Conception Phase 1 – Project : Online Cake Shop

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1 Project Profile

The Online Cake Bakery System offers customers convenience by eliminating the need to order in-store. It quickens the process of ordering and makes the ordering more standardized and allows for better communication between the bakery and customers.

Customers can view a digital cake menu, and one click or tap on a mobile device allows them to place an order while payment is completed online or cash-on delivery. Each online customer is given a unique ID and password to ensure a secure transaction and confidentiality of their account information.

Along with all the benefits of a more efficient, secure and friendly service for the online bakery, the system brings together a real-time order tracking, customer database system and much more in focused delivery services.

The online Cake Bakery System also provides convenience for its customers as it eliminates the flaw behind a traditional queuing system. The system encourages a higher percentage of takeaway cakes than visitors. Because of this system the speed and standardization of taking the order from the customer has been improved as there is a better platform for communication and the user's details can be electronically recorded.

The online Cake Bakery System encourages having the cake menu's available online, the customer can place an order simply by clicking a mouse. Additionally with an online cake menu you can track orders easily, maintain those customers' database, and improve your cake delivery service. The user can easily select the desired cake from the menu presented and then once the cake is selected the user orders the cake. Payment or payment on delivery is available. The details of the user will be kept confidential because this online system keeps separate accounts for all users, and therefore the user will be allocated an Id and password. So, it should be a more secure Bakery.

1.1 Scope

The Online Cake Shop system is developed to provide a convenient and efficient platform to customer as well as administrators. Its scope is as below:

❖ **Customer Convenience**

- Customers can register, browse the cake menu, and place orders online at any time (24/7 availability).
- Provides multiple ordering options with secure login, user accounts, and order history tracking.
- Payment flexibility with **Cash on Delivery** (and extendable to online payments in the future)

❖ **Administrative Management**

- Admins can manage cake categories, menus, prices, and availability.
- Provides tools for monitoring and updating orders, generating reports, and handling customer inquiries.
- Secure management through encrypted passwords and session handling.

❖ **Efficiency & Automation**

- Reduces manual effort in order handling, record keeping, and customer management.
- Automates order tracking and delivery updates.
- Maintains a centralized database for customer details, cake menu, and transactions.

❖ **System Users**

- **Admin**: Full control over menu, orders, customers, and reports.

- **Registered Users (Customers)**: Can place, manage, and track orders.
- **Guest Users**: Can view menu, register, and contact bakery.

❖ **Future Extensions**

- Integration of **real-time notifications and SMS confirmations**.
- **Live chat support** for customers.
- Expansion to include **multiple payment options** (credit/debit cards, UPI, wallets).

❖ **Limitations within Scope**

- Currently designed for **web platforms only** (not fully optimized for iOS mobile applications).
- CAPTCHA for added security and multiple online payment gateways are not yet implemented.

1.2 Risks

❖ **Technical Risks**

- System downtime due to server failure or poor internet connectivity may prevent users from placing or tracking orders.
- Security vulnerabilities such as SQL injection, weak password policies, or lack of CAPTCHA could expose sensitive customer data.

❖ **Operational Risks**

- Errors in order processing (wrong cake, incorrect address, or delayed delivery) can reduce customer satisfaction.
- Lack of trained staff to manage the admin panel effectively may cause delays in updating menu, categories, or handling complaints.
- Dependency on cash-on-delivery as the only payment option increases financial risks (fake orders, cancellations).

- **Business Risks**
  - If the system fails during peak demand (birthdays, festivals), it may lead to loss of business and customer trust.

1.3 Project Plan

First, I compiled the requirements and produced wireframes for the user interface. I also developed the site's structure, implemented a MySQL database and developed functionality for products, cart, and checkout. I will be testing the system as to functionality, usability, and performance.

- **Requirement Analysis** – Gather functional and non-functional requirements (customer, admin, guest modules).
- **System Design** – Create UML diagrams, database schema, and UI wireframes.
- **Development** – Implement front-end (HTML, CSS, JS, Bootstrap) and back-end (PHP, MySQL).
- **Testing** – Conduct unit testing, integration testing, and user acceptance testing.
- **Deployment** – Host the system on a web server and configure the database.
- **Training & Documentation** – Provide admin training and prepare user manuals.
- **Maintenance & Support** – Fix bugs, update features, and enhance security.

1.4 Concept

The Online Cake Shop is a web-based application that allows customers to more easily order cake. Customers can now browse a menu on their computer instead of travelling to a bakery, complete their cake selection and customization, and pay for the cake, in person, or online.

The system allows users to login securely and manages a database that maintains information about customers and their orders. The system allows administrators to manage cake selections and categories, order administration, and reports. The program will reduce manual busy work for staff, increase speed of service, and provide customer convenience, offering cake orders and delivery management anytime, 24/7.

1.5 Software Development Methodology

The Online Cake Shop project leverages the Waterfall Model of software development. This means that every phase of development is finished completely and sequentially before moving on to the next phase. This method formally begins with requirement analysis, identifying needs for the customer, admin, and system itself. Once requirements are established, system design is used to build UML diagrams and a database schema, and this is completely finished before coding can start.

In choosing the development tools, the front-end is developed with HTML, CSS, JavaScript, Bootstrap, the back end with PHP, and MySQL is used to store and retrieve data. Once coding is finished, testing is performed to confirm the functional and non-functional requirements are met. This consists of unit testing, integration-testing, and user acceptance testing. Once testing successfully completes, the system is deployed on a server, and after that, maintenance (bug fixes, updates, enhancements, etc) allows the system to be reliable and user-friendly.

1.6 Requirements Analysis

- **Functional Requirements:**

For Customers:

- Browse products by category and price
- View detailed product pages (with image, description, price, and stock status)
- Add/remove items from the shopping cart
- Register and log into a user account
- Place and track orders
- Use secure checkout and payment process
- Contact support via a form or help page

For Admin:

- Secure admin login
- Add, edit, and delete product listings
- Manage categories and inventory
- View and manage customer orders
- Access sales reports or order history

- **Hardware:**

- Web server or local server using XAMPP
- Client devices: desktops, tablets, or smartphones with internet access

- **Non-Functional Requirements:**

- **Security:** Basic data protection with secure login, input validation, and password encryption.
- **Scalability:** System can handle growth in products and users without performance degradation.
- **Maintainability:** Code written in PHP and structured for ease of updates.
- **Accessibility:** Compatible with common browsers (Chrome, Firefox, Edge) and mobile devices.

1.7 System Design

➢ **Architecture Overview**

The system design of the Online Cake Shop clearly outlines the architecture, database schema, and user interaction process necessary to ensure everything works properly. The Online Cake Shop will have a three-tier architecture: the presentation layer (HTML, CSS, JavaScript, Bootstrap, jQuery) which is the user interface; the application layer (PHP) focused on business logic; and the data layer (MySQL) dealing with customer, cake, and order information. UML diagrams which include case diagrams, activity diagrams, and sequence diagrams display how the admin, customer, and guest modules interact with each other. The database design document and its schemas provide an organized way to display entities such as a user, order, payments, and cake categories. This structured design is integral for ensuring scalability, security and request processing for users.

❖ **Three-Tier Architecture**

The system follows a basic three-tier architecture:

1. **Presentation Layer (Frontend):**

    - **Technologies**: HTML, CSS, Bootstrap, PHP, Java Script

- **Purpose**: User interface for customers and admin to interact with the website

- **Features**: Product listing, shopping cart

2. **Logic Layer (Application Layer):**

    - **Technology**: PHP
    - **Purpose**: Processes user inputs, handles business logic (e.g., cart updates, login authentication)
    - **Role**: Connects frontend inputs with backend data and All Websites Developed

3. **Data Layer (Backend/Database):**

    - **Technology**: MySQLi (MySQL database)

    - **Purpose**: Stores and retrieves data such as product details, user information, orders, and inventory

    - **Management**: phpMyAdmin used for administration and testing

1.8 System Diagram

User → [Frontend (PHP)] → [Backend (MySqli)] → Response