

Lab # 04 Task

1. Implement simple **Breadth-First-Search** Algorithm on complete Binary/BST?
2. Implement simple **Depth-First-Search** Algorithm on Binary/BST?
3. The full vacuum world from the exercises in Chapter 2 can be viewed as a search problem in the sense we have defined, provided we assume that the initial state is completely known.
 - A. Define the initial state, operators, goal test function, and path cost function.
 - B. Which of the algorithms defined in this chapter would be appropriate for this problem? BFS or DFS?
 - C. Apply one of them to compute an optimal sequence of actions for a **3 x 3** world with dirt in the center and home squares.
 - D. Construct a search agent for the vacuum world, and evaluate its performance in a set of **3x3** worlds with probability **0.2** of dirt in each square. Include the search cost as well as path cost in the performance measure, using a reasonable exchange rate.
 - E. Compare the performance of your search agent with the performance of the agents constructed for the exercises in Chapter 2. What happens if you include computation time in the performance measure, at various "exchange rates" with respect to the cost of taking a step in the environment? f. Consider what would happen if the world was enlarged to **nxn**. How does the performance of the search agent vary with «? Of the reflex agents?