Software Requirements Specification

FOR

ONLINE FOOD DELIVERY SYSTEM

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

This SRS describes the software functional and nonfunctional requirements for release 1.0 of the Online Food Delivery system(OFDS). This document is intended to be used by the members of the project team that will implement and verify the correct functioning of the system. Unless otherwise noted, all requirements specified here are high priority and committed for release 1.0.

1.2 Document Conventions

This SRS document adheres to standard formatting conventions, with headings in bold and important notes italicized. Every requirement statement will have its own priority.

1.3 Intended Audience and Reading Suggestions

This Software Requirements Specification (SRS) document is intended to serve as a comprehensive guide for a diverse set of stakeholders involved in the development, deployment, and maintenance of the software project outlined herein. The document is organized to cater to the unique needs and interests of various reader types. We recommend the following sequence for reading the document, based on your role and objectives:
Developers and the project team : They are the primary audience that the document is intended for. They should start with the “Introduction” section, then the “Overall Description” section, and “System Features”.
General Users : Users of the software, who will eventually interact with the system, can start with the “Introduction” section to get an overview of the project. They should focus on the “System Features” section to understand what functionalities the software will offer.

1.4 Product Scope

The Online Food Delivery System is a mobile application designed to streamline the process of ordering and delivering food from a variety of restaurants to end-users' doorsteps. This platform provides a user-friendly interface for customers to browse menus, place orders, track deliveries in real-time, and enjoy a convenient dining experience from the comfort of their homes. Additionally, it offers restaurant owners tools for menu management and order processing, optimizing their online presence and expanding their customer base.

1.5 References

1. Baloh, Ivan. *Mobile App Design Principles Guide,* https://relevant.software/blog/mobile-app-ui-design-guide/

2. Overall Description

2.1 Product Perspective

The Online Food Delivery System (OFDS) is a standalone product developed to revolutionize the way food is ordered and delivered, enhancing the dining experience for customers and enabling restaurant partners to thrive in the digital age. OFDS is not a replacement for existing systems but rather a new, self-contained product designed to meet the growing demand for online food ordering and delivery services

2.2 Product Functions

User Registration and Authentication	Allow users to create accounts, log in, and manage their profiles securely
Restaurant Listing and Menu Browsing	Provide a user-friendly interface for customers to browse and search for restaurants and their menus
Order Placement and Customization	Enable users to select food items, customize orders (e.g., special instructions), and add items to the cart.
Payment Processing	Support various payment methods for secure and efficient transactions
Order Tracking	Allow users to track the status of their orders in real-time and receive notifications.
Delivery Management	Assign delivery drivers, manage their routes, and provide estimated delivery times.
Customer Support	Provide an administrative dashboard for restaurant and user management.

2.3 User Classes and Characteristics

The "Online Food Delivery System" is designed to cater to a diverse set of user classes, each with distinct characteristics and needs.

2.3.1 Customers:

1. Frequency of Use: Frequent users, order food online regularly.
2. Characteristics: Varied levels of technical expertise, ranging from tech-savvy users to those less familiar with online ordering. Differing culinary preferences and dietary restrictions.

2.3.2 Restaurants:

1. Frequency of Use: Participating restaurants use the system daily for managing orders.
2. Characteristics: Varying levels of technical proficiency among restaurant staff. Require tools for managing menus, orders, and delivery.

2.3.3 Delivery Drivers:

1. Frequency of Use: Daily, responsible for delivering orders.
2. Characteristics: Technically adept in using GPS navigation and order management apps. Need real-time order updates and optimized delivery routes.

2.3.4 Support Staff:

1. Frequency of Use: Frequent interaction with customers and restaurants for order-related inquiries and issue resolution.

2. Characteristics: Strong interpersonal skills, ability to troubleshoot and resolve issues. Access to customer and order data for support.

2.3.5 System Developers and Maintenance Team:

1. Frequency of Use: Continuously work on system enhancements, updates, and maintenance.
2. Characteristics: High technical proficiency. Responsible for system architecture, coding, and troubleshooting.

2.3.6 Most Important User Classes:

1. Customers: Ensuring a user-friendly experience, accessible to users with varying levels of technical expertise, is crucial for attracting and retaining customers.
2. Restaurants: Partnering restaurants are essential stakeholders. Their experience with the system directly impacts the quality and availability of food choices.
3. Delivery Drivers: Efficient delivery is a critical aspect of customer satisfaction, making the experience of delivery drivers paramount.
4. Administrators: System administrators play a vital role in maintaining system integrity and configuring it to meet evolving business needs.

2.4 Operating Environment

OE-1: The Food Delivery System shall operate with the mobile devices with the following operating systems: Android KiKat and beyond i.e version 20+.
OE-2: The OFDS notification delivery and tracking system shall operate a Go script on a server rented from a cloud service provider.
OE-3: The data, media and authentication shall operate on the spark plan of Firebase.

2.5 Design and Implementation Constraints

CO-1: The user-facing part of the system shall be developed using Flutter so that cross platform applications may be built with ease in the future starting with Android applications.
CO-2: The system shall use the Firebase Realtime Database and Firebase Storage.
CO-3: The Flutter project files shall be organized according to their functionality or type.
CO-4: All scripts shall be written in Go.
CO-5: Payment gateways such as Razorpay shall be used to make online transactions between all parties involved.

2.6 User Documentation

UD-1: The first time customers looking to buy food install the application, the system shall guide the user through graphical prompts to help them learn the workflow of the app.
UD-2: Restaurant owners and delivery people who register their services for the first time on the app shall be given a tutorial to refer to on how to manage and successfully deliver orders on time.

2.7 Assumptions and Dependencies

AS-1: Large number of users order food at particular times specifically for breakfast,lunch and dinner.
DE-1: The operation of OFDS depends on the perfect balance between the activity of restaurants,customers and delivery people.
DE-2: The operation of OFDS depends on the operation of payment gateways to successfully place pending orders.

3. External Interface Requirements

3.1 User Interfaces

UI-1: There shall be three different user interfaces for end-user, restaurant and delivery people.
UI-2: The user interfaces shall follow the design principles outlined in 1.5.1
UI-3: Any process shall not need users to navigate to more than 5 pages.

3.2 Hardware Interfaces

No hardware interfaces have been identified.

3.3 Software Interfaces

SI-1: Restaurant Partner APIs

SI-1.1: Transmit customer orders to restaurant partners for seamless order placement and real-time updates.
SI-1.2: Periodically poll restaurant partner systems to determine menu item availability.
SI-1.3: Automatically remove unavailable food items from the menu for the current date.

SI-2: Payment Gateway Integration

SI-2.1: Allow customers to make secure online payments for their orders.
SI-2.2: Process refund requests for rejected or unsatisfactory meals.

SI-3: Location Services (Google Maps)

SI-3.1: Provide location-based services for restaurant discovery and real-time delivery tracking.

SI-4: SMS and Email Services

SI-4.1: Send order notifications and updates via SMS to customers and delivery drivers.
SI-4.2: Send order confirmations, account-related emails, and promotional emails to customers.

SI-5: External Restaurant Review APIs

SI-5.1: Display restaurant ratings and reviews from external sources on the platform for customer information.

3.4 Communications Interfaces

CI-1: Order Confirmation Emails

The Online Food Delivery System (OFDS) shall send an email notification to customers confirming the acceptance of their order. The email will include details such as the order items, total price, and delivery instructions.

CI-2: The Online Food Delivery System (OFDS) shall send an e-mail message to the Patron to report

any problems with the meal order or delivery after the order is accepted.

CI-3: Restaurant Partner API Communication

The Online Food Delivery System (OFDS) shall communicate with restaurant partners to transmit customer orders, receive menu availability updates, and synchronize order statuses.

CI-4: Payment Gateway Integration

OFDS shall securely communicate with the Payment Gateway API to process payment transactions. Data transfer between OFDS and the Payment Gateway will be encrypted using industry-standard encryption protocols (e.g., SSL).

CI-5: Google Maps API Integration

OFDS shall integrate with the Google Maps JavaScript API for location-based services. This includes real-time tracking of delivery drivers, mapping restaurant locations, and calculating optimal delivery routes

4. System Features

4.1 Restaurant Listings and Menu Display:

Description and Priority:

Allow users to select a restaurant of their choice and choose any food item from the menu.
This feature is of high priority **(Priority: 9)** as it forms the core functionality of the application.

Stimulus/Response Sequences:

1. User selects the "Browse Restaurants" option
2. User chooses a specific restaurant.
3. User selects a food item from the menu.
4. User can continue adding more items or proceed to checkout.

Functional Requirements:

FD-1: The system must provide a user-friendly interface for browsing and selecting restaurants
FD-2: The system must display a list of restaurants, including their names and brief descriptions
FD-3: Users must be able to choose a specific restaurant from the list
FD-4: The system should display the restaurant's menu, including food items and their prices
FD-5: Users must be able to select food items from the menu.
FD-6: The system should allow users to add multiple items to their order.
FD-7: Users should have the option to review their order before finalizing it.
FD-8: The system should calculate and display the total cost of the order.
FD-9: Users must be able to proceed to checkout and complete the order.
FD-10: The system should handle errors gracefully and provide clear error messages for invalid inputs or system issues.

4.2 Ordering and Cart Management

Description and Priority:

This feature involves the process of users placing food orders and managing their orders. It is of High Priority **(Priority:9)** as it directly impacts the core functionality and revenue generation of the platform.

Stimulus/Response Sequences:

1. Stimulus: User selects a restaurant and browses the menu.
   Response: The system displays the restaurant's menu with food items, descriptions, and prices.
2. Stimulus: User adds items to the cart.
   Response: The system updates the cart with the selected items, quantities, and the total cost.
3. Stimulus:User customizes items (e.g., adds special instructions, selects toppings).

Response: The system updates item details accordingly.
4. Stimulus: User reviews the cart and proceeds to checkout.
Response: The system presents the order summary, delivery details, and payment options.
5. Stimulus: User selects a payment method and confirms the order.
Response: The system processes the payment, sends an order confirmation, and notifies the restaurant.
6. Stimulus: User receives an order confirmation and tracking information.
Response: The system provides real-time order tracking and an estimated delivery time.
7. Stimulus: User receives the order at the specified delivery location.
Response: The delivery driver marks the order as delivered, and the user receives a notification.

Functional Requirements:

FR-01: Display Restaurant Menu
The system shall display the restaurant's menu with items, descriptions, prices, and images.
FR-02: Cart Management
Users shall be able to add, remove, or modify items in the cart, and in real-time the total cost update.

FR-03: Customization
Users shall have the option to customize food items, such as adding special

FR-04: Checkout Process
Users shall be able to revie
w their cart, provide delivery details, and select a payment method.

FR-05: Payment Processing
The system shall securely process payments via various methods (credit cards, digital wallets, cash on delivery).

FR-06: Order Confirmation
Users shall receive an order confirmation with order details and tracking information.

FR-07: Order Modification and Cancellation
Users shall be able to cancel or modify orders before they are prepared, with appropriate refund or adjustment mechanisms.

FR-08: Order Tracking
The system shall provide real-time order tracking with status updates (e.g., order received, preparing, out for delivery).

FR-09: Delivery Confirmation
Users shall receive a delivery confirmation once the order is delivered.

FR-10: Error Handling
The system shall handle errors gracefully, providing informative error messages and allowing users to recover from errors.

FR-11: Data Security
User data and payment information shall be securely handled and stored in compliance with relevant regulations.

FR-12: Performance

The system shall be able to handle a high volume of orders and provide a responsive user experience.

4.3 Different Modes of Payment

Description and Priority:

This feature encompasses the various payment methods available for users to complete their food orders. It is of High Priority(**Priority:9)** as it directly impacts the convenience and accessibility of the platform for users.

Stimulus/Response Sequences:

1. Stimulus: User proceeds to checkout after adding items to the cart.
   Response: The system presents multiple payment options to the user.

2. Stimulus: User selects a paymen method (e.g., credit card, digital wallet, cash on delivery).
   Response: The system prompts the user to enter the required payment information or provides instructions for the chosen method.

3. Stimulus: The user enters payment information and confirms the order.
   Response: The system securely processes the payment, sends an order confirmation, and notifies the restaurant.

4. Stimulus: Payment processing fails (e.g., declined card).
   Response: The system provides an error message and options for the user to correct the payment issue or select an alternative payment method.

Functional Requirements:

FT-01: Multiple Payment Methods
The system shall offer a variety of payment methods, including credit/debit cards, digital wallets (e.g., PayPal, Apple Pay), and cash on delivery.

FT-02: Payment Selection
Users shall be able to select their preferred payment method during the checkout process.

FT-03: Payment Information Collection
The system shall collect and securely store payment information (e.g., card details) if users choose to save them for future orders.

FT-04: Payment Authorization
The system shall verify and authorize payments, ensuring the validity of the payment method and sufficient funds.

FT-05: Payment Confirmation
Upon successful payment processing, users shall receive an order confirmation with details and tracking information.

FT-06: Error Handling
The system shall handle payment processing errors gracefully, providing informative error messages and guiding users on resolution steps.

FT-07: Payment Security
User payment information shall be securely encrypted and stored in compliance with industry standards and regulations.

FT-08: Cash Handling
If cash on delivery is a payment option, the system shall facilitate cash collection and provide accurate change calculation.

FT-09: Payment Gateway Integration
Integration with third-party payment gateways shall be implemented to process payments securely and efficiently.

FT-10: Payment Confirmation to Restaurants
The system shall notify the restaurant upon successful payment authorization to initiate food preparation.

4.4 Order Tracking

Description and Priority:

Order tracking allows users to monitor the status and progress of their food orders in real-time, enhancing transparency and convenience. It is of High Priority**(Priority:7)** as it significantly contributes to a positive user experience and reduces uncertainty during the delivery process.

Stimulus/Response Sequences:

1. Stimulus: User confirms an order and proceeds to payment.
   Response: The system generates an order confirmation and initiates the order tracking process.

2. Stimulus: User accesses the order tracking feature.
   Response: The system displays the order status, estimated delivery time, and real-time updates.

3. Stimulus: The restaurant confirms the order and begins preparing the food.
   Response: The system updates the order status to "Preparing" and notifies the user.

4. Stimulus: A delivery driver is assigned to the order and starts the delivery.
   Response: The system changes the order status to "Out for Delivery" and provides the driver's information.

5. Stimulus: The delivery driver arrives at the user's location.
   Response: The system updates the order status to "Delivered" and sends a notification to the user.
6. Stimulus: The user leaves feedback or reviews the order after delivery.
   Response: The system allows users to provide feedback and updates the order status to "Completed."

Functional Requirements:

FV-01: Real-Time Status Updates
The system shall provide real-time updates on the order status, including "Received", "Preparing," "Out for Delivery," and "Delivered."
FV-02: Estimated Delivery Time
The system shall display an estimated delivery time based on the order status and the user's location.
FV-03: Driver Information
Users shall have access to driver information (e.g., name, photo, contact details) when the order is "Out for Delivery."
FV-04: Notifications
The system shall send push notifications or SMS updates to inform users about status changes and estimated delivery times.
FV-05: Order History
The system shall maintain a history of past orders with order tracking details for reference.
FV-06: Feedback Collection
Users shall be able to leave feedback, ratings, and reviews for their orders through the order tracking interface.
FV-07: Order Completion
The system shall update the order status to "Completed" once the user confirms receipt of the order.
FV-08: Error Handling
The system shall handle errors in tracking updates and provide users with clear instructions on how to proceed.

4.5 On-Demand Order Assignment for Delivery Executives

Description and Priority:

Enable delivery executives to choose additional orders while they are already delivering an order. This feature is considered to be of medium priority **(Priority: 5)**, offering a balance between its benefits and potential impacts.

Stimulus/Response Sequences:

1. Stimulus: The delivery executive, currently in the process of delivering an order, indicates their availability to potentially accept another order.
   Response: The system identifies available unclaimed orders for assignment.

2. Stimulus: The system presents a list of available orders to the delivery executive.
   Response: This list includes order details, delivery locations, and estimated delivery times.

3. Stimulus: The delivery executive selects an order they wish to deliver next.
   Response: The system confirms the selection and updates the delivery queue.

Functional Requirements:

FS-1 : The system must provide a user-friendly interface for delivery executives to indicate their availability for additional orders.
FS-2: The system should continuously monitor available orders for assignment.
FS-3: Delivery executives must be presented with a list of available orders, including relevant order details.
FS-4: Delivery executives should have the option to select one order from the list.
FS-5: The system must ensure that the selected order is not assigned to another delivery executive.
FS-6: Once an order is selected, the system should update the delivery executive's queue and provide directions to the new delivery location.
FS-7: In case of system errors or unavailability of suitable orders, the system should provide clear and informative error messages.
FS-8: The system should have a mechanism to handle conflicts if two delivery executives attempt to select the same order simultaneously.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

PE-1: Due to the assumption made in AS-1, the system shall accommodate all its active users during the peak usage time window of 7:00 to 9:00 am, 12 to 2:00 pm and 8:00 to 10:00 pm local time, with a maximum order scheduling delay of 10 seconds.
PE-2: Responses to all requests shall take no more than 10 seconds to be received by the user's device after they submit a request.
PE-3: Due to the dynamic nature of user orders and delivery people's location, this change in information shall be alerted by the system in real-time i.e no more than 1 second to all the interested parties.
PE-4: Customer support/chatbots shall address any stakeholders problems within 1 minute to maintain a positive outlook of the business from the stakeholders perspective.

5.2 Safety Requirements

SR-1: The system shall make sure that all parties involved maintain the highest level of moral, ethical and professional standards. To do so, feedback/complaint forms shall be readily available on the application.

5.3 Security Requirements

SE-1: All network transactions that involve financial information or personally identifiable information shall be encrypted per BR-33.
SE-2: All stakeholders shall be required to sign up to the OFDS and share their personal information such as name,address and phone no.
SE-3: The data offered by restaurant owners shall be verified before listing them on the application.
SE-4: The restaurant shall not receive any personal information of the user placing the order. Similarly, the delivery person shall not receive any order details except for the location of the restaurant and user who placed the order.
SE-5: All passwords shall be encrypted with the Blowfish encryption algorithm.

5.4 Software Quality Attributes

Robustness-1: If the user accidentally exits the app without placing an order, the details mentioned in the cart shall be saved by the system so that the user can pick up from where he left off.
Maintainability-1: The interfaces with similar features meant for different types of stakeholder shall be grouped into a single widget to aid with the ease of understanding the software.
Maintainability-2: Logs of errors faced by users shall be stored for a duration of 1 day.
Adaptability-1: The interface of the system shall be designed such that variation in restaurant details displayed shall not affect the user interface nor will the change in screen sizes of the devices.
Correctness-1: In case any information displayed on the application is incorrect, a report feature shall be added to the system and any flagged content will be reviewed by a panel.

5.5 Business Rules

BR-1: In the event that the number of orders placed exceeds the number of delivery people in a region, delivery people near a restaurant with a high number of orders shall be encouraged to take up multiple orders and deliver them in one route.

Appendix A: Glossary

OFDS: Online Food Delivery System

Appendix B: Analysis Models

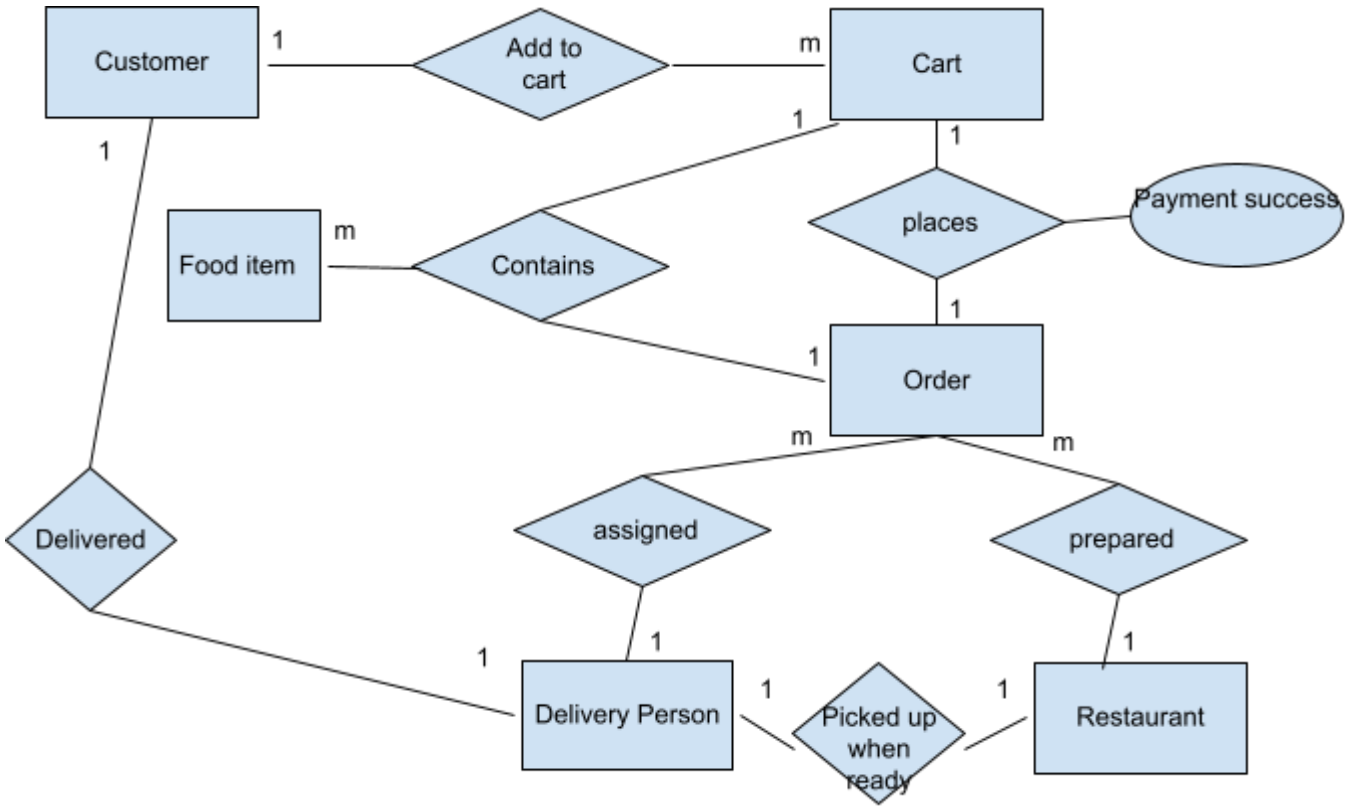

Figure 1
Partial data model of ODFS

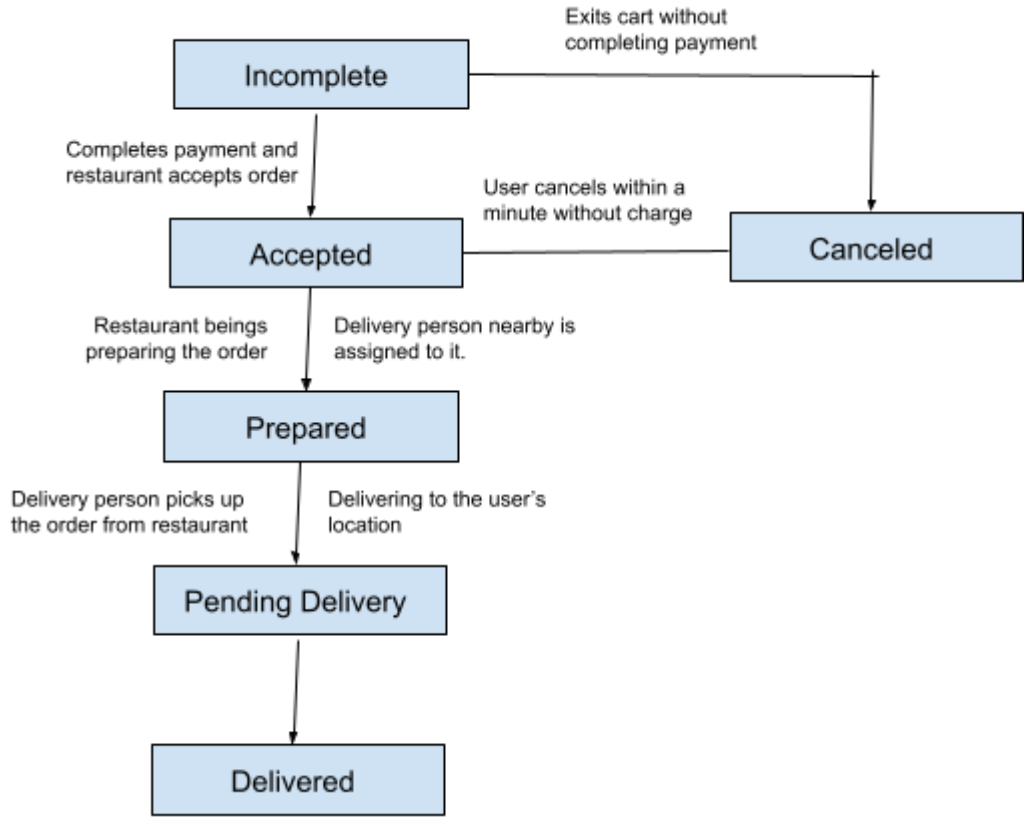

Figure 2

State transition diagram of OFDS