10/11/2020

AI lab test

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5-A

Write-up

8-puzzle program using a-star

```
goal stat = [[1, 2, 3]
             [4, 5, 6]
             [7, 8, 0]]

def distance(puzzle, item_tot_calc, total_cal):
    t=0
    for r in range(3):
        for col in range(3):
            val = puzzle.peek(row,col) - 1
            target_col = val % 3
            target_row = val/3
            if target_row < 0:
                target_row = 2
            t += item_tot_calc(row, target_row, col, target_col)
    return total_calc(t)

def manhattan(puzzle):
    return distance(puzzle, lambda x, tx, y, ty: abs(tx-x) + abs(ty-y),
                    lambda t:t)

class SlidePuzzle():
# this class contains all the functions for generating moves, swapping, etc
    def generate_sol_path(self, path)
        if self.parent is None:
            return path
        else:
            path.append(self)
            return self.parent.generate_sol_path(path)

    def generate_moves(self):
        free = self.get_legal_moves()
        zero = self.find(0)
```

@yan

```
def swap(self, pos_first, pos_second):
    temp = self.peek(*pos_first)
    self.poke(pos_first[0], pos_first[1], self.peek(*pos_second))
    self.poke(pos_second[0], pos_second[1], temp)

def main():
    p = SlidePuzzle()
    p.initMat = [[8 2 3],[0 7 6],[4 5 1]]
    print(p)

    path, count = p.solve(manhattan)
    path.reverse()
    for i in path:
        print(i)

if __name__ == "__main__":
    main()
```