National University of Modern Languages

Artificial Intelligence - LAB

Lab # 6

BSSE 5(M)

Submitted By:

Muhammad Umair (12093)

Submitted To:

Sir Faiq

TASK

1.   Can you name few model-based reflex agents?

Some of the model based reflex agents are listed below
1. Vacuum Agent
2. Self-Driving Car (Nearby Vehicle Sensor)
3. Mail Delivery Agent
4. Incubator Agent
5. Room Temperature Moderator

2. Write a program for model-based reflex agent of your own choice.

Scenario:

In the case of NearbyVehicleSensor, as the name suggests we set a value for maximum range of the motion sensor embedded in the car. Its functionality would be if the nearby vehicle is in range it would detect and display the distance from our car to the nearby vehicle and also would detect its location and then according to that would suggest possible actions i.e to move Left or Right.

Code:

```python
class NearbyVehicleSensor():
    def __init__(self, a):
        self.max_range = a
        print('Vehicle Detection Range Is', a, "Metres! \n")

    def Move(self, vehicle_location):
        if vehicle_location == 'Right':
            print('Nearby vehicle is at Right')
            return 'Turning Left'
        else:
            print('Nearby vehicle is at Left')
            return 'Turning Right'

    def Detect(self, vehicle_distance, vehicle_location) -> str:
        print('Nearby vehicle is at', vehicle_distance, 'meters!')
        if self.max_range > vehicle_distance:
            print('Vehicle detected Up Ahead! - Slowing Down \n')
            return self.Move(vehicle_location)
        else:
            return 'No Vehicle is In Range'


a = NearbyVehicleSensor(25)
print(a.Detect(13, 'Right'))
print(a.Detect(75, 'Left'))
```
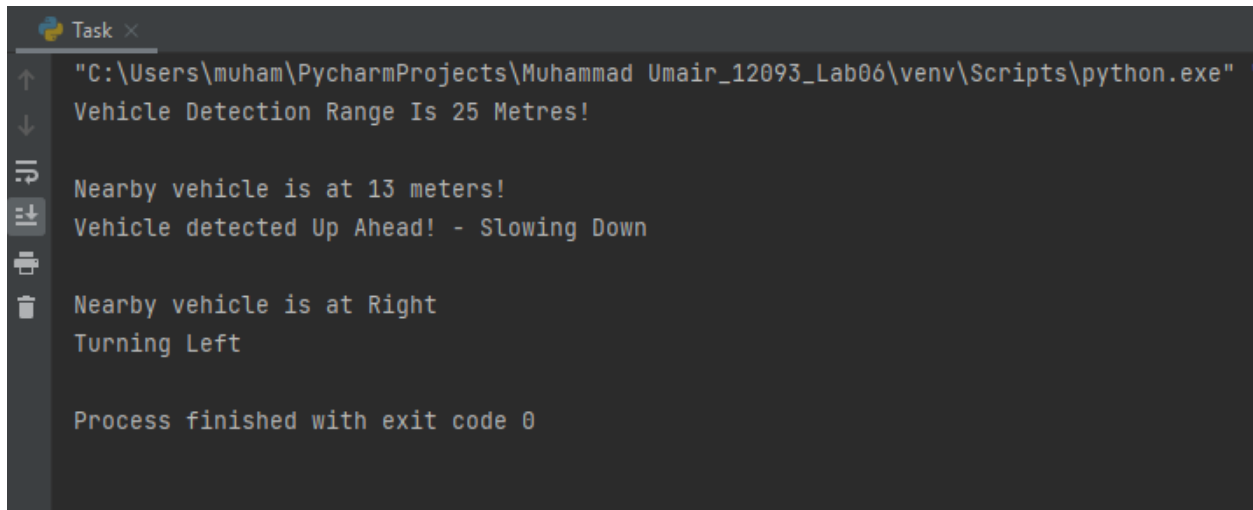
Output:

Case 1: If nearby vehicle is in range.

Using code statement: *print(a.Detect(40, 'Right'))*

```
 Task ×
   "C:\Users\muham\PycharmProjects\Muhammad Umair_12093_Lab06\venv\Scripts\python.exe"
   Vehicle Detection Range Is 25 Metres!

   Nearby vehicle is at 13 meters!
   Vehicle detected Up Ahead! - Slowing Down

   Nearby vehicle is at Right
   Turning Left

   Process finished with exit code 0
```
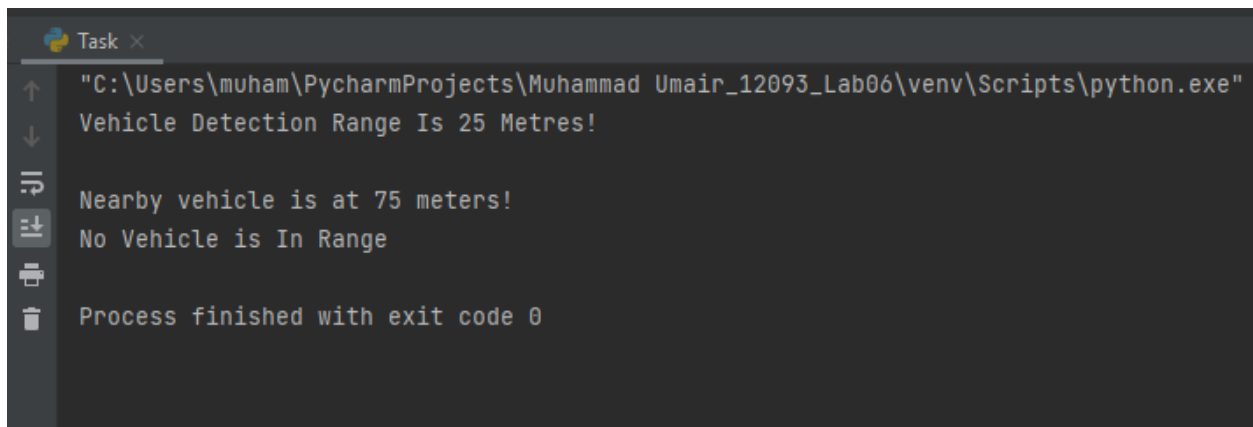
Case 2: If nearby vehicle is out of range.

Using code statement: *print(a.Detect(75, 'Left'))*

```
 Task ×
   "C:\Users\muham\PycharmProjects\Muhammad Umair_12093_Lab06\venv\Scripts\python.exe"
   Vehicle Detection Range Is 25 Metres!

   Nearby vehicle is at 75 meters!
   No Vehicle is In Range

   Process finished with exit code 0
```