

CS210 : ARTIFICIAL INTELLIGENCE LAB

LAB ASSIGNMENT 4_5: AI & Python

Submitted By:

Name: AKSHAT SAHU

Roll No: U22CS034

Branch: CSE

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Division : A

Submitted To: Dr. Chandra Prakash

Department of Computer Science and Engineering



**SV NATIONAL INSTITUTE OF TECHNOLOGY
SURAT**

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Question no. 1

PART A : Introductory Problem [25 Marks] Maze Problem [15 Marks] 1. Consider a maze comprising of square blocks in which intelligent agent can move either vertically or horizontally. Diagonal movement is not allowed. Cost of each move is 1. Red block: initial position, Blue block: goal position and Grey block: obstacle Apply following Blind/Uninformed and Informed algorithms : (a) dfs: Depth first search (b) bfs: Breadth first search (c) dls: Depth limited search, use 3 as default depth (d) ucs: Uniform cost Search (e) gbfs: Greedy Best First Search (f) astar: A* Algorithm Inputs: Write a python program that takes input number of square blocks as input (i.e. 6 x 6) in first line. Second line contains the initial position of intelligent agent which is (1,1) and the goal square block which is (6,6) in above example. Third line contains the coordinates of the obstacles. Fourth line contains the search strategy. eg. input file: input.txt
6,6 1-1 1,1;6,6 2,1;2,5;3,2;3,3;3,5;4,5;4,6;5,2;5,3;6,3 dfs python TA_4_5_P2_maze_world.py
"input2.txt|output2.txt" Outputs: Sequence of blocks that are explored (each on separate line) as per search algorithm so as to reach goal position. Last line should contain the total search cost.

Pacman

. Search in Pac-Man This problem allow you to visualize the results of the techniques you implement. Pac-Man provides a challenging problem environment that demands creative solutions of a real-world AI problems. The Pacman agent needs to find paths through the maze world, both to reach a location and to collect food efficiently. In this Problem, you are expected to implement and experiment with different AI search techniques that was discussed in the class in a Pacman environment. This lab assignment is inspired by Project 1: Search, which is a part of a recent offering of CS188 at UC Berkeley[1]. We thank the authors at Berkeley for making their project available to the public.

```
Pacman died! Score: -518
Average Score: -518.0
Scores: -518.0
Win Rate: 0/1 (0.00)
Record: Loss
PS C:\Users\hp\Downloads\LA_4_5_search\LA_4_5_search> py pacman.py
Pacman died! Score: -148
Average Score: -148.0
Scores: -148.0
Win Rate: 0/1 (0.00)
Record: Loss
PS C:\Users\hp\Downloads\LA_4_5_search\LA_4_5_search> py pacman.py
Pacman died! Score: -87
Average Score: -87.0
Scores: -87.0
Win Rate: 0/1 (0.00)
Record: Loss
PS C:\Users\hp\Downloads\LA_4_5_search\LA_4_5_search> py pacman.py
Pacman died! Score: -187
Average Score: -187.0
Scores: -187.0
Win Rate: 0/1 (0.00)
Record: Loss
PS C:\Users\hp\Downloads\LA_4_5_search\LA_4_5_search> py pacman.py
Pacman emerges victorious! Score: 1202
Average Score: 1202.0
Scores: 1202.0
Win Rate: 1/1 (1.00)
Record: Win
PS C:\Users\hp\Downloads\LA_4_5_search\LA_4_5_search>
```

