EAST WEST UNIVERSITY

Online Food Ordering System

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Submitted By:

Name	ID
Tanjela Rahman Rosni	2020-1-60-018
Anika Tabassum Tanha	2020-1-60-090
Md. Arham Islam Khan	2020-1-60-116
Md. Golam Muhit	2020-1-60-269
Md. Farhad Billah	2020-2-60-213

Submitted To:

Dr. Mohammad Arifuzzaman

Associate Professor

Department of Computer Science and Engineering

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1. Executive Summary:

In the digital age, online food ordering has become an integral part of modern living, offering convenience and accessibility to customers while driving sales and efficiency for restaurants. Our project, the Online Food Ordering System, capitalizes on this trend by providing a comprehensive platform that caters to the evolving needs of both customers and administrators. The system is designed to offer a seamless experience for customers, allowing them to easily browse, select, and order food items from various categories. With features like advanced search options, personalized recommendations, and convenient checkout processes, our platform aims to meet the diverse preferences of modern consumers. The system offers administrators a centralized dashboard to manage food categories, items, and orders efficiently. Key functionalities include adding new admins, updating food items, tracking orders, and generating revenue reports. With robust security measures and authorization controls, administrators can ensure the integrity and security of the system's data. The Online Food Ordering System offers a compelling solution for customers and administrators, embodying the essence of digital convenience and business efficiency. With its user-friendly interface, comprehensive features, and commitment to customer satisfaction, the system is poised to significantly impact the food industry, driving growth and innovation in the years to come.

2. Introduction:

In today's digital era, we live in a virtual world where nearly everything is accessible via the internet, including ordering our favourite foods. The online food delivery system has become integral to our generation's lifestyle. In the mid-1990s, pioneers like Pizza Hut laid the groundwork for online food delivery, offering customers the convenience of ordering through early websites [1]. Over the past five years, online ordering has seen a significant surge, but its importance became undeniable in 2020 as many restaurants quickly adopted it to stay afloat during the COVID-19 pandemic and meet customer needs [2].

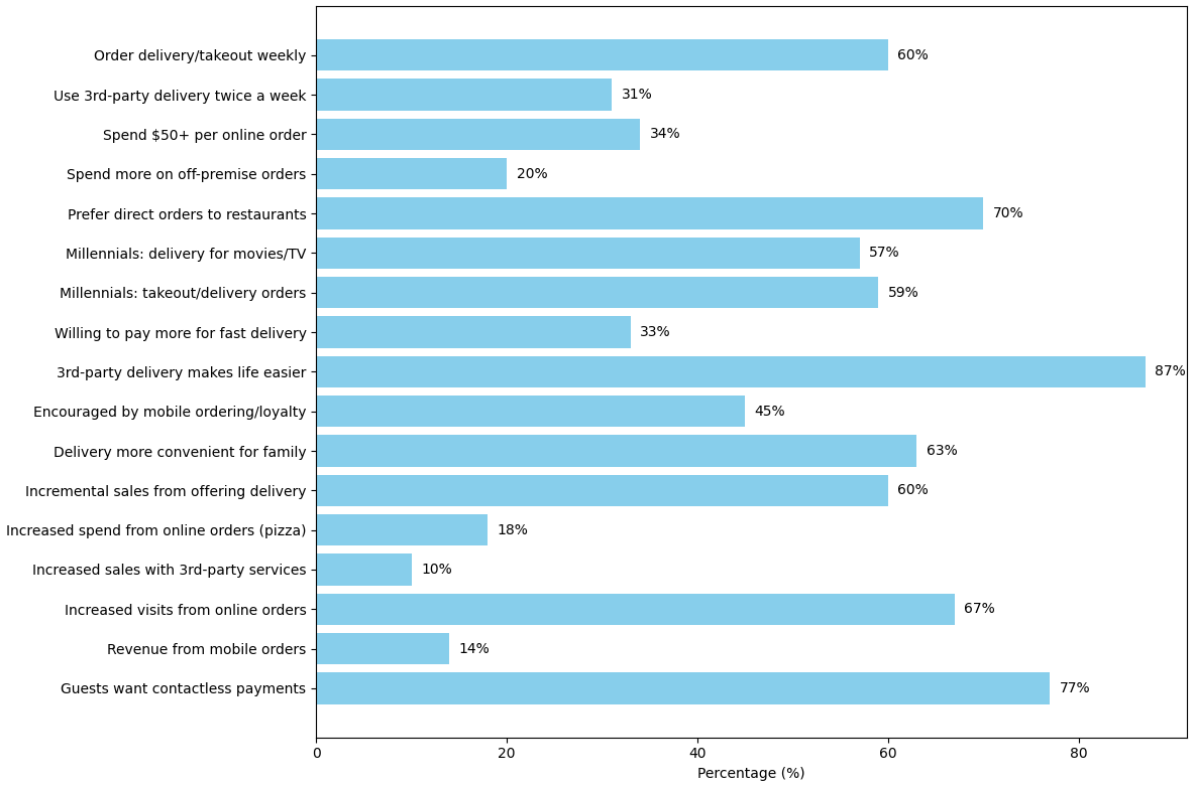

Figure1: Consumer and Restaurant Behaviors in Online Food Ordering [3].

Frequency and Spend: 60% of U.S. consumers order delivery or takeout once a week, with 31% using third-party delivery services at least twice a week. 34% of consumers spend at least $50 per online order, and 20% spend more on off-premise orders than dine-in.

Consumer Preferences: 70% of consumers prefer ordering directly from restaurants to support them financially. A significant portion of orders (57%) is for watching movies or TV, and 59% of total orders are takeout or delivery.

Convenience and Willingness to Pay: 33% of consumers would pay extra for faster delivery, and 87% find third-party delivery services convenient. Additionally, 45% would use online services more with mobile ordering or loyalty programs, and 63% find delivery more convenient than dining out with family.

Impact on Restaurants: Offering delivery increases incremental sales for 60% of operators, with pizza chains seeing an 18% higher spend on online orders. Third-party services boost sales volume by 10-20%, and online orders visit restaurants 67% more frequently. Mobile orders account for 14% of revenue, and 77% of consumers prefer contactless payments post-pandemic.

These trends highlight the significant contribution of online ordering to consumer behaviour and the restaurant industry.

Our website offers a comprehensive online food ordering system that caters to this growing demand. Customers can easily search for and order food items from the homepage, view the types

of food available, and check prices. This convenience meets the modern consumer's expectations for quick and easy access to their favourite foods.
The admin panel is designed to handle the technical aspects of the website. It allows administrators to Add new admins and food items, Remove unnecessary items, and Access a dashboard that displays categories of food (such as types of burgers, pizzas, drinks, and rice), total orders (including current and delivered orders), and revenue generation. All data is securely saved in the website's database, ensuring efficient management and operation.
Our online food ordering system provides a seamless experience for both customers and administrators, reinforcing the importance of digital convenience in the food industry. By facilitating easy access to food ordering and efficient management, our system supports the ongoing trend towards online food delivery, reflecting its essential role in contemporary lifestyle and business sustainability.

3. Related Work:

In this section, we are going to discuss some well-known food ordering system software that are popular among restaurants and food delivery services. These are-

Uber Eats is a global food delivery service that connects restaurants with customers through an intuitive app and website. It offers a range of features including real-time order tracking, customizable restaurant profiles, integrated payment systems, and marketing tools, making it a popular choice for both independent restaurants and large chains. [5]

Grubhub stands out as a leading online and mobile food ordering marketplace in the United States. Known for its user-friendly platform, it facilitates easy menu browsing, order scheduling, and offers both delivery and pick-up options. It also integrates smoothly with POS systems, catering to individual restaurants, chains, and corporate catering services. [5]

DoorDash provides extensive delivery coverage with a platform that is easy to use for both customers and restaurants. Its features include real-time delivery tracking, advanced analytics for restaurants, and seamless payment processing, catering to restaurants of all sizes with both pickup and delivery options. [5]

Zomato started in India and has grown into a global restaurant aggregator and food delivery service. It offers detailed restaurant information, including user reviews and ratings, alongside in-app ordering and payment capabilities. Zomato also includes a table reservation system, making it suitable for restaurants, cafes, and bars. [6]

Postmates offers on-demand delivery services not only from restaurants but also from grocery stores and other local businesses. It features real-time delivery tracking, a wide range of delivery

options, and integration with various types of businesses. The platform also includes in-app promotions and discounts, serving restaurants, grocery stores, and retail businesses.[5]

ChowNow helps restaurants offer online ordering directly through their own websites and apps, focusing on building the restaurant's brand rather than relying on third-party platforms. Its features include branded ordering apps, website integration, marketing tools, and customer relationship management (CRM), making it ideal for independent restaurants and small chains. [5]

Toast POS is a comprehensive point-of-sale system designed specifically for restaurants, incorporating robust online ordering capabilities. It includes features like inventory management, customer management, and in-depth reporting and analytics, catering to restaurants of all sizes. [7]

Square for Restaurants offers a point-of-sale system with integrated online ordering. It provides efficient tools for managing orders, payments, and customer interactions. Features such as table management, payment processing, and advanced reporting make it a versatile choice for restaurants, cafes, and food trucks. [8]

These food ordering systems cater to a wide range of needs, from small independent restaurants to large chains, providing features like real-time tracking, payment processing, customer relationship management, and detailed analytics, enhancing the efficiency and customer experience in the food service industry.

Comparatively new but doing well in the market:

In the rapidly evolving market of food ordering software, several new and noteworthy platforms are gaining popularity in 2024. Among these, BentoBox, Bbot, Olo, and GloriaFood stand out for their innovative features and growing user bases.

BentoBox offers a comprehensive suite of tools for restaurant management, including online ordering, event management, and catering. It integrates with social media for promotional content and provides analytics for tracking online sales and website traffic. Despite its robust feature set, it lacks multi-location support and has a higher setup cost compared to other options. [9]

Bbot is a contactless order and pay solution that enables guests to order from their phones without needing an app. It supports various order types like curbside pickup and delivery and features easy setup and social media integration. However, its basic plan lacks advanced features like a loyalty program and POS integrations.[9]

Olo focuses on streamlining the online ordering process with a mobile app and website integration. It supports popular delivery services and offers tools for customer data analysis and marketing.

While it is user-friendly and effective in increasing sales, it is relatively expensive and lacks features like employee management and mobile alerts. [9]

GloriaFood provides a cloud-based system that allows orders from a restaurant's website, Facebook page, or mobile app. It includes features like online payment processing and order tracking, making it a practical choice for small to mid-sized restaurants. Its user-friendly interface and comprehensive order management features make it a competitive option. [9]

These platforms demonstrate the increasing sophistication and diversity of online ordering systems, catering to various needs and budgets in the restaurant industry.

4. Proposed Work:

Our project aims to develop an Online Food Ordering System that provides customers with a convenient platform to browse, select, and order food items from various categories. The system will also include an administrative backend to manage food categories, items, and orders.

Key Features:

i. User-Friendly Interface: The system will feature an intuitive and easy-to-navigate interface for customers to browse through available food categories and items.
ii. Search and Filtering: Customers can search for specific food items and apply filters based on preferences such as cuisine type and price range.
iii. Order Placement: Customers can easily place orders for selected food items, specify quantity, and provide delivery details such as address and contact information.
iv. Customer Authentication: Customers will be able to create accounts and log in securely to access their order history and save delivery preferences.
v. Admin Dashboard: The system will include an administrative backend with a dashboard for managing food categories, items, and orders. Administrators can add new categories, update existing items, and view order details for processing.
vi. Order Management: Administrators will have tools to efficiently manage customer orders, including order tracking, status updates, and order fulfilment.

Technology Stack:

- Frontend: HTML, CSS
- Backend: PHP
- Database: MySQL

- Web Server: Apache
- Development Environment: XAMPP (Cross-Platform Apache, MySQL, PHP, Perl)

Project Goal:

i. Develop a fully functional Online Food Ordering System that meets the needs of customers and administrators.
ii. Provide a user-friendly interface with intuitive navigation and efficient order placement.
iii. Implement robust security measures to protect user data and ensure secure transactions.
iv. Offer responsive customer support and regular maintenance to ensure smooth system operation.

Overall, our project aims to create a comprehensive and reliable Online Food Ordering System that enhances the dining experience for customers and simplifies operations for restaurant administrators. Through effective collaboration and diligent development efforts, we aspire to deliver a high-quality solution that exceeds expectations and adds value to the food industry.

4.1 Tools used:

1. PHP (Hypertext Preprocessor):

- PHP is a server-side scripting language commonly used for web development.
- It is particularly well-suited for web development due to its ability to interact with databases, handle forms, and generate dynamic content.
- In the context of a food ordering system website, PHP can be used to manage user authentication, process orders, interact with the database to retrieve menu items and pricing, and handle other server-side tasks efficiently.
- In 2024, PHP is the most widely used server-side scripting language, holding a market share of 77.4%. [10]

2. HTML (Hypertext Markup Language):

- HTML is the standard markup language for creating web pages and web applications.
- It provides the structure and content of web pages through a series of elements and tags.
- In a food ordering system website, HTML is essential for defining the layout, structure, and content of the various pages, including the homepage, menu pages, checkout process, and more.

- HTML currently holds a market share of 52.97%. [11]

3. CSS (Cascading Style Sheets):

- CSS is used for styling the HTML elements defined in a web page.
- It allows developers to control web page layout, appearance, and presentation.
- For a food ordering system website, CSS plays a crucial role in creating an attractive and user-friendly interface, including styling menus, buttons, forms, and other elements to enhance the user experience.
- The market share of CSS is 52.97%. [11]

4. MySQL (My Structured Query Language):

- MySQL is a widely used relational database management system (RDBMS) known for its reliability, scalability, and performance.
- It provides a robust platform for storing and retrieving data efficiently, making it an ideal choice for powering web applications like the food ordering system website.
- MySQL offers compatibility with popular programming languages and frameworks, allowing seamless integration into the development environment.
- With its open-source nature, MySQL offers cost-effectiveness and extensive community support, making it a preferred database solution for businesses of all sizes.
- Its scalability features enable the food ordering system to handle a growing number of users, orders, and data without compromising performance.
- MySQL currently holds a market share of 40.91% in the relational databases market.[12]

5. Xampp (Apache, MySQL, PHP, Perl):

- XAMPP, a cross-platform web server solution package developed by Apache Friends, offers a free and open-source solution for developers. By leveraging PHP, Perl, MySQL, and Apache HTTP Server, XAMPP enables the creation of a local web server environment tailored for testing and development purposes.
- XAMPP simplifies the process of setting up a development environment for PHP-based online applications like the food ordering system website. It achieves this by bundling all necessary components, including the web server, database server, and scripting language, into a single package. This makes installation and setup straightforward across various operating systems.

By using PHP, HTML, CSS, and MySQL together, we can create a robust, dynamic, and visually appealing food ordering system website with server-side processing capabilities, an intuitive user interface, and a reliable development environment for testing and debugging. That is the reason we have chosen these languages and tools.

4.2 Description

The online food order system facilitates menu browsing, ordering and cash on delivery for customers, menu and order management for restaurant owners, and user management and platform oversight for administrators, all supported by a robust frontend, backend, and database architecture, ensuring security, performance, and scalability, with regular updates and maintenance to enhance the user experience.

In the provided database schema:

i. tbl_category and tbl_food:
   - tbl_food's category_id column references tbl_category's id column, establishing a relationship where each food item belongs to a category.

ii. tbl_users and tbl_order:
   - Information about customers is stored in tbl_users.
   - tbl_order includes columns for customer details, connecting orders to specific users.

These connections ensure data organization and facilitate operations like categorizing food items and tracking customer orders.

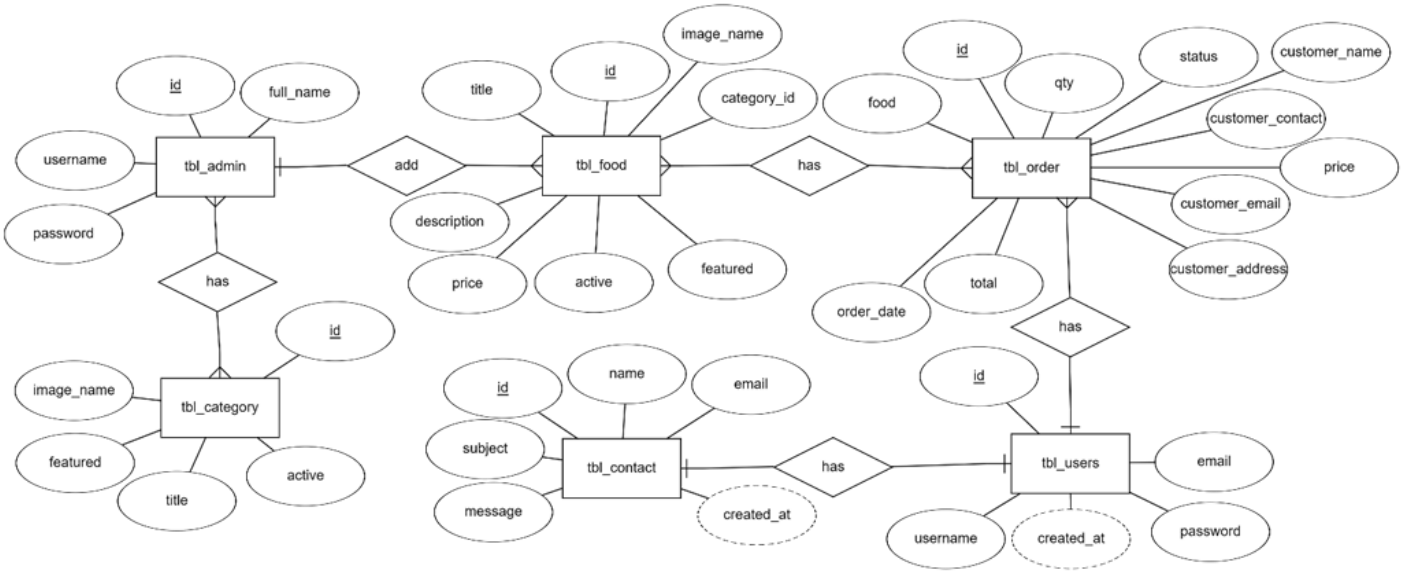

Figure2: ER Diagram of the Online Food Ordering System.

Let's break down each feature of the Online Food Ordering System:

Order Feature:

The Order feature allows customers to place orders for their desired food items. Here's how it works:

i. Selecting Food Items: Customers can browse through the available food items displayed on the website and select the ones they want to order.

ii. Quantity Selection: Customers can specify the quantity of each food item they wish to order.

iii. 3. Checkout Process: Once customers have finalized their selections, they proceed to the checkout form, where they provide their contact details, delivery address, and any additional instructions.

iv. Placing the Order: Customers submit their orders after confirming the order details. The system then records the order in the database and generates an order confirmation for the customer.

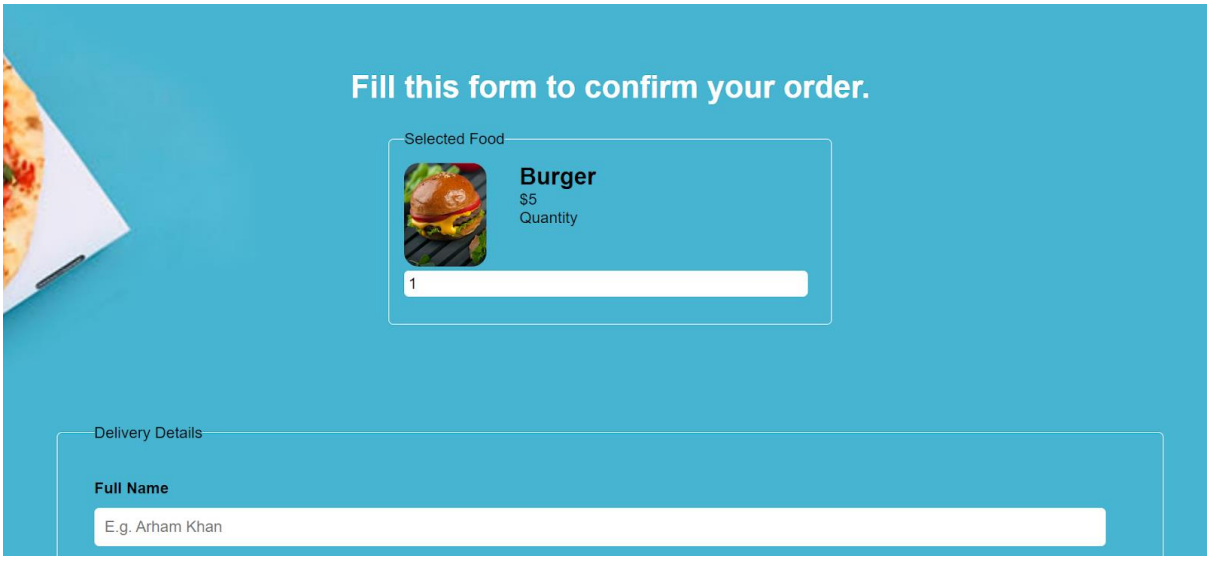

Figure3: Food Order Page.

Dashboard:

The Dashboard provides administrators with a comprehensive overview of the system's performance and key metrics. It includes the following sections:

i. Categories: Displays the total number of food categories available in the system.

ii. Total Food: Shows the total number of food items listed in the database.

iii. Foods: Provides a summary of the featured and active food items.

iv. Revenue Generated: Calculates and displays the total revenue generated from food orders.

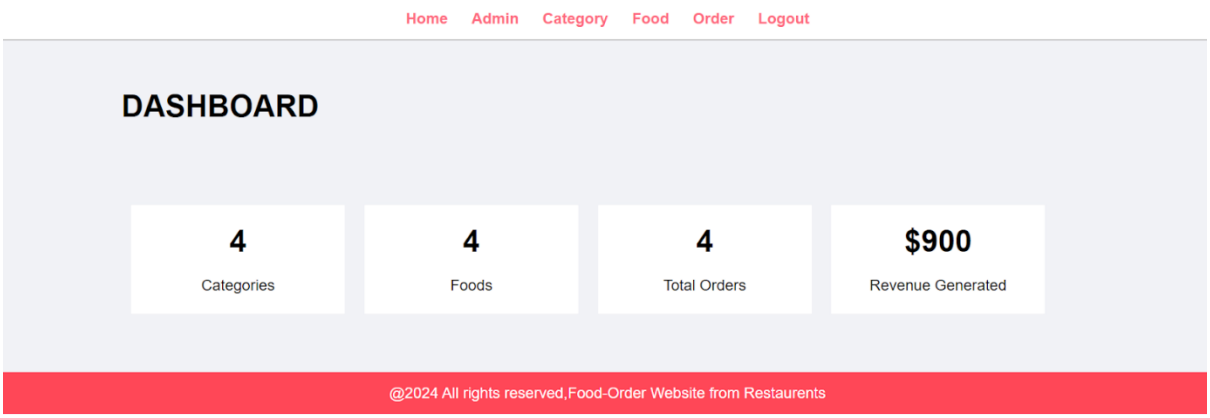

Figure4: Dashboard of Online Food Ordering System.

Manage Admin:

The Manage Admin section allows administrators to perform various actions related to user management. It includes functionalities such as:

i. Update Admin: This feature enables administrators to update existing admin accounts with new information such as username, email, and role.
ii. Delete Admin: Allows administrators to delete existing admin accounts from the system.
iii. Change Password: Provides administrators with the option to change their login passwords for security purposes.

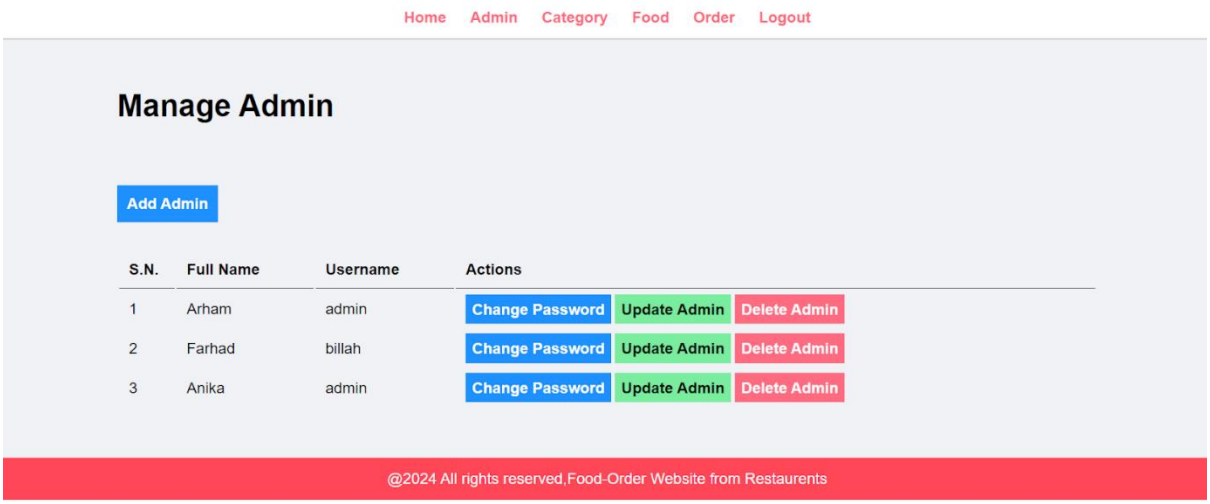

Figure5: Manage Admin.

Manage Category:

The Manage Category section allows administrators to control and organize food categories. It includes the following functionalities:

i. Update Category: Administrators can modify existing categories' names, descriptions, or images.

ii. Delete Category: Allows administrators to remove no longer needed categories.

iii. Featured: Administrators can mark categories as featured to highlight them on the front end.

iv. Active: Enables administrators to activate or deactivate categories based on their availability.

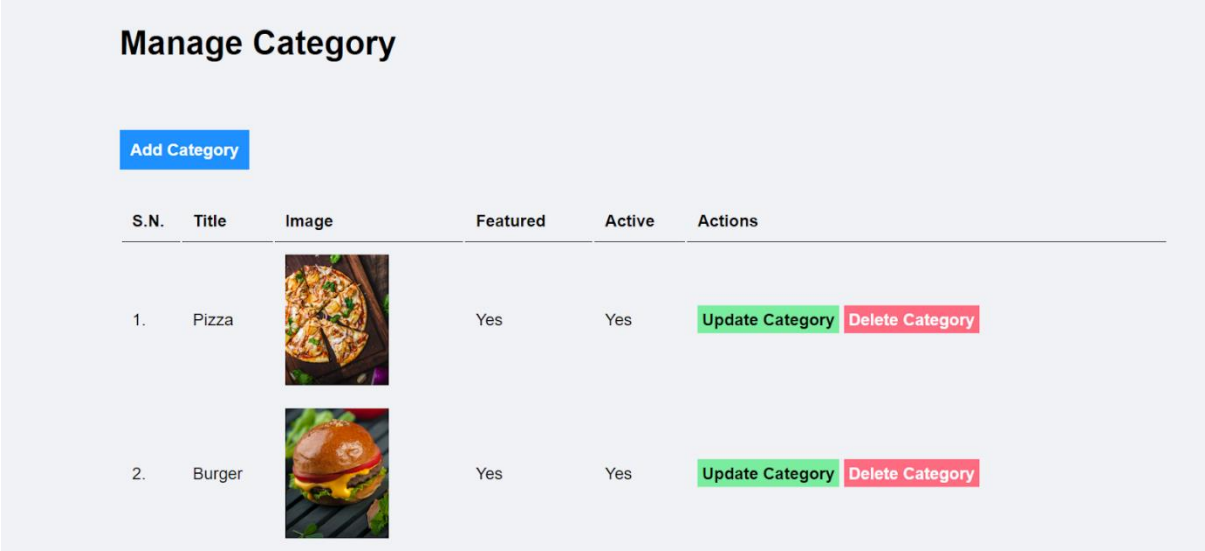

Figure6: Manage Category.

Manage Food:

The Manage Food section enables administrators to oversee and manage food items within the system. It offers the following features:

i. Featured: Administrators can designate specific food items as featured to promote them on the website.

ii. Active: Allows administrators to activate or deactivate food items based on their availability.

iii. Actions: Provides options to update food item details (such as title, description, price, and image) or delete food items from the database.

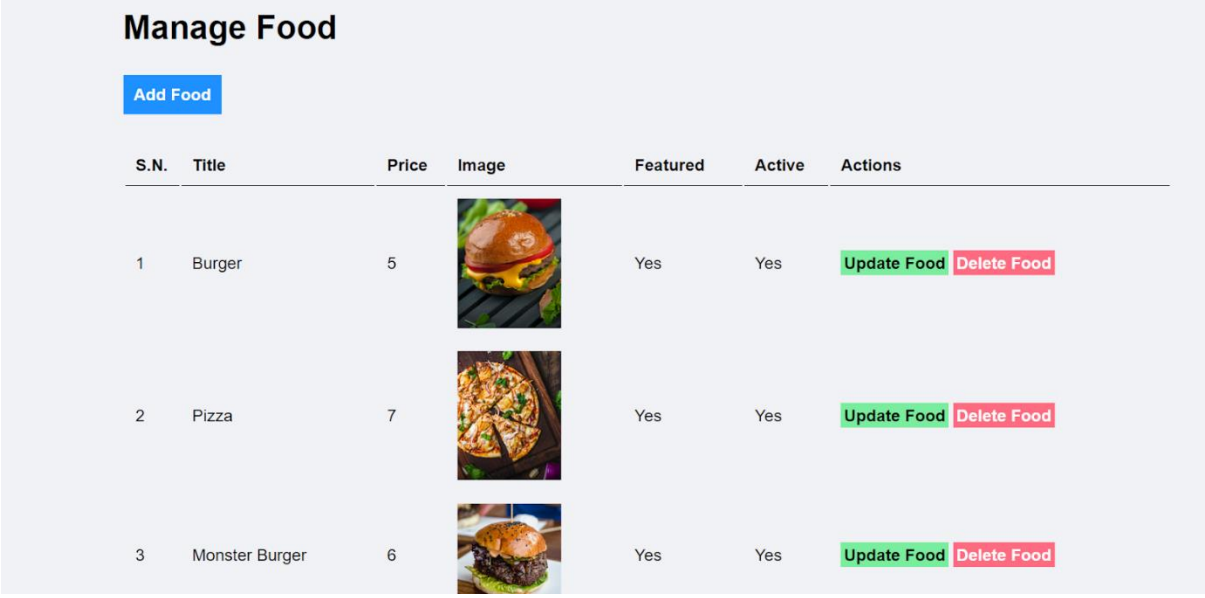

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Figure7: Manage Food.

Manage Order:

The Order Food section presents a detailed overview of customer orders. It includes the following information for each order:

i. Food: Lists the food items ordered by the customer.

ii. Price: Displays the price of each food item.

iii. Qty.: Indicates the quantity of each food item ordered.

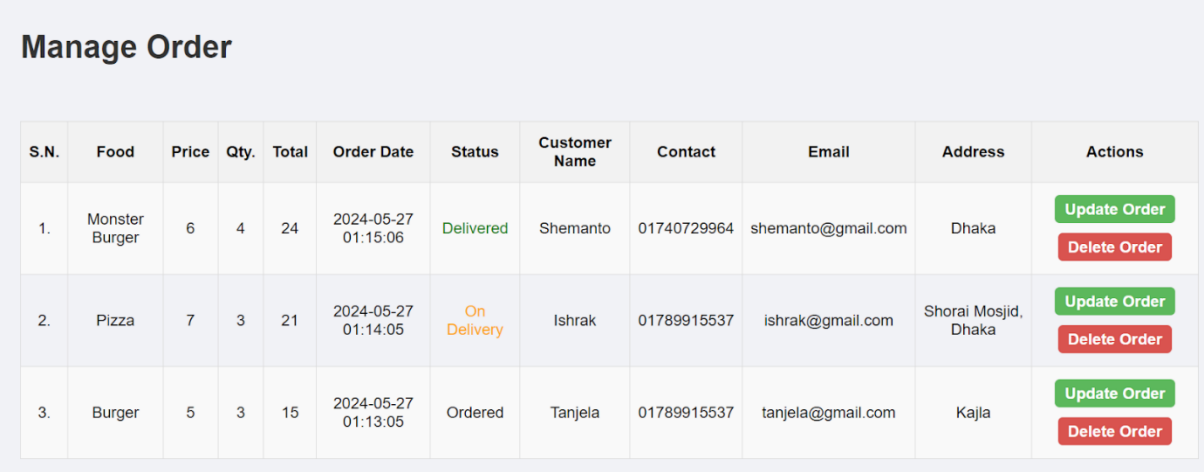
iv. Total: Calculates the total cost of the order.

v. Order Date: Specifies the date and time when the order was placed.

vi. Status: Shows the current status of the order (e.g., pending, processing, delivered).

vii. Customer Name, Contact, Email, Address: Provides the customer's contact information and delivery address.

viii. Actions: Offers options to manage orders, such as updating the status or deleting the order.



Manage Order

S.N.	Food	Price	Qty.	Total	Order Date	Status	Customer Name	Contact	Email	Address	Actions
1.	Monster Burger	6	4	24	2024-05-27 01:15:06	Delivered	Shemanto	01740729964	shemanto@gmail.com	Dhaka	Update Order Delete Order
2.	Pizza	7	3	21	2024-05-27 01:14:05	On Delivery	Ishrak	01789915537	ishrak@gmail.com	Shorai Mosjid, Dhaka	Update Order Delete Order
3.	Burger	5	3	15	2024-05-27 01:13:05	Ordered	Tanjela	01789915537	tanjela@gmail.com	Kajla	Update Order Delete Order

Figure8: Manage Order.

These features collectively contribute to the efficient operation and management of the Online Food Ordering System, catering to both customer needs and administrative tasks.

5. New idea:

Our Food Ordering System is a streamlined platform for online food ordering, offering user-friendly features for both customers and administrators. Customers can browse a wide variety of food items and enjoy personalized recommendations. Administrators can access a comprehensive dashboard, enabling efficient management of categories, food items, and orders. With advanced search options and seamless delivery integration, our system ensures a delightful experience for users and facilitates business growth. In our online food-ordering system project, several new ideas and improvements have been implemented to enhance functionality, security, and user experience. Here are some of the notable enhancements:

1. Secure User Authentication:

- Passwords for both `tbl_admin` and `tbl_users` are stored securely using hashing algorithms (like `md5` or `password_hash()` for stronger security).

- Example: Implementing secure login and signup processes with hashed passwords.

2. Session Management and Access Control:

- Admin and user sessions are managed to ensure that only authenticated users can access specific pages.

- Example: Using session variables to track logged-in users and restricting access to admin pages.

3. Dynamic Content Management:

- The use of SQL queries to dynamically fetch and display content such as categories, food items, and orders.

- Example: Displaying active and featured categories and foods on the front-end based on their status in the database.

4. User-friendly Interfaces and Navigation:

- Clean and responsive user interface with consistent navigation elements.

- Example: Different menus for logged-in users and guests, ensuring a smooth user experience.

5. Error Handling and User Feedback:

- Improved error handling by providing clear and user-friendly error messages.

- Example: Storing error messages in session variables and displaying them to users on relevant pages.

6. Order Management System:

- Complete order management system allowing users to place orders and admins to manage these orders.

- Example: `tbl_order` table tracks order details, statuses, and customer information.

7. Category and Food Management:

- Admin functionality to add, update, and delete categories and food items.

- Example: Admin pages such as `add-category.php`, `update-category.php`, `delete-category.php` for managing categories.

8. Contact Form:

- A contact form allowing users to send messages, which are stored in `tbl_contact`.

- Example: Implementing a contact page where users can submit queries and feedback.

9. Data Sanitization and Security:

- Sanitizing user inputs to prevent SQL injection attacks and other security threats.

- Example: Using `mysqli_real_escape_string()` to sanitize inputs in SQL queries.

10. Code Modularity and Reusability:

- Using includes for reusable components like header, footer, and menu to keep the codebase modular and maintainable.

- Example: Including `partials-front/menu.php` and `partials-front/footer.php` in multiple front-end pages.

11. Responsive Design:

- Ensuring that the website is responsive and works well on different devices, enhancing user experience.

- Example: CSS styles in `style.css` to handle different screen sizes.

12. Order Tracking and Management:

- Allowing users to track their orders and admins to manage the order lifecycle.

- Example: `tbl_order` includes fields like `status` and `order_date` to manage and track orders.

13. Enhanced Admin Dashboard:

- An admin dashboard providing a summary and management tools for categories, foods, and orders.

- Example: `admin/index.php` displaying a summary of the latest activities and quick links to management pages.

These enhancements contribute to a more secure, user-friendly, and manageable food-ordering system, ensuring a better experience for both the users and the administrators.

6. Advantages (Selling point):

The selling points of our Food Ordering System project include:

i. User-Friendly Interface: Our platform offers an intuitive and easy-to-use interface for customers and administrators, ensuring a seamless user experience.

ii. Comprehensive Features: From advanced search and filtering options to personalized recommendations, our system encompasses a wide range of features to meet diverse user needs.

iii. Efficient Management: Administrators can efficiently manage categories, food items, and orders through a centralized dashboard, enabling streamlined operations and enhanced productivity.

iv. Scalability and Customization: Built on robust technologies and modular architecture, our system is highly scalable and customizable, allowing for future expansions and tailored solutions to meet specific business requirements.

v. Customer Satisfaction: We prioritize user feedback, offer timely support, and ensure prompt delivery to exceed customer expectations and deliver a delightful dining experience.

vi. Robust Security Measures: Our platform incorporates robust security measures to safeguard user data, transactions, and sensitive information. We utilize encryption protocols, secure authentication methods, and regular security audits to ensure data integrity and protect against cyber threats.

vii. Authorization Controls: Administrators have granular control over user access levels and permissions, ensuring that sensitive actions and data are restricted to authorized personnel only. This helps prevent unauthorized access and mitigate the risk of data breaches.

In summary, our Food Ordering System stands out for its user-friendly interface, comprehensive features, efficient management capabilities, and commitment to customer satisfaction, making it an ideal choice for businesses looking to enhance their online food ordering services.

7. Business Model:

i. **Programmer Costs (Onetime costs)**:

- **Web Developers**:
  - We have three web developers, each receiving a monthly salary of 25,000 tk.
  - Total cost for web developers per month = (3 ×25,000) tk.

    = 75,000 tk.

- **Backend Programmers**:

- We have two backend programmers, each receiving a monthly salary of 30,000 tk.
- Total cost for backend programmers per month = (2 ×30,000) tk.

  = 60,000 tk.
- Total Programmer Cost per Month = (75,000 + 60,000) tk.

  =135,000 tk.
- Considering the five-month project duration, the total programmer cost

  = (135,000 × 5) tk.

  = 675,000 tk.

ii. **Continued Costs:**

- We have hired two developers for maintenance, each receiving a monthly salary of 20,000 tk.
- Total Maintenance Programmer Cost for seven months for 1st year = 280,000 tk.

iii. **Cloud Costs**:

- We will choose Amazon RDS for our cloud database needs due to its scalability, flexibility, and cost-effectiveness.
- It supports various database formats, including MySQL, SQL Server, MariaDB, and Amazon Aurora. With RDS, we will pay for our needs, making it cost-effective.
- Amazon RDS pricing varies based on the database format, storage, and other features. It starts at around $47 per month [4].

➢ **Calculate the monthly cost for Amazon RDS:**

- Assuming an average monthly cost of Amazon RDS of $47.
- The monthly cost for Amazon RDS = 5507 tk.
- For the 12-month project duration, the total cloud cost = (5507× 12) tk.

  = 66,084 tk.

iv. **Payback Period Calculation**:

The payback period represents the time it takes to recover the initial investment through net cash flows. In our case, we have the following costs:

- Total programmer cost for the 5-month project duration = 675,000 tk.
- Total maintenance programmer cost seven months for 1st year = 280,000 tk.
- Total cloud cost for 12 - month = 66,084 tk.
- Total investment in 1st year = (675,000 + 280,000 + 66,084) tk.
  = 1,021,084 tk.

To calculate the payback period, we must determine the monthly net cash. Let's assume that our website generates revenue after the project is completed. Let's assume by running our website, we get a monthly revenue of 100,000 tk. If we successfully run our website for 12 months, we will accumulate a total revenue of 1,200,000 tk. Even after covering our total costs, this revenue remains profitable. Therefore, we can confidently state that our payback period is 12 months.

8. Conclusion of Future work:

Our online food ordering system provides a seamless experience for both customers and administrators, reinforcing the importance of digital convenience in the food industry. By facilitating easy access to food ordering and efficient management, our system supports the ongoing trend towards online food delivery, reflecting its essential role in contemporary lifestyle and business sustainability.

The website can contribute to reducing traffic congestion by minimizing the need for customers to drive to restaurants. The system creates job opportunities in delivery services and website management. It is highly profitable for restaurant owners, increasing sales and customer reach. If the government decides to add VAT on online deliveries, it could become a good source of income, especially since 33% [3] of consumers are willing to pay extra for faster delivery.

Currently, the payment system is limited to cash on delivery. However, in the future, we plan to add an online payment system to allow customers to pay easily and securely online. By addressing these limitations and continually improving our platform, our online food ordering system will

continue to adapt to consumer needs and industry trends, ensuring it remains a valuable tool for both users and restaurant owners.

9. Reference:

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