Politecnico di Milano

Department of Computer Science and Engineering

Software Engineering 2

CLup – Customers Line-up Design Document

December 18, 2020

Student
Damiano Derin

Student
Jas Valencic

Contents

1 Introduction **1**
- 1.1 Purpose . . . 2
- 1.2 Scope . . . 2
- 1.3 Definitions, Acronyms, Abbreviations . . . 2
  - 1.3.1 Definitions . . . 2
  - 1.3.2 Acronyms and Abbreviations . . . 3
- 1.4 Revision History . . . 3
- 1.5 Reference Documents . . . 3
- 1.6 Documents Structure . . . 3

2 Architectural Design **4**
- 2.1 Overview . . . 4
- 2.2 Component View . . . 7
- 2.3 Deployment View . . . 7
- 2.4 Runtime View . . . 7
- 2.5 Component Interfaces . . . 11
- 2.6 Selected Architectural Styles and Patterns . . . 11
- 2.7 Other Design Decisions . . . 11

3 User Interface Design **12**

4 Requirements Traceability **13**

5 Implementation, Integration and Test Plan **14**

6 Effort Spent **15**

7 References **16**

Chapter 1

Introduction

1.1 Purpose

1.2 Scope

1.3 Definitions, Acronyms, Abbreviations

1.3.1 Definitions

Customer	a person who buys goods from the stores. We will use the term *customers* to refer to natural persons, instead the term *users* will be used to specify the virtual entity served by the application.
Store Manager	a person who is in charge of the store. In our context, we assume that the *store manager* controls the entrances to the store with the help of CLup service. In the real world scenario this activity can be delegated, without loss of generality.
Physical Spot	a digital device positioned outside the store that allows customers to obtain tickets to line up.
User	a virtual entity that interacts with the virtual service offered by CLup. The user can be a customers, a store manager and a physical spot (when it is acting as proxy). In case of ambiguous interpretations, we will specify the real entity name.
Proxy	an intermediary entity that exchanges information between two other entities. In our system, the physical spot can be seen as a proxy, since it allows customers to line up without the necessity to create an user account. From the point of view of the server, the physical spot is seen as an user.
Virtual Queue	a queue of users allocated in the memory of the server. When a user asks for a lining up operation, or a booking a visit operation, it is allocated in this queue.
Physical Queue	a queue of customers outside the store.

Ticket	a piece of paper or a virtual card given to customers to show that they have performed a lining up or a booking a visit operation.
QR code	a matrix composed by white and black squares encoding a string. It is reported on the ticket.
System	we use this term to represent the entire service, composed by smartphone application and servers.

1.3.2 Acronyms and Abbreviations

API	Application Programming Interface
CLup	Customers Line-up
d.P.C.m	*"decreto del Presidente del Consiglio dei ministri"*
FIFO	First In First Out
GPS	Global Positioning System

1.4 Revision History

1.5 Reference Documents

1.6 Documents Structure

Chapter 2

Architectural Design

2.1 Overview

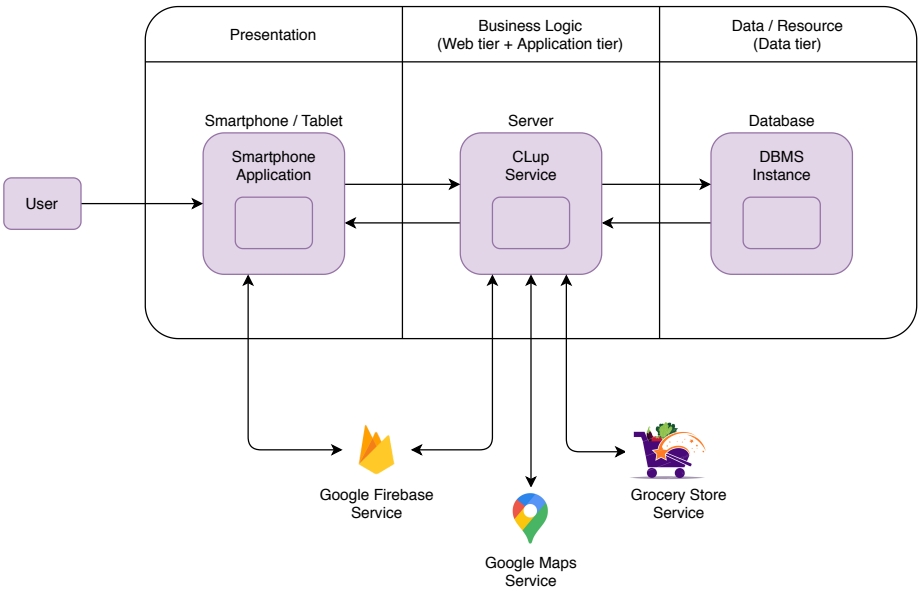

Figure 2.1: System architecture.

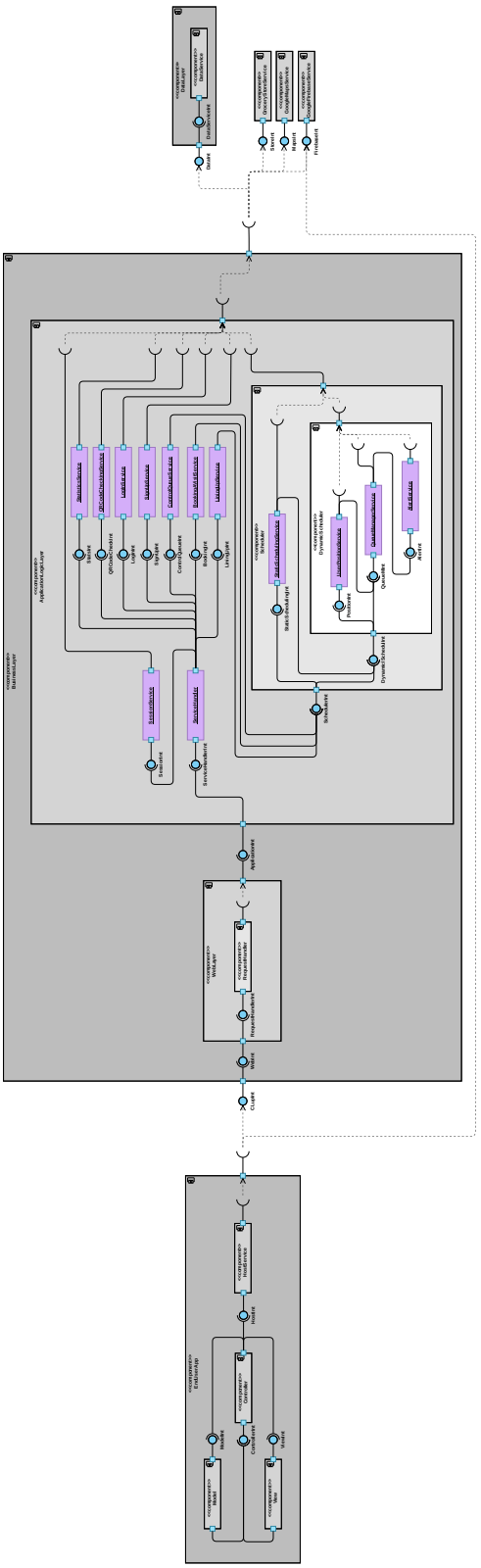

Figure 2.2: Component Diagram.

2.2 Component View

2.3 Deployment View

2.4 Runtime View

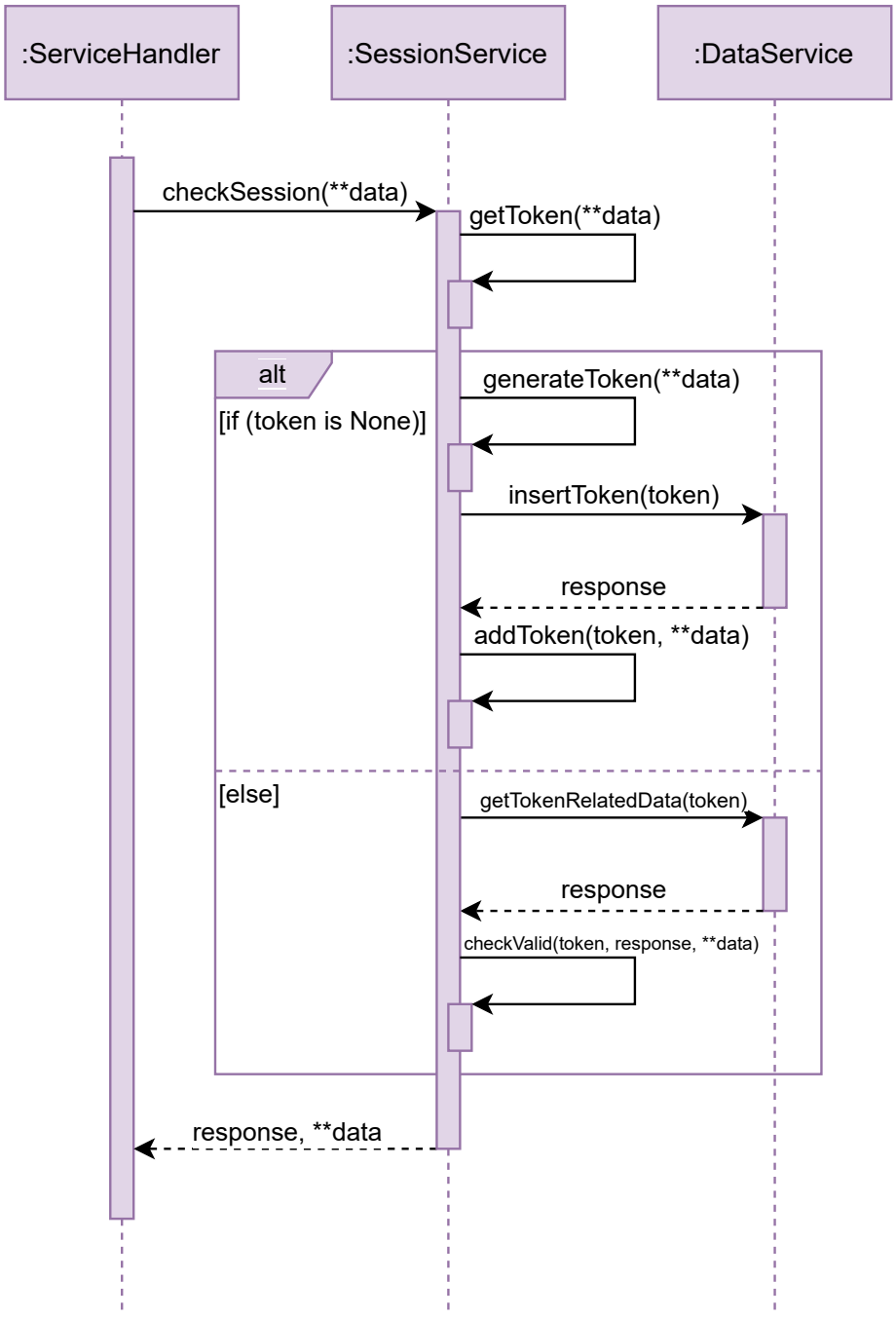

Figure 2.3: Session control sequence diagram.

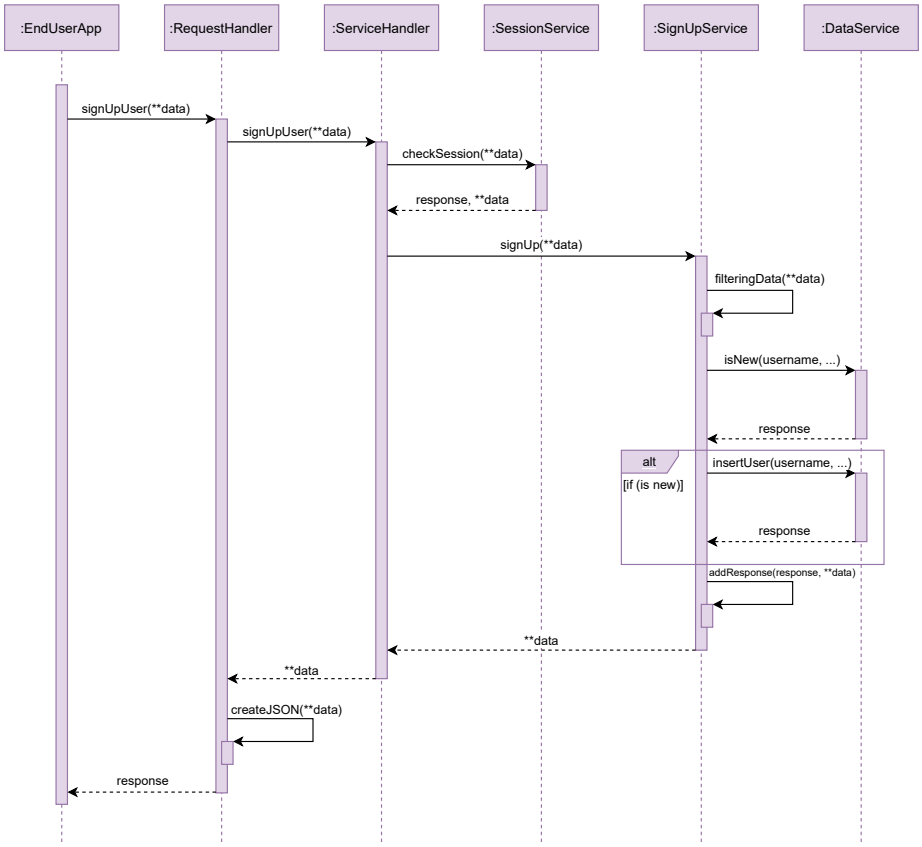

Figure 2.4: Sign Up sequence diagram.

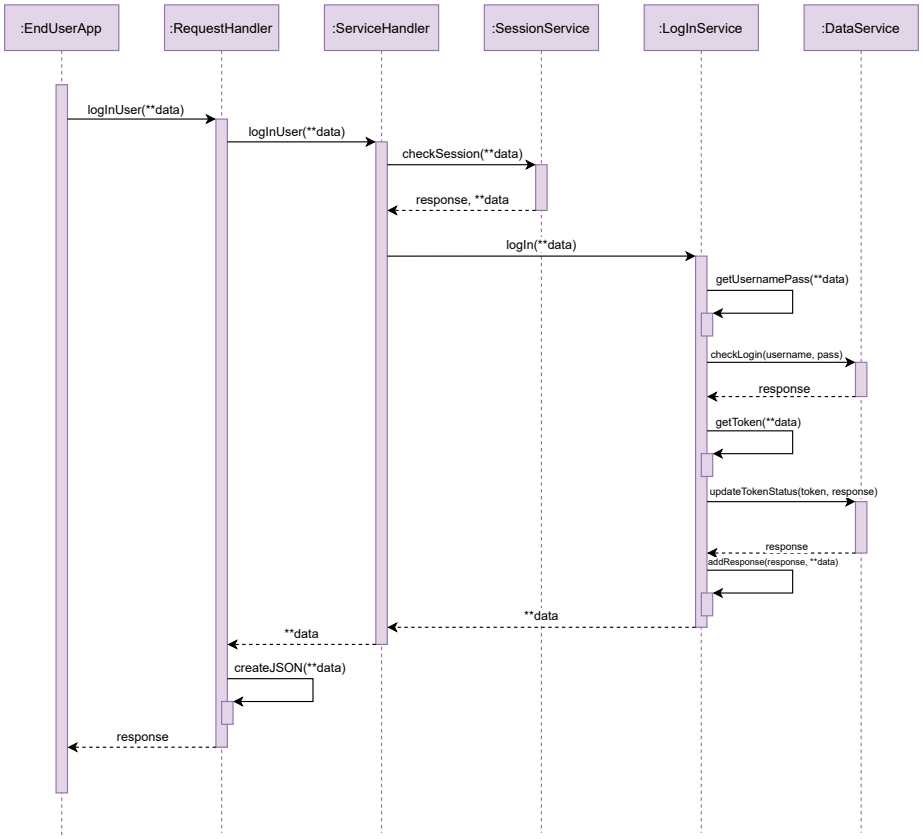

Figure 2.5: Log In sequence diagram.

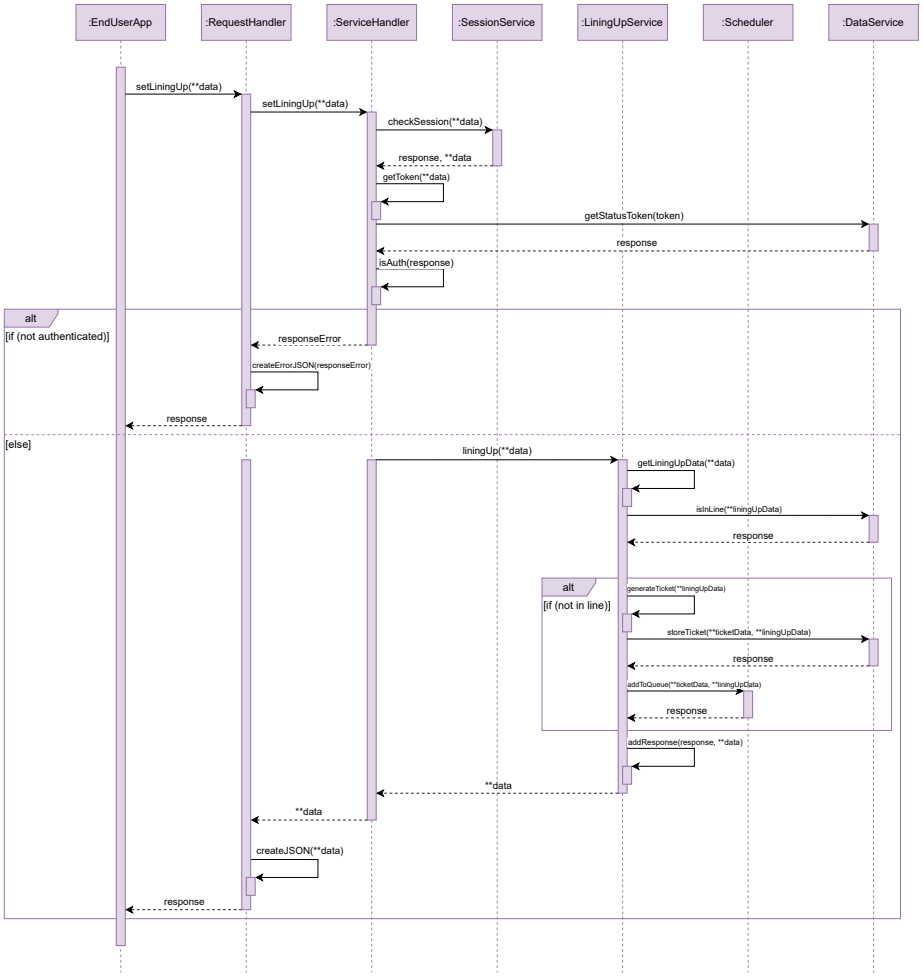

Figure 2.6: Lining Up sequence diagram.

2.5 Component Interfaces

2.6 Selected Architectural Styles and Patterns

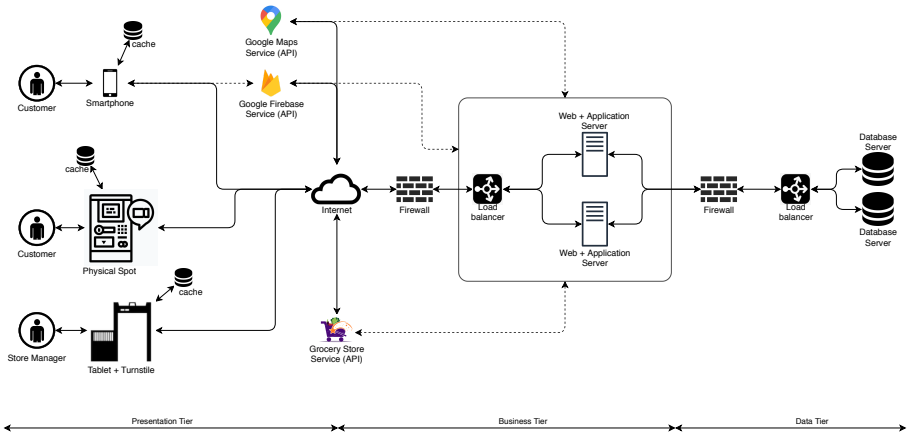

Figure 2.7: Architecture components.

2.7 Other Design Decisions

Chapter 3

User Interface Design

Chapter 4

Requirements Traceability

Chapter 5

Implementation, Integration and Test Plan

Chapter 6

Effort Spent

Chapter 7

References

API	Application Programming Interface
CLup	Customers Line-up
d.P.C.m	*"decreto del Presidente del Consiglio dei ministri"*
FIFO	First In First Out
GPS	Global Positioning System