Design Document - DD

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Contents

Chapter 1

INTRODUCTION

1.1 Purpose

The purpose of this document is to explain how we design and build CLup application. We demostrate the architecture design of the system, based on the rule of Top-down design approach, we describe the different design characteristics. We explain it from the view of component, deployment and runtime. To be more specific, we also show the user interface design to illustrate the CLup application step by step. The purpose of interface design is user-friendly and efficiently. Our aim is to let other stakeholders can easily understand and know the structure of CLup application.

1.2 Scope

1.3 Definitions, Acronyms, Abbreviations

1.3.1 Definitions

- Click Customer : The customer has the required technology to access the store. I.e a smartphone. They can use the customer terminal software.
- Brick Customer : The customer doesn't have the required technology to access the store, they have to hand out "tickets" on the spot.
- Store Manager : They have to manage the Store System, include the software and hardware.

- Ticket: The ticket is a document which contains three key information: QR Code, the estimated departure time, the queue number, and the Store Planned Roadmap. To the click customer, it's **E-ticket** but to the brick customer,it's **Paper Ticket**,and doesn't contain the estimated departure time, and just a General Store Map without the Planned Road.
- QR Code : When customer booked a visit, they will received a QR Code.
- QR Code Scanned Machine : A hardware, the Click Customer can use this machine scan their QR code.
- Tickets Hand-Out Machine : A hardware, the Brick Customer can use it retrieve their Ticket.
- Store Planned Roadmap: A store map that includes a finer way which is recommended form Store System.
- Digital Counterpart : A hardware, it with show the queue number.
- Store Back-End System : A software, as the back-end manages all stuffs.
- On-Time Store Data : A dataset that includes the store's on-time date.
  - The current queue
  - The customers in the store
  - The maximum number of people in the store.
- Long-Term Customers: The Click Customer who visited the store more than one time by the CLup mobile application.

1.3.2 Acronyms

- RASD - Requirement Analysis and Specification Document
- DD - Design Document
- CLup - Customers Line-up
- UI - User Interface
- IOS - iPhone OS

- PC - Personal Computer
- IaaS - Infrastructure as a Service
- CRM - Customer Relationship Management
- LAN - Local Area Network

1.3.3 Abbreviations

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1.4 Revision history

1.5 Document Structure

Chapter 2

ARCHITECTURAL DESIGN

In this chapter, we will describe the architectural design of our system.

We will use the Top-down design approach, design the very high-level structure first, and then gradually work down to detailed decisions about low-level constructs. Finally, arrive at detailed decisions. [4] Let us start with the High-level components and their interaction.

2.1 Overview: High-level components and their interaction

We chose **3-Tiered architecture** with the **Thin Client** strategy for our system. As shown in Fig.2.1.[1]

Tier-1 is the presentation layer. This layer will deploy the Click Client's mobile application, Store Manager's Management Web Page, and even Digital Counterpart and Ticket Hand-Out Machine's presentation.

Tier-2 is the logic application layer. This layer will deploy our Back-End System component.

Tier-3 is the data access layer. This layer includes our DBMS and the Data Base.

We have a web page as the Management page for the Store Manager but considered this page a static page, and the traffic will be minimal, so we did not use the 5-Tiered Architecture with the Web Server and the Script Engine Server to general the Dynamic Page.

Finally, our high-level architecture is shown in Fig.2.2. The Store Manager's PC and other hardware will connect with an Ethernet cable. The Click Customer's Mobile App communicates with our Back-End System with the Internet.

More detailed components will be introduced in the next section.

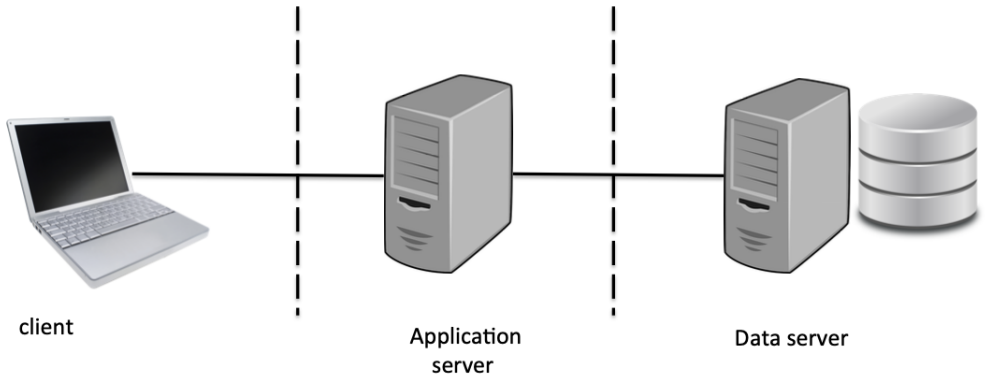

Figure 2.1: 3-Tiered architecture

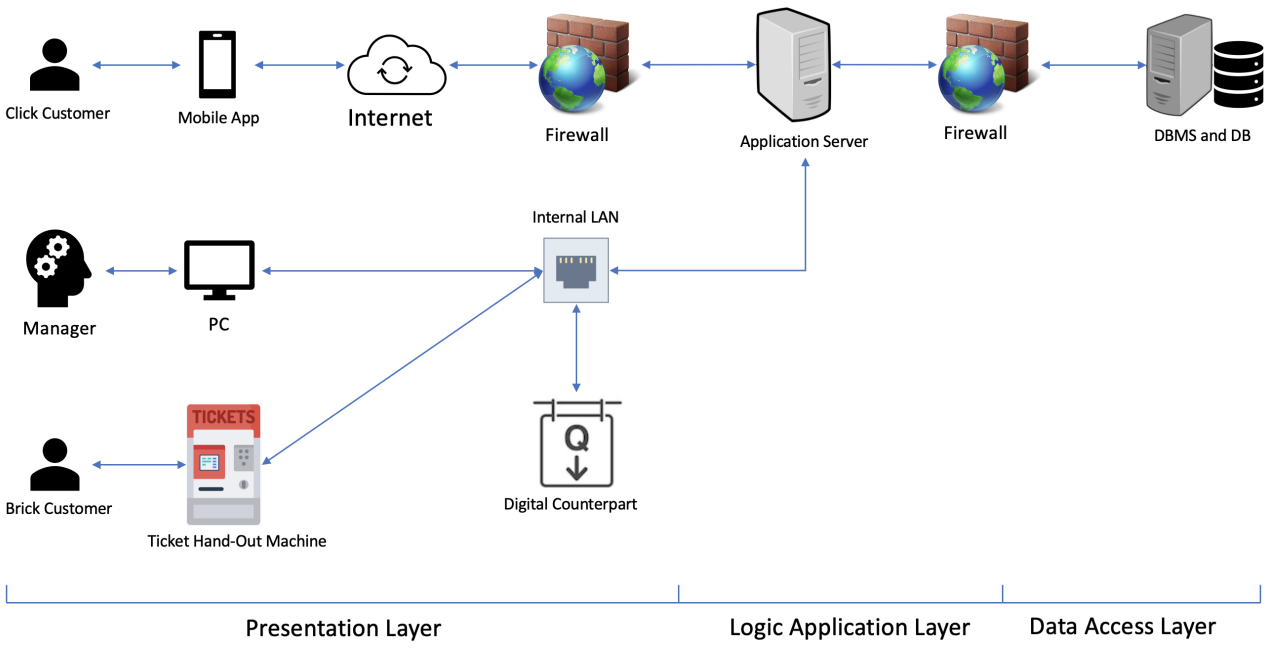

Figure 2.2: High level architecture

2.2 Component View

2.3 Deployment View

2.4 Runtime View

2.5 Component Interfaces

2.6 Selected Architectural Styles and Patterns

2.7 Other Design Decisions

Chapter 3

USER INTERFACE DESIGN

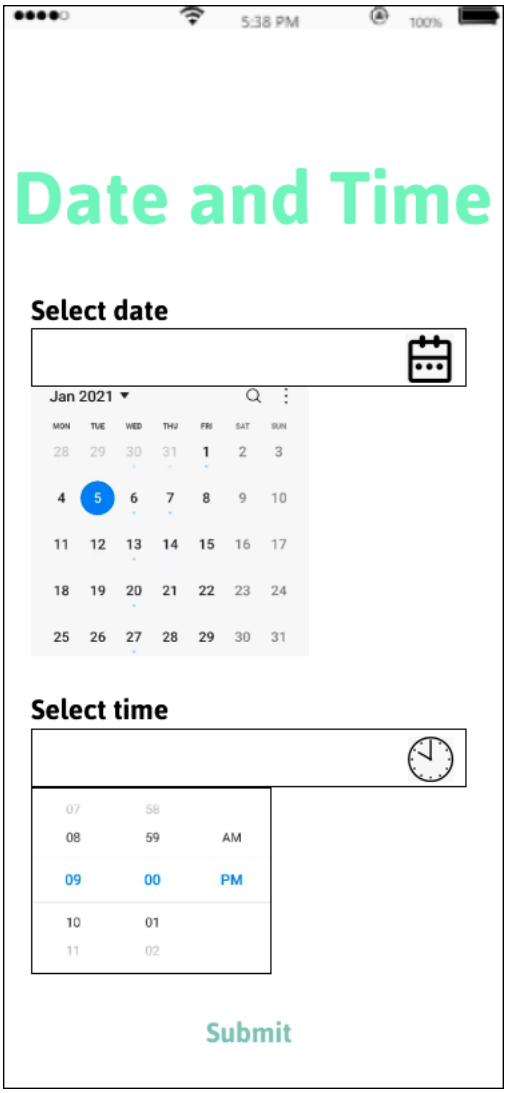

Figure 3.1: UI-Date Time

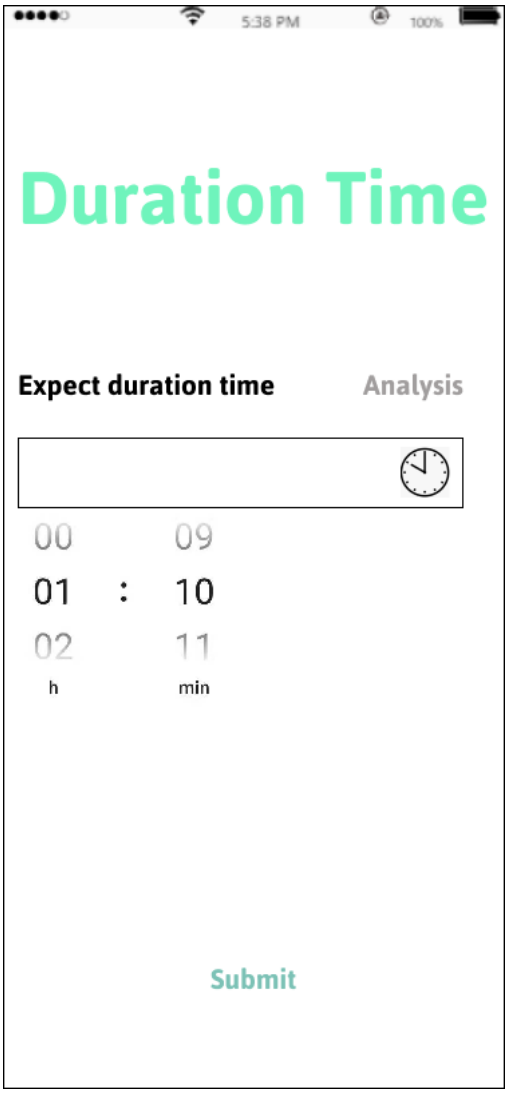

Figure 3.2: UI-Duration Time

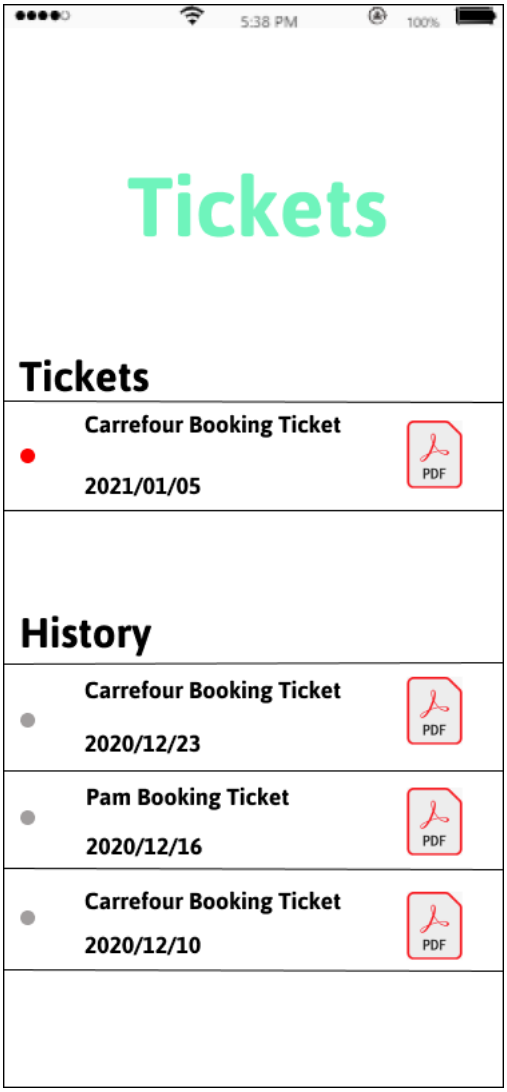

Figure 3.3: UI-Ticket

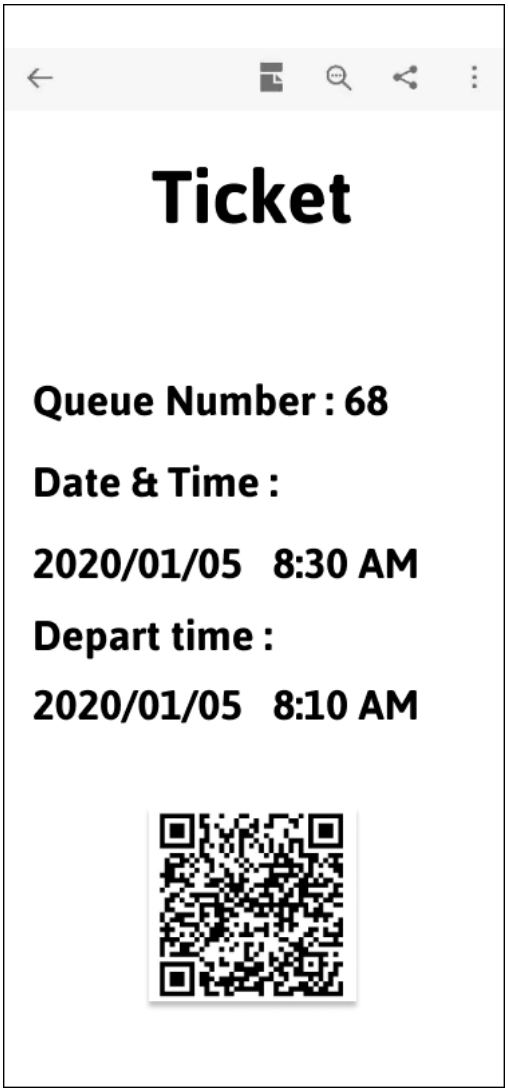

Figure 3.4: UI-Ticket PDF

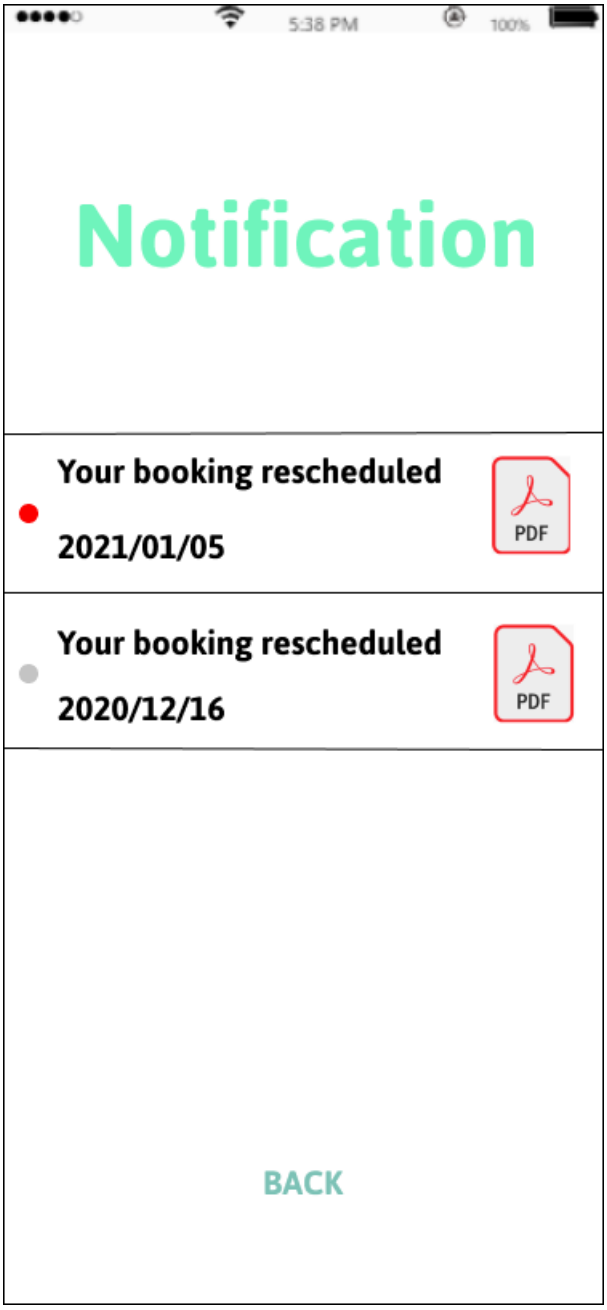

Figure 3.5: UI-Notification

Chapter 4

REQUIREMENTS TRACEABILITY

Chapter 5

IMPLEMENTATION, INTEGRATION AND TEST PLAN

Chapter 6

Effort Spent

- **Kong XiangYi**

Date	Task	Hours
2021/01/02	Group discussion and task assignment	2h

- **Zhang YueDong**

Date	Task	Hours
2021/01/01	Launch DD	2h
2021/01/02	Group discussion and task assignment	2h
2021/01/03	Did S.2.2.1 and S.2.2.2 Component Diagram	3h

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