COM110: Lab 3
(chapters 5, 7)
file processing, string manipulation, and decision structures

1) **Text manipulation using built-in string functions.** There are many built-in Python string functions. You can get a listing of them by typing `dir(str)` and more information on the methods by typing `help(str)`. There is also a handy table of some useful ones in your text on page 148 (page 140 for the second edition). The right built-in string function(s) will do most of the work of this checkpoint for you!

   We will be analyzing and comparing Mitt Romney's speech at the 2012 Republican National Convention (RomneySpeech2012.txt) to Barack Obama's speech at the 2012 Democratic National Convention (ObamaSpeech2012.txt). The two files are attached to this Lab4 entry on Moodle, download them both to your lab3_xxxx folder. To open and read these files successfully in Python, you might need a third parameter for the open() function that indicates the type of plain text encoding, similar to the ASCII and Unicode encoding concepts that we learned about: (***NB: DO NOT COPY & PASTE THE CODE***)

```
inputfile = open("ObamaSpeech2012.txt", "r", encoding = "utf-8")
```

   a. Make sure you can get the files to open without error.

   b. Which speech is longer (in terms of number of words)? Try using python built-in functions to compute this rather than writing your own loop to do it. (Knowing how to do it by writing our own loops is important too, but we've already practiced that in class.)

   c. Which mentions the economy more times? (To be thorough, you probably want to go beyond searching for only exact matches with the word "economy.") Again, find the python built-in string function that will achieve this for you, rather than writing your own loop to do it.

☺ Get check 1 ☺

2) Modify your program from part 1 so that instead of only working for the word "economy," it inputs any noun from the user and answers question 1.c, about that word. Test your program with the words "war," "climate," "etc"…

☺ **Get check 2** ☺

3) **Decision statements.** Write a module that will help customers figure out ticket prices at your movie theater. It should ask for the customer's age and then use the following guidelines: if the customer is an infant, the ticket is free, kids cost half-price, adults cost full price and seniors cost ¾ price. Make a constant that holds the cost of a full adult ticket (i.e. $20.00) so that if that ticket price changes then your program can be easily adjusted. Use nicely formatted output. Here you get to choose your age numbers for each group.

☺ **Get check 3** ☺

4) **More decision statements.**

   a. Create a new and exciting "version 2" of the program you wrote for the last checkpoint. Add a feature to this version where the user is first prompted to choose from 2 options, displayed as a readable menu as follows:

      (A) List movies

      (B) Determine ticket price

   If the user chooses (A), then an easy-to-read list of the movies currently playing at your theater should be printed out. If the user chooses (B) your module from part 3 should run.

   ☺ **Get check 4** ☺

   b. Let's reorganize the structure of our code a bit so that it's cleaner and more elegant. (This will be reminiscent of the first checkpoint we ever did in our first lab… remember the `greeting()` and `farewell()` programs…?)

In the `main()` function, leave the code that prints out the main menu and takes the initial input choice from the user. But put the code from part 3 (determining the ticket price) into a separate function…

```
def ticketprice():
   <code from part 3 only>
```

Put the code that prints out the movies playing in your theater in yet another separate function called listmovies().:

```
def listmovies():
   <code that lists movies in a nicely readable way>
```

These two "sub-functions" should now be called from the `main()` function as appropriate.

☺ Get check 5 ☺

Add a sub-menu to your movie theater program. If the user chooses "(B) Determine ticket price," prompt them with yet another menu asking whether they are interested in (A) a matinee (early) screening or (B) regular (evening) screening. Make your matinee prices lower than your regular prices.

☺ Get check 6 ☺

5) **More time?**

   a. **More political speech analysis:**

      1) Whose speech mentions the economy sooner?

      ☺ Get bonus A ☺

      2) Whose speech mentions the economy more *frequently*? Be careful here, it depends on the length of the speech…

      ☺ Get bonus B ☺

   b. **File output.** In problem 1) replace all instances of 'America' (and all its variations) with another country name and write the new speech out to a new file. (See Lab 2, check 7, for how to open a file and write to it.)

      ☺ Get bonus C ☺