```python
1 src=[1,2,3,-1,4,5,6,7,8]
2 target=[1,2,3,4,5,-1,6,7,8]
3 def iddfs(src,target,depth):
4     for limit in range(0,depth+1):
5         visited_states=[]
6         if dfs(src,target,limit,visited_states):
7             return True
8     return False
9
10 def gen(state,m,b):
11     temp=state[:]
12     if m=='l':
13         temp[b],temp[b-1]=temp[b-1],temp[b]
14     if m=='r':
15         temp[b],temp[b+1]=temp[b+1],temp[b]
16     if m=='u':
17         temp[b],temp[b-3]=temp[b-3],temp[b]
18     if m=='d':
19         temp[b],temp[b+3]=temp[b+3],temp[b]
20     return temp
21
22 def possible_moves(state, visited_states):
23     b = state.index(-1)
24     d = []
25     pos_moves = []
26     if b <= 5:
27         d.append("d")
28     if b >= 3:
29         d.append("u")
30     if b % 3 > 0:
31         d.append("l")
32     if b % 3 < 2:
33         d.append("r")
34     for i in d:
35         temp = gen(state, i, b)
36         if not temp in visited_states:
37             pos_moves.append(temp)
38     return pos_moves
39 def search(src, target, visited_states, g):
40     if src == target:
41         return visited_states
42     visited_states.append(src),
43     adj = possible_moves(src, visited_states)
44     scores = []
45     selected_moves = []
46     for move in adj:
47         scores.append(h(move) + g)
48     min_score = min(scores)
49     for i in range(len(adj)):
50         if scores[i] == min_score:
51             selected_moves.append(adj[i])
52     for move in selected_moves:
53         if search(move, target, visited_states, g +
54             return visited_states
55     return 0
56 def solve(src, target):
57     visited_states = []
58     res = search(src, target, visited_states, 0)
59
60     if type(res) != type(int()):
61         i = 0
62         for state in res:
63             display(state)
64             i += 1
65         display(target)
66         print("Total moves made: ", i + 1)
67
68
69 def display(state):
70     for i in range(9):
71         if i % 3 == 0:
72             print()
73         if state[i] == -1:
74             print(state[i], end="   ")
75         else:
76             print(state[i], end="   ")
77     print(end="\n")
78
79 print("Source State: ")
80 display(src)
81 print("Target State: ")
82 display(target)
83 print("Solving using IDDFS: ")
84
85 solve(src, target)
```

```
Source State:

1    2    3
-1    4    5
6    7    8
Target State:

1    2    3
4    5   -1
6    7    8
Solving using IDDFS:

1    2    3
-1    4    5
6    7    8


1    2    3
4   -1    5
6    7    8


1    2    3
4    5   -1
6    7    8
Total moves made:   3

Process finished.
```