

8-Puzzle problem using A\* search Algorithm

Enter the Current State

4 1 3

0 2 6

7 5 8

Enter the Goal State

1 2 3

4 5 6

7 8 0

Enter the heuristic number that you want to proceed with

1. Manhattan

2. Misplaced Tiles

2

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Level 0 - [[4,1,3][0,2,6][7,5,8]]

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Node Chosen for Level 1 - [[4,1,3][0,2,6][7,5,8]]

Generated Nodes :

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[[0,1,3][4,2,6][7,5,8]] -  $f(n) = 1 + 4 = 5$

[[4,1,3][2,0,6][7,5,8]] -  $f(n) = 1 + 5 = 6$

[[4,1,3][7,2,6][0,5,8]] -  $f(n) = 1 + 6 = 7$

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Node Chosen for Level 2 - [[0,1,3][4,2,6][7,5,8]]

Generated Nodes :

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[[1,0,3][4,2,6][7,5,8]] -  $f(n) = 2 + 3 = 5$

[[4,1,3][0,2,6][7,5,8]] - Already visited Node!

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Node Chosen for Level 3 - [[1,0,3][4,2,6][7,5,8]]

Generated Nodes :

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[[1,3,0][4,2,6][7,5,8]] -  $f(n) = 3 + 4 = 7$

[[0,1,3][4,2,6][7,5,8]] - Already visited Node!

[[1,2,3][4,0,6][7,5,8]] -  $f(n) = 3 + 2 = 5$

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Node Chosen for Level 4 - [[1,2,3][4,0,6][7,5,8]]

Generated Nodes :

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[[1,0,3][4,2,6][7,5,8]] - Already visited Node!

[[1,2,3][4,6,0][7,5,8]] -  $f(n) = 4 + 3 = 7$

[[1,2,3][0,4,6][7,5,8]] -  $f(n) = 4 + 3 = 7$

[[1,2,3][4,5,6][7,0,8]] -  $f(n) = 4 + 1 = 5$

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Node Chosen for Level 5 - [[1,2,3][4,5,6][7,0,8]]

Generated Nodes :

[[1,2,3][4,0,6][7,5,8]] - Already visited Node!  
[[1,2,3][4,5,6][7,8,0]] -  $f(n) = 5 + 0 = 5$   
[[1,2,3][4,5,6][0,7,8]] -  $f(n) = 5 + 2 = 7$

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Node Chosen for Level 6 - [[1,2,3][4,5,6][7,8,0]]  
The goal path found...

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[[4,1,3][0,2,6][7,5,8]]  
[[0,1,3][4,2,6][7,5,8]]  
[[1,0,3][4,2,6][7,5,8]]  
[[1,2,3][4,0,6][7,5,8]]  
[[1,2,3][4,5,6][7,0,8]]  
[[1,2,3][4,5,6][7,8,0]]

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Time Taken : 15 milliseconds

The number of nodes that are generated are : 15

The number of nodes that are expanded are : 6