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AI LAB WEEK – 4

Code:

```
import numpy as np
def create(matrix,c,d,r,p):
    def find():
        for i in range(3):
            for j in range(3):
                if(matrix[i][j]==0):
                    c=i
                    d=j
        return c,d
    def left(matrix,c,d):
            if d > 0:
                print(r)
                print("left")
                matrix1=np.copy(matrix)
                temp1=matrix1[c][d-1]
                matrix1[c][d-1]=matrix1[c][d]
                matrix1[c][d]=temp1
                c,d=find()
                print(matrix1)
                create(matrix1,c,d,r+1,p)
    def right(matrix,c,d):
            if d < 2 :
                print(r)
                print("right")
                matrix1=np.copy(matrix)
                temp1=matrix1[c][d+1]
                matrix1[c][d+1]=matrix1[c][d]
                matrix1[c][d]=temp1
                c,d=find()
                print(matrix1)
                create(matrix1,c,d,r+1,p)
    def up(matrix,c,d):
            if c > 0:
                print(r)
                print('up')
                matrix1=np.copy(matrix)
                temp1=matrix[c-1][d]
                matrix1[c-1][d]=matrix[c][d]
                matrix1[c][d]=temp1
                c,d=find()
                print(matrix1)
                create(matrix1,c,d,r+1,p)
    def down(matrix,c,d):
            if c < 2:
```

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```
                print(r)
                print('down')
                matrix1=np.copy(matrix)
                temp1=matrix1[c+1][d]
                matrix1[c+1][d]=matrix1[c][d]
                matrix1[c][d]=temp1
                c,d=find()
                print(matrix1)
                create(matrix1,c,d,r+1,p)
    if r>p:
        return 0
    c,d=find()
    left(matrix,c,d)
    right(matrix,c,d)
    up(matrix,c,d)
    down(matrix,c,d)
Rows = int(input("Give the number of rows:"))
Columns = int(input("Give the number of columns:"))
matrix = [[int(input()) for c in range (Columns)] for r in range(Rows)]
print(matrix)
c=0
d=0
r=0
p=int(input())
create(np.array(matrix),c,d,r+1,p)
```