



Artificial Intelligence

Lab 08 Tasks

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Task#1

Solution:

```
import random
room_status = {
    'A': random.choice([0, 1]),
    'B': random.choice([0, 1]),
    'C': random.choice([0, 1]),
    'D': random.choice([0, 1])
}

def auto_vacuum(): 1 usage
    for room, condition in room_status.items():
        print(f"Room {room} is {'Dirty' if condition == 1 else 'Clean'}")
        if condition == 1: # If the room is dirty, clean it
            room_status[room] = 0
            print(f"Cleaning {room}...")
auto_vacuum()
print("Final Room Status:", room_status)
```

Output:

```
Room A is Clean
Room B is Clean
Room C is Dirty
Cleaning C...
Room D is Dirty
Cleaning D...
Final Room Status: {'A': 0, 'B': 0, 'C': 0, 'D': 0}
```

Task#2

Solution:

```
def traffic_light_agent(light_color): 1 usage
    if light_color == "Red":
        return "Stop"
    elif light_color == "Yellow":
        return "Slow down"
    elif light_color == "Green":
        return "Move"
    else:
        return "Invalid color"
light = input("Enter traffic light color (Red/Yellow/Green): ")
print("Action:", traffic_light_agent(light))
```

Output:

```
Enter traffic light color (Red/Yellow/Green): Green
Action: Move

Process finished with exit code 0
|
```

Task#3

Solution:

```
def smart_door(sensor_active, period, has_access=False): 1 usage
    if period == "Night":
        if sensor_active and has_access:
            return "Door is Unlocked"
        return "Door Remains Locked"
    else:
        return "Door Opens" if sensor_active else "Door Remains Shut"
motion_detected = input("Is motion detected? (yes/no): ").strip().lower() == "yes"
current_time = input("Is it daytime or nighttime? (Day/Night): ").strip().capitalize()
access_granted = input("Does the person have access? (yes/no): ").strip().lower() == "yes"
print("Door Status:", smart_door(motion_detected, current_time, access_granted))
```

Output:

```
Is motion detected? (yes/no): no  
Is it daytime or nighttime? (Day/Night): day  
Does the person have access? (yes/no): no  
Door Status: Door Remains Shut  
  
Process finished with exit code 0  
|
```