# Model-Based Reflex Agent: Temperature Control

This document explains the working of a Python program that simulates a Model-Based Reflex Agent to control room temperatures by deciding whether to turn the air conditioner (AC) on or off.

## How It Works

1. The program defines a class `ModelBased` which is initialized with an ideal temperature. This is the preferred temperature the user wants to maintain.

2. When the agent perceives the current temperature of a room, it first checks a memory file called `climate\_history.txt`. This file contains past temperature readings and the actions taken. If the current temperature is already in memory, the agent uses the stored decision instead of recalculating.

3. If no memory record exists, the agent makes a new decision:

* - If the room temperature is below the ideal temperature → Turn OFF AC
* - If the room temperature is above or equal to the ideal temperature → Turn ON AC

4. The decision along with the current temperature is then stored in a file called `temp\_history.txt`. This keeps track of new cases for future reference.

## Example Run

Suppose the ideal temperature is set to 21°C, and the following room temperatures are given:

* - Living Room: 18°C
* - Bedroom: 22°C
* - Kitchen: 20°C
* - Bathroom: 24°C

The agent will decide as follows:

* - Living Room → Turn OFF AC (since 18 < 21)
* - Bedroom → Turn ON AC (since 22 ≥ 21)
* - Kitchen → Turn OFF AC (since 20 < 21)
* - Bathroom → Turn ON AC (since 24 ≥ 21)