1/10/24　Lab-2.

Algorithm:

1) Take a class vacuum cleaner Agent

2) Define a function init with self parameter

3) Now select a location room A and room B assign a room A and B are dirty.

4) Define a function move-right and move-left. set a location move-right to room B and move-left to room A.

5) Define a function suck if a rooms are clean vacuum cleaner will suck.

6) Define a sense and function sense & act. In this we will print a in which vacuum is cleaning and what is the room state and which room va

7) Now, check the condition.

    if self.rooms[self.location]==Dirty

      print("Action : suck"):

    elif self.location=='A'

      print("Action: Move Right").

    elif self.location=='B'

      print("Action: Move Left").

8) Define a function run and take a range and print a steps and it will show that the room is cleaned or it is dirty.

Rooms A, B

```
[A, clean]
[A, dirty]                         right
[B, clean]                         suck
[B, dirty]                         left
[A, clean], [A, clean]            suck
[A, clean], [A, dirty]            left
[B, clean], [B, clean]           suck
[B, clean], [B, dirty]           right
[A, clean], [B, clean]           suck
                                  exit
```

Vacuum cleaner Agent:

```python
class VacuumCleanerAgent:
    def __init__(self):
        self.location = 'A'
        self.rooms = {'A': 'Dirty', 'B': 'Dirty'}
    def move_right(self):
        self.location = 'B'
    def move_left(self):
        self.location = 'A'
    def suck(self):
        self.rooms[self.location] = 'clean'
    def sense_and_act(self):
        print(f "vacuum is in room {self.location}
        Room state: {self.rooms[self.location]}
        if self.rooms[self.location] == 'Dirty':
            print("Action: suck")
            self.suck()
        elif self.location == 'A':
```

```python
            print("Action: Move Right")
            set self.move_right().
        elelif self.location == 'B':
            print("Action: Move Left")
            self.move_left().
    def run(self, steps=5):
        for step in range(steps):
            print(f"Step {step+1}: ")
            self.sense_and_act()
            print(f"Room States: {self.rooms}")
            print("-" * 20).

vacuum_agent = VacuumCleanerAgent()
vacuum_agent.run().
```

output:

Step 1:
vacuum is in Room A, Room State: Dirty.
Action: Suck
Room states: {'A': 'clean', 'B': 'Dirty'}

Step 2:
vacuum is in Room A, Room state: clean
Action: Move Right.
Room states: {'A': 'clean', 'B': 'Dirty'}

Step 3:
vacuum is in Room B, Room state: Dirty
Action: Suck
Room states: {'A': 'clean', 'B': 'clean'}.

Step 4:

vacuum es in room B, Room state: clean.
Action: move left.
Room state: {'A': 'clean', 'B': 'clean'}

Step 5:

vacuum es in room A, Room state: clean.
Action: move Right
Room States: {'A': 'clean', 'B': 'clean'}

Output for 4 ~~four~~ rooms

Step 1:

vacuum es in Room A, Room state: Dirty
Action: suck
Sucking dirt in room A.
Room States: {'A': 'clean', 'B': 'Dirty', 'C': 'Dirty', 'D': 'Dirty'}

Step 2:

vacuum es in Room A, Room state: clean
Action: move right.
moved right to room B,
Room states: {'A': 'clean', 'B': 'clean', 'C': 'Dirty', 'D': 'Dirty'}

Step 3:

vacuum es in room B Room state: clean
move down to room D.
Room states: {'A': 'clean', 'B': 'clean', 'C': 'Dirty', 'D': 'clean'}

Step 4:
Vacuum is in room D, Room state 6 clean.
moved left to room C.
Room states: {'A': 'clean', 'B': 'clean', 'C': 'clean', 'D': 'clean'}

Step 5:
Vacuum is in room C, Room state: clean.
moved left to room A.
Room states: {'A': clean, 'B': clean, C: clean, D: clean}

1.10 pr

Changes for 4 rooms

Self. rooms = { 'A': 'Dirty', 'B': 'Dirty', 'C': 'Dirty', 'D': 'Dirty'}
Self. neighbours = {'A': {'right': 'B', 'down': 'c'},
                    'B': {'left': 'A', 'down': 'D'}
                    'C': {'up': 'A', 'right': 'D'},
                    'D': {'up': 'B', 'left': 'c'}.}

def run(self, steps = 10):
    for step in range(steps):
        print(f"Step{step+1}:")
        self.sense_and_act()
        print(f"Room States: {self.rooms}")
        print("_" * 40).