

## Post Lab Questions

A1 Uninformed: Blind search (brute-force) with no domain knowledge.

Search with knowledge: problem knowledge

Informed: Uses domain knowledge (heuristics) to estimate closeness to the goal.

## A2 Properties of Search Algorithms:

① Completeness: guaranteed to find a sol<sup>n</sup> or not.

↳ goal - not reached, search a sol<sup>n</sup>

② Optimality: Finds the best / shortest the sol<sup>n</sup> or not.

↳ solution, don't use 270, previous sol<sup>n</sup>

③ Time complexity: Time taken ( $O(b^d)$  or  $O(b^m)$ ).

↳ At any particular step, it's time to search tree

④ Space complexity: Memory required.

A3 What BFS is a blind search that explores the tree layer-by-layer (shallowest nodes first). It uses a Queue (FIFO) data structure.

A4 DFS is a blind search that explores a path to the deepest node before backtracking. It uses a stack (LIFO) data structure.

A5	Feature	BFS	DFS
①	Data Structure	Queue (FIFO)	Stack (LIFO)
②	Traversal	Level-by-level	Deepest Path, 1 <sup>st</sup>
③	Memory	High (Exponential)	Low (Linear)
④	Optimal	Yes	No

Conclusion: We implement BFS & DFS algorithms. BFS uses a Queue, explores layer-by-layer & guarantees the shortest path but requires high memory. DFS uses stack, explores deep path first, and is memory efficient but doesn't guarantee the shortest path.