

Tushar SuperStore- Advanced Inventory Management System

With Real-Time Analytics Dashboard

Developed by: Tushar Mahajan

Technology Stack: Flask, Python, SQLAlchemy, Bootstrap, Plotly.js

Date: July 2025

PROJECT OVERVIEW

- Modern web-based inventory management system
- Real-time analytics dashboard with interactive charts
- Complete product and bill management
- Professional PDF bill generation
- Responsive design for all devices
- Built with Flask framework and modern web technologies

KEY FEATURES

Product Management

- Add, edit, delete products
- Category-wise organization
- Stock level tracking

Bill Management

- Create and manage bills
- PDF generation with professional layout
- Draft and final bill states

Real-time Dashboard

- Live analytics with auto-refresh
- Interactive charts and graphs
- Key performance indicators

TECHNOLOGY STACK

Backend:

- Python 3.12
- Flask 2.3.3
- SQLAlchemy (Database ORM)
- SQLite Database

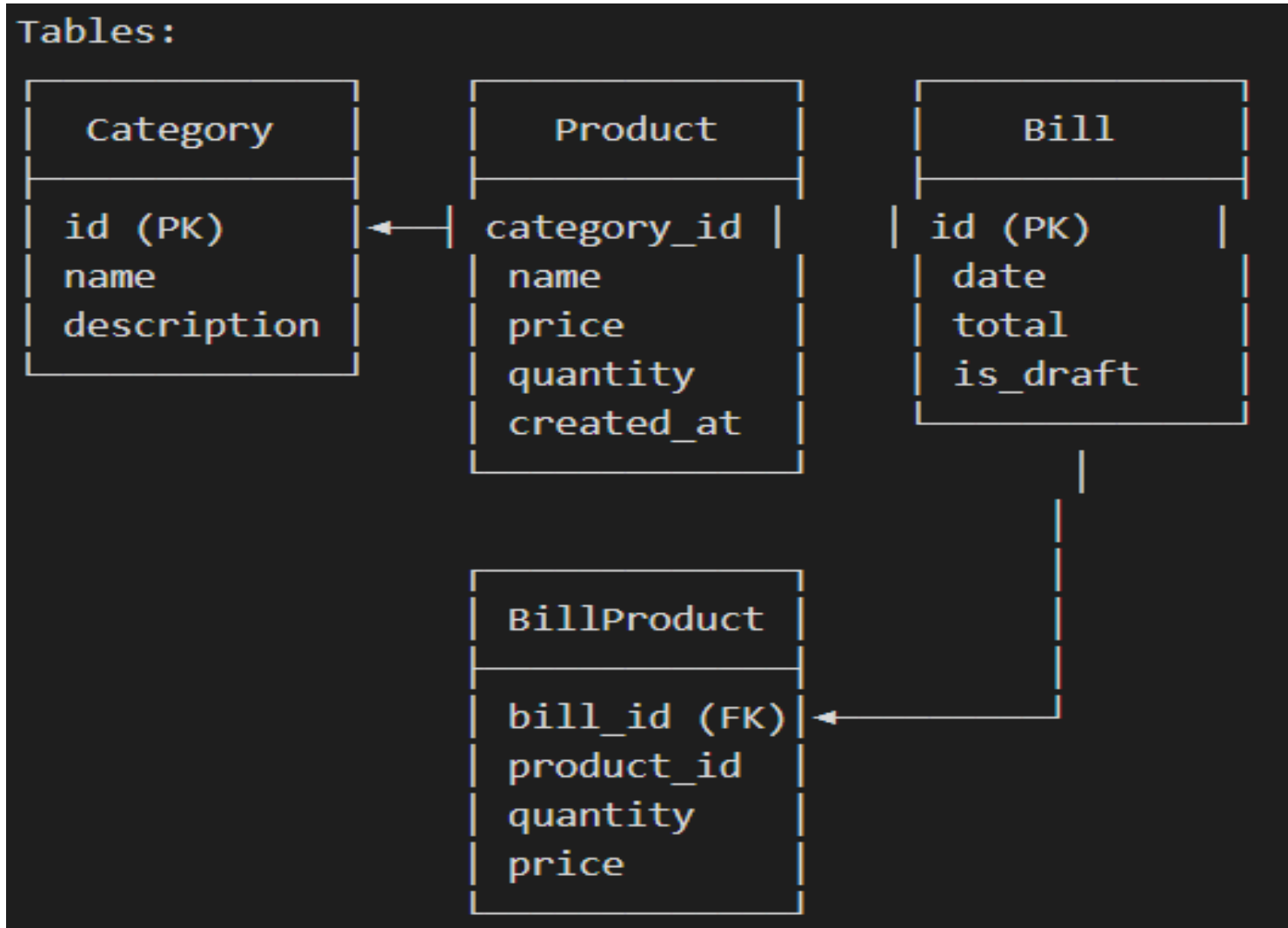
Frontend:

- Bootstrap 5 (Responsive Design)
- Plotly.js (Interactive Charts)
- JavaScript (Real-time Updates)
- HTML5 & CSS3

Libraries:

ReportLab (PDF Generation)
Pandas (Data Processing)
Matplotlib & Seaborn (Analytics)

Database Architecture



DASHBOARD ANALYTICS

Key Metrics:

- Total Revenue & Bills
- Average Bill Value
- Today's/Week's/Month's Sales
- Product & Category Count

Interactive Charts:

- Sales Trend Analysis (Line Chart)
- Category Distribution (Pie Chart)
- Top Products Performance (Bar Chart)
- Inventory Levels (Stock Chart)

Real-time Updates:

Auto-refresh every 30 seconds

Manual refresh controls

Live notifications

User Interface Highlights

Modern Design:

- Responsive Bootstrap 5 layout
- Gradient color schemes
- Font Awesome icons
- Smooth animations and transitions

Navigation:

- Intuitive menu structure
- Easy access to all features
- Mobile-friendly design

User Experience:

Real-time feedback

Loading indicators

Error handling

Success notifications

CORE FUNCTIONALITIES

Product Management:

- CRUD operations for products
- Category-based organization
- Stock level monitoring
- Low stock alerts

Bill Generation:

- Dynamic bill creation
- Multiple product selection
- Professional PDF export
- Draft and final states

Analytics:

Real-time data visualization
Performance metrics
Trend analysis
Inventory insights

TECHNICAL IMPLEMENTATION

Backend Architecture:

- MVC pattern with Flask
- SQLAlchemy ORM for database
- RESTful API endpoints
- Error handling & validation

Frontend Features:

- AJAX for real-time updates
- Plotly.js for interactive charts
- Bootstrap for responsive design
- JavaScript for dynamic content

Data Flow:

Database → Flask Routes → API Endpoints → Frontend → User Interface

API ENDPOINTS

Dashboard APIs:

- /api/dashboard_metrics - Live metrics data
- /api/sales_chart - Sales trend data
- /api/category_chart - Category distribution
- /api/top_products_chart - Product performance
- /api/inventory_chart - Stock levels

Main Routes:

- / - Home page with product listing
- /dashboard - Analytics dashboard
- /create_bill - Bill creation interface
- /add_product - Product management
- /bill/<id>/pdf - PDF generation

REAL-TIME FEATURES

Auto-refresh System:

- 30-second automatic updates
- Manual refresh controls
- Toggle auto-refresh on/off
- Last updated timestamps

Live Data Updates:

- Metrics update without page reload
- Charts refresh with new data
- Recent activity tables update
- Inventory alerts appear dynamically

User Controls:

Play/pause auto-refresh
Instant manual refresh
Visual update indicators
Status notifications

PROJECT BENIFITS

For Business:

- Real-time inventory tracking
- Professional bill generation
- Data-driven decision making
- Efficient stock management

For Users:

- Intuitive interface
- Mobile accessibility
- Real-time feedback
- Professional documentation

For Developers:

Clean, maintainable code
Scalable architecture
Modern web technologies
Best practices implementation

FUTURE ENHANCEMENTS

Planned Features:

- Multi-user authentication system
- Advanced reporting modules
- Email integration for bills
- Barcode scanning support
- Mobile app development

Technical Improvements:

- Database migration to PostgreSQL
- Redis caching for better performance
- API rate limiting
- Advanced security features
- Cloud deployment options

INSTALLATION AND SETUP

Prerequisites:

- Python 3.12+
- pip package manager
- Git (for version control)

Quick Setup:

1. Clone repository from GitHub
2. Install dependencies: `pip install -r requirements.txt`
3. Run application: `python app.py`
4. Access at: `http://localhost:5000`

Database Setup:

- SQLite database auto-created
- Sample data can be added
- Migrations supported via Flask-Migrate

DEMO SCREENSHOTS - Homepage

Store Management System

Dashboard

| | | | |
|------------------------|-----------------------------|--------------------------------|-------------------|
| Total Products 6 | Total Categories 3 | Total Stock Value ₹10560.00 | Total Bills 13 |
| Total Sales ₹880.00 | Avg Product Price ₹33.33 | Low Stock Items 0 | |

- Add Product
- Add Category
- Create Bill

Products

| Name | Price | Quantity | Category | Actions |
|----------------------------|---------|----------|------------|---|
| Haldiram Aaloo Bhujia | ₹10.00 | 486 | Food | Edit Delete |
| Cadbury Oreo Biscuit | ₹20.00 | 18 | Food | Edit Delete |
| Coca Cola | ₹40.00 | 13 | Drinks | Edit Delete |
| Mountain Dew | ₹20.00 | 17 | Drinks | Edit Delete |
| Classmate A4 Long Notebook | ₹100.00 | 20 | Stationary | Edit Delete |
| Hauser Pen Blue | ₹10.00 | 248 | Stationary | Edit Delete |

DEMO SCREENSHOTS- Add Product

Add Product

Name

Lays Blue

Price (₹)

20

Quantity

250

Category

Food

Add Product

Cancel

Store Management System

Product added successfully!

| Dashboard | | | |
|------------------------|-----------------------------|--------------------------------|-------------------|
| Total Products 7 | Total Categories 3 | Total Stock Value ₹15560.00 | Total Bills 13 |
| Total Sales ₹880.00 | Avg Product Price ₹31.43 | Low Stock Items 0 | |

DEMO SCREENSHOTS – Add Category

Add Category

Category Name

Electronics

Add Category

Cancel

Store Management System

Category added successfully!

Dashboard

Total Products

7

Total Categories

4

Total Stock Value

₹15560.00

Total Bills

13

Total Sales

₹880.00

Avg Product Price

₹31.43

Low Stock Items

0

DEMO SCREENSHOTS- Creating Bill

Create Bill

Filter by Category

All Categories

Lays Blue

Quantity (Stock: 250)

3

Hauser Pen Blue

Quantity (Stock: 248)

1

Remove

Mountain Dew

Quantity (Stock: 17)

2

Remove

Add Item

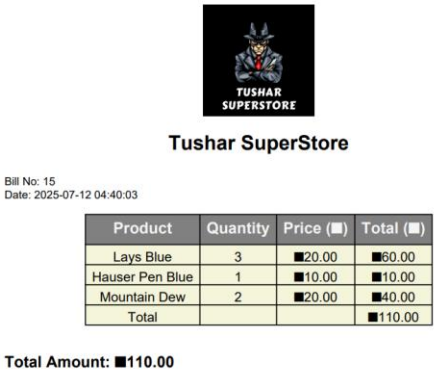
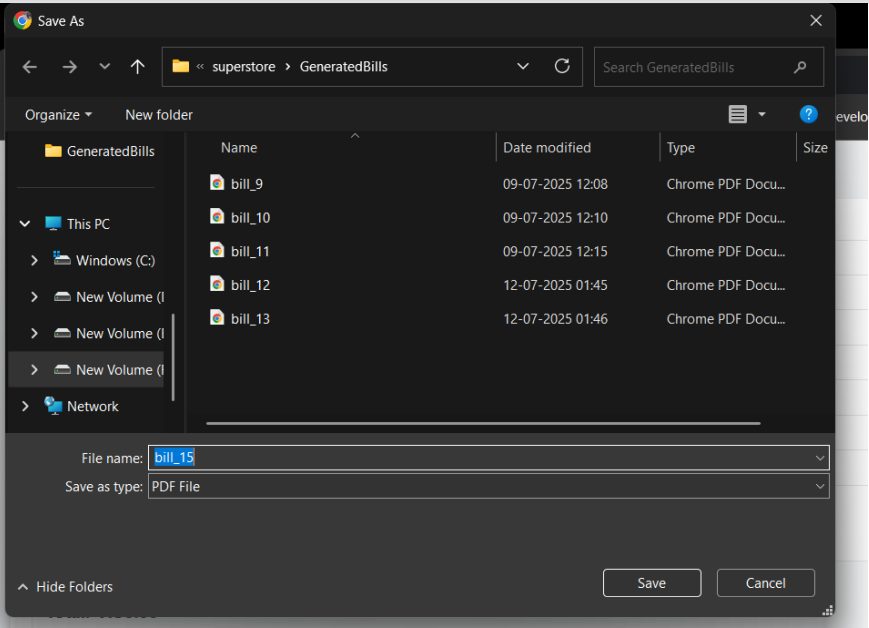
DEMO SCREENSHOTS - Billing

Bill Preview

| Product | Quantity | Price (₹) | Total (₹) |
|-----------------|----------|-----------|-----------|
| Lays Blue | 3 | ₹20.00 | ₹60.00 |
| Hauser Pen Blue | 1 | ₹10.00 | ₹10.00 |
| Mountain Dew | 2 | ₹20.00 | ₹40.00 |
| Total | | | ₹110.00 |

Back to Edit

Confirm Bill



DEMO SCREENSHOTS – Updated Stock

Products

| Name | Price | Quantity | Category | Actions |
|----------------------------|---------|----------|------------|---|
| Haldiram Aaloo Bhujia | ₹10.00 | 486 | Food | Edit Delete |
| Cadbury Oreo Biscuit | ₹20.00 | 18 | Food | Edit Delete |
| Coca Cola | ₹40.00 | 13 | Drinks | Edit Delete |
| Mountain Dew | ₹20.00 | 15 | Drinks | Edit Delete |
| Classmate A4 Long Notebook | ₹100.00 | 20 | Stationary | Edit Delete |
| Hauser Pen Blue | ₹10.00 | 247 | Stationary | Edit Delete |
| Lays Blue | ₹20.00 | 247 | Food | Edit Delete |

DEMO SCREENSHOTS- Dashboard

Analytics Dashboard


[Refresh](#) [Auto](#) Last updated: 10:11:45 AM

Rs
₹990.00
Total Revenue


14
Total Bills


7
Total Products

\$
₹71
Avg Bill Value

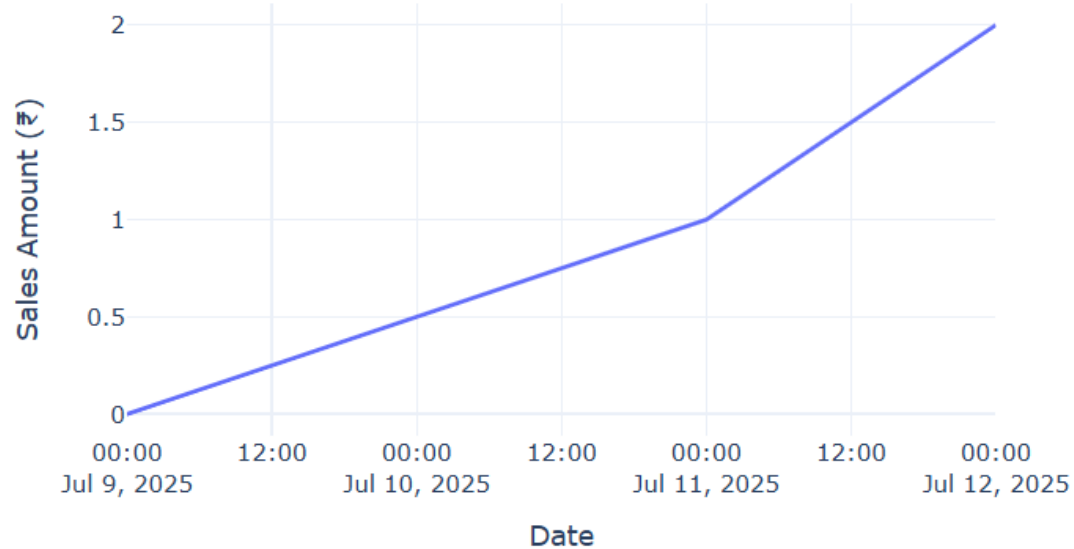

Today's Sales
₹110.00


Week's Sales
₹990.00

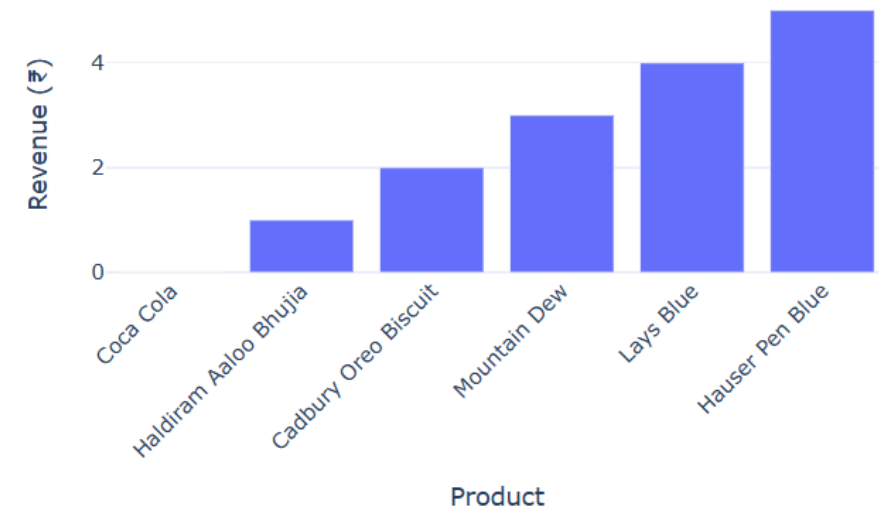

Month's Sales
₹990.00

DEMO SCREENSHOTS - Dashboard

Daily Sales Trend

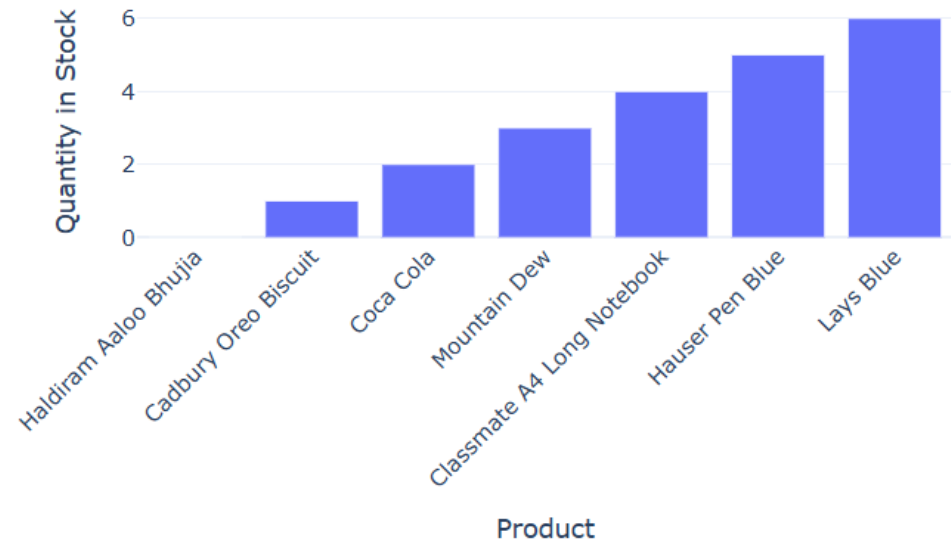


Top 10 Products by Revenue



DEMO SCREENSHOTS - Dashboard

Current Inventory Levels



Recent Bills

| Bill # | Date | Amount |
|--------|-----------|---------|
| 15 | 7/12/2025 | ₹110.00 |
| 13 | 7/11/2025 | ₹240.00 |
| 12 | 7/11/2025 | ₹160.00 |
| 11 | 7/9/2025 | ₹80.00 |
| 10 | 7/9/2025 | ₹40.00 |

Recent Products

| Product | Price | Stock |
|----------------------------|---------|-------|
| Lays Blue | ₹20.00 | 247 |
| Hauser Pen Blue | ₹10.00 | 247 |
| Classmate A4 Long Notebook | ₹100.00 | 20 |
| Mountain Dew | ₹20.00 | 15 |
| Coca Cola | ₹40.00 | 13 |

GITHUB REPOSITORY

github.com/tushaarmahajan/tushar-superstore

Repository Features:

- Complete source code
- Comprehensive documentation
- Installation instructions
- Contributing guidelines
- MIT License for open use

Stats:

- 22+ files
- Modern UI/UX
- Multiple chart types
- Real-time functionality

TECHNICAL ACHIEVEMENTS

Code Quality:

- Clean, well-documented code
- Modular architecture
- Error handling & validation
- Responsive design principles

Performance:

- Optimized database queries
- Efficient real-time updates
- Fast chart rendering
- Mobile-optimized interface

Best Practices:

RESTful API design

Security considerations

Version control with Git

Professional documentation

LEARNING OUTCOMES

Technical Skills Gained:

- Full-stack web development
- Database design & management
- Real-time data visualization
- API development & integration
- PDF generation techniques

Soft Skills Developed:

- Project planning & execution
- Problem-solving abilities
- User experience design
- Documentation writing
- Version control management

CONCLUSION

Project Success Factors:

- Complete inventory management solution
- Real-time analytics dashboard
- Professional user interface
- Mobile-responsive design
- Open source contribution

Impact:

- Demonstrates full-stack development skills
- Showcases modern web technologies
- Provides practical business solution
- Ready for portfolio presentation
- Suitable for real-world deployment