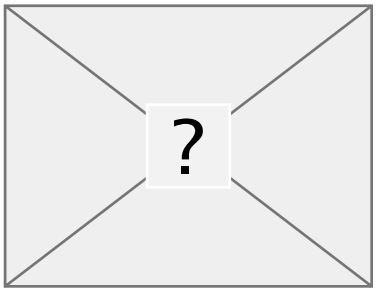
Assignment 7
Due: Wednesday, October 23
8 pts

1. (2 pts) If you're faced with a graph where each node has an even degree, how would you go about finding a Euler tour? Write pseudocode or code. Submit your function in a file named YOURLASTNAME_5.1.py. (First line should include comment if it is pseudocode or code.)

DONE!

2. (2 pts) Given the following tree, implement DFS, IDDFS, and BFS to write out the order in which nodes are visited for each. Your code should be structured as follows:

```
def DFS_function…
def IDDFS_function…
def BFS_function…
x=call_to_DFS
y=call_to_IDDFS
z=call_to_BFS
print("DFS:" + x's results)
print("IDDFS:" + x's results)
print("BFS:" + x's results)
```



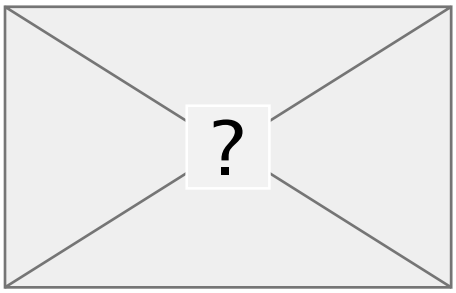
Submit your function in a file named YOURLASTNAME_5.2.py.

DFS: DONE!
BFS: DONE!

3. (1 pt) Show that if and only if DFS finds no back edges, the graph being traversed is acyclic. (Problem 5-10)

A backedge is when a node is connected to previously discovered node, due to the nature of DFS if we find a backedge in the graph that means there is a cycle because DFS will go as far down as possible before returning to a node it was previously at.

4. (1 pt) Write a version of BFS that finds the distances from the start node to each of the others, rather than the actual paths. (Problem 5-13) Submit your function in a file named YOURLASTNAME_5.4.py.



DONE!

5. (1 pt) Let's apply your code from #4 on our map for travel from our traveling salesman problem. Again, assuming Chicago is the "start node", write out the number of flights needed to get from Chicago to all other cities on the map. Note, your code for this question should be written generally, such that the function could be supplied with any start node and any similar flight graph. Submit your function in a file named YOURLASTNAME_5.5.py.

DONE!

6. (1 pt) If you reverse all the edges of a directed graph, the strongly connected components remain the same. Why is that? (Problem 5-15)

Strongly connected nodes are characterized by some sort of cycle. If there is a cycle in a directed graph and the direction of the graph is reversed, the cycle will remain just in the opposite direction. If the cycle remains between the nodes then they are still strongly connected.