Tunisian Republic
Ministry of Communication Technologies
and the Digital Transformation
Ministry of Higher Education and Scientific
Research
University of Carthage
Higher School of Communications of Tunis

Design Document

SMART PARKING BASED ON COT

Realised by

AZZOUZ IMEN

TOUMI MOHAMED AMINE

Supervised by

Dr. Kaâniche Mohamed-Bécha

Academic year: 2022 - 2023

1 Introduction

Currently, IoT applications in our daily life are increasing, and there is also a growing trend in smart city applications that can help improve to reduce the problems of the current Cities. In smart cities we encounter many difficulties to develop. One of the biggest problems in a smart city is parking.
Parking should offer customers enough space to park their cars, because the car plays a huge role in transportation, it is necessary to find a parking lot to park vehicles. And for this, we need a new system, a system that can help manage and reduce traffic. A system that helps customers to save time looking for a parking space.
The need for these options has led to the emergence of a new term called "Smart Parking".

2 Solution and Objectives

This project aims to prototype a system that makes it easy to find an empty parking space and help customers save time and automate parking monitoring for park owners. By realizing this project, we aim to:

- Concept and realize a full prototype of a smart parking system with the ability to connect and control it remotely.
- Use different Inner and Outer network technologies: The use of different communication techniques between the objects, main server, and the parking owner's control application.
- Use devices that saves power : The use of technologies that do not consume a lot of resources is mandatory
- Security : Use different techniques and algorithms to guarantee the security and the privacy of the data, sensors and mobile application.
- Scalability: The network needs to be scalable, which means that the possibility to add new sensors and new smart things to the IoT network should be easy.

3 Usecase Diagram

The use case diagram can summarize the details of our system's users (Normal user and Parking owner) and their interactions with the system.

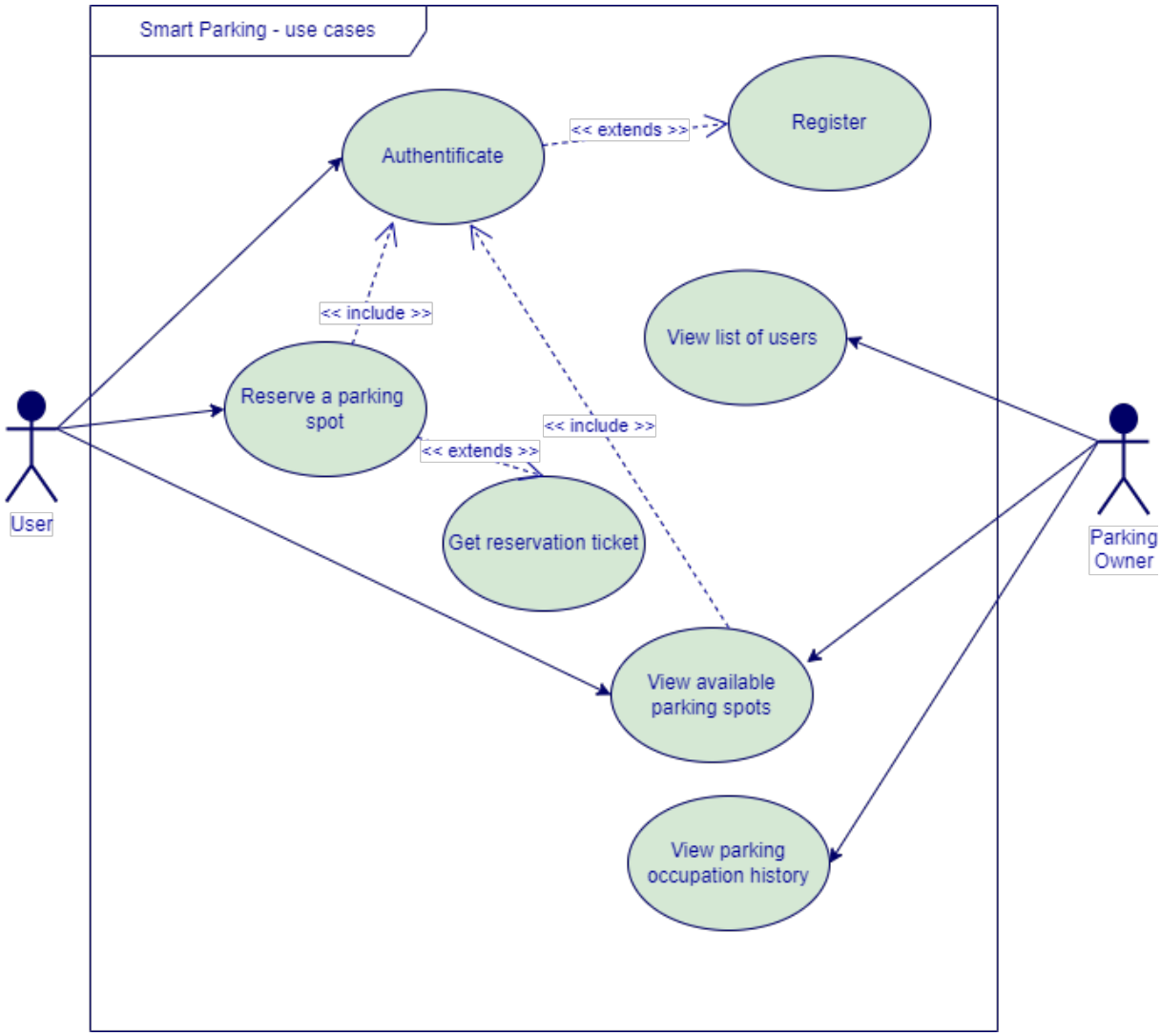

Figure 1: Use case diagram

4 Authentication flow

The purpose of the Authentication flow is to identify and authenticate the user to parking system.

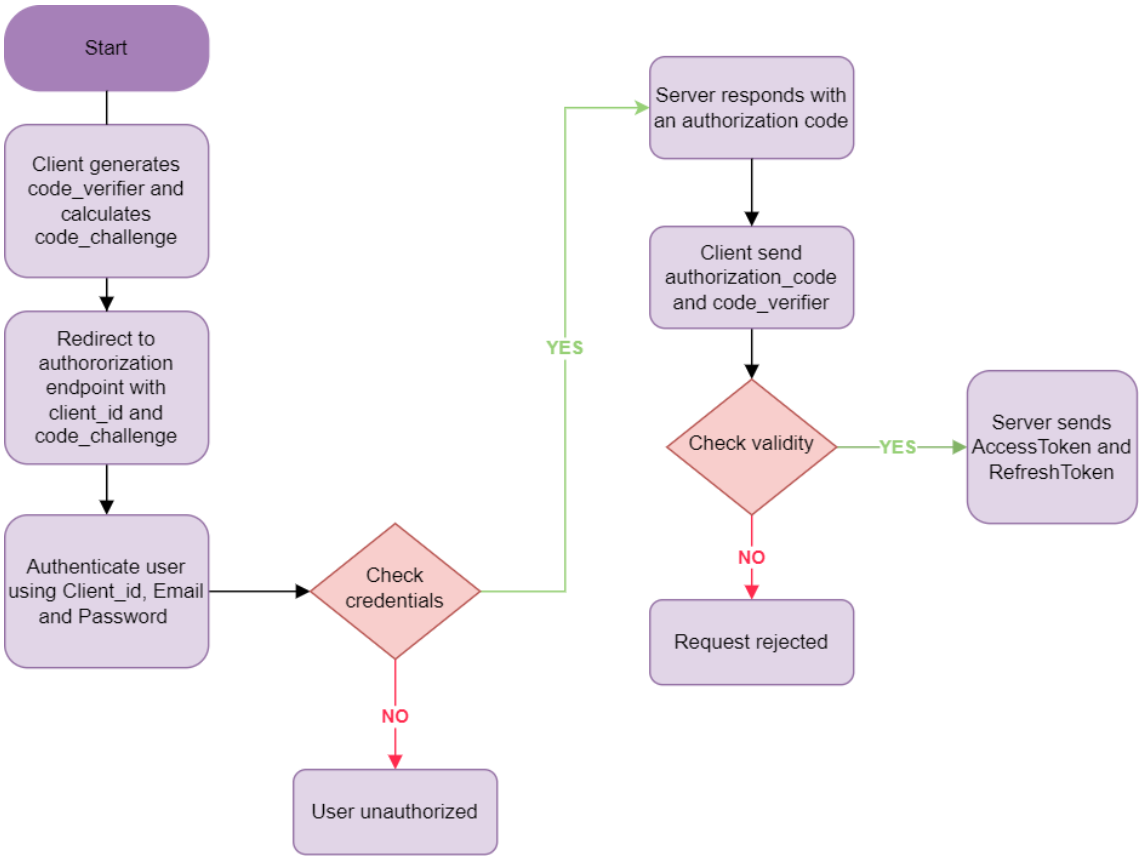

Figure 2: Authentication flow

5 Class Diagram

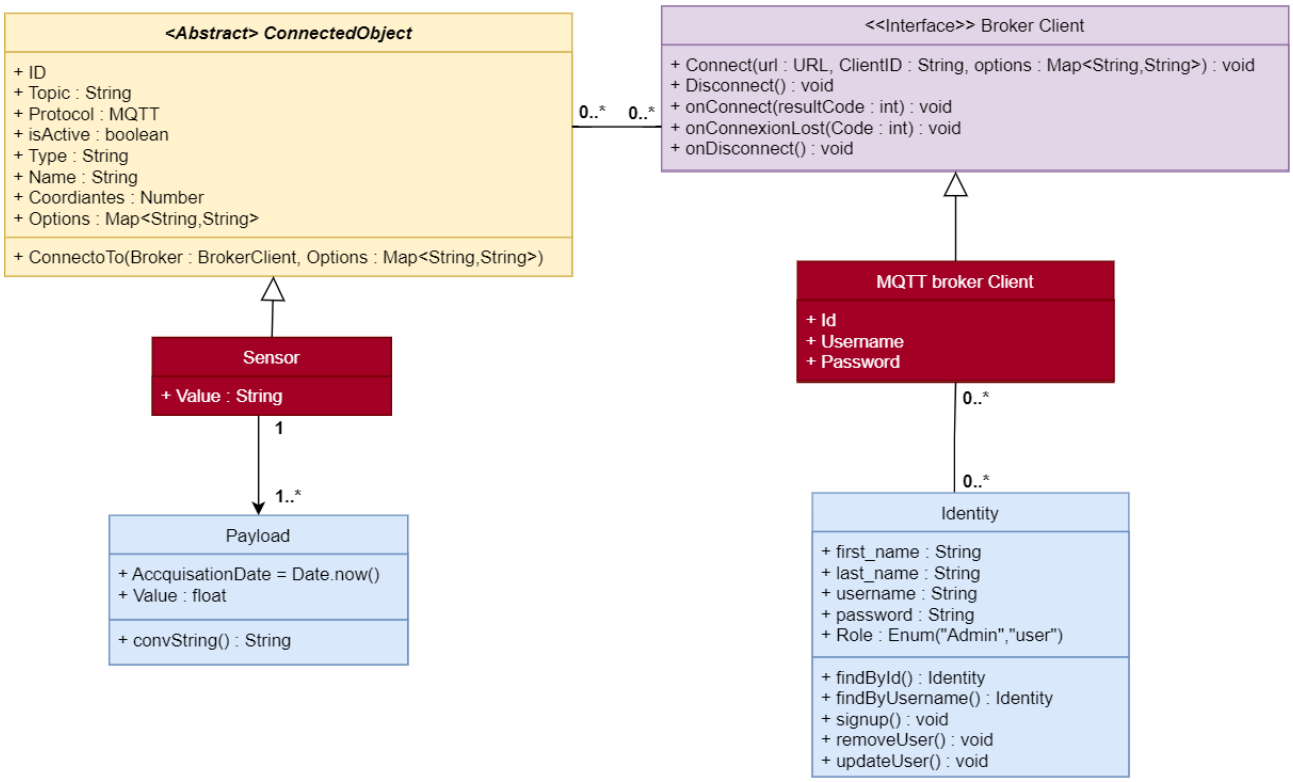

Figure 3: Class Diagram

6 Deployment Diagram

Deployment diagrams are used to visualize the hardware processors/ nodes/ devices of a system, the links of communication between them and the placement of software files on that hardware.

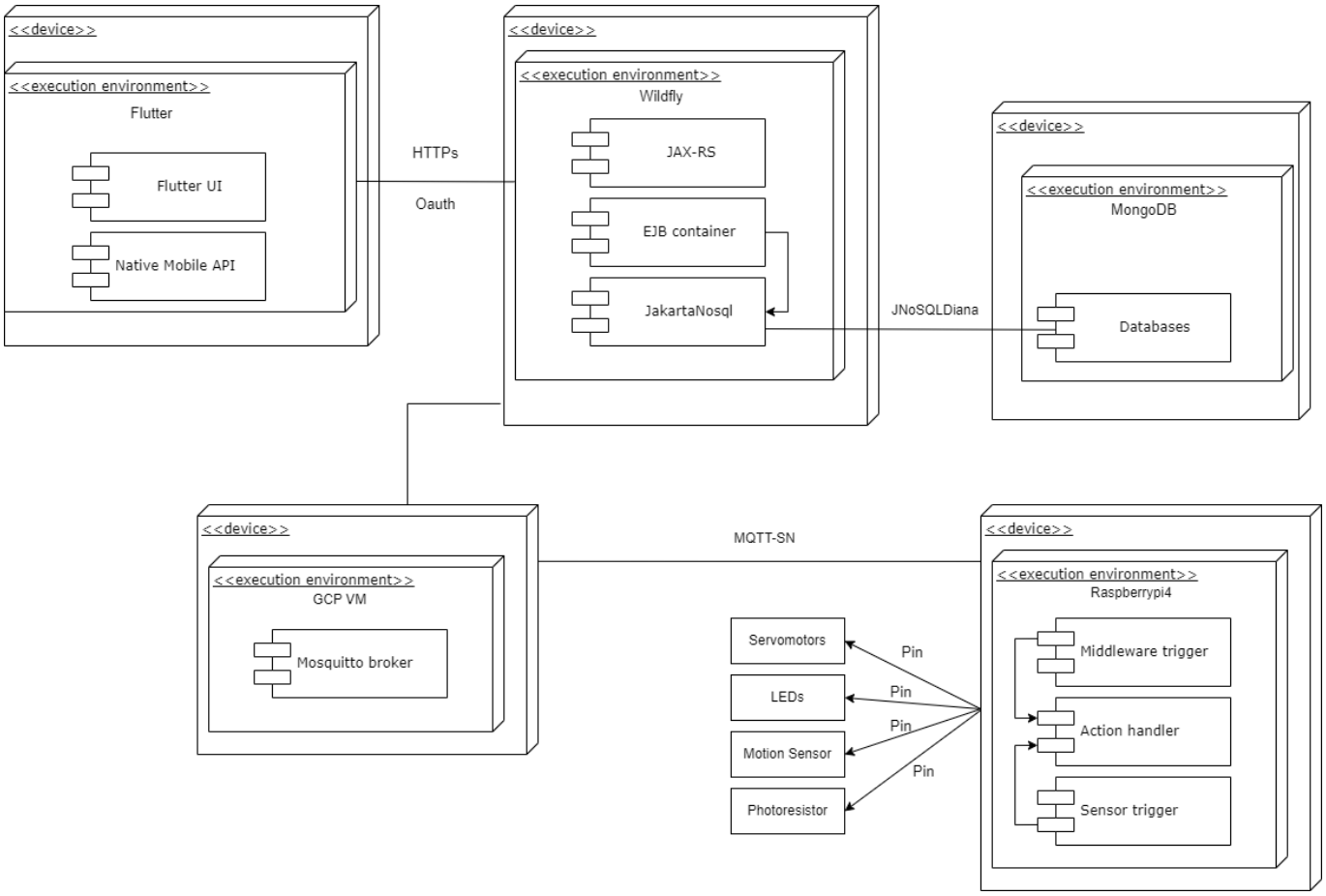

Figure 4: Deployment Diagram