

Programming Project 05

This assignment is worth 45 points (4.5% of the course grade) and must be **completed and turned in before 11:59 on Monday, February 19, 2018.**

Assignment Overview

This assignment involves coding and testing of a program that reads input files, and uses strings and functions to search through the file and print happiness scores of matching countries.

Assignment Background

The *World Happiness Report* is a survey of the state of global happiness. The report gets released each year at the United Nations at an event celebrating International Day of Happiness. For this project we are using the 2017 world happiness data which you can download from <http://worldhappiness.report/> or <https://www.kaggle.com/unsdsn/world-happiness/>

We modified the data file and provided `data.csv` to use for this project.

Project Description

Your program must prompt for a file name at program start and open it to read. Then prompt the user to search in country name or region. Finally prompt for a keyword to search. The program should read the file line by line and print the matching results. At the end, the program should print the average happiness scores of the printed results.

The data file has multiple columns and we use only the first three in this project: country, region and happiness score.

You have to use the four functions in the provided `proj05.py` skeleton. You have to implement and use the following:

1. `open_file()` : Prompts for a file name and opens it. Returns a file pointer. Keeps looping until a file is successfully opened.
Use try-except and `FileNotFoundError`.
2. `read_data(fp, input_str, search_str)` : Has three parameters, file pointer `fp`, the input string `input_str` which is either "1" or "2", and the keyword `search_str`. It reads through the file and calls `display_line` function for every line that contains the `search_str` for the specified `input_str` field ("1" for country; "2" for region). After printing all lines, an average happiness score for those selected countries is printed. This function doesn't return any values.
3. `display_line(country_name, region_name, happiness_score)` : Has three inputs, country name, region and happiness score. It prints the values using the provided formatting. This function doesn't have a return value.
4. `main()` : The main function doesn't have any parameters and doesn't return any values. It is responsible for prompting the user for inputs and calling the appropriate functions.

Assignment Deliverable

The deliverable for this assignment is the following file:

proj05.py – the source code for your Python program

Be sure to use the specified file name and to submit it for grading via the **Mimir** before the project deadline.

Assignment Notes

1. To clarify the project specifications, sample output is appended to the end of this document.
2. Items 1-9 of the Coding Standard will be enforced for this project.
3. Use a `while` loop in `open_file` function to loop again if the file fails to open. To check if the file opened correctly use a `try-except` statement.
4. When the program prompts the user to input either “1” or “2”, it should check the input and print an error message and prompt the user for another input in case of an error. This should be done in a `while` loop as the user might enter a wrong value multiple times.
5. You should print the happiness scores with two decimal places. (Use the provided formatting)
6. The search is not case sensitive, so if user enters “united”, the program should match “United” and “united”.
7. You may not use advanced data structures such as dictionaries or classes for this project—no credit if you do. (Note that at this point you likely don’t recognize those terms because they are covered later in the course.)

Test Cases

Test 1

Input a file name: data.csv

Input 1 to search in country names, 2 to search in regions: 1

What do you want to search for? united

Country	Region	Happiness Score

United States	North America	7.10
United Kingdom	Western Europe	6.72
United Arab Emirates	Middle East and Northern Africa	6.57

Average Happiness Score		6.80

Test 2

Input a file name: data.csv

Input 1 to search in country names, 2 to search in regions: 2

What do you want to search for? west

Country	Region	Happiness Score

Denmark	Western Europe	7.53
Switzerland	Western Europe	7.51
Iceland	Western Europe	7.50
Norway	Western Europe	7.50
Finland	Western Europe	7.41
Netherlands	Western Europe	7.34

Sweden	Western Europe	7.29
Austria	Western Europe	7.12
Germany	Western Europe	6.99
Belgium	Western Europe	6.93
Ireland	Western Europe	6.91
Luxembourg	Western Europe	6.87
United Kingdom	Western Europe	6.72
Malta	Western Europe	6.49
France	Western Europe	6.48
Spain	Western Europe	6.36
Italy	Western Europe	5.98
North Cyprus	Western Europe	5.77
Cyprus	Western Europe	5.55
Portugal	Western Europe	5.12
Greece	Western Europe	5.03

Average Happiness Score		6.69

Test 3

Input a file name: test.txt
 Unable to open the file. Please try again.

Input a file name: test.csv
 Unable to open the file. Please try again.

Input a file name: data.csv

Input 1 to search in country names, 2 to search in regions: 1

What do you want to search for? states

Country	Region	Happiness Score

United States	North America	7.10

Average Happiness Score		7.10

Test 4

Input a file name: data.csv

Input 1 to search in country names, 2 to search in regions: 3
 Invalid choice, please try again!

Input 1 to search in country names, 2 to search in regions: 0
 Invalid choice, please try again!

Input 1 to search in country names, 2 to search in regions: file.txt
 Invalid choice, please try again!

Input 1 to search in country names, 2 to search in regions: data.csv
 Invalid choice, please try again!

Input 1 to search in country names, 2 to search in regions: 1

What do you want to search for? united

Country	Region	Happiness Score
United States	North America	7.10
United Kingdom	Western Europe	6.72
United Arab Emirates	Middle East and Northern Africa	6.57
Average Happiness Score		6.80

Test 5

This test is a blind test. You do not get to see input or output.

Grading Rubric

5 pts	Coding Standard (descriptive comments, mnemonic identifiers, format, etc...)
8 pts	Test 1, search in country
8 pts	Test 2, search in region
8 pts	Test 3, error checking for file
8 pts	Test 4, error checking for input (1 or 2)
8 pts	Test 5 (Blind test)