Task 3 :

Explanation

1. Class Definition

Class ModelBasedReflexAgent:

This defines a class named ModelBasedReflexAgent, which represents the agent controlling the heater.

2. Initialization (__init__ method)

Def __init__(self):

Self.previous_action = None

The agent has a memory (self.previous_action) that stores the last action it took.

Initially, it is set to None.

3. Decision Function (decide_action)

Def decide_action(self, temperature, threshold=22):

This function decides whether to turn the heater ON or OFF based on the given temperature.

The threshold value is set to 22°C by default.

4. Decision Logic

If temperature < threshold and self.previous_action != “Heater ON”:

Self.previous_action = “Heater ON”

If the temperature is below 22°C and the heater is not already ON, turn it ON.

Elif temperature ≥ threshold and self.previous_action != “Heater OFF”:

Self.previous_action = “Heater OFF”

If the temperature is 22°C or higher and the heater is not already OFF, turn it OFF.

Return self.previous_action

The function returns the current action (either “Heater ON” or “Heater OFF”).

5. Creating an Agent

Agent = ModelBasedReflexAgent()

This creates an instance of the agent.

6. Temperature List

Temperatures = [18, 20, 22, 23, 19, 21]

A list of temperatures is given to test the agent's behavior.

7. Processing Temperatures

For temp in temperatures:

Print(f"Temperature: {temp}°C → Action: {agent.decide_action(temp)}")

The program loops through each temperature.

It calls decide_action(temp) and prints the action taken.

The heater turns ON when the temperature is below 22°C.

The heater turns OFF when the temperature reaches or exceeds 22°C.