CS 152: Files

CS 152: Python for STEM

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Weekly Announcements!

TODO Reminders:

- Reading 9 (zybooks) – you should have already done that ☺
- Lab 06
- Reading 10 (zybooks) – you should have already done that ☺
- Lab 07
- Reading 11 (zybooks)

Recall Activity

- Write at least three concepts that you remember from your readings regarding Files in Python.
- Write your answer in our today's attendance assignment.

Reading entire .txt files

- Understanding the readEntireTxtFile function

```
def readEntireTxtFile(name):
    f = open(name);
    contents = f.read();
    f.close();
    return contents
```

Reading entire .txt files with “with”

- Understanding the readEntireTxtFileWith function

```
def readEntireTxtFileWith(name):
    with open(name, 'r') as f:
        contents = f.read()
    return contents
```

Comparing Solutions for Reading entire .txt

```
def readEntireTxtFile(name):
    f = open(name);
    contents = f.read();
    f.close();
    return contents
```

```
def readEntireTxtFileWith(name):
    with open(name, 'r') as f:
        contents = f.read()
    return contents
```

Reading each line in .txt files

- Understanding the readEachLineTxtFile function

```
def readEachLineTxtFile(name):
    f = open(name);
    lines = f.readlines()
    f.close()
    return lines
```

Write the readEachLineTxtFileWith function

Writing in .txt files

```
def writeTextFile(name, anyString):
    f = open(name, 'w')
    f.write(anyString)
    f.close()
```

```
def writeTextFileWith(name, anyString):
    with open(name, 'w') as f:
        f.write(anyString)
```

Modes for opening files

Mode	Description	Allow read?	Allow write?	Create missing file?	Overwrite file?
'r'	Open the file for reading.	Yes	No	No	No
'w'	Open the file for writing. If file does not exist then the file is created. Contents of an existing file are overwritten.	No	Yes	Yes	Yes
'a'	Open the file for appending. If file does not exist then the file is created. Writes are added to end of existing file contents.	No	Yes	Yes	No

Reading csv files

```
import csv
def readCSVFile(name):
    with open(name, 'r') as csvfile:
        name_ages = csv.reader(csvfile, delimiter=',')
        row_num = 1
        for row in name_ages:
            print(f'Row #{row_num}:', row)
            row_num += 1
```

Writing csv files with append

- Understanding the writeCSVFile function
  - Rows is a list of a list ☺ we will work more on that
    - rows = [["Julia", "18"], ["Anton", "19"]]
  - open function has 3 parameters: name of the file, mode for open the file – a – append, newline=‘’ does not add a blank line in the csv file, between rows that are being appended

```
def writeCSVFile(name, rows):
    with open(name, 'a', newline='') as csvfile:
        name_ages = csv.writer(csvfile)
        for row in rows:
            name_ages.writerow(row)
```

Coding Along

- Write a Python function that receives the lines of a file as a parameter and calculates and prints the sum of each line.
- To do this we will need to use the following additional functions:
  - split() – split a string into a list (https://www.w3schools.com/python/ref_string_split.asp)
  - replace(oldValue, newValue) – removes the oldValue and substitute for a newValue in a string (https://www.w3schools.com/python/ref_string_replace.asp)
- Download the fileExamples.py file from Canvas, that file already has reading and writing functions to work with files

Coding Activity

- With a Peer:
  - Write a Python function that receives the name of a csv file, reads the content of the file and calculate the sum and average of the years old data.
  - Consider that the csv file has the following format.
- Tip: rewrite the readCSVFile function provided in Canvas.

name	years_old
Anna	18
John	17
Clara	17
Oliver	18
Julia	18
Anton	19