**AI LAB 02 REPORT**

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1. Lab report answers:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Depth-First Search** | | | **Breadth-First Search** | | | **Uniform-Cost Search** | | |
| **Maze** | **#nodes explored** | **Solution length** | **Is it optimal?** | **#nodes explored** | **Solution length** | **Is it optimal?** | **#nodes explored** | **Solution length** | **Is it optimal?** |
| **tiny** | 16 | 10 | No | 16 | 8 | Yes | 15 | 8 | Yes |
| **medium** | 147 | 130 | No | 275 | 68 | Yes | 269 | 68 | Yes |
| **big** | 391 | 210 | Yes | 620 | 210 | Yes | 620 | 210 | Yes |

Does BFS find a least cost solution? -> Yes

Does UCS find a least cost solution? -> Yes

How many nodes are UCS expanded? -> tiny - medium - big = 15 - 269 – 620

Path cost for StayEastSearchAgent: 1

Path cost for StayWestSearchAgent: 68719479864

1. Compare different searches:

DFS is faster in node exploration but may result in not ideal solutions, whereas BFS and UCS ensure optimality but cost more computer resources.