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CMPT 317

Blocks1.txt

	h(n) = 0 (BFS)	Admissible h(n)	Non-admissible h(n)
Solution depth	5	6	6
Time (secs)	0.018	0.00036	0.00052
Space (nodes)	693	13	13

Blocks2.txt

	h(n) = 0 (BFS)	Admissible h(n)	Non-admissible h(n)
Solution depth	2	21	21
Time (secs)	0.00034	0.00095	0.00086
Space (nodes)	8	3	3

Blocks3.txt

	h(n) = 0 (BFS)	Admissible h(n)	Non-admissible h(n)

Solution depth	4	N/A	N/A
Time (secs)	15.655	180.004	180.005
Space (nodes)	5136	6733	54

Blocks4.txt

	h(n) = 0 (BFS)	Admissible h(n)	Non-admissible h(n)
Solution depth	N/A	6	7
Time (secs)	198.490	0.0048	0.0014
Space (nodes)	4564587	75	63

Blocks5.txt

	h(n) = 0 (BFS)	Admissible h(n)	Non-admissible h(n)
Solution depth	N/A	36	36
Time (secs)	180.001	11.630	0.0042
Space (nodes)	5589534	37822	79

Admissible h(n): -
An admissible heuristic is optimistic and is one that never overestimates the cost to reach a goal. The admissible heuristic function is the sum of the maximum unoccupied height and the number of unoccupied columns. This heuristic function is similar to the Hamming distance which measures the distance from the current state to the goal.

Non-admissible h(n): - The inadmissible heuristic function counts the number of unoccupied cells in the current state. This is proportional to the cost of the state from the goal.

And based on the result here, Blocks1.txt, Blocks2.txt and Blocks3.txt solution depth is the same for both the admissible and non-admissible heuristics here. And Blocks3.txt the non-admissible heuristic required lesser space (nodes) than the admissible heuristic and they almost had the same time but with a slight difference with the non-admissible have a couple of seconds more. For the Blocks4.txt the solution depth for the admissible was much lower than the non-admissible h(n). And both the admissible and non-admissible was able to find a solution for both the blocks4.txt and blocks5.txt were the h(n) = 0 BFS could not find a solution. And the h(n) = 0 BFS for the Blocks4.txt took longer time to run here compared to the admissible heuristic function here and the space (nodes) for the BFS was higher than the admissible and non-admissible for most of the blocks txt file except blocks3.txt and many more findings as listed in the table for the simplified Tetris problem.

So based on my analysis on the result, the admissibility of the heuristic function is going to be significant in terms of time and space efficiency for the search algorithms. And the admissible function provides a better and more efficient solution with less time and space compared to the h(n) = 0 BFS.