**AI  
Assignment one**

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# Algorithm

Algorithm is operated in a simple way but first should identify some data structure (frontier, explored, parent-map) frontier depends on the type of search it will be queue in BFS and stack in DFS and priority queue in UCS, parent-map keep track of parent of each state thus we can indicate the path at the end, explored when add all neighbors of a state add it to explored set to never check it again, first add state to the frontier then pop it and add it to the explored and check if it is the goal and add its neighbors to frontier and parent-map if it is not in both of them, continue iterating like that till frontier become empty.

# Data Structure

Queue, stack, set, map.

# Sample Runs

### BFS & DFS

## State (‘’)

|  |  |  |
| --- | --- | --- |
|  | DFS | BFS |
| Running time |  |  |
| Cost |  |  |
| # nodes expanded |  |  |
| Search Depth |  |  |

## State (‘’)

|  |  |  |
| --- | --- | --- |
|  | DFS | BFS |
| Running time |  |  |
| Cost |  |  |
| # nodes expanded |  |  |
| Search Depth |  |  |

## State (‘’)

|  |  |  |
| --- | --- | --- |
|  | DFS | BFS |
| Running time |  |  |
| Cost |  |  |
| # nodes expanded |  |  |
| Search Depth |  |  |

## State (‘’)

|  |  |  |
| --- | --- | --- |
|  | DFS | BFS |
| Running time |  |  |
| Cost |  |  |
| # nodes expanded |  |  |
| Search Depth |  |  |

### Heuristic (A\*)

## State (‘’)

|  |  |  |
| --- | --- | --- |
|  | DFS | BFS |
| Running time |  |  |
| Cost |  |  |
| # nodes expanded |  |  |
| Search Depth |  |  |

## State (‘’)

|  |  |  |
| --- | --- | --- |
|  | DFS | BFS |
| Running time |  |  |
| Cost |  |  |
| # nodes expanded |  |  |
| Search Depth |  |  |