Experimentation for Assignment 2

Algorithms and Data Structures

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Below we will demonstrate our findings from 2 different sources for this project:

1) MacBook Pro i7 2.6 GHz with 16GB Memory
2) Dimefox

```
192-168-1-8:15-puzzle-base-code panagiotisgoulas$ ./15puzzle 1.puzzle
14 13 15  7
11 12  9  5
 6  0  2  1
 4  8 10  3
Initial Estimate = 41
Threshold = 41 43 45 47 49 51 53 55 57
Solution = 57
Generated = 499,911,549
Expanded = 253,079,504
Time (seconds) = 17.33
Expanded/Second = 14,600,014
```

```
bash-4.1$ ./15puzzle 1.puzzle
4 13 15  7
1 12  9  5
6  0  2  1
4  8 10  3
Initial Estimate = 41
Threshold = 41 43 45 47 49 51 53 55 57
Solution = 57
Generated = 499,911,549
Expanded = 253,079,504
Time (seconds) = 38.29
Expanded/Second = 6,610,377

-bash-4.1$
rt MobaXterm by subscribing to the professional edition here: https://mobaxterr
```

```
192-168-1-8:15-puzzle-base-code panagiotisgoulas$ ./15puzzle 2.puzzle
13  5  4 10
 9 12  8 14
 2  3  7  1
 0 15 11  6
Initial Estimate = 43
Threshold = 43 45 47 49 51 53 55
Solution = 55
Generated = 18,983,807
Expanded = 9,777,756
Time (seconds) = 0.67
Expanded/Second = 14,605,938
```

```
-bash-4.1$ ./15puzzle 2.puzzle
13  5  4 10
 9 12  8 14
 2  3  7  1
 0 15 11  6
Initial Estimate = 43
Threshold = 43 45 47 49 51 53 55
Solution = 55
Generated = 18,983,807
Expanded = 9,777,756
Time (seconds) = 1.46
Expanded/Second = 6,698,111
```

```
192-168-1-8:15-puzzle-base-code panagiotisgoulas$ ./15puzzle 3.puzzle
14  7  8  2
13 11 10  4
 9 12  5  0
 3  6  1 15
Initial Estimate = 41
Threshold = 41 43 45 47 49 51 53 55 57 59
Solution = 59
Generated = 455,125,239
Expanded = 229,658,296
Time (seconds) = 15.37
Expanded/Second = 14,940,709
```

```
bash-4.1$ ./15puzzle 3.puzzle
4  7  8  2
3 11 10  4
9 12  5  0
3  6  1 15
Initial Estimate = 41
Threshold = 41 43 45 47 49 51 53 55 57 59
Solution = 59
Generated = 455,125,239
Expanded = 229,658,296
Time (seconds) = 34.77
Expanded/Second = 6,604,745

-bash-4.1$
```

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```
192-168-1-8:15-puzzle-base-code panagiotisgoulas$ ./15puzzle 4.puzzle
 5 12 10  7
15 11 14  0
 8  2  1 13
 3  4  9  6
Initial Estimate = 42
Threshold = 42 44 46 48 50 52 54 56
Solution = 56
Generated = 82,631,527
Expanded = 41,688,998
Time (seconds) = 2.79
Expanded/Second = 14,955,989
```

```
192-168-1-8:15-puzzle-base-code panagiotisgoulas$ ./15puzzle 14.puzzle
 7  6  8  1
11  5 14 10
 3  4  9 13
15  2  0 12
Initial Estimate = 41
Threshold = 41 43 45 47 49 51 53 55 57 59
Solution = 59
Generated = 937,956,567
Expanded = 475,109,872
Time (seconds) = 34.73
Expanded/Second = 13,679,217
```

```
-bash-4.1$ ./15puzzle 14.puzzle
 7  6  8  1
11  5 14 10
 3  4  9 13
15  2  0 12
Initial Estimate = 41
Threshold = 41 43 45 47 49 51 53 55 57 59
Solution = 59
Generated = 937,956,567
Expanded = 475,109,872
Time (seconds) = 72.75
Expanded/Second = 6,530,276

-bash-4.1$
```

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```
192-168-1-8:15-puzzle-base-code panagiotisgoulas$ ./15puzzle 88.puzzle
15  2 12 11
14 13  9  5
 1  3  8  7
 0 10  6  4
Initial Estimate = 43
Threshold = 43 45 47 49 51 53 55 57 59 61 63 65
Solution = 65
Generated = 6,195,467,075
Expanded = 3,176,234,804
Time (seconds) = 213.97
Expanded/Second = 14,844,429

192-168-1-8:15-puzzle-base-code panagiotisgoulas$ 
```