**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**



**“JNANA SANGAMA”, BELAGAVI- 590018, KARNATAKA, INDIA**



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**A**

**Mini Report on**

**“BILLING SYSTEM“ [BIS586]**

Submitted in partial fulfillment of the requirements for the award of degree of

### BACHELOR OF ENGINEERING

**In**

**INFORMATION SCIENCE AND ENGINEERING**

#### 

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**CERTIFICATE**

This is to certify that mini project work (BIS586) entitled **“BILLING SYSTEM”** carried out by **Namitha S N,** (1AT22IS067)**, Yashaswini K S(**1AT22IS125)is bonafide student of **ATRIA INSTITUTE OF TECHNOLOGY**, Bengaluru, in partial fulfillment for the award of Degree of **Bachelor of Engineering** in **Information Science & Engineering** of **Visvesvaraya Technological University, Belagavi,** during the academic year **2024-2025**. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The mini project report has been approved as it satisfies the academic requirements with respect to project report as prescribed for the said degree.

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**DECLARATION**

We, **Namitha S N** **(1AT22IS067) , Yashaswini K S (1AT22IS125)** students of 5th semester **Bachelor of Engineering, Department of Information Science and Engineering, Atria Institute of Technology, Bengaluru**  would hereby declare that mini project (BIS586) entitled **“Billing System”**  has been carried out by us at **Atria Institute of Technology, Bengaluru,** and submitted in partial fulfilment of the course requirement for the award of degree of **Bachelor of Engineering in Information Science and Engineering** of **Visvesvaraya Technological University, Belagavi,** during the academic year **2024-25.**

We further declare that, to the best of our knowledge and belief, the work embodied in this report has not been submitted to any other university or institution for the award of any other degree.

Place: Bengaluru Signature of the students

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We are grateful to our institution, **Atria Institute of Technology**, for having provided us with the facilities to successfully complete the Mini project (BIS586) on “Billing System”**.** We thank **Dr. Rajesha S , Principal** and **Dr. Deepak N R, HOD, ISE** for providing us all the necessary facilities for the successful completion of our mini-project. Deadlines play a very important role in the successful completion of the academic project on time, efficiently and effectively. We take this opportunity to express our deep sense of gratitude to our guide and coordinators **Mr Omprakash B, Assistant Professor, Department of ISE and Mrs Shruthi B , Assistant Professor, Department of ISE** for their valuable guidance and help throughout the course of the academic mini-project. They have always been patient with us and helped immensely in completing the task on hand. We also thank them for their immense support, guidance, specifications & ideas without which seminar would have been completed without full merit. Last but not least from the Department of Information Science and Engineering, teaching and non-teaching staffs for their constant encouragement, support, patience, and endurance shown during the preparation of this report were remarkable. We also thank the management. Finally, we thank our parents and friends for their motivation, morale and material support.

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# ABSTRACT

# The purpose of this project is to enhance the efficiency of the billing by designing a Billing System which standardizes, streamlines and automates all aspects of the transactions, inventory, and customer billing. It has a PHP based back end that deals with the relevant portions of the system like the business logic, user login and password protection, and lip generating requirements. To further emphasize the need for data integrity and the ability to query data faster, essential data such as clients, products, transactions, and users are stored in a MySQL database.

# The front end interface, likely using HTML, CSS and JavaScript or a JavaScript framework such as React or Angular allow users to create and print out bills and reports as well as to control their stock accounts in an easy-to-use and flexible manner. The idea behind this system is to improve productivity, reduce billing error stemming from manual preparation of the billing documents, and ensure that correct information is kept on records. It targets retailing and service business and provides for future growth through payment gateway, better analytics, and mobile application.

# This all-in-one solution helps achieve the goals of any current company by combining the straightforwardness and the operational capabilities.

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# INTRODUCTION

# 1.1 Overview

# The Biling System is one of the best solutions which aids business enterprises to make billing processes easier and automatic. This web-based system implements a PHP based backend server that can manage users and their security, orders and invoices, and a MySQL Database which gives security services such as customer information, product information, and transaction information. The application has the capability to generate bills and fetch reports via its front end which is coded in HTML, CSS and JavaScript. This application system is built with better efficiency, larger operational work, and lower amount of repetitive work so that organizations are able to keep accurate records.

# **1.2 Technologies used**

**1.Backend**:

* PHP: For handling core business logic and server-side processing.

**2.Database**:

* MySQL: For storing and managing data like customer records, product inventories, and transaction history.

**3.Frontend**:

* HTML: For structuring the user interface.
* CSS: For styling and creating a visually appealing design.
* JavaScript: For dynamic behavior and interaction on the frontend.

**4. Development Environment**:

* XAMPP

# OBJECTIVE

# The main objective of the Billing System is to eliminate roughly all the top three primary reasons for difficulty in managing and controlling day to day operations. Billing, Inventory and Transaction Tracking does not only affect the profit of most companies but also leads to wastage of a lot of time and effort. This includes putting in data into system as well as monitoring activities through a php based system, using a secured mysql database, and navigating through basic front end interfaces.

# Such core functionalities dealing with the dissemination of bills to the customer or generating invoices along with updating stored inventory or customer information are part of the highly integrated billing system which minimises wastages and maximises accuracy. Such An integrated system allows the users to process transactions and create invoices while making updates on the inventory all in all the one billing system.

# SYSTEM ARCHITECTURE

The architecture of the Billing System follows a **three-tier structure** comprising the **Frontend, Backend, and Database**, ensuring modularity, scalability, and ease of maintenance.

#### **1. Frontend Layer**

* **Purpose**: Provides an interface for user interaction.
* **Technologies**: HTML, CSS, JavaScript, and optional frameworks like React or Angular.
* **Features**:
  + User-friendly interface for creating bills, managing inventory, and generating reports.
  + Input validation and data submission to the backend via HTTP requests.
  + Responsive design for seamless usage on different devices.

#### **2. Backend Layer**

* **Purpose**: Handles business logic and communication between the frontend and the database.
* **Technologies**: PHP (Core scripting language), REST APIs (if applicable).
* **Features**:
  + Processes user requests such as creating invoices, updating inventory, and managing customer details.
  + Implements user authentication and authorization.
  + Serves data to the frontend using APIs or server-side rendering.
  + Error handling and input validation to ensure system reliability.

#### **3. Database Layer**

* **Purpose**: Stores and manages all system data.
* **Technologies**: MySQL relational database.
* **Features**:
  + Stores data such as customer details, product inventory, pricing, transaction history, and user accounts.
  + Uses relational structures with foreign keys for efficient data organization and integrity.
  + Enables data querying and report generation through optimized SQL queries.

#### **4. Web Server Layer**

* **Purpose**: Hosts the backend and serves requests from the frontend.
* **Technologies**: Apache
* **Features**:
  + Manages incoming HTTP requests and routes them to the backend.
  + Ensures secure and efficient delivery of system resources.

#### **Data Flow**

1. Users interact with the **frontend** to perform tasks (e.g., create a bill).
2. The **frontend** sends the user’s input to the **backend** via HTTP requests or API calls.
3. The **backend** processes the input, interacts with the **database** to store or retrieve data, and sends the response back to the **frontend**.
4. The **frontend** displays the result (e.g., a generated invoice or updated inventory) to the user.

# 

# **3.1 Architecture Diagram**

# FEATURES

#### **1. User Management**

* Secure authentication system for login and role-based access.
* Roles such as admin, cashier, or manager with specific permissions.

#### **2. Billing and Invoice Generation**

* Quick and accurate bill creation for products or services.
* Automatic calculation of totals, taxes, and discounts.
* Option to print or email invoices.

#### **3. Inventory Management**

* Real-time updates to product inventory after transactions.
* Alerts for low stock or out-of-stock items.
* Easy addition, removal, or modification of product details.

#### **4. Customer Management**

* Storing and managing customer details.
* Tracking customer purchase history.
* Generating loyalty programs or discounts for repeat customers.

#### **5. Reporting and Analytics**

* Detailed sales reports with customizable date ranges.
* Graphical representation of sales trends and inventory data.
* Export reports in formats like PDF or Excel for external use.

#### **6. Payment Management**

* Recording multiple payment modes (cash, card, online).
* Option for partial or installment-based payments.
* Integration with third-party payment gateways (optional).

#### **7. User-Friendly Interface**

* Intuitive design for quick learning and ease of use.
* Responsive layout compatible with desktops, tablets, and smartphones.

#### **8. Search and Filtering**

* Fast search functionality for products, customers, or transactions.
* Advanced filters for viewing specific categories or sales records.

#### **9. Backup and Data Security**

* Automatic or manual database backup options.
* Encrypted storage of sensitive data to prevent unauthorized access.

#### **10. Scalability and Customization**

* Scalable architecture to add new features as business needs grow.
* Flexible design for integrating analytics tools, additional modules, or APIs.

**11**.**Tracking Due payment**

* By collecting their details and storing it in system.

# IMPLEMENTATION

### **5.1 Prerequisites**

1. **Web Server**: Apache
2. **PHP**: Version 7.4 or higher
3. **Database**: MySQL
4. **Frontend Technologies**: HTML, CSS, JavaScript
5. **Development Environment**: XAMPP

#### **5.2 Setting Up the Development Environment**

**1.Install XAMPP**:

* + Download and install XAMPP to set up Apache, MySQL, and PHP on your local machine.
  + XAMPP download

**Start Apache and MySQL**:

* Open the control panel of your environment XAMPP and start Apache and MySQL services.

#### **2. Setting Up the Database**

* **Create a Database**:
  + Open phpMyAdmin by navigating to <http://localhost/phpmyadmin> in your browser.
  + Create a new database called billing\_system.
* **Create Tables**:
  + Use SQL queries or phpMyAdmin's interface to create the necessary tables for customers, products, transactions, and users.

#### **3. Backend (PHP) Development**

* **Set Up Project Structure**:
  + Create a folder for your project inside the htdocs directory (XAMPP) .

#### **4. Frontend Development**

* **Create HTML Pages**:
  + Design user interfaces for managing customers, products, transactions, and invoices.
* **CSS/JS**:
* Use CSS for styling the pages and JavaScript for dynamic functionality (e.g., calculating totals, applying discounts).

# WORKFLOW

**1.Customer Management**

* Admin or manager can add new customers or modify existing customer information.
* The system checks for **duplicate customer IDs** when adding a new customer to avoid redundancy.
* Customers' transaction history, dues, and receipts are linked to their profiles.

**2.Item Management**

* Admin or manager adds new products/items to the system, including pricing, stock, and descriptions.
* The inventory is updated automatically when an item is sold.

**3.Customer Item Purchase**

* The cashier selects a customer and records the items being purchased.
* The customer can either pay the full amount or opt for **installment payments** (in case of dues).
* The system calculates the total cost, including taxes, discounts, and any applicable dues.

**4.Receipt Generation**

* A detailed receipt is generated for each purchase, showing items, prices, taxes, discounts, and the total amount.
* The receipt can be printed or sent to the customer via email.

**5.Dues Management**

* If a customer has outstanding dues, the system keeps track of them.
* **Dues reminders** are triggered for overdue payments and can be sent via email or SMS.
* Admins and managers can view customers' dues and payment history at any time.

**6.Calculator Functionality**

* A built-in **calculator** feature is available for the cashier to calculate totals, discounts, or taxes manually before confirming the purchase.
* This tool helps in providing quick checks and balances during transactions.

**7.Inventory and Sales Reports**

* **Purchase Reports**: Admins and managers can view detailed reports of item purchases, showing quantity, price, total sales, and date.
* **Item Sold Reports**: Detailed reports on which items are being sold, including quantities, prices, and total sales.
* Reports can be filtered by date, product, or customer and can be exported to PDF or Excel.

**8.Repair and Maintenance Records**

* The system allows users to log items for repair (if applicable).
* A separate section tracks repair requests, status, and completion details, providing visibility into product maintenance.

**9.Backup and Data Security**

* **Backup Data**: The system allows regular backups of transaction data, customer profiles, inventory, and payment records.
* Backups can be scheduled automatically or triggered manually by the admin.
* Data is securely stored, with encryption for sensitive customer information.

**10.Handling Duplicate Customer IDs**

* Before adding a new customer, the system checks for duplicate customer IDs or contact information (e.g., email, phone number) to avoid errors in the database.
* Alerts are displayed if a duplicate entry is found, prompting the user to update existing records instead.

**11.Final Invoice and Payment Completion**

* After the transaction is complete, a final invoice is generated with all item details, taxes, and total costs.
* A receipt is provided to the customer, and the inventory and payment records are updated accordingly.

**12.Notifications and Alerts**

* Customers with overdue dues receive **automated reminders** via email/SMS, notifying them of pending payments.
* Admins and managers are alerted to low stock items and potential issues with payments.

# 

# CODE SNIPPET

# Frontend code

# <form action="generate\_invoice.php" method="POST">

# <label for="customer\_id">Customer:</label>

# <input type="text" name="customer\_id" required><br>

# 

# <label for="product\_id">Product:</label>

# <input type="text" name="product\_id" required><br>

# 

# <label for="quantity">Quantity:</label>

# <input type="number" name="quantity" required><br>

# 

# <button type="submit" name="generate\_invoice">Generate Invoice</button>

# </form>

# Backend code

# <?php include('includes/db\_connect.php');

# if (isset($\_POST['generate\_invoice'])) {

# $customer\_id = $\_POST['customer\_id'];

# $product\_id = $\_POST['product\_id'];

# $quantity = $\_POST['quantity']; // Insert invoice details into database

# $query = "INSERT INTO transactions (customer\_id, product\_id, quantity) VALUES ('$customer\_id', '$product\_id', '$quantity')";

# if ($conn->query($query) === TRUE) { echo "Invoice generated successfully"; } else { echo "Error: " . $conn->error; } }

# ?>

# Database

# CREATE TABLE customers (

# id INT AUTO\_INCREMENT PRIMARY KEY,

# name VARCHAR(255) NOT NULL,

# email VARCHAR(255) NOT NULL UNIQUE,

# phone VARCHAR(15)

# );

# RESULTS AND SCREENSHOTS

# 8.1 Results

* Automated processes such as billing, inventory update, and reports generation minimizes human error thereby speeding up the entire cycle making it more effective.
* Automation of business processes, real-time systems integration, and modification lessen the likelihood of making operational errors concerning the data.Thanks to such tools as tracking dues and automatic reminders, the finances are smoothly forwarded through the customers which in return raises their level of satisfaction.
* Business and customer sensitive information are kept save through backups and encryption facilities.There are various types of reports that are detaile and customizable, which allow an employee to have an initiative in making management and financial plans of the company easier for him to make decisions.
* The system is flexible more which means that it can expand along with the business by introducing new options as the business requires them.
* The system automatically creates accurate receipts showing the amount that has been spent and the taxes that are applicable, increasing trust and confidence of customers in the system.
* Reports are labor intensive may be due to the extensive processes involved, therefore, the inbuilt calculator may ease the workload by enabling easy and straightforward in between calculations’ interruptions for transactions to go on.

**8.2 Screenshots**

# 

# 

# 

# 

# FUTURE SCOPE

# The system is built in such a way that it is able to grow with the business needs, and along with enabling the growing needs it provides a great freedom to integrate advanced payment integration alongside analytics dashboards.

# The billing system primarily focuses on being reliable and easy to use meaning it can be modified and adapted, this helps companies reduce their workflow time thereby increasing overall productivity while keeping every operational record precise to help with decision making alongside strategic development and growth of every business and its processes.

# However, everything is digital and with the rapid evolution of technology and change in business requirements it is safe to say that the advancement of billing systems seems to be endless. Some of the key trends that could shape the future of billing systems.

# CONCLUSION

# In summary, the billing system satisfies all the requirements which in turn optimizes the functioning of the business, improves customer relations and trust as well as the accuracy and protection of the data. Thanks to the automation of activities such as issuing invoices, working with stock of products, accounts, billing, and dues management, the system minimizes the risk of human mistakes and the inefficiency of operations.

# Business reports and mass customization analytics provide great business opportunities and in combination with accurate receipts and reminders about repayment of dues makes it easier for the customer to satisfy their needs regardless of the location of the company. This system has secure data storage, back up and decryption as well as interconnectivity to allow growth of the business making it both a cost effective and reliable solution to existing and future needs of the business.

# This system improves customer satisfaction and introduces loyalty. Additionally, the system allows for the generation of real-time business reports which are essential for business managers and administrators in making well-informed decisions in order to improve performance of the business. Possession of any critical or vital data is never a challenge with the backup and data storage functions of the system which guarantee the safety of any information. Such a solution is today enough to cover the business needs and it is still extensive enough to ensure there is room for growth in the future ensuring the business grows and covers all operational needs.

# REFERENCES

**1.PHP Manual**

* Official PHP documentation for understanding syntax, functions, and features.

[PHP Manual](https://www.php.net/manual/en/)

**2.MySQL Documentation**

* Official MySQL documentation for database setup, queries, and optimization.

[MySQL Documentation](https://dev.mysql.com/doc/)

**3.W3Schools**

* Comprehensive tutorials on HTML, CSS, JavaScript, PHP, and MySQL, helpful for building both frontend and backend.

[W3Schools](https://www.w3schools.com/)

**4.Stack Overflow**

* A popular platform for developers to ask and answer questions. Ideal for troubleshooting specific coding issues.

[Stack Overflow](https://stackoverflow.com/)

**5**.**Building a Billing System with PHP and MySQL" - Tutorial**

* A step-by-step guide on creating a basic billing system using PHP and MySQL. It covers order creation, invoice generation, and customer management.
* Tutorial Link: <https://www.tutorialspoint.com/php/php_mysql_create_billing_system.html>