import random, sys

def board():

'''Make matrix board of random numbers'''

list1 = [0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15]

random.shuffle(list1)

matrix = []

while list1 !=[]:

matrix.append(list1[:4])

list1 = list1[4:]

return matrix

def zero(board):

'''function to find where the zero is'''

empty\_space = None

for x,item in enumerate(board):

for y,item in enumerate(board):

if board[x][y] == 0:

empty\_space = (x,y)

return empty\_space

def draw\_board(board):

'''function to draw the board'''

print('\n\t+-------+-------+-------+-------|')

for x,item in enumerate(board):

for y,item in enumerate(board):

if board[x][y] == 0:

print('\t| XX' , end='')

else:

print('\t| ' + '{:02d}' .format(board[x][y]), end=' ')

print('\n\t+-------+-------+-------+-------|')

def ask\_number(board):

''' function to ask for the number to move'''

num = input('\nplease type the number of the piece to move : ( q ) to quit ')

if num in ['q','Q']:

print('\n\ngame over ')

sys.exit()

num = int(num)

piece = ()

for i,item in enumerate(board):

for j,item in enumerate(board):

if num == board[i][j]:

piece = (i,j)

return piece , num

def game():

'''Run the game logic'''

matrix = board()

empty\_space = zero(matrix)

game\_on = True

move = 0

while game\_on:

draw\_board(matrix)

piece,num = ask\_number(matrix)

if num > 15:

print('illegal move , try again ')

else:

if(empty\_space==(piece[0]-1,piece[1]))\

or(empty\_space==(piece[0]+1,piece[1]))\

or(empty\_space==(piece[0],piece[1]-1))\

or(empty\_space==(piece[0],piece[1]+1)):

matrix[empty\_space[0]][empty\_space[1]]=num

matrix[piece[0]][piece[1]]=0

empty\_space=(piece[0],piece[1])

move = move +1

print()

print('you have made ',move , 'moves so far ')

print(2\*'\n')

else:

print('illegal move , try again ')

if \_\_name\_\_ == '\_\_main\_\_':

game()