COMP 1800 – Fall 2016
Homework 4: Loops
(40 points)

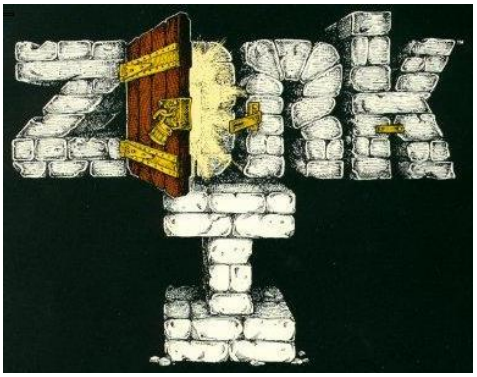
Number of People: Individual. Feel free to ask me for help, or visit the Computer Science Learning Center (http://www.memphis.edu/cs/current_students/cslc.php).

Due: Thurs., Nov. 10 by 5:30 pm

Submission: Zip your Python source code files and submit the zip file to the proper folder on eCourseware (https://elearn.memphis.edu).

Grader: TA, Swaroop Goli (ssgoli@memphis.edu). Questions about grading? Please contact him first!

1. **(15 pts) Save your script file as: HW4Problem1.py**



Back in the days before fancy graphics became the norm, people played computer games that were entirely text-based. A famous example is Zork, written by four students at the Massachusetts Institute of Technology in the late 1970s. If you're curious to see what gaming was like back then, you can play a version of Zork online here: https://textadventures.co.uk/games/view/5zyoqrsugeopel3ffhz_vq/zork

Let's say that you want to write your own text-based adventure game. Before your hero(ine) can set out to engage in epic battle, s/he needs to be able to move around! Assume that your character moves on a flat surface and can move one unit at a time in any of the four cardinal directions (north, south, east, or west). You start the game at position (0, 0).

Write a program that allows the player to issue movement commands to his/her character, one at a time. After each command, display the character's new position. Also allow the player an option to exit the program, and include some error checking to catch invalid user input.

Hint: Use two variables to keep track of the player's current position (one for the *x*-coordinate, one for the *y*-coordinate). Use a multibranch conditional to change these variables' values depending on what direction the player travels.

Below is an example of what your program might look like while running. The underlined parts indicate what you type in as the program is running.

```
Welcome to World of TextCraft!
------------------------------

You are currently at (0, 0)
Enter command (1 = North, 2 = East, 3 = South, 4 = West, 5 = Exit): 1

Moving north
You are currently at (0, 1)
Enter command (1 = North, 2 = East, 3 = South, 4 = West, 5 = Exit): 1

Moving north
You are currently at (0, 2)
Enter command (1 = North, 2 = East, 3 = South, 4 = West, 5 = Exit): 4
```

```
Moving west
You are currently at (-1, 2)
Enter command (1 = North, 2 = East, 3 = South, 4 = West, 5 = Exit): 0

I find your lack of reading comprehension skills disturbing.
You are currently at (-1, 2)
Enter command (1 = North, 2 = East, 3 = South, 4 = West, 5 = Exit): 3

Moving south
You are currently at (-1, 1)
Enter command (1 = North, 2 = East, 3 = South, 4 = West, 5 = Exit): 5

Dost thou leave so soon?  Fare thee well!
```

2. **(25 pts) Save your script file as: HW4Problem2.py**

You've been employed by a small nation that's trying to elect a new Supreme (Yet Somehow Democratically Elected) Leader. You want to modernize their voting system by writing a program to count ballots.

There are five candidates running for the position, each of whom has a unique ID number from 1-5. Your program should allow the user to enter the ID number on each ballot, keeping track of each candidate's votes. The user enters 0 to stop the counting. Once the program stops, show the votes for each candidate, the total votes, and the winner of the election. If two or more candidates are tied, you can display any one of them.

Include some error checking to ensure that the user cannot enter an invalid ID number (something negative, or something beyond 5). Invalid input should display an error message and ask the user to re-enter the number.

Below is an example of what your program might look like while running. The underlined parts indicate what you type in as the program is running.

```
Enter the ID number of the candidate (1-5, 0 to exit): 3
Enter the ID number of the candidate (1-5, 0 to exit): -1
That's not a valid candidate!  Please try again.
Enter the ID number of the candidate (1-5, 0 to exit): 6
That's not a valid candidate!  Please try again.
Enter the ID number of the candidate (1-5, 0 to exit): 99
That's not a valid candidate!  Please try again.
Enter the ID number of the candidate (1-5, 0 to exit): 5
Enter the ID number of the candidate (1-5, 0 to exit): 5
Enter the ID number of the candidate (1-5, 0 to exit): 3
Enter the ID number of the candidate (1-5, 0 to exit): 2
Enter the ID number of the candidate (1-5, 0 to exit): 3
Enter the ID number of the candidate (1-5, 0 to exit): 1
Enter the ID number of the candidate (1-5, 0 to exit): 3
Enter the ID number of the candidate (1-5, 0 to exit): 4
Enter the ID number of the candidate (1-5, 0 to exit): 3
Enter the ID number of the candidate (1-5, 0 to exit): 2
Enter the ID number of the candidate (1-5, 0 to exit): 2
Enter the ID number of the candidate (1-5, 0 to exit): 5
Enter the ID number of the candidate (1-5, 0 to exit): 0

Okay, here are the results!

Candidate 1:  1 vote(s)
Candidate 2:  3 vote(s)
Candidate 3:  5 vote(s)
Candidate 4:  1 vote(s)
Candidate 5:  3 vote(s)
Total:        13 vote(s)

*** Winner: Candidate 3 ***
```