca;Spain;HSK;LEHC;42.0760994;-0.316666991;1768.0;1.0;U 7489;Ciudad Real
Central Airport;Ciudad Real;Spain;CQM;LERL;38.85638889;-3.97;0.0;1.0; U 7731;La Cerdanya Airport;Das i
Fontanals de Cerdanya;Spain;\N;LECD;42.38639832;1.866670012; 3586.0;1.0;E

8690;Fuentemilanos Airport;Segovia;Spain;\N;LEFM;40.88861084;-4.237500191;3307.0;1.0;E 9484;Central Bolívar
Airport;Sevilla;Spain;\N;SVSJ;8.916666985;-71.93333435;39.0;-4.0 ;E 11878;Cuatro Vientos
Airport;Madrid;Spain;ECV;LECU;40.370701;-3.78514;2269.0;0.0;\N 11879;Castellón-Costa Azahar Airport;Castellón
de la Plana;Spain;CDT;LEDS;40.213889; 0.073333;1145.0;0.0;\N

11880;Teruel Airport;Teruel;Spain;TEV;LETL;40.403;-1.2183;3380.0;0.0;\N 13677;Algeciras
Heliport;Algeciras;Spain;AEI;LEAG;36.12888;-5.441118;98.0;-2.0;E 13829; Region of Murcia International
Airport;Murcia;Spain;RMU;LEMI;37.803;-1.125;632.0;1.0;E
```