**A Project Report**

**on**

**Yummy Kitchen Hub**

Submitted as the partial requirement of Project – IV

Of

Bachelor of Information Technology

**Submitted To:**



Purbanchal University

Biratnagar, Nepal

**Submitted By:**

Dhiraj Sapkota ()

Elisha Rai ()

Sagar Upadhyaya ()

**KANTIPUR CITY COLLEGE**

Putalisadak, Kathmandu

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**Submitted By:**

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# TOPIC APPROVAL SHEET

It is here by informed that the topic selected by Dhiraj Sapkota, Elisha Rai and Sagar Upadhyaya of BIT III semester project has been found suitable and as per the credit assigned by Purbanchal University (PU), Biratnagar, Nepal. The Project Committee has approved the following topic and supervisor for the mentioned students. This project has been completed for the prescribed period and the project embodied the result of their investigation conducted while they worked as full-time students of this institution.

Topic Approved: Yummy Kitchen Hub

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mr. Saroj Pandey

Deputy HOD, Department of IT

Kantipur City College

# CERTIFICATE FROM THE SUPERVISOR

This is to certify that the project entitled “**Yummy Kitchen Hub**” submitted by Dhiraj Sapkota, Elisha Rai and Sagar Upadhyaya to the Department of Information Technology, School of Science and Technology at Kantipur City College, Putalisadak, Kathmandu towards the requirement for BIT: Project-IV is an original work carried out by them under my supervision and guidance.

Signature:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Kiran Khanal

Department of Information Technology

Kantipur City College

(Project Supervisor)

# Acknowledgement

We are very grateful to submit this project report. This report wouldn’t have been possible without the immense contribution of a few people. Firstly, we would like to express our deepest gratitude to Purbanchal University for providing us with this opportunity to present this project and its report.

We would like to express our gratitude and deep respect to our respected project supervisor Kiran Khanal who helped us solve any problems that arose during the preparation of this project.

Lastly, we want to thank Kantipur City College for providing us with this opportunity by approving our project. We are thankful to our dear friends for constant support and encouragement, and we would like to thank our seniors as well who helped us out while we were stuck at a problem during the development of our project. We hope that this project will fulfill the course requirement.

With regards

Dhiraj Sapkota

Elisha Rai

Sagar Upadhyaya

# Abstract

"Yummy Kitchen Hub" presents an efficient restaurant management system tailored to enhance operational effectiveness in the food service industry. This project focuses on optimizing core processes, including table management, order placement, and billing. Designed for seamless utilization by both staff and administrators, this system streamlines daily operations while providing customers with a simple menu viewing experience.

The table management feature empowers staff and administrators to effortlessly oversee table assignments and availability, reducing wait times and ensuring efficient seating arrangements. Through an intuitive interface, the system enables real-time updates on table status, enhancing customer satisfaction by minimizing wait times and optimizing table turnover.

Order placement is facilitated through an intuitive interface that empowers staff to efficiently manage customer orders. From taking orders to sending them to the kitchen, the system ensures accurate communication and reduces errors, resulting in improved customer experience. The user-friendly platform allows for easy customization of orders to accommodate specific customer preferences or dietary requirements.

Billing becomes a streamlined process with the integration of this restaurant management system. Staff can swiftly generate accurate bills based on order details, reducing errors, and expediting the checkout process. This not only enhances customer satisfaction but also aids in the efficient management of financial transactions.

With a primary focus on staff and administrative users, the system limits customer interactions to menu viewing. Customers can access the menu items without engaging in the online ordering process, preserving the traditional dining experience while benefitting from a digital menu display.

Incorporating these features, the "Yummy Kitchen Hub" restaurant management system presents a targeted approach to enhancing restaurant operations. By catering to staff and administrative needs while offering customers an intuitive menu interface, this system aims to elevate the efficiency, accuracy, and overall dining experience within the restaurant.

# Chapter 1: Introduction

The project “Yummy Kitchen Hub” is a desktop application which we are planned to design to streamline the operations of a restaurant.

It provides a comprehensive solution for managing various aspects of a restaurant, including menu management, order placement, table management, sales report, and billing.

Our goal is to empower customers with the tools needed to run the establishment smoothly, maximize efficiency, improve accuracy and accountability, track sales revenue and deliver a top-notch dining experience.

## Overview

In today's fast-paced world, the restaurant industry demands efficient management solutions to cater to the growing demands of customers while maintaining a high level of service quality. Yummy Kitchen Hub addresses these needs by offering a digital platform that simplifies the entire dining process. By integrating various functions such as menu browsing, order placement, staff interaction, and administrative control, the system optimizes restaurant operations and enhances customer satisfaction.

## 1.2 Problem Statement

* Inefficient order placement, processing, and billing.
* Inefficient tracking and reporting.
* Lacked table management and reservation system.

## 1.3 Objectives

* To provide efficient management of restaurant operations which includes:
* menu
* Order
* Billing
* Table
* Report

## 1.4 Features

* + Staff and Admin login
* Menu management
* Food order placement
* Billing
* Managing table
* Sales report

## 1.5 Significance

* **Optimized Table Placement:**
* **Improved Customer Experience:** Efficient table placement ensures that customers are seated promptly, reducing wait times, and enhancing their overall dining experience.
* **Accurate Seating:** It ensures that the restaurant is not over capacity, complying with safety regulations and avoiding customer dissatisfaction.
* **Personalization:** The system can store information about customer preferences and seating preferences, enabling staff to offer a more personalized service.
* **Sales Reporting:**
* **Data-Driven Decision Making:** Detailed sales reports provide insights into which menu items are selling well, helping the restaurant make informed decisions about menu changes, promotions, and pricing adjustments.
* **Revenue Tracking:** Sales reports track daily, weekly, and monthly revenue trends, allowing the restaurant to set financial goals and monitor progress.
* **Performance Evaluation:** Sales reports can be used to evaluate the performance of individual servers, menu items, and shifts, facilitating staff management and training.
* **Time Efficiency:**
  + **Faster Service:** The system can help waitstaff quickly identify available tables and provide customers with accurate wait times, reducing customer frustration and improving service speed.
  + **Instant Reporting:** Sales data is available in real-time, enabling immediate.
  + decision-making and reducing delays in identifying trends or issues.
* **Accuracy and Accountability:**
  + **Reduced Human Errors:** Automation in table placement and sales reporting minimizes the chances of errors in seating assignments and financial transactions.
  + **Accountability:** Sales reports provide a clear record of all transactions, making it easier to identify discrepancies and track revenue accurately.
* **Customer Satisfaction and Loyalty:**
  + **Consistency:** Efficient table placement and accurate sales reporting
  + contribute to a consistent and reliable dining experience, which is key to building customer loyalty.
  + **Feedback and Improvement:** Sales reports can reveal customer preferences and trends, allowing the restaurant to tailor its offerings and service to better meet customers.

## 1.6 Scope and Limitation

### 1.6.1 Scope:

* Generating bills
* Order management
* Table proper manageable

### 1.6.2 Limitation:

* Offline mode
* Lacked inventory management.
* No customer interaction
* Profit calculation excluded.

# Chapter 2: Literature Review

We looked at various research papers and projects to understand all the previous work done on the project we undertook.

* These studies emphasize the need for efficient management of different aspects of restaurant operations, including order management, table management, billing, sales report, and user authentication.
* Java-based restaurant management systems have been found to offer a range of benefits, such as improved order accuracy, reduced order processing time, better billing mechanisms, enhanced reporting, and increased customer satisfaction.
* first, research was done on a website name: Restaurant management system. Within this website, there are the following features: Staff Management, Login Admin, Stock Control, and Menu Management.

**Pros:**

* Authentication
* User control

**Cons:**

* Technical issues
* Complexity
* Table management issue
* We studied available restaurant management system in Nepal there are many systems, but we research about “TouchBistro” it comes with mobile functionality, advanced management capability and food service specific features to meet unique needs of the restaurant industry.

**Pros:**

* Easy bill splitting
* Offline mode
* Reporting and analytics

**Cons:**

* Expensive
* Device incompatible
* We studied and experienced our college canteen management system. There is no well-managed system, manually they write order on the copy and occupied by ticket to the students. We noticed this problem is the biggest problem, there is a lack of time efficiency, seating problems, billing problems. To solve this problem, we decided to work on this project.

Pros:

* Easy to work.

Cons:

* Lacked time efficiency.
* Food order placement problem
* No accuracy on billing system

## 2.1 System login overview

In a system where only staff and administrators can access the application through a username and password, the login process serves as a critical security measure to ensure that only authorized personnel can interact with the system. Admin registered the staff username and password into the database, and admin login is already determined or fixed into the system database.

### 2.1.1 Pros:

* User access control
* User authentication
* Security measures
* Account management

### 2.1.2 Cons:

* + - Technical issues
* Training requirements
* Security concerns
* Password management problem

## 2**.2 System Admin overview**

An admin system is a vital component of many organizations and businesses, providing administrators with the tools and permissions necessary to manage various aspects of the system or organization efficiently. In our system this overview outlines the key functionalities of an admin system, highlighting the login process, staff/employee registration,sales report analysis, and menu item modification capabilities.

An admin system is an essential tool for organizations and businesses that require efficient management of their operations. It ensures secure access, allows for staff/employee management, empowers administrators to analyze sales data, and provides control over menu item modifications. By facilitating these functionalities, the admin system plays a pivotal role in maintaining the smooth operation and growth of the system.

### 2.1.2 Pros:

* Authentication
* Accountability
* Availability control
* Feedback helps to improve.

### 2.1.3 Cons:

* Security concerns
* Complexity
* User errors
* Access control challenges.

## **System staff overview**

Staff members play a crucial role in the day-to-day operations of various businesses, particularly in customer-centric industries like restaurants. In our system this overview outlines the key responsibilities and functionalities of staff members within an organization, including login procedures, customer service, menu viewing, bill generation, order placement, table management, and reporting sales to the admin.

Staff members are the face of an organization, responsible for providing excellent customer service, managing orders, and ensuring smooth operations. Their responsibilities extend to menu viewing, bill generation, order placement, table management, and reporting sales data to the admin. By fulfilling these roles effectively, staff members contribute to the overall success and customer satisfaction of the business.

### 2.3.1 Pros:

* Improved productivity
* Accuracy in payroll
* Compliance and reporting
* Efficient staff management

### 2.3.2 Cons:

* Technical issues
* Lack of data security
* Privacy concerns.

# 

# Chapter 3: Methodology

## 3.1 Software Development Life Cycle

The Waterfall Model is one of the earliest and most traditional approaches to software development. It was first introduced by Dr. Winston W. Royce in a paper published in 1970. The Waterfall Model is a linear and sequential approach that divides the software development process into distinct phases, each of which must be completed before moving on to the next. We are using waterfall model to work on this project “Yummy Kitchen Hub” is the shortest period or one semester project, it is a small project as well as we don’t need to move back so, we are choosing it as the best model for our project.

Requirement gathering

System design

implementation

Testing/debugging

Maintenance

***Fig 3.1: Waterfall Model***

1. **Requirements Gathering and Analysis:**

In this initial phase, we all development team gathered and documented all the project requirements. Detailed analysis of the requirements is performed to ensure a clear understanding of the “Yummy Kitchen Hub” scope and objectives.

1. **System Design:**

Once the requirements are well-defined, the system design phase begins. In this phase, we designed an overall blueprint of system design. Make an entity-relationship diagram to describe relationships between entity and discussed about attributes of each entity, and design Dataflow Diagram (DFD) to understand flow of data.

1. I**mplementation (Coding):**

In this phase, we started coding based on the design specifications. The code is written and reviewed to ensure it aligns with the design and meets the specified requirements.

1. Testing:

After coding, we are entering the testing phase. We conducted various tests, including unit testing, integration testing, system testing, and user acceptance testing, to identify and rectify defects. Each test is successfully run, after rectifying and debugging errors.

1. **Maintenance:**

The maintenance phase is **the last stage of the waterfall model, where we monitor, update, and fix it after it is released to the users**. In this phase we can work as an activity such as bug fixing, performance improvement, security enhancement, and feature addition.

## 3.2 Technologies and Tools

Yummy Kitchen Hub is a java-based restaurant management system. In this project we are using various tools and technologies.

### 3.2.1 Specified Programming Language

Programming language: Java

### 3.2.2 Specified Database

Database: MySQL

### 3.2.3 Specified Software

Software: IntelliJ Idea

## 3.3 Assignments of Rolls and Responsibilities

The member assigned with these responsibilities:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Members** | **Study and analysis** | **Designing** | **Coding** | **Debugging** | **documentation** |
| **Dhiraj Sapkota** | **Dhiraj Sapkota** | **Dhiraj Sapkota** | **Dhiraj Sapkota** |  | **Dhiraj Sapkota** |
| **Elisha Rai** | **Elisha Rai** | **Elisha Rai** |  | **Elisha Rai** | **Elisha Rai** |
| **Sagar Upadhyaya** | **Sagar Upadhyaya** | **Sagar Upadhyaya** | **Sagar Upadhyaya** | **Sagar Upadhyaya** |  |

*Table 3.3: Assignments of Rolls and Responsibilities*

# Chapter 4: System Analysis

## 4.1 Requirement Analysis

### Requirement Analysis for “Yummy Kitchen Hub” Restaurant Management System

### **1. User Authentication and Authorization:**

* **Feature:** Admin and Staff Login
* **Requirements:**
  + Users should be able to log in with a username and password.
  + Differentiate between admin and staff login page.
  + Restrict access based on user type.

**2. Employee Management:**

* **Feature:** Admin Registers New Employee Record
* **Requirements:**
  + Admin can add new employee records, including personal information and job details.
  + Employee records should include fields like name, contact details, job, address **etc.**

**3. Sales Analysis**

* **Feature:** Admin Analyzes Sales Reports
* **Requirements:**
* Staff should be able to report sales data.
* Admin can view and analyze sales reports, including total amount.
* Generate customizable sales reports for a specified date range.

**4. Menu Management:**

* **Feature:** Admin Modifies Menu Items
* **Requirements:**
  + Admin can add, edit, or remove menu items.
  + Each menu item should include a name, quantity, price.

**5. Table Management:**

* **Feature:** Staff Manages Tables
* **Requirements:**
  + Staff can assign tables to customers.
  + Track table availability and status (e.g., occupied, vacant, reserved).

**6. Order Management:**

* **Feature:** Staff Serves Customers
* **Requirements:**
  + Staff can take customer orders, add items to orders, and update orders as needed.
  + Ability to view the menu items and their descriptions.

**7. Billing and Payment:**

* **Feature:** Bill Generation
* **Requirements:**
  + Generate bills based on the items ordered.
  + Calculate and display the total amount.

**8. Menu Item Viewing:**

* **Feature:** Users View Menu Items
* **Requirements:**
  + Users (both staff and customers) can view the menu items.
  + Include item details such as name, description, and price.

## 4.1.1 Requirement Gathering

|  |  |
| --- | --- |
| **Requirement ID** | **Description** |
| Authentication and authorization | Staff and admin access the system by using username, and password |
| Menu management | Admin (owner) modified the menu item |
| Billing and payment | Bill generated and reported by admin |
| Table management | Track table availability and status |
| Order placement | Serve the food item appropriately |

*Table 4.1.1: Requirement Gatherings*

## 4.1.2 Functional Requirement

|  |  |
| --- | --- |
| Function ID | Description |
| Menu info | View the item details |
| Admin page | It consists of item modification, staff modification, and view order report |
| Staff page | It consists of order placement, view menu info |
| Staff/admin login | Performed authentication |
| Staff info | Manages staff details |
| Order placement | Take order and it is added to the orders database, bill generate and show table status |
| Home page | It consists of admin page, staff page, customer page |
| Customer page | Customer able to view menu item |
| Sales report | Track total amount earned according to date |

*Table 4.1.2: Functional Requirements*

## 4.2 Feasibility study

### 4.2.1 Technical Feasibility

The technical feasibility study suggests that implementing a Restaurant Management System using Java and MySQL Server is viable, provided that the necessary hardware, software, and development resources are available. Thorough planning and adherence to best practices in software development and database management are crucial for the success of the project. Additionally, ongoing maintenance and support are essential to ensure the long-term sustainability of the system.

Yummy Kitchen Hub is a restaurant management system. It is a java-based desktop application. This project is technically feasible to develop and use. We can use a java development kid version 11.6, and IntelliJ idea IDE is used to coding the program. Database is the most crucial thing for each application to store, process, retrieve, and access the data. We are using MySQL database server for database.

### 4.2.2 Economic Feasibility

This economic feasibility study evaluates the viability of developing and implementing a Restaurant Management System (RMS). The RMS aims to streamline restaurant operations, enhance customer service, and improve overall efficiency. This study assesses the financial aspects of the project to determine its economic feasibility.

We are estimating development costs, including software development, and hardware acquisition. Calculate ongoing expenses such as maintenance, licensing, and support. All the estimation is feasible for our management system.

### 4.2.3 Schedule Feasibility

Assessing the schedule feasibility for the development of a restaurant management system is essential to ensure that the project can be completed within the allotted timeframe. The feasibility analysis considers a range of critical factors, including the complexity of the system, the availability of resources, and the scope of work. It's crucial to consider the various phases of the project, from planning and design to development, deployment, and ongoing maintenance. Additionally, evaluating the project's dependencies, potential risks, and historical data from similar projects can help in determining whether the proposed schedule is realistic and achievable.

We have six months’ time to complete all the system so, each process or phase is feasible to schedule on timeframe. Our analysis is succeeding, and we completed all the tasks in setting schedule.

### Gantt chart

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Task | March | April | May | June | July | August |
| Requirement gathering |  |  |  |  |  |  |
| System analysis and design |  |  |  |  |  |  |
| System implementation |  |  |  |  |  |  |
| Testing and debugging |  |  |  |  |  |  |
| Documentation |  |  |  |  |  |  |

***Table 4.2.3.1: Gantt chart***

# Chapter 5: System Design

## 5.1 Procedure Oriented

### 5.1.1 Data Flow diagram

### 5.1.2 Context Level (level 0) DFD:

A diagram of a kitchen hub

Description automatically generated

*Fig 5.1.2: Level 0 DFD*

### 5.1.3 Level 1 DFD:

A diagram of a company

Description automatically generated

*Fig 5.1.3: Level 1 DFD*

### 5.1.4 Use Case Diagram:

A diagram of a kitchen hub

Description automatically generated

*Fig 5.1.4: Use Case Diagram*

## 5.2 Database Design

### 5.2.1 ER Diagram:

A diagram of a software company

Description automatically generated

*Fig 5.2.1: E-R Diagram*

### 5.2.2 Data Dictionary

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name | Data Type | Field size | Description |
| f-name | Varchar | 40 |  |
| f-price | double |  |  |
| quantity | int |  |  |
| f-id | int |  | Primary key |
| A-name | varchar | 35 |  |
| A-id | int |  | Primary key |
| S-name | varchar | 35 |  |
| S-id | Int |  | Primary key |
| f-id | int |  | Foreign key |
| Order-id | int |  | Foreign key |
| Table-number | int |  |  |
| Total-amount | double |  |  |
| Order-id | int |  | Primary key |

*Table 5.2.2: Data Dictionary*

# Chapter 6: System Development and Implementation

## 6.1 Programming Platform:

We are using IntelliJ idea IDE for programming.IntelliJ IDEA provides [support for developing](https://www.jetbrains.com/idea/jakarta/) enterprise Java applications based on [Jakarta EE](https://jakarta.ee/) (formerly known as Java EE). All the required plugins are bundled and enabled by default in IntelliJ IDEA Ultimate. The main plugin is Jakarta EE Platform for the core platform support, such as a dedicated project wizard. Other plugins that start with Jakarta EE in their name add support for various specifications, such as JPA, JAX-RS, and so on.

## 6.2 Operating Environment:

**Software Specifications**

Computer software specification we have used for development:

* Operating System: Windows 10 Operating System
* IntelliJ Idea
* MySQL database Server

**Hardware Specifications**

Computer hardware specification we have used for development:

* Processor: Intel Core i5
* RAM: 8GB
* SSD: 512GB

# Chapter 7: Testing and Debugging

Testing and debugging are crucial phases in the software development process to ensure that the system works correctly and is free of errors or bugs. We are testing a step-by-step guide on how to approach testing and debugging systems effectively. We tested the overall system, unit system, performance of system, debugging, security testing, and code review.

|  |  |  |
| --- | --- | --- |
| S. N | Tools | Specification |
| 1 | Laptop | Hardware |
| 2 | IntelliJ | IDE |
| 3 | MySQL | Database server |

## 7.1 Tools use in testing

*Table 7.1: Tools use in Testing*

## 7.2 Test Cases

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test Case Login** | | | | | |
| ID | Test case description | Test case data | Expected result | Actual result | Status |
| 01 | authenticate admin login system | Username, password | login | login | success |
| 02 | Authenticate staff login system | Username, password | login | login | success |

*Table 7.2.1: Test case login*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test Case Admin** | | | | | |
| ID | Test case description | Test case data | Expected result | Actual result | Status |
| 01 | Register new staff | Staff details | registered | registered | success |
| 02 | View sales report | Sales item, f-price, date | viewed | viewed | success |
| 03 | Modify menu item | Name, price, category | modified | modified | success |

*Table 7.2.2: Test case admin*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test Case Staff** | | | | | |
| ID | Test case description | Test case data | Expected result | Actual result | Status |
| 01 | Staff verify table status | table no. | Verified | Verified | success |
| 02 | Order placement | f-name, f-qty, f-price | served | served | success |
| 03 | Add to cart | f-name, f-qty, f-price | added | added | success |
| 04 | Bill generates | Table no, order-item | generated | generated | success |
| 05 | Mark as paid | Table no., total bill amount | paid | paid | success |

*Table 7.2.3: Test case staff*

# Chapter 8: Conclusion

This Java-based desktop application has successfully addressed various challenges faced by restaurants in managing their day-to-day activities. With its comprehensive set of features, including menu management, order placement, billing, and sales reporting, it has greatly enhanced the efficiency and effectiveness of restaurant operations.

This project was undertaken with the primary objective of streamlining and optimizing restaurant management processes. Through meticulous design and development, we have created a user-friendly, reliable, and efficient system that meets the diverse needs of restaurant owners, managers, and staff.

The Menu Management feature allows for easy customization and updates, ensuring that restaurants can adapt to changing customer preferences and dietary requirements swiftly. The Order Placement module simplifies the ordering process, reducing errors and improving customer satisfaction. The Billing system provides accurate and efficient financial management, while the Sales Report feature offers valuable insights into strategic decision-making.

The success of the Yummy Kitchen Hub is a testament to the dedication, teamwork, and technical expertise of our project members. It not only serves as a powerful tool for restaurant owners but also contributes to the broader restaurant industry's evolution towards more efficient and customer-centric operations.

As technology continues to play a vital role in the restaurant business, we believe that our application will continue to be an asset, helping restaurants thrive. We remain committed to enhancing and expanding the system's capabilities to meet the ever-evolving needs of the restaurant industry.

# Chapter 9: References

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**THE END…!**

staff

Admin

Yummy Kitchen Hub

staff

Data

Base