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| --- | --- | --- | --- | --- | --- |
| Averages: | Solved | Depth |  | Explored Nodes | Time (Seconds) |
| BFS | Yes | 23.625 |  | 138990.1 | 9.924058 |
| DFS | Yes | 52808.13 |  | 114061.8 | 4.342867 |
| A\* Misplaced | Yes | 23.625 |  | 31698.75 | 2.258925 |
| A\* Manhattan | Yes | 23.625 |  | 3216.143 | 0.192733 |
|  |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
| Unsolved: | |  |  | Nodes Explored | Time (Seconds) |
| BFS | No |  |  | 181440 | 13.99684 |
| DFS | No |  |  | 181440 | 9.883525 |
| A\* Misplaced | No |  |  | 181440 | 17.34774 |
| A\* Manhattan | No |  |  | 181440 | 18.65865 |

During the run of 10 different puzzles on these four searches the results on par with what was expected. The A\* searches were able to find a solution (if possible to solve), in a much faster manner than BFS and DFS were able to. They rank as follows: A\* Manhattan, A\* Misplaced Tile, DFS, and BFS respectively. They A\* searches were also able to search a minimal amount of nodes as compared to the DFS and BFS, with an average of a mere 3216, and 31690 node for the Manhattan and Misplaced tile respectively. The BFS and DFS on average explored a large amount of nodes ~110,00 to 140,00. The depths of these searches are all the same at a depth of ~24 per solution. The exception to this is the DFS, which clocked out at an average of ~52808 per solution. However, when the puzzle was not solvable, the DFS, and BFS preformed better time wise in declaring that there was no solution. DFS was the fastest at 9.9s followed by BFS at 14s and A\* Misplaced clocked in at 17.3s followed by A\* Manhattan at a whopping 18.67s. Full solutions to each run are recorded in ‘results.xlsx’.