Progress Report

1 Which members did what so far?

All the work completed so far has been done collaboratively by both team members during class sessions. Each member contributed equally to coding, discussion, and setup activities.

2 What are the challenges your team is facing?

Our main challenges were organizing the overall architecture of the project and understanding how and where to implement the Linux C Real-Time (RT) component. These issues were resolved through class discussions and with the help of the teachers, and now we are ready to implement everything without any major problems.

3 What are the tasks to be done until the demonstration?

The most important tasks ahead are connecting the system to a real Sense HAT to begin gathering actual environmental data, the code implementation of the Linux C real-time component (which is currently being replaced with a Python script) and the development of the frontend for visualizing the data.

4 Concrete things that you have done

So far, we've successfully defined the overall architecture of the project, implemented the Raspberry Pi component that publishes (simulated) data to the MQTT broker, and developed an ,mqtt_handler' module that acts as a house-level controller.

Regarding the overall architecture of the project, after some discussion, we ended up with the next schematic.

The ,mqtt_handler' collects data from the Raspberry Pi (temperature and humidity) and the C Real-Time Component (production and consuption wattage), merges them, and sends the results to Firebase. This forms the initial backbone of our system's data flow per house. On Firebase, multiple global ,mqtt_handlers' will write their data, and everything will be available on the frontend.