

LAB 2 – VACUUM CLEANER

CODE:

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#vacuum cleaner

def is_done(grid):
    for i in range(2):
        for j in range(2):
            if grid[i][j] == 0:
                return False
    return True

def get_position(i, j):
    if i == 0 and j == 0:
        return 'A'
    elif i == 0 and j == 1:
        return 'B'
    elif i == 1 and j == 0:
        return 'C'
    elif i == 1 and j == 1:
        return 'D'

def movement(pos):
    if pos == 'A' or pos == 'D':
        return "Where do you want to move next, B or C?"
    if pos == 'B' or pos == 'C':
        return "Where do you want to move next, A or D?"

def position_to_indices(pos):
    mapping = {
        'A': (0,0),
        'B': (0,1),
        'C': (1,0),
        'D': (1,1)
    }
    return mapping.get(pos.upper(), (-1,-1))

print("MANASWI SIRIPURAPU - 1BM23CS331\n")
grid = [[0, 0], [0, 0]]
i, j = 0, 0

while not is_done(grid):
    current_pos = get_position(i, j)
    print(f"Current room is: {current_pos}")

    if grid[i][j] == 0:
        grid[i][j] = 1
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        print(f"Cleaning room {current_pos}... Done.")
    else:
        print("This room is already clean...")

    print(movement(current_pos))
    inp = input().strip().upper()
    print()

    valid_moves = []
    if current_pos in ['A', 'D']:
        valid_moves = ['B', 'C']
    elif current_pos in ['B', 'C']:
        valid_moves = ['A', 'D']

    if inp not in valid_moves:
        print("Invalid move. Please choose a valid room.")
        continue

    i, j = position_to_indices(inp)

print("All rooms are clean. Vacuuming complete!")

```

OUTPUT:

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MANASWI SIRIPURAPU - 1BM23CS331

Current room is: A
Cleaning room A... Done.
Where do you want to move next, B or C?
B

Current room is: B
Cleaning room B... Done.
Where do you want to move next, A or D?
A

Current room is: A
This room is already clean...
Where do you want to move next, B or C?
A

Invalid move. Please choose a valid room.
Current room is: A
This room is already clean...
Where do you want to move next, B or C?
c

Current room is: C
Cleaning room C... Done.
Where do you want to move next, A or D?
d

Current room is: D
Cleaning room D... Done.
Where do you want to move next, B or C?
b

All rooms are clean. Vacuuming complete!

```