

# Assignment 3 Report – Heuristic Search

CSE 415: Introduction to Artificial Intelligence

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Stephan Hagel

Student Number: 1870562

sthagel@uw.edu

## 1 Heuristics for the Eight Puzzle

For the sake of fitting the table onto one page, I will not include the initial configuration of each of the puzzles inside of the table, but I will rather give them outside, as the report template suggests. Since none of the problems took longer than five minutes with either heuristic, I did not need to abort any of them. Therefore, I won't include this in the table either. The Table contains another column though, called "Time". The value for "Time" is based on the time it took for the algorithm to solve the problem on my Laptop with an Intel Core i5-560M processor (3 M cache, 2.66 GHz) and 3.75 GB of RAM .

Puzzle	Heuristic	Solved?	# Soln Edges	Soln Cost	# Expanded	Max OPEN	Time
A	none (UCS)	Y	7	7	166	101	0.1 s
A	Hamming	Y	7	7	8	6	<0.1 s
A	Manhattan	Y	7	7	7	6	<0.1 s
B	none (UCS)	Y	12	12	1490	898	5.3 s
B	Hamming	Y	12	12	96	72	0.1 s
B	Manhattan	Y	12	12	33	25	<0.1 s
C	none (UCS)	Y	14	14	4070	2290	38.1 s
C	Hamming	Y	14	14	196	127	0.2 s
C	Manhattan	Y	14	14	56	39	<0.1 s
D	none (UCS)	Y	16	16	7982	4700	158.0 s
D	Hamming	Y	16	16	617	365	1.5 s
D	Manhattan	Y	16	16	148	96	0.1 s

Table 1: Comparison of the Heuristics for the Eight Puzzle.