**Implementing a class**

**Step 1.**

In order to implement a class, the first step is to list the responsibilities of the objects. In this case, our **Country** class should have these responsibilities:

1. Display the menu.
2. Get user input (name, population and area)
3. Store the list of countries and its attributes.
4. Calculate the country with largest area.
5. Calculate the country with the largest population.
6. Calculate the country with the largest population density.

**Step 2**

The second step, is to specify the public interface of the **Country**, in these case there are 6 methods to be implemented in the public interface:

Texto

Descripción generada automáticamente

**Step 3**

Every method and class is documented as follows:

Texto

Descripción generada automáticamente

And for each of the 6 methods, the comment goes as follows:

Texto, Sitio web

Descripción generada automáticamente

**Step 4**

In this case, since the **Country** has a name, an area and a population, these 3 attributes are created as instance variables:

1. \_name
2. \_population
3. \_area

In addition to the instance variables, two additional class variables are created to store the information of each country, one as a dictionary and the other one as a list:

a. \_dictCountries

b. \_listCountries

**Step 5**

In the constructor of the class, the instances and class variables are initialized:

Texto

Descripción generada automáticamente

**Step 6**

After the constructor is implemented, each of the 6 methods are created. In this case, the implementation is the same for each method. Since we are looking for a maximum, each method will have two auxiliary variables to store the local max and the name of the country.

Texto

Descripción generada automáticamente

Depending on the type (dictionaries or lists) slight differences are made:

Texto

Descripción generada automáticamente

**Step 7**

Finally, in order to test the class, a different python script is used to test the class in isolation. To do this correctly, the argparse method is used and a demo is implemented:

Texto

Descripción generada automáticamente

After executing the demo, the results show that all the test performed have passed:

Interfaz de usuario gráfica, Texto

Descripción generada automáticamente

Interfaz de usuario gráfica, Aplicación

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