

Billing Management System

Project Documentation

1. Project Overview

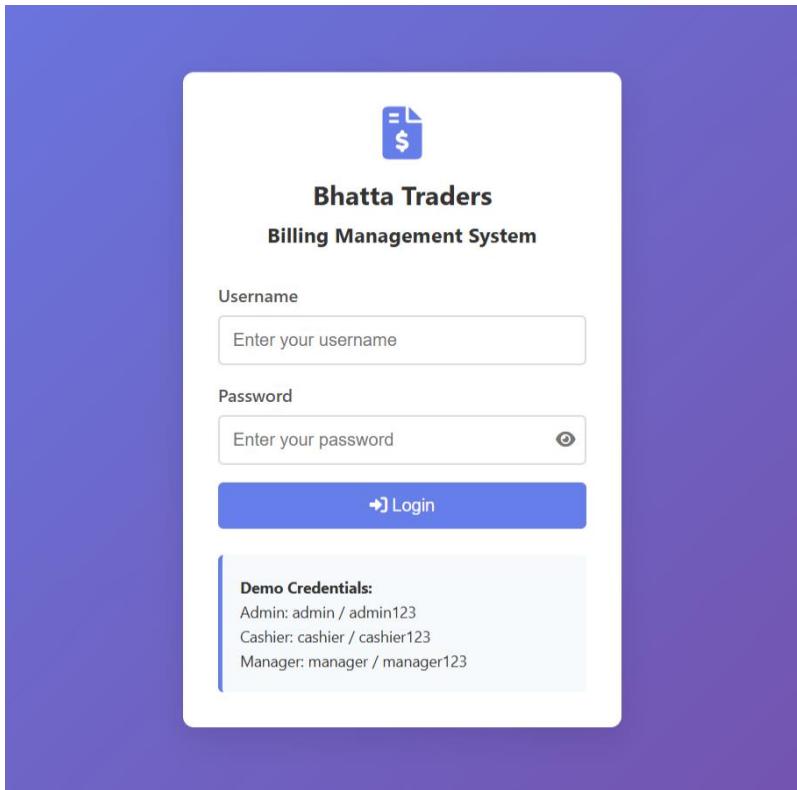
The **Billing Management System** is a comprehensive web-based application designed for retail shop owners and businesses to efficiently manage sales transactions, customer records, inventory, and generate professional invoices. The system provides multiple user roles (Admin, Cashier, Manager) with role-based access control, an intuitive dashboard, integrated billing and reporting modules, and customizable settings. Users can generate, save, print, and export bills in PDF format with support for multiple payment methods, discount calculations, and tax configurations.

Key Objective: To streamline point-of-sale (POS) operations and provide real-time business insights through an easy-to-use interface.

2. Login and Authentication

Features

- **Username and Password Authentication:** Secure login with input validation
- **Role-Based Access:** Three user roles with demo credentials:
 - **Admin:** Full system access including settings and configuration
 - **Cashier:** Billing and product selection access
 - **Manager:** Reporting and analytics access
- **Password Visibility Toggle:** Eye icon to show/hide password for user convenience
- **Demo Credentials Display:** Built-in demo credentials for testing
- **Session Management:** Maintains user session state across navigation



Technical Implementation

The login system validates user credentials and routes them to the dashboard based on their assigned role. The interface includes visual feedback and error messages for invalid login attempts.

3. Dashboard Overview

Dashboard Features

The main dashboard provides a centralized hub with:

- **Sidebar Navigation Menu:** Quick access to all modules
 - Billing
 - Reports
 - Products
 - Customers
 - Settings
- **User Profile Display:** Current logged-in user with logout option
- **Dynamic Content Area:** Loads respective modules based on menu selection

- **Responsive Layout:** Works seamlessly on desktop and tablet devices

The screenshot shows the BillManager application's Billing System dashboard. On the left is a dark sidebar with a logo and five menu items: Billing (selected), Reports, Products, Customers, and Settings. The main area has a header "Billing System" and "Admin" with a "Logout" button. Below is a "Customer Information" section with fields for Name, Phone Number, Email (Optional), and Address (Optional). A "Add Items to Bill" section includes "Quick Add" and "Manual Entry" buttons, and a table for adding products with columns: Product, Quantity, Unit Price, and Discount (%). A "Subtotal" field shows "Rs. 0.00" with a "+ Add Item" button. At the bottom, a table lists items with columns: S.No, Product, Quantity, Unit Price, Discount, Subtotal, and Action. A message "No items added yet" is displayed.

Navigation Flow

Once authenticated, users land on the dashboard home screen displaying quick statistics and recent activity. The sidebar remains persistent for easy module switching throughout the session.

4. Billing Section

Purpose

The billing section is the core module where staff creates and processes customer transactions in real-time.

This screenshot shows the "Add Items to Bill" section. It features a "Product" dropdown menu with a placeholder "Select Product". Below the dropdown is a list of products with their prices: Laptop - Rs. 50000, Mouse - Rs. 500 (which is highlighted with a blue background), Keyboard - Rs. 1500, Monitor - Rs. 15000, and Headphones - Rs. 2000.

Key Subsections

4.1 Customer Information Input

- **Customer Name (Required):** Text input field
- **Phone Number (Required):** Validated phone input
- **Email (Optional):** For receipts and records
- **Address (Optional):** Delivery or billing address

4.2 Product Entry Modes

Quick Add Mode:

- Dropdown to select pre-existing products
- Automatically populates unit price from product database
- Quick entry for high-volume transactions
- Ideal for fast checkout operations

Manual Entry Mode:

- Custom product entry with manual pricing
- Useful for services, custom items, or on-the-fly additions
- Full control over product name, quantity, and unit price

4.3 Live Bill Table

- Real-time display of added items
- Columns: Serial Number, Product, Quantity, Unit Price, Discount (%), Subtotal
- Instant calculation and updates
- Ability to remove items with delete action
- Running subtotal display

+ Add Items to Bill

Quick Add Manual Entry

Product	Quantity	Unit Price	Discount (%)
Mouse - Rs. 500	2	500	10
Subtotal	Rs. 900.00		
+ Add Item			

4.4 Tax and Charge Calculations

- **Discount:** Percentage-based discount applied per item and total

- **Tax Calculation:** Configured tax rate applied to subtotal
- **Shipping:** Optional shipping charges
- **Final Total:** Automatic calculation of (Subtotal - Discount) + Tax + Shipping

4.5 Payment Method Selection

S.No	Product	Quantity	Unit Price	Discount	Subtotal	Action
1	Mouse	2	Rs. 500.00	10%	Rs. 900.00	<input type="checkbox"/>
2	Laptop	1	Rs. 50000.00	10%	Rs. 45000.00	<input type="checkbox"/>
3	Keyboard	1	Rs. 1500.00	10%	Rs. 1350.00	<input type="checkbox"/>

Subtotal: Rs. 47250.00

Total Discount: Rs. 5250.00

Tax (10%): Rs. 4725.00

Shipping: 0.00

Final Total: Rs. 51975.00

Payment Method

Cash Card UPI Credit

Action Buttons:

Print Bill Download PDF Save Bill Clear Bill

Options available:

- **Cash:** Counter payment
- **Card:** Debit/Credit card payment
- **UPI:** Digital payment via UPI
- **Credit:** Customer credit/account balance

4.6 Action Buttons

- **Print Bill:** Direct printing to local printer
- **Download PDF:** Export bill as PDF file
- **Save Bill:** Store bill record in system
- **Clear Bill:** Reset form for new transaction

Workflow Example

1. Select or enter customer information
2. Add products using Quick Add or Manual Entry
3. Apply discount if applicable
4. Select payment method

5. Review final total
 6. Print/Download/Save as needed
-

5. Reports Section

Purpose

Provides business owners with analytical insights into store performance and transaction history.

Report Metrics

- **Today's Sales:** Total revenue for current day
- **Monthly Revenue:** Cumulative sales for current month
- **Customer Count:** Total number of registered customers
- **Order Count:** Total transactions processed
- **Recent Bills Table:** Last 10-15 transactions with details:
 - Bill number
 - Customer name
 - Date and time
 - Amount
 - Payment method

Use Cases

- Daily closing reconciliation
 - Monthly performance tracking
 - Customer analysis
 - Payment method trends
 - Staff performance monitoring (if extended)
-

6. Product Management

Features

Add Product

- **Product Name:** Unique identifier

- **Price:** Unit selling price in local currency (Rs.)
- **Stock/Inventory:** Current quantity available
- **Category:** Product classification (Electronics, Accessories, etc.)
- **Search and Filter:** Find products by name or category

Edit Product

- Modify existing product details
- Update pricing and stock levels
- Change category assignments

Delete Product

- Remove discontinued products
- Archive old items

Product Database Structure

Field	Type	Example
ID	Integer	1
Product Name	String	Laptop
Price	Decimal	Rs. 50,000
Stock	Integer	10
Category	String	Electronics
Created Date	Date	2026-01-15

Stock Management

The system tracks inventory levels and can be configured to:

- Alert when stock falls below threshold
- Prevent sales of out-of-stock items
- Generate stock reports

7. Customer Management

Features

- **Customer List View:** Display all registered customers with sortable columns

- **Customer Details:**
 - Name
 - Phone number
 - Email
 - Address
 - Total orders count
 - Total amount spent
- **Transaction History:** View all bills associated with each customer
- **Edit/Update Capability:** Modify customer information (future scope)
- **Search Functionality:** Quickly find customers by name or phone

Customer Benefits

- Loyalty tracking
 - Purchase history analysis
 - Repeat customer identification
 - Personalized service
-

8. Settings Configuration

Customizable Parameters

Store Information

- **Store Name:** Business name displayed on bills
- **Store Address:** Location details for invoices
- **Store Phone:** Contact number
- **Store Email:** Business email address
- **Store Logo:** Optional branding (future scope)

Tax Configuration

- **Tax Name:** e.g., "VAT", "GST", "Sales Tax"
- **Tax Rate:** Percentage (e.g., 10%, 15%)
- **Tax Applicability:** Choose items subject to tax

Appearance Settings

- **Theme Selection:** Light/Dark mode toggle

- **Currency Symbol:** Default is Rs. (Nepali Rupee)
- **Language:** System language preference (future scope)

Billing Options

- **Invoice Header/Footer:** Custom text on bills
- **Company Details:** Business registration information
- **Return Policy Text:** Standard return policy for receipts

Configuration Impact

All settings apply globally to:

- Generated bills
 - Reports
 - Printouts
 - PDF exports
-

9. Notifications and Loading States

User Feedback System

Toast Notifications (Pop-ups)

- **Success:** Green notification for completed actions (Bill saved, Product added)
- **Error:** Red notification for failures (Invalid input, Network error)
- **Warning:** Yellow notification for important alerts (Low stock, Session timeout)
- **Info:** Blue notification for general information

Loading Indicators

- **Loading Spinner:** Animated indicator during data processing
- **Disabled Buttons:** Prevents duplicate submissions
- **Progress Messages:** "Saving...", "Generating PDF...", "Loading..."

Examples

- ✓ Bill saved successfully!
 - ✗ Error: Product name cannot be empty
 - ⚠ Warning: Only 5 items left in stock
 - ℹ Generating PDF, please wait...
-

10. Print and PDF Export

Print Functionality

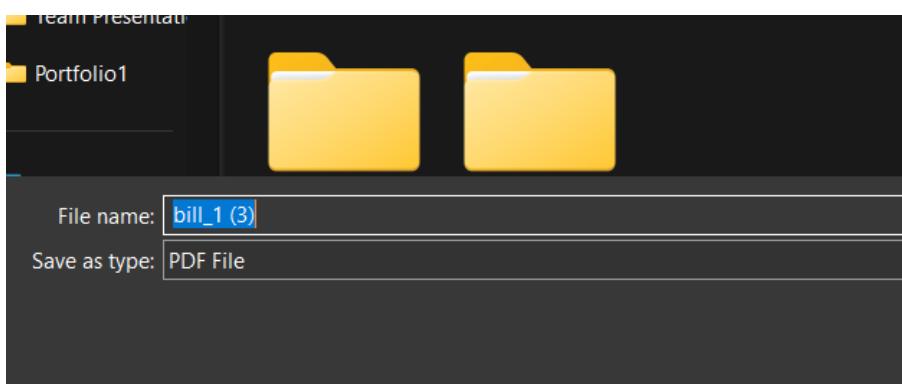
Print Bill Feature:

- Formats bill in printer-friendly layout
- Hides UI elements (buttons, sidebar)
- Optimized for thermal or standard printers
- Includes:
 - Store header
 - Invoice number
 - Date and time
 - Customer details
 - Itemized product list
 - Calculations (Subtotal, Discount, Tax)
 - Final total
 - Payment method
 - Footer message

PDF Export

PDF Generation Using jsPDF:

Downloads bill as PDF file named with invoice number and date (e.g., `bill_1_2026-01-18.pdf`)



- Preserves all bill information
- Email-friendly format
- Stores on customer's device for records
- Print-ready document

Bill Receipt Format

BHATTA TRADERS
Billing Management System

Bill #: 1
Date: 1/18/2026
Customer: Walk-in Customer
Phone: N/A

S.No | Product | Qty | Unit Price | Subtotal

1 | Mouse | 2 | Rs. 500 | Rs. 1000
2 | Laptop | 1 | Rs. 50000 | Rs. 50000
3 | Keyboard | 1 | Rs. 1500 | Rs. 1500

Subtotal: Rs. 52,500
Total Discount: Rs. 5,250 (10%)
Tax (10%): Rs. 4,725
Shipping: Rs. 0

FINAL TOTAL: Rs. 51,975

Payment Method: Cash

Thank you for your purchase!

11. Technical Stack

Frontend Technologies

Technology	Purpose	Usage
HTML5	Markup Structure	Page layout, forms, semantic elements
CSS3	Styling & Design	Responsive design, layout, animations
JavaScript (ES6+)	Dynamic Functionality	Event handling, calculations, DOM manipulation
FontAwesome	Icons	UI icons (menu, buttons, status indicators)

jsPDF Library	PDF Generation	Export bills as PDF documents
Bootstrap/Custom CSS	Responsive Framework	Mobile-friendly layout, grid system

Architecture

Frontend (Browser)

```

    └── HTML (Structure)
    └── CSS (Styling & Responsive)
    └── JavaScript (Logic & Events)
        └── Login Handler
        └── Billing Calculator
        └── PDF Generator
        └── Data Manager
        └── UI Controller
    └── Libraries
        └── jsPDF
    └── FontAwesome Icons
  
```

Browser Compatibility

- Chrome (Latest 2 versions)
- Firefox (Latest 2 versions)
- Safari (Latest 2 versions)
- Edge (Latest 2 versions)



12. Key Functionalities in Detail

12.1 Real-Time Bill Calculation

My Store

123 Main Street, City, State

+1234567890

store@example.com

Bill #: 1

Date: 1/18/2026

Customer: Walk-in Customer

Items:

1. Mouse - Qty: 2 - Rs. 900.00
2. Laptop - Qty: 1 - Rs. 45000.00
3. Keyboard - Qty: 1 - Rs. 1350.00

Subtotal: Rs. 47250.00

Tax: Rs. 4725.00

Shipping: Rs. 0.00

Total: Rs. 51975.00

The system automatically calculates:

Per Item:

Subtotal = Quantity × Unit Price

Item Discount = Subtotal × (Discount % / 100)

Item Total = Subtotal - Item Discount

Bill Total:

Grand Subtotal = Sum of all Item Totals

Total Discount = Sum of all Item Discounts

Taxable Amount = Grand Subtotal - Total Discount

Tax Amount = Taxable Amount × (Tax Rate / 100)

Final Total = Taxable Amount + Tax Amount + Shipping

12.2 Role-Based Features

Admin Access:

- All modules and features
- Settings configuration
- User role management
- Reports viewing

Cashier Access:

- Billing and Quick Add
- Basic product list
- Reports (view only)

Manager Access:

- Full reports access
- Product and customer lists
- No settings modification

12.3 Data Validation

- **Customer Name:** Required, minimum 3 characters
- **Phone Number:** Required, 10+ digits
- **Product Name:** Required, unique
- **Price:** Required, positive number
- **Quantity:** Required, positive integer
- **Discount %:** 0-100 range validation

13. Future Enhancements

Potential Expansions

1. Backend Integration

- Connect to database (MySQL, PostgreSQL)

- Persistent data storage
- Multi-user concurrent access

2. Advanced Features

- Email receipt delivery
- SMS notifications
- Barcode scanning for products
- Multi-branch support
- Inventory alerts and low-stock notifications

3. Security Enhancements

- Password hashing and encryption
- Two-factor authentication
- Audit logs for all transactions
- Role-based access control enforcement

4. Analytics & Reporting

- Advanced sales graphs and charts
- Profit margin analysis
- Customer behavior insights
- Predictive inventory management

5. Mobile App

- React Native or Flutter version
- Offline billing capability
- Mobile payment integration

6. Integration Options

- Payment gateway (Stripe, Khalti, Esewa)
- Accounting software (QuickBooks)
- CRM systems
- E-commerce platforms

14. Installation and Setup

Current Deployment

Since this is a frontend-focused HTML/CSS/JavaScript application:

1. **Extract Files:** Unzip project folder

2. **Open in Browser:** Double-click `index.html` or open via local server
3. **Test Credentials:** Use demo credentials provided in login screen
4. **No Installation Required:** Runs directly in modern web browsers

For Production Deployment

1. **Web Server Setup:** Deploy to Apache, Nginx, or cloud platform
2. **Backend Setup:** Integrate with Node.js/PHP/Python backend
3. **Database Setup:** Configure MySQL or PostgreSQL
4. **SSL Certificate:** Enable HTTPS for security
5. **Domain Configuration:** Map custom domain

15. User Manual

Getting Started

1. **Login:** Enter username (admin) and password (admin123)
2. **Navigate Dashboard:** Use sidebar to access modules
3. **Create Bill:** Go to Billing → Enter customer info → Add products
4. **Finalize:** Select payment method → Click Save/Print/Download PDF

Common Tasks

Product Management						Admin	Logout
Product Management						<input type="text" value="Search products..."/>	
ID	Product Name	Price	Stock	Category	Actions		
1	Laptop	Rs. 50000	10	Electronics			
2	Mouse	Rs. 500	50	Accessories			
3	Keyboard	Rs. 1500	30	Accessories			
4	Monitor	Rs. 15000	20	Electronics			
5	Headphones	Rs. 2000	25	Accessories			

Task: Add a New Product

- Click Products → Click "Add New Product" → Fill details → Save

Task: Generate Daily Report

- Click Reports → View today's sales metrics → Download if needed

Task: Search Customer

- Click Customers → Use search bar → View transaction history

Task: Export Bill as PDF

- Complete bill entry → Click "Download PDF" → Save to device
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16. System Requirements

Minimum Requirements

- **Operating System:** Windows 7+, macOS 10.12+, Linux (any)
- **RAM:** 2 GB minimum
- **Storage:** 100 MB for application
- **Internet:** Not required for basic operation (required for cloud sync if implemented)
- **Browser:** Any modern browser (Chrome, Firefox, Safari, Edge)

Recommended Specifications

- **RAM:** 4 GB or more
 - **Processor:** Intel Core i5 or equivalent
 - **Storage:** SSD with 256 GB capacity
 - **Display:** 1920×1080 resolution or higher
 - **Network:** Broadband internet for cloud features
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17. Conclusion

The **Billing Management System** provides a complete, user-friendly solution for small to medium-sized retail businesses to manage:

- Point-of-sale transactions
- Inventory management
- Customer relationship management
- Financial reporting and analysis

With its **scalable, responsive design** and **modern web technologies**, the system is production-ready for immediate deployment. It can be further enhanced with backend

integration, advanced security features, and additional analytics capabilities to meet evolving business needs.

The modular architecture allows for easy extension and customization without disrupting core functionality. Whether for a small shop or a growing retail chain, this system provides the tools necessary for efficient business operations and customer service excellence.

Document Information

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