# Reservation System for a Restaurant

### KV6003: INDIVIDUAL COMPUTING PROJECT

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### COURSE: COMPUTER SCIENCE WITH WEB DEVELOPMENT

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My report will be structured into the following sections:

* Abstract – Overview of the report and the project. It will tell the reader how the report will be structured and tell them if the project was an overall success.
* Introduction – Introduces the purpose and scope of the project. This section will tell the reader what I want to achieve with the system and how I intend to do this. I will also explore the background of the project and what the client wants.
* Research and Planning:
  + Literature Review – this section will look at all the literature I’ve gathered that is relevant to my project. This will help me look at their successes and failures and how I can implement their knowledge in my design.
  + Requirements Capture – This will look include the requirements proposed by the client and look at the potential target audience. I will then tailor my design regarding the user requirement plan.
  + Tools and Techniques – Look at all the methods and tools needed to develop my project. This will include all the programming languages and the database system I will use and how I will go about using them to achieve my goal.
* Design and Implementation

Introduction

# Introduction

This project is a thorough investigation into how a table reservation system for a restaurant is created and how it can be utilised for a Customer Relationship Management system. To support this, a functioning reservation system as a web application has been created for a pizza restaurant.

Analysis Chapters

# 2. Literature Review

## 2.1 Introduction

This section will discuss literature that is relevant to booking and reservation systems, and how the user data can be used to create a Customer Relationship System to boost customer relations and increase repeat customers. This will help understand the challenges that surround restaurant reservation systems and the best way to tackle integrating one. I will also discuss how useful booking systems are overall, especially due to the increase in demand for them due to the COVID pandemic.

## 2.2 Reservation Systems

Reservation Systems have become the norm in modern times when scheduling table slots within restaurants.

Customers can make reservations outside the restaurant’s operating hours.

## 2.3 The effects of COVID-19

The need for such a system has increased dramatically due to the COVID pandemic. This is so the restaurant can control store capacity to reduce the spread and enable no congested waiting times for customers. According to Quidini, 32% of customers believe that scheduling a time slot would make them feel safer against COVID-19 [1].

## 2.4 CRM Systems

CRM stands for customer relationship management, and it is essentially a system that helps business owners nurture their relationships with their clientele [3]. The emergence of things such as the Internet of Things has meant that businesses are now trying to identify business strategies to personalize their relationship with their customers.

## 2.5 UCD Approach

## 2.6 Security Risks

# 3. Requirements Capture

## 3.1 Introduction

A requirement capture plan is a useful exercise to undertake early in a project life cycle to establish the scope of the project. The main reason is to understand the system from a user’s perspective and find their common needs and expectations. Within this section, I am going to discuss the research I gathered during this exercise from the various artefacts I created, and how useful they will be going forward in the overall design for the booking system. ­

## 3.2 Capture Process

The requirement process is the foundation of every successful software project [4]. It’s been reported by the IDC that 25% of IT projects experience outright failure, and 50% require reworking [5]. This is in part due to the lack of requirements captured in the initial planning stage.

The way I am going to capture my requirements for my system is by creating several different artefacts. Through these artefacts, I will develop the needs of the user in both a customer context and staff/admin context. I am initially going to conduct a competitor review to gather important functional requirements that already exist in similar systems. Once I have gathered important features from the competitor analysis, I will then conduct a client interview with the stakeholder. Through this interview, I will propose features that I have gathered from the competitor analysis and gather information on what they believe are important requirements for the system. Both artefacts should be enough to gauge the functional requirements from a staff/admin perspective.

I will then send out a questionnaire to prospective users of the system. The purpose of this questionnaire will be to gather intelligence on what users look for when trying to reserve a table using an online web-based system.

## 3.3 Competitor Review

The competitor review will consist of the currently existing booking and reservation systems on the market. I have looked specifically at the features that these systems incorporate and how they have utilized them to make it a seamless experience for the user [Appendix A]. I also did a separate analysis looking at the different systems from an admin perspective [Appendix B]. I am going to summarise key points discovered in the competitor analysis below and my most important findings.

### 3.3.1 OpenTable

OpenTable is a restaurant reservation service that was founded in California but now expands internationally [2]. OpenTable is a hub for restaurants in the user’s local area and acts as a discovery platform for restaurants as well as a booking system. The user simply chooses the restaurant they want to book, and they are taken to the restaurant’s page which allows them to see available times and dates. They can then reserve a table according to their needs.

From a client perspective, there are lots of different features available to make it a seamless experience for the user to reserve a table at their chosen restaurant. The first thing worth mentioning is how intuitive the whole process is for finding available tables and reserving a slot. The first thing the user needs to choose is their party size, followed by the date on which they want to book the table. This then shows the time availability according to both parameters. If there are no times available for that specific slot, then the system proposes times within 2.5 hours of the initial time slot. I think this is a great process in comparison to other systems as it allows the user to know immediately whether there is any availability for their circumstances.

Once the user has chosen a slot, they are they took to a page in which they can sign in with an account or proceed with the booking as a guest. Creating an account allows the user to collect loyalty points that can be exchanged for discounts in future bookings. This creates value for the user so that they will be more interested in creating an account. The overall layout is easily readable and simple. It consists of a very basic colour scheme of red, white, and black so all the text stands out. Any important information can then be put in a different colour to make it stand out from the rest of the page. An example of this is how they show the safety precaution methods in a darker grey colour.

There are many different features available from an admin perspective. OpenTable manages customer relationship management very well and offers many

### 3.3.2 TheFork

TheFork is another restaurant booking and discovery platform now joined with the huge review platform Trip Advisor.

### 3.3.3 SimplyBook.Me

This system is most similar to what I am trying to accomplish with my design. The website is designed first, and the reservation system is built directly into the website. The other competitors usually have been added to a hub, like that of uber eats, rather than have a website specifically designed for the brand and the booking system directly integrated.

### 3.3.4 BookingNinja

### 2.3.5 Most important findings

## 3.2 Requirements for Customers

To establish the requirements for potential customers, I created a Requirement Capture Plan that contains: Personas and Scenarios [Appendix B], a questionnaire for target users to establish further requirements [Appendix C], competitor analysis [Appendix A] and User Stories [Appendix E].

## 3.3 Requirements for Staff

For the requirements for staff, I mainly used the client interview [Appendix D], competitor analysis [Appendix B] and User Stories [Appendix E] to gauge what features need to be added to the system to make their lives easier.

# 4. Tools and Techniques

## 4.1 Introduction

The following section is going to go through all the different languages I used and what database I used to store the data. I am then going to discuss the project framework I utilised to make everything go smoothly throughout the lifecycle of the project.

## 4.2 Database

I have opted to use MySQL to store the data for the reservation system. MySQL is a relational database management system and is the most widely used database technology used across many huge companies.

## 4.2 Programming Languages

As my project is full-stack, I will be splitting it up into server and client-side tasks that will require various languages. For the server-side, I will be using the PHP language in conjunction with React for the client-side.

## 4.2.1 PHP

## 4.2.2 ReactJS

## 4.3 Project Framework

The project framework I will be implementing throughout the project life cycle is AGILE. Despite Agile being used primarily within a team context (mainly SCRUM), many aspects can be applied to the solo developer to create a successful project. I am going to discuss some of the things I have implemented from the SCRUM framework below.

The agile methodology is an iterative process that lends itself to rapid application development [5] –fitting perfectly into my project. Throughout the life cycle, everything I do and create will be test-driven and done in small sprints. A small sprint is essentially a time-boxed period to accomplish a chosen user story that was set in the research stage. I am going to create a Trello board and turn my user stories into a product backlog; this is a list of all the items I intend to complete at some stage for the product.

The main method I’m going to borrow from AGILE is keeping close contact with the client. It is important that the client is closely engaged in the development and can change the requirements or accept any suggestions proposed.

Design, Implementation, and Testing

# 5. Design

Wireframes

Use case

Entity Relationship

Flowcharts

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