1BM18CS153 Vinay Kumar

AI Lab internal 1

1 8 puzzle using A*

```
class Node:
    def __init__(self, data, level, fval):
        self.data = data
        self.level = level
        self.fval = fval

    def generate_child(self):
        x,y = self.find(self.data,'_')
        val_list = [[x,y-1],[x,y+1],[x-1,y],[x+1,y]]
        children = []
        for i in val_list:
            child = self.shuffle(self.data,x,y,i[0],i[1])
            if child is not None:
                child_node = Node(child, self.level+1,0)
                children.append(child_node)
        return children
```

Vinay Kumar

1BM18CS153

```
class puzzle:

    def __init__(self, size):
        self.n = size
        self.open = []
        self.closed = []

    def accept(self):
        puz = []
        for i in range(0, self.n):
            temp = input().split(" ")
            puz.append(temp)
        return puz

    def f(self, start, goal):
        return self.h(start.data, goal) + start.level

    def h(self, start, goal):
        temp = 0
        for i in range(0, self.n):
            for j in range(0, self.n):
                if start[i][j] != goal[i][j]
                    and start[i][j] != '_':
                    temp += 1
        return temp
```

IBM18CS115
Vinay Kumar

```
def process(self):
    print("Enter state state")
    start = self.accept()
    print("Enter goal state")
    goal = self.accept()

    start = Node(start, 0, 0)
    start.fval = self.f(start, goal)

    self.open.appen(start)
    print("\n")
    while True:
        cur = self.open[0]
        print(" ")
        print("|")
        print("\\\|///")
        for i in cur.data:
            for j in i:
                print(j, end=" ")
        if(self.h(cur.data, goal) == 0):
            break
        for i in cur.generate_child():
            i.fval = self.f(i, goal)
            self.open.appen d(i)
            self.closed.append(cur.ent)
        self.open.sort(key=lambda x:x.fval
                       ,reverse=False)

puz = puzzle(3)
puz.process()
```

1BM18CS[5]
vinay kumar