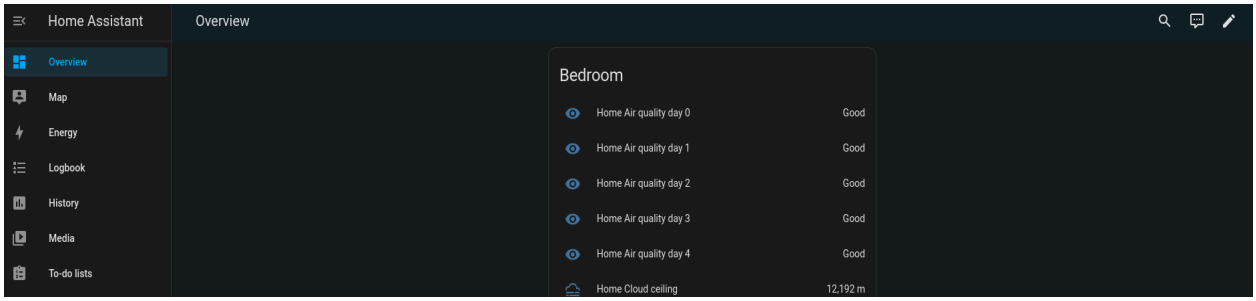
brought to you by Group D
Selin's Individual Report

Smart Home

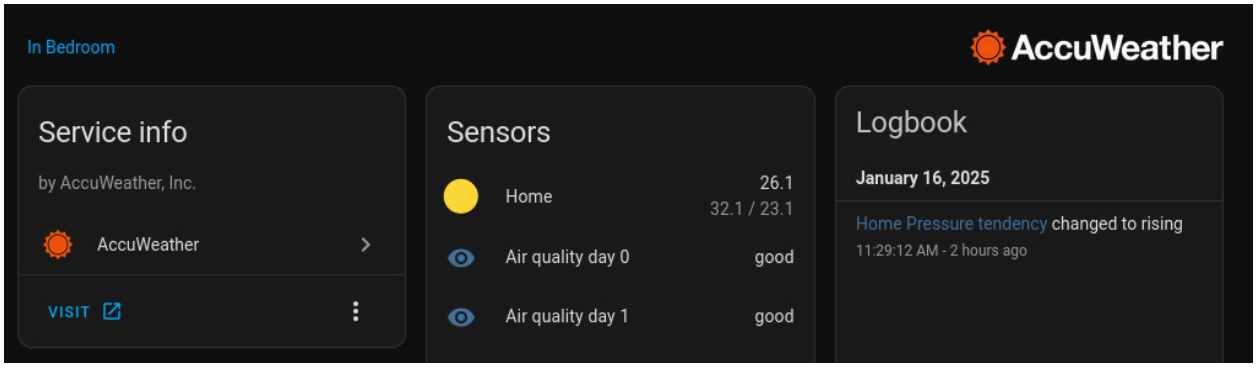
23rd January

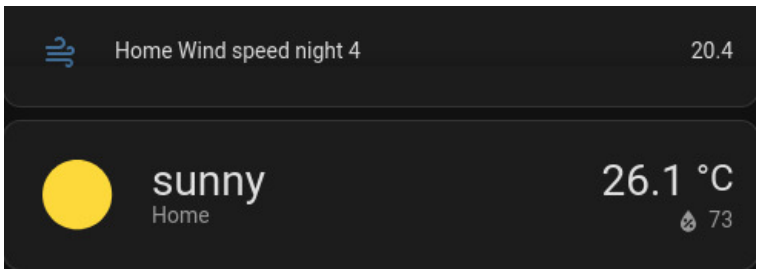
1 Home Assistant Platform

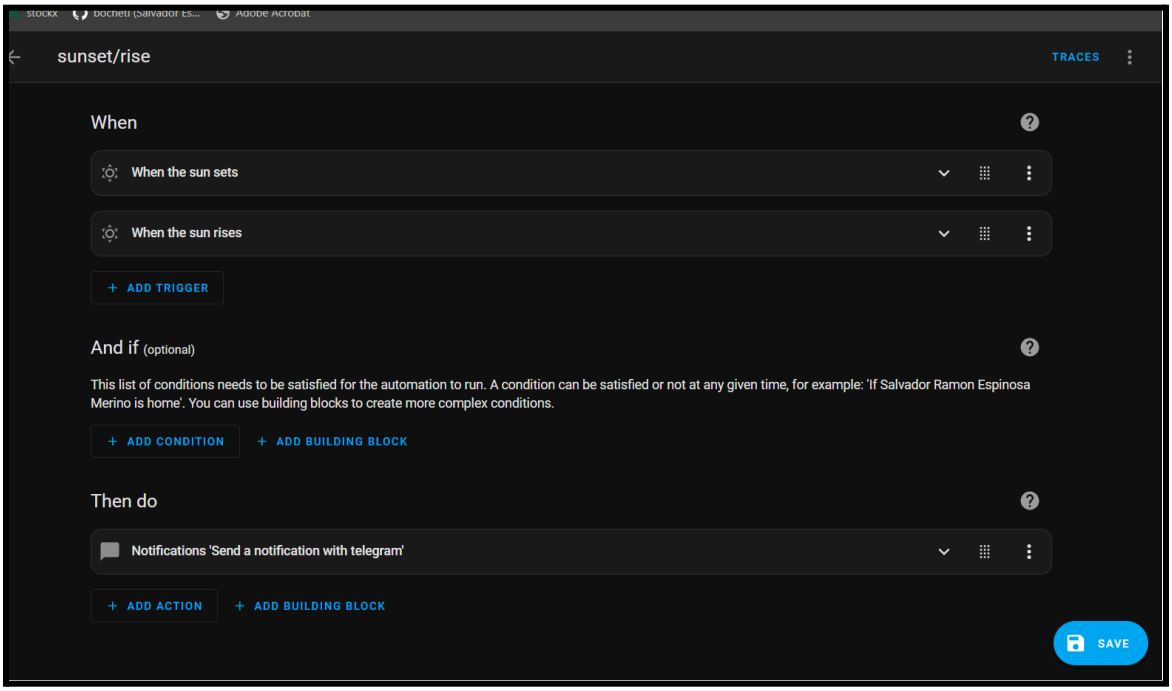
I followed [this tutorial] because I've never used a VM software before and I thought this would be faster to install on Linux. I was probably right about this as the others gave up on setting it up on VirtualBox as well. No problems with this one.



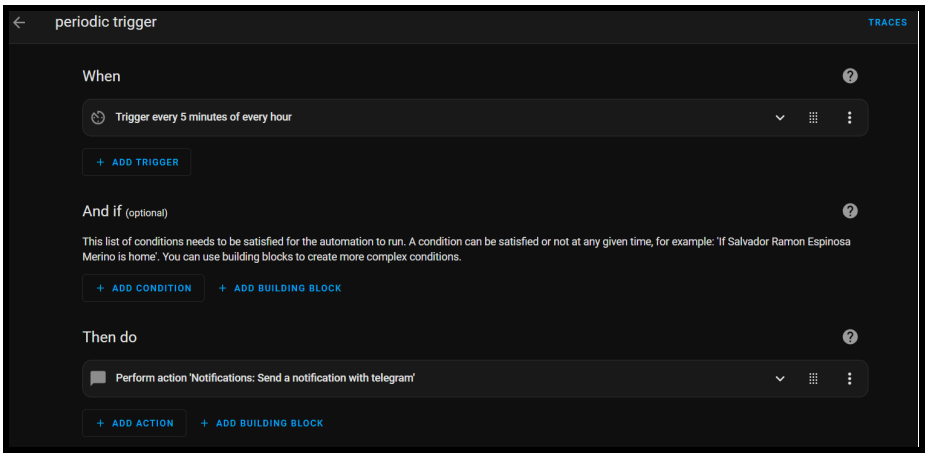
2 Telegram Bot

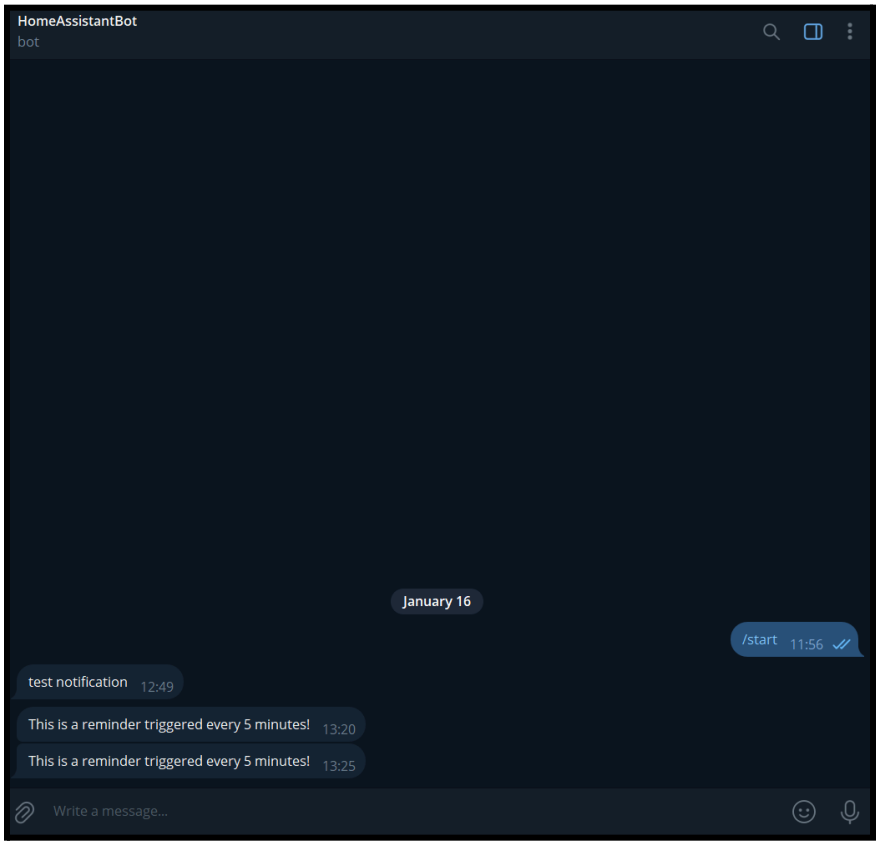



Home Wind speed night 4
20.4
sunny
Home
26.1 °C
73


sunset/rise
TRACES
When
When the sun sets
When the sun rises
+ ADD TRIGGER
And if (optional)
This list of conditions needs to be satisfied for the automation to run. A condition can be satisfied or not at any given time, for example: 'If Salvador Ramon Espinosa Merino is home'. You can use building blocks to create more complex conditions.
+ ADD CONDITION
+ ADD BUILDING BLOCK
Then do
Notifications 'Send a notification with telegram'
+ ADD ACTION
+ ADD BUILDING BLOCK
SAVE


periodic trigger
alias: periodic trigger
triggers:
- minutes: /5
trigger: time_pattern
actions:
- data:
message: This is a reminder triggered every 5 minutes!
action: notify.telegram


periodic trigger
TRACES
When
Trigger every 5 minutes of every hour
+ ADD TRIGGER
And if (optional)
This list of conditions needs to be satisfied for the automation to run. A condition can be satisfied or not at any given time, for example: 'If Salvador Ramon Espinosa Merino is home'. You can use building blocks to create more complex conditions.
+ ADD CONDITION
+ ADD BUILDING BLOCK
Then do
Perform action 'Notifications: Send a notification with telegram'
+ ADD ACTION
+ ADD BUILDING BLOCK



- First we created a telegram bot with BotFather, and GetIDs made by @wjclub to get our Chat ID.
- We edited the YAML file so it would trigger a notification every 5 minutes.
- A discovery we made online is that by using the Home Assistants UI, we could simply put "/5" instead of just a 5, which would have triggered it every 5th minute of every hour.

3 Smart Home Project (5 Minute Presentation)

Devices and their functions

1. Smart Lighting

- enhance energy efficiency and convenience
- motion detection
- adaptive brightness based on natural light
- app-controlled and voice-enabled settings

2. Smart Windows

- maintain temperature, privacy, and natural light
- automated blinds controlled by sunlight sensors
- UV protection
- weather-adaptive response

3. Automatic Doors

- improve accessibility and security
- proximity sensors
- remote control integration with security systems
- main door includes a camera, two-way audio, and keyless entry with authentication

4. Smart Heating

- increase energy efficiency and comfort
- room-specific temperature control
- scheduling and real-time adjustments based on how full a room is

5. Smart Water System

- **r**educe water waste and enhance hygiene
- leak detection with automatic shut-off
- water consumption monitoring
- touchless faucets

6. Smart Devices

- **Home Entertainment**:
    - Smart TV, home cinema system, gaming console, and sound-surrounding systems for immersive experiences
- **Household Management**:
    - Robot vacuum cleaner for autonomous cleaning
    - Pet food refiller for scheduled feeding

Device Connectivity

Central Hub:

- All devices are connected through a central smart hub located in a server rack in the basement. The hub serves as the brain of the system, managing communication and automation rules.

Connectivity Across Devices:

- Wi-Fi
- Bluetooth: short-range connectivity for specific devices like speakers
- Ethernet: wired connections for cores like the server rack and access points

Protocol:

- As MQTT is the only protocol I know, it would be mandatory for all devices to support it. They communicate through a broker, publish a message or update about its temperature data or water consumption and then be able to send an alert.

System Cooperation

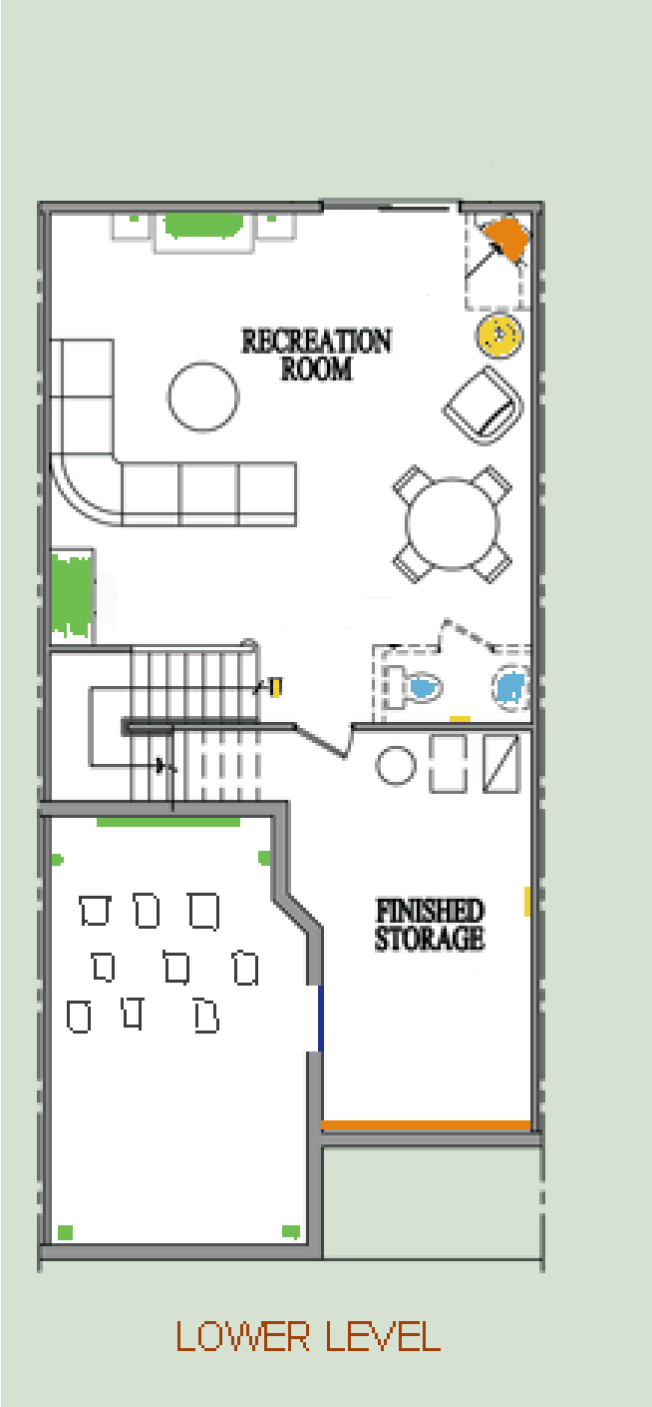
A dashboard on Home Assistant enables me to control all devices.

- **Energy Efficiency**:
    - smart heating adjusts when windows are open or rooms are empty.
    - lighting dims automatically during daylight hours or based on user preferences.
- **Security**:
    - automatic doors lock when the house is empty.

- camera alerts for unauthorized access attempts.

- **Safety**:
  - water leaks trigger automatic shut-off.
  - smoke detection systems with ventilation.

Floor Plan



SECOND LEVEL

- Yellow: Smart Lightning
- Red: Smart Windows
- Blue: Automatic Doors
- Orange: Smart Heating
- Pink: Access Points
- Light Blue: Smart water system (in sinks and toilets)
- Green: Smart Devices (TV, Home Cinema, console, Sound surrounding system, Pet Food Refiller, Vacuum Cleaner robot, Server Rack)

Home

Ground Floor

Basement