Assignment 1 Local Search Report
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Task 1. Puzzle Representation

Some sample GUI images:

Puzzle size 5 ▾	Puzzle Generate	Puzzle Evaluation	Puzzle Combination
Tease	Basic Hill Climb	1	

4	1	1	1	4
4	3	3	3	1
1	1	1	1	1
4	1	1	1	1
2	3	1	2	0

Puzzle size 7 ▾ | Puzzle Generate | Puzzle Evaluation | Puzzle Combination
Tease | Basic Hill Climb | 1

1	4	4	4	4	2	1
1	5	1	1	1	5	3
1	3	1	1	1	3	1
2	5	4	2	2	2	3
1	4	1	1	2	1	1
1	5	1	2	1	2	1
6	4	1	4	1	3	0

Task 2. Puzzle Evaluation

The puzzle is on the left, while the BFS output is on the right. The following shows 2 puzzles for each possible size, one that is solvable and one that is unsolvable
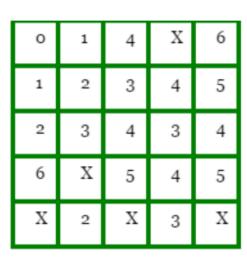
1. 5x5 (Solvable):

2	4	2	1	1
1	1	3	1	1
2	3	2	1	2
4	2	2	1	1
1	2	2	1	0

O	X	1	3	2
X	X	5	4	3
1	4	2	5	3
3	X	6	5	4
2	3	3	4	4

2. 5x5 (Unsolvable):

1	4	3	2	2
1	1	1	3	1
3	2	1	1	1
4	2	2	1	2
3	2	1	2	0

O	1	4	X	6
1	2	3	4	5
2	3	4	3	4
6	X	5	4	5
X	2	X	3	X

3. 7x7 (Solvable):

4	6	5	5	1	1	1
4	2	1	4	1	1	2
2	1	2	1	1	4	1
2	5	1	2	1	2	4
5	4	1	1	2	3	2
1	1	3	1	1	1	3
4	2	1	2	4	3	0

0	5	6	2	1	2	3
X	6	X	3	2	3	4
6	5	5	4	3	4	7
X	5	4	5	4	5	5
1	4	3	4	5	2	6
X	X	4	3	4	5	6
6	5	6	4	5	5	7

4. 7x7 (Unsolvable):

2	1	4	1	4	1	3
1	5	1	5	1	5	1
3	5	3	4	4	1	3
1	1	1	1	2	2	1
3	3	1	1	1	2	1
3	5	1	1	1	3	3
5	1	3	1	1	3	0

0	5	1	3	4	X	2
6	4	X	4	6	5	5
1	5	4	2	6	5	4
5	4	3	4	5	4	3
6	3	2	3	4	5	4
2	4	3	3	4	5	5
6	5	4	3	4	5	X

5. 9x9 (Solvable):

1	4	4	5	5	4	1	3	8
1	1	1	1	2	1	7	2	4
1	4	2	2	6	2	6	3	6
7	7	2	2	1	4	5	2	3
4	6	3	3	1	1	3	2	4
7	3	6	3	1	3	4	3	5
3	5	5	2	1	2	3	3	3
1	2	3	1	4	4	1	1	6
5	7	1	2	5	6	1	2	0

0	1	4	5	7	2	5	6	6
1	2	3	4	5	6	5	5	8
2	3	4	5	5	4	X	4	X
3	5	X	6	5	4	6	4	6
6	2	5	5	4	3	4	3	X
7	7	5	6	5	4	7	5	5
8	4	X	6	5	6	5	4	7
7	6	6	6	6	5	5	6	7
7	8	X	7	6	5	6	6	7

6. 9x9 (Unsolvable):

4	5	1	7	1	6	4	1	5
2	2	3	3	3	2	1	5	3
5	2	1	2	3	3	2	1	3
7	4	6	1	1	1	1	3	6
3	1	2	3	1	1	1	4	2
6	4	2	4	1	1	4	3	1
1	3	4	2	1	2	4	3	6
4	1	4	4	2	4	4	1	4
5	4	1	4	1	1	6	3	0

0	7	6	2	1	2	5	5	6
2	3	3	3	2	4	4	3	X
X	6	5	5	5	6	5	6	6
3	4	5	4	4	5	4	4	6
1	7	4	2	3	4	3	4	8
6	8	5	5	4	5	4	6	7
X	5	5	4	5	3	6	4	8
2	5	4	3	3	5	4	4	5
6	6	X	5	5	4	5	5	X

7. 11x11 (Solvable):

5	3	1	5	1	10	1	9	1	6	5
8	1	8	5	1	4	1	3	1	1	3
5	2	8	8	3	1	5	6	5	8	1
2	3	1	3	2	1	4	4	2	6	1
6	7	1	1	1	6	4	4	1	1	6
1	1	8	2	1	2	1	1	1	5	3
1	2	2	5	2	5	4	5	1	3	7
2	3	6	1	5	1	1	1	3	2	1
8	3	1	3	4	1	6	1	1	1	7
4	1	6	2	7	3	4	5	1	1	7
6	4	2	2	1	2	4	2	1	3	0

0	7	X	7	8	1	4	5	7	7	X
8	7	5	5	7	6	5	6	6	7	6
X	6	6	7	6	8	5	7	7	6	5
7	6	5	6	6	7	6	X	5	6	6
2	3	4	5	5	6	3	5	4	5	4
1	2	3	5	6	6	6	5	5	6	4
2	3	6	4	7	5	5	6	5	6	6
3	X	4	6	5	4	5	5	5	5	X
5	4	6	4	4	3	4	4	5	6	5
4	9	5	8	5	4	X	5	5	6	7
3	4	5	3	6	2	4	3	6	4	5

8. 11x11 (Unsolvable):

4	7	7	7	3	3	4	1	10	2	2
8	4	3	6	1	4	3	5	7	5	1
3	1	8	1	1	1	7	7	8	6	6
5	9	2	7	4	3	6	6	2	4	1
2	7	2	3	1	3	1	4	4	4	5
5	1	3	1	1	3	5	2	6	2	8
5	8	8	6	3	5	3	4	5	2	6
5	8	2	5	5	1	5	1	3	4	6
1	1	4	6	1	1	2	1	3	1	7
1	6	1	5	6	3	1	2	1	6	8
4	4	5	2	8	3	5	1	8	1	0

0	2	4	6	1	5	3	2	3	5	4
3	5	4	4	5	4	X	3	4	5	6
2	X	3	3	4	5	6	5	5	6	4
3	6	5	4	2	4	4	X	3	5	4
1	7	2	4	3	4	4	5	5	7	5
3	6	5	5	4	4	5	X	4	X	X
2	6	3	5	5	3	7	4	X	6	4
5	3	5	5	3	5	6	7	6	4	X
4	5	6	6	6	5	6	6	5	7	5
4	5	6	7	6	6	5	6	7	7	6
4	6	4	5	5	6	6	5	4	X	X