09 Team Activity: CSV Files

Instructions

Arrange a one hour synchronous meeting with your team for this activity. Online students should coordinate a video-sharing meeting. Campus students will use class time for this meeting. You should prepare for this meeting by completing the preparation material and the individual checkpoint assignment beforehand.

Problem Statement

A common task for many knowledge workers is to use a number, key, or ID to find information about a person. For example, a knowledge worker may use a phone number or e-mail address as a key to find (or look up) additional information about a customer. During this activity, your team will write a Python program that uses a student's I-Number to look up the student's name.

Helpful Documentation

- This article explains how to setup VS Code so that your Python program can read from text files.
- The prepare content for this lesson includes a section about reading CSV files.
- The prepare content for lesson 8 explains how to use dictionaries.
- A program can call the string replace method to replace all occurrences of a character with another character or to remove all occurrences of a character by replacing them with the empty string ("").

Assignment

Download the `students.csv` file and save it in the same folder where you will save your Python program. Open the file in VS Code and examine it. Notice that the I-Numbers and names in the file are separated by a comma. Notice also that the I-Numbers are stored in the file without any dashes between the digits.

Core Requirements

Write a Python program named `students.py` that does the following:

1. Opens the `students.csv` file for reading, skips the first line of text in the file because it contains only headings, and reads the other lines of the file into a dictionary. The program must store the student I-Numbers as keys and the student names as values in the dictionary.
2. Gets an I-Number from the user, uses the I-Number to find the corresponding student name in the dictionary, and prints the name.
3. If a user enters an I-Number that doesn't exist in the dictionary, your program must print the message, "No such student" (without the quotes).

Stretch Challenges

If your team finishes the core requirements in less than an hour, complete one or more of these stretch challenges. Note that the stretch challenges are optional.

1. Add code to remove dashes from the I-Number that the user enters. This will allow the user to enter I-Numbers with dashes or without dashes and still allow the computer to search in the dictionary.

2. When a user enters an I-Number, your program should ensure it is a valid I-Number.
    a. If there are too few digits in the I-Number, your program should print, "Invalid I-Number: too few digits" (without the quotes).
    b. If there are too many digits in the I-Number, your program should print, "Invalid I-Number: too many digits" (without the quotes).
    c. If the given I-Number contains any characters besides digits and dashes, your program should output "Invalid I-Number" (without the quotes).

3. Add something or change something in your program that you think would make your program better, easier for the user, more elegant, or more fun. Be creative.

Testing Procedure

Verify that your program works correctly by following each step in this testing procedure:

1. Download the `test_students.py` Python file and save it in the same folder where you saved your `students.py` program. Run the `test_students.py` file and ensure that the `test_read_dict` function passes. If it doesn't pass, there is a mistake in your `read_dict` function. Read the output from `pytest`, fix the mistake, and run the `test_students.py` file again until the test function passes.

```
> python test_students.py
====================== test session starts ========================
platform win32--Python 3.8.6, pytest-6.1.2, py-1.9.0, pluggy-0.13.
rootdir: C:\Users\cse111\lesson07
collected 1 item

test_students.py::test_students PASSED                      [100%]

======================= 1 passed in 0.12s ========================
```

2. Run your program and enter the inputs shown below. Ensure that your program's output matches the output below.

```
> python students.py
Please enter an I-Number (xxxxxxxxx): 551234151
No such student

> python students.py
Please enter an I-Number (xxxxxxxxx): 751766201
James Smith
```

3. Run your program and enterh this I-Number as input: `00-115-2306` (including the dashes). Many users will want to enter I-Numbers with dashes. How should your program handle the dashes?

4. Run your program and enter an I-Number with too few digits or too many digits. How should your program handle these invalid I-Numbers?

Sample Solution

Please work diligently with your team for the one hour meeting. After the meeting is over, please compare your approach to the sample solution [↓]. Please *do not look at the sample solution* until you have either finished the program or diligently worked for at least one hour. At the end of the hour, if you are still struggling to complete the assignment, you may use the sample solution to help you finish.

Submission

When you have finished the activity, please report your progress via the associated I-Learn quiz. When asked about which of the requirements you completed, feel free to include any work done during the team meeting or after the meeting, including work done with the help of the sample solution, if necessary. In short, report on what you were able to accomplish, regardless of when you completed it or if you needed help from the sample solution.