Program 3

Assume that there are 3 floors and 4 rooms in each floor. Design the vacuum cleaner to ensure the rooms are clean. You may make suitable assumption for initial state

# Given M x N grid(floor) create an agent that moves around the grid until the entire grid is clean

floor = [[1, 0, 0, 0], # '1' represents dirty and '0' represents clean

[0, 1, 0, 1],

[1, 0, 1, 1]]

def clean(floor):

m = len(floor[0]) # no of cols

n = len(floor) # no of rows

no\_of\_tiles = m \* n

tiles\_checked = 0

row = 0

col = 0

while tiles\_checked < no\_of\_tiles:

# Current position

print\_floor(floor, row, col)

# Suck if dirty

if floor[row][col] == 1:

floor[row][col] = 0

print('Sucked the dirt')

else:

print('Already Clean')

# Next tile

if row % 2 == 0: # Even rows the bot moves right to the next tile

if col < m-1:

col += 1

else:

row += 1 # Move to next row if we reached the last col

elif row % 2 == 1: # Odd rows the bot moves left to the next tile

if 0 < col:

col -= 1

else:

row += 1 # Move to next row if we reached the last col

tiles\_checked += 1

print('---------------')

print('Cleaned!!!')

def print\_floor(floor, row, col):

temp = floor[row][col]

floor[row][col] = 'VC'

for x in floor:

print(x)

floor[row][col] = temp

# Call the function

clean(floor)