ONLINE ORDERING SYSTEM WITH REAL-TIME STATUS TRACKING FOR KUYA NICKS ROTISSERIE CHICKEN HOUSE

Ryan Jay Blaya, Jerome Grayda, Pia Guardian

College of Information and communication
Technology Sorsogon State University -
Bulan Campus Bulan, Sorsogon

Email:

blayaryanjay@sorsu.edu.ph, jerome.grayda@sorsu.edu.ph,
pia.guardian@sorsu.edu.ph

Chapter I

1 Introduction

This chapter presents the background of the study which establishes the context of the research. This section explains why this particular research topic is important and essential to understanding the main aspects of the study.

1.1 Project Context

The food and drink industry has undergone drastic transformation over the last few years, driven by increasing demand for convenience, efficiency, and better customer experiences. With digital technologies being embraced at a fast pace, businesses are leveraging web-based systems to automate, improve customer engagement, and stay competitive in a rapidly accelerating market [1]. However, most stores such as Kuya Nick Rotisserie Chicken House still use manual reservation and ordering processes, which generate inefficiencies such as too much waiting time, data loss, and decreased customer interaction. Such inefficiencies tend to result in customer dissatisfaction as well as operational inconvenience [2].

To enhance the store service delivery and improve customer satisfaction a web-based system will be proposed, the Online Ordering System with Real-Time Status Tracking for Kuya Nicks Rotisserie Chicken House. This system will serve to enhance the operations of Kuya Nick Rotisserie Chicken House by providing customers with an easy platform for reserving orders, browsing menus, ordering, and tracking orders in real time. By applying a real-time order tracking system and a virtual order board for kitchen staff, the project will enhance operational efficiency, reduce waiting times, and enhance overall customer satisfaction. By leveraging these technological solutions, the Kuya Nick Rotisserie Chicken House could improve its operations, reduce waiting times, and ultimately provide a higher level of service to the customers.

1.2 Purpose Description

Kuya Nick Rotisserie Chicken House, Bataan City operates in the highly competitive hospitality industry whose success relies on fast, convenient, and engaging service. Robust brand reputation and loyal customers aside, the restaurant has issues of lengthy queues, inefficient ordering processes, and inadequate real-time feedback to the customer. The reliance on manual reservation and ordering procedures further emphasizes those issues, resulting in operational inefficiencies and customer dissatisfaction. The online ordering system project aims to solve these problems by establishing an online ordering platform with real-time status tracking. Customers shall be able to navigate the menu, order, and reserve conveniently through a web-based interface. Moreover, it will include a real-time tracking of orders that notifies customers of the order status (e.g., Queued, Cooking, Cooked,

Ready for Pickup) using an interactive dashboard. To kitchen staff, the system will feature an electronic order board that received orders and notify customers once orders are ready.

This research is of relevance to the following:

- **Client:**The system will automate critical processes, reduce wait times, and increase operational effectiveness, enabling the business more customers with efficiency, raise more revenue, and improve its competitive edge.
- **Customers:**The system will provide a simple and efficient platform for ordering and booking, saving time, reducing frustration, and improving overall satisfaction.
- **Staff:** The ordering and reservation process will be simplified by the system, reducing workload and staff stress, giving them time to focus on quality service.
- **Proponents:** The development of this study will enhance their skills and broaden their mind in generating new ideas.
- **Future Researchers:** The study will serve as a reference for developing similar systems in the hospitality industry, giving details on the problems and solutions for the application of web-based reservation and ordering systems.

1.3 Objectives

The study focuses on the development of the Online Ordering System with Real-Time Status Tracking For Kuya Nicks Rotisserie Chicken House to organize and streamline the ordering process. Specifically, it aims to:

1. To develop an integrated online system with the following features:

   1.1 Online menu viewing

   1.2 Order placement

   1.3 Real-time order tracking (Queued, Cooking, Ready for Pickup)

   1.4 Digital display for staff and customer updates

2. To Generate automated sales reports to monitor daily transactions and store performance.
3. To evaluate the proposed project, based on IS0/IEC 25010 Software Product Quality, in terms of;

   3.1 Efficiency

   3.2 Functional Suitability

   3.3 Usability

1.4 Project Scope and Delimitation

The development of the Online Ordering System with Real-Time Status Tracking for Kuya Nick's Rotisserie Chicken House aims to introduce a centralized, web-based platform that enables customers to view the menu, place orders, and track them in real time. This integrated system will organize the ordering process and enhance operational efficiency by offering key features such as real-time menu visibility, online order placement, and a status tracking module that notifies customers whether their order is "Queued," "Cooking," or "Ready for Pickup." In addition, the system will include a digital display that provides both customers and kitchen staff with live updates on order status, reducing confusion and ensuring better service coordination.

To support the business in monitoring performance and sales activity, the system will also generate automated sales reports. This function will collect and summarize transaction data daily, providing insights into sales trends, peak hours, and overall store performance. These reports will assist management in making data-driven decisions and streamlining business operations by minimizing manual record-keeping and ensuring timely access to reliable performance metrics.

The project will be evaluated using the ISO/IEC 25010 Software Product Quality standard, focusing on the aspect of efficiency, functional suitability, and usability. The system's efficiency will be measured by its ability to process real-time updates promptly and support smooth operation under typical usage conditions. Functional suitability will be assessed based on how well the system meets the core needs of Kuya Nick's operations and its customers. Lastly, usability will be evaluated through the interface's intuitiveness, user accessibility, and overall customer and staff experience when interacting with the system. These criteria ensure the system is not only functional but also effective and user-friendly.

The Online Ordering System with Real-Time Status Tracking will be developed exclusively for Kuya Nick's Rotisserie Chicken House in Bataan and will not extend to other branches. The system will include a web-based customer portal and an admin panel for staff, with features such as real-time order tracking and a digital order board for kitchen personnel to optimize operations and improve customer satisfaction. Automated notifications will be used to inform customers about their reservation status, order progress, and payment confirmations. However, the system will not operate offline and will require a stable internet connection. Payment processing via GCash or any other mobile application will not be integrated into the system and must be handled externally. Moreover, the project will not include advanced features like AI-based recommendations, voice commands, or third-party delivery integration, to maintain focus on the core functionality needed by the Bataan branch within the project's scope and timeline.

Chapter II

Review of Related System

The goal of this study is to develop a Online Ordering System with Real-Time Status Tracking for Kuya Nicks Rotisserie Chicken House, which will transform customer interactions with food establishments through a seamless and efficient platform for reservations and ordering. This chapter reviews related systems to establish a foundation for understanding existing solutions, their limitations, and the opportunities for innovation that this project aims to address.

Conducting this review is essential for identifying gaps in current systems and supporting arguments regarding the necessity of the proposed solution. By analyzing existing platforms, the challenges faced by customers and businesses can be highlighted, such as inefficient reservation processes and a lack of real-time updates. These insights will guide the development of the proposed system, ensuring it effectively addresses these pain points and enhances the overall dining experience.

The novelty of this project lies in the integration of real-time kitchen updates with an online reservation and ordering system. This innovative approach not only improves the customer experience by providing transparency and reducing wait times but also optimizes kitchen operations for enhanced efficiency. By combining these features into a single platform, the project aims to create a solution that is both practical and trans formative for the food service industry.

This chapter is organized into thematic sections that explore existing online reservation and ordering systems, real-time update technologies in the food industry, and the integration of customer and kitchen operations. As these themes are examined, a foundation will be laid for understanding how the proposed system builds upon existing solutions while introducing unique features to meet unmet needs in the market.

Theme 1: Database Design for Implementation of Online Reservation Systems

DinoBook Cafe, a business that integrates a love for books and coffee, has improved its operations by transitioning from a manual to a web-based reservation system. This digitalize solution was designed using these programming languages HTML5, CSS3, JavaScript 4.0, and PHP to provide seamless user interaction across all devices and browsers. It includes features such as, user registration, digital menu access, and an admin panel for customer and booking management. The system has significantly improved customer satisfaction and staff efficiency while minimizing errors associated with manual processes [3]. Also, the Orderlikey, a web-kiosk system implemented in FK kiosks, offers a modernized ordering experience through real-time data integration on menu options and kiosk status. It uniquely merges the Self-Order System (SOS), Point of Sale (POS), and Kitchen

Display System (KDS) technologies, this improves the university kiosk environments, using the Rapid Application Development (RAD) methodology. The system focuses on enhancing ordering efficiency and reducing processing times [4]. Moreover, a smart restaurant system was proposed to address inefficiencies like long wait times and incorrect orders by integrating smart ordering technologies and service delivery improvements [5].

The proposed system for Kuya Nicks Rotisserie Chicken House shares similarities with these related systems, such as online menu access and real-time updates. However, it differs in its specific focus on real-time order tracking, which not only updates customers on their order status (Queued, Cooking, Ready for Pickup) but also incorporates a digital display viewable by both staff and customers. This feature directly addresses the gap in user visibility during food preparation stages seen in earlier systems like DinoBook Cafe and Orderlikey. Additionally, the inclusion of an automated sales report generation and evaluation using ISO/IEC 25010 standards makes the Kuya Nicks system more organized in its operational scope and quality assessment.

Theme 2: Integrated Design for Implementation of Ordering and Reservation for Customers

An online reservation system was developed to facilitate direct interaction between customers and restaurant staff, improving the food ordering and reservation process. This system aimed to make online bookings more user-friendly and convenient [6]. In the case of Kuya Nick Rotisserie Chicken House, its previous manual system caused issues such as long queues and difficulty in accessing the menu. To enhance the operatios, a web-based ordering and reservation system was designed using HTML, CSS, JavaScript, and MySQL. Following the Waterfall methodology, the system supports menu browsing, order placement, and online payments, resulting in faster transactions and improved data management [7]. Another related study further confirmed that early order preparation based on online submissions could reduce wait times and enhance service speed. This approach used an information system framework tailored for delivering timely services to end users [8].

The proposed system aligns with the existing systems through its ordering and reservation functionality. At the same time, it has differences like the real-time order status tracking feature and digital display component, which optimize order transparency for both staff and customers. While the systems in the related studies organized ordering, they lacked visible status updates during the cooking and preparation phase. Additionally, the proposed system includes built-in analytics through automated sales reports, offering management valuable insights for performance monitoring, which is not presented on the mentioned related systems.

Theme 3: Real-Time Order Tracking and UI/UX Design in Online Ordering Systems

An effective online ordering system relies not only on functional capabilities but also on an intuitive user interface and real-time interaction between customers and service providers. Several existing systems have addressed these aspects with different approaches. The study by [9] emphasized the value of a simple and user-friendly design in enhancing customer satisfaction in food ordering platforms. The system developed of [10] introduced a web-based system with real-time booking status updates to help reduce customer wait times, but it lacked detailed order segmentation and internal coordination tools. While the paper of [11] presented a web-based ordering system with a practical user interface but without real-time kitchen communication. Also, [12] proposed a system that focused on customer data management and menu flexibility, though it offered limited order tracking functionality.

The proposed Online Ordering System with Real-Time Status Tracking for Kuya Nicks Rotisserie Chicken House enhances these existing concepts by offering segmented real-time order tracking categorized as "Queued," "Cooking," and "Ready for Pickup." These features are visible to both customers and kitchen staff through an integrated digital display, promoting better coordination and service efficiency. The system's interface is designed to be accessible across devices, enabling smooth navigation for menu browsing, order placement, and order monitoring. Unlike previous systems that focus either on front-end usability or back-end functionality, the proposed solution effectively bridges both. This balanced approach ensures a more seamless and transparent ordering process, improving operational workflow and customer satisfaction at Kuya Nicks Rotisserie Chicken House.

Chapter III

Technical Background

1.5 Technical Background

This chapter, the various components of the project are outlined, detailing both the hardware and software requirements necessary for the successful development and implementation of the system.

1.6 System's Development Specification

This table 1 present all the detailed specification needed for the development of the system project.

1.6.1 Hardware Specification

The hardware specification details the essential hardware parts needed for the system to function and be implemented effective.

Table 1: Hardware Specification

Components	**Specification**
Processor	AMD Ryzen 5 @ 2.10GHz
Memory	8GB of Ram
Storage	30GB of SSD
Monitor	LCD MOnitor, 1080p Resolution
Internet Connenction	10mbps or Higher

Processor: (CPU) The central processing unit (CPU) is the primary component of a computer the performs most of the processing inside the system. For this project, AMD Ryzen 5 @ 2.10GHz is specified to ensure efficient of instructions and smooth handling of computational tasks.

Memory: (RAM) Random Access Memory (RAM) is a type of computer memory that stores data and machine code currently being used. An 8GB RAM is required to allow for quick access to information, enabling efficient multitasking and smooth operational of applications.

Storage: Storage refers to the hardware component used to store data permanently or temporarily. For this project, 30GB of SSD to accommodate the operating system, software, and user data.

Monitor: A monitor is an output device that displays visual information generate by the computer. An LCD monitor with 1080p resolution is specified to provide a graphical interface for users to interact with system and view content in high resolution.

Internet Connection: A 10mbps or higher connection providers a faster speed to receive notification from users who place orders or make reservation.

1.6.2 Software Specification

The software requirements include the essential tools and platforms needed to build and operate the system effectively.

Table 2: Software Specification

Components	**Specification**
Operating System	Windows 10 Home 64-Bit
Development Platform	OutSystem
Browser	Google Chrome v.134.0.6998.178
DataBase	MySQL
Diagram	Draw.io
Prototype	Figma

Operational System: An operational system (OS) is software that manages computer hardware, software resources, and provides common service for computer program. For this project, Windows 10 is specified to manage between the user and the hardware.

Development Platform: A developer platform is a software development environment the allows hand-coded programming. OutSystem is the chosen platform for this study to accelerate application development.

Browser: A browser is a Software application used to access and view information on the Word Wide Web. Google Chrome are specified as the browsers for testing and interacting with wed based application.

Database: A Database is an organized collection of data stored and accessed electronically. For this project, MySQL are specified to manage the database and provide a local server environment for development and testing.

Diagram: Draw.io is the chosen tool for this project to create diagrams.

Prototype: A Figma is the chosen tool for this project to enable designer to visualize and design the layout and appearance of application.

1.6.3 Service Specification

The service specification provider information about the service providers without going into specific details about the providers mentioned in the table.

Table 3: Service Specification

Service	Provider
Internet Connection Provider	Converge Fiber X Home/ PLDT Fiber

Internet Service Provider's: A Converge Fiber X Home or PLDT Home maintains uninterrupted connectivity for cloud-based operation.

1.7 User's System Specification Requirements

In the table approximate minimum and recommended hardware and software specification of the User's system were presented. It is imperative to specify their specification so that the system can be used in the right setting.

1.7.1 User's Specification Requirements

The section lists the services used during the development process, ensuring Accessibility and reliability.

Table 4: Software Specification

List of Hardware Requirements		
Components	**Minimum Requirements**	**Recommended Requirements**
Processor	AMD Ryzen 3/intel i3 @ 1.80GHz	AMD Ryzen 5/intel i5 @ 2.10GHz or Higher
Memory Platform	8GD of RAM	8GB of RAM or Higher
Storage	30GB of SSD	50GB of SSD
Internet Connection Speed	10mbps	15mpbs or Higher
Monitor	LCD Monitor, 720p Resolution	LCD Monitor, 1080p Resolution or Higher
List of Software Specification		
Components	**Minimum Requirements**	**Recommended Requirements**
Operating System	Windows 10 Home 64-Bit	Windows 11pro 64-Bit
Browser	Google Chrome v.134.0	Latest Version of Google Chrome

The User's System Requirements table offers a comprehensive list of hardware and software elements that are necessary to make a system function smoothly.

The table lists the minimum and recommended hardware specifications for the processor, memory, storage, internet speed, and monitor resolution for the hardware requirements. The system at least needs an AMD Ryzen 3 or an Intel

i3 processor that runs at 1.80GHz, 8GB of memory, 30GB SSD storage, 10mbps internet connection, and an LCD monitor with a resolution of 720p. These are the minimum specifications required for the system to run basic tasks, although for stability and performance, the recommended specs are advisable. These are an AMD Ryzen 5 or Intel i5 processor at a speed of 2.10GHz or above, 8GB RAM or more, 50GB SSD storage, and 15mbps or more internet connection speed and LCD monitor at 1080p resolution or higher.

The software requirements section emphasizes the operating system need, where Windows 10 is the required minimum but Windows 11 Pro is recommended for enhanced features and security. Google Chrome version 134.0 is the minimum requirement for web browsing, while the latest version is recommended to ensure compatibility with current web standards, security updates, and browser functionality.

1.8 Technical Terms

The following are the conceptual and operational definition of terms that will be used in the study:

Web-Base System - A web-based system provides access to a software system by just using a computer and internet connection. This software does not need local installation [13].

Real-Time Updates - Refers to the fast and immediate distribution of information as it occurs or is created, ensuring that end-users receive the most recent data without delays [14].

Online Menu - Refers to an electronic version of a restaurant's traditional paper menu that can be accessed through a computer, tablet, smartphone, or any capable device. By tapping options, customers can view the list of meals along with description, costs, and images using their own devices [15].

Order Tracking - Is a process of monitoring and tracking orders placed online and delivering real-time order status updates to customers. It helps customer learn where exactly their order is, when they should expect it to arrive, and whether there has been a delay [16].

Automated Notification System - A software feature that allows store owners to Notify the customer about the status of their orders [17].

Server – A strong computer that runs the online ordering site and processes client requests[18].

Database – An organized set of data that stores data such as customer orders, menu items, and order statuses[19].

RAM (Random Access Memory) – A form of computer memory used to store and access data temporarily while the system is operating. More RAM is better

for multitasking and system speed[20].

Processor (CPU) – The part of the server or computer that executes instructions. Processor speed influences how fast the system handles user requests and information[21].

Chapter IV

Design and Methodology

The prime objective of the project is the creation of the "Online Ordering System with Real-time Status Tracking for Kuya Nicks Rotisserie Chicken House" It is system that will enable customers to make orders in advance, and track the status of their orders is real-time using a web. At the same time, automated notifications of upcoming orders are given to the kitchen staff, reducing preparation time and wait times. The idea as a whole encourage a more structured, technology–based way of managing stores, which present a competitive advantage within the food industry.

This chapter offers a foundation for planning, analysis, and development methods of the system project. The model method, development tools, requirement analysis, and diagram testing procedures, the accountability of the proponents for the project, and the management of the foundation of a well-planned and efficient system project implementation is the budget.

1.9 Concept

The Online Ordering System's general idea is presented in this section, along with illustrations that clearly show how it works. By combining digital ordering, online reservation, and real-time kitchen status into a single, centralized system. The Online Ordering System is a technologically advanced solution designed to optimize business operations.

1.9.1 System Architecture Diagram

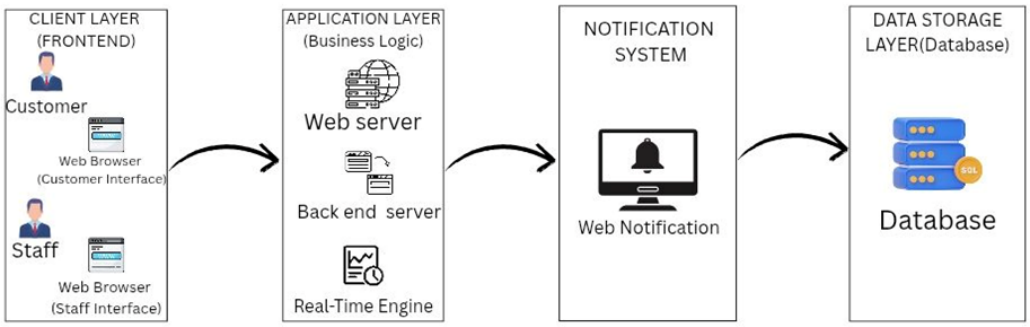


Figure 1: System Architecture Diagram

Here in the system architecture diagram, it describes the architecture of the web application that consists of four layers. First is the client layer frontend, where the customer and staff communicate through the web browser, and second is the application layer, which includes the web, backend server, and real-time engine to handle business logic and process requests, and third is the notification

system, which is responsible for sending real-time notification updates to the user's web, and fourth is the data storage layer, where all application data is managed in an SQL. And because of SQL, the flow starts with user interaction, followed by backend processing, notification fetching, and fetching data or updates from the database, insuring a seamless and responsive user experience.

1.9.2 Data Flow Diagram

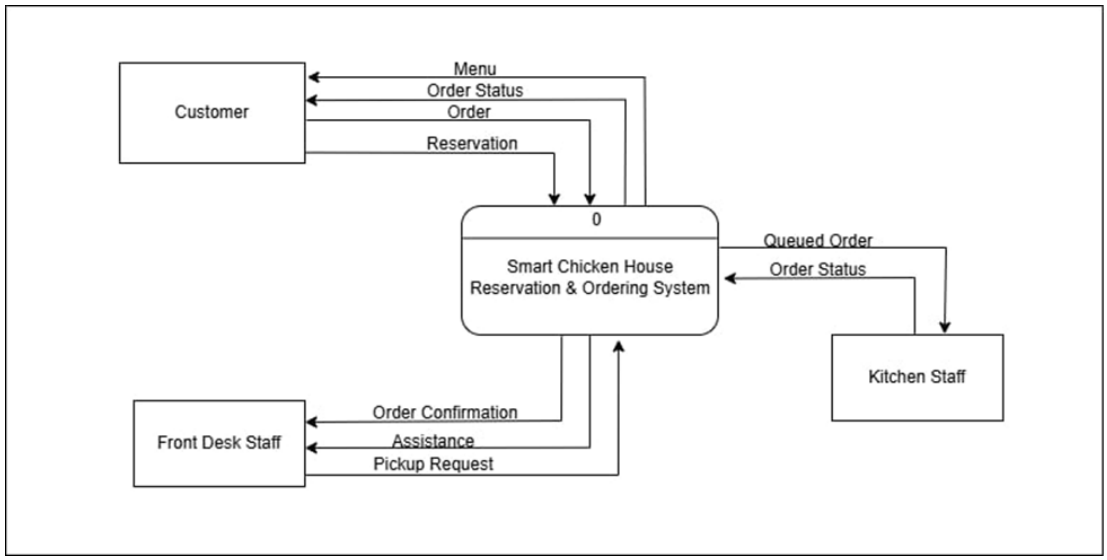


Figure 2: Data Flow Diagram Level 0

In this data flow level 0 of the Smart Chicken House Reservation and Ordering system that highlights the interaction between customers, front desk staff, and kitchen staff. Customers can access the system to make reservations, place orders, and check the menu or their order status. The system then passes these orders as queued orders to the kitchen staff, who update the order status through system updates. Meanwhile, the front desk can receive assistance by placing orders in the system. This facilities communication and coordination among all parties involved in the ordering and reservation process.

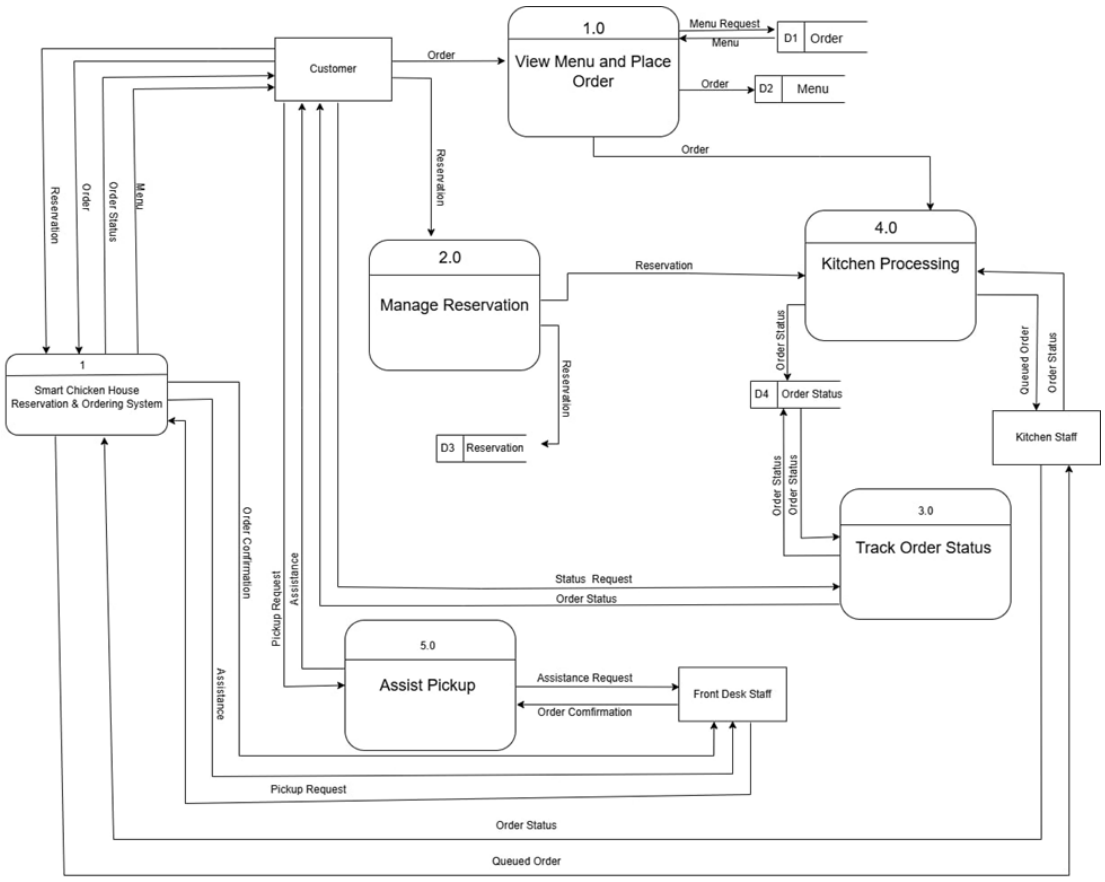


Figure 3: Data Flow Diagram Level 1

This diagram level 1 data flow provides a detailed overview of the Smart Chicken House Reservation and Ordering System that divides the system into five main processes: viewing the menu and placing orders, managing reservation, tracking the status of orders and processing them in the kitchen, and assisting with pickup. Customers interact with the system to view the menu and make reservation, and orders are processed and queued in the kitchen, with real-time status updates accessible to both customers and staff through the tracking module. the system also supports reservation management and customer support, including assistance and handling pickups by front desk staff, and the process is relevant data through well-defined data flows that ensure smooth coordination among all parts and stakeholders in the service.

1.9.3 Use Case Diagram

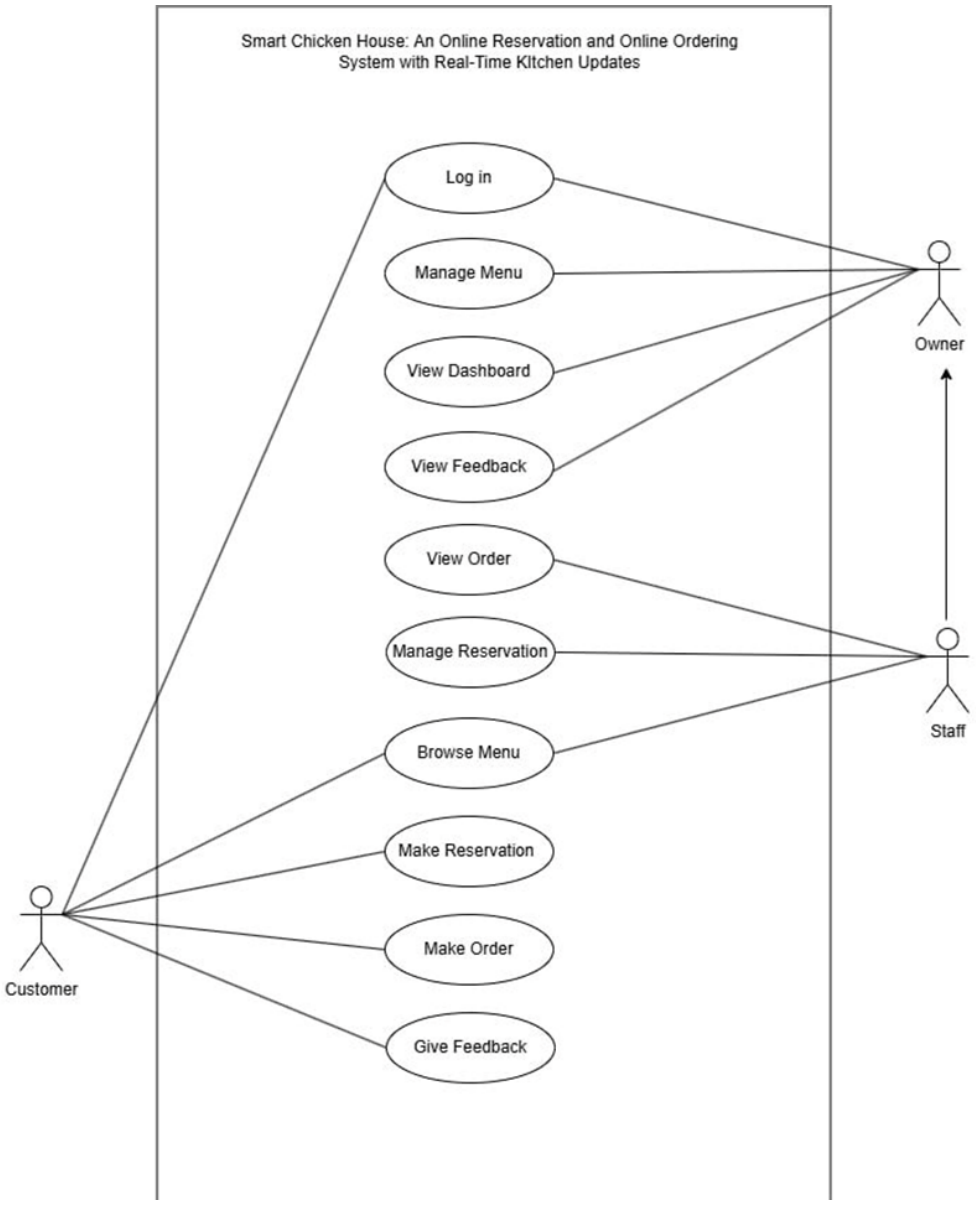


Figure 4: Use Case Diagram

The main use case diagram, it shows the Smart Chicken House System as an online platform for reservation and ordering with real-time updates from the kitchen. It highlights the main functionalities, such as logging in managing menus, viewing dashboard, checking feedback, and holding orders and reservation. Customer can browse the menu, make reservation, and interact with the system, while the interface provides separate access for staff or owners to manage operations. The system aims to streamline the dining experience by integrating digital ordering and reservation management.

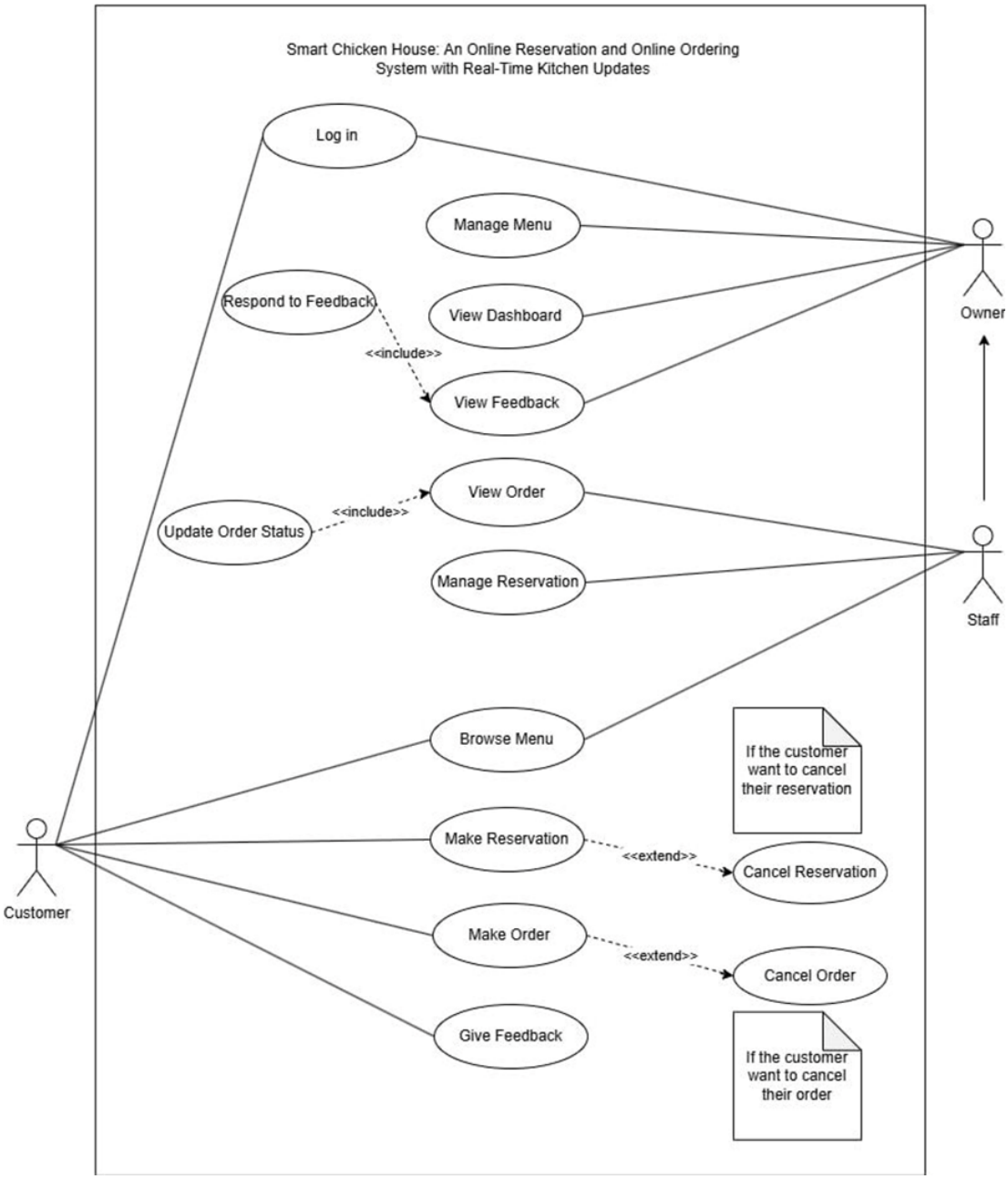


Figure 5: Extended Functions

And here in the extended functions, the feature of the "Smart Chicken House" system is described, which includes online reservation and ordering functionalities with real-time kitchen updates, and it options for owners and staff to manage menus, respond to feedback, and view dashboard, and customers can browse menus and reserve or order and give feedback while also having the option to cancel. Reservation or orders as needed, the system is designed to streamline operations for both of owner's business, staff, and customers, ensuring efficient management of reservation, orders, and feedback in real time.

1.9.4 Activity Diagram

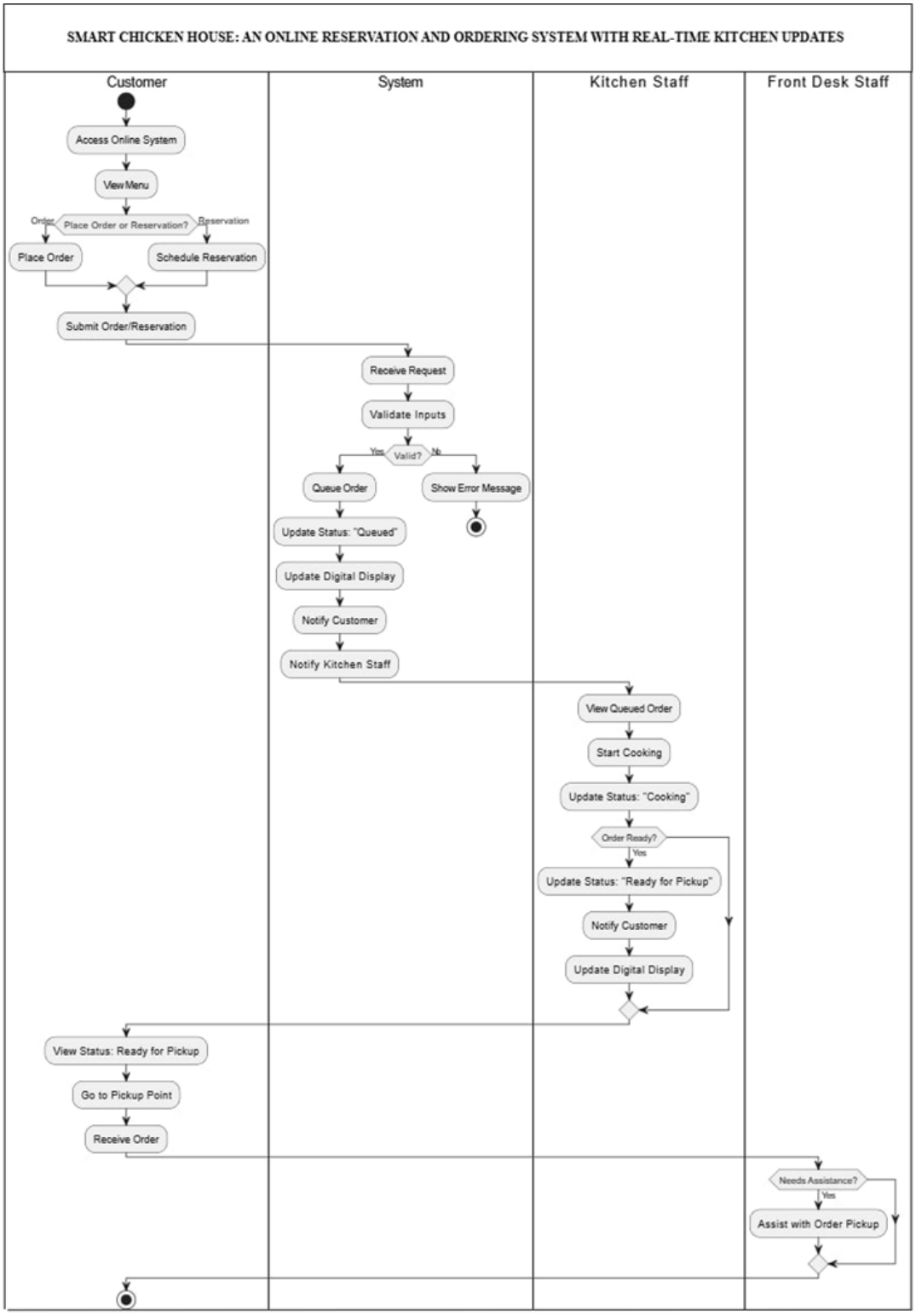


Figure 6: Activity Diagram

The activity diagram is a process flow of the Smart Chicken House. It is an online reservation and ordering system that provides real-time updates to the kitchen, and it start with a customer accessing the online system, looking at menu then choosing to order or schedule a reservation by submitting a request. The system receives then validates and input if valid queues the order it updates the status of the queued, the digital display is notifies for customer and kitchen staff, then the kitchen staff checks the queue starts cooking and updates the cooking status when the order is ready for pickup and notifies, the customer can check this status go to the pickup point and receive the order if assistance is needed and staff in the front desk will assists to picking process, this seamless system ensures good communication and real-time tracking of the order status from placement to picking.

1.9.5 Entity-Relationship Diagram

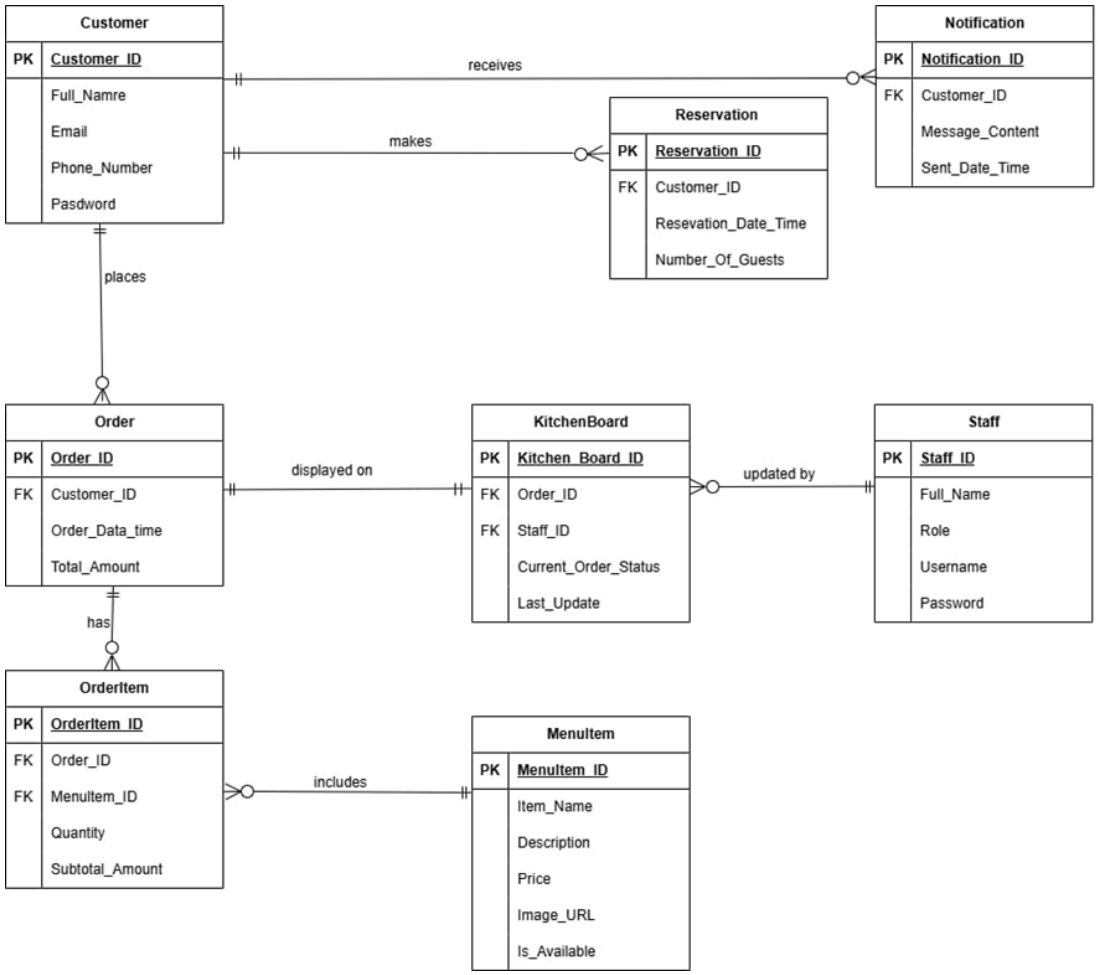


Figure 7: Entity-Relationship Diagram

This Entity – Relationship Diagram (ERD) is a database structure model for the Smart Chicken House Online Reservation and Ordering System, and it

captures interactions between customer, orders, reservation, kitchen operations, and notifications. Each customer has a unique ID and can place multiple orders or make reservation, both tied to them through foreign key. The orders are divided into order items that refer to the individual and the menu items to obtain the quantity and costs, and the status of each order is monitored on the kitchen board, which is updated by the staff members and records the current status of the order and update time, then notifications are sent to the customers who provide real-time updates related to their orders or reservations.

1.10 Analysis and Design

This chapter focuses on comprehending the specifications and features of the suggested system. This includes the functional and nonfunctional requirements as well as the requirement analysis.

1.10.1 Requirement Analysis

Requirements analysis or requirements engineering is a process used to determine the needs and expectations of a new product. It involves frequent communication with the stakeholders and end-users of the product to define expectations, resolve conflicts, and document all the key requirement [19]. The system must meet the following functional and nonfunctional requirements.

1.10.2 Functional Requirements

A functional requirement in the context of Computer Science refers to the specific capabilities and characteristics that a software product or system must possess in order to meet the needs of its users [22]. Table 4.2.1.1 displays the system's functional needs. assign specific system tasks to various system users.

Task Requirements	**Task Reference**
The system should let customers view the menu, place food orders, and reservations online.	Customer
The system should provide real-time order tracking showing order status: queued, cooking, and ready.	Staff
The system should improve staff and customer operations using digital displays to show order updates.	Owner

1.10.3 NonFunctional Requirements

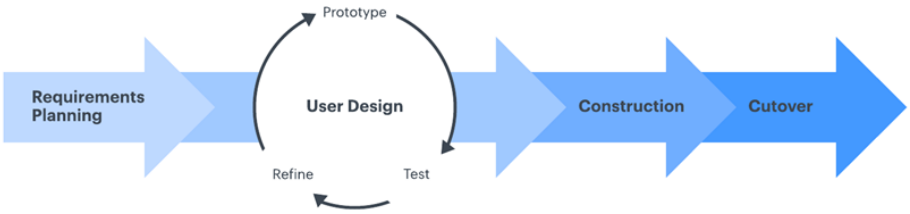
Nonfunctional requirements, or NFRs, are a set of specifications that describe the system's operation capabilities and constraints [23]. The non-functional requirements of the systems are listed in Table 4.2.1.2, along with a description and

task reference for each requirement. The sources were modified from .The International Organization for Standardization's Software Quality Standards, commonly referred to as the ISO/IEC 25010.

Task Requirements	Task Reference
The system should perform tasks quickly and efficiently, even under heavy load or traffic.	Efficiency
The system should include all necessary features (ordering, reservation, tracking) that work as expected.	Functional Suitability
The system should have a user-friendly interface that is easy to navigate and use by everyone.	Usability

1.11 Development Model

Rapid application development (RAD) is a methodology that focuses on developing applications rapidly through frequent iterations and continuous feedback. As the increasingly competitive software market emphasis a stronger demand for new applications, the IT industry is feeling pressure to deliver working products faster, and RAD is becoming a necessity [24].



Rapid Application Development (RAD): model is initiated with Requirements Planning phase when system analysts, in collaboration with stakeholders, are engaged to specify the scope, purpose, and fundamental functions of the system. The team decides the major problems that the system is supposed to solve and takes business and technical requirements through interview sessions, reviewing documents, and consulting. For the Online Ordering system, this phase helped to clarify the need for an online ordering and reservation system with real-time kitchen updates to solve issues such as waiting in line, manual inefficiencies, and not providing customer updates in time. This phase helps to make sure everyone involved knows what the system should do, so successful development can be guaranteed.

User Construction and Design phase: where the developers and users collaborate to develop interactive prototypes that capture the nature of the major features of the system. The prototypes enable timely and repeated feedback

from the users, resulting in rich and user-focused designs. The interface includes major functions such as menu browsing, ordering, and real-time tracking of order status. When the design has been fulfilled for the users, Construction is where the system gets implemented using technologies such as OutSystems, MySQL, and JavaScript. Developers implement the entire system on the basis of approved prototypes by integrating all the modules, like customer dashboard, digital kitchen display, and the notification system. Since most of the design is already proven in the prototyping phase, development is quicker and more effective than with conventional processes.

Cutover: implies installing the system into a production environment. Final testing, users training, required data migration, and proper module functioning are a part of it. For Online Ordering system, in this stage, restaurant personnel would be able to process digital orders smoothly and also provide customers real-time status information on their reservation and orders. The system is implemented gradually to minimize disruption, and the users are supported with documentation and training. This final stage provides for an uninterrupted switch from the current manual system to the new web-based application, improving the overall efficiency and satisfaction of the staff and customers.

1.12 Development Approach

A bottom-up approach is a strategy used across various fields, including management, software development, and project planning, where the process begins at the most detailed and basic level and works upwards to form a comprehensive picture or solution [25]. The Online Ordering system was built with the Rapid Application Development (RAD) model, which is a rapid and adaptable method of building systems. The developers started by defining the key features, including online booking, viewing menus, tracking orders, and kitchen updates in real time. The features were added incrementally, and each module was tried and perfected through user and employee feedback. This helped the system adapt and respond to the needs of its users quickly. Finally, at the last stage, all the components were combined and tried together so that the system could operate smoothly. The finished system is finished, easy to use, and useful for both employees and customers.

1.13 Software Development Tools

The software development tools and programs listed below were utilized in the system's development this includes the conceptual and operation definition that would further expand the understanding of the development tools.

FRONTEND DEVELOPMENT

Outsystems

Outsystem is a low-code development platform that enables organization to build various types of application including web,mobile, and enterprise system. And leveraging it's features to enable rapid development, customization, scalability. It provides a visual development environment where developers can create applications by assembling pre-built components using a drag-and-drop interface [27]. Outsystem is to be need as the primary development platform for the development of Online Ordering System with Real-Time Status Tracking fo Kuya Nicks Rotisserie Chciken House. It clarifies how concept, such as UI element or a process is measured and applied within the application ensures consistent understanding and execution by all involved in developing.

Figma

Figma is a web - based designing tool used for the user interface, offering the capacity to collaborate with others in real-time. It is an interactive prototyping user interface software [28]. Figma is a web application and desktop application design for interface design and prototyping, features for mobile viewing and interaction.

MySQL

MySQL a relational database management system, provide the infrastructure for application to handle structured data efficiency. MySQL represent the relational database management system. This includes how the application interacts with MySQL, such as creating, retrieving, updating, and deleting data, as well as managing user access and permissions. Essentially, it outlines the application's data storage, retrieval, and manipulation strategies using MySQL.

1.14 Schedule and Timeline

A project schedule is like a detailed to-do list for your project, outlining all the tasks, when they need to be done, and who is responsible for them. It is like breaking down your project into smaller steps and planning exactly when each step will happen [29].

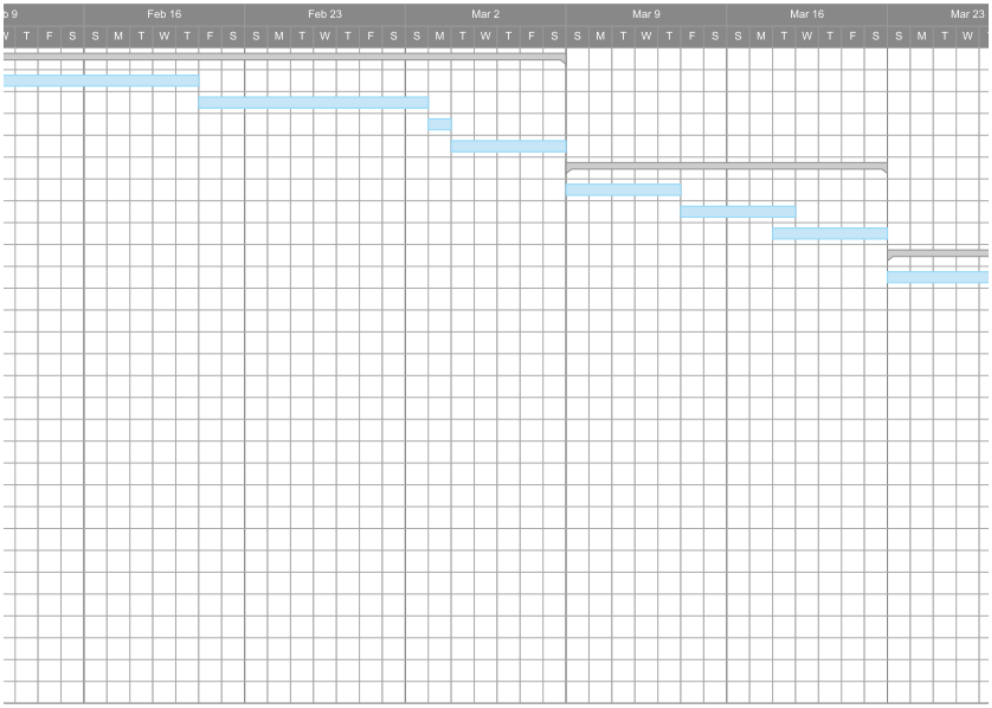
WBS

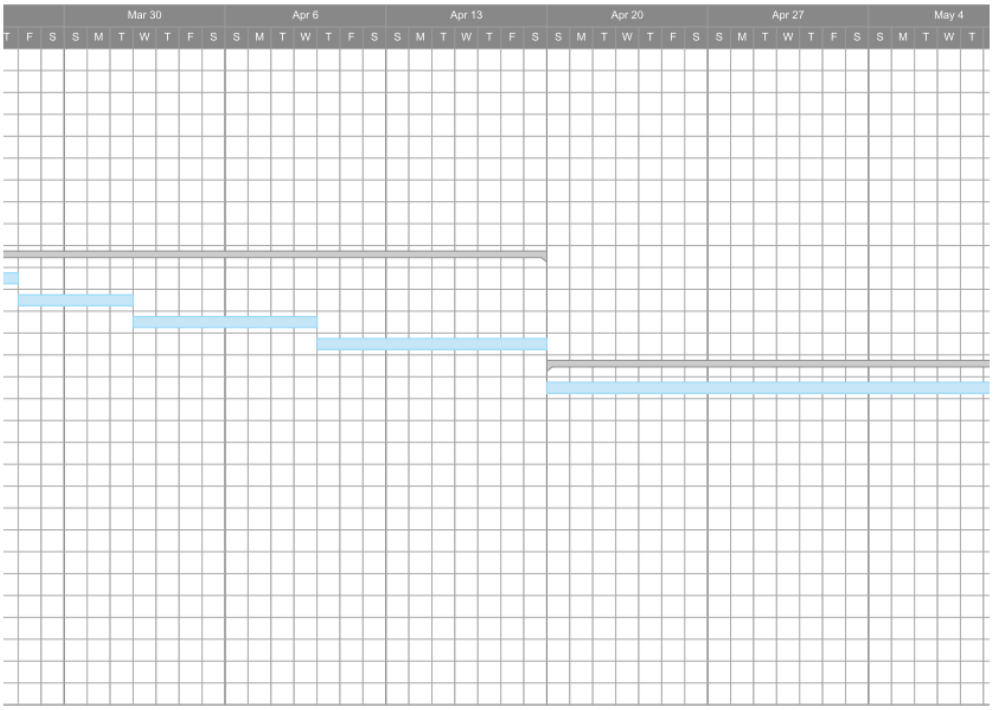
Task ID	Description	Duration	Start Date	End Date	Precedence
	PLANNING PHASE				
T1	Identify project goals and scope	10d	02/11/25	02/20/25	
T2	Conducting feasibility study and initial budgeting	10d	02/21/25	03/02/25	T1
T3	Assign team roles and responsibilities	1d	03/03/25	03/03/25	T2
T4	Define project timeline and schedule (Gantt Chart, WBS)	5d	03/04/25	03/08/25	T3
	REQUIREMENTS ANALYSIS PHASE				
T5	Conduct stakeholder interviews	5d	03/09/25	03/13/25	T4
T6	Define functional and non-functional requirements	5d	03/14/25	03/18/25	T5
T7	Document user roles (customer, staff, admin)	5d	03/19/25	03/23/25	T6
	SYSTEM DESIGN PHASE				
T8	Create system architecture diagram	5d	03/ 24/ 25	03/28/25	T7
T9	Develop use case and Activity diagram	5d	03/29/25	04/02/25	T8
T10	Design database (ERD)	8d	04/03/25	04/10/25	T9
T11	Design UI/UX prototype using Figma	10d	04/11/20	04/20/25	T10
	IMPLEMENTATION PHASE				
T12	Develop front-end using Out Systems	20d	04/21/25	05/09/25	T11
T13	Build back-end and database using MySQL	20d	05/10/25	05/29/25	T12
T14	Integrate order tracking and notification modules	15d	05/30/25	06/13/25	T13
T15	Configure digital system for kitchen and customer	15d	06/14/25	06/28/25	T14
	TESTING PHASE				
T16	Conduct black box testing (function modules)	15d	06/29/25	07/13/25	T15
T17	Perform usability and interface testing	15d	07/14/25	07/28/25	T16
T18	Test order status flow (Queued, Cooking, Ready)	10d	07/29/25	08/08/25	T17
T19	Ensure compatibility across devices and browsers	10d	08/09/25	08/18/25	T18
	DEPLOYMENT, MAINTENANCE AND SUPPORT PHASE				
T20	Deploy system and train users	15d	08/19/25	09/02/25	T19
T21	Provide documentation and monitor performance	15d	09/03/25	09/17/25	T20
T22	Collect feedback and fix bugs	30d	09/18/25	10/16/25	T21
T23	Ensure uptime and support	15d	10/17/25	11/01/25	T22
T24	Plan for future improvements	10d	11/02/25	11/11/25	T23

Figure 8: WBS

Gantt Chart

Task ID	Description	Duration	Start Date	Finish Date	Precedence
	PLANNING PHASE	26d	02/11/25	03/08/25	
T1	Identify project goals and scope	10d	02/11/25	02/20/25	
T2	Conduct feasibility study and initial budgeting	10d	02/21/25	03/02/25	T1
T3	Assign team roles and responsibilities	1d	03/03/25	03/03/25	T2
T4	Define project timeline and schedule (Gantt chart, WBS)	5d	03/04/25	03/08/25	T3
	REQUIREMNTS ANALYSIS PHASE	14d	03/09/25	03/22/25	
T5	Conduct stakeholder interviews	5d	03/09/25	03/13/25	T4
T6	Define functional and non-functional requirements	5d	03/14/25	03/18/25	T5
T7	Document user roles (customer, staff, admin)	5d	03/18/25	03/22/25	T6
	SYSTEM DESIGN PHASE	28d	03/23/25	04/19/25	
T8	Create system architecture diagram	5d	03/23/25	03/27/25	T7
T9	Develop use case and activity diagram	5d	03/28/25	04/01/25	T8
T10	Design database (ERD)	8d	04/02/25	04/09/25	T9
T11	Create UI/UX prototypes using Figma	10d	04/10/25	04/19/25	T10
	IMPLEMENTATION PHASE	75d	04/20/25	07/03/25	
T12	Develop front-end using OutSystems	20d	04/20/25	05/09/25	T11
T13	Build back-end and database using MySQL	20d	05/10/25	05/29/25	T12
T14	Integrate order tracking and notification modules	15d	05/30/25	06/13/25	T13
T15	Configure digital display system for kitchen and customers	15d	06/19/25	07/03/25	T14
	TESTING PHASE	50d	07/04/25	08/22/25	
T16	Conduct black box testing (functional modules)	15d	07/04/25	07/18/25	T15
T17	Perform usability and interface testing	15d	07/19/25	08/02/25	T16
T18	Test order status flow (Queued > Cooking > Ready)	10d	08/03/25	08/12/25	T17
T19	Ensure compatibility across devices and browsers	10d	08/13/25	08/22/25	T18
	DEPLOYMENT, MAINTENANCE AND SUPPORT PHASE	85d	08/23/25	11/15/25	
T20	Deploy system and train users	15d	08/23/25	09/06/25	T19
T21	Provide documentation and monitor performance	15d	09/07/25	09/21/25	T20
T22	Collect feedback and fix issues	30d	09/22/25	10/21/25	T21
T23	Ensure uptime and support	15d	10/22/25	11/05/25	T22
T24	Plan for future improvements	10d	11/06/25	11/15/25	T23

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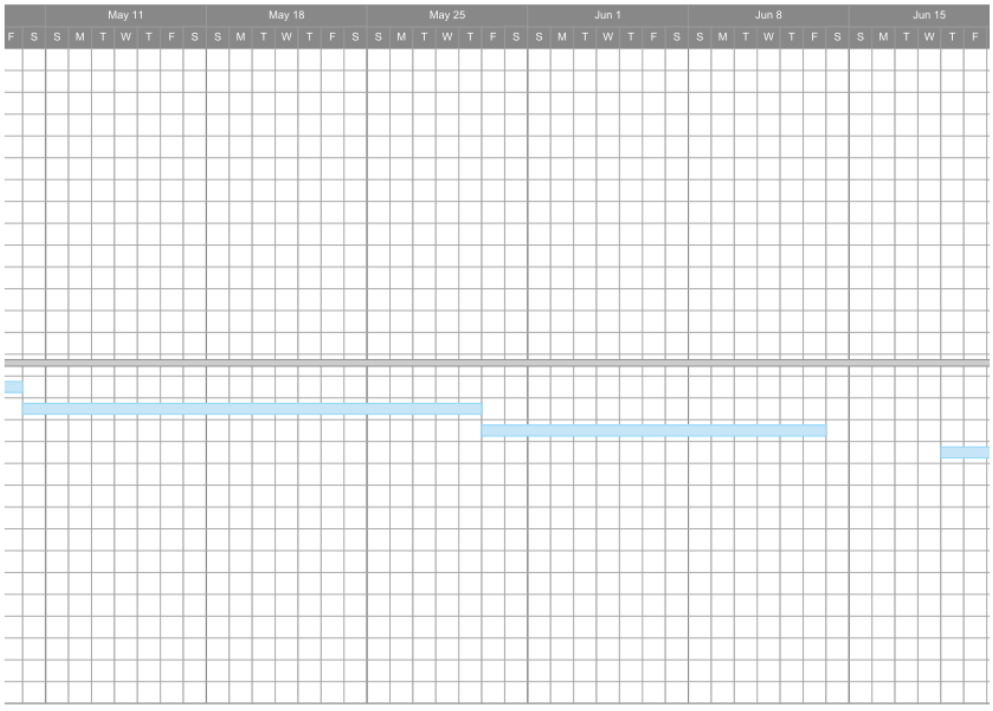
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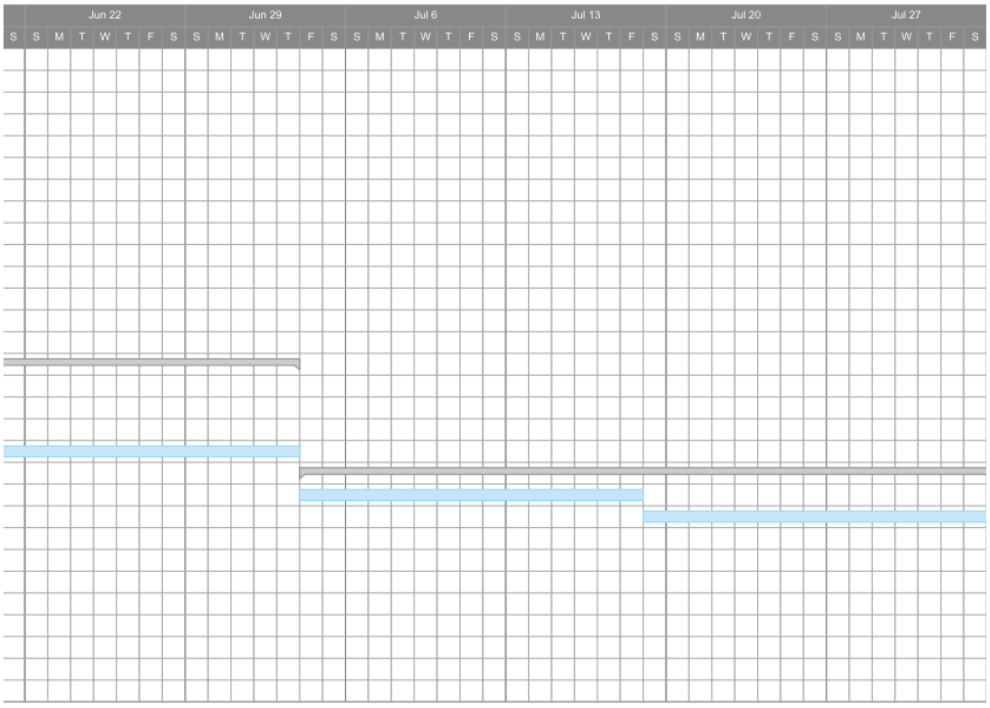
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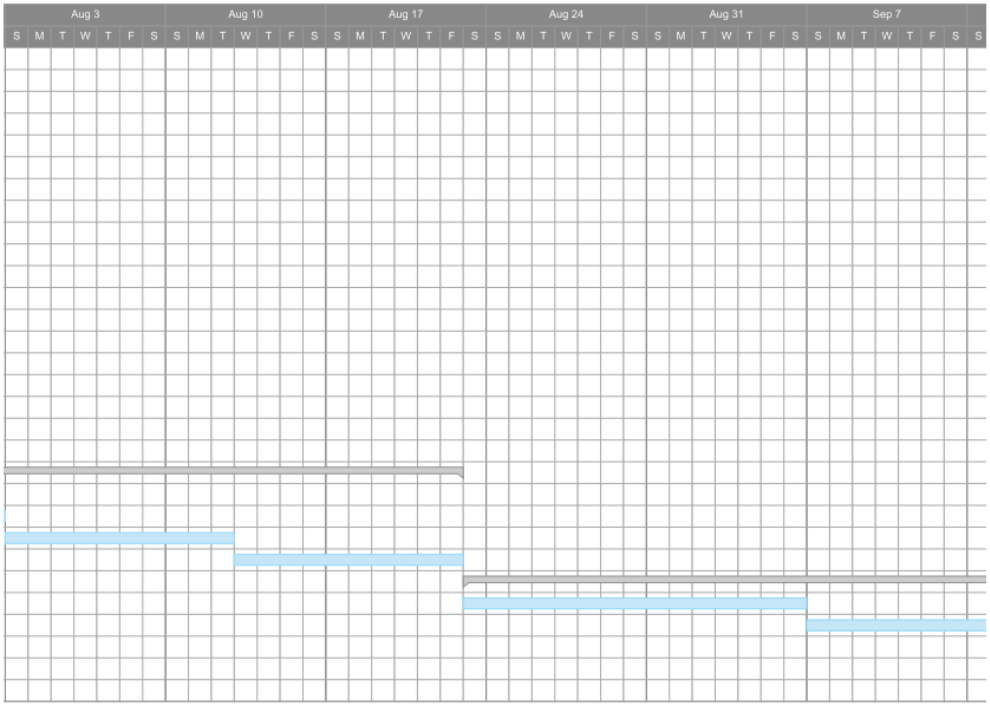
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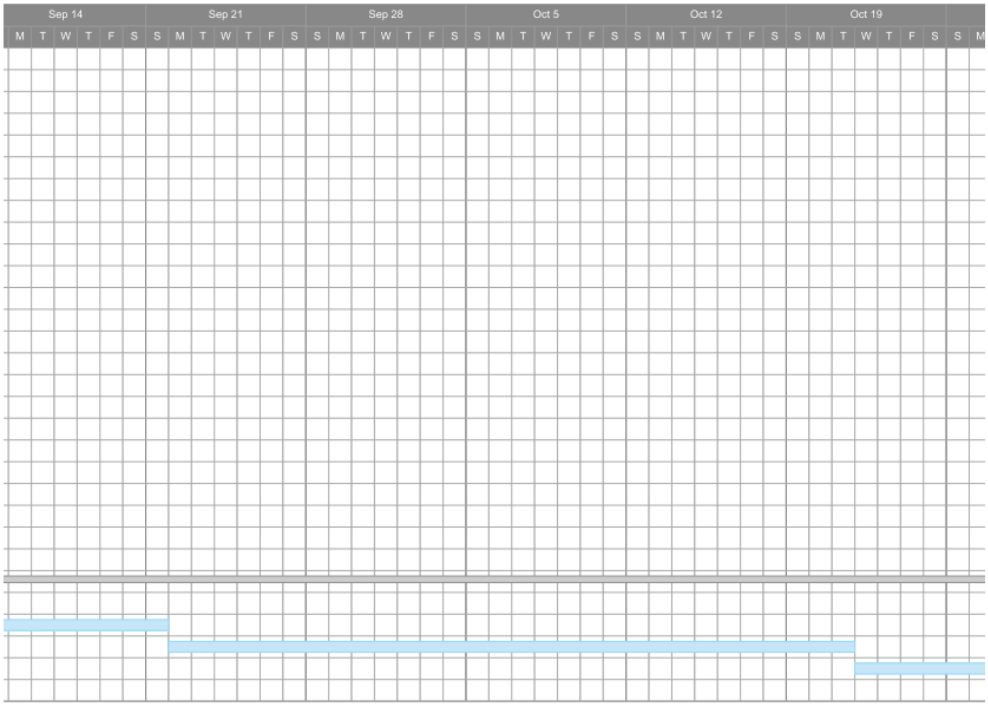

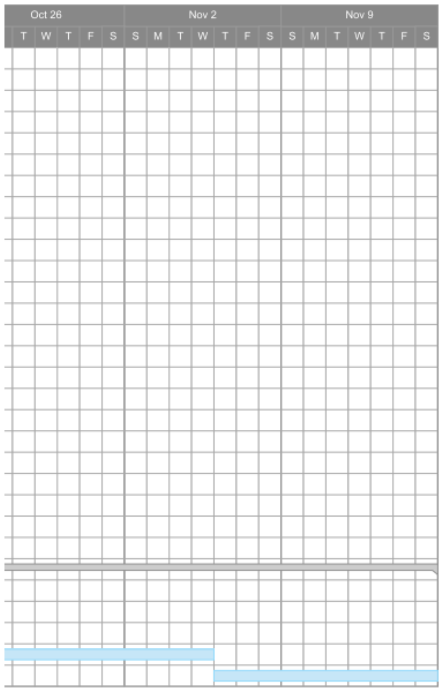

Figure 9: Gantt Chart

Critical Path

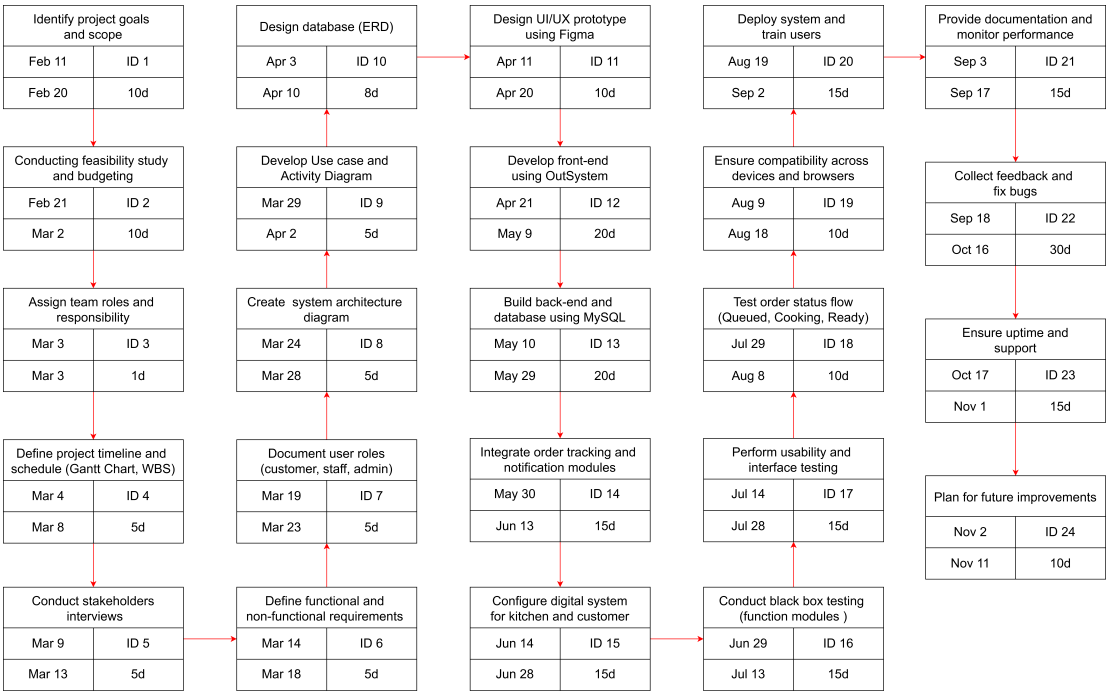

Figure 10: Critical Path

1.15 Responsibilities

Name	Position	Responsibilities
Ryan Jay Blaya	System Analyst	The system analyst is responsible for analyzing the requirements of the smart chicken house: a online reservation and ordering system with real-time kitchen updates project and translating them into technical specifications.
Jerome Grayda	Technical Writer	The role of technical writer is to ensure that technical information is communicated effectively to various stakeholders. They translate complex technical concept into clear and understandable language, making documentation accessible to the audience.
Pia Guardian	Programmer	She is assigned to plan and check the progress of the papers and the development of the system. She is also responsible for assigning tasks among the members and guiding them during the project's development. And assigned to be the system developer, Latex encoder, and editor. She is in charge of the interface, design of the development, as well as ensuring the system looks good, and functions properly. She also helps the technical writer with the revision of the manuscript before putting it in the Latex (Overleaf).

1.16 Budget and Cost Management

The financial problems of the establishment and operation of the proposed system are carefully analyzed in this stage. This includes the cost and budget of the proponent. supply and equipment management, hosting and service expense, and the estimated budget of the proposed framework.

1.16.1 Proponent's budget and cost management

Table 1: Materials and Supplies

Item Name	Quality	Unit Price	Total Amount
Bond paper(long/short)	1 ream	240.00	240.00
Pencil	3 pcs	12.00	36.00
Ballpen (black)	3 pcs	12.oo	36.00
Ruler	1 pc	10.00	10.00
Total			322.00

The Table shown above outlines all the expenses on materials and supplies of the researchers. The total amount of the expenses is PHP 322.00.

1.16.2 SERVICE AND HOSTING BUDGET

Table 2: Service Expenses

Service	Provider	Monthly Fee	Total Amount/per year
Internet Service Provider's	Converge Fiber X Home/PLDT Fiber	1,500	18,000

Table 2 shows the expenses on services that use by the researchers which includes internet, Internet Service Provider's

1.17 Verification and Validation

Verification and validation are the key phases of our system development to make sure that it is developed as per the given requirements and actually serves the purpose as desired by the client. Both these processes serve to ensure that the final product is both accurate and effective.

Verification

The development team is responsible for ensuring that the system is planned and implemented with precision according to the specified requirements and specifications. The project is taken up in a structured manner with detailed planning, design, system development, review sessions, and several stages of testing to ensure that any defects are found and fixed. There will be regular communication and constant consultations with the client as well to ensure that the progress of the system is aligned with the operational goals and requirements of smart chicken house: an online reservation and ordering system with real-time kitchen updates.

Validation

In order to achieve that the system is up to the standards and specifications of smart chicken house: an online reservations and ordering system with real-time kitchen updates, validation will be achieved through active dynamic participation and client feedback. The system would be put under real application test in its normal environment to help it become successful, usable, and generally perfect. Feedback will be taken through pilot operation and demonstration so that everything will be in proper working condition and the system fulfills the operation issues it was meant to fill. Any changes required to this will be done on the basis of feedback to ensure the final product meets the client in all respects. In this case, the Likert Scale is divided into five categories based on the range calculated using the formula (high value - lowest value) / 5, where the high value is 5 and the lowest value is 1.

MEAN	**DESCRIPTON**
1.0 - 1.80	Strongly disagree
1.81 - 2,40	Disagree
2.41 - 3,20	Neither Agree no Disagree
3.21 - 4.20	Agree
4.21 - 5.0	Strongly Agree

By using this table, evaluators can assign Mean values to different software characteristics based on user feedback or assessments. This structured approach helps in clearly defining the levels of agreement or disagreement, providing a standardized method for evaluating and interpreting data relate to software characteristics such as Efficiency, Functional Suitability,Usability,and Reliability.

1.18 Testing

The below data presented in the table reveals the testing approaches that the proponents will utilize. The approach which the proponents will utilize is the Black Box Testing

System	**Online Ordering System with Real-Time Status Tracking for Kuya Nicks Rotisserie Chicken House**
Test Module	Main Module: Reservation and Ordering System Sub-module: Online Menu, Order Placement, Table Reservation, Payment Gateway Integration Main Module: Kitchen Dashboard Sub-module: Real-Time Status Updates (Queued, Cooking, Ready), Order Queue Management Main Module: Notification System Sub-module: Customer Alerts, Kitchen Order Updates
Access requirements	URL: To be given when deployed Login Credentials: [Username] [Password] [User Type] (Customer / Staff / Admin)
Objective of the test	Based on client-approved specifications and Figma design prototypes, the objective is to ensure that the system allows for online reservation, ordering, kitchen coordination, and real-time tracking of order status. Testing guarantees that the system is functional, usable, efficient, and reliable in enhancing restaurant operations and customer experience.
Out of scope	"AI-based Recommendation" and "Voice Command Support" — these functionalities are out of the scope of the current release and are not covered in this testing cycle.
Other requirements	Auto generation of reminders to customers and kitchen staff at all stages throughout the order cycle.
Testing steps	Login Verification: Access the provided URL. Enter the username, password, and user type. Verify successful login and access to dashboard. Navigation Testing: Iterate through all modules in terms of Figma UI. Ensure that links, buttons, and menus work. Functionality Testing: Ensure major functionalities: ordering, reservation, tracking, status update, and notification. Ensure order status updates (Queued $\rightarrow$ Cooking $\rightarrow$ Ready). Usability Testing: Test user-friendliness and navigability across all user types. Validate a consistent and intuitive experience. Security Testing: Validate login security and role-based access controls. Test safeguarding of customer and order data. Maintainability Testing: Validate molecularity and code structure for easy updates. Validate updates will not interfere with key functions. Compatibility Testing: Test between browsers (Chrome, Edge) and devices (mobile, desktop, tablet). Have responsive and consistent UI on screen sizes.
Device	Target Devices: Desktop computers, laptops, smartphones Software Required: Compatible web browsers (Google Chrome, Microsoft Edge)

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