

Smart Canteen Billing System - Project Report

Project Title

Smart Canteen Billing System (Campus-25)

Objective

To reduce long queues and speed up the billing process in the Campus-25 canteen by introducing an online pre-order and payment system using a web application with QR code-based order validation.

Problem Statement

Currently, billing in the Campus-25 canteen is manual, leading to long queues and delays during peak hours. Our project aims to digitize and streamline this process.

Proposed Solution

Users can browse menu items, place an order, pay online, and receive a QR code. The canteen staff scans this QR code to verify the order, speeding up the entire process.

Team Members & Roles

- Aashutosh Yadav (23053853): Backend Developer (Java + React)
- Shashank Singh (23053XXX): Frontend Developer (HTML, CSS, JS)
- [Your Friend's Name]: Database and Connectivity

Technology Stack

- Frontend: React, HTML, CSS, JavaScript
- Backend: Java (Spring Boot)
- Database: MySQL/PostgreSQL
- Tools: GitHub, VS Code, IntelliJ, MySQL Workbench

Main Features

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- Online menu with item selection
- Cart and total price calculation
- Online payment gateway integration (UPI/Cards)
- Auto-generated QR code for order verification
- Secure QR validation system
- Admin panel for menu and order management

Database Design (Schema Overview)

- users(user_id, name, email)
- items(item_id, name, price)
- orders(order_id, user_id, item_ids, total_amount, status)
- payments(payment_id, order_id, payment_method, timestamp)

QR Code Functionality

Upon successful payment, a unique QR code is generated containing order ID and payment info. Staff scans this code to validate the order. The system checks QR validity and marks it as used.

Development Phases

1. Planning & Tool Setup
2. UI/UX Design
3. Backend API Development
4. Database Setup
5. QR Code Generation
6. Payment Integration
7. Testing and Debugging
8. Deployment

Deployment Suggestions

- Frontend: Netlify / Vercel

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- Backend: Render / Railway / Heroku
- Database: ClearDB / PlanetScale

Future Scope

- Mobile app version
- Scheduled pre-orders
- Analytics and reporting for canteen
- Expansion to multiple canteens or hostels