Software Requirements Specification

for

Canteen Automation System

Version 1.0

Team

111803092 Atharva Phand
111803099 Chaitanya Shinge
111803110 Amey Dhongade

College of Engineering Pune

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Revision History

Name	Date	Reason For Changes	Version
Amey Makarand	25/02/21	Added features in section 4.2,4.5,glossary	0.1
Atharva Phand	25/02/21	Sections 1.2,1.5,2.3,2.4,2.5,2.7	0.2
Amey Makarand	25/02/21	Added features in section 3.1	0.3
Chaitanya Shinge	25/02/21	Added features in section 4	0.4
Chaitanya Shinge	25/02/21	Added block diagram in Appendix B	0.5
Atharva Phand	25/02/21	Sections 3.1,3.3,4.1,4.4,4.5,4.6	0.6

1. Introduction

1.1 Purpose

The purpose of this document is to show a detailed description of and to help understand the canteen automation system. The various features will be explained, the interface used (both software and hardware). The document is meant for the developers of the software.

1.2 Document Conventions

The font style used in this document is Times. The headings have been made bold.
Some Definitions:

Term	Definition
Java	Java is a general-purpose computer programming language that is concurrent, class based, object oriented, and specifically designed to have as few implementation dependencies as possible.
Android	Android is the name of the mobile operating system made by American company; Google.
Android Studio	Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA. On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhances the productivity when building Android apps.

1.3 Intended Audience and Reading Suggestions

This project is a prototype for canteen systems. This has been implemented in a group of 3 and guidance of college professors. This project is useful for the canteen system as well as for the customers.
The document is intended for the developer, students, teachers.

The second section of the document contains the architecture for the system, environment, the user classes, user documentation.

The third section contains the information related to the software and hardware interface requirements.

The fourth section contains the various features of the canteen automation system.

The fifth section contains contains non-functional requirements like safety, security, the performance of the system.

1.4   Product Scope

The system is a Canteen Automation System. The main aim of the system is to reduce the queuing delay at the canteen. This is helpful as students and teachers don't need to wait for a long time to receive their orders. It is also beneficial to the canteen team as they will receive an organized list of orders and so preparation of orders and serving the orders is done quickly. Above all, we also hope to provide a comfortable user experience with the application.

1.5   References

https://www.irjet.net/archives/V5/i1/IRJET-V5I1320.pdf
https://www.researchgate.net/publication/333201476_ONLINE_CANTEEN_SYSTEM

2.   Overall Description

2.1   Product Perspective

This is a new self-contained product and not an upgrade or a part of any larger system.

2.2   Product Functions

Login and Registration

The students and teachers will have to register once and then login to order.

Updating Menu

An updatable menu will be made to ensure orders present at that time are available

Placing Orders

Customers and select the food items and place the order.

Order Confirmation

Order Confirmation through One Time Password.

2.3   User Classes and Characteristics

The various user classes :-
1. Canteen Manager - The Manager manages all the orders. He receives orders through the application as well as from customers physically present in the canteen.
2. Students - When implemented in college premises, students can place orders from anywhere in the campus using their mobile devices and then collect the order after receiving the confirmation message.
3. Professors - Professors can order from their cabins during lunch time and the canteen team will provide facilities to deliver the order directly to them.
4. Others - Guests can have a guest session, where no login or registering is required.

Outsiders can order food from app, but they will have to give some details
The terms "students" and "professors" are used as examples. The software is generic and can be implemented in restaurants, offices and other relevant places.

2.4   Operating Environment

Operating Environment for Canteen Automation System are listed as below
1. A Database
2. Client/Server system
3. Operating System: Android
4. Database: Database + SQL
5. Platform: Android Studio

Type - Mobile application

2.5   Design and Implementation Constraints

1. Users have to download the application on their phone in order to use it.
2. There should be at least 50 MB of free space on the device.
3. Java should be the programming language used in implementation with Android SDK.
4. Order schema, Accounts schema, SQL commands for queries.

2.6   User Documentation

A user-manual will be provided to help users understand the various features of the application.

2.7   Assumptions and Dependencies

1. Operating System: The application will be developed for Android platforms. Android 4.0.3 and upper versions.
2. Battery: In emergency situations, energy is becoming an important issue. Most probably our application will not drain the battery very fast.
3. Network Requirements - Internet support will be required for the device through which users will place orders.

3.   External Interface Requirements

3.1   User Interfaces

User interface of our application will be easy to use and understandable. Moreover,the user is expected to know how to use Android mobile devices and to be able to write and read messages and use buttons.
1. Login Interface: In this interface, users will have to login with their username and password. There will also be a register button.
2. Register Interface: In this interface, the user registers to the system by submitting details in the provided text fields. After this step, the user can login and order.
3. Order Interface: In this interface, the user will see a list of food items available. He/she can browse through the page and add to the cart.
4. Payment Interface: In this interface, the user will have a choice of cash on delivery or a UPI payment.

Mobile Application for Users:
     Java & Android framework
Web Application for Canteen Staff:
     Backend:
          MySQL DBMS
          ExpressJS
     Frontend:
          ReactJS
          HTML
          CSS
          JS

3.2   Hardware Interfaces

Supported Device Types - Android mobile devices, tablets.
Nature of Data - Text & Images.
Control Interaction - Touch

3.3   Software Interfaces

Following are the software used for development of the project

Software used	Description
Android Studio	For developing mobile application for customers
Database Management System	For designing databases of customer accounts and orders

3.4   Communications Interfaces
Email, mobile phone as medium for the application.

4.   System Features

4.1   User Registration and Login

4.1.1   Description and Priority

This feature allows new users such as students, faculty within a college premise to register on the application. Here the user has to provide details like name, department, mobile number, photo, roll no (if applicable).

Considering that placing orders and payment is critical to the functioning of the app, this feature will have a medium priority.

4.1.2   Stimulus/Response Sequences

1. User installs the application.

2. Opens the app, clicks on Register.

3. Fills the details in the fields provided.

4. After successful registration, he/she is redirected to the login page.

5. Users can then login to the app with valid credentials.

6. In case they have forgotten their password, they can select the "Forgot Password" option. Users will have to enter email address/contact number and a link will be sent through sms or email.

7. After successfully logging in, users can go to the profile page, to manage their account.

4.1.3 Functional Requirements

1. Warning will be shown if inputs do not meet requirements. For example, email with wrong input, password not meeting the required criteria. This applies for both registration and login.
2. Login existing user.
3. Register a new user.
4. Forgot password feature.

4.2 Placing Orders

4.2.1 Description and Priority
This feature allows the users to place the beverages/food items from the menu. Cart shows the order placed by the user.

4.2.2 Stimulus/Response Sequences
1. Select the food item/beverage.
2. Check the cart
3. Place order and pay.
4. Proceed with OTP generation process

4.1.3 Functional Requirements

Add food items to cart
Change the quantity of items in cart
Add suggestions or cooking instructions
View food items available from menu

4.3 OTP generation

4.3.1 Description and Priority

This feature generates a 6-digit OTP, once an order gets placed. This OTP will be common among user and canteen staff.

4.3.2 Stimulus/Response Sequences

1. OTP will be received on email/phone
2. Users can take their order only after confirming the OTP with the canteen staff.

4.1.3 Functional Requirements
Resend OTP if not received.
Download the receipt.

4.4   Online payment

4.4.1   Description and Priority

This is the payments feature. Customers have flexibility for order payments such as:

1. UPI Payment
2. Cash on Collecting the Order

Customers will be redirected to the payments page when after they select the required food items.

High priority as money transactions are critical.

4.4.2   Stimulus/Response Sequences

1. Confirm your cart, click on next.
2. Now you will be redirected to the payments page.
3. Select either Cash payment while collecting options OR UPI Payment.
4. A receipt will be generated in PDF form.

4.4.3   Functional Requirements

In case UPI Payment does not happen successfully, you always have the option of paying while collecting the order or you can go back and try again.

4.5   Deluxe users

4.5.1   Description and Priority

This feature is like Amazon Prime. Users need to pay a certain membership fee to become a "Deluxe" user of the application.

Such users avail discount on every order.

4.5.2   Stimulus/Response Sequences

1. On the profile/account page, there will be a button - "Become a Deluxe User"
2. After buying membership, discounts will be availed on every order.

4.5.3   Functional Requirements

Users need to have an account first to become a deluxe user.

4.6   Admin Side Features

4.6.1   Description and Priority

1. Canteen team will receive an organized list of orders from the users. The list will keep growing as time progresses.
2. The canteen team can update the menu as and when required. Also they can add offers on some food items.

3. They can see the sales on a particular day and all past sales on a different page.

4.6.2 Stimulus/Response Sequences
1. There will be a login for admin as well.
2. After logging in, the admin side will have several sections such as live orders, past sales, menu section.
3. On the live orders page, the admin can see live orders which are being prepared currently. Once an order is delivered, the admin can click on "completed" so then the order will be moved to the past sales section. (this is a rough functional idea of the admin side system.)
4. On the menu page, there will be a list of all food items. The admin can select any of them as desired on a daily basis.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

1. When customers are on the food item selection page, they must be able to see all the items available in different defined sections.

5.2 Safety Requirements

1. Customers of any type should take care that their account credentials remain safe with them.
2. Customers of any type should have a lock on the phone.
3. Customers of any type should inform the change in Mobile number if applicable in any point in time.

5.3 Security Requirements

<Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define any user identity authentication requirements. Refer to any external policies or regulations containing security issues that affect the product. Define any security or privacy certifications that must be satisfied.>

5.4 Software Quality Attributes

Correctness- The order should have the correct details of the customer.
Usability- The system should try to satisfy maximum orders from students and professors.

5.5 Business Rules

1. User Details

It must be possible to specify the following details for new users when creating their account: Full Name, Email ID, Mobile No., Username, Password.

2. Specify related department
It must be possible to specify that the user to be created belongs to which department.
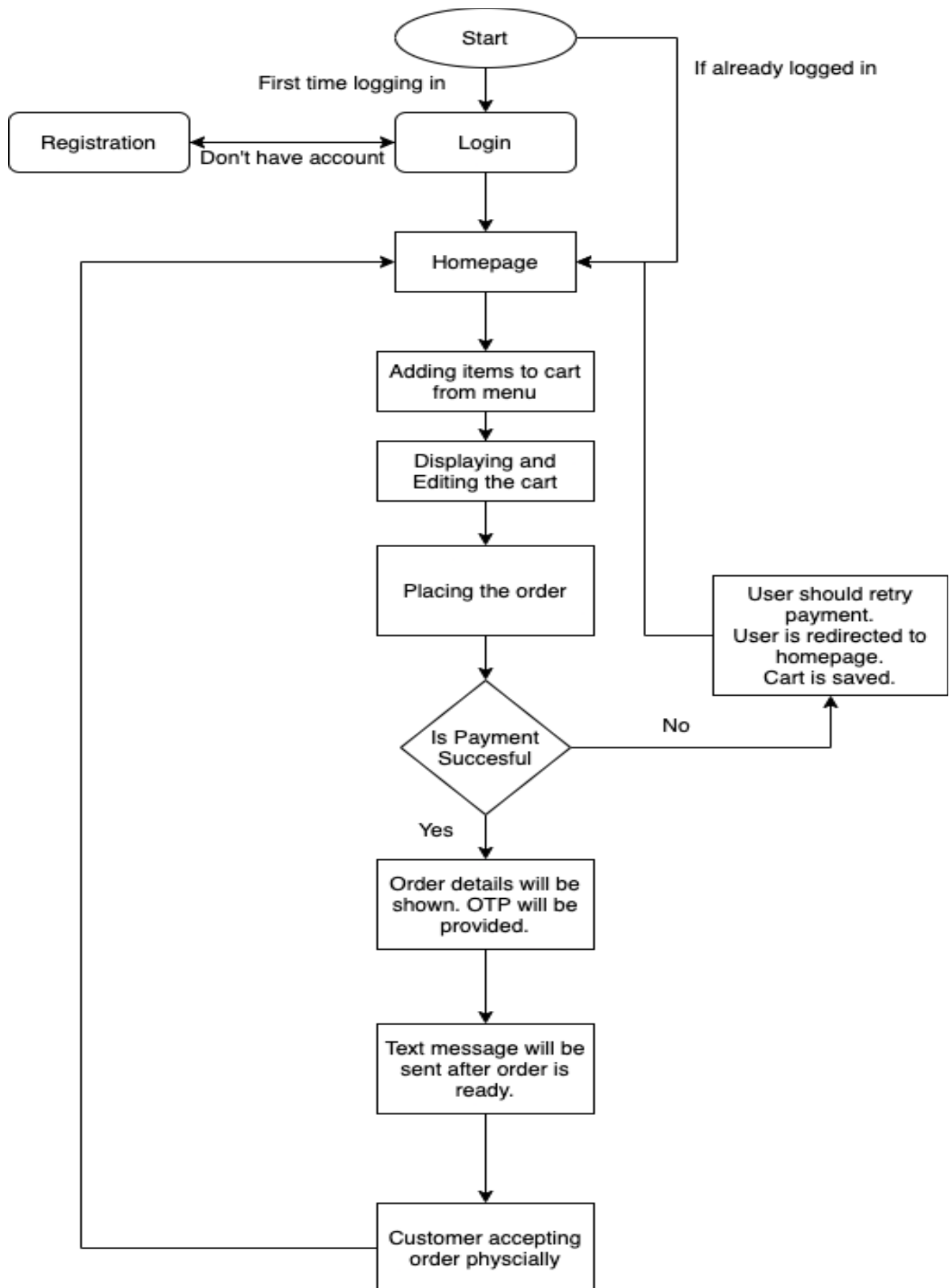
3. Payments
The customer should pay with any one of the methods - Cash, Card Payment, UPI.

Appendix A: Glossary

Deluxe User	A user who pays a monthly fee to receive discounts on any item ordered.
UPI	Unified Payment Interface
OTP	One Time Password
JS	Javascript (Programming Language)

Appendix B: Analysis Model (User)

```
                              ┌─────────┐
                             (   Start   )─────────────┐
                              └─────────┘              │
         First time logging in    │           If already logged in
                                   ▼                    │
┌──────────────┐           ┌──────────────┐            │
│ Registration │◄─────────►│    Login     │            │
└──────────────┘ Don't have └──────────────┘            │
                  account          │                    │
                                   ▼                    │
                           ┌──────────────┐             │
                           │   Homepage   │◄────────────┘
                           └──────────────┘
                                   │
                                   ▼
                           ┌──────────────┐
                           │ Adding items │
                           │ to cart      │
                           │ from menu    │
                           └──────────────┘
                                   │
                                   ▼
                           ┌──────────────┐
                           │ Displaying   │
                           │ and Editing  │
                           │ the cart     │
                           └──────────────┘
                                   │
                                   ▼
                           ┌──────────────┐      ┌──────────────────┐
                           │ Placing the  │      │ User should retry│
                           │ order        │      │ payment.         │
                           └──────────────┘      │ User is redirected│
                                   │             │ to homepage.     │
                                   ▼             │ Cart is saved.   │
                             ◇───────────◇  No   └──────────────────┘
                            │ Is Payment  │─────────►
                            │ Succesful   │
                             ◇───────────◇
                                   │ Yes
                                   ▼
                           ┌──────────────┐
                           │ Order details│
                           │ will be shown.│
                           │ OTP will be  │
                           │ provided.    │
                           └──────────────┘
                                   │
                                   ▼
                           ┌──────────────┐
                           │ Text message │
                           │ will be sent │
                           │ after order  │
                           │ is ready.    │
                           └──────────────┘
                                   │
                                   ▼
                           ┌──────────────┐
                           │ Customer     │
                           │ accepting    │
                           │ order        │
                           │ physcially   │
                           └──────────────┘
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Appendix C: To Be Determined List

1. Making the application to run on IOS Platforms as well.