Homework assignment 7

1. Scan the QR code on the screen from the presentation slides to go to the GitHub Repo. Alternatively, you can also go directly to this link: https://github.com/abhishekphadke/dijkstras-algorithm/tree/main
2. This will take you to the GitHub repository
3. Download the entire repository and uncompress it. You can also clone the repository directly to your IDE if you know how to do so. Either way will work.
4. Go to the worksheet folder and see Graph 2.
5. 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 slides number 12
6. Your job is to modify the example, so that it solves Graph 2 in the worksheet.
7. 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.

8. Next, carefully study the "**3 interactive example"** folder. Run the code, select two nodes and check out how the code works. The window will show you the shortest path between the two selected nodes.

9. Next step, open and run the code in the **interactive challenge** folder.
10. 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. It will give you the total for the shortest path.
11. Once you do this step, it will ask you to input the nodes one by one. Trace the shortest path and put the Dijkstra's route in the terminal.
12. If you put all nodes correctly, it will give you a message that says "Congratulations, you followed the correct path!"
13. 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!".
14. You are required to do this step 3 times. I.e. generate three unique graphs and find the solution three times.

You are responsible for installing the libraries required to run the python code.

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

Some 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 the code.py file and modify it to provide you with the solution for steps 4 and 5. Alternatively, you may also write your own code or choose to do it on paper.