**LAB PROGRAM 2:**

class VacuumEnvironment4Rooms:

    def \_\_init\_\_(self):

        self.rooms = {'A': True, 'B': True, 'C': True, 'D': True}

        self.agent\_location = None

        self.room\_order = ['A', 'B', 'C', 'D']

    def is\_dirty(self, location):

        return self.rooms[location]

    def clean(self, location):

        self.rooms[location] = False

    def move\_agent(self, location):

        self.agent\_location = location

    def get\_percept(self):

        return (self.agent\_location, self.is\_dirty(self.agent\_location))

    def all\_clean(self):

        return all(not dirty for dirty in self.rooms.values())

class VacuumAgent4Rooms:

    def \_\_init\_\_(self, environment):

        self.env = environment

        self.room\_order = environment.room\_order

        self.direction = 1

    def act(self):

        location, dirty = self.env.get\_percept()

        if dirty:

            print(f"Location {location} is dirty. Cleaning...")

            self.env.clean(location)

            return 'Suck'

        current\_index = self.room\_order.index(location)

        next\_index = current\_index + self.direction

        if next\_index >= len(self.room\_order):

            self.direction = -1

            next\_index = current\_index + self.direction

        elif next\_index < 0:

            self.direction = 1

            next\_index = current\_index + self.direction

        next\_location = self.room\_order[next\_index]

        print(f"Location {location} is clean. Moving {'right' if self.direction == 1 else 'left'} to {next\_location}...")

        self.env.move\_agent(next\_location)

        return 'Move'

def main():

    env = VacuumEnvironment4Rooms()

    start = input("Enter starting location (A, B, C, D): ").strip().upper()

    while start not in env.room\_order:

        start = input("Invalid input. Enter starting location (A, B, C, D): ").strip().upper()

    env.move\_agent(start)

    agent = VacuumAgent4Rooms(env)

    steps = 0

    while not env.all\_clean():

        agent.act()

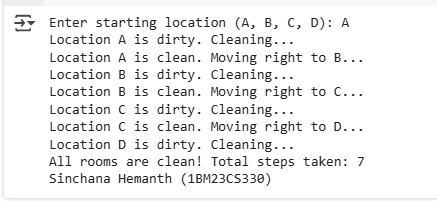
        steps += 1

    print(f"All rooms are clean! Total steps taken: {steps}")

if \_\_name\_\_ == "\_\_main\_\_":

    main()

print("Sinchana Hemanth (1BM23CS330)")

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