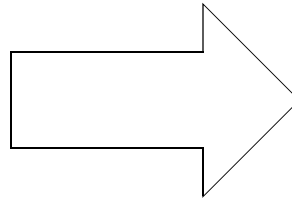


# 15-Puzzle

## State Space Search

Initial State

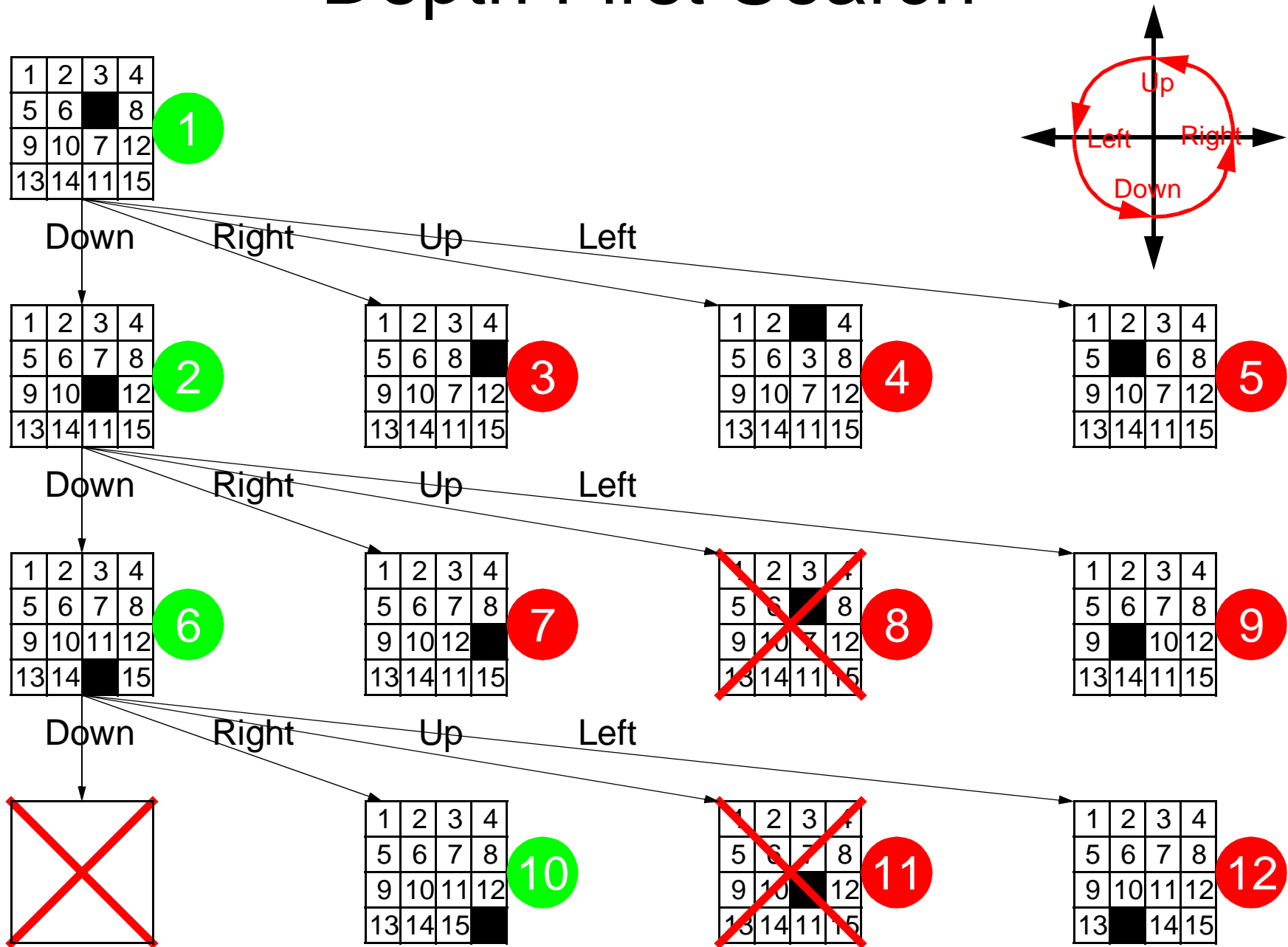
1	2	3	4
5	6		8
9	10	7	12
13	14	11	15



Goal State

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	

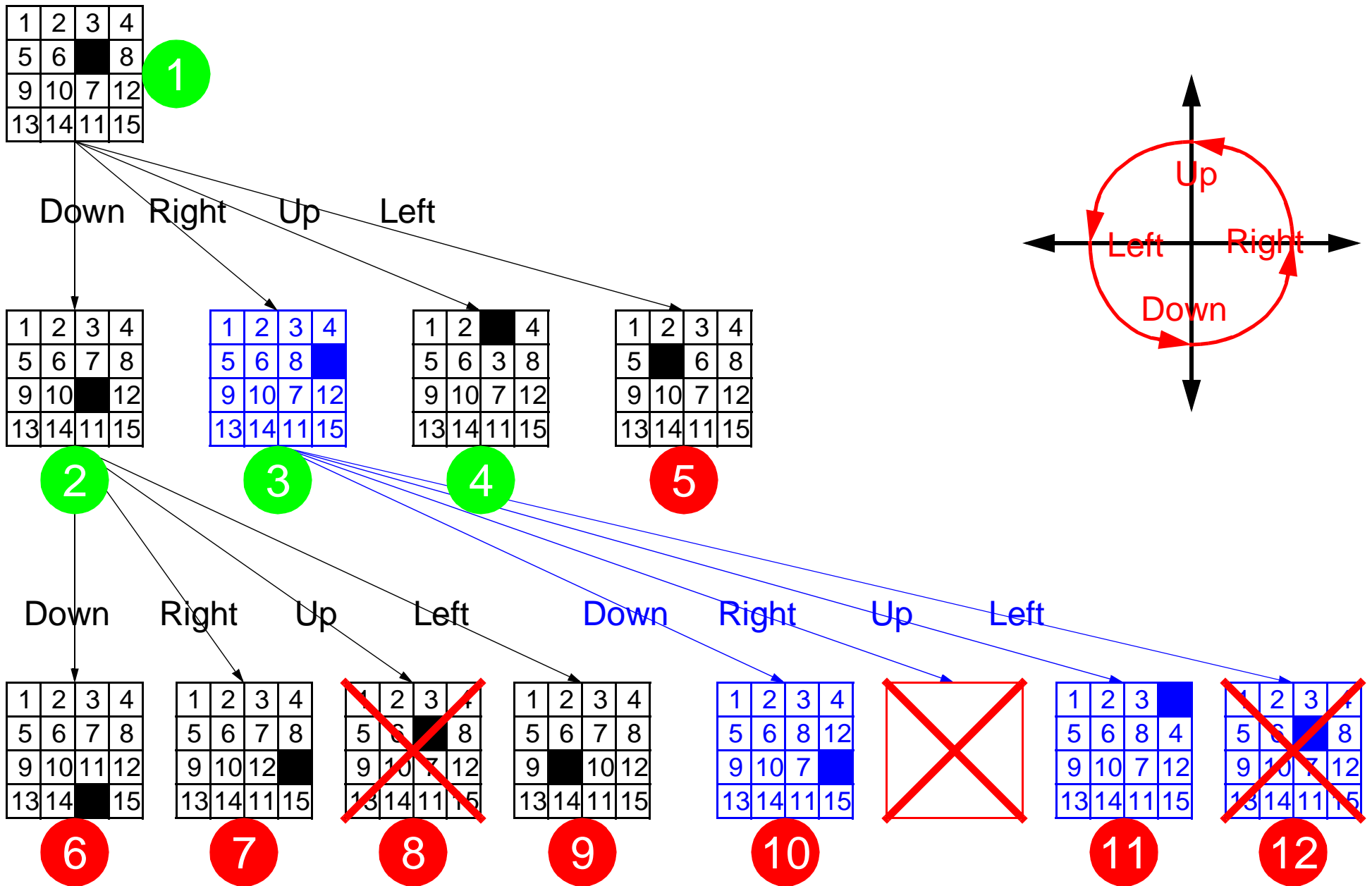
# Depth First Search



# Depth First Search

iter	open before	closed	current	succ	closed	open after
0	1					1
1	1		1	2, 3, 4, 5	1	2, 3, 4, 5
2	2, 3, 4, 5	1	2	6, 7, <del>8</del> , 9	1,2	6,7,9,3,4,5
3	6,7,9,3,4,5	1,2	6	10, <del>11</del> , 12	1,2,6	10,12,7,9,3,4,5
4	10,12,7,9,3,4,5	1,2,6	10	---	1,2,6,10	---
5						

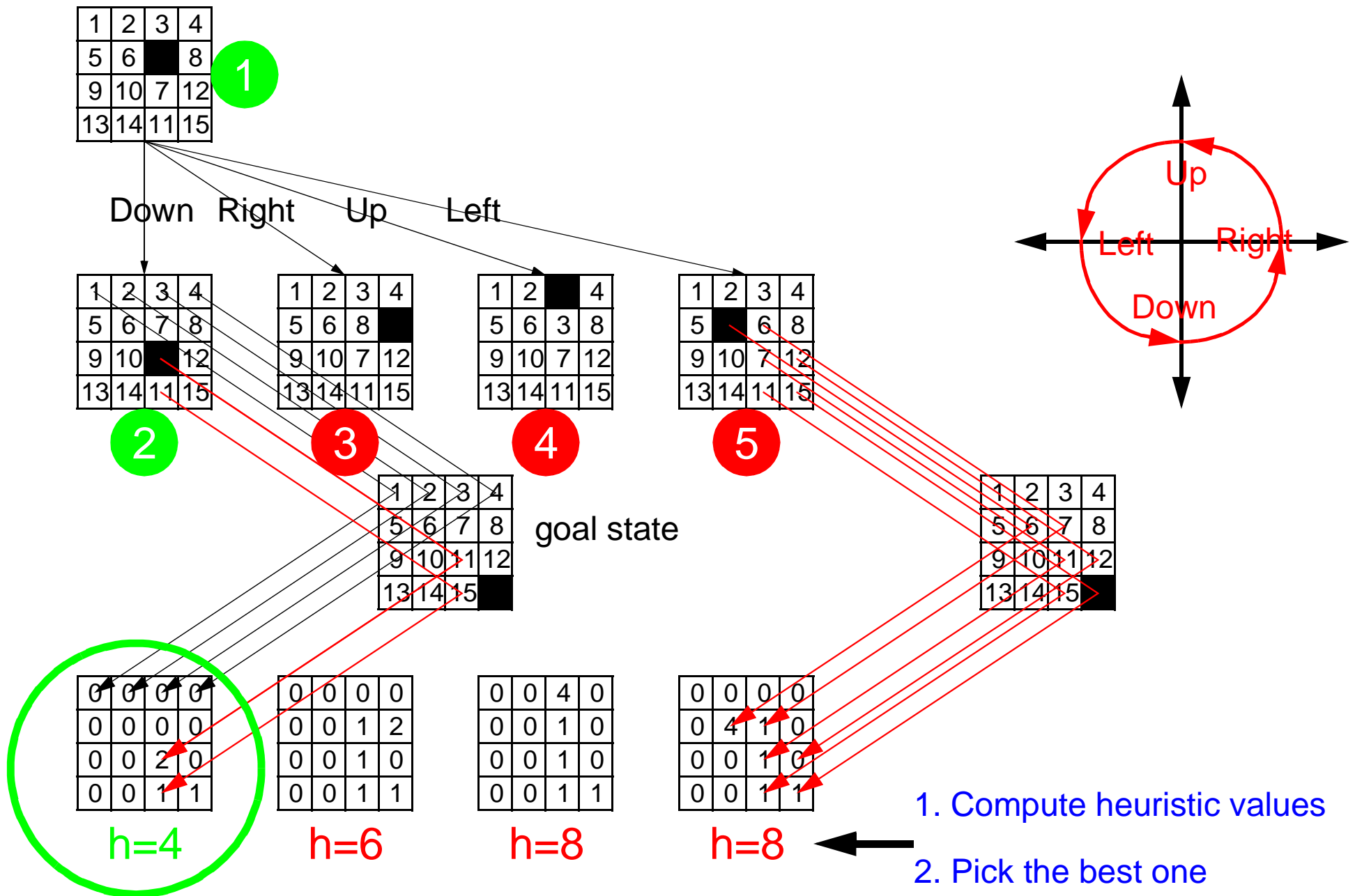
# Breadth First Search



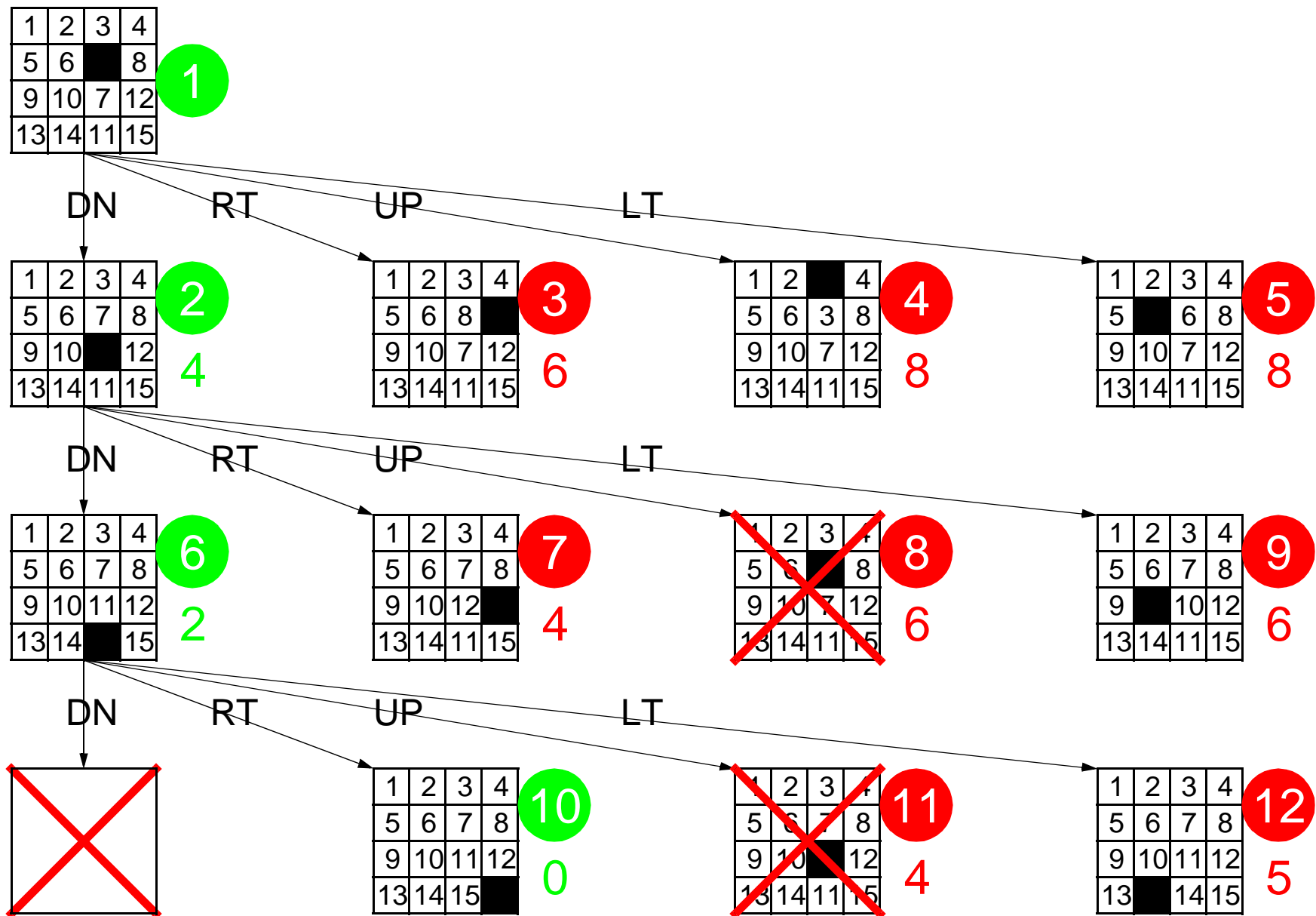
# Breadth First Search

iter	open before	closed	current	succ	closed	open after
0	1					1
1	1		1	2, 3, 4, 5	1	2, 3, 4, 5
2	2, 3, 4, 5	1	2	6, 7, <del>8</del> , 9	1,2	3,4,5,6,7,9
3	3,4,5,6,7,9	1,2	3	10, 11, <del>12</del>	1,2,3	4,5,6,7,9,11,12
4	4,5,6,7,9,11,12	1,2,3	4	---	1,2,3,4	---
5						

# Best First Search 1



# Best First Search 2

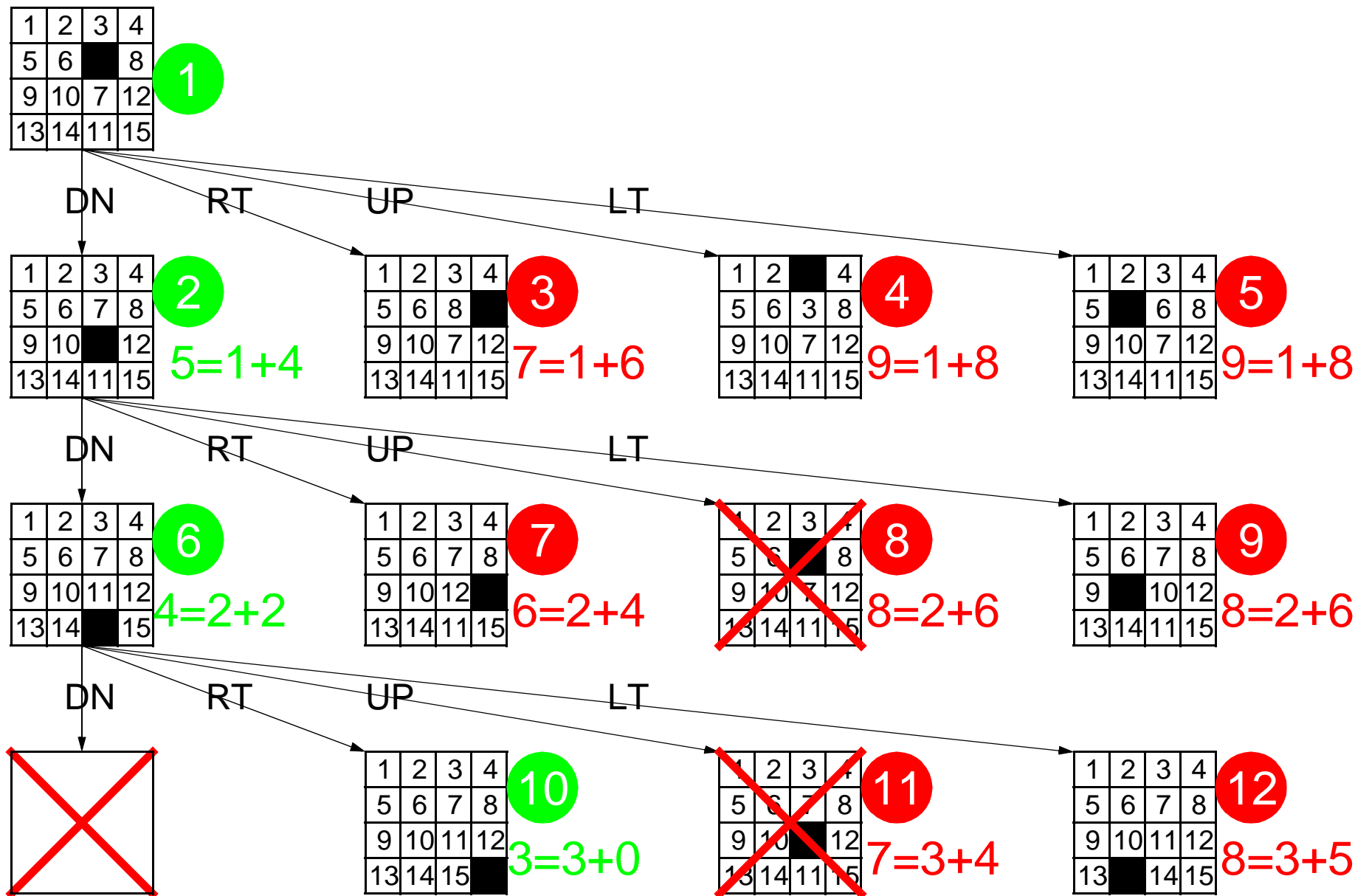


# Best First Search

iter	open before	closed	current	succ	closed	open after
0	1					1
1	1		1	2(h=4), 3(h=6), 4(h=8), 5(h=8)	1	2(h=4), 3(h=6), 4(h=8), 5(h=8)
2	2, 3, 4, 5	1	2	6(2), 7(4), <del>8</del> , 9(6)	1,2	6(2), 7(4), 9(6), 3(6), 4(8), 5(8)
3	6,7,9,3,4,5	1,2	6	10(0), <del>11(4)</del> , 12(5)	1,2,6	10(0), 7(4), 12(5),9(6), 3(6), 4(8), 5(8)



# A\* Search



# A\* Search

iter	open before	closed	current	succ	closed	open after
0	1					1
1	1		1	2(f=g+h=5), 3(f=g+h=7), 4(f=g+h=9), 5(f=g+h=9)	1	2(f=5), 3(f=7), 4(f=9), 5(f=9)
2	2, 3, 4, 5	1	2	6(4), 7(6), <del>8(8)</del> , 9(8)	1,2	6(4), 7(6), 3(7), 9(8), 4(9), 5(9)
3	7, 3, 9, 4, 5	1, 2	6	10(3), <del>11(7)</del> , 12(8)	1,2,6	10(3), 7(6), 3(7), 12(8), 9(8), 4(9), 5(9)