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**UNIVERSITY OF GREENWICH**  
COMP1682–   
Final Year Project

COURSEWORK

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COMP1682 Final Report

**Project Name: Developing an online fast-food e-commerce system.**

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**Abstract**

Project Name: **Developing an online fast-food e-commerce system.**

The rise of e-commerce has transformed the way businesses operate and created a new potential economy. From traditional e-commerce to modern e-commerce, the field has grown and become one of the biggest sectors of business today. This shift has fundamentally changed how companies’ market and sell their products and services in today's market. With an open and extensive marketplace, online food marketing has become increasingly popular, and well-known companies like KFC and TripAdvisor have capitalized on this trend.

To follow suit, a project has been undertaken to develop a fast-food e-commerce website using full stack technology. The website's primary purpose is to provide a platform for users to order food during busy or challenging weather conditions. This feature is particularly important in times of extreme weather when users may not want to leave their homes. By utilizing full stack technology, the website will offer a complete solution for the entire process of food ordering, from browsing menus to payment and delivery.

The website will be designed with user experience in mind, making the ordering process as intuitive and straightforward as possible. This includes a simple and user-friendly interface, allowing customers to easily select their desired food items, and a secure online payment system that ensures safe and reliable transactions.

In conclusion, the project aims to create an online platform for fast-food orders that will provide customers with an easy and efficient ordering experience. With the implementation of full stack technology, the website will be able to offer a complete end-to-end solution for food orders, making it a reliable and convenient option for customers.

**(COI LẠI)**

**Acknowledgements**

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Furthermore, I would also like to acknowledge with much appreciation the crucial role of the staff of [Mr Nghe], who gave the permission to use all required equipment and the necessary materials to complete the task “**Developing an online fast-food e-commerce system**”. A special thanks goes to my teammate, [Mr Nghe], who help me to assemble the parts and gave suggestion about the task “**Developing an online fast-food e-commerce system**”. Last but not least, many thanks go to the head of the project, [Ms/Mr/Dr Surname] whose have invested his full effort in guiding the team in achieving the goal. I have to appreciate the guidance given by other supervisor as well as the panels especially in our project presentation that has improved our presentation skills thanks to their comment and advice.

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# Introduction

## Background

E-commerce has become a fundamental part of our daily lives, as it offers convenience, accessibility, and affordability. It has revolutionized how we shop, transforming traditional brick-and-mortar stores into virtual marketplaces that can be accessed from anywhere in the world. In recent years, there has been a surge in e-commerce activity, with more businesses and consumers embracing this digital platform.

One of the main reasons for the popularity of e-commerce is the ease and convenience it offers. With just a few clicks, consumers can order products from the comfort of their own homes, and businesses can reach a global audience without the need for physical storefronts. E-commerce has also helped to eliminate geographical barriers, allowing consumers to purchase products from anywhere in the world, and businesses to expand their customer base beyond their local markets.

Another trend that has emerged in recent years is the use of mobile devices for e-commerce transactions. With the proliferation of smartphones and tablets, consumers can now shop online while on the go, making e-commerce even more accessible and convenient. Mobile apps have become increasingly popular for e-commerce, providing consumers with a seamless shopping experience, and enabling businesses to reach their target audiences more effectively.

In addition to the convenience factor, e-commerce has also created new business opportunities, particularly for small and medium-sized enterprises (SMEs). With low startup costs and minimal overheads, SMEs can now compete with larger businesses on a global scale and reach a wider audience through e-commerce platforms.

In this context, the fast-food industry is also embracing e-commerce, with many fast-food chains now offering online ordering and delivery services. This has enabled consumers to order food from their favourite fast-food chains without leaving their homes and has also increased the efficiency of the ordering process during peak hours or inclement weather.

My e-commerce project is a Fast-Food website that gives users the ability to order food online, especially during busy times or adverse weather conditions. The platform offers a wide range of functions that ensure a seamless and secure ordering experience for customers.

## Aim

This project aims to develop an online fast food e-commerce system.

# Objectives

## Research

* + - Find e-commerce related material and selected topic. Citations from reliable sources (books, articles, reputable references).
    - Research some technologies that can be used for existing e-commerce systems on the market.
    - Study the system to suggest, analyse and evaluate the benefits it brings to the system.
    - Research legal, social, ethical, and professional issues with the project.
    - Planning and implementing data collection
    - Take a survey through Google Forms

## Analysis

* + - Analyse system requirements.
    - Analyse user needs.
    - Analyse the functional requirements.
    - Analyse non-functional requirements.
    - Analyse system functions

## Design & Implementation

* + - Design the site map of the system.
    - Database design and coding.
    - Design the user interface (UI) for the main functions of the system.
    - Create a cloud-based website.
    - Deploy the database to the system.
    - Design Registration function linked with UI and Database.
    - Design the Login function associated with the User Interface and the Database.
    - Design function View and Update records related to UI and Database.
    - Design the Product Management function in association with User Interface and Database with Create, Read, Update, Delete (CRUD) functions.
    - Design function Shopping Cart with UI and Database with Update and Delete function.
    - Functional Design View product details with user interface and database.
    - Design the Search function associated with the User Interface and the Database.
    - Design the Order functionality associated with the User Interface and Database.
    - Design the Order Management function linked with UI and Database.

## Test

* + - Test Database
    - Test all system functions.
    - Test connecting the system to the database in the cloud.
    - Test the application running on different devices.

## Evaluation and conclusions

* + - Overview of the e-commerce system.
    - Evaluate the strengths and weaknesses of the system.
    - Personal rating
    - Write a conclusion for the project.
    - Evaluate the future development of the system.

# Approach

For my current project, I have decided to use the Waterfall model as the Software Development Life Cycle (SDLC) methodology. This approach is considered one of the simplest project management models available, and it follows a sequential and linear design process. Although the popularity of the Waterfall model has decreased in recent years, as more agile methodologies have emerged, it is still a suitable choice for this project's objectives. The key to success with this model is to adhere to the outlined steps and ensure that each stage is completed before moving on to the next.

The Waterfall model is particularly well-suited for small-scale and short-term projects, such as this personal project. Its straightforward design makes it easy to understand and implement, and it ensures that each stage is completed thoroughly and with care. Additionally, the Waterfall model is cost-effective and efficient, making it a practical option for personal projects with limited resources.

While other methodologies may offer more flexibility or adaptability, the Waterfall model provides a clear structure and process that can be beneficial for specific projects. Overall, I believe that the Waterfall model is the best fit for my current project's goals and requirements.

## Justification of the suitability of a Methodology or a Framework followed.

The chosen SDLC model for this project is the waterfall model, which is a sequential and linear methodology in software development. The project will undergo several stages, beginning with the requirement gathering stage where we will identify the project's objectives, goals, and constraints. This will be followed by the design phase, where we will create the system's logic, functions, and shape, ensuring that it meets the requirements identified in the previous stage.

After completing the design phase, we will move to the implementation phase, where the system will be constructed according to the design. The testing phase will follow to check if the implemented functions are working correctly and if the system design goals are met. If the testing is successful, the project will then move to the deployment phase where it will be made available to users. The final phase is the maintenance phase, where the project's performance is monitored, and updates are made based on customer feedback.

By following the above stages, we aim to deliver a fully functional system within a few months. This will allow us to start realizing the benefits of the system quickly and assess its capabilities. Though the waterfall model is considered old-fashioned, it is still a useful approach in small-scale and short-term projects, and it is ideal for personal projects like this one.

# Literature Review

## Approach to literature searching.

To carry out this research, the initial step is to ensure that all the gathered information is thoroughly scrutinized and cited by a diverse range of scholars. The research will center on e-commerce and the technologies employed in building an e-commerce system, which will be examined by analysing relevant books and articles. The data has been gathered from various databases, including Google Scholar, ResearchGate, and other repositories featuring articles and books related to the subject matter.

## Identifying the problem

According to the article "Online food delivery: A systematic synthesis of literature and a framework development" provides a comprehensive overview of the current state of online food delivery systems. The authors conducted a thorough review of relevant academic literature and identified key factors influencing the success of online food delivery platforms, such as customer trust, service quality, and website usability.

The article also presents a new framework for analysing and evaluating online food delivery systems. The framework is based on four key dimensions: customer, service provider, technology, and environment. Within each dimension, specific factors are identified and explained in detail.

One strength of this article is its thoroughness in reviewing the literature and identifying key factors and dimensions. The framework presented in the article is a valuable tool for researchers and practitioners in the field of online food delivery systems.

However, one potential weakness of the article is its limited focus on literature published between 2010 and 2019, which may not fully capture recent developments in the field. Additionally, while the framework provides a useful structure for analysis, it may not account for all possible factors and dimensions that can impact the success of an online food delivery system.

Overall, this article is a valuable contribution to the field of online food delivery systems and provides useful insights for researchers and practitioners alike.(Shankar *et al.*, 2022)

## E-commerce and projects

According to the book " **Introduction to E-Commerce** " by Kenneth C. Laudon and Carol Guercio Traver edited by Zheng Qin is a comprehensive guide that explores the fast-paced world of e-commerce. It delves into the technological advancements that have revolutionized the way businesses conduct their operations and how they interact with their customers. The authors provide a thorough analysis of the different business models, marketing strategies, and legal issues surrounding e-commerce.

One of the strengths of this book is its ability to cover a wide range of topics, from the history of e-commerce to the latest trends and future predictions. It provides numerous real-world examples and case studies to help readers understand the concepts and apply them in practical scenarios. The book is well-structured, with each chapter building on the previous one, making it easy for readers to follow and retain the information.

Moreover, the book is written in clear and concise language, making it accessible to both business professionals and students. The authors also use various visual aids such as tables, diagrams, and graphs to explain complex concepts in a simplified manner.

Overall, "E-commerce: Business, Technology, Society" is an excellent resource for anyone interested in learning about e-commerce. It provides a comprehensive and in-depth analysis of the field, covering all aspects of the industry. Whether you are a business owner, a marketer, or a student, this book is an invaluable tool that can help you navigate the complex world of e-commerce.(C. Laudon and Traver, 2010)

The article "**Trends in e-commerce for the food marketing system**" provides an overview of the current trends and future possibilities of e-commerce in the food industry. The authors identify several factors contributing to the growth of e-commerce in the food sector, including changing consumer behavior, technological advancements, and the rise of mobile devices. The article also discusses different types of e-commerce models such as business-to-business (B2B) and business-to-consumer (B2C) and how these models are transforming the food industry's supply chain and logistics.

Moreover, the article highlights the significance of the "last-mile delivery" concept and how it has become a crucial factor for companies to succeed in e-commerce. The authors also discuss how companies can utilize data analytics and machine learning to improve their e-commerce operations and personalize their offerings to meet consumer demands. Additionally, the article identifies some of the challenges that e-commerce companies may face in the food industry, such as maintaining food safety standards, maintaining customer loyalty, and managing returns and refunds.

Overall, this article provides valuable insights into the growing importance of e-commerce in the food industry and highlights the opportunities and challenges associated with this trend. The article is a useful resource for researchers, policymakers, and professionals in the food industry who want to keep up with the latest developments in e-commerce and explore its potential for their businesses.(Carpio and Lange, 2015)

The article titled "**Factors Affecting Customers’ Perceptions and Firms’ Decisions Concerning Online Fast-Food Ordering**" presents a study on the factors that influence customers' perceptions of online fast food ordering and the corresponding decisions of firms operating in this industry. The research is conducted through a survey of 205 participants, who are asked to evaluate different attributes of online ordering platforms.

The authors find that customers' perceptions of online fast-food ordering are influenced by various factors, such as the ease of use, reliability, responsiveness, and security of the platform. In addition, the study shows that firms' decisions to adopt online ordering platforms are influenced by factors such as the costs and benefits of implementation, the level of competition in the industry, and the potential impact on the overall customer experience.

Overall, the article provides valuable insights into the complex interplay between customers' perceptions and firms' decisions in the context of online fast-food ordering. The study's findings can be useful for firms looking to optimize their online ordering platforms and improve the overall customer experience, as well as for researchers interested in understanding the factors that drive the adoption of new technologies in the food industry. However, it should be noted that the study has certain limitations, such as the relatively small sample size and the focus on a specific geographic region, which may limit the generalizability of the findings.(Papaioannou *et al.*, 2015)

## E-commerce development

"**Programming PHP**" by Kevin Tatroe, Peter MacIntyre, and Rasmus Lerdorf is a comprehensive guide to the PHP programming language. The book covers a wide range of topics, from the basics of PHP syntax and data types to more advanced concepts such as object-oriented programming and web application development.

One of the strengths of this book is its clear and concise writing style. The authors explain complex concepts in a way that is easy to understand and follow, even for readers with no prior programming experience. Additionally, the book provides plenty of code examples and practical exercises to help readers apply what they've learned.

The book is also up to date with the latest version of PHP at the time of its publication, version 7. The authors cover new features such as scalar type hints and return type declarations, as well as best practices for writing secure and efficient PHP code.

Overall, "Programming PHP" is an excellent resource for anyone looking to learn or improve their PHP programming skills. It is well-organized, easy to read, and packed with practical information and examples.(Lerdorf et al., 2002)

"**JavaScript Design Patterns**" by Addy Osmani is an excellent resource for any JavaScript developer looking to improve their code quality and structure. The book covers a wide range of design patterns, from the classic Gang of Four patterns to modern patterns specific to JavaScript development.

One of the strengths of this book is the clear and concise way in which the author explains each pattern. The examples provided are also practical and relevant to real-world scenarios, making it easy for readers to apply the patterns to their own code.

Another strength of the book is the focus on best practices and optimization. The author provides tips on how to write efficient and scalable code, as well as how to avoid common pitfalls and anti-patterns.

Overall, "**JavaScript Design Patterns**" is a valuable resource for any JavaScript developer looking to improve their skills and write better code. The book is well-written, well-organized, and packed with practical information and examples.(Osmani, 2012)

"**Guide to Software Development: Designing and Managing the Life Cycle**" by Arthur M. Langer is a comprehensive guide to software development, covering everything from design and planning to testing and maintenance. The book is aimed at both students and professionals, and it is designed to provide a broad overview of the software development process.

One of the strengths of this book is the author's emphasis on practical considerations. The author provides detailed guidance on project management, risk assessment, and team organization, as well as tips on how to manage client relationships and communicate effectively with stakeholders.

Another strength of the book is the clear and accessible writing style. The author presents complex concepts in a way that is easy to understand, even for readers with no prior experience in software development.

Overall, this book is a valuable resource for anyone involved in software development, whether students, professionals, or managers. The book is well organized, comprehensive, and packed with information and practical examples. If you are looking to improve your understanding of the software development process, then this book is definitely worth reading.(Langer, 2012)

"**Learning Heroku Postgres**" by Patrick Espake is an excellent resource for anyone looking to learn how to use Heroku Postgres for their database needs. The book is well-written and easy to follow, making it accessible to readers with a range of technical backgrounds.

One of the strengths of this book is the author's focus on practical examples. The book is filled with step-by-step instructions and real-world scenarios that allow readers to learn by doing. This approach is particularly helpful for those who are new to Heroku Postgres or who are looking to expand their knowledge of the platform.

Another strength of the book is the author's coverage of advanced topics. The book goes beyond the basics of Heroku Postgres and covers advanced topics such as replication, backups, and security. This makes the book a valuable resource for experienced database administrators as well as those who are just starting out.

Overall, "Learning Heroku Postgres" is a great resource for anyone looking to learn how to use Heroku Postgres for their database needs. The book is well-organized, thorough, and filled with practical information and examples. (Espake, 2015)

The article "**Database Design for Real-World E-Commerce Systems**" by Il-Yeol Song, Kyu-Young Whang, and Taejeon Korea is a comprehensive and informative resource for anyone interested in designing database systems for e-commerce applications. The authors present a detailed overview of various design aspects, such as data modeling, normalization, indexing, and database administration, among others.

One of the strengths of the article is its focus on real-world examples. The authors use case studies and practical examples to illustrate how database design can be applied to solve real-world problems in e-commerce systems. This approach makes the article more accessible and practical for readers with a range of technical backgrounds.

Another strength of the article is the authors' emphasis on scalability and performance. The authors provide insights into how database design can impact the performance of e-commerce systems and offer tips and best practices to optimize database performance.

Overall, "**Database Design for Real-World E-Commerce Systems**" is a valuable resource for anyone involved in designing, implementing, or maintaining database systems for e-commerce applications. The article is well-organized, comprehensive, and filled with practical examples and insights. If you are interested in gaining a deeper understanding of e-commerce database design, this article is definitely worth reading.(Song, Whang and Korea, 2000)

## Suggestion system

The article "Recommender Systems in E-Commerce" by Sanjeevan Sivapalan, Alireza Sadeghian, Asad M. Madni, and Hossein Rahanam is a well-written and informative review of recommender systems and their role in e-commerce.

The authors begin by providing an overview of e-commerce and the challenges that it poses to businesses, including the need to effectively recommend products to customers. They then delve into the different types of recommender systems, including content-based, collaborative filtering, and hybrid approaches.

The article also discusses various techniques and algorithms used in recommender systems, such as matrix factorization, neighborhood-based methods, and deep learning. Additionally, the authors explore some of the challenges and limitations of recommender systems, such as the cold start problem and the issue of data sparsity.

Overall, "Recommender Systems in E-Commerce" is a valuable resource for anyone interested in understanding the role of recommender systems in e-commerce and the techniques and algorithms used to implement them. The authors provide clear explanations and examples throughout the article, making it accessible to readers with different levels of expertise in the field.(Sivapalan *et al.*, 2014)

# Legal, Social, Ethical and Professional Issues and Considerations

Legal Issues: Presence technologies raise legal concerns, such as privacy, intellectual property, and liability for harm caused by virtual environments. There is a need for a clear legal framework to regulate the use of these technologies and to ensure the protection of user rights.

Social Issues: Presence technologies have the potential to affect social interactions, including changing the way people communicate and interact with each other. It is important to consider the broader social implications of these technologies and to engage in a dialogue with stakeholders to ensure that the potential benefits are maximized, and the potential risks are mitigated.

Ethical Issues: Presence technologies can raise ethical concerns, such as the potential for addiction, deception, and manipulation of users. Researchers and developers need to adhere to ethical standards and consider the potential consequences of their work.

Professional Issues: Researchers and developers in the presence field need to adhere to professional standards and best practices, such as obtaining informed consent from users, ensuring the protection of user privacy, and avoiding harm to users. It is important to establish a culture of professionalism in the presence field to ensure the responsible development and use of these technologies. (Schroeder, Meyer and Ziewitz, 2009)

# Requirements

Requirements are essential to understand the tasks that need to be performed to successfully complete a project. They ensure that all stakeholders involved in the project comprehend what is required to meet the client's expectations. It is vital to initiate a project by conducting a requirement analysis as it enables stakeholders to communicate their issues with the current system and what they expect the new system to accomplish. Understanding the customer's problems is the key to identifying the necessary elements for the new system. However, there are various types of requirements that support different aspects of the project, such as functional, non-functional, and business requirements, among others. To start with, it is crucial to determine all requirements for the project. This allows for a clear understanding of the project's scope and helps ensure that all necessary components are considered before moving forward with the project. A thorough requirement analysis sets the foundation for a successful project by identifying what needs to be achieved and how it can be accomplished.

## Analysis of requirements

At the outset of any project, it is critical to consider the requirements of the proposed system and the project holistically. Before the implementation phase can commence, a comprehensive list of requirements must be compiled, encompassing all the necessary elements of the new system. These requirements can be established through ongoing communication with stakeholders in meetings, as well as by researching similar products and solutions offered by competitors. By taking these steps, the project can ensure that it can understand what needs to be done and work towards developing a system that meets all the necessary requirements.

## Existing Solutions

### Product A

Introduction

Pros

Cons

### Product B

Introduction

Pros

Cons

### Product C

Introduction

Pros

Cons

### Conclusion

# Business Requirements

## Overall Picture

## Functional Requirements with MoSCoW prioritisation

## Non-functional Requirements

# Analysis and Design

## Architecture

## High Level Design

### Assumptions

### Overall

### Endpoints

### 3rd party Services

## Technology choices

### Front End

### Back End

### Mobile App

## Use case Diagram

### Primary and Secondary Use-case scenario

## Entity Relationship Diagrams

### Physical design (Capacity)

## Wireframes for prototypes

## Class Diagram

## Activity Diagram / Sequence Diagram

# Implementation

## Database

## Front End

## Back End

Structure Application

Controller / Views / Database …

## Deployment

## Images

# Testing

# Evaluation

## Summarised Key findings from the project

## Recommendations for future development

## Project Evaluation

## Personal Evaluation

## Conclusion

### What went well?

### What did not go well?

### What have I learned from this project?

### Future development

# References

# Appendix A – Project Proposal

# Appendix B

# Appendix C