EBill (Bill Generator)

.NET TECHNOLOGY (01CE0523)

MINI PROJECT REPORT

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BACHELOR OF TECHNOLOGY

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Computer Engineering

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.NET Technologies (01CE0523)

Mini Project

Faculty of Technology, Marwadi University

Computer Engineering Department

2025-26

CERTIFICATE

This is to certify that the project report submitted along with the project entitled **EBill (Bill Generator)** has been carried out by **Yash Talaviya (92410103105)** under my guidance in partial fulfillment for the degree of Bachelor of Technology in Computer Engineering, 5th Semester of Marwadi University, Rajkot during the academic year 2025-26.

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Internal Guide

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Dr. Krunal Vaghela

Head of the Department

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Prof. Priyanka Mangi	**Dr. Krunal Vaghela**
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Head of the Department

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Acknowledgments

This mini project would not have been possible without the Guidance and the help of several Individuals who in some ways contributed their valuable time and assistance in the completion of this Internship.

We/I would like to thank our/my college **Marwadi University** for giving us this opportunity of doingInternship and gaining Industry Level Experience in the field that we/I are interested in. Our/My sincere gratitude to our Head of The Department (HOD), **Dr. Krunal Vaghela**, our/my Internal Guide, **Prof. Priyanka Mangi** for helping and solving our queries whenever required.

Abstract

The Bill Generator is a web-based application developed using the ASP.NET MVC framework that simplifies and automates the process of generating, and storing customer bills. Traditional manual billing systems are time-consuming, error-prone, and lack data consistency. This system provides an efficient alternative by allowing users to add products, maintain customer details, generate itemized bills, calculate totals automatically, and save records securely in a database.

The primary objective of the project is to improve billing accuracy, reduce human intervention, and offer a user-friendly platform for managing commercial billing operations. The system supports CRUD operations for products, customer management, and invoice generation using SQL Server as the backend technology. The application also provides quick search features and ensures data security through role-based accessibility.

By adopting a structured MVC architecture, the system becomes easily scalable and maintainable. The Bill Generator project demonstrates how digital billing systems can significantly boost operational productivity and data reliability for businesses of all sizes.

1. Introduction

In today's fast-growing digital environment, businesses across multiple sectors rely on efficient billing systems to ensure smooth financial operations. Billing plays a crucial role in recording sales, tracking payments, generating invoices, and maintaining customer relationships. A manual billing process often leads to calculation errors, missing records, data redundancy, and delayed services. Therefore, automation in billing has become a necessity for both small and large organizations to improve operational accuracy and performance.

The **Bill Generator** system is designed to overcome the limitations of traditional billing methods by offering a systematic and streamlined approach to invoice creation through a web-based platform. It enables users to manage products, store customer data, and generate bills efficiently using computerized automation. The system ensures transparency in payment records while reducing the dependency on human intervention. It also provides a professional and user-friendly interface that allows employees to manage billing operations with minimal technical skills.

Need for Automated Billing

Automated billing systems have become an essential part of modern businesses.

Key reasons for automation include:

- Enhances accuracy in financial calculations
- Reduces processing and service time
- Maintains a centralized and secure database
- Eliminates manual paperwork and record misplacement
- Improves customer service experience through fast billing
- Minimizes human errors and data manipulation
- Enables efficient business auditing and reporting

Objectives of the System

The primary goal of the Bill Generator project is to develop a secure computerized system that simplifies billing activities.

Major objectives:

- To provide a fast and user-friendly online billing system
- To generate professional, clear, and itemized bills for customers
- To allow easy management of product and customer details
- To maintain secure and well-structured billing records
- To ensure quick retrieval of bill history for future references

- To reduce the overall workload of employees
- To support accurate total calculations including tax (future enhancement)

Scope of the Project

The proposed Bill Generator system can be implemented in:

- Grocery and retail shops
- Electronics stores
- Medical and pharmacy outlets
- Supermarkets and wholesale sectors
- Stationary and daily-need stores

Future enhancements:

- GST and multi-tax billing features
- Integration with barcode scanners for fast item entry
- Bill printing and PDF export
- Online stock and inventory tracking
- Cloud database integration
- Multi-branch connectivity for chain stores

The scope of the project is wide and scalable to meet evolving business needs. It can serve as a strong foundation for a complete **Point of Sale (POS)** system in the future.

Advantages of the System

The Bill Generator is advantageous to businesses in the following ways:

- Better data organization using SQL Server Database
- Reliable, fast, and secure operations
- Accessible from multiple systems within a network
- Scalable and extendable for future needs
- Reduces operation cost by minimizing paperwork
- Efficient role-based access and management
- Reusable architecture due to Model-View-Controller (MVC) design

Summary

In summary, the Bill Generator System provides an efficient solution to enhance business operations by combining digital automation with streamlined billing workflows. Its use of modern web technology allows for fast, accurate, and reliable bill processing, making it a valuable tool for today's commercial industries. This system not only solves the existing challenges of manual billing but also sets a strong platform for future digital transformation trends in business management.

2. Technology used and Implementation Strategy

A well-structured and reliable technology stack is essential for developing a modern automated billing system. The **Bill Generator** application is built using Microsoft's .NET ecosystem, which ensures security, stability, and performance. Each component used in the project contributes toward efficient data handling and seamless user interaction.

Software Requirements

Component	Technology Used
Frontend	HTML5, CSS3, Bootstrap, JavaScript
Backend	ASP.NET MVC (.NET Framework)
Database	Microsoft SQL Server
Tools	Visual Studio, SQL Server Management Studio
Languages	C#, Razor View Engine
Connectivity	ADO.NET
Framework Pattern	Model-View-Controller (MVC)

1. **HTML5 & CSS3**

   Used for creating structured and responsive layouts. Ensures clean design for billing pages.

2. **Bootstrap**

   Provides an attractive, mobile-friendly interface with ready-to-use styling components.

3. **JavaScript**

   Used for dynamic UI interactions such as total calculations and input validations.

4. **Microsoft SQL Server**

   Database system used for storing:

   - Customer details
   - Product information
   - Billing history

   Ensures fast retrieval data management.

5. **ASP.NET MVC Framework (.NET)**

   This framework is used due to its modular structure, built-in security, and enterprise-grade support. It enables better code reusability and avoids mixing business logic with UI logic.

ASP.NET MVC Architecture

The application follows the Model-View-Controller architecture:

Component	Responsibilities
Model	Represents data structures such as Product, Customer, Bill
View	User interface rendered using Razor syntax
Controller	Handles business logic and request routing

This modularity ensures:

- Faster development
- Easy debugging
- Better scalability

Implementation Flow

The step-by-step workflow followed in the system:

1. User selects customer
2. Products are added to the bill
3. Quantities & prices are calculated automatically
4. Bill totals are generated using server-side logic
5. Bill stored in SQL Server Database

Database Design

Main Tables

BillDetails :- stores Bill details for View Bill after Generating (Customer Name, Mobile Number, Address, Total Amount)

BillItems :- stores item-wise details(Product Name, Price, Quantity)

Proper relational mapping, customer and billing data are securely linked for retrieval and generating.

Security Considerations

Security is a major requirement for business applications dealing with financial records.

Feature	Purpose
SQL Parameterized Queries	Prevent SQL Injection attacks
Model Validation	Ensures correct and safe input
Session Management	Stores user state securely

Microsoft's .NET framework automatically provides patches and updates, ensuring long-term security.

Why MVC for This Project?

Aspect	Benefit
Separation of Concerns	Reduces dependency between modules
Easy Maintenance	UI and logic are independent
Reusability	Common functions reused across modules
High Performance	Faster response and routing
Better Team Collaboration	Different developers can work separately
Scalability	New features easily added without affecting old ones

Thus, ASP.NET MVC serves as the backbone for building a **robust and future-ready billing system**.

Implementation Strategy

The system development was carried out through the following phases:

Phase	Tasks Performed
Requirement Analysis	Understanding billing workflow & data fields
System Design	Creating database schema & MVC structure
Frontend Development	UI for product, customer & bill pages
Backend Development	Logic for calculations & data CRUD
Testing & Debugging	Fixing errors and validating correctness
Deployment	Hosting the system for real users

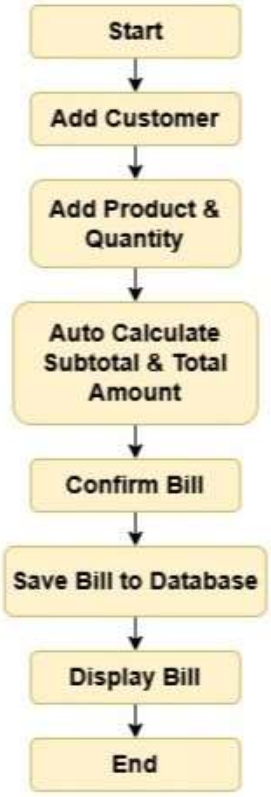

Figure 2.1 Flow Chart of EBill

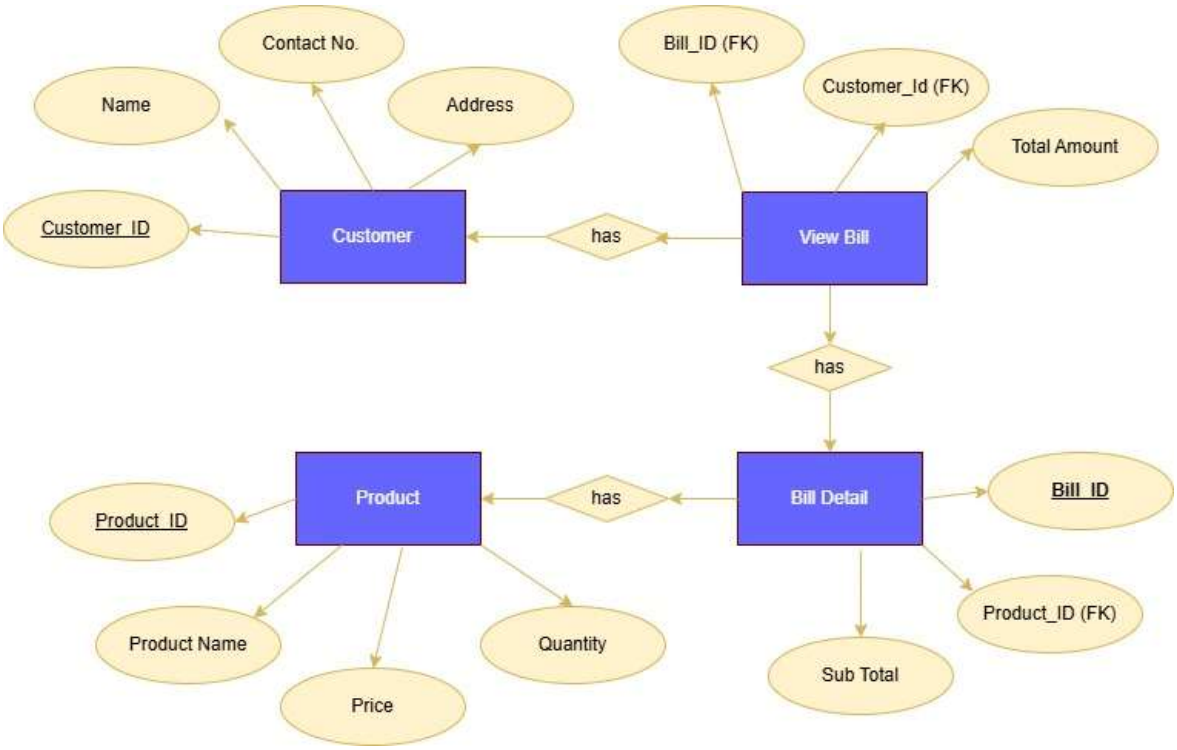

Figure 2.1 ER Diagram of EBill

Summary

The **Bill Generator** project uses a powerful Microsoft technology stack to deliver secure, scalable, and efficient billing operations. The combination of ASP.NET MVC and SQL Server ensures smooth business functionality while enabling rapid development and future enhancement opportunities.

3. Implementation Snapshot

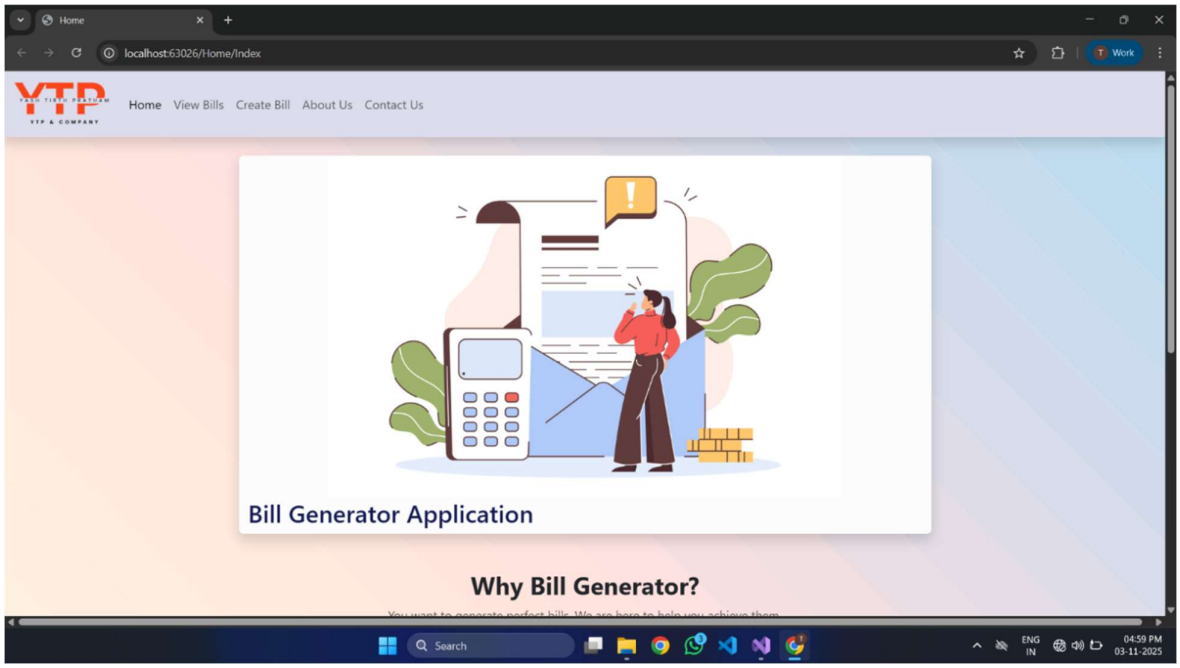

Figure 3.1 Home Page

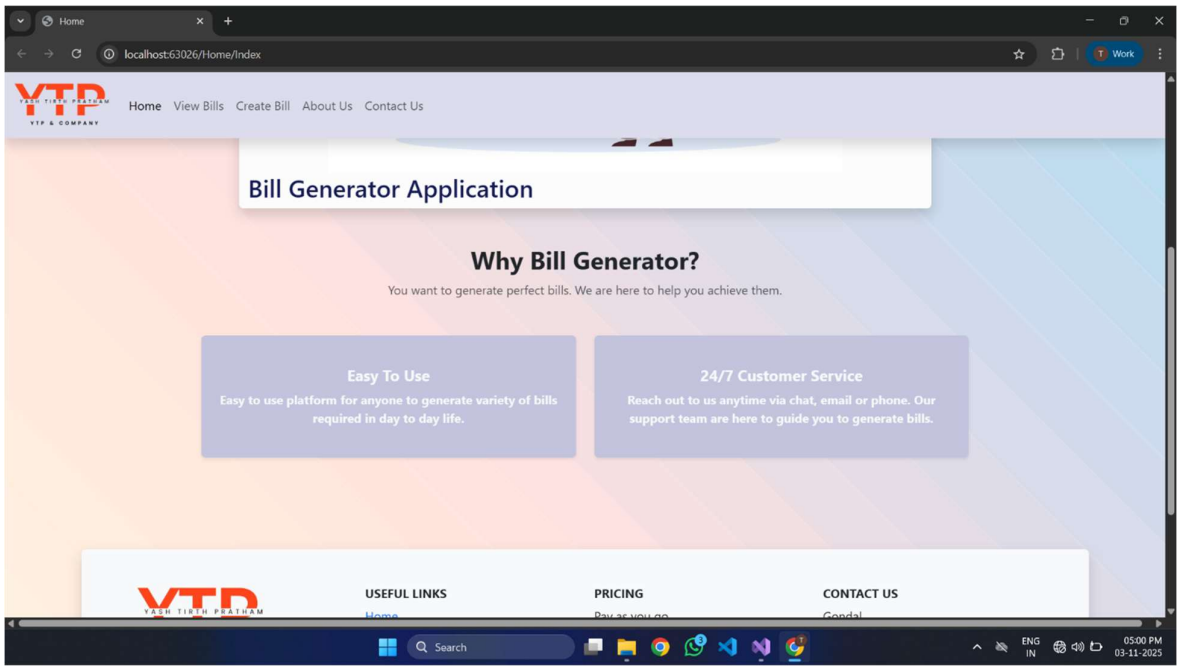

Figure 3.2 Home Page (Why Bill Generator?)

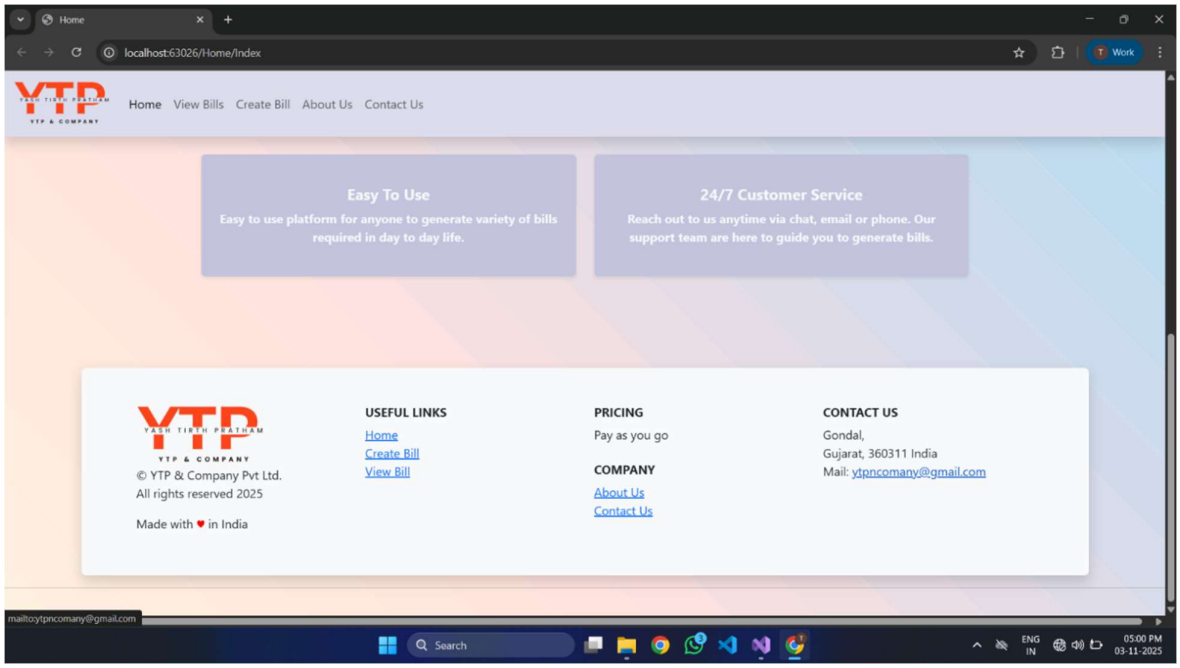

Figure 3.3 Home Page (Footer)

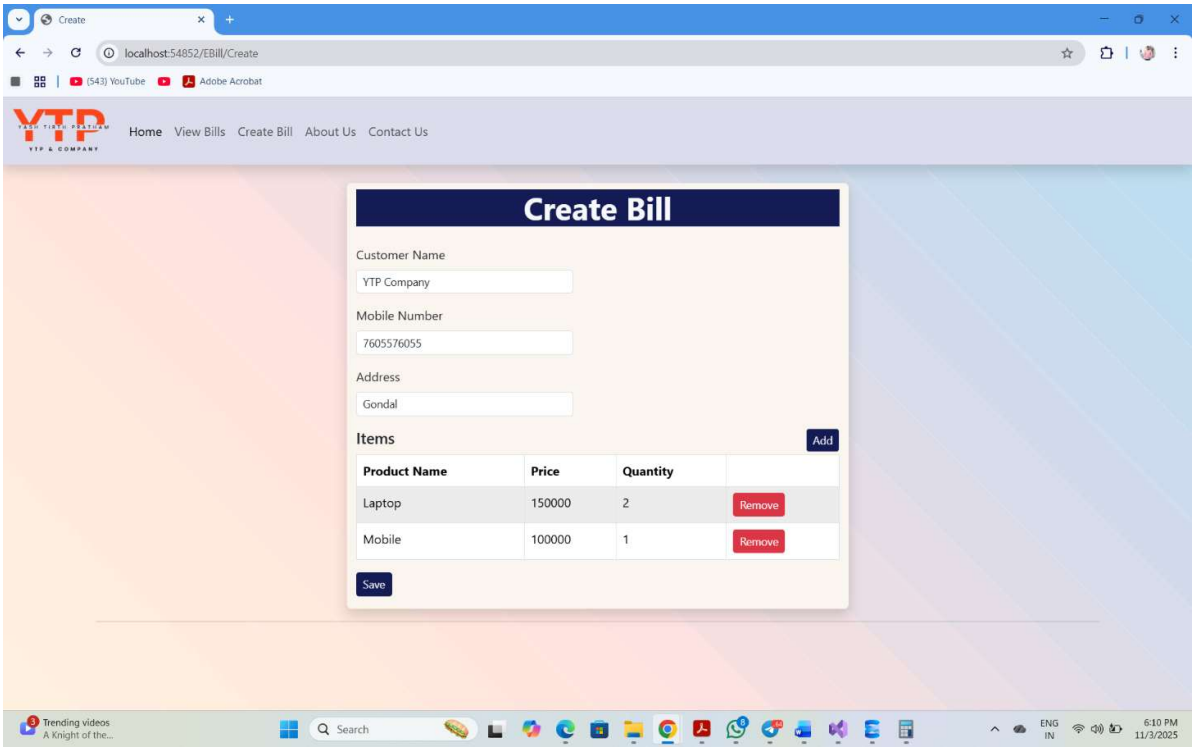

Figure 3.4 Create Bill Page (Adding Customer Details)

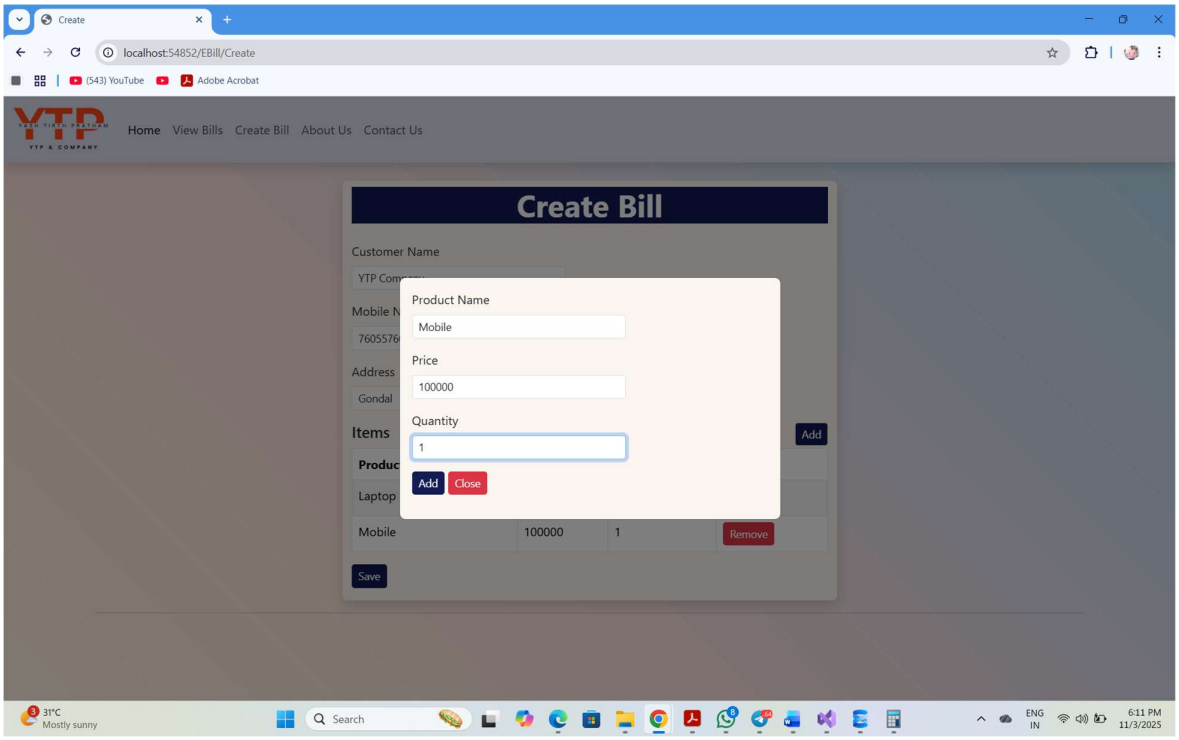

Figure 3.5 Create Bill Page (Adding Product Details)

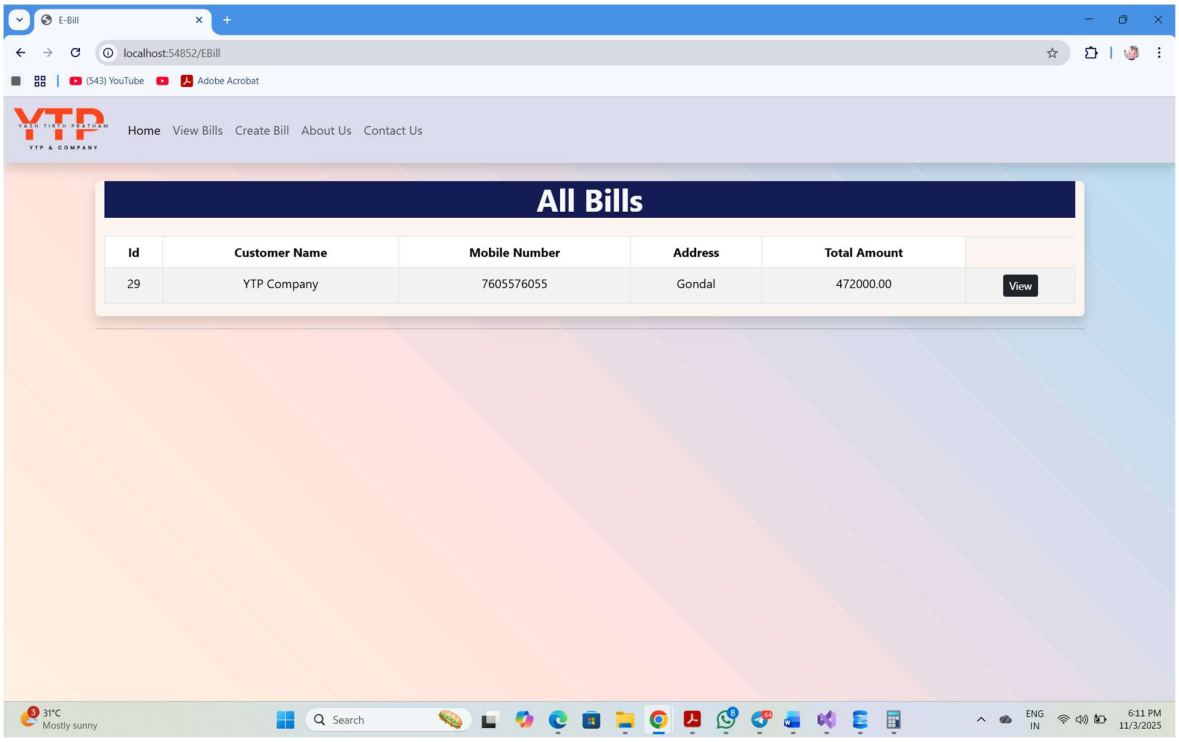

Figure 3.6 View Bill Page (History of All Bills)

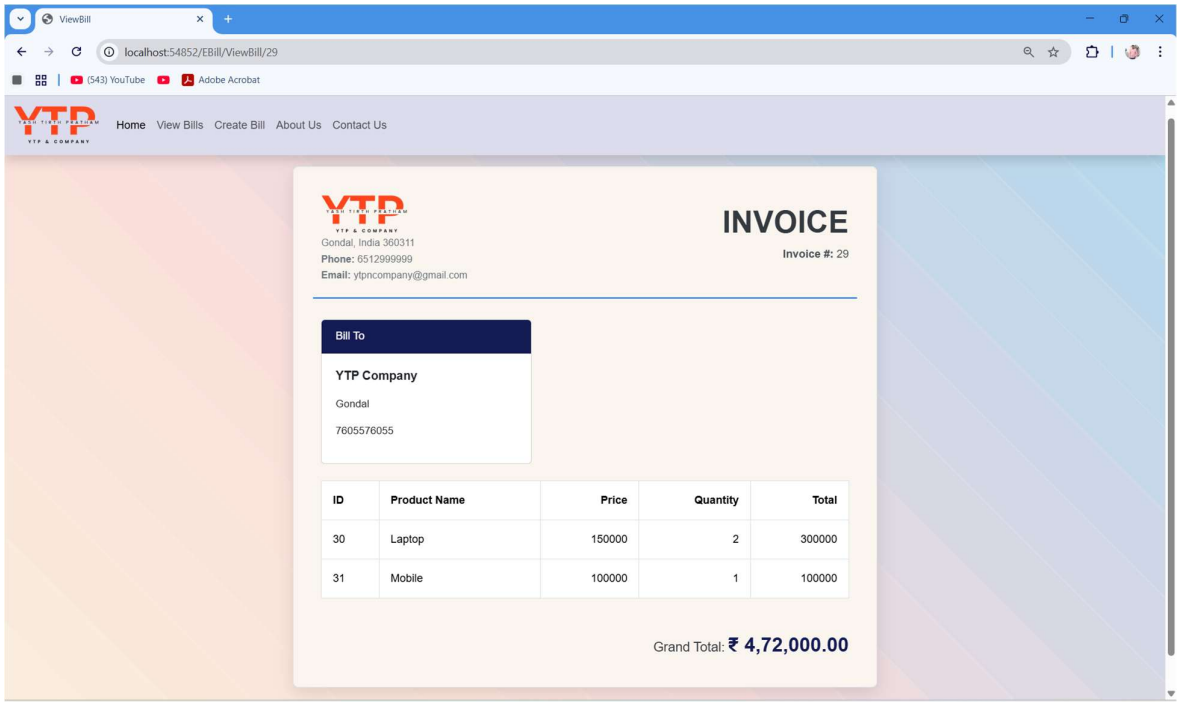

Figure 3.7 View Bill Page (View Specific Bill)

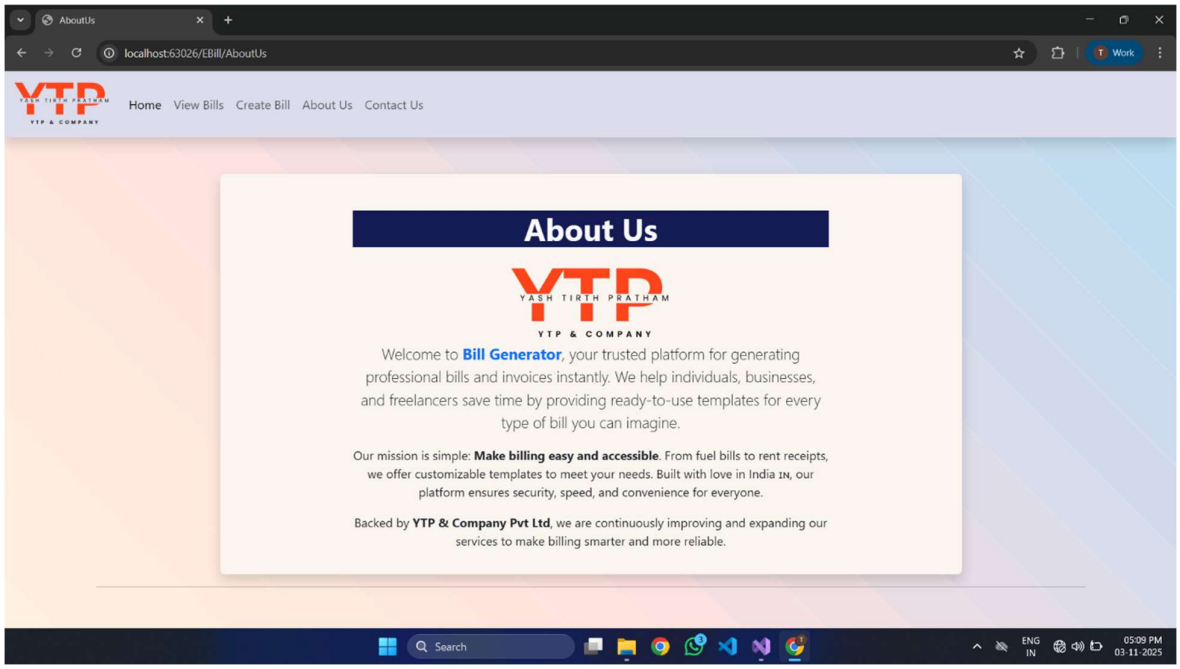

Figure 3.7 About Us Page

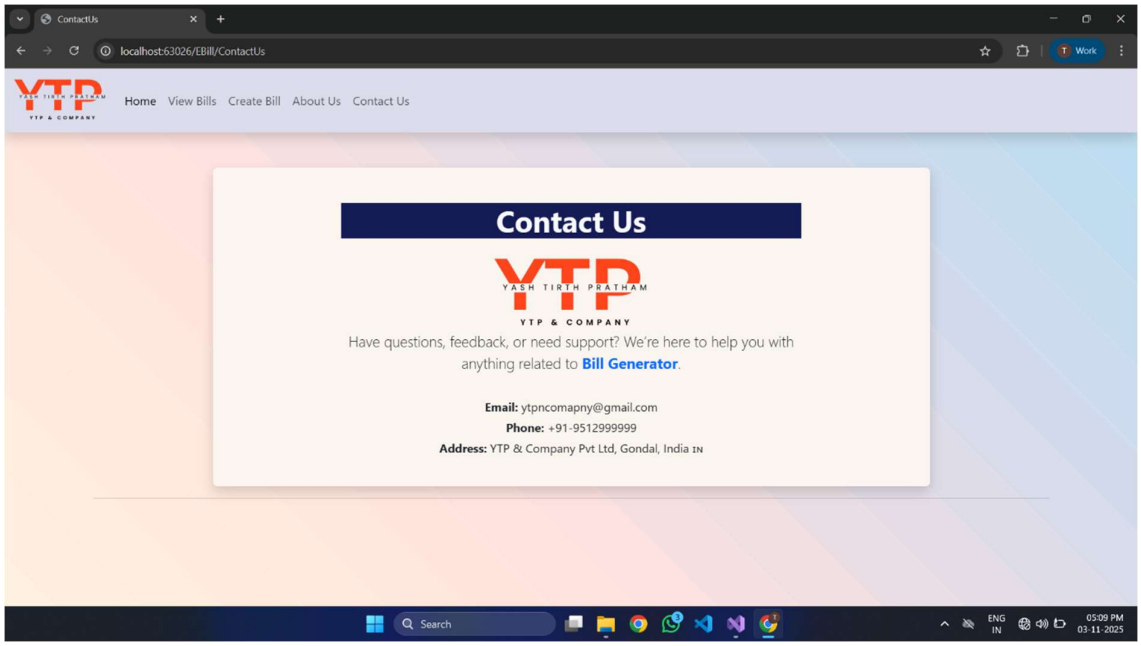

Figure 3.8 Contact Us Page

4. Conclusion

The Bill Generator project successfully meets its objective of providing a reliable, user-friendly, and automated billing solution for commercial businesses. The system minimizes human effort, reduces calculation errors, and ensures data consistency by integrating all billing functions into a single digital platform. Its MVC architecture makes the solution highly maintainable and scalable for future enhancements like GST implementation, online payment support, and cloud deployment.

Additionally, the project highlights the importance of modern web technologies such as SQL Server, HTML, CSS, and Bootstrap in real-time business applications. Since the system is developed with industry-standard tools, it has high scope for deployment in local retail shops, supermarkets, electronic appliance outlets, and various other commercial sectors.

Overall, the project demonstrates the importance of automation in business operations and how modern web technologies can significantly improve efficiency and decision-making in billing workflows.

To conclude, the Bill Generator system is an effective implementation of digital transformation in billing processes. It simplifies business operations, eliminates repetitive manual tasks, and provides a professional and structured approach to customer records. Overall, this project demonstrates strong potential for real-world application and scalability, making it a valuable solution for businesses aiming toward automation and technological advancement.

References

1. Microsoft Learn Documentation – ASP.NET MVC Framework Concepts & Development

2. Microsoft SQL Server Documentation – Database Design and Management

3. Adam Freeman (2019), Pro ASP.NET MVC, Apress Publications.

4. W3Schools – *HTML5, CSS3 & JavaScript Learning Resource*

5. J. D. Ullman & J. Widom, *A First Course in Database Systems*, Pearson Education.