BFS results:

puzzle2-3

['inc_E', 'inc_long_0', 'dec_long_90', 'dec_E', 'inc_long_90', 'inc_long_90', 'dec_E', 'inc_long_0']

nodes_expanded: 42326

max_queue_size: 161135

Path_length:8

puzzle2-8

['dec_E', 'dec_long_0', 'dec_long_0', 'dec_long_90', 'inc_long_0', 'inc_long_90', 'inc_long_0']

nodes_expanded: 6166

max_queue_size: 23751

Path_length:7

puzzle2-11

['dec_E', 'dec_E', 'dec_long_90', 'dec_E', 'inc_long_90', 'dec_long_0', 'inc_long_90']

nodes_expanded: 5103

max_queue_size: 19649

Path_length:7

For the puzzles greater than depth 10 BFS

Puzzle-12

['dec_long_0', 'dec_long_90', 'inc_E', 'inc_E', 'inc_long_0', 'dec_E', 'dec_long_90']

nodes_expanded: 16040

max_queue_size: 61423

Path_length:7

Other puzzles couldn't be solved by BFS as the depth of goal is greater than 10

A-STAR Results:

Puzzle2-1

['inc_long_0', 'inc_long_0', 'inc_long_90', 'dec_long_0', 'inc_long_90', 'inc_E', 'inc_long_0', 'inc_E', 'inc_long_0', 'inc_long_0', 'inc_E', 'dec_long_90', 'inc_E', 'dec_long_90']

nodes_expanded:142825

max_queue_size:554553

path_length: 14

Puzzle2-2

['dec_long_90', 'dec_long_90', 'inc_E', 'inc_E', 'inc_E', 'dec_long_90', 'inc_E', 'inc_long_90', 'dec_long_0']

nodes_expanded:53

max_queue_size:211

path_length: 9

Puzzle2-3

'inc_E', 'inc_long_0', 'dec_long_90', 'dec_E', 'inc_long_90', 'inc_long_90', 'dec_E', 'inc_long_0']

nodes_expanded:45

max_queue_size:178

path_length: 8

Puzzle2-4

['inc_long_0', 'inc_long_0', 'inc_long_90', 'dec_long_0', 'inc_E', 'dec_long_90', 'inc_E', 'inc_long_90', 'inc_E', 'dec_long_0', 'dec_long_0']

nodes_expanded:1966

max_queue_size:7699

path_length: 11

puzzle-5

['dec_long_90', 'dec_long_90', 'dec_E', 'inc_long_90', 'dec_E', 'dec_E', 'inc_long_0', 'inc_long_0', 'inc_E', 'inc_long_0', 'inc_long_0', 'inc_long_0']

nodes_expanded:99212

max_queue_size:379537

path_length: 12

puzzle-8

['dec_E', 'dec_long_0', 'dec_long_0', 'dec_long_90', 'inc_long_0', 'inc_long_90', 'inc_long_0']

nodes_expanded:269

max_queue_size:1039

path_length: 7

puzzle-9

['inc_long_0', 'inc_long_90', 'inc_long_90', 'inc_E', 'inc_long_0', 'dec_E', 'dec_E', 'inc_long_90', 'inc_long_0', 'inc_long_0']

nodes_expanded:52

max_queue_size:207

path_length: 10

Puzzle-11

['dec_E', 'dec_E', 'dec_long_90', 'dec_E', 'inc_long_90', 'dec_long_0', 'inc_long_90']

nodes_expanded:78

max_queue_size:312

path_length: 7

Puzzle-12

['dec_long_0', 'dec_long_90', 'inc_E', 'inc_E', 'inc_long_0', 'dec_E', 'dec_long_90']

nodes_expanded:249

max_queue_size:984

path_length: 7

puzzle-13

['dec_long_0', 'dec_E', 'dec_long_0', 'dec_long_90', 'inc_E', 'inc_E', 'inc_long_90', 'inc_long_0', 'dec_E', 'dec_E', 'inc_long_0', 'inc_long_90', 'dec_long_0']

nodes_expanded:34542

max_queue_size:130212

path_length: 13

Puzzle-14

['dec_long_90', 'inc_long_0', 'inc_long_0', 'dec_E', 'inc_long_0', 'inc_long_0', 'dec_long_90', 'dec_long_90', 'dec_E', 'dec_long_0', 'dec_long_0', 'dec_long_90']

nodes_expanded:15167

max_queue_size:58978

path_length: 12

Puzzle-15

['inc_long_0', 'dec_E', 'dec_long_0', 'dec_long_0', 'inc_long_90', 'inc_E', 'dec_long_90', 'inc_long_0', 'dec_E', 'dec_long_90']

nodes_expanded:6462

max_queue_size:24595

path_length: 10

Puzzle-16

['inc_long_0', 'inc_E', 'dec_long_90', 'dec_long_0', 'dec_long_0', 'inc_long_90', 'dec_E', 'dec_long_90', 'inc_E', 'inc_E', 'dec_long_0', 'inc_long_90']

nodes_expanded:10678

max_queue_size:41343

path_length: 12

puzzle-17

nodes_expanded:446749

max_queue_size:1675427

path_length: 15

puzzle-18

['inc_E', 'inc_long_90', 'inc_E', 'inc_E', 'inc_E', 'dec_long_90', 'dec_long_90', 'inc_long_0', 'dec_E', 'inc_long_90', 'inc_long_90', 'dec_long_0']

nodes_expanded:4106

max_queue_size:15823

path_length: 12

puzzle-19

['inc_E', 'dec_long_0', 'dec_long_90', 'inc_long_0', 'dec_E', 'inc_long_90', 'dec_E', 'inc_long_0', 'inc_long_0', 'inc_long_90', 'inc_E', 'dec_long_90', 'inc_E']

nodes_expanded:174094

max_queue_size:641215

path_length: 13

RBFS:

puzzle2-0 max recursion depth occurred

puzzle2-1 max recursion depth occurred

puzzle2-2 max recursion depth occurred

puzzle-4 max recursion depth occurred

puzzle2-3

['inc_E', 'inc_long_0', 'dec_long_90', 'dec_E', 'inc_long_90', 'inc_long_90', 'dec_E', 'inc_long_0']

nodes expanded:70

Path_length:8

Max_elements in queue RBFS:40

puzzle-8

['dec_E', 'dec_long_0', 'dec_long_0', 'dec_long_90', 'inc_long_0', 'inc_long_90', 'inc_long_0']

nodes expanded:175

Path_length:7

Max_elements in queue RBFS:40

puzzle-9

['inc_long_0', 'inc_long_90', 'inc_long_90', 'inc_E', 'inc_long_0', 'dec_E', 'dec_E', 'inc_long_90', 'inc_long_0', 'inc_long_0']

nodes expanded:51

Path_length:10

Max_elements in queue RBFS:50

puzzle-11

['dec_E', 'dec_E', 'dec_long_90', 'dec_E', 'inc_long_90', 'dec_long_0', 'inc_long_0', 'dec_long_0', 'inc_long_90']

nodes expanded:4447

Path_length:9

Max_elements in queue RBFS:60

puzzle12-

['dec_long_0', 'dec_long_90', 'inc_E', 'inc_E', 'inc_long_0', 'dec_E', 'dec_long_90']

nodes expanded:1463

Path_length:7

Max_elements in queue RBFS:45