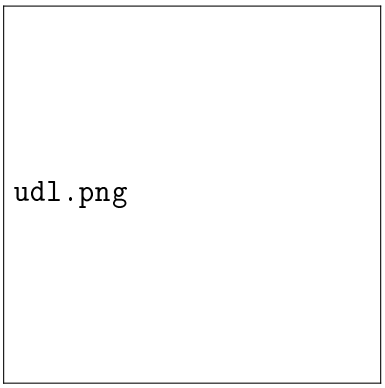


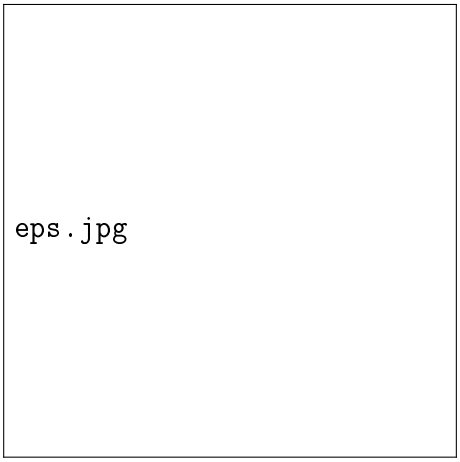


# Project 1: Internet of Things applications

Simulate the creation of an IoT platform to gather information, optimize, and control the climate and comfort of remote homes. Using kafka, MQTT, and InfluxDB.

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May Castells Raga
Anna Marin Nuño

Distributed Computing
Grau en Enginyeria Informàtica
Universitat de Lleida

# Contents

# 1 Brief introduction

This project simulate the creation of an IoT platform to gather information, optimize, and control the climate and comfort of remote homes. The project's schhema can be divided into two main parts: the user side and the cloud side.

# 2 User / home part

The user side is composed of several sensors, each one has its own temperature measurement and its own heatpump actuator. Each sensor is represented by a Docker container with a simulating script that generates temperature data.

Each user or home has a MQTT (Message Queuing Telemetry Transport) broker that receives the temperature data from the sensors. In addition, the broker sends commands to the heatpump actuators to adjust the temperature as needed, if the broker receives such commands from the cloud side, it broadcasts them to the corresponding actuators. The MQTT broker is also represented by a Docker container.

The most important components of the user side is the gateway, which is responsible of the communication between the user side and the cloud side. The gateway subscribes to the MQTT broker to receive temperature data from the sensors and publishes the gathered data to the cloud side using another MQTT broker located in the cloud side. The gateway is also represented by a Docker container.

# References

PolyAPI. (2023). Darko's Thoughts: GraphQL and REST APIs – What Does the Future Hold? Retrieved October 24, 2025, from `https://polyapi.io/darkos-thoughts-graphql-and-rest-apis-what-does-the-future-hold/`