LAB-2: Vacuum Cleaner

Observation book:

2 Parameters → State, Location

Functions:

* Return state
* Suction ON
* Suction OFF
* Change Room
* Count

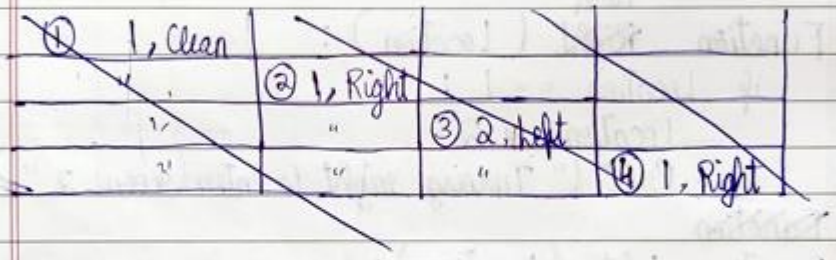
Vacuum Cleaner:

Algorithm:

```
Function ON (State, Location):
    Print ("Suction Turned ON")

Function OFF (State, Location):
    Print ("Suction Turned OFF")

Function Turn (Location):
    if Location == 1:
        Location = 2
    else: Print ("Turning right to enter room 2.")

Function Left (Location):
    Location = 1
    Print ("Turning left to enter room 1.")

Function Vacuum ():
    State = "Dirty"
    Location = 1

Function State (State):
    return State

Function Vacuum ():
    State = "Dirty"
    Location = 1
    for i in range (2):
        if State == "Dirty":
            ON()
```

State = "Clean"
OFF() → Print ("Room is clean now")
Turn(Location)
else:
~~Turn(Loc)~~
Print ("Room Already clean")
Turn(Location)

Percept Sequence :



① 1, Check					
① 1, Check	② 1, Clean				
① 1, Check	② 1, Clean	③ 1, Right			
① 1, Check	② 1, Clean	③ 1, Right	④ 2, Check		
① 1, Check	② 1, Clean	③ 1, Right	④ 2, Check	⑤ 2, Left	
① 1, Check	② 1, Clean	③ 1, Right	④ 2, Check	⑤ 2, Left	⑥ 1, Check
① 1, Check	② 1, Clean	③ 1, Right	④ 2, Check	⑤ 2, Left	⑥ 1, Check	⑦ 1, Right

Program:

```
def ON():
    print ("Suction Turned ON")

def OFF():
    print ("Suction Turned OFF")
```

```
def Turn (Location , Direction ):
    if Direction == "forward":
        if Location == 1:
            Location = 2
            print ("Turning Right to enter room 2")
        elif Location == 2:
            Location = 3
            print ("Turning Right to enter room 3")
        elif Location == 3:
            Location = 4
            print ("Turning Right to enter room 4")
        else:
            pass
    else:
        if Location == 2:
            Location = 1
            print ("Turning left to enter room 1")
        elif Location == 3:
            Location = 2
            print ("Turning left to enter room 2")
        elif Location == 4:
            Location = 3
            print ("Turning left to enter room 3")
        else:
            pass.
    return Location

State = "Dirty"
Location = 1
print ("Starting in room 1")
print ("The room is dirty")
```

```
for i in range(4):
    if state == "Dirty":
        ON()
        state = "Clean"
        print("Room is clean now")
        OFF()
        location = Turn(location, "forward")
    "    # "forward"
for i in range(3):
    if state == "Dirty":
        ON()
        state = "Clean"
        print("Room is clean now")
        OFF()
        location = Turn(location, "reverse")
    else:
        print("Room is already clean")
        location = Turn(location, "reverse")
```

Output :

```
Starting in room 1
The room is dirty
Suction turned ON
Room is clean now
Suction turned OFF
Turning right to enter room 2
Room is already clean
Turning right to enter room 3
  :
```

Output:

```
Enter the number of rows: 2
Enter the number of columns: 2
Enter the number of dirty cells: 2
Enter coordinates for 2 dirty cells (format: row,col row,col ...):
0,0 1,1
Initial grid state:
[1, 0]
[0, 1]
Cleaning position (0, 0)
Position (0, 1) is already clean
Position (1, 0) is already clean
Cleaning position (1, 1)
Final grid state:
[0, 0]
[0, 0]
Nikhilesh 1bm22cs181
```