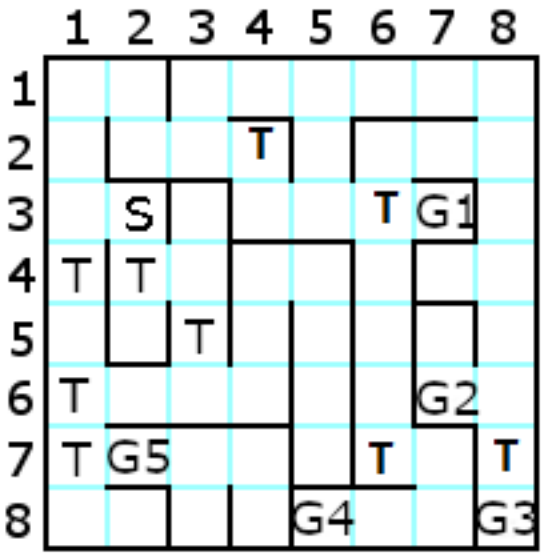
CSE 4082 – Project 2

(Due 26.12.2023 at 23:59, electronic submission only, to cse.cse482@gmail.com)

Implement a solver for 2D mazes supporting the following strategies:

a. Depth First Search
b. Breadth First Search
c. Iterative Deepening
d. Uniform Cost Search
e. Greedy Best First Search
f. A* Heuristic Search

Your program should input a maze file the format of which will be determined by yourself. The letter “S” denotes the starting square, the letter “G” denotes one or more goal squares, and the letter “T” denotes the squares with trap. The cost of each move is one point, however, when the agent moves in a trap square, the cost of the move will increase by 6 (i.e. the total cost of the move will be 7 instead of 1). For every search method, the order of node expansion should be East, South, West, North. An example maze is as follows:



For the above maze and for each search method, your program should display

i. The goal state found (e.g. G1).
ii. The cost of the solution found.
iii. The solution path itself.
iv. The list of expanded nodes

Notes:

a. You should also submit a design document describing the classes (fields and methods) used in the project. The document should also contain the output of your program for the example maze for each search strategy.

b. Details of the project will be discussed in the class.

c. The project can be done in groups of three.