CSCE 1035 Lab 12 Fall 2021

1. **zyBooks Labs**

   Please follow the link on Canvas to complete the following zyBooks labs:

   - 12.8 *LAB: Words in a range (lists)*
   - 12.9 *LAB: Word frequencies (lists)*
   - 12.10 *LAB: Sorting TV Shows (dictionaries and lists)*
   - 16.10 *LAB: Descending selection sort with output during execution*

2. **File IO using try-finally**

   In this component of the lab, you will write a small, but complete Python 3 program called **`Lab12A.py`** that reads in a cvs file and creates an output file using data from the input file. It will use nested try-catch-finally blocks to handle closing files.

   a. Create a file with the following text called **in12.csv**:

```
1,2,3
3,4,5,7,
7,8,9
```

   b. Import sys. It will to be used to read command line arguments.

   c. Use an if statement to check that the user included exactly 2 command line arguments. If the number of command line arguments are not equal to 2 print out an appropriate message and exit the program

   d. Open the input file using the first command line argument as the name of the file.

   e. Create an outer try-except-finally block

      i. Inside the outer try block, open an output file using the second command line argument as the file name.

      ii. Create an inner try-finally block

         1. Inside the inner try block use a for loop to read in each line from the input file.

         2. For each line in the file do the following

            a. Using strip remove the trailing newline from the input text.

            b. Split the line into a list using comma as the delimiter

            c. In a loop of your choice determine the product of the numbers.

            d. Using join concatenate the list into a string with an asterix (*) as the delimiter.

            e. Append '=' and the product calculated in step b.

            f. Write this string to the output file.

3. In the inner finally block, close the output file and print a message that the file was closed.

iii. Add an exception block to the outer try block, which prints any error messages

iv. In the outer finally block, close the input file and print a mess that the file was closed.

f. List the file by using the cat command as shown in the example.

For example, the output might look like this (input shown in **bold**):

```
$ python3 Lab12A.py
usage: lab12A inputfile outputfile

$ python3 Lab12A.py in12.csv out12A.txt
Close Output
Close Input
$ cat out12A.txt
1*2*3=6
3*4*5*7=420
7*8*9=504
```

3. File IO using with

In this component of the lab, you will write a small, but complete Python 3 program called **Lab12B.py** that reads in a cvs file and creates an output csv file using data from the input file. This time we will be using the with block to close the files at the end. We will also use the csv module to open read and write csv files.

a. We will use the same input file **in12.csv** from Lab12A:

b. Import sys. It is used to read command line arguments.

c. Import csv. It is used to read and write csv files.

d. Use an if statement to check that the user included exactly 2 command line arguments. If the number of command line arguments are not equal to 2 print out an appropriate message and exit the program

e. Create a try-except block.

i. In the except block print out any errors that occur

ii. In the try block create an outer with file open block to open an input file using the first command line argument as the file name.

1. Create a csv reader from the input file that was just opened

2. Create an inner with file open block to open an output file using the second command line argument as the file name.

a. Create a csv writer from the output file just opened.

b. Using a for loop read each line from the csv reader. The reader will return a list for each line.
    i. In a loop of your choice determine the product of the items read in the list.
    ii. Copy this list to a new list called outvalues.
    iii. Append the product to this list.
    iv. Using csv writerow, write this new list to the output file.

For example, the output might look like this (input shown in **bold**):

```
$ python3 Lab12B.py
usage: lab12A inputfile outputfile

$ python3 Lab12B.py in12.csv out12B.csv
$ cat out12A.txt
1,2,3.6
3,4,5,7,420
7,8,9,504
```

Now that you have completed this lab, it's time to turn in your results. Once you've moved the files to your windows machine (using **WinSCP**), you may use the browser to submit them to Canvas for the **Lab 12** dropbox.

You should submit the following files:

- **Lab12A.py**
- **Lab12B.py**
- **Out12A.txt**
- **Out12B.csv**
- **(Note that the zyBooks labs are submitted separately through Canvas.)**

Ask your TA to check your results before submission.

Now that you've finished the lab, use any additional time to practice writing simple programs out of the textbook, lectures, or even ones you come up with on your own to gain some more experience.