Project 22: Coolaroo Restaurant- Restaurant Management System

About the Client

In the heart of Coolaroo on Barry Road, The Coolaroo Hotel is a family friendly destination north of Melbourne.

We're the perfect place for families to meet for an overdue long lunch, for mates to catch up for a beer and watch the game, to celebrate a milestone birthday or special event, and for visitors to stay in affordable accommodation when north of the city.

Our Bistro has something for everyone, including fresh seafood, steaks, pastas, salads and all the pub classics you know and love. We have a dedicated menu for our youngest guests to keep everyone happy, and a delicious and affordable seniors menu.

If it's a drink you're after, look no further than our Sports Bar. It's the perfect place to sip a brew and relax in one of our lounges, with sport broadcasting across a number of large TV screens. Choose one of our beers on tap, or take a look at our spirits, cider and wine list. For those after a quick bite, we have a refined menu available with pub classics that are suited perfectly to enjoying with mates. .

Project Brief & Business Problem Specifications:

Coolaroo Restaurant is struggling with:

- Slow and inefficient order-taking processes

- Manual errors in orders due to miscommunication

- High dependency on staff availability

- Difficulty managing and updating printed menus

- Limited customer engagement and feedback collection

Without an integrated, digital solution, these challenges are impacting service quality, customer satisfaction, and profitability.

System Modules Requirements

User Management

- Registration and login for staff and admins

- Role-based access: Admin, Waitstaff, Kitchen, Customer

- Password hashing and reset functionality

- User profile management

Table Management

- Create and manage table records

- Assign unique QR codes to each table

- View table occupancy status

- QR code generation with table ID encoding

Menu Management

- Admin interface to add, edit, and remove menu items

- Categories and subcategories for easy navigation

- Item details: name, description, price, image

- Manage item availability (in stock / out of stock)

QR Code Generator

- Generate unique QR codes for each table or menu section

- Store QR code images on the server or generate on-the-fly

- QR links direct customers to the digital menu for their specific table

Customer Ordering Module

- Customers scan QR codes to access the digital menu

- Browse categories and items

- Add items to cart/order

- Specify quantity, notes, or special requests

- Submit orders linked to table ID

Order Management (Waitstaff / Admin)

- Real-time view of incoming orders per table

- Update order status (received, preparing, ready, served)

- Assign orders to kitchen or bar section

- Notify kitchen staff of new orders

Kitchen Display Module

- Dedicated view for kitchen staff

- List of active orders with item details and special instructions

- Mark items as prepared or completed

- Track order progress and timings

Billing and Payment

- Generate order summary for each table

- Calculate subtotal, tax, and discounts

- Mark bills as paid or unpaid

- Option to export or print bills as PDF

Customer Feedback Module

- Allow customers to rate food and service

- Store feedback linked to table and order

- Admin access to view feedback reports

Reporting and Analytics

- Admin dashboard for sales reports

- Track total orders and revenue per day/week/month

- Analyse popular menu items

- View staff activity logs

Notifications Module

- Email or SMS notifications for order status updates

- Alerts for kitchen staff when new orders arrive

- Customer updates when orders are ready

Audit Logging

- Record critical system actions:

  - User logins and logouts

  - Order creation and updates

  - Payments

  - Menu changes

- Admin access to view and search logs

Security Module

- Secure user authentication with hashed passwords

- HTTPS support for secure communication

- Input validation and sanitisation

- CSRF protection for forms

- Role-based access control enforcement

User Modules (User Frontend):

Developers need to research and discuss with the client to finalise the modules and requirements.

UI Design

User Interface Design is concerned with the dialogue between a user and the computer. It is concerned with everything from starting the system or logging into the system to the eventually presentation of desired inputs and outputs. The overall flow of screens and messages is called a dialogue.

UI Design Requirements

1. The system user should always be aware of what to do next.

2. The screen should be formatted so that various types of information, instructions and messages always appear in the same general display area.

3. Message, instructions or information should be displayed long enough to allow the system user to read them.

4. Use display attributes sparingly.

5. Default values for fields and answers to be entered by the user should be specified.

6. A user should not be allowed to proceed without correcting an error.

7. The system user should never get an operating system message or fatal error.

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work.

- Security of data.

- Ensure data accuracy's
- Proper control of the higher officials.
- Minimize manual data entry.
- Minimum time needed for the various processing.
- Greater efficiency.
- Better service.
- User friendliness and interactive.
- Minimum time required.

Functional Requirements:

User Authentication and Management
- Secure registration and login for Admin, Waitstaff, and Kitchen roles
- Role-based access control to restrict features by user type
- Password storage with secure hashing
- User profile management with update capabilities
- Password reset functionality

Table Management
- Creation and management of table records with unique IDs
- Assignment of QR codes linking to specific table ordering pages
- Display of occupancy status (occupied or available)
- Ability to deactivate or remove tables

Menu Management
- Add, edit, or delete menu items
- Organise items into categories and subcategories
- Store item details: name, description, price, image
- Set item availability status (available, out of stock)
- Real-time menu updates for customer view

QR Code Generation
- Generate unique QR codes for each table or menu section
- Encode table ID or URL in QR code
- Store or generate QR code images for printing
- Link QR code scans directly to that table's ordering page

Customer Ordering
- Customers scan QR codes to access the digital menu
- View menu categories and item details
- Add items to cart with specified quantity and special notes

- Submit orders linked to their table ID
- View order confirmation page

Order Management (Waitstaff / Admin)
- Real-time view of incoming orders by table
- Update order status: received, preparing, ready, served
- Assign orders to kitchen or bar section
- Edit or cancel orders before preparation
- Mark orders as complete when served

Kitchen Display
- Dedicated view of active orders for kitchen staff
- Display of item details and special instructions
- Mark items as prepared or completed
- Filter orders by status or time

Billing and Payment
- Generate order summaries per table
- Calculate subtotal, taxes, discounts, and total amount
- Mark bills as paid or unpaid
- Generate PDF receipts for printing or download

Customer Feedback
- Allow customers to rate food and service after payment
- Collect ratings and comments
- Link feedback to specific orders and tables
- Admin reporting on collected feedback

Reporting and Analytics
- Admin dashboard with sales reports
- Track total orders and revenue daily, weekly, monthly
- Analyse popular menu items
- View staff activity logs

Notifications
- Send email or SMS notifications for order status updates
- Alerts for kitchen staff when new orders arrive
- Customer updates when orders are ready

Audit Logging
- Record critical system actions including:
  - Logins and logouts

     o Order creation, updates, and cancellations
     o Payments
     o Menu changes
- Provide searchable logs for admins

Security Features
- Enforce secure HTTPS communication
- Use password hashing for all stored credentials
- Validate and sanitise all user inputs to prevent SQL injection
- Include CSRF protection for forms
- Apply role-based access restrictions for all sensitive functions

Non Functional Requirements

There are a lot of software requirements specifications included in the non-functional requirements of the system, which contains various processes, namely Security, Performance, Maintainability, and Reliability.

Security:

- Cybersecurity Implementation: Identify ethical risks in database design and implement the actions of mitigation.

- Cybersecurity Implementation: Provide evidence that you have implemented the data encryption and anonymization of data.

- Cybersecurity Implementation: Perform 'Data Protection Impact assessment' to help ensure compliance, facilitate a privacy by-design approach and identify better practice.

- Cybersecurity Implementation: Implement the secure methods for data encryption, data security and data breach to maintain the privacy of end users.

- Password hashing

- HTTPS enforced for all traffic

- CSRF protection on all forms

- Input validation and sanitisation to prevent SQL injection

- Role-based access control enforcing least privilege

- Encrypted QR code payloads or tokens to prevent tampering

Performance

- Page load times under 2 seconds for typical user actions
- Real-time order updates for kitchen and waitstaff dashboards
- QR code scans resolve to menus in under 1 second
- Support for at least 100 concurrent customer sessions

Scalability

- Database design supporting thousands of menu items, orders, and users
- Modular code structure for adding new features (e.g., delivery integration)
- Ability to expand to multiple restaurant branches with unique menus and tables

Availability

- Target uptime of 99.5%, excluding scheduled maintenance
- Clear maintenance windows with advance user notifications

Reliability

- Accurate order processing without data loss or corruption
- Transaction integrity for order submissions and status changes
- Consistent QR validation even under load
- Automated error logging with alerts for critical failures

Maintainability

- Clean, modular PHP codebase using MVC or similar design pattern
- Well-documented classes, functions, and database schema
- Database with foreign key constraints and indexing for performance
- Change history logging for menu edits and configuration

Usability

- Mobile-friendly, responsive design for customer ordering
- Intuitive admin and kitchen dashboards with clear statuses
- Accessible UI (contrast, font size, clear buttons)
- Error messages that clearly describe problems and how to resolve them

Portability

- Compatible with major browsers (Chrome, Firefox, Edge, Safari)

Audit and Compliance

- Complete audit trail of user actions (login/logout, order updates, menu changes)
- Secure storage of audit logs
- Exportable audit logs for compliance and reporting

Backup and Recovery

- Automated daily database backups with secure storage
- Manual backup option for Admins

Reporting and Analytics

- Real-time sales dashboards
- Exportable reports in PDF and CSV
- Comparison reports over time (daily, weekly, monthly)
- Data visualisation with charts and graphs
- Staff performance tracking

Notifications

- Configurable email or SMS notifications for order updates
- Staff alerts for new or urgent orders

- Customer updates when order status changes

- Admin notifications for system errors or security events

Hardware Requirement: Should be recommended by the developers.

Software Requirement: Should be recommended by the developers.