AI – ASSIGNMENT 1 (Report)

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Given State:

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 6 | 2 | 4 |
| 5 | 10 | 3 | 8 |
| 9 | 0 | 7 | 12 |
| 13 | 14 | 11 | 15 |

Goal State:

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 0 | 2 | 4 |
| 5 | 6 | 3 | 8 |
| 9 | 10 | 7 | 12 |
| 13 | 14 | 11 | 15 |

Steps Involved:

1. 2. 3. 4.

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 6 | 2 | 4 |
| 5 | 0 | 3 | 8 |
| 9 | 10 | 7 | 12 |
| 13 | 14 | 11 | 15 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 0 | 4 |
| 5 | 6 | 3 | 8 |
| 9 | 10 | 7 | 12 |
| 13 | 14 | 11 | 15 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| 5 | 6 | 0 | 8 |
| 9 | 10 | 7 | 12 |
| 13 | 14 | 11 | 15 |

5. 6.

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 0 | 12 |
| 13 | 14 | 11 | 15 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 0 | 15 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 0 |

7.

By using 1st heuristic i.e. no. of displaced tiles : No. of nodes in memory = 25

: Level reached i.e. g(x)=7

: Max. Heuristic value h(x)=8

By using heuristic 2nd i.e. sum of distance of displaced tiles:

:No. of nodes in memory = 25

: Level reached i.e. g(x)=7

: Max. Heuristic value h(x)=8

For this case both the heuristic perform equally well.