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AI tools like chatgpt

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**A Major Project-1  
On  
“Restaurant table booking system”**

**SUBMITTED TO  
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA  
(M.P.)**



**In Partial Fulfillment of the award of  
Bachelor of Technology in  
Computer Science and Engineering  
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## CANDIDATE DECLARATION

We **NISHANT SHRIVASTAV, NUPUR RATHORE , RITIKA JAIN, RIYA JAIN and SAKSHI JAIN** students of B.Tech. (Computer Science) VII semester **Roll No 0905CS201117, 0905CS201119, 0905CS201142, 0905CS201144 and 0905CS201152** hereby declare that the Project entitled “ **ONLINE RESTURANT TABLE BOOKING SYSTEM**” which is being submitted to Department of computer science & Engineering in ITM, Gwalior is our authentic work carried out in our VII semesters.

We declare that our work has not been submitted in part or in full to any othis university or institution for the award of any degree or diploma.

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# **CERTIFICATE**

This is to certify that the project entitled “**ONLINE RESTURANT TABLE BOOKING SYSTEM**” being submitted by **NISHANT SHRIVASTAV(Enroll. No. 0905CS201117), NUPUR RATHORE (Enroll. No. 0905CS201119), RITIKA JAIN(Enroll. No. 0905CS201142), RIYA JAIN(Enroll. No. 0905CS201144) and SAKSHI JAIN(Enroll. No. 0905CS201152)** in partial fulfillment of the requirement for the award of B. Tech. degree in Computer Science & Engineering to Rajiv Gandhi Proudtyogiki Vishwavidyalaya, Bhopal (M.P.) is a record of bonafide work done by them, under my guidance.

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# **INTRODUCTION:**

## **AIMS:**

The primary aim is to create an online platform that enhances the overall dining experience for customers and improves the restaurant's online presence. Flask, a lightweight web framework for Python, is utilized for its simplicity and efficiency in developing web applications. The website can serve multiple purposes, including providing essential information about the restaurant such as its menu, location, contact details, and operating hours. Additionally, it can facilitate online reservations or orders, allowing customers to interact with the restaurant conveniently.

Moreover, a Flask-based restaurant website can integrate features that enhance customer engagement, such as reviews and ratings, special promotions, and loyalty programs. The website's design and user interface should be intuitive, ensuring a seamless and enjoyable browsing experience for visitors. Utilizing Flask's compatibility with modern technologies, the website can also incorporate responsive design for mobile users.

In conclusion, the aim of a restaurant website using Flask is to create a user-friendly and feature-rich online platform that promotes the restaurant, engages customers, and facilitates online interactions, ultimately contributing to the restaurant's success in the digital space.

## **OBJECTIVES:**

The objectives of a restaurant website built using Flask encompass a range of functionalities aimed at enhancing the overall efficiency and customer experience. Firstly, the website serves as a digital representation of the restaurant, providing essential information such as the menu, location, contact details, and operating hours. This digital presence helps attract potential customers and provides a convenient way for them to explore the offerings of the restaurant.

Secondly, a Flask-based restaurant website can facilitate online interactions, allowing customers to make reservations or place orders online. This feature streamlines the process for both customers and the restaurant, improving efficiency and customer satisfaction. The integration of an online ordering system can significantly enhance the restaurant's revenue stream.

Thirdly, the website can serve as a platform for customer engagement, allowing users to leave reviews and ratings. This not only provides valuable feedback for the restaurant but also helps build a sense of community around the brand. Additionally, the website can be used to promote special events, discounts, and loyalty programs, encouraging customer loyalty.

## **VISION:**

The vision of a restaurant website is a forward-looking statement that articulates the desired future state and goals of the website. In the context of a restaurant website using Flask, the vision may encompass several key elements. Firstly, it could focus on creating a digital platform that provides an immersive and enjoyable experience for visitors, reflecting the ambiance and personality of the physical restaurant.

Secondly, the vision may include leveraging technology to enhance customer interactions, making it easy for users to explore the menu, place online orders, and make reservations seamlessly. This could contribute to establishing the restaurant website as a central hub for customer engagement and convenience

The vision of a restaurant website using Flask revolves around creating a dynamic, user-centric, and visually appealing online presence that enhances the overall brand image and customer engagement.

# Project / Problem Selection:

Selecting a project or problem for developing an online restaurant table booking system is a great choice, as it addresses a practical need in the hospitality industry. Here are some considerations and aspects you might want to explore in your project:

## 1. User-Friendly Interface:

- Develop an intuitive and easy-to-use interface for both restaurant owners and customers.
- Implement responsive design for various devices, ensuring a seamless experience on desktops, tablets, and smartphones.

## 2. Real-Time Availability:

- Design a system that shows real-time availability of tables in different restaurants.
- Implement a notification system to alert customers when a preferred table becomes available.

## 3. Reservation Management:

- Create a robust reservation management system for restaurant owners, allowing them to confirm, modify, or cancel reservations.
- Implement a calendar view for restaurant staff to see the bookings for the day/week.

## 4. User Profiles and Preferences:

- Allow users to create profiles with preferences such as favorite restaurants, preferred seating, etc.
- Use this data to provide personalized recommendations and offers.

## 5. Integration with Point of Sale (POS) Systems:

- Integrate the system with restaurant POS systems to streamline the overall operation.
- This integration can help in managing orders, inventory, and customer data efficiently.

## 6. Rating and Review System:

- Implement a rating and review system for both customers and restaurants.
- Reviews can help other users make informed decisions, and restaurants can use feedback for improvement.

## 7. Notification System:

- Set up a notification system for users to receive confirmation, reminder, and feedback requests.



- Restaurants can also receive notifications for new reservations and cancellations.

**8. Security and Privacy:**

- Prioritize the security of user data, including personal information and payment details.
- Comply with data protection regulations and industry standards.

**9. Analytics and Reporting:**

- Provide analytics tools for restaurants to track reservation trends, peak hours, and customer demographics.
- Use this data to optimize restaurant operations and marketing strategies.

**10. Payment Integration:**

- Implement secure payment gateways for online transactions.
- Allow users to pre-pay or pay at the restaurant, depending on their preference.

**11. Social Media Integration:**

- Enable users to share their reservations and experiences on social media platforms.
- Integrate social media login options for a seamless registration process.

# Project Monitoring System:

## Gantt Chart:

A Gantt chart is a visual representation of a project schedule, displaying the start and finish dates of different elements of a project. It's a widely used tool in project management that provides a timeline view of tasks, dependencies, and the overall project timeline. Below is an example of how you might structure a Gantt chart for developing an online restaurant table booking system:

Gantt Chart for Online Restaurant Table Booking System:

### Project Initiation:

Define project scope and objectives

Research and feasibility analysis

### Planning and designing:

Create project plan

Identify project team members and roles

Develop Gantt chart and project timeline

### Development:

Backend development

Frontend development

Database design

Integration with external systems (POS, payment gateways)

### Testing:

Conduct unit testing

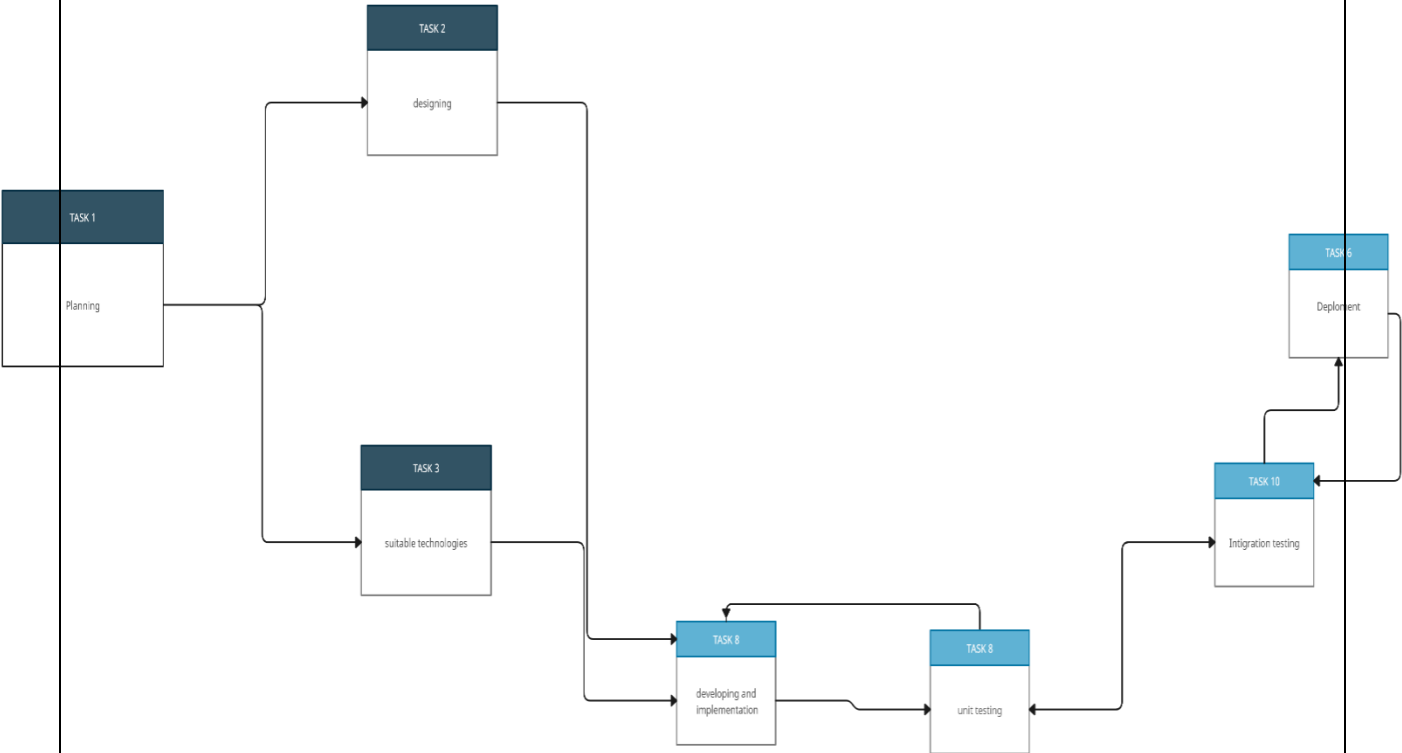
## User acceptance testing

## Prepare for system launch

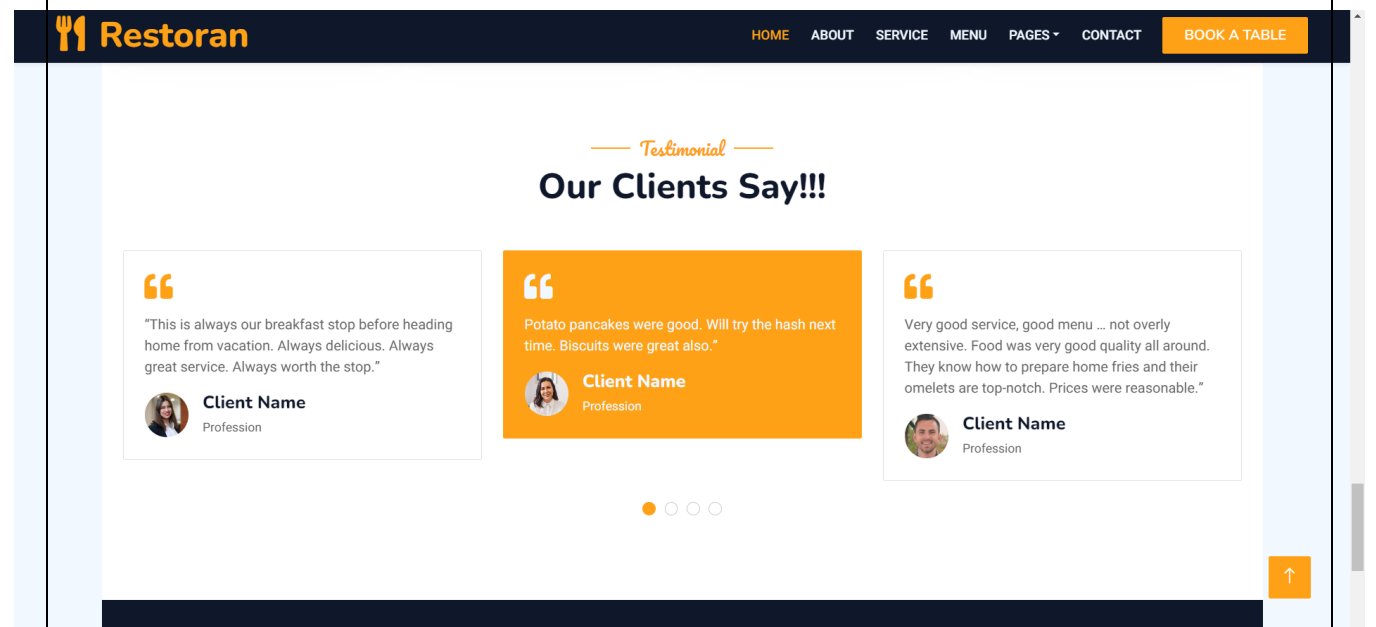
Go live with the system

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# PERT Chart:



## Functionalities:



## Food Menu

# Most Popular Items



Popular  
Breakfast



Special  
Launch



Lovely  
Dinner



### Idli Sambar

Rs.120

Idli Sambar is a hearty, satisfying, comforting and a healthy meal of soft fluffy idlis served with savory, spiced and lightly tangy sambar a vegetable stew made with lentils and assorted vegetables. It is a winning combination made for each other.



### Sandwich

Rs.150

A sandwich is a food typically consisting of vegetables, sliced cheese or meat, placed on or between slices of bread, or more generally any dish wherein bread serves as a container or wrapper for another food type.



### Poha

Rs.40

Poha, also known as pauwa, sira, chira, chivda, avil or avalakki, among many other names, is flattened rice originating from the Indian subcontinent. Rice is parboiled before flattening so that it can be consumed with very little to no cooking.



### Samosa

Rs.120

A samosa is a fried South Asian pastry with a savoury filling, including ingredients such as spiced potatoes, onions, peas, meat or fish. It may take different forms, including triangular, cone, or half-moon shapes, depending on the region.



### Khaman Dhokla

Rs.100

Dhokla is a savoury sponge dish that is native to the Indian state of Gujarat and parts of the adjacent states,[1] and is popular throughout the country. It is made with a fermented batter that is steamed to a cake-like consistency.



### Uttapam

Rs.80

An uttapam (or uthapam, uttappam, etc.) is a type of dosa from South India. Unlike a typical dosa, which is crisp and crepe-like, an uttapam is thicker, with toppings. The name is derived from the Tamil words appam and utthia or uttria, meaning "poured appam".



### Master Chefs

Diam elit kasd sed at elit sed ipsum justo dolor sed clita amet diam



### Quality Food

Diam elit kasd sed at elit sed ipsum justo dolor sed clita amet diam



### Online Order

Diam elit kasd sed at elit sed ipsum justo dolor sed clita amet diam



### 24/7 Service

Diam elit kasd sed at elit sed ipsum justo dolor sed clita amet diam



## About Us

Welcome to  Restoran



## **System Study:**

### **4.1 Existing Systems along with limitations/deficiencies.**

#### **A. Performance Issues:**

- Limitation: Some Flask applications may face performance challenges, especially during peak hours or with a high volume of concurrent users.
- Deficiency: Slow response times can lead to a poor user experience, impacting online ordering and reservation processes.

#### **B. Scalability Challenges:**

- Limitation: As the restaurant business grows, scalability might become an issue if the Flask application is not designed to handle increasing loads.
- Deficiency: Difficulty in scaling the system can lead to downtime or degraded performance during periods of high traffic.

#### **C. Security Concerns:**

- Limitation: Inadequate security measures may expose the system to vulnerabilities, such as SQL injection or cross-site scripting (XSS) attacks.
- Deficiency: Breaches in security can compromise customer data, including personal information and payment details.

#### **D. Limited User Account Features:**

- Limitation: Some restaurant websites built with Flask may have limited user account functionalities, such as the absence of order history or personalized recommendations.
- Deficiency: Customers may miss out on personalized experiences and the convenience of easily reordering their favorite items.

#### **E. Insufficient Mobile Responsiveness:**

- Limitation: Some Flask applications for restaurant websites may not be optimized for mobile devices, leading to a sub optimal mobile user experience.
- Deficiency: Customers accessing the website from smartphones may encounter difficulties navigating menus or placing orders.

## 4.2 Proposed systems along with intended objectives

### User-Friendly Interface:

- Objective: Create an intuitive and visually appealing website interface for users to easily navigate and explore the restaurant's offerings.

### Reservation System:

- Objective: Enable customers to make reservations online, providing a convenient way to plan their dining experience.
- Features:
  - A reservation form with date, time, and party size selection.
  - Confirmation emails or notifications for successful reservations.

### Online Menu and Ordering:

- Objective: Facilitate online food ordering to enhance customer convenience and streamline the ordering process.
- Features:
  - Display an interactive menu with images and detailed descriptions.
  - Allow users to customize their orders.
  - Implement a secure online payment system.

### Integration with Social Media:

- Objective: Increase the restaurant's online presence and customer reach through integration with social media platforms.
- Features:
  - Shareable links for menu items on social media.
  - Integration of customer reviews and feedback.

### Inventory Management:

- Objective: Streamline restaurant operations by managing inventory and reducing the chances of running out of stock.



**•Features:**

- Automated tracking of ingredient usage with each order.
- Notifications for low stock items.

**Feedback and Review System:**

- Objective: Gather customer feedback to improve service and address any issues promptly.
- Features:
  - A feedback form for users to submit reviews.
  - Integration with the website for displaying recent reviews.

**Mobile Responsiveness:**

- Objective: Ensure a seamless experience for users accessing the website from mobile devices.
- Features:
  - Responsive design for various screen sizes.
  - Mobile-friendly navigation and ordering process.

## **4.3 Feasibility study**

### **4.3.1 Operational.**

**1. Introduction:**

Provide an overview of the restaurant and its goals for the website.

**2. Objectives:**

- Online Presence: Establish a strong online presence to attract and engage customers.
- Enhanced Customer Experience: Improve the overall dining experience through seamless online services.
- Operational Efficiency: Streamline restaurant operations, including ordering, reservations, and inventory management.
- Marketing and Promotion: Utilize the website for marketing, promotions, and customer loyalty programs.

### **3. Key Features:**

#### **3.1 User-Friendly Interface:**

- Develop an intuitive and visually appealing interface for easy navigation.

#### **3.2Reservation System:**

- Provide a user-friendly reservation system for customers to book tables online.
- Allow customization of reservation details, including date, time, and party size.

#### **3.3 Mobile Responsiveness:**

- Ensure the website is optimized for various devices, especially smartphone.

### **4. User Requirements.**

#### **4.1 Intuitive Navigation:**

- Requirement: The website should have a clear and intuitive navigation structure.

Justification: Users should be able to easily find menu items, place orders, and make reservations without confusion.

#### **4.2 Reservation System:**

- Requirement: An easy-to-use reservation system.
- Justification: Users want the convenience of booking tables online, specifying date, time, and the number of guests.

#### **4.3 Mobile Responsiveness:**

- Requirement: The website should be optimized for mobile devices.
- Justification: Many users access websites on mobile devices, so a responsive design is crucial for a positive experience.

## **4.3.2 Technical.**

### **1. Technology Stack:**

- Requirement: Identify the technologies to be used in the development of the website.
- Evaluation:
- Frontend: HTML, CSS, JavaScript,Bootstrap
- Backend: Flask (Python web framework)

- Database: MySQL or PostgreSQL
- Additional Tools: Git for version control, and deployment tools.

## **2. Development Tools:**

- Requirement: Specify the tools and development environment for building and testing the website.
- Evaluation:
- Visual Studio (VS)
- Testing frameworks for Flask applications.

## **3.Hosting and Deployment:**

- Requirement: Identify the hosting platform and deployment strategy.
- Evaluation:
- Options include cloud services dedicated hosting, or Platform as a Service solutions.
- Evaluate deployment mechanisms such as Docker containers.

## **4. Scalability:**

- Requirement: Assess the scalability of the proposed system to handle increasing loads.
- Evaluation:
- Consider potential scalability issues and plan for horizontal scaling if needed.
- Evaluate the capacity of the chosen hosting solution to accommodate growth.

## **5. Performance:**

- Requirement: Ensure the website's performance meets user expectations.
- Evaluation:
- Conduct performance testing to identify and address bottlenecks.
- Optimize code, database queries, and assets for faster load times.

## **6. Security Measures:**

- Requirement: Implement robust security measures to protect user data and ensure secure transactions.
- Evaluation:
- Assess and implement best practices for securing the Flask application.

- Use HTTPS for secure communication.
- Regularly update dependencies and libraries to address security vulnerabilities.

#### **7. Database Management:**

- Requirement: Choose a suitable database management system for storing and managing data.
- Evaluation:
  - Evaluate the performance, scalability, and features of MySQL or PostgreSQL.
  - Design an efficient database schema to support the application's requirements.

### **4.3.3 Technical.**

#### **1. Cost Estimation:**

- Requirement: Estimate the costs associated with developing, deploying, and maintaining the restaurant website.
- Evaluation:
  - Break down costs into development, hosting, domain registration, security measures, and ongoing maintenance.
  - Consider both one-time and recurring expenses.

#### **2. Return on Investment (ROI):**

- Requirement: Evaluate the potential returns and benefits derived from the restaurant website.
- Evaluation:
  - Identify revenue streams, such as increased online orders, reservations, and customer engagement.
  - Estimate the time frame for recovering the initial investment.

#### **3. Market Analysis:**

- Requirement: Analyze the market and competitive landscape to gauge the economic viability.
- Evaluation:
  - Identify customer preferences and behaviors in online ordering and reservations.

- Analyze competitors' online presence and customer engagement strategies.

#### **4 Revenue Generation:**

- Requirement: Identify strategies for generating revenue through the website.
- Evaluation:
- Assess the potential for increased sales through online orders and reservations.
- Consider opportunities for cross-selling and upselling.

#### **5. Cost-Benefit Analysis:**

- Requirement: Conduct a detailed cost-benefit analysis to weigh the advantages against the expenses.
- Evaluation:
- Compare the total cost of ownership with the expected benefits over time.
- Factor in both quantitative and qualitative benefits.

#### **6.Risk Analysis:**

- Requirement: Identify potential economic risks that may impact the success of the project.
- Evaluation:
- Assess risks such as market changes, technological advancements, and unforeseen economic downturns.
- Develop contingency plans for mitigating identified risks.

#### **7.Sustainability:**

- Requirement: Assess the long-term economic sustainability of the website.
- Evaluation:
- Consider the potential for continued growth and adaptation to changing market conditions.
- Evaluate the scalability of the system to accommodate increased demand.

## **System analysis:**

### **5.1. Requirements Analysis:**

#### **User Requirements:**

Ease of Use: Ensure a user-friendly interface for both product purchase and table booking.

Security: Implement secure data handling for customer information and payment transactions.

Customization: Allow users to specify preferences and special requests during the booking process.

#### **System Functionality:**

Inventory Management: Keep track of available tables and update in real-time to avoid overbooking.

Notification System: Send confirmation emails or messages to users upon successful bookings.

Integration with eCommerce Platform: Seamlessly integrate the table booking system with the eCommerce platform.

#### **Performance Requirements:**

Response Time: Ensure quick response times during the booking process to enhance user experience.

Scalability: Design the system to handle a growing number of users and reservations.

#### **Data Management:**

Database Design: Develop a robust database structure to efficiently store and retrieve user and reservation data.

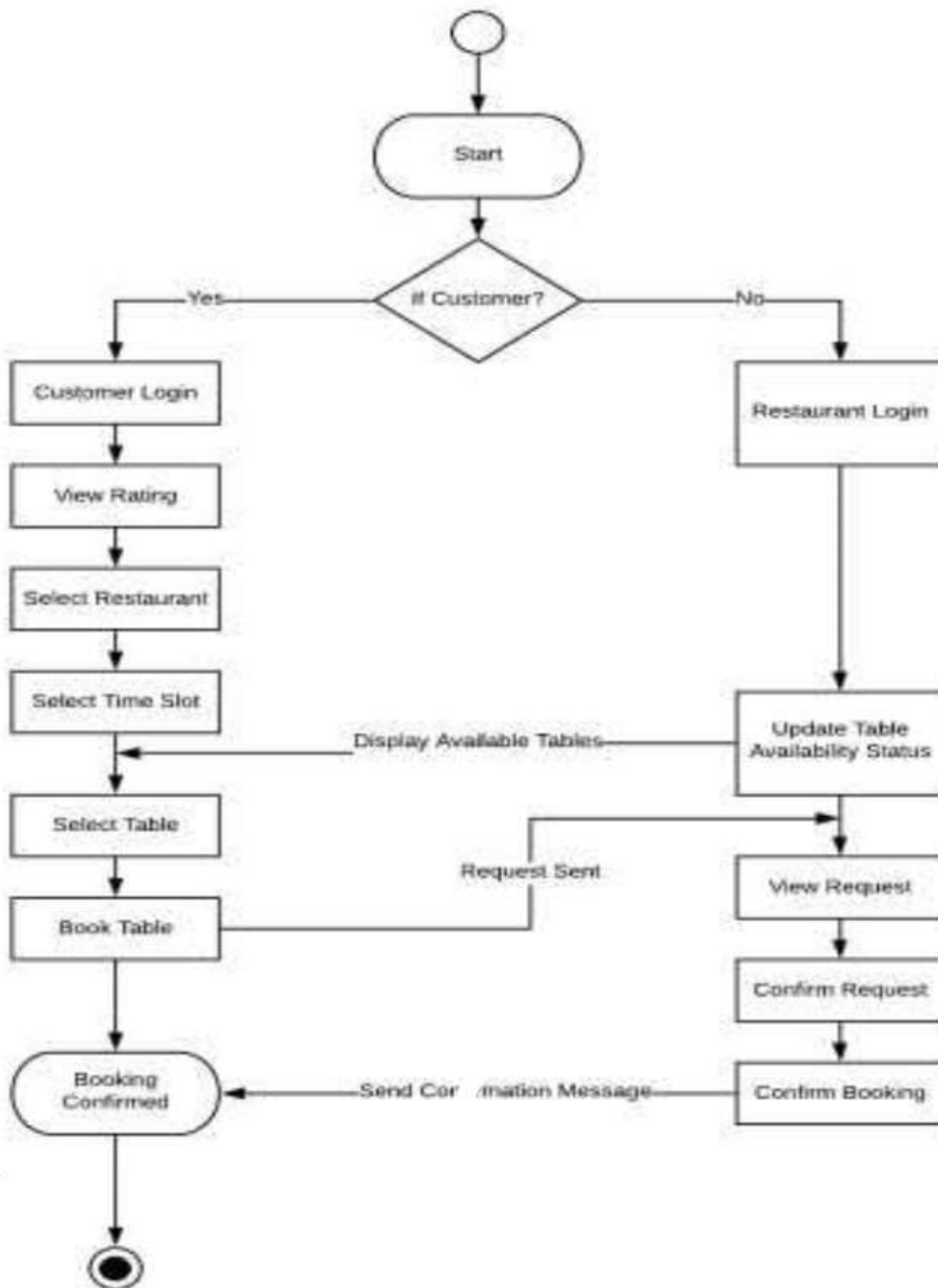
Backup and Recovery: Implement regular backups to prevent data loss and facilitate recovery in case of system failures.

#### **Testing and Quality Assurance:**

User Acceptance Testing (UAT): Conduct thorough testing with end-users to ensure the system meets their expectations.

Security Testing: Regularly test the system for vulnerabilities and apply security patches promptly.

## 5.2. Flowchart:



## 5.3 . DFDs/HIPOs/ERDs:

Data flow diagram

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## 5.4. Source of Data:

**User Input:** Collect data from users during the booking process, including customer details, preferred time, and special requests.

**Product Listings:** Gather information on available products, menu items, and pricing.

**Reservation History:** Store past reservation data for reference and analytics.

**Inventory Management:** Track availability of tables and update in real-time.

**User Reviews and Ratings:** Consider integrating customer feedback for continuous improvement.



These requirements lay the foundation for developing a robust and user-friendly eCommerce website with integrated table booking functionality.

## Scope of project:

The scope of an online restaurant table booking system is broad and encompasses various aspects of the restaurant industry. Here are some key components and features that define the scope of such a system:

1. **User Registration and Authentication:**

- Allow users to create accounts and log in securely.
- Implement authentication mechanisms to ensure the security of user information.

2. **Table Reservation:**

- Enable users to browse available tables and reserve them for a specific date and time.
- Provide a calendar and time picker for users to choose their preferred reservation slot.

3. **Real-time Availability:**

- Ensure that the system updates in real-time to reflect the current availability of tables.
- Implement a notification system to alert users if their desired time slot is unavailable.

4. **Confirmation and Reminders:**

- Send confirmation emails or SMS messages to users after they successfully book a table.
- Send reminders closer to the reservation time to reduce no-shows.

5. **User Reviews and Ratings:**

- Allow users to leave reviews and ratings for restaurants and their experiences.
- Display reviews to help other users make informed decisions.

6. **Integration with POS Systems:**

- Integrate the booking system with the restaurant's Point of Sale (POS) system to manage reservations and walk-ins efficiently.

7. **Mobile-Friendly Interface:**

- Ensure that the system is accessible and user-friendly on various devices, especially mobile phones.

8. **Payment Integration:**

- Provide secure payment options for users who want to pre-pay for their reservations or order food in advance.

**9. Admin Panel:**

- A backend admin panel to manage restaurant listings, view reservation analytics, and handle user feedback.
- Tools for managing reservation availability and making adjustments as needed.

**10. Reporting and Analytics:**

- Generate reports on reservation trends, peak hours, and popular dishes.
- Use analytics to help restaurants optimize their operations and enhance the overall customer experience.

**11. Customer Support:**

- Include a support system for users to contact the platform or the restaurant directly for assistance.

**12. Multi-language Support:**

- Support multiple languages to cater to a diverse user base.