# CS 115 - Introduction to Programming in Python

# Lab Guide 07

**Lab Objectives:** Classes

1. Write a class called Country which represents country data. All data should be hidden (\_\_)
   1. The class will store the following attributes:
      * cname – name of the country
      * region – region/continent of the country
      * education – average education level of males and females
      * literacy – average literacy rate of males and females
      * expectancy – average life expectancy level of males and females
   2. Your class should have **an init() method** that takes the values of all five attributes as parameters.
   3. Your class should have get methods for all attributes and set methods for everything except country name and region.
   4. In addition to the above methods, your class should define the following special methods:
      * \_\_repr\_\_ method. See sample output for format of a Country string.
      * \_\_lt\_\_ method. A country is less than another based on the alphabetic region, (A-Z). If two countries have the same region the life expectancy is compared (less than if life expectancy is lower).
2. Create an application that does the following:
   1. Create an empty list to store Countries.
   2. Read the data from the file countries.txt, and for each line in the file, create a Country and add it to the list. The fields in the file are in the following order: country\_name, region, education\_males, education\_females, life\_expectancy\_males, education\_males, education\_females, illiteracy\_males (rate of illiterate males), illiteracy\_females (rate of illiterate females).

**Note 1:** you can calculate the simple averages by dividing the sum of the male and female rates by 2.

**Note 2:** The countries store the literacy rates, however the file contains illiteracy rates.

* 1. Sort the list of countries and display the sorted list.
  2. Input a region and life expectancy limit from the user, and display all countries in the list, in the given region with life expectancy over the given limit.
  3. Display the average literacy rate for all countries in the given region.

**Sample Run:**

Sorted list of countries:

[

Burkina.Faso(Africa):

Life Expectacy: 46.05

Literacy Rate: 19.35

Education Rate: 2.65,

Burundi(Africa):

Life Expectacy: 47.15

Literacy Rate: 35.90

Education Rate: 4.55,

Gambia(Africa):

Life Expectacy: 47.05

Literacy Rate: 38.85

Education Rate: 5.05,

Egypt(Africa):

Life Expectacy: 66.00

Literacy Rate: 51.20

Education Rate: 9.80,

Malawi(Africa):

Life Expectacy: 40.70

Literacy Rate: 56.85

Education Rate: 10.45,

Algeria(Africa):

Life Expectacy: 68.90

Literacy Rate: 61.45

Education Rate: 10.50,

Botswana(Africa):

Life Expectacy: 50.30

Literacy Rate: 70.20

Education Rate: 10.60,

Swaziland(Africa):

Life Expectacy: 60.00

Literacy Rate: 76.80

Education Rate: 11.15,

South.Africa(Africa):

Life Expectacy: 65.30

Literacy Rate: 81.80

Education Rate: 13.10,

Nicaragua(America):

Life Expectacy: 68.20

Literacy Rate: 65.60

Education Rate: 9.15,

El.Salvador(America):

Life Expectacy: 69.50

Literacy Rate: 71.65

Education Rate: 9.75,

Belize(America):

Life Expectacy: 74.75

Literacy Rate: 77.64

Education Rate: 10.50,

Dominican.Republic(America):

Life Expectacy: 71.00

Literacy Rate: 82.10

Education Rate: 11.20,

Jamaica(America):

Life Expectacy: 74.60

Literacy Rate: 84.95

Education Rate: 10.95,

Peru(America):

Life Expectacy: 68.40

Literacy Rate: 88.75

Education Rate: 12.35,

Venezuela(America):

Life Expectacy: 72.85

Literacy Rate: 91.05

Education Rate: 10.45,

Paraguay(America):

Life Expectacy: 69.75

Literacy Rate: 92.05

Education Rate: 9.15,

Chile(America):

Life Expectacy: 75.30

Literacy Rate: 95.20

Education Rate: 11.75,

Cuba(America):

Life Expectacy: 76.10

Literacy Rate: 95.75

Education Rate: 11.30,

United.States(America):

Life Expectacy: 76.75

Literacy Rate: 97.76

Education Rate: 15.80,

Trinidad.and.Tobago(America):

Life Expectacy: 73.85

Literacy Rate: 97.90

Education Rate: 10.70,

Bahamas(America):

Life Expectacy: 73.80

Literacy Rate: 98.25

Education Rate: 12.65,

Iraq(Asia):

Life Expectacy: 62.40

Literacy Rate: 57.85

Education Rate: 8.25,

Kuwait(Asia):

Life Expectacy: 76.15

Literacy Rate: 78.55

Education Rate: 9.00,

Qatar(Asia):

Life Expectacy: 72.70

Literacy Rate: 79.55

Education Rate: 11.10,

Turkey(Asia):

Life Expectacy: 69.10

Literacy Rate: 82.05

Education Rate: 9.65,

Indonesia(Asia):

Life Expectacy: 65.15

Literacy Rate: 83.80

Education Rate: 9.95,

Bahrain(Asia):

Life Expectacy: 73.20

Literacy Rate: 84.25

Education Rate: 12.95,

Hong.Kong(Asia):

Life Expectacy: 78.95

Literacy Rate: 92.10

Education Rate: 12.65,

Philippines(Asia):

Life Expectacy: 68.40

Literacy Rate: 94.65

Education Rate: 11.00,

Korea.Republic.of(Asia):

Life Expectacy: 72.40

Literacy Rate: 98.00

Education Rate: 14.50,

Georgia(Asia):

Life Expectacy: 72.60

Literacy Rate: 99.55

Education Rate: 10.25,

Portugal(Europe):

Life Expectacy: 75.35

Literacy Rate: 89.75

Education Rate: 14.30,

Spain(Europe):

Life Expectacy: 78.00

Literacy Rate: 97.15

Education Rate: 15.50,

Romania(Europe):

Life Expectacy: 69.60

Literacy Rate: 97.90

Education Rate: 11.45,

Hungary(Europe):

Life Expectacy: 69.15

Literacy Rate: 99.15

Education Rate: 12.45,

Latvia(Europe):

Life Expectacy: 68.40

Literacy Rate: 99.75

Education Rate: 11.40,

Estonia(Europe):

Life Expectacy: 69.45

Literacy Rate: 99.80

Education Rate: 12.55,

Samoa(Oceania):

Life Expectacy: 69.30

Literacy Rate: 98.25

Education Rate: 11.55]

Enter region: Europe

Enter life expectancy: 70

Countries in Europe with life expectancy above 70.0

Portugal

Spain

Average Literacy in Europe : 97.2