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AI Lab Write UP

Vacuum Cleaner Agent

Problem Statement:

An MxN matrix will be given. Make and design an agent that moves and traverses the grid until the whole floor is clean.

⇒ Move the agent in the best possible way after cleaning a cell

⇒ Agent can start anywhere

Eg: floor ⇒ [[1,0,0],[0,0,1]] '1' = dirty '0' = clean.

Function to Clean: Algorithm/PseudoCode

```
i, j, m, n = row, col, len(floor), len(floor[0])
right = down = True
cleaned = [not any(f) for f in floor]
while not all(cleaned):
    while any(floor[i]):
        print_floor(floor, i, j)
        if floor[i][j]:
            floor[i][j] = 0
            printfloor([i][j])
        if not any(floor[i]):
            cleaned[i] = True
            break
        if j == n-1 : j-=1, right = False
        elif j == 0 : j+=1, right = True
        else : j+= 1 if right else -1
        if all(cleaned): break
```

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if i==n-1: i-=1, down=False
elif i==0: i+=1, down=True
else: ~~i+=1, down=True~~ i+=1 if down else -1
if cleared[i]: printfloor(floor, i, j)

Print Function: Normal 2-for loop traversal

```
for i in range(len(floor))
    for j in range(len(floor[i]))
        if i==row and j==col: print "Agent here"
        else print " floor[i][j] "
        print("\n")
    print("\n")
```