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class VacuumCleanerAgent:
    def __init__(self, environment):
        self.environment = environment
        self.position = (0, 0)
        self.goal = "clean the entire environment"

    def is_dirty(self, position):
        return self.environment[position[0]][position[1]]

    def clean(self):
        print(f"Cleaning position {self.position}")
        self.environment[self.position[0]][self.position[1]] = False

    def move_right(self):
        if self.position[1] < len(self.environment[0]) - 1:
            self.position = (self.position[0], self.position[1] + 1)
            print(f"Moving right to {self.position}")

    def move_left(self):
        if self.position[1] > 0:
            self.position = (self.position[0], self.position[1] - 1)
            print(f"Moving left to {self.position}")

    def move_down(self):
        if self.position[0] < len(self.environment) - 1:
            self.position = (self.position[0] + 1, self.position[1])
            print(f"Moving down to {self.position}")

    def move_up(self):
        if self.position[0] > 0:
            self.position = (self.position[0] - 1, self.position[1])
            print(f"Moving up to {self.position}")

    def all_clean(self):
        return all(all(not cell for cell in row) for row in self.environment)

    def step(self):
        if self.is_dirty(self.position):
            self.clean()
        else:
            if self.position[1] < len(self.environment[0]) - 1:
                self.move_right()
            elif self.position[0] < len(self.environment) - 1:
                self.move_down()
                while self.position[1] > 0:
                    self.move_left()

            if self.all_clean():
                print("Goal achieved: The entire environment is clean!")
                return True
            return False

environment = [
    [True, False, True],
    [False, True, False],
    [True, False, True]
]

agent = VacuumCleanerAgent(environment)

while not agent.step():
    print(agent.environment)

print('Adithya Ravikeerthi')

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⇒ Cleaning position (0, 0)
[[False, False, True], [False, True, False], [True, False, True]]
Moving right to (0, 1)
[[False, False, True], [False, True, False], [True, False, True]]
Moving right to (0, 2)
[[False, False, True], [False, True, False], [True, False, True]]
Cleaning position (0, 2)
[[False, False, False], [False, True, False], [True, False, True]]
Moving down to (1, 2)
Moving left to (1, 1)
Moving left to (1, 0)
[[False, False, False], [False, True, False], [True, False, True]]
Moving right to (1, 1)
[[False, False, False], [False, True, False], [True, False, True]]
Cleaning position (1, 1)

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[[False, False, False], [False, False, False], [True, False, True]]
Moving right to (1, 2)
[[False, False, False], [False, False, False], [True, False, True]]
Moving down to (2, 2)
Moving left to (2, 1)
Moving left to (2, 0)
[[False, False, False], [False, False, False], [True, False, True]]
Cleaning position (2, 0)
[[False, False, False], [False, False, False], [False, False, True]]
Moving right to (2, 1)
[[False, False, False], [False, False, False], [False, False, True]]
Moving right to (2, 2)
[[False, False, False], [False, False, False], [False, False, True]]
Cleaning position (2, 2)
Goal achieved: The entire environment is clean!
Adithya Ravikeerthi
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