**Task 1.2:**

Solved 40 puzzles from file: easy.txt

Average nodes expanded: 334.1

Average search time: 0.012200558185577392

Average solution length: 7.0

Solved 40 puzzles from file: medium.txt

Average nodes expanded: 28269.0

Average search time: 0.6403847694396972

Average solution length: 15.0

Solved 1 puzzles from file: hard.txt

Average nodes expanded: 870572.0

Average search time: 19.751783847808838

Average solution length: 21.0

Both random.txt and worst.txt puzzles took upwards of 30 minutes, so I chose to omit these for this part

**Task 1.3:**

**Uniform Cost Search:**

Solved 40 puzzles from file: easy.txt

Average nodes expanded: 143.7

Average search time: 0.00941963791847229

Average solution length: 7.0

Solved 40 puzzles from file: medium.txt

Average nodes expanded: 6407.25

Average search time: 0.5383153319358825

Average solution length: 15.0

Solved 40 puzzles from file: hard.txt

Average nodes expanded: 72320.5

Average search time: 6.834794729948044

Average solution length: 21.0

Solved 40 puzzles from file: worst.txt

Average nodes expanded: 181315.7

Average search time: 26.959357953071596

Average solution length: 30.05

Solved 40 puzzles from file: random.txt

Average nodes expanded: 58265.65

Average search time: 6.46006800532341

Average solution length: 16.775

**Greedy Best-First Search:**

Solved 40 puzzles from file: easy.txt

Average nodes expanded: 52.675

Average search time: 0.0028564453125

Average solution length: 10.7

Solved 40 puzzles from file: medium.txt

Average nodes expanded: 624.8

Average search time: 0.040770184993743894

Average solution length: 75.9

Solved 40 puzzles from file: hard.txt

Average nodes expanded: 716.2

Average search time: 0.061104482412338255

Average solution length: 94.55

Solved 40 puzzles from file: worst.txt

Average nodes expanded: 771.55

Average search time: 0.04984536170959473

Average solution length: 100.75

Solved 40 puzzles from file: random.txt

Average nodes expanded: 363.175

Average search time: 0.023558282852172853

Average solution length: 56.825

**A\* Search:**

Solved 40 puzzles from file: easy.txt

Average nodes expanded: 13.35

Average search time: 0.0014934778213500977

Average solution length: 7.0

Solved 40 puzzles from file: medium.txt

Average nodes expanded: 341.175

Average search time: 0.026452910900115967

Average solution length: 15.0

Solved 40 puzzles from file: hard.txt

Average nodes expanded: 4887.875

Average search time: 0.3487042486667633

Average solution length: 21.0

Solved 40 puzzles from file: worst.txt

Average nodes expanded: 100266.5

Average search time: 6.982451349496841

Average solution length: 30.05

Solved 40 puzzles from file: random.txt

Average nodes expanded: 11867.425

Average search time: 0.7757408559322357

Average solution length: 16.775

**Task 1.4:**