Homework assignment 5

1. Scan the QR code on the screen from the presentation slides to go to the GitHub Repo for the assignment.
2. Alternatively, you can also go directly to this link: https://github.com/abhishekphadke/dijkstras-algorithm/tree/main
3. This will take you to the GitHub repository without having to scan the code.

4. Download the entire repository and uncompress it. You will need a tool like 7ZIP or WinRAR. You can also clone the repository directly to your IDE if you know how to do so. Either way will work.
5. Go to the worksheet folder and see Graph 2.
6. Modify the Dijkstra's code that you have been given in the folder called "1 Presentation code" The code file is called "code.py" This file is already able to solve the graph that you see on the slide number 15 i.e. the one that we solved in class.
7. Your job is to modify the example code, so that it solves Graph 2 in the worksheet.
8. You are required to find:

   1) Minimum cost path from A to H
   2) Minimum distance from A to all other nodes
   3) Take screenshots of these answers when your code executes. I will also need your modified python code.

9. Next, carefully study the "**3 interactive example"** folder. Run the code and a dialog box will appear with a graph. Click and select ANY two nodes and the code will show you the shortest path between the two nodes.

10. Next step, open and run the code in the **interactive challenge** folder.
11. Once you run the code, a graph will be generated, and it will give you a problem statement in the terminal. Select the source and destination node that the problem specifies in the terminal. For example, if the problem says "Find the shortest path between A and G" then select A and G. It will give you the total for the shortest path.
12. Once you do this step, it will ask you to input the nodes in the terminal one by one. Trace the shortest path and put the Dijkstra's route in the terminal.
13. If you put all nodes correctly, it will give you a message that says "Congratulations, you followed the correct path!"
14. Take **screenshots** of the graph that you have been assigned, the challenge question in the terminal and also the message "Congratulations, you followed the correct path!".
15. You are required to do this step 3 times. I.e. generate three unique graphs and find the solution three times.

This assignment has been tested by multiple students in previous class. If any errors happen, they are unfortunately on your end. You are responsible for installing the libraries required to run the python code/setting up the environment required to run the assignment. I have designed the assignment such that no complicated setup is required to run the assignment. A simple IDE or even your terminal will work.

What to submit

Create a word document with the following information:

1. A screenshot of your python code output in the terminal or IDE for **code.py. The output should answer the following questions:**
    - What is the minimum cost path from A to H?
    - What is the minimum distance from A to all other nodes?
2. Also put the answer in words for the following questions
    - What is the minimum cost path from A to H?
    - What is the minimum distance from A to all other nodes?
3. The modified code from code.py activity as a .py file.
4. Next, proceed to do the steps from 8 to 12 given above. Take screenshots of the 1) Graph problem that you are assigned, the graph question, and the "Congratulations message" Important: **You are required to do this THREE times.**
5. Put all the screenshots in a word document and upload it along with your python code.

Grading rubric

Successfully modify code.py to run Graph 2 and show me code.py file by uploading it	5
Put screenshots of code.py output for minimum cost path from A to H and minimum distance from A to all other nodes	5
Successfully run the **Interactive challenge** and show screenshots of the problem question and the graph that you get by doing the same activity three times.	5
Show the "congratulations" message in the terminal that indicates you have completed the interactive challenge	5

Helpful hints:

1. The code.py requires minimum modifications to do steps 1 and 2. You just need to find and modify the right section.
2. The interactive challenge question will give you a graph. You can reuse my code.py file and modify it to provide you with the solution. Alternatively, you may also write your own python code or choose to do it on paper.
3. This is a networking class and not a programming class. Therefore, my assignments never involve a significant coding. None of the above questions require you to have an expertise in python. Whatever you learn in a 150-level class at CNU should suffice.

This assignment is due on March 10th at 11:59 AM (NOT PM!)

My "not late until I start grading" policy does not apply for this assignment