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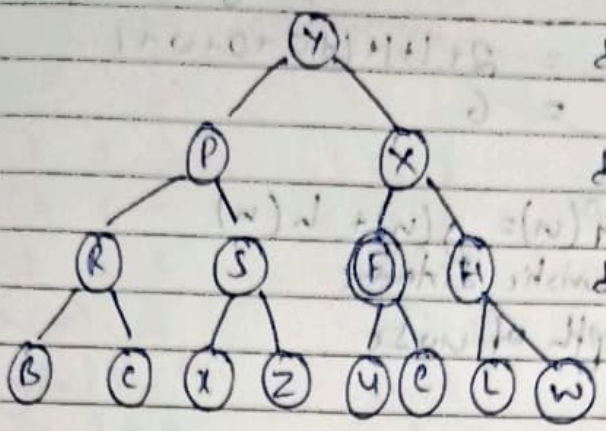
Iterative deepening Search Algorithm



Step 1: print the root node
Y

Step 2: Print the children of the root node

Y	Goal: Not found depth: 0
YPX	Goal: Not found depth: 1
YPRSXFH	Goal: Not found depth: 2

Return (F)

Using A*, 8 puzzle problem

Initial State			Goal		
1	2	3	2	8	1
8	0	4	0	4	3
7	6	5	7	6	5

The blank space can move in 4 directions which is 2, 8, 6, 4.

when moved to 8

1	0	3
8	2	4
7	6	5

Heuristic distance = 2 + 2 + 1 + 1 + 0 + 0 + 2
= 8

when moved to 8.

1	2	3
0	8	4
7	6	5

distance = 2+1+1+1+0+0+0+1
= 6

we know $f(n) = g(n) + h(n)$
$h(n)$ = heuristic distance
$g(n)$ = depth of node

initially
$h(n) = 7$
$g(n) = 0$
$f(n) = 0+7 = 7$

after 1st move

1	2	3
0	8	4
7	6	5

$h(n) = 6$
$g(n) = 1$
$f(n) = 1+6 = 7$

after 2nd move

1	2	3
8	4	0
7	6	5

$h(n) = 6$
$g(n) = 1$
$f(n) = 6+1 = 7$

after 3rd move

1	0	3
8	2	4
7	6	5

$h(n) = 8$
$g(n) = 1$
$f(n) = 9$

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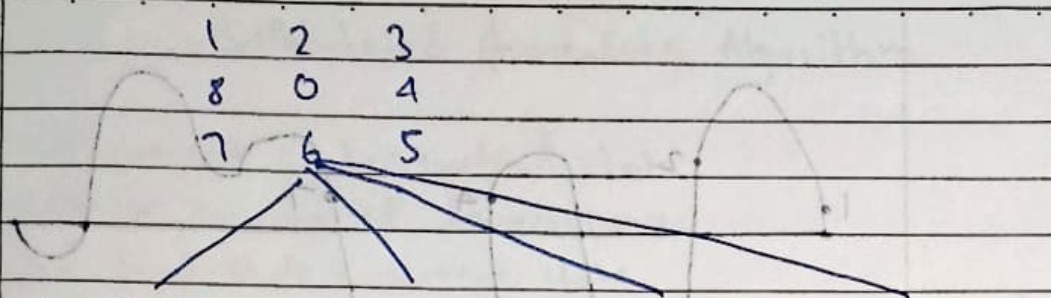

1 2 3	1 2 3	1 2 3	1 0 3
0 8 4	8 4 0	8 6 4	8 2 4
7 6 5	7 6 5	7 0 5	7 6 5
h(n) = 6	h(n) = 6	h(n) = 8	
g(n) = 1	g(n) = 1		
f(n) = 7	f(n) = 7		

0 2 3	1 2 3	1 0 2	1 2 3
1 8 4	7 8 4	8 4 3	8 4 5
7 6 5	0 6 5	7 6 5	7 6 0
h(n) = 7	h(n) = 7	h(n) = 5	h(n) = 7
g(n) = 2	g(n) = 2	g(n) = 2	g(n) = 2

1 0 2	0 1 2	8 1 2
8 4 3 →	8 4 3 →	0 4 3
7 6 5	7 6 5	7 6 5
h(n) = 6	h(n) = 5	h(n) = 4

8 1 2
7 4 3
0 6 5
h(n) = 5

8 1 2
4 0 3
7 6 5
h(n) = 5