

8puzzle.py

Pseudocode

```
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 move in adj:
```

```
        if dfs(move, target, limit-1, visited_states):
```

```
            ind 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')
```

①

Gargam


```
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
```

```
    elif 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 = iddfs(src, target, depth)
```