**Breadth-First Search**

The final solution path is not optimal because each edge has varying weights. BFS does not pay attention to costs of an edge when traversing it, thus it may not give the most cost efficient path unless each path cost is only 1.

**Depth-First Search**

The final solution path is not optimal as it may result in a large cost to reach the goal node as a result of not paying attention to costs of an edge.

**Uniform Cost Search**

The final solution path is always optimal as UCS always finds the lowest total path cost from the start node to the goal node.

**Iterative Deepening Search**

The final solution path is not optimal because each edge has varying weights once again and depends on which expansions are taken that may lead to the goal node.

**Program Descriptions**

* Programming Language and Version
  + Python 3.9.13
* Environment
  + Ubuntu 22.04.1 LTS
* How to run?
  + Open up a terminal in the location of wherever the program file is located.
  + Type “python3 graph\_search\_algorithms.py”.
* Understanding the display
  + In the terminal, it should display each of the search algorithms as ---<search algorithm>---.
  + Under each title, it shows the depth of each node, the resulting expanded nodes and stops all expansions and continuation of the graph traversal once it reaches the goal state of “G”.
  + Lastly, the total cost of the solutions as a result of performing each search algorithm will be displayed.