



Artificial Intelligence (AI)

Assignment No 2

Total Marks: 10

Due Date: 24th Nov 2023

Consider a 2D grid representing a maze, where '#' represents walls, 'S' represents the start point, 'G' represents the goal point, and '.' represents open paths that can be traversed. The goal is to find the optimal path from the start to the goal using A*, Greedy, and UCS.

'#': Wall (cannot pass through)

'S': Start point

'G': Goal point

': Open path (can be traversed)

Heuristics: Euclidian Distance

Example Maze:

Here's an example of a maze:

```
#####  
#S.....#  
#.#####  
#.#...#...#  
#.#.#.#.#.#  
#...#...#...#  
#.#.#.#.#.#  
#.#...#...#  
#.#####  
#....G.....#  
#####
```

You will be provided with the maze description as a 2D grid. The maze will be represented as a list of strings in your code or any other data structure you like. Your program should output the path for both search algorithms. The maze with the optimal path from the start ('S') to the goal ('G') marked with a special character (e.g., 'X'). Display the length of the optimal path, total number of steps taken by the algorithm. Also handle if there is no path to the goal. Without proper output you will get partial marks.

Note: A quiz and a viva will be conducted after the submission. Failing the viva or quiz will result in zero marks.