**AI-LAB – ASSIGNMENT#1**

**NAME: ZAIN ALI**

**ROLL NO: Su92-BSAIM-F24-046**

**SECTION: BSAI-3A**

# Lab 3 Task: Model-Based Reflex Agent

This document explains the implementation and working of a Model-Based Reflex Agent. The agent is designed to control a heater based on the room temperature while remembering its previous action. This prevents unnecessary switching of the heater ON or OFF.

## Python Code

class ReflexAgent:  
 def \_\_init\_\_(self):  
 self.last\_action = "OFF"   
  
 def decide(self, temperature):  
 if temperature < 20 and self.last\_action != "ON":  
 self.last\_action = "ON"  
 return "Heater ON"  
 elif temperature > 25 and self.last\_action != "OFF":  
 self.last\_action = "OFF"  
 return "Heater OFF"  
 else:  
 return f"No change, Heater {self.last\_action}"  
  
agent = ReflexAgent()  
temperatures = [18, 19, 22, 26, 24, 19, 21, 27]  
  
for t in temperatures:  
 print(f"Temp: {t} → {agent.decide(t)}")

## Step-by-Step Explanation

• The agent starts with the heater OFF (last\_action = 'OFF').

• If the temperature is below 20°C and the heater is not already ON, it switches the heater ON.

• If the temperature is above 25°C and the heater is not already OFF, it switches the heater OFF.

• If the temperature is between 20°C and 25°C, the agent makes no change and keeps the previous action.

• This way, the agent avoids sending repeated ON or OFF commands unnecessarily.

## Execution Example

|  |  |
| --- | --- |
| Temperature | Agent Decision |
| 18 | Heater ON |
| 19 | No change, Heater ON |
| 22 | No change, Heater ON |
| 26 | Heater OFF |
| 24 | No change, Heater OFF |
| 19 | Heater ON |
| 21 | No change, Heater ON |
| 27 | Heater OFF |