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AI Homework 1: Results

- Case 1: Map with dimensions 5x5 (map5x5.txt)

Algorithm	*State*	*Total Cost*	*Expanded Nodes*	*Max Nodes in Memory*	*Runtime*
BFS	Success	10	2	9	0ms
IDS	Success	12	11	15	1ms
AS	Success	10	2	9	1ms

- Case 2: Map with dimensions 10x10 (map10x10.txt)

Algorithm	*State*	*Total Cost*	*Expanded Nodes*	*Max Nodes in Memory*	*Runtime*
BFS	Success	60	34	26	1ms
IDS	Success	39	444	212	3ms
AS	Success	24	38	33	0ms

- Case 3: Map with dimensions 20x20 (map20x20.txt)

Algorithm	*State*	*Total Cost*	*Expanded Nodes*	*Max Nodes in Memory*	*Runtime*
BFS	Success	164	132	96	1ms
IDS	Success	81	2014	892	5ms
AS	Success	44	310	136	5ms

Conclusion:

A* seem to be the algorithm that scaled better overall in terms of cost, memory, and running time. In the first iteration, the differences are negligible but as the dimensions get higher it can be seen that Iterative Deepening Search uses a lot more memory while Breadth-first search always seems to have the highest cost of them all.

For pathfinding it seems the optimal way would be to use A* which gets a lower cost without using as many resources as Iterative Deepening even though it takes longer than breadth-first search.