**Coursework 1**

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# Problem Specification

## Requirements Elicitation Process

To gather requirements for our restaurant website project, we employed the following methods:

* + User persona creation
  + Brainstorming sessions with the team
  + Analysis of existing restaurant websites
  + Consideration of industry best practices

## User Requirements Overview

We identified the following key user groups and their requirements:

### Residents

Locals searching for somewhere to eat

### Workers

Employees from surrounding companies looking for lunch or dinner options

### Delivery and Takeout Customers

Users who prefer to place an online meal order, pick it up, or have it delivered

## Key user requirements

### Responsive Design:

* Accessible and usable on all devices (desktop, tablet, and mobile)
* Quick information availability to avoid user frustration

## Restaurant Overview

Overview of the restaurant's atmosphere, specialization, and menu

### Menu

* Simple navigation to menu sections
* List of foods with costs, descriptions, and images
* Filtering options for dietary requirements and food categories

### Online Ordering

* Integration for takeout or delivery orders
* User registration to store order history and preferences
* Secure online payment options

### Reservations:

* Simple table booking form
* View of available times and dates
* Automatic booking confirmations via email or SMS

### Contact Information:

* Address, phone number, and email
* Embedded map with directions

### Customer Reviews and Feedback:

* Section for ratings and reviews from customers
* Contact form for customer inquiries

### About Us:

* Description of the restaurant's mission, values, and background
* Staff and chef information

### Visual Appeal

* Eye-catching layouts and high-quality photos

## System Requirements

### Functional Requirements

### User Interface.

* Provide a responsive interface on desktop devices
* Allow quick access to menu and contact information

### Menu.

* Display food items with prices, descriptions, and images
* Implement filtering options for dietary requirements and food categories

### Online Ordering.

* Integrate an online ordering system for takeout or delivery
* Support user registration to store order history and preferences
* Implement secure online payment options

### Reservation System.

* Allow users to book tables through an online form
* Display available time slots and dates
* Send automatic booking confirmations via email or SMS

### Events and Promotions.

* Showcase event details and special promotions
* Provide a system for booking private events

### Customer Feedback.

* Implement a system for displaying customer ratings and reviews
* Include a contact form for customer inquiries

### Content Management.

* Allow easy updates to menu items, prices, and promotional content

### Non-Functional Requirements

### Performance.

* Ensure quick loading times across all devices
* Handle multiple concurrent users without significant slowdown

### Usability.

* Implement an intuitive and user-friendly design
* Ensure accessibility for users with disabilities

### Security.

* Implement secure data transmission for online payments
* Protect user data and comply with relevant data protection regulations

### Scalability.

* Design the system to handle increased traffic during peak times
* Allow for easy addition of new features in the future

### Reliability.

* Ensure high uptime and minimal system downtime
* Implement regular backups of critical data

# Design

## System Architecture

Our restaurant website will follow a 3-tier architecture:

### Presentation Layer

The user interface, implemented using HTML, CSS, and JavaScript

### Application Layer

Server-side logic, handling requests and processing data

### Data Layer

Database for storing menu items, user information, and reservations

## Use Cases

Here are 5 representative use cases for our restaurant website:

* Browse Menu
* Place Online Order
* Make Reservation
* Leave Review
* Book Private Event

# Implementation

## Version Control

We have set up a GitHub repository for our project.

## Implementation Tools and Technologies

We are considering the following tools and technologies for our implementation:

* Frontend: HTML5, CSS3, JavaScript
* Database: MySQL
* Website Builder: Wix.com
* Integrated Development Environment (IDE): Visual Studio Code

This selection of tools and technologies provides a solid foundation for our project. HTML5, CSS3, and JavaScript form a powerful combination for creating responsive and interactive frontend designs. MySQL offers a robust and reliable database solution for managing our data. Visual Studio Code will serve as our primary coding environment, offering features that enhance productivity and code quality. Additionally, Wix.com provides an alternative option for rapid website development and prototyping.

As we progress with the project, we may identify and incorporate additional tools or technologies based on specific needs that arise during the development process.

# Testing

## Test Plan

We have developed a comprehensive test plan covering each system requirement. Our plan encompasses:

### Unit Tests

* Evaluate individual components of the menu display system.
* Verify correct functioning of the reservation form.
* Ensure accurate calculation of order totals in the online ordering system.

### Integration Tests

* Assess the integration between the frontend and backend for menu retrieval.
* Confirm correct data flow between the reservation system and the database.
* Verify proper communication between the payment gateway and the ordering system.

### User Acceptance Tests

* Confirm that users can successfully browse the menu and filter items.
* Ensure users can complete the reservation process without errors.
* Evaluate the complete flow of placing an online order, from item selection to payment confirmation.

### Performance Tests

* Measure page load times across different devices and network conditions.
* Evaluate the system's response time when handling multiple concurrent reservations.
* Assess the performance of the search and filter functionality with a large menu dataset.

### Security Tests

* Verify that user data is properly encrypted during transmission.
* Test for common vulnerabilities such as SQL injection and cross-site scripting.
* Ensure correct functioning of user authentication and authorization.

## Test Case Mapping to System Requirements

### Responsive Design

#### **UAT.** Verify website accessibility and functionality across desktop, tablet, and mobile devices

**Performance**. Measure load times on different devices

### Menu

**Unit Test.** Verify correct display of menu items with prices, descriptions, and images

**Integration Test.** Check proper retrieval of menu data from the backend

**UAT.** Test filtering options for dietary requirements and food categories

### Online Ordering

**Integration Test.** Verify proper integration of the online ordering system

**Security Test.** Ensure secure handling of payment information

**UAT.** Test full order placement process, including user registration and order history

### Reservations

**Unit Test.** Verify correct functioning of the reservation form

**Integration Test.** Check proper storage and retrieval of reservation data

**UAT.** Test the complete reservation process, including confirmation emails

### Performance

**Performance Test.** Measure page load times and system responsiveness

**Stress Test.** Verify system behavior under high user load

As we progress with the implementation, we will continue to refine and expand this test plan to ensure comprehensive coverage of all system functionalities.

# Critical Analysis

## Leadership

In the initial stages of our project, we have adopted a collaborative leadership approach. Key aspects of our leadership strategy include

### Role Assignment

We assigned roles based on team members' strengths and interests. For example, Hayden took the lead on database setup due to his experience in MySQL.

### Decision Making

We make major decisions collectively during team meetings, ensuring all voices are heard. To enhance communication, we have established a WhatsApp group chat.

### Responsibility Distribution

We've distributed responsibilities evenly, with each team member taking ownership of specific aspects of the project.

## Challenges faced

***Limited Team Size***

### Our fourth member has not attended the first three classes, and their status remains uncertain. It's highly likely we will proceed as a team of three students.

### Limited Experience

### As a team of Batch 14 students in our first university module, we lack the established teamwork of Batch 13 students who have worked together for a year. Additionally, only experienced coders from Batch 14 were integrated into Batch 13 teams.

### Resolution

### Despite these challenging circumstances, we are confident in our ability to learn and deliver as a team. We quickly bonded and overcame the initially demoralizing situation.

### Progress Monitoring

To effectively track our progress, we have implemented the following strategies:

### Regular Meetings

We hold weekly team meetings to discuss progress, challenges, and next steps.

### Project Management Tool

We're using Jira linked to Github to create and assign tasks, set deadlines, and track completion status.

### Progress Reports

Each team member updates a brief progress summary before our weekly meetings on WhatsApp.

### GitHub Commits

We monitor the frequency and quality of code commits to gauge development progress.

### Challenges faced

Ensuring all team members consistently update their progress on Jira.

Balancing time spent on progress reporting with actual project work

### Resolution

We're continuously refining our progress monitoring approach to strike the right balance between oversight and productivity.

## Conflict Resolution

Thus far, our team has worked together harmoniously without significant conflicts. We are committed to avoiding internal disputes, recognizing that we already face external challenges.

### Moving forward

We plan to maintain our extra effort to keep pace with other groups and continue fostering open and respectful communication. This critical analysis reflects our experiences to date and demonstrates our commitment to effective teamwork and continuous improvement in our project management approach.