# CS 115 - Introduction to Programming in Python

# Lab Guide 07

**Lab Objectives:** Classes

**Notes:**

1. Upload your solutions as **a single .zip file** to the Lab07 assignment for your section on Moodle. You must use the following naming convention: Lab07\_Surname\_FirstName.zip where Surname is your family name and FirstName is your first name.
2. You should only use functionality covered in CS115 in your solution.
3. Include a docstring for your functions.
4. Write a class called Nation (**Nation.py**) that represents a typical **Nation** object.

The class will store the following attributes:

* + - country
    - continent
    - life expectancy for men
    - life expectancy for women

Note that all data attributes should be private ( \_\_ ).

* 1. Your class should have an **init()** methodthat takes the values of all four attributes as parameters.
  2. Your class should have the following methods:
     + get\_country: returns the country
     + get\_continent: returns the continent
     + get\_life\_men: returns the life expectancy for men
     + get\_life\_women: returns the life expectancy for women

1. Write a method calculate\_average which returns the average life expectancy of men and women.
   1. Write the special method **\_\_lt\_\_** which will check the country names of two **Nation** objects and return either **True** or **False**.
2. Your class should define an **\_\_str\_\_** method and a **\_\_repr\_\_** method according to the output.
3. Create a Python script that does the following:
   1. Implement the read\_file method which receives the file name and returns a dictionary which contains the country names as keys and nation objects as the values. (First examine the data file format)
4. Write the global scope:
   1. Read the contents of the file **‘country.txt’** into dictionary d using the above read\_file function
   2. Input a country name and display its information.
   3. Input a continent name and put the nation objects in that continent into a list **selected**.
   4. Sort the **selected** list according to the country names.
   5. Display the sorted list.

**Sample Run:**

Enter a country: Turkey

Country:Turkey

Continent: Asia

Average Life Expectancy: 69.1

Enter a continent: Europe

Countries in Europe :

[Country:Bulgaria

Continent: Europe

Life Expectancy for Males: 67.8

Life Expectancy for Females: 74.9

, Country:Czech.Republic

Continent: Europe

Life Expectancy for Males: 69.8

Life Expectancy for Females: 72.3

, Country:Denmark

Continent: Europe

Life Expectancy for Males: 73.0

Life Expectancy for Females: 78.3

, Country:Finland

Continent: Europe

Life Expectancy for Males: 73.0

Life Expectancy for Females: 80.1

, Country:France

Continent: Europe

Life Expectancy for Males: 74.6

Life Expectancy for Females: 82.9

, Country:Germany

Continent: Europe

Life Expectancy for Males: 73.4

Life Expectancy for Females: 79.9

, Country:Greece

Continent: Europe

Life Expectancy for Males: 75.5

Life Expectancy for Females: 80.6

, Country:Hungary

Continent: Europe

Life Expectancy for Males: 64.5

Life Expectancy for Females: 73.8

, Country:Iceland

Continent: Europe

Life Expectancy for Males: 77.4

Life Expectancy for Females: 81.2

, Country:Ireland

Continent: Europe

Life Expectancy for Males: 74.0

Life Expectancy for Females: 79.4

, Country:Italy

Continent: Europe

Life Expectancy for Males: 75.1

Life Expectancy for Females: 81.4

, Country:Malta

Continent: Europe

Life Expectancy for Males: 74.6

Life Expectancy for Females: 79.1

, Country:Netherlands

Continent: Europe

Life Expectancy for Males: 75.0

Life Expectancy for Females: 80.6

, Country:Norway

Continent: Europe

Life Expectancy for Males: 74.8

Life Expectancy for Females: 80.6

, Country:Poland

Continent: Europe

Life Expectancy for Males: 66.7

Life Expectancy for Females: 75.7

, Country:Portugal

Continent: Europe

Life Expectancy for Males: 71.8

Life Expectancy for Females: 78.9

, Country:Romania

Continent: Europe

Life Expectancy for Males: 66.0

Life Expectancy for Females: 73.2

, Country:Russia

Continent: Europe

Life Expectancy for Males: 58.0

Life Expectancy for Females: 71.5

, Country:Slovakia

Continent: Europe

Life Expectancy for Males: 67.0

Life Expectancy for Females: 75.8

, Country:Slovenia

Continent: Europe

Life Expectancy for Males: 69.2

Life Expectancy for Females: 77.8

, Country:Spain

Continent: Europe

Life Expectancy for Males: 74.5

Life Expectancy for Females: 81.5

, Country:Sweden

Continent: Europe

Life Expectancy for Males: 76.2

Life Expectancy for Females: 80.8

, Country:Switzerland

Continent: Europe

Life Expectancy for Males: 75.3

Life Expectancy for Females: 81.8

, Country:United.Kingdom

Continent: Europe

Life Expectancy for Males: 74.5

Life Expectancy for Females: 79.8

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