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Task-2 8puzzle

```
def dfs(src, target, limit, visited_states)
    if src == target:
        return True
    if limit <= 0:
        return False
    visited_states.append(src)
    adj = possible_moves(src, visited_states)

    for mov in adj:
        if dfs(move, target, limit-1, visited_states
            return True
    return False

def possible_moves(state, visited_states):
    ind = state.index(-1)
    d = []
    if ind + 3 in range(9):
        d.append('d')
    if ind - 3 in range(9):
        d.append('u')
    if ind not in [0, 3, 6]:
        d.append('l')
    if ind not in [2, 5, 8]:
        d.append('r')
    pos_moves = []
    for move in d:
        pos_moves.append(gen(state,
            move, ind))
```

return [move for move in
pos_moves if move not in
visited_states]

```
def gen(state, m, b):
    temp = state.copy()
    if m == 'd':
        a = temp[b+3]
        temp[b+3] = temp[b]
        temp[b] = a
    def m == 'u':
        a = temp[b-3]
        temp[b-3] = temp[b]
        temp[b] = a
    elif m == 'l':
        a = temp[b-1]
        temp[b-1] = temp[b]
        temp[b] = a
    elif m == 'r'
        a = temp[b+1]
        temp[b+1] = temp[b]
        temp[b] = a
        return temp
def iddfs(src, target, depth):
        visited_states = []
    for i in range(1, depth+1):
        if dfs(src, target, i, visited_states):
            return True
    return False
```

src = [1, 2, 3, -1, 4, 5, 6, 7, 8]

target = [1, 2, 3, 4, 5, 6, -1, 7, 8]

depth = 4

iddfs = (src, target, depth)