****

**Name : Talha Usman**

**Class: SU92-BSAIM-F24-064**

**Subject: AI-Lab**

**Temperature Control (Model Base Agent)**

**Introduction:**

This agent monitors the temperature of different rooms and decides whether to turn the AC ON or OFF. It also maintains a history of previous temperature readings, allowing it to reuse past decisions for repeated temperatures.

**Functions of the Agent**

**Constructor (\_\_init\_\_)**

* Runs automatically when an agent object is created.
* Sets the temperature threshold (above which AC should be ON).
* Defines the history file and creates it if it doesn’t exist.

**Sensor (senser)**

* Stores the current temperature and room name.
* Saves the temperature to the history file for future reference.

**Performance (performance)**

* Determines whether the AC should be ON or OFF.
* Checks the history file to see if the current temperature has been recorded before.
  + If yes → reuses the previous decision.
  + If no → compares the temperature to the threshold and makes a new decision.

**Actuator (actuator)**

* Takes the action decided by performance() and displays it.
* Prints the current room name, current temperature, decision (AC ON or OFF), and full history of all previous temperatures.

**Summary**

* Constructor sets up the threshold and history file.
* Sensor stores the current temperature and room, and saves it to history.
* Performance decides whether to turn the AC ON/OFF, using history if available or calculating new.
* Actuator displays the current decision and full temperature history.

**Output of the code :**

