1BM18CS122
VARADVITHAL KJ

AI-Lab

IDS algorithm using heuristic function where 'd' not greater than 4

Algorithm:-

```
def iddfs( src, target, depth): # IDS
        for limit in range(1, depth+1);
                Visited States = []
                if dfs ( src, target, limit, visited_states):
                        return True
                return False


def dfs ( src, target ,limit, Visited_States): # DFS
        if src==target:
                print (target)
                return true

    if limit<=0;
            return False

    visited_states.append (src)
    adj = possible_moves( src ; visited_states)
```

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```
for move in adj:
    if dfs(move, target, limit-1, visited_stats):
        return True
return False


def possible_moves(State, visited_stats):
    b = State.index(-1)
    d = []
    pos_moves = []
    if b<=5:
        d.append('d')
    if b>=3:
        d.append('u')
    if b%3>0:
        d.append('l')
    if b%3<3:
        d.append('r')
    for i in d:
        temp = gen(State, i, b)
        if temp not in visited_stats:
            pos_moves.append(temp)
    return pos_moves
```

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```
def gen( state, m,b):
        temp =state.copy()
        if m=='l':
              temp[b], temp[b-1] = temp [b-1],
                                         temp[b]
    if m=='r':
          temp[b], temp[b+1] = temp[b+1], temp[b]
       if m=='u':
            temp[b], temp[b-3] = temp[b-3], temp[b]
    if m=='d':
          temp[b], temp[b+3] = temp [b+3], temp[b]

    return temp


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

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

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```
depth = 4
print((iddfs(src, ~~target~~ dst, depth))
```