Question:

Using your student ID, apply the A* Search algorithm on the Romania Map.

1) Your **start node** and **goal node** should be chosen according to your serial number (in this case, Serial No. 2 → Start: **Giurgiu**, Goal: **Oradea**).

2) The heuristic values must be scaled based on the last two digits of your student ID. Formula: (last two digits)2+1(\text{last two digits})^2 + 1(last two digits)2+1. Add this scaling factor to the straight-line distances to Bucharest.

3) Implement the A* Search algorithm in Python.

4) Print the optimal path found by the algorithm.

5) Visualize the Romania Map graph with NetworkX and Matplotlib. Show heuristic values at each node and animate the step-by-step traversal of the path.