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PYTHON LAB

ZIM - READING FILES

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Overview & Introduction

- Task: read in a text file, and parse and manipulate the lines of the text file
- This lesson and Lab is to bring together the basic Python constructs, including:
  - File I/O (reading a text file
  - Conditional IF statements
  - For loops
  - While Loops
- Using Top Down design flow to break a coding problem down

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SEE APPENDIX A, FOR LICENSING & ATTRIBUTION INFORMATION

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Resources & Materials Needed

- Raspberry Pi or Laptop to with Python 3 installed and updated
- Interactive Notebook or Google doc to create Top Down design flow diagram

WHAT YOU WILL KNOW…

- Prior Knowledge
  - How to open and run Python on a Raspberry Pi or other device
  - Familiarity with Python constructs like if, elif, else, while, for loops
  - Debugging skills to break down a python coding challenge

- What You Will Know & Be Able To Do
  - Use your Debugging skill to construct a top down flowchart to describe the python coding challenge
  - Impalement Python code to solve the coding challenge
  - Describe to classmates how you solved the coding challenge

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How will you be measured

- Individual Students will submit working code, which will be graded
- Students teams will present diagram of Top Down design flow chart, and this will be graded
- Students teams will present orally how they solved the coding challenge, and depth of understanding will be graded

Introduction - The Coding Task

- Open a text file, and print the file handle
- While loop through each line of the file
  - Count the number of lines of code
  - Count the number of characters in the file
  - Search for and count specific key words
  - Print results

Identify the smaller tasks of this challenge, and create a modular flow diagram
Implement the code in a modular function based method that will allow for easy modification

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First Challenge - Open a File

- Challenge 1: - Open the text file zimTextFile.txt
- Print the file handle information

```
STEAM-Clown@STEAM-Clown-PC ~/myPython
$ python3 zim.py
<_io.TextIOWrapper name='zimTextFile.txt' mode='r' encoding='UTF-8'>

STEAM-Clown@STEAM-Clown-PC ~/myPython
$
```

- If you need to, please review the PY4E chapter 7 presentation Pythonlearn-07-Files.pdf

Hint:

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Challenge 2- Count the number of lines

- Count the number of lines in the file

```
STEAM-Clown@STEAM-Clown-PC ~/myPython
$ python3 zim.py
<_io.TextIOWrapper name='zimTextFile.txt' mode='r' encoding='UTF-8'>
the number of lines in this file is  1063

STEAM-Clown@STEAM-Clown-PC ~/myPython
$
```

Hint:

Challenge 3- Count the number of characters in the file

- In the last challenge you were able to count each line.
- Now also count each character of each line, add then up and print out the total

Hint:

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Challenge 4- Log for a specific key word

- Count up all the instances of the word “Zim”

```
STEAM-Clown@STEAM-Clown-PC ~/myPython
$ python3 zim.py
<_io.TextIOWrapper name='zimTextFile.txt' mode='r' encoding='UTF-8'>
The number of lines in this file is  1063
The number of "Zim" found is  879

STEAM-Clown@STEAM-Clown-PC ~/myPython
$
```

- How many line start with “Zim:”?

Hint: if you need help understanding the median see: https://www.khanacademy.org/

Challenge 5 – How many emails are in the file

- Count the number if emails and print the line they are fount in

Hint:

Challenge 6 – Extract the Emails

- Now that you have counted and printed the emails, can you extract them and just print the email?
  - You will need to use methods like .rstrip, .strip, etc to find and extract them from the line they are found in

Hint:

ASSESSMENT

- Assessment Type(s):
  - ✓Demonstrations
  - ✓Rubrics

Turn in

1. Link to Code (this can be github, google docs, or upload txt files

NOT a PDF

- C = working challenge 1 code
- C+ = working challenge 2 code
- B- = working challenge 3 code
- B = working challenge 4 code
- B+ = working challenge 5 code
- A = working challenge 6 code

+1 extra point = get user input for the file to read

REFERENCE SLIDES

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APPENDIX

Appendix A: License & Attribution

- This interpretation is primarily the Intellectual Property of Jim Burnham, Top STEAM Clown, at STEAMClown.org
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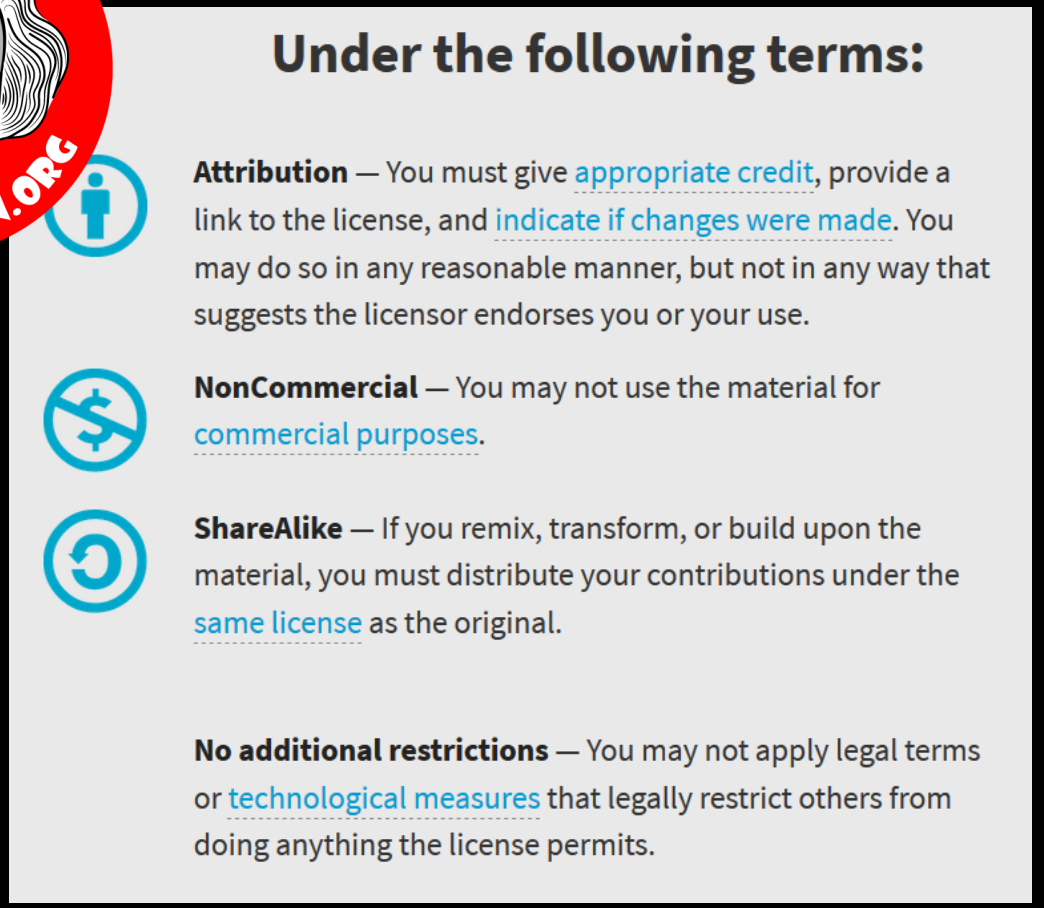
- My best attempt to properly attribute, or reference any other sources or work I have used are listed in Appendix B



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Appendix B: Attribution for Sources Used

WHAT TO FIX FOR NEXT TIME