

**BS Artificial Intelligence**

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**Lab Task 3**

**Explanation of Model-Based Reflex Agent Code**

This document explains the Python code for a Model-Based Reflex Agent that controls an Air Conditioner (AC) based on room temperatures. It not only checks the current temperature but also remembers the previous action to avoid unnecessary switching of the AC.

**Class Definition**

The class 'ModelBasedReflexAgent' is defined to represent the agent.

**\_\_init\_\_ Method**

The constructor (\_\_init\_\_) takes a fixed temperature (desired threshold). It initializes two attributes:  
- self.fixed\_temp: stores the desired temperature.  
- self.previous\_action: keeps track of the last action taken (initially None).

**sensor Method**

This method receives the current room temperature (temp) as input and assigns it to the attribute self.current\_temp.

**performance Method**

This method decides what action to take based on the current temperature:  
- If current\_temp > fixed\_temp: set action = 'Turn on the AC'.  
- Otherwise: set action = 'Turn off the AC'.  
  
It then checks if the new action is the same as the previous action. If yes, it sets action = 'No action needed' to prevent repetition.  
Finally, it updates self.previous\_action and returns the chosen action.

**Actuator Method**

This method calls **performance()** to get the action and then prints the result in the format: temperature and action.

**Rooms Dictionary**

A dictionary named 'rooms' is created with room names as keys and their respective temperatures as values.

**Agent Creation**

An object of ModelBasedReflexAgent is created with a fixed temperature of 22°C.

**Loop Through Rooms**

The program loops through each room in the dictionary, sends the room temperature to the agent using sensor(), and then calls actuator() to print the decision.

**Individual Room Example**

Finally, an example with a single room temperature (24°C) is tested to show how the agent behaves individually.

**Output ScreenShots**

A screen shot of a computer program

AI-generated content may be incorrect.

Figure This image shows the class ofthe Model Based Reflex Agent

A screen shot of a computer program

AI-generated content may be incorrect.

Figure Showing the Output of the Agent.