DD

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1 Document Structure

1. `Introduction`: This section introduces the Design Document. It explains the Purpose, the Scope and the conventions of the document.
2. `Architectural Design`: This section describes the components used for the system and the relations between them, providing information about their deployment and how they works. It also specifies the architectural styles and the design patterns chosen to design the system.
3. `User Interface Design`: This section provides an overview on how the User Interface will look like. This section will be accurate enough to explain all our decisions about the design and the UI of the Mobile Application.
4. `Implementation, Integration and Testing`: This section contains the order of the system's subcomponents implementation, integration and testing.

2 Introduction

2.1 Purpose

This document represents the Design Document (DD) for SmartParking mobile application. The purpose of this document is to provide an overall guidance to the architecture of the software product and the interaction between all the components of the system to be developed, following the requirements and the goals that the software must satisfy.

2.2 Scope

SmartParking is a crowd-sourced application where users can view all the street parkings around them, together with detailed information. Users can also filter the parkings in several ways: searching for a specific address, a specific type, a maximum distance, etc... Moreover, users can pay the fee directly from the app, chosing the payment type and how much they want to stop.

2.3 Definition, Acronyms, Abbreviations

2.3.1 Definitions

- `User`: any client of the service, a person that logs in the system and uses it.
- `User Device`: any compatible device with the SmartParking application, mainly smartphones.
- `App`: abbreviation for the SmartParking Mobile Application.

2.3.2 Acronyms

- DD: Design Document.
- API: Application Programming Interface.
- GPS: Global Positioning System.

2.3.3 Abbreviations

- [Gn]: n-goal.
- [Rn]: n-functional requirement.

2.4 Revision History

- 3/04/2020: First Version of DD Document.

2.5 Reference Documents and Used Tools

Reference Documents

Used Tools

- *Github*: https://github.com/
- *TexMaker*: https://www.xm1math.net/texmaker/
- *Draw.io*: https://www.draw.io/
- *AdobeXD*: https://www.adobe.com/it/products/adobexd.html
- *LucidChart*: https://www.lucidchart.com/

3 Architectural Design

Our application is composed by two main components: a Front End, developed with the React Native framework, and a Back End that relies on Firebase, and in particular on Firebase Realtime Database.
These two components are highly connected: in fact, the mobile application has the role to show to the user all the data stored in the Database, and also to respond to the user's behaviour.

HIGH LEVEL DIAGRAM - app e db

3.1 Front End: Mobile Application

The Mobile Application is a React Native application.

3.2 Back End: Firebase

The Firebase back end is where all the parkings, users and reservations data are stored.

3.3 Third Party interaction

- Google : login
- Facebook : login
- Paypal : parking payments
- Stripe : parking payments with credit cards
- Redux : persistent storage of data
- Google Maps APIs : directions, distance matrix, geocoding

4 User Interface Design

5 Implementation, Integration and test plan