DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Assignment-1

Semester: 5th	**Date: 20/12/2023**
Subject Name: Artificial Intelligence and Machine Learning	**Subject Code: 21CS54**

Q. No.	Questions-Module 1, and 2	Marks	CO	Level
Q1.	Explain the eight definitions of artificial intelligence by highlighting the distinctions between thought processes and reasoning, as well as behavior.	8	CO1	L2
Q2.	Describe the Turing Test as proposed by Alan Turing in 1950. Discuss the criteria a computer needs to meet to pass the Turing Test.	8	CO1	L2
Q3.	Discuss about the foundations of AI.	8	CO1	L2
Q4.	Summarize the History of AI.	8	CO1	L2
Q5.	Provide insights into a simple problem-solving agent that formulates goals, searches for solutions, and executes the chosen actions.	8	CO1	L2
Q6.	Describe Well-defined problems and solutions with its components.	8	CO1	L2
Q7.	Formulate the following real world task environments using problem solving approach a. Vacuum World b. 8-puzzle game c. 8-Queens problem d. Route finding problem e. VLSI Layout	4x5 =20	CO1	L2
Q8.	Describe TREE-SEARCH and GRAPH-SEARCH functions	8	CO1	L2
Q9.	Explain node data structure used in construction of a search tree.	4	CO1	L2
Q10.	Discuss about the criteria used to evaluate an algorithm's performance.	4	CO1	L2
Q11.	Define the following a. Turing test b. Natural language processing c. Branching factor d. Uninformed search e. Solution v/s Optimal solution	10	CO1	L2
Q12.	Write Breadth first search algorithm and illustrate with an example.	8	CO1	L2
Q13.	Examine Breadth First search algorithm using all evaluation criteria.	8	CO1	L3
Q14.	Differentiate between BFS and DFS.	6	CO2	L2
Q15.	Solve following graph problems using BFS and DFS fig 1, fig 2	8	CO1	L3
Q16.	Define heuristic function. Explain Greedy Best First search algorithm with an example.	8	CO1	L2
Q17.	Solve following graph problems (fig 3, fig 4) using A* search algorithm. Explain conditions for optimality of A* search algorithm.	12	CO1	L3
Q18.	Illustrate the generation of heuristic functions for 8-puzzle game.	6	CO2	L2
Q19.	Define the following a. Admissible heuristic function b. Effective branching factor c. Relaxed problems.	6	CO1	L2
Q20.	Analyze Depth First search algorithm using all evaluation criteria.	4	CO1	L3

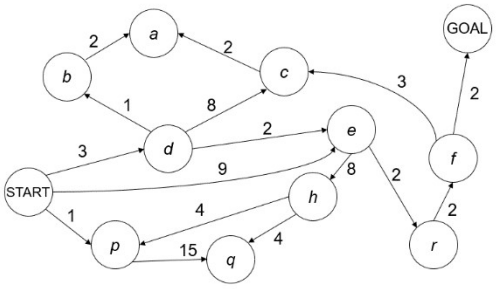

Fig 1

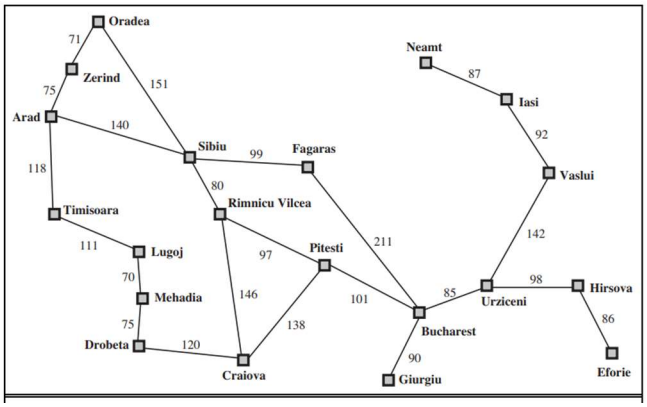

Fig 2 start state: Arad and goal state: Bucharest

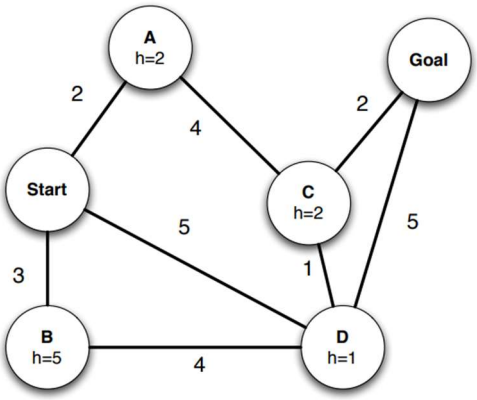

Fig 3

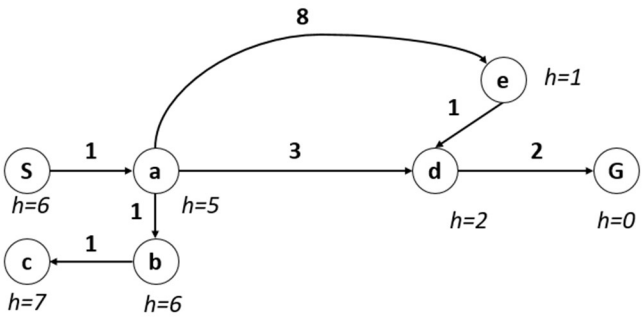

Fig 4

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