import random

# Define the environment

class Environment:

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

self.rooms = {

"A": random.choice(["Dirty", "Clean"]),

"B": random.choice(["Dirty", "Clean"])

}

self.vacuum\_location = random.choice(["A", "B"])

def status(self):

return self.vacuum\_location, self.rooms[self.vacuum\_location]

def is\_clean(self):

return self.rooms["A"] == "Clean" and self.rooms["B"] == "Clean"

def display(self):

print(f"Room A: {self.rooms['A']}, Room B: {self.rooms['B']}, Vacuum at: {self.vacuum\_location}")

# Define the agent

class VacuumAgent:

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

self.env = environment

self.steps = 0

def run(self):

while not self.env.is\_clean():

loc, status = self.env.status()

self.env.display()

if status == "Dirty":

print(f"Step {self.steps + 1}: {loc} is dirty. Cleaning...")

self.env.rooms[loc] = "Clean"

else:

print(f"Step {self.steps + 1}: {loc} is clean. Moving...")

# Move to the other room

self.env.vacuum\_location = "B" if loc == "A" else "A"

self.steps += 1

print("\nAll rooms are clean!")

print(f"Total steps taken: {self.steps}")

# Run the simulation

env = Environment()

agent = VacuumAgent(env)

agent.run()

