Project Name: Restaurant Management System

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Declaration

I declare that this or any other University has not previously submitted this work for the awarding of the course marks. To the best of my knowledge and belief, this wok contains no material previously published or written by another person except where due reference is made.

Student Name: Faith Chugu Mwanyolo

Signature:

Date:

APPROVAL

The project proposal of *Faith Chugu Mwanyolo* was reviewed and approved by the following:

Supervisor's Name: ……

Signature: ……

Dedication

I hereby dedicate this project to my parents who have paid my school fees without fail and constantly encouraged me to do my best in school and life in general. I also dedicate this to my lecturers because without them, I would not have the guidance I need to see this project through.

Furthermore, I dedicate this project to the people in the service industry, especially the food industry for delivering and managing each customer's orders accurately. It is not an easy task, especially when it is done manually.

Acknowledgment

I acknowledge that without God I would not have made it this far. He has seen me through both the tough times and the good times and I cannot fail to give Him gratitude for that. I would like to thank my parents: Lucy Mwanyolo and Dan Mwanyolo for paying my school fees and ensuring that I have all the resources I require throughout my years as a student at Riara University. I also want to thank my sisters: Christine Wali and Dorah Malemba for encouraging me and genuinely looking out for me and holding my hand throughout my journey in this institution. May God bless them all.

I would like to thank my lecturers for seeing potential in me and guiding me where they saw fit. Having lecturers who actually look out for your best interest is a rare experience.

ABSTRACT

Managing a restaurant is already tiring and hectic so why not automate tasks and take some of the burden away? The restaurant management system allows customers to reserve tables at particular restaurants and also make their personalised or off-menu orders in case they do not want to sit in the restaurant. These orders can either be delivered or picked up by the customers. The system also enables the restaurant staff to manage orders and properly handle tables in order to avoid overbooking. In the case of an order, the staff is able to see whether the customer would like to pick it up or have it delivered. In the case of a table reservation, the staff is able to allocate a time slot for the particular table and this table will be reserved for a particular time. This system saves on a lot of time and allows for hastened management of orders and customers thus making it a must-have for any restaurant. This system will attract many more customers as the orders are sped up and also arrive at the convenience of the customer.

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CHAPTER 1: INTRODUCTION

1.1 Background

In the modern world that we live in, technology has undeniably become integrated into every aspect of our life. It is therefore highly important to sustain, spread and integrate this technological involvement in our lives due to its countless benefits. Technology in any business is needed to greatly optimize both organizational and managerial aspects of such an organization. There is also provision of real-time information, customizable interfaces based on the requirements, and high adaptability to any business field. Long gone are the days where manual input was used. This was a slow and tedious process and needed to be replaced. Automated systems are more accurate and save on time.

In the wake of the COVID-19 pandemic, the world has literally been forced to embrace technology due to the limitation of physical interactions. The coronavirus has become a colossal threat to public health all over the world. All sectors in the economy have been hit hard and people are stuck wondering how to deal with this kind of global crisis. Restaurants have been forced to make rapid changes to way the operations are carried out. Restaurant owners, waiters, staff, delivery personnel have all been affected. What's more, is that no one seems to know how long we will be combating a crisis of this magnitude.

Nobody has been left unaffected from restaurants, hotels, all the way to general eateries. This pandemic has particularly affected small-scale restaurants due to lack of funds caused by lack of clients and orders, which inevitably leads to forced closure and/ or retrenchment of staff hence leaving them highly disadvantaged.

Taking into mind that people still love to eat at their convenience and do not like to wait in queues, and also given the fact that the pandemic has greatly reduced the available eating options, the **restaurant management system** is necessary to help restaurants get back on their feet and continue pushing orders out. The system I am proposing will greatly simplify the ordering process for both the consumer and the restaurant or franchise. The system presents an interactive, user friendly and up-to-date menu with all available options in an easy to manoeuvre manner.

The customer is required to login or create an account. This helps to provide custom features for the clients in the event that this is necessary. This also enables the user to build a profile which can aid in reordering previous orders without having to start from scratch. With an account, the user is also able to review his or her history and specify payment methods.

Customers can choose and customise one or more items to purchase. Once done, the order will be placed in the purchasing basket or cart. Customers can view all the purchase details in the basket before checking out. The customer then receives the purchase confirmation details. The database runs in real-time hence orders are worked on the minute they are received, unless there is a delay. Delays are quickly managed through allocation of tasks and customers are still able to receive their meal in a short time. All orders are accurate and in the case that an order is mixed up or lacking a particular item, returns or refunds are an option, through the right procedure. In case the customer wants to eat in, a table reservation can be made.

This system will greatly increase the traffic for restaurants and find a way to go around the pandemic hence slowly adapting to the new normal. When tables are reserved, this will give the restaurant ample time to adhere to the COVID-19 sanitation requirements by disinfecting the tables, seats, cutlery and crockery. Guests are also able to specify how many people they would want on the table hence giving the restaurant an opportunity to rearrange the tables and seats in order to ensure social distancing. The smooth nature of the system gives the customers confidence in the restaurant since they are well taken care of in regards to the global pandemic.

1.2 Problem Statement

In the wake of the pandemic and the fast pace of the technological world, an automated system is needed to keep up with the orders and still ensure quality and efficiency. Due to the limits imposed on physical meet-ups, customers are able to have their meals quickly delivered to their doorstep without having to leave the safety of their homes. It also a well-known fact that people dislike waiting in long queues so this system finds a way to tackle this problem. Managers need this system in order to oversee customer satisfaction through monitoring the rate at which orders are pushed out and checking on client feedback. The system also tackles the huge communication problem that is an issue in a lot of restaurants especially between the cooks and the staff or servers. Waiters also tend to overwork and spend a lot of time looking for orders that belong to specific tables. This problem is tackled through allocation of roles to specific members of staff.

1.3 Objectives

1. To enable customers to pay for their food remotely.
2. To provide customers with the ability to order and receive meals while adhering to the COVID-19 restrictions and regulations.
3. To enable restaurants to bill and collect money from their customers remotely.
4. To enable customers to have an in-hand menu.

1.4 Justification

This system will be used by both large scale and small scale hotels, restaurants and general eateries. The intention is to go all the way down to *kibandas* and "locals". Advantages of this system include enabling non-contact payments in order to adhere to the pandemic regulations. This system will also ensure maintenance of social distancing as the restaurant will be able to properly space out tables depending on the number of people indicated on the reservation. The restaurant management system will enable tracking of orders and also build on customer loyalty by ensuring they are well taken care of even in the midst of the pandemic. In general this eliminates the long queues in restaurants and also significantly cuts down waiting time. Tables are well managed and staff is able to communicate with ease and share tasks well.

1.5 Scope

As stated before, the system will be used by both large scale and small scale hotels, restaurants and general eateries all the way down to *kibandas* and "locals". It will prove to be handy in the wake of the pandemic that is currently at hand.

CHAPTER 2: LITERATURE REVIEW

2.1 History of the Food Delivery concept

Integrating professionally made food with convenient and affordable access from home, food delivery is more popular today than at any other time in history. But where did it start? The concept of takeout began in ancient Rome when *thermopolium* was created. The word literally refers to "a place where something hot is sold" and was an establishment where people could buy ready-to-eat food. It was basically a street kitchen and provided hot food to those who could not afford their own kitchen hence giving them the opportunity to eat hot food. (Harvey, 2019)

In 1889, the first recorded instance of actual food delivery occurred. King Umberto and Queen Margherita called a man named Raffaele Esposito to deliver a pizza to them at their home in Naples. Shortly after this, a man in India named Mahadeo Havaji Bachche came up with the idea of a company that was meant to make and deliver homemade lunches to workers within Mumbai. This service came to be known as "dabbawala" and there are currently over 5000 of them delivering over 200,000 lunches in India on a daily basis. (Delong, 2018)

As this was going on, the US was making use of horse-drawn carriers to deliver food to the customers. In the UK as well, during the 2nd World War, a system was set up to deliver hot meals to the families of those who lost their homes and belongings due to the war. After the war was over and normalcy begun to resume, this style of food delivery was slowly getting embedded into society especially with more and more people getting television sets in their homes. Who would not want their food delivered as they comfortably sat in front of their television? Gradually, restaurants began to adapt to this new way of life and even started advertising their menus on the televisions and having these menus available for download to be viewed through **iPads, tablets and phones**. Years later and we cannot imagine a world where food delivery was not a norm.

2.1.1 Revolution of menus (e-menus)

Over the years, technology has greatly revolutionized the service industry. The restaurant industry has been very significantly altered. A great deal of these operations and innovation has been with point-of-sale (POS) operations but we forget that the most important part of the restaurant was still up and ripe for innovation. This is the menu. Restaurant menus have evolved from extremely humble beginnings on carte chalkboards and print with no images to today's vibrant and colourful displays. There is a famous saying that "People eat with their eyes". (Spence, 2016)

Restaurants began to offer digitized versions of their menus and almost immediately began to reap the benefits. E-menus provide the customer with a lot more information about menu items than a traditional paper menu. It is proven that customers who sit in restaurants that provide e-menus spend about 10% more in terms of money than those who are seated at restaurants that provide the traditional menus. With vivid visuals, you know exactly what you are going to get served on your plate. Customers also feel more involved with the process as it has been made more interactive and user friendly.

E-menus also greatly advantage the waiters in that use of tablets to take orders eliminate order taking errors. There is now less confusion in the kitchen as everything is automated and clearly distinguished. Through integration of e-menus and tablets, expenses that would regularly be incurred on stationery is eliminated and the waiters have an easier time piling up orders through easy-to-use interfaces. Through this revolution, restaurants slowly build their e-reputation and become relevant in the technological world.

With electronic menus, orders can be taken correctly the first time. There is no need to run back and forth to a distant terminal, because the terminal is always with the server. The exception, of course, comes in terms of battery percentage of the terminal. Every order is associated with an individual seat at the table, and orders are built one customer at a time, just like on paper, but with greater precision and accuracy. Items can also easily be shared by the whole table, moved or customized, and the cost calculated in real time.

2.2. Online food orders in the modern world

It is almost impossible to imagine a world without food delivery right? This service has become so embedded into our lives that it seems like a basic right. There are several platforms that deliver meals, foodstuffs and groceries to your doorstep, for example UberEats, Jumia Food, Yum deliveries and Glovo among others. Such platforms often require the user to create an account or log in with Facebook. This ensures that the user does not have to keep on filling in user details such as location. This requirement also enables the building of user history hence enabling the user to keep on reordering the same item(s) if that is their desire.

The Recommendation algorithm suggests meals to the customers based on previous orders. It makes it easier for the customer to build his/her order and also view the most popular dishes. Moreover, various dimension filters can be used according to individual preferences e.g. Price, taste or quantity. The client is able to browse through the selection of menu items available without leaving the comfort of wherever they are. They are then allowed to mix and match items,

add and remove items and in some, but very few cases, order from more than one restaurant at a time.

Once selected, these items are added to a cart that is often represented by a trolley symbol. Once the user is satisfied with their selections, they proceed to check out. The client is often presented with more than one payment option for example Debit card, Credit card, cash on delivery or MPESA where this option is applicable. The items are then delivered to the user's location of convenience. There is, however, the option of individually picking the order up. In this case, the user would have managed to avoid long queues and only leave to collect their order when it is ready.The use of technology ensures that the customer's order is accurate hence leaving no room for disappointment.

2.2.1 Advantages of restaurant management systems

It is possible to track sales down to each item. Since all transactions are captured by the system, all the sales data is accurate. These transactions include discounts, promotion deals, payments and any voids. Revenue obtained at the end of the day has accounted for everything. Sales data is also easily categorized in a way that makes sense to the staff i.e. using customer names as a category.

Better customer service. Making customers happy is the ideal goal of any restaurant and through management systems, this is highly plausible. Software features allow staff to record customer information such as names and contact details. With more knowledge of your customer's likes, you can deliver a more satisfying service. This also enables the creation of mailing lists which can be used to check up on the customers, send out coupons and receive customer feedback.

Through restaurant management systems, the employer can **access data anywhere.** A lot of these systems are now hosted on the cloud meaning a manager can monitor real-time sales transactions and track employee performance. This enables him or to be a hands-on leader without necessarily having to be in the premise.

There is **improved communication** for every member of staff. With the service industry, someone will always mix up information along the line. This results in angry and frustrated customers and staff members. With restaurant management systems, everything is done in real time, for example, billing is accurate because it is sent directly to the cashier.

These systems ensure **faster service** and **successful server stations.** The waiters are more organized and able to properly handle orders hence resulting in less waiting time for clients. There are also smaller and more productive server stations.

2.2.2 Disadvantages of restaurant management systems

The infrastructure required to set up such systems tends to be high and significantly costly hence discouraging a lot of restaurant owners. To add on to that, many members of staff tend to be replaced when tasks become automated hence the idea is not commonly received with open arms.

At time, revenue conflicts may occur between the restaurants and delivery provider. This is because not every restaurant owner has the budget to employ several delivery boys and bear all the transport and remuneration expenditure hence they choose to partner with the delivery service providers through various apps. However, due to the nature of humans and our inability to fully control automated systems, conflict can arise between the restaurant owner and delivery providers regarding the payments.

2.3 Case Study: **Foodie365cloud**

2.3.1 What is Foodie365cloud?

This is a ready to use cloud-based restaurant management system made for fine dining restaurants, take away and quick service restaurants. Bars and your local clubs are not excluded from this. The system makes use of single order on multiple KOT (Kitchen order taking) and BOT (Bar Order Taking) print channel functionality in order to serve more customers. The system is fashioned around the floor layout of the relevant restaurant and together with its interactive nature allows the manager to check and update current status of every table and other activities going on within the establishment that are relevant to the dining experience.

It has been deployed in several establishments such as Inside the Box Café and Catering, Butcher's Char-B-Que, Zola, Scratch and Los Gatos Roasting Company which are all full service restaurants. The owner of Scratch, Steven Grebing said: “Our sales went up and we were able to generate a better flow allowing us to run at 100% capacity.” There are several other testimonies from various restaurant owners marvelling at the change that the system has brought to their restaurants and establishments.

2.3.2 What features does the system have?

The system offers **guest seating and service options**. A dashboard enables the manager and members of staff to know which tables are occupied and available. Another notable feature is

inventory and production that prevents food wastage by letting the business know the right quantity of ingredients to purchase hence ensuring optimum utilization. Foodie360cloud has a **loyalty system** that awards frequent clients with vouchers, coupons and promotion codes. It allows the restaurant to customize the menu, menu style and other menu options as per the need at the time without any additional cost. For example, the restaurant may want a Christmas themed menu, full of festive meals. This is possible through the easy to use interface. It also offers accounting and taxation features through automatic tax calculation and discount function. It will automatically adjust according to the tax percentage specified. This prevents the inconvenience of wrong billing.

2.3.3 Context

A lot of the restaurants that implemented the restaurant management system had two similar pain areas: **problem with inventory management** whereby the establishment would end up either overspending or underspending on kitchen requirements such as ingredients etc. This is because a manual inventory checker is prone to errors due to the imperfect nature of humans. The second common problem was a **problem in sending food orders directly to direct kitchen.** This has to do with the different types of kitchens i.e. the pastry kitchen, salad bar and main kitchen. Separation of orders was a challenge as they would all be written on the same piece of paper then sent into the kitchen where they would be read aloud. This caused a lot of confusion in the kitchen. Both of these pain areas were resolved through implementation of the features previously mentioned.

Once implemented, the restaurants faced a faced a few challenges, since it was a new concept. Firstly they found it hard to manage two-way data synchronization between mobile application and server to work in offline mode. They also found it difficult to understand the requirements and to adapt to the continuous change in requirements. These were, however, eventually reconciled as the establishments continued to familiarize themselves with the system. The developers of the system also took time in the understanding and Implementation of complex database structure to fulfil the client requirements hence making the transition process simple and smooth.

The system implements a wide range of technologies. Material Design, Google Maps APIs, Firebase for Push Notifications, Fabric API for Crash Report and Analytic, FTP library to upload image on FTP Server and SOAP Web Services for **Android Application** and SQL Server 2008 and Metronic Theme for **Web Application.** With this, the system allows for Registration, Log In,Forgot Password, Change Password, Manage Profile, Front & Back Office- Account

Management, Banquet management, Club /mini-bar management, Menu management, Inventory management, Table billing, Customer relationship, Takeaway & delivery, Employee management and Tracking.

Lastly, Foodie365cloud also comes with a variety of modules such as Account management which enables the complex accounting procedures to be done seamlessly, such as auditing. Banquet management that handles advance party booking and multiple reservations. Club/ mini-bar management to account for bar stock and to handle the sales register. Menu management where the business is provided with a customisable menu dashboard. The Inventory management that provides a sophisticated way to manage inventory and stock by providing Real-time inventory.

2.4 Gap identified

The restaurant management system will firstly benefit both the customer and the establishment or business. With an easy to use app, customers can easily browse through menu options, customize dishes and thereafter place orders as opposed to standing in line, only to read the menu at the counter and then proceed to order. A lot of time will be saved and there will be a subsequent decrease in human traffic at these establishments. This will help to reduce crowds hence adhering to the COVID-19 regulations.

From the restaurant's point of view, they no longer have to spend time manually taking the customers and can now evade communication errors that occur due to miscommunication. With the wake of a global pandemic, the restaurant will now be better prepared to deal with customers due to the ability to reserve a table. They will get the reservation beforehand and be able to ensure social distancing depending on the number of people expected. This is in line with government and global directives.

Billing and payment is made easier and contact-free thus protecting both the customers and staff members. In these times, anything that can be implemented to prevent direct human contact should be enforced due to the ease at which the coronavirus is spread. In terms of payment, cashless payment is secure and transparent. It is easy for both the customer and business to trace payments in case of any dispute.

CHAPTER 3: METHODOLOGY

3.1 System Analysis

A **system** is a collection of different parts to form a functional unit that achieves a particular goal or outcome. Therefore, **system analysis** is a problem-solving approach that breaks a larger system into these previously mentioned parts in order to figure out how it works so that a specific goal can be achieved. This problem-solving method can help a person learn how to use systems that were created by someone else and to plan for new systems. System analysis also reduce errors when using systems to solve problems for example a person may resolve a problem within a few minutes but then weeks later find out that what they fixed caused other errors to occur. The better you understand a system, the lower the chances of such occurrences.

3.1.2 What actually happens during system analysis?

Generally, system analysis consists of Analysis, Design, Testing and Development, Implementation, Documentation and Evaluation. In this case, however, the stages varied from the usual system analysis steps and are hence unique to this system.

3.1.3 Idea formulation

Firstly, every system has to begin with an **idea.** In this particular instance, the idea generation process was a bit more involved as it is a revolutionary idea that came out due to a worldwide crisis, COVID-19, which shut down the economy and gratefully affected the hospitality industry.

3.1.4 Research

Next is **research.** Is there a market for this system? Research also helps to establish what special and unique features need to be added to the system to fulfil the wants of the target market. This is basically identifying a gap and figuring out how to fill it. In this stage, restaurants are visited in order to establish whether they have any similar system in place and if not, why they have not put a system in place. Are they afraid of costs? If so, how can this system built to be pocket friendly or at least guarantee great returns for the establishment.

3.1.5 Development

Third step is **development**. Here prototypes are built, tested, modified, rebuilt and perfected. Is the system accomplishing all our goals? Will it be easy for the staff and customers to learn?

3.1.6 Testing

Once the final product is achieved, it is **tested.** Depending on the scope of the manufacturing company, tests are done on smaller companies to see the efficiency of the system. In this case, a local nearby Kibanda was used. This helps to ensure that the system is viable and covers restaurant demands and hence does not need any modifications.

3.1.7 Analysis

Next there is **analysis,** from the feedback obtained from real customers, the system is then tweaked and modified in order to perfect it. Is the interface hard to learn and memorize? Feedback also helps the manufacturer understand how to launch the system into the market.

3.1.8 Introduction

Lastly there is **introduction,** the restaurant management system had passed all the checks and has gotten the green light to be implemented in interested restaurants and establishments. For such a system, phased implementation is recommended in order to ensure a smooth transition.

3.2 Old vs. New Restaurant management system

3.2.1 Tin Rangers Coffee shop (old system)

With this system, first, the customer will have to stand in queue to place his or her order on screens at the front of the queue. They then have to move aside or sit and wait for the order to be delivered to them. In case he or she needs to order again or forgot an item, they are required to repeat the whole process and queue again. This way, billing becomes a confusing task due to multiple new orders on a single person's tab. A lot of human errors occur as well due to the nature in which the screens work since the client has to type in their order. A lot of time is wasted queuing which leads to build up of unnecessary traffic within the establishment.

A new system was proposed that would upgrade the menu display, provide for online ordering, personal account facility and provide seat availability information among many other needed features. The new system would also call for users to know how to use the system, which has a very simple interface. It requires both user and admin to have a proper internet connection and also requires the users to be aware of potential viruses, malware and adware. The aim of all this is to provide the user with a platform that is free from all formalities that are time consuming in nature.

3.2.2 New Restaurant Management System

With the new system, the client is able to browse through the selection of menu items available without leaving the comfort of wherever they are. They are then allowed to mix and match items, add and remove items. This in itself saves a lot of time and minimises contact amongst people during this very uncertain time where a worldwide pandemic is prevalent.

Once selected, these items are added to a cart that is often represented by a trolley symbol. Once the user is satisfied with their selections, they proceed to check out. The client is often presented with more than one payment option for example Debit card, Credit card, cash on delivery or MPESA where this option is applicable. The items are then delivered to the user's location of convenience. There is, however, the option of individually picking the order up. In

this case, the user would have managed to avoid long queues and only leave to collect their order when it is ready. The use of technology ensures that the customer's order is accurate hence leaving no room for disappointment.

3.3 Feasibility study

A feasibility study is an analysis that takes all parts of a project's relevant factors into account – including economic, technical, legal and scheduling considerations – to ascertain the likelihood of completing the project successfully. (Will Kenton, 2020). Feasibility studies are necessary in that they help the project, concept or plan inside and out and potential problems are easily highlighted.

3.3.1 Economic feasibility

The computerized system will help in automating the selection leading the profits and details of the establishments. The costs incurred of not creating the system are set to be great, because precious time can be wasted carrying out these services manually.

Resource table

ITEMS	BUDGET	DURATION	TOTAL
Wifi	7,000 KES monthky	4 months	28,000 KES
Bundles (MBs)	2,000 KES monthly	4 months	8,000 KES
Printing fees	500 KES monthly	4 months	2,000 KES
Airtime (remote work)	1,000 KES monthly	4 months	4000 KES
Total			42,000 KES

Figure 1 Resource table

3.3.2 Technical feasibility

The project was developed in web scripting languages, these are: JavaScript, CSS and PHP. They provide a high level of reliability, availability and compatibility. All these qualities make the chosen languages appropriate for this project. A payment system will be integrated using APIs.

3.4 System Design

3.4.1 What is system design?

Designing a system requires that someone think about the right way to decompose the functionality, and how to create a small set of abstractions that can be re-used and re-combined to provide the needed functionality. (Jim Waldo, 2016). It involves definition of the elements of a system such as modules, architecture and components.

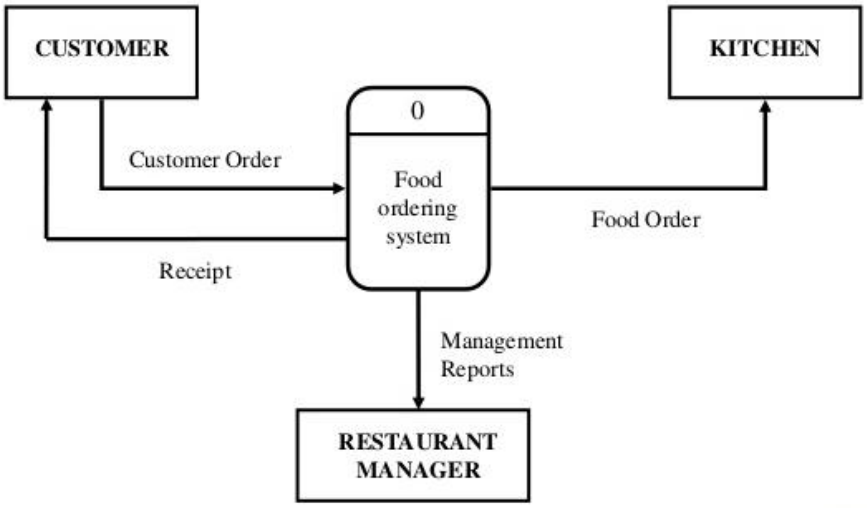


Figure 2 General food ordering system design

3.4.2 Data Flow Diagram

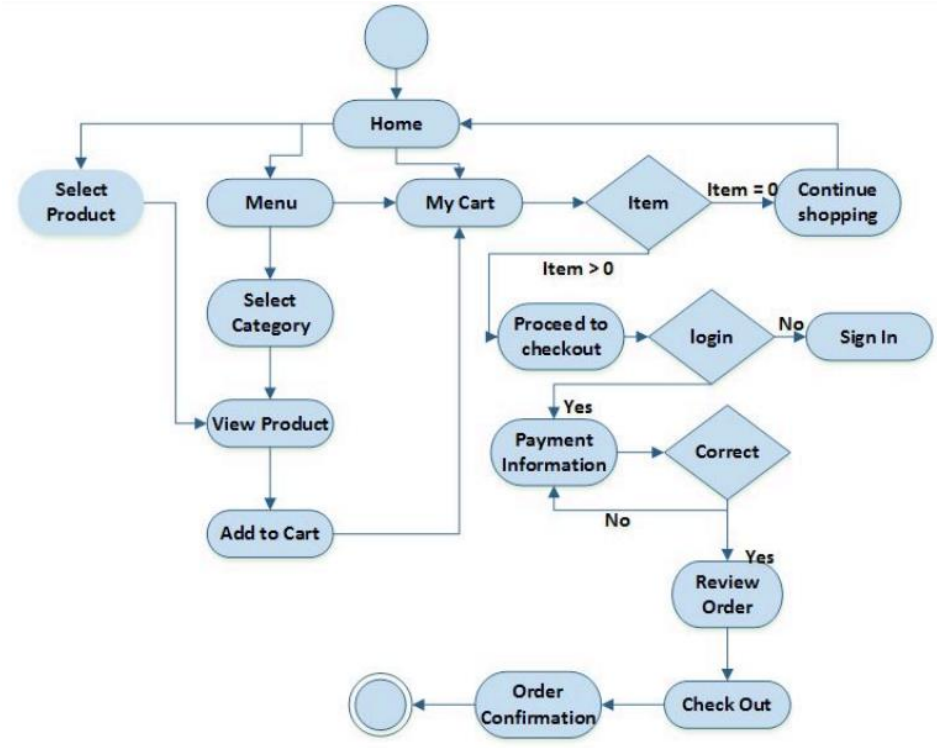


Figure 3 Data Flow Diagram

3.4.3 Entity Relationship Diagram

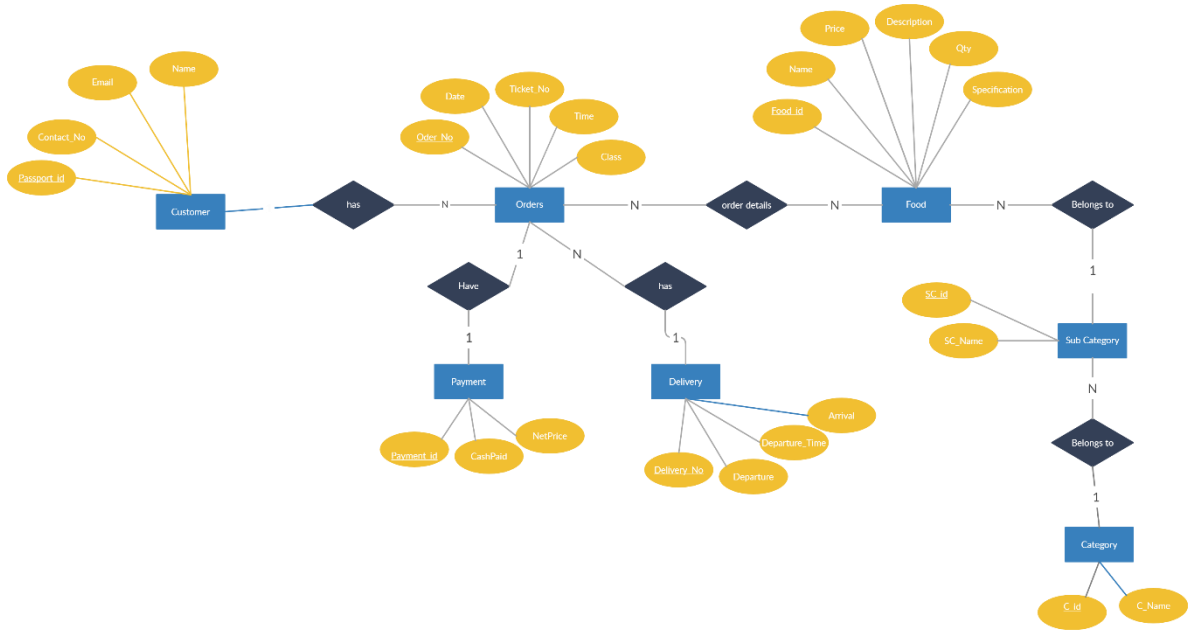


Figure 4 Entity Relationship Diagram

3.4.3 Gantt Chart

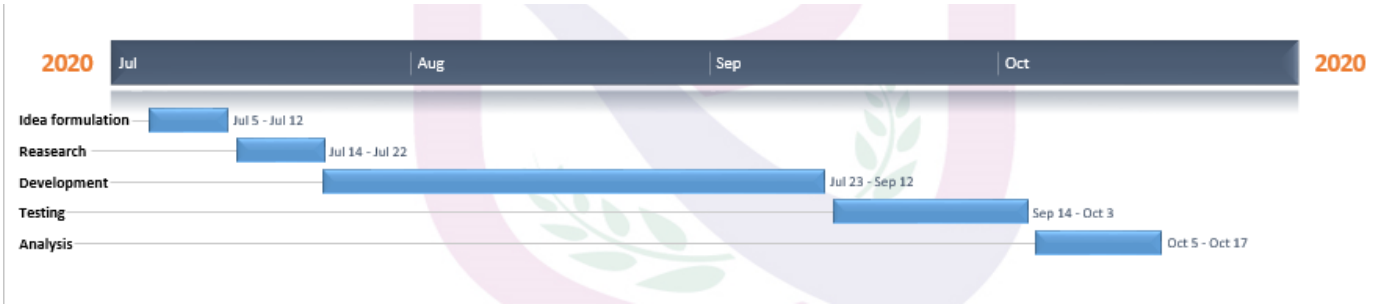


Figure 5 Gantt Chart

CHAPTER FOUR: IMPLEMENTATION, TESTING AND RESULT

4.1 Implementation

The coding for this system is done using simple programming languages which include, JavaScript, PHP, Sql, CSS, html and MySQL. The front end system is based on Foodilite theme which fit the restaurant management system perfectly. The system has a front-end and back-end which is only accessible to an administrator. The backend pulls data from the database and displays it to the administrator via localhost/phpmyadmin. The implementation and testing for this project is using Xampp control panel and the Google Chrome browser.

4.1.1 Hardware/ Software Interface

These are the hardware and software requirements needed to run the system efficiently. The hardware interface comprises includes of:

- Dual Core(Processor).
- GB Ram
- 512 KB Cache Memory
- Hard disk 10 GB
- Microsoft Compatible 101 or more Key Board
- Web Browser: Internet Explorer 10 or above, Mozilla Firefox or Google Chrome
- Drivers: Java Runtime Environment
- Integrated Development Environment: Eclipse J2EE or Apache Tomcat

4.1.2 Implementation Languages

For my restaurant management system I used HTML, CSS, PHP and SQL. Find below, the reasons why I chose these languages:

✓ **HTML**

Hypertext Markup Language, or HTML, is a programming language that describes how information is structured on a web page. Together with CSS, and JavaScript, they make up essential building blocks of websites. Basically, HTML provides the bone structure of a web page, while CSS provides the skin, and JavaScript provides the brain.

HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. To depict a HTML element, once must use tags which are basically the less than and greater than signs <> i.e. <img> . HTML provides a means to create structured documents by denoting

structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. (w3schools.com, N.D).

- ✓ **PHP**

PHP (Hypertext Pre-Processor) is a server-side web programing language that is widely used for web development. PHP is widely used for web development because PHP language has its roots in C and C++. PHP is free and has no licensing hence is generally not costly. It works well with MySQL which is a popular database language. Due to its readily available documentation, the language is quite easy to learn hence influenced my decision to pick it.

- ✓ **CSS**
- ✓ **MySQL**

4.2 How does the system work?

Once a customer opts in, they are presented with the following interface. The interface gives them the option of signing in (for existing customers) or registering and setting up an account (for new users). Upon keying in details (for users with accounts) they are notified if the details keyed in are incorrect.

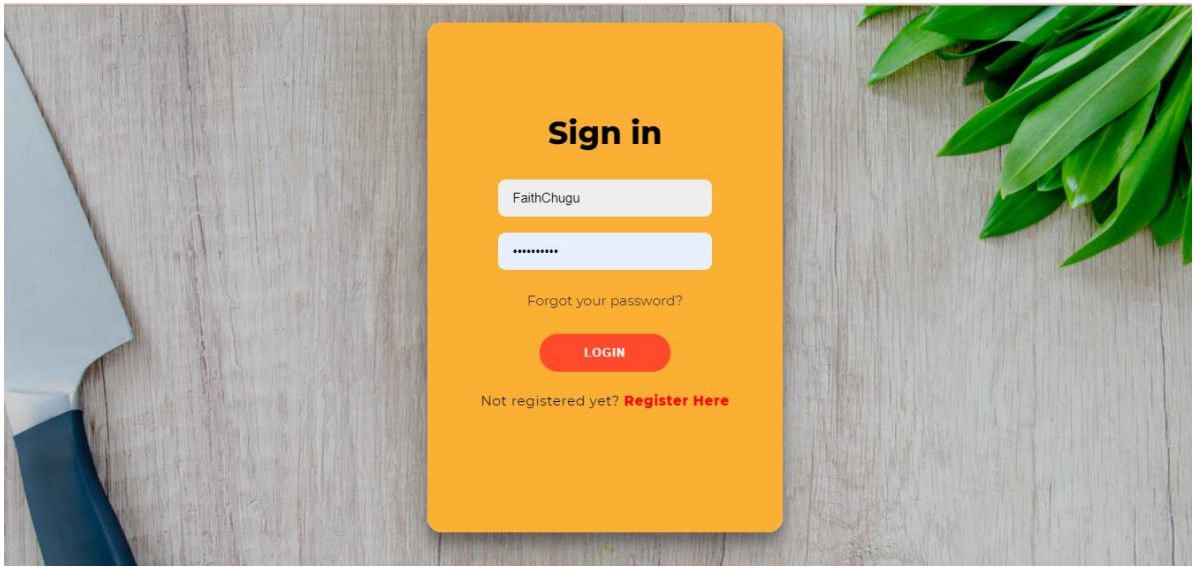


Figure 6 Log in

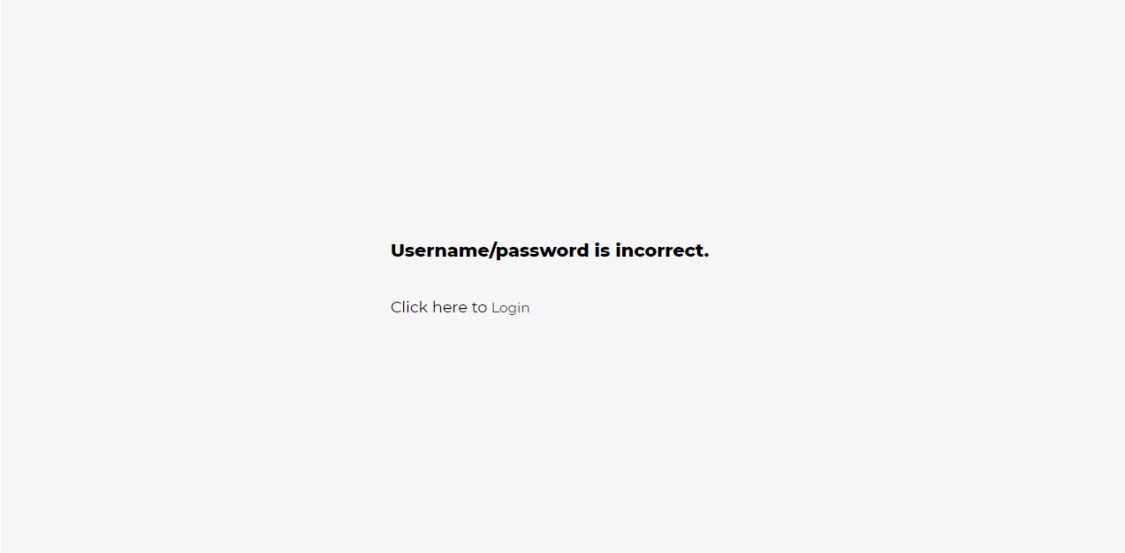


Figure 7 Incorrect details

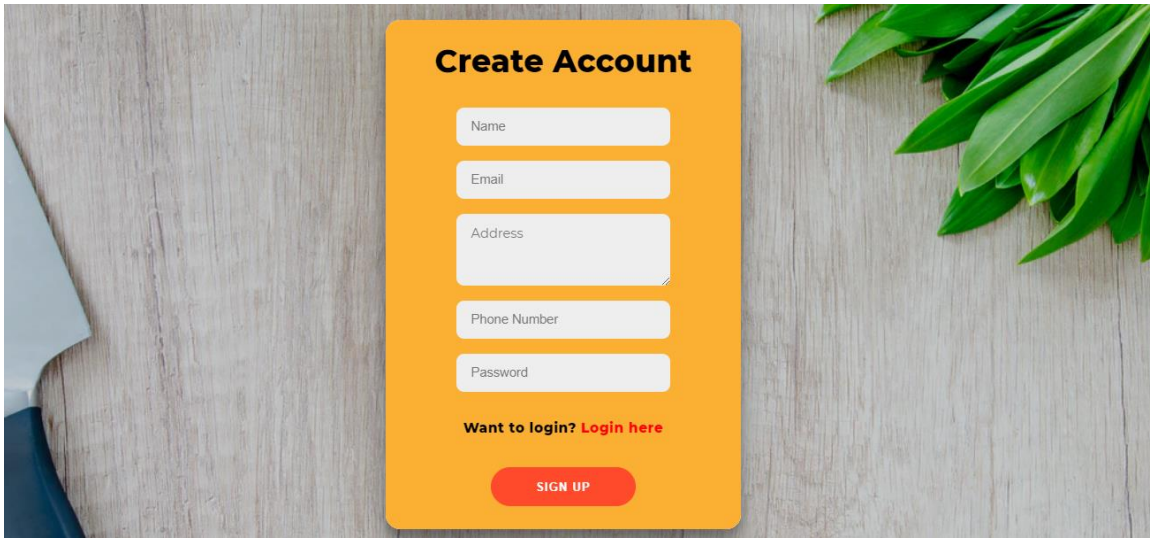


Figure 8 Create account

4.2.1 The ordering module and interface

Once logged in, the user is presented with a landing page with a hero image that invites them to the system. The navigation tab consists of the following options

- ✓ The *Foodilite* logo that is used as a home button to return the user to the homepage. Upon scrolling down, there is a brief description about the business followed by a list of cuisines offered.
- ✓ The next button is *About* which leads to a section that gives a brief history about the business.

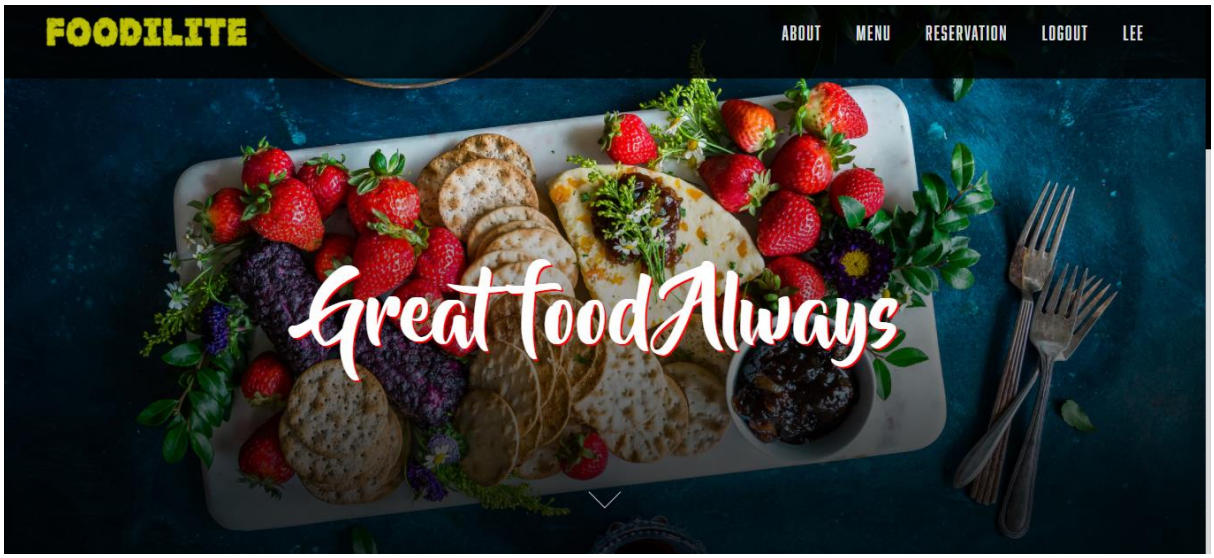


Figure 9 Landing page

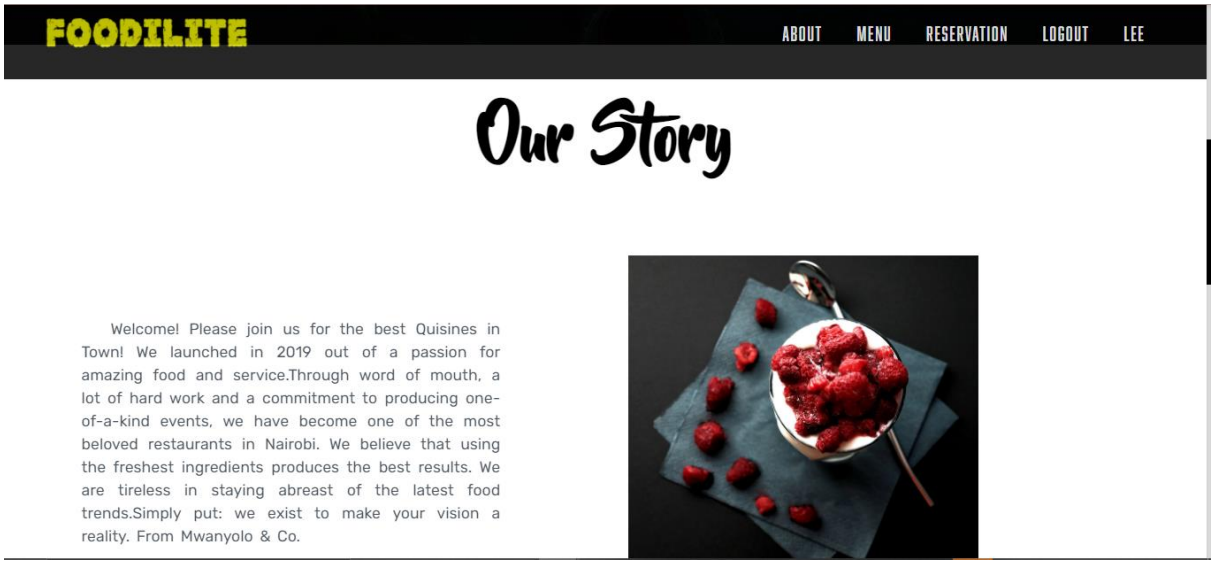


Figure 10 About

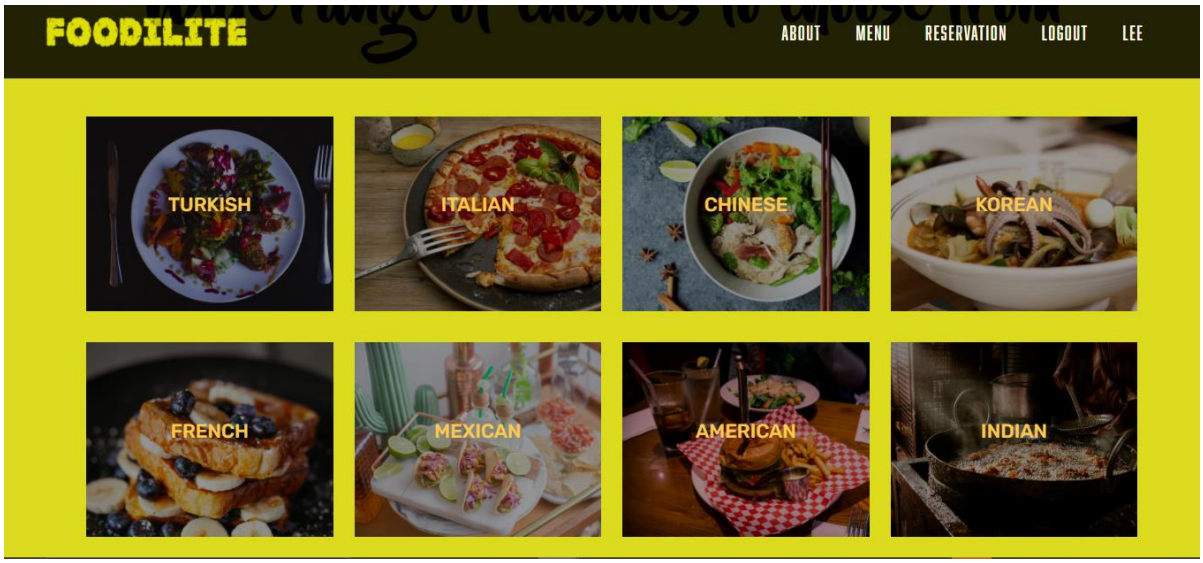


Figure 11 What is on offer

- ✓ Next is the *Menu* button that directs the user to a list of available menu items to order. Here, one is allowed to order as many items as desired. The user can empty their cart to begin again. Once completed, they click on Place Order and the process is done.

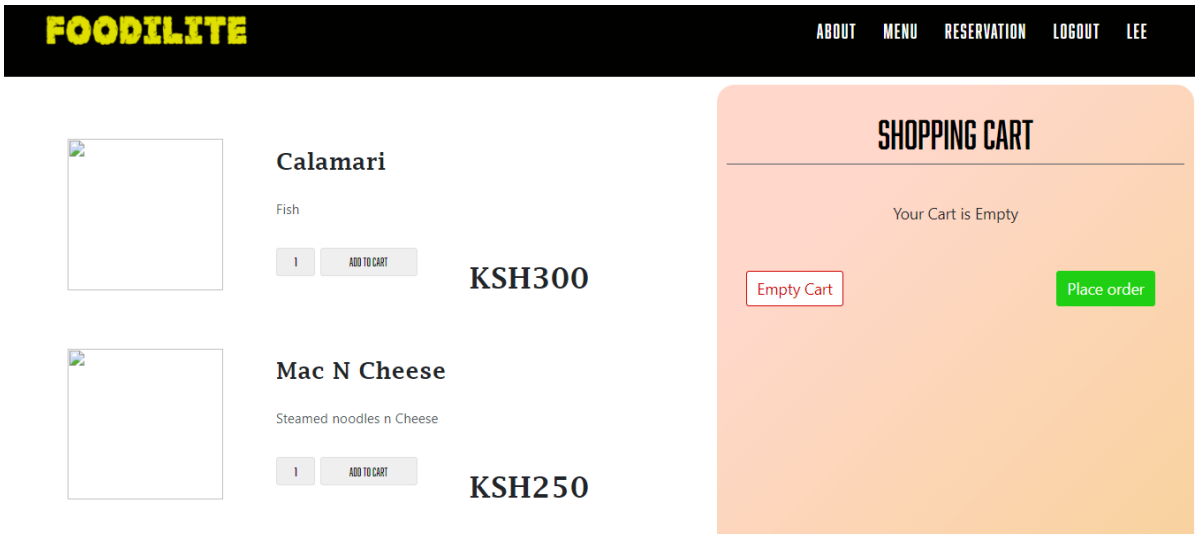


Figure 12 Menu

- ✓ The next button is the *Reservation* button. Here the user is able to book a table and specify the date, time and number of people that the reservation is for.

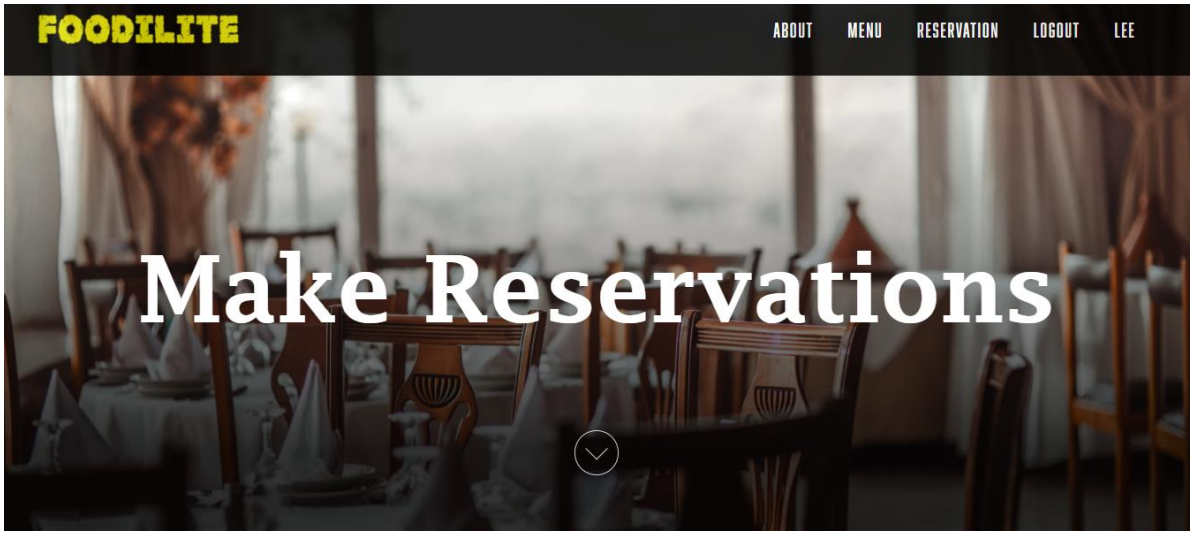


Figure 13 Reservation landing page

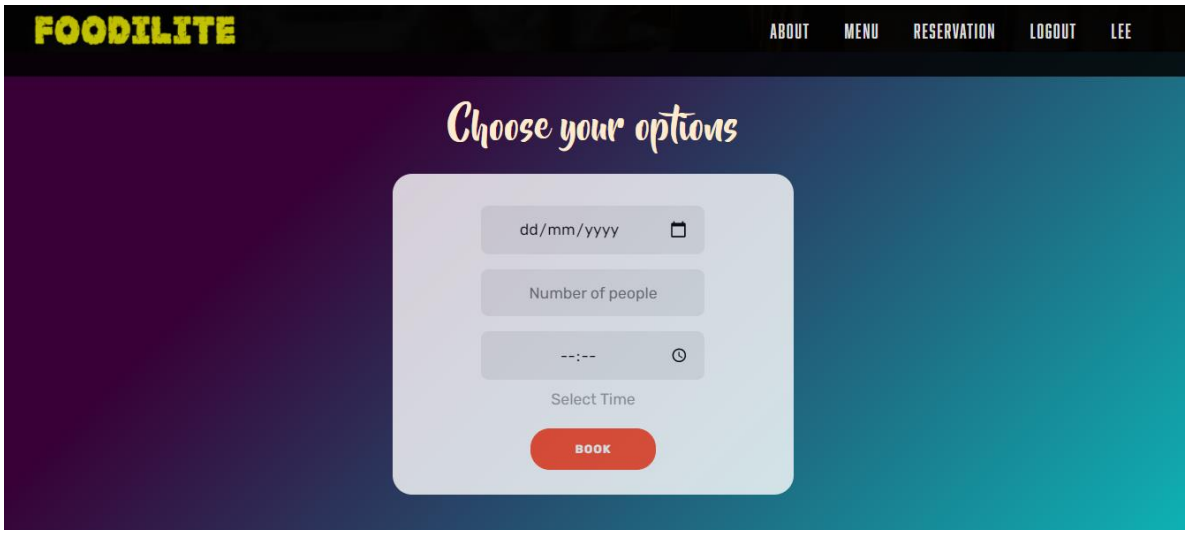


Figure 14 Make reservation

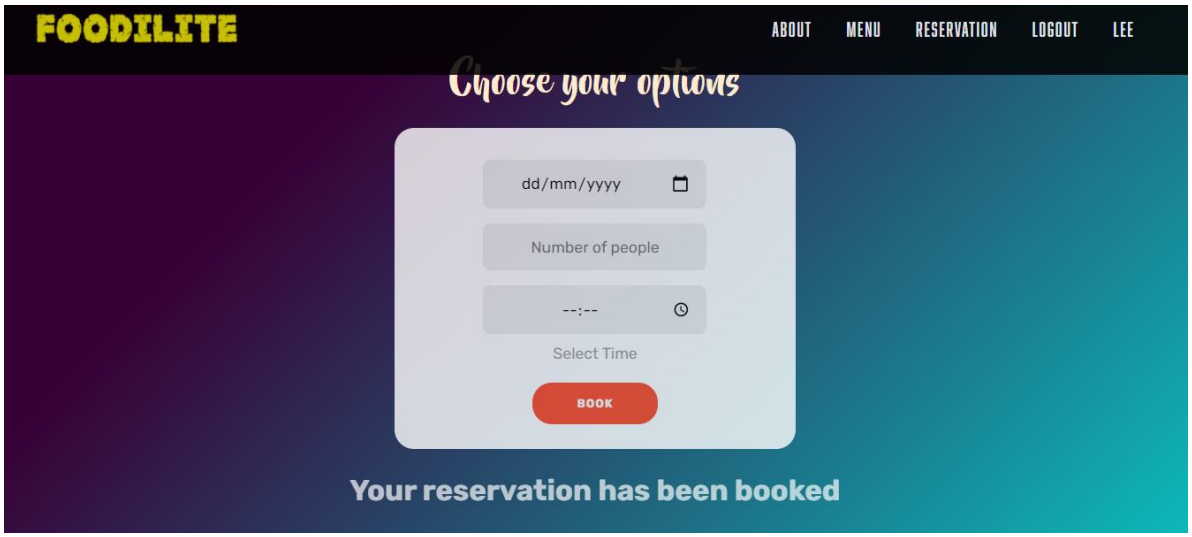
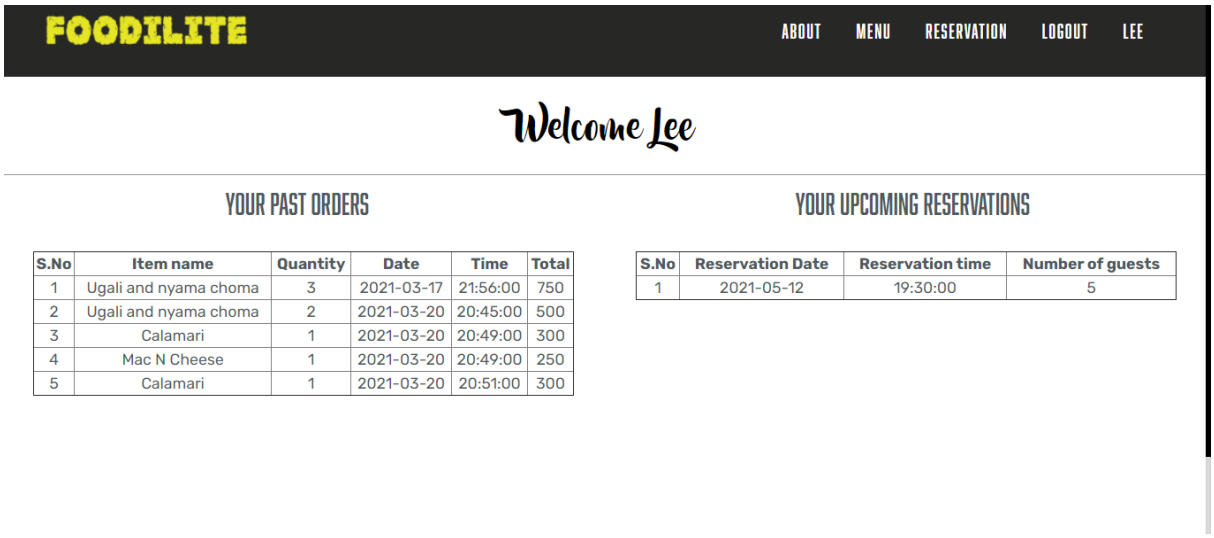


Figure 15 Booked reservation

The next button is the *Logout* button which allows the user to sign out of the platform.

Lastly, the user is presented with a button that displays their username. In this case, the username is Lee. Once clicked the user is able to see their orders and reservations.



S.No	Item name	Quantity	Date	Time	Total
1	Ugali and nyama choma	3	2021-03-17	21:56:00	750
2	Ugali and nyama choma	2	2021-03-20	20:45:00	500
3	Calamari	1	2021-03-20	20:49:00	300
4	Mac N Cheese	1	2021-03-20	20:49:00	250
5	Calamari	1	2021-03-20	20:51:00	300

S.No	Reservation Date	Reservation time	Number of guests
1	2021-05-12	19:30:00	5

Figure 16 Profile

As we can see, Lee has orders and has also made a reservation. Ideally payment is done on delivery via MPESA.

4.3 Testing

System testing is to ensure that a **system** meets its specification and any other requirements that have been agreed upon by its users.

4.3.1 The testing methods used

There are various testing methods available including Unit testing, Integration testing, System testing and Acceptance testing which are functional testing methods. Non-functional testing methods include Performance testing, Security testing, Usability testing and Compatibility testing.

For this restaurant management system I used:

- Backend testing
- Graphical User Interface testing
- Integration testing &
- Browser Compatibility Testing

4.3.2 Backend testing

The figure 17 is showing the error that is caused by not providing connection between the system and database and apache server.

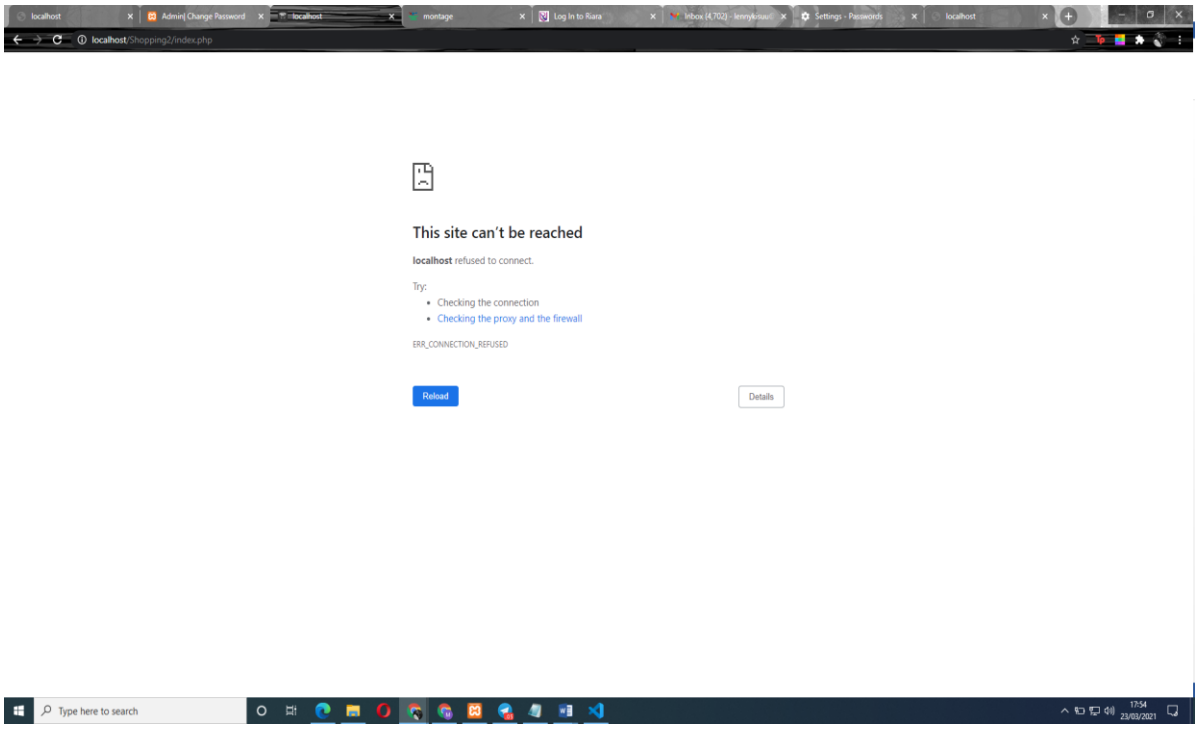


Figure 17Database connection (Failed)

To resolve that, in Xampp panel, MySQL and apache services should be started as shown below in figure 18.

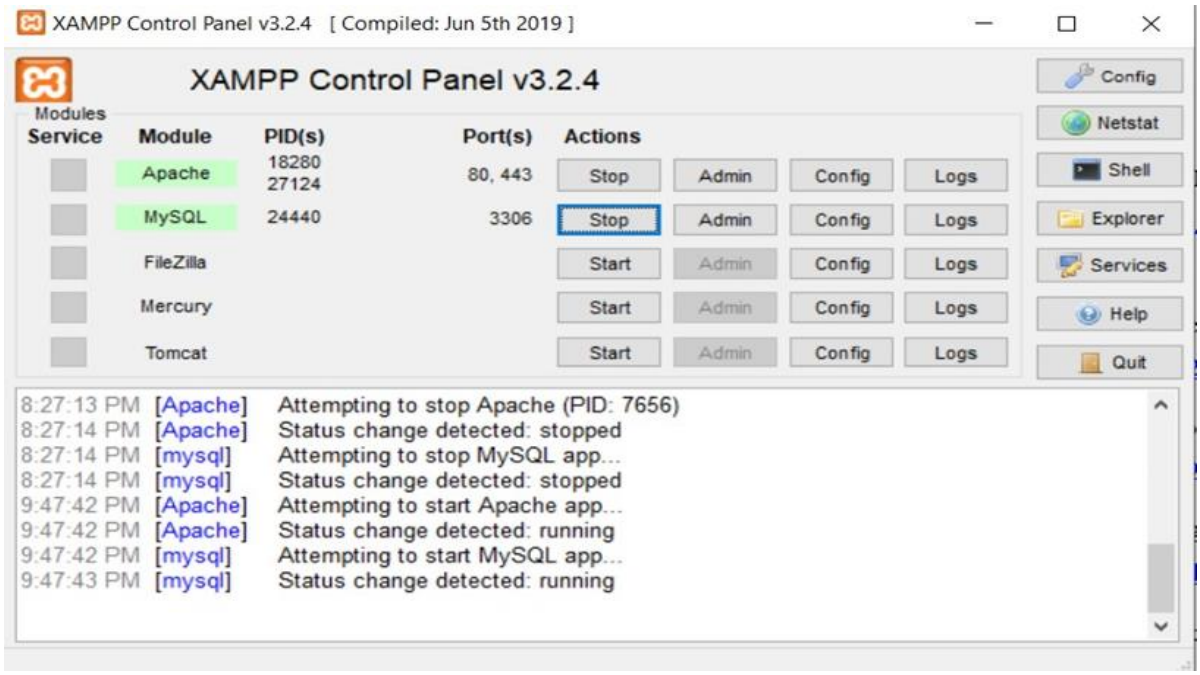


Figure 18 Xampp Panel

After start all the necessary Actions, (Apache & MySQL) the system will work as intended. The home page will be loaded with contents and hyperlinks to navigate around the system.

4.3.3 Graphical User Interface testing

I proceeded to test my system on various devices such as a laptop, PC, i-phone and an android phone. This was to ensure that the look and feel was the same across different devices hence putting out a high quality system that would efficiently serve the target audience.

4.3.4 Integration testing

I was able to test all components of the restaurant system. The first test I conducted was registering a user as a normal user and an administrator user, thereafter I logged in into the system. Once a registration was made it reflected in the database and in the back-end where the administrator can add or remove a user or upgrade a user. The second test conducted was the reservation table, I made a reservation and the reservation reflected in the database and I was also able to see the reservation I had made on the front end and on the back-end.

4.3.5 Browser Compatibility Testing

I tested the system with Microsoft edge, Chrome, work stream browser and opera. In all the browsers the system was operational, however on other browser the system was slower to launch such as Microsoft edge which took 60 seconds as opposed to the rest which ranged from 40 seconds to 55seconds.

CHAPTER FIVE: CONCLUSION

5.1 My Objectives

Upon beginning this project, I stated some objectives that I hoped to fulfil.

5.1.2 To enable customers to pay for their food remotely

The system provides the users with a paybill number that is used to pay for meals and deliveries. Users are also billed directly to their email and phone number hence this information is captured upon registration.

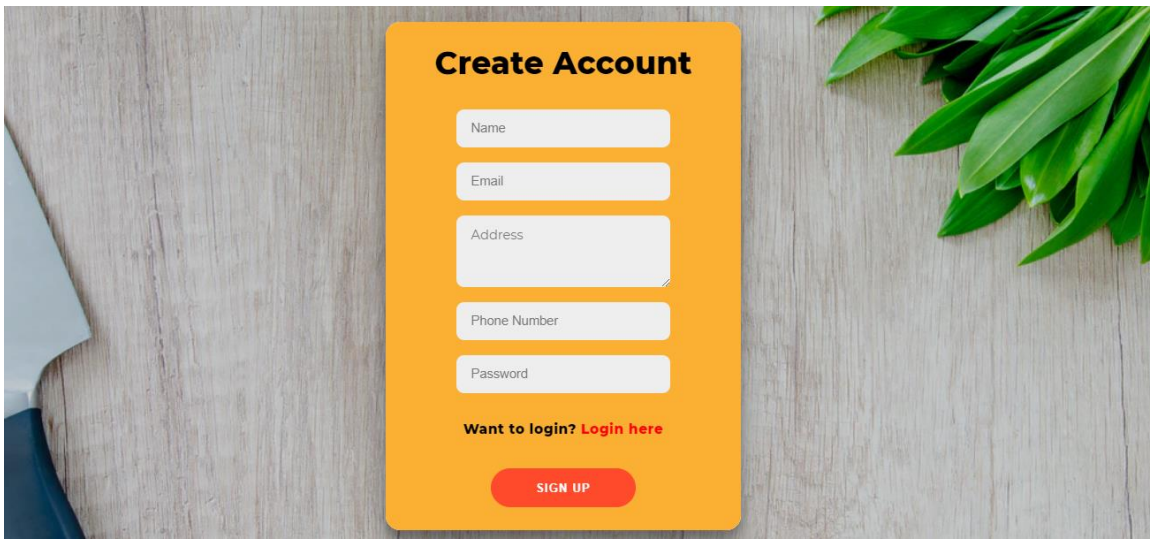


Figure 19 Registration

5.1.3 To provide customers with the ability to order and receive meals while adhering to the COVID-19 restrictions and regulations

This has been obtained through the easy-to-use ordering system that allows users to order from wherever they are without having to queue in the restaurant. This has helped to minimize interactions between customers and staff members hence keeping the disease at bay.

5.1.4 To enable restaurants to bill and collect money remotely

With this restaurant management system, the restaurant is able to monitor orders and assign orders to the users through use of mapping. The customers' names are mapped to their orders through their profiles and this helps to know who ordered what and who made a reservation for what time. This way proper billing is possible.

5.1.5 To enable customers to have an in-hand menu

The system provides the customers with a list of available meals hence making it easier for the customers to make their choice.

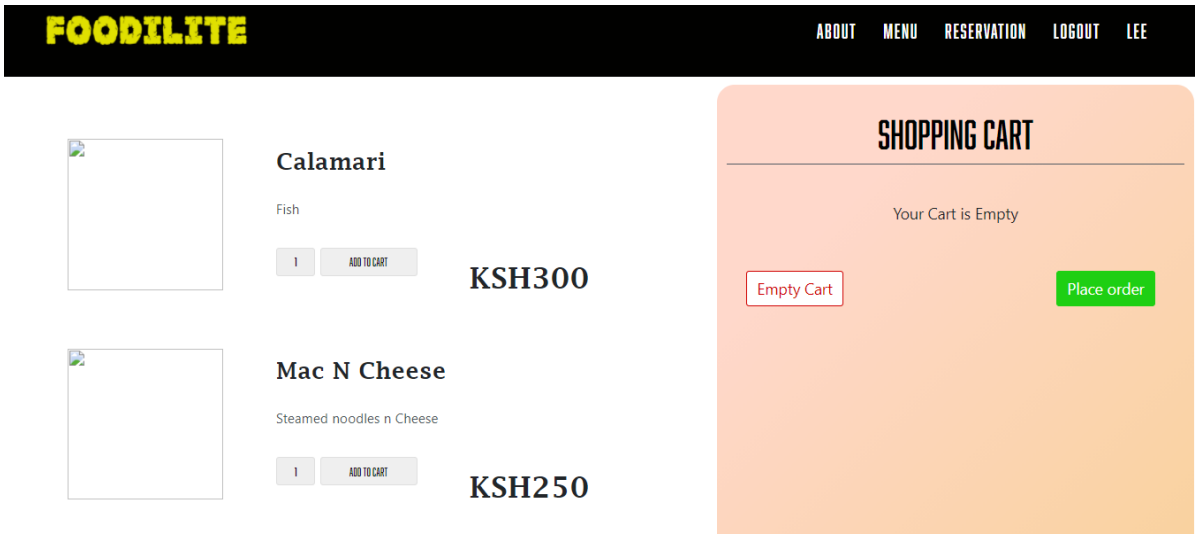


Figure 20 Menu

5.2 Conclusion

In conclusion the modern world that we live in, has undeniably become integrated with technology. You cannot escape it. It has been meshed into every aspect of our life. It is therefore highly important to sustain, spread and integrate this technological involvement in our lives due to its countless benefits. The food industry greatly relies on technology and I believe such systems are the future of the hospitality industry.

5.3 Recommendations

The following will be implemented at a later stage of this project.

- Payment method- Instead of having the customer pay to the till number directly, I will integrate the system with M-PESA APIs in order to enable automated payments.
- Allow processing of orders as a guest.
- • Enhance User Interface by adding more features and better graphics.
- Add a blog section where users can read up on recipes and other related stories.

5.4 Challenges experienced

- Integration of a payment method was constantly failing.
- I altered a line of code and some of the graphics began to fail.

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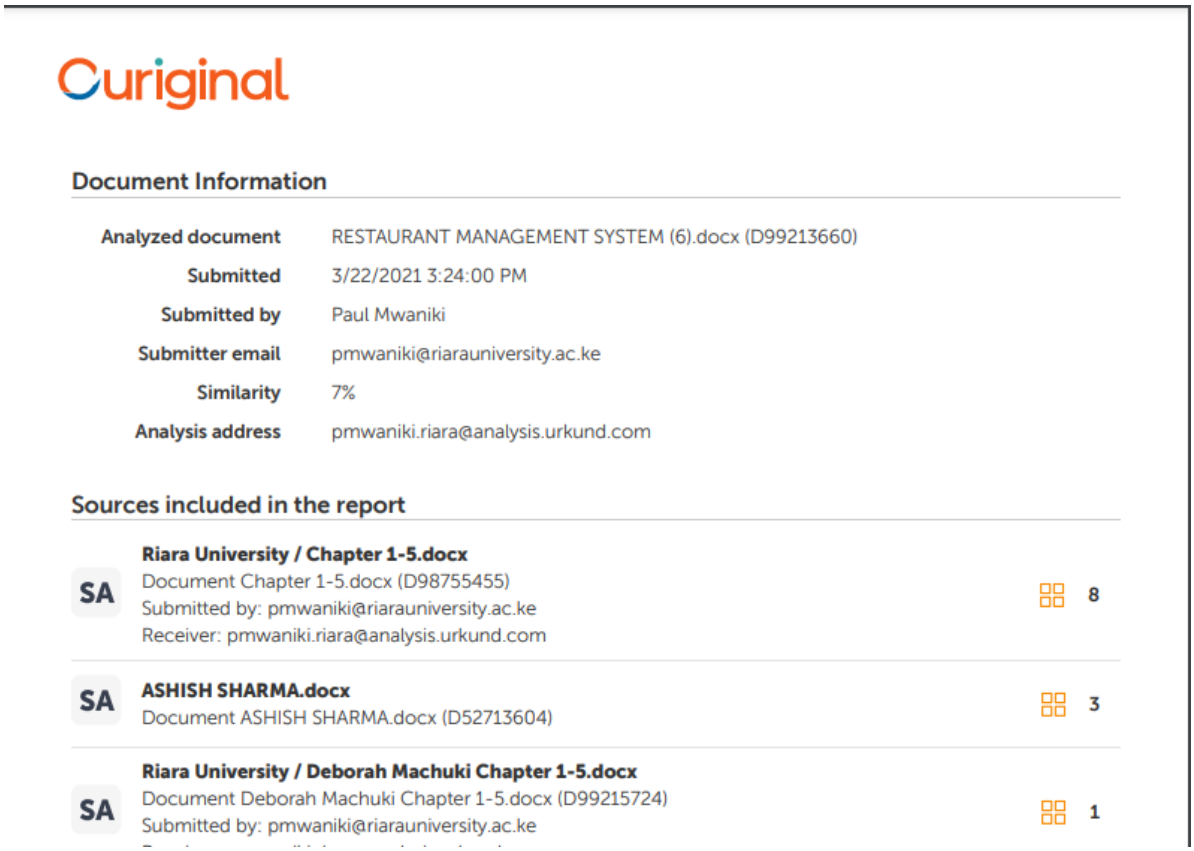

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Figure 21 Plagiarism report