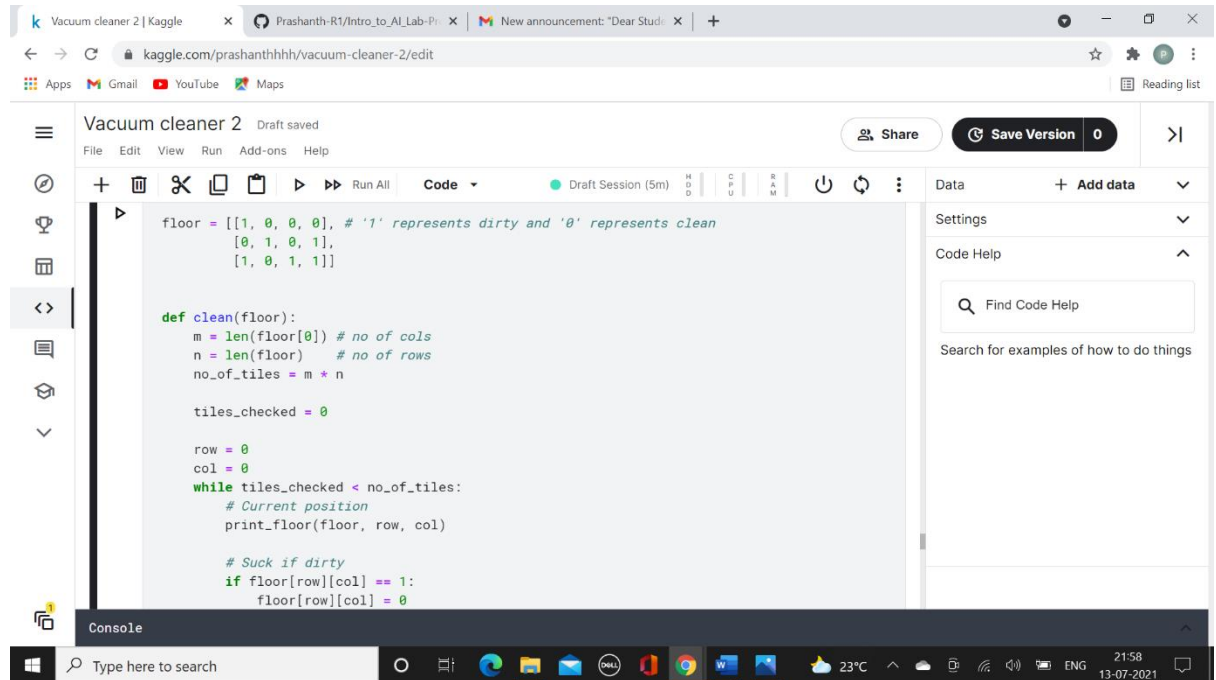


3. Assume that there are 3 floors and 4 rooms in each floor. Design the vacuum cleaner to ensure the rooms are clean. You may make suitable assumption for initial state.



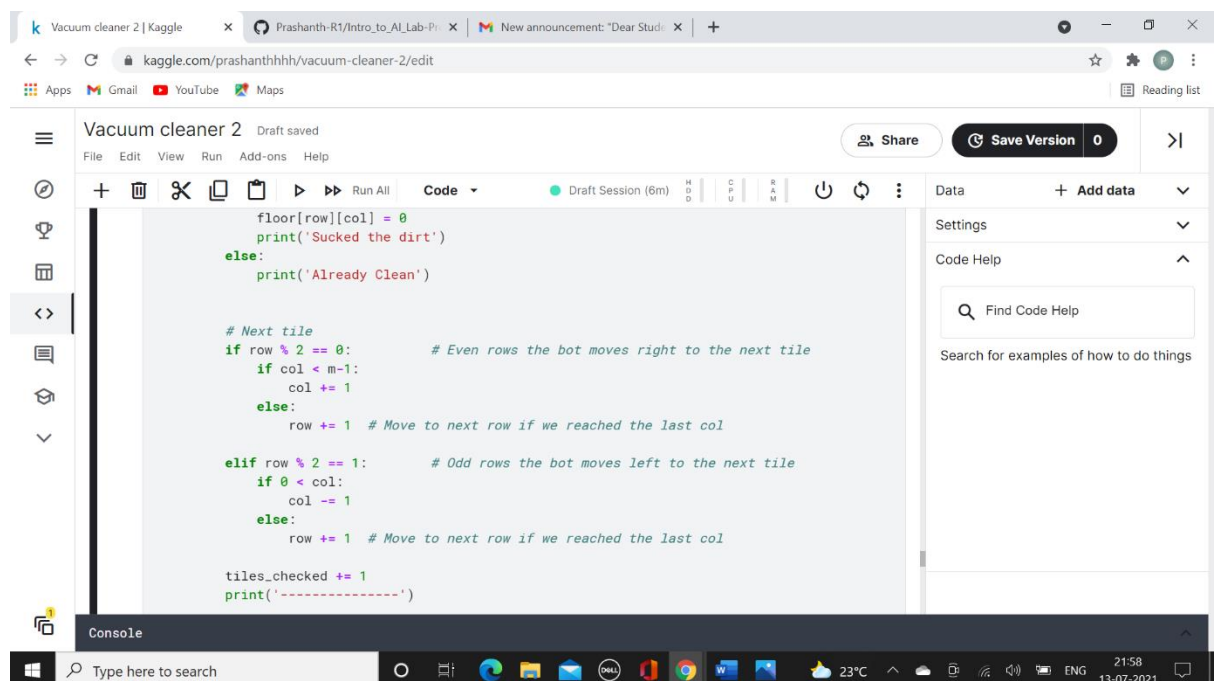
```
floor = [[1, 0, 0, 0], # '1' represents dirty and '0' represents clean
         [0, 1, 0, 1],
         [1, 0, 1, 1]]

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
```



```
        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('-----')
```

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Code

```
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)

['VC', 0, 0, 0]
[0, 1, 0, 1]
[1, 0, 1, 1]
Sucked the dirt
```

Console

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Code

```
-----
[0, 'VC', 0, 0]
[0, 1, 0, 1]
[1, 0, 1, 1]
Already Clean
-----
[0, 0, 'VC', 0]
[0, 1, 0, 1]
[1, 0, 1, 1]
Already Clean
-----
[0, 0, 0, 'VC']
[0, 1, 0, 1]
[1, 0, 1, 1]
Already Clean
-----
[0, 0, 0, 0]
[0, 1, 0, 'VC']
[1, 0, 1, 1]
Sucked the dirt
-----
[0, 0, 0, 0]
[0, 1, 'VC', 0]
[1, 0, 1, 1]
Already Clean
-----
[0, 0, 0, 0]
[0, 'VC', 0, 0]
```

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Code

```
[0, 0, 0, 0]
[0, 1, 'VC', 0]
[1, 0, 1, 1]
Already Clean
-----
[0, 0, 0, 0]
[0, 'VC', 0, 0]
[1, 0, 1, 1]
Sucked the dirt
-----
[0, 0, 0, 0]
['VC', 0, 0, 0]
[1, 0, 1, 1]
Already Clean
-----
[0, 0, 0, 0]
[0, 0, 0, 0]
['VC', 0, 1, 1]
Sucked the dirt
-----
[0, 0, 0, 0]
[0, 0, 0, 0]
[0, 'VC', 1, 1]
Already Clean
-----
[0, 0, 0, 0]
[0, 0, 0, 0]
```

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+ Draft Session (6m)

Code

```
[0, 0, 0, 0]
['VC', 0, 1, 1]
Sucked the dirt
-----
[0, 0, 0, 0]
[0, 0, 0, 0]
[0, 'VC', 1, 1]
Already Clean
-----
[0, 0, 0, 0]
[0, 0, 0, 0]
[0, 0, 'VC', 1]
Sucked the dirt
-----
[0, 0, 0, 0]
[0, 0, 0, 0]
[0, 0, 0, 'VC']
Sucked the dirt
-----
Cleaned!!!
```

+ Code + Markdown

Keep Going

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