GRADUATION THESIS

Asian Restaurant Management Application

亚洲餐厅管理应用

Major	Computer Science and Technology
Class	140104
Student No.	14031274
Name	Hossain Syed Abir(阿贝尔)
Supervisor	Dr. LIANG Zhao

SHENYANG AEROSPACE UNIVERSITY

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Declaration

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Abstract

The project Asian Restaurant Management Application is implemented to reduce the manual work and enhances the accuracy of work in a restaurant. This software has been made in a user friendly interface. This project is also designed with full consideration to help the users in an easy manner without any unnecessary wastage of time. This application can be implemented in big restaurant where clients can order their food from their table using application. The application consists of various food varieties available in the restaurant.Through the ordering form, the client can simply click and order the food even from home. This application entirely reduces the unnecessary time waste inside the hotel as well as it reduces unnecessary noise. This report documents the process of designing, developing and testing a software application to be used in a restaurant; usually given the name restaurant management application. The restaurant management application is there to help communication between all teams within a restaurant by minimizing the probability of human errors. This project serves the best way of maintaining client's information and caters their needs. The application is designed and implemented with client and server mode. This is an integrated application which contains both the user component (used by client to sign up, sign in, sign out the application, modifying personal information, browse the detail information of a food, query a specified cuisine according to the name or type, write user experience or comment on the dish and submit satisfaction score, user get reward points after sharing their experiences) and the admin component (used by the administrators for performing admin level functions such as sign up, sign in, sign out the application, modifying personal information, managing the order list, adding new cuisine items). This application is successfully running for the restaurant management. Asian Restaurant Management Application is a java application designed with Java technique and MySQL server as the database of the application.

Key Words: Asian Restaurant Management Application, Java technique, Wamp server, MySQL, Database.

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1   Introduction

The concept of restaurant table order management application, since it is java application, I will keep everything as simple as possible. The project consists in an java application that can be used by employees in a restaurant to handle the clients, their orders and can help them easily find free tables or place orders. This application, created mainly for proof of proper user-java interaction. The restaurant menu is organized by categories (appetizers, soups,fig salads, entrees etc.) of menu items. Each menu item has a chef, preparation instructions and associated ingredients. The ingredients are identified by their ingredient id and the quality of the ingredient needed to prepare a particular recipe, the unit of measure and a name.

"Asian Restaurant Management Application(ARMP)" is java application to restaurant management. This application wake to provide service facility to restaurant and also to the client. The services that are provided is food ordering and home delivery by the client through the application, client information management and waiter information management, menu information management and report. Main objective build the application, ordering, and home delivery management will become easier and systematic to replace traditional application.

1.1   Chapter Overview

This chapter gives an introduction to the project by defining the problems encountered by restaurants, the main objectives that the application expects to achieve and a brief introduction to existing solutions.

1.2   The Problem

According to a research article written by Horizons[1], in 2006 within the UK there was just over 26,000 restaurants with 734 million meals served that year. As this restaurant sector was worth £7.61 billion, any restaurant generating a good business reputation could lead to the making of a very successful and profitable business. The problem for many businesses is to ensure that they not only attract new clients but to ensure they maintain their existing clientele. It has been argued many times that an existing client is worth more to a business than a new client as the cost to attract a new client can be up to five times the cost to retain an old client. An online article by Paul Lemberg [2], discusses the pros and cons of this argument.

Within the restaurant sector, a client is likely to return to the restaurant in the future if they received an excellent client service as well as appetising food. However, if they had to wait for an unreasonable amount of time or there was a mistake in the order, it's very unlikely the client would return.

Therefore a solution to this problem would be to minimise mistakes within the order and bill, and help eradicate delays as well as encouraging team work and communication within the team. The next section will go into the objectives of the proposed solution.

1.3   Project Objectves

We are stuck with technology when what we really want is just stuff that works. With the current paradigm shift in technological field, there is an urgent need to embrace and appreciate the power of technology.Restaurant sector remains vigilant to face the challenges of change by employing a new strategy that facilities easy management application that can simplify work for the restaurant admins so that all their work can be efficient and effective. The general objectives of the study is to develop a reliable, convenient and accurate Ordering System.
The study has the following specific objectives:

- To develop a application that will surely satisfied the client service.

- To design a application able to accommodate huge amount of orders at a time.

- To evaluate its performance and acceptability in terms of security, user-friendliness, accuracy and reliability.

- To improve the communication between the client and the server and minimize the time of ordering.

One of the main objectives of a restaurant to ensure client satisfaction. Manual listing of orders by the waiters/waitresses may result to slow response in client service. Hence, if the restaurant uses the proposed application, manipulation of orders to the clients be so easy and choosing the desired menu.

1.4   Project Requirements Analysis

Project requirements analysis are important stage in the application development. It determines the functions of the whole application integrity and stability. Software requirements analysis is an ongoing process of understanding and progressive refinement. Through requirements analysis, design functions of the management application as below.

a. **User management:** User can signup (Admin or client), signin and signout the application.

b. **Adding a food:** admin can add new food information for showing to clients.

c. **Foods information browsing:** The Foods are grouped by categories. Clients may browse the detailed information of a food.

d. **Foods query:** admin can query foods according to price, name.

e. **Foods comments:** clients can write comments on the food and submit satisfaction score.

1.4.1 Requirements Analysis

The in-front management application is the user visits food list and signup user is client. Only the admin can manage his/her searching potion about the specific food, comment and rate. So in this part, specific functions are described as below:

- **signin and signout:** User can sign in into application and also sign out from the application.

- **Register:** If user have no account, user have to must create an account.

- **Modify personal information:** User can also modify his personal information.

- **Browse detailed information of a food:** User can browse details of food.

- **Comments:** User can post a comment for each food.

- **Rate a food:** User can post a score for each food.

1.5 Project Deliverables

Deliverables[3] are usually classified as internal deliverables and external deliverables. Internal deliverables : Internal deliverables are usually deliverables that make a project run, but they are not a part of the product that the end users would like to see. They are deliverables which the project generates internally. Project Management, Configuration Management, Training and Testing are some examples of internal deliverables.
External Deliverables : External deliverables are usually those that the project delivers to the users or the client. An external deliverable could be an IT system and subsystems that make it up or the resulting organizational transition and benefits from a project to reduce the turnaround time of a process.
The main deliverable of this project is to build a simple and easy use of Asian restaurant management application following the specific software requirements as well as the programming languages.

- Fucntioning software appliction.

- List of (non) functional requirement.

- Schematic models (analysis+design).

- Evaluation findings.

- Dissertation report.

2　Technological Background

2.1　Implementation Process

In the thesis project, Window 10 as an operating system,MySQL as a database and netbeans as a IDE. The application is a collection of Apache server, MySQL server comprehensive programming and easy to use.

2.2　Tools and Technologies

This tools used to accomplish in this project are MySQL[4], Apache Server[5] and Java[6] is Object oriented programming language .

2.2.1　MySQL Database

MySQL[4] is an open source relational database management system. It is based on the structure query language (SQL), which is used for adding, removing, and modifying information in the database. Standard SQL commands, such as ADD, DROP, INSERT, and UPDATE can be used with MySQL.
A database is a data structure that stores organized information. Most databases contain multiple tables, which may each include several different fields. For example, a company database may include tables for products, employees, and financial records. Each of these tables would have different fields that are relevant to the information stored in the table. Today's relational databases allow users to access, update, and search information based on the relationship of data stored in different tables. Relational databases can also run queries that involve multiple databases. While early databases could only store text or such numeric data, modern databases also let users store other data types such as sound clips, pictures, and videos.
SQL (Structured Query Language) is a standardized programming language used for managing relational databases and performing various operations on the data in them. Initially created on 1970s, SQLs is regularly being used by database administrators, as well as by developers writing data integration scripts and data analysts looking to set up and run analytical queries. For example, books information, client information etc.

2.2.2　JAVA

Java[6] is a high-level programming language developed by Sun Microsystems. It was originally designed for developing programs for set-top boxes and handheld devices, but later became a popular choice for creating web applications. The Java syntax is similar to C++, but is strictly an object-oriented programming language. For example, most Java programs contain classes, which are used to define objects, and methods, which are assigned to individual classes. Java is also known for being more strict than C++, meaning variables and functions must be explicitly defined. This means Java source code may produce errors or and quot;exceptions and quot; more easily than other languages, but it also limits other types of errors that may be caused by undefined variables or unassigned types.
Unlike Windows executables (.EXE files) or Macintosh applications (.APP files), Java programs are not run directly by the operating system. Instead, Java programs are interpreted by the Java Virtual Machine, or JVM, which runs on multiple platforms. This means all Java

programs are multiplatform and can run on different platforms, including Macintosh, Windows, and Unix computers. However, the JVM must be installed for Java applications or applets to run at all. Fortunately, the JVM is included as part of the Java Runtime Environment (JRE), which is available as a free download. Oracle acquired Sun Microsystems in January, 2010. Therefore, Java is now maintained and distributed by Oracle.

Java is a general-purpose computer-programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation.Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of computer architecture. As of 2016, Java is one of the most popular programming languages in use,particularly for client-server web applications, with a reported 9 million developers.Java was originally developed by James Gosling at Sun Microsystems (which has since been acquired by Oracle Corporation) and released in 1995 as a core component of Sun Microsystems' Java platform. The language derives much of its syntax from C and C++, but it has fewer low-level facilities than either of them

The original and reference implementation Java compilers, virtual machines, and class libraries were originally released by Sun under proprietary licenses. As of May 2007, in compliance with the specifications of the Java Community Process, Sun relicensed most of its Java technologies under the GNU General Public License. Others have also developed alternative implementations of these Sun technologies, such as the GNU Compiler for Java (bytecode compiler), GNU Classpath (standard libraries), and IcedTea-Web (browser plugin for applets).

The latest version is Java 11, released on September 25, 2018, which follows Java 10 after only six months, being in line with the new release schedule. Java 8 is still supported but there will be no more security updates for Java 9.Versions earlier than Java 8 are supported by companies on a commercial basis; e.g. by Oracle back to Java 6 as of October 2017 (while they still "highly recommend that you uninstall" pre-Java 8 from at least Windows computers).

2.2.3   Apache Server

Apache server[5] is an open source www server tool developed by the Apache Software Foundation (ASF). It is one of many Apache-related open source products used by IT professionals for various tasks and objectives. It allows the implementation of Java Servlets and JavaServer Pages (JSP) to promote an effective Java server environment. Users can also access resources for configuration and use extensible markup language (XML) to configure projects. Successive versions of Apache Tomcat have solved different problems by applying software patches and other solutions. Some experts characterize Apache Tomcat as a product offering a runtime shell for Java Servlets. Users can also set up Java virtual machines (JVM) to configure virtual hosting.

Apache is an open-source and free web server software that powers around 46 percent of websites around the world. The official name is Apache HTTP Server, and it's maintained and developed by the Apache Software Foundation.

3　System Design

System design [7] is the process of defining the elements of the system such as the architecture, modules and components, the different interfaces of those components and the data that goes through the system.It is meant to satisfy specific needs and requirements of a business or organization through the engineering of a coherent and well-running system.Systems design implies a systematic approach to the design of a system. It may take a bottom-up or top-down approach, but either way the process is systematic wherein it takes into account all related variables of the system that needs to be created from the architecture, to the required hardware and software, right down to the data and how it travels and transforms throughout its travel through the system. Systems design then overlaps with systems analysis, systems engineering and systems architecture. The systems design approach first appeared right before World War II, when engineers were trying to solve complex control and communications problems. They needed to be able to standardize their work into a formal discipline with proper methods, especially for new fields like information theory, operations research and computer science in general.

3.1　Architectural Design

A system architecture [8] design is the conceptual model that defines the structure, behavior, and more views of a system. An architectural description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.One can think of system architecture as a set of representations of an existing (or future) system. These representations initially describe a general, high-level functional organization, and are progressively refined to more detailed and concrete descriptions.System architecture conveys the informational content of the elements consisting of a system, the relationships among those elements, and the rules governing those relationships. The architectural components and set of relationships between these components that an architecture description may consist of hardware, software, documentation, facilities, manual procedures, or roles played by organizations or people.In this part, system block diagram details are given.Various organizations can define systems architecture in different ways, including:

- The fundamental organization of a system, embodied in its components, their relationships to each other and to the environment, and the principles governing its design and evolution.

- An allocated arrangement of physical elements which provides the design solution for a consumer product or life-cycle process intended to satisfy the requirements of the functional architecture and the requirements baseline.

- An architecture consists of the most important, pervasive, top-level, strategic inventions, decisions, and their associated rationales about the overall structure (i.e) essential elements and their relationships) and associated characteristics and behavior.

- A formal description of a system, or a detailed plan of the system at component level to guide its implementation.

- The composite of the design architectures for products and their life-cycle processes.

- The structure of components, their interrelationships, and the principles and guidelines governing their design and evolution over time.

According to requirements gather, the asian restaurant management system will be designed as below:
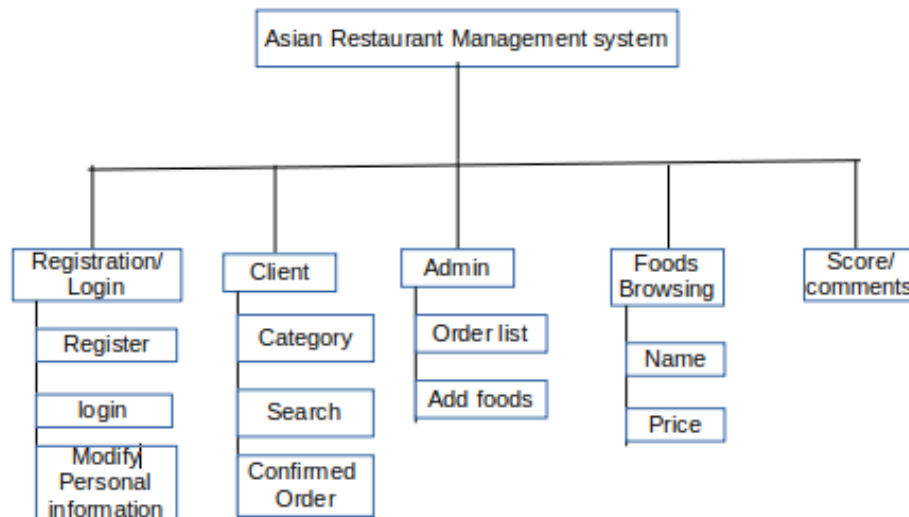

Figure 3.1: System block diagram.

As shown figure3.1 is showing the **Asian Restaurant Management System** is divided into some modules and submodules.

3.2   Database Diagram

Within a database diagram [9], each relationship can appear with three distinct features: endpoints, a line style, and related tables.

Endpoints The endpoints of the line indicate whether the relationship is one-to-one or one-to-many. If a relationship has a key at one endpoint and a figure-eight at the other, it is a one-to-many relationship. If a relationship has a key at each endpoint, it is a one-to-one relationship.

Line Style The line itself (not its endpoints) indicates whether the Database Management System (DBMS) enforces referential integrity for the relationship when new data is added to the foreign-key table. If the line appears solid, the DBMS enforces referential integrity for the relationship when rows are added or modified in the foreign-key table. If the line appears dotted, the DBMS does not enforce referential integrity for the relationship when rows are added or modified in the foreign-key table.

Related Tables The relationship line indicates that a foreign-key relationship exists between one table and another. For a one-to-many relationship, the foreign-key table is the table near the line's figure-eight symbol. If both endpoints of the line attach to the same table, the relationship is a reflexive relationship.

3.2.1   Entity Diagram

An Entity Relationship (ER) Diagram [10] is a type of flowchart that illustrates how "entities" such as people, objects or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education and research. Also known as ERDs or ER Models, they use a defined set of symbols such as rectangles, diamonds, ovals and connecting lines to depict the interconnectedness of entities, relationships and their attributes. They mirror grammatical structure, with entities as nouns and relationships as verbs.

These diagrams below show how the attributes are defined in database table:

If admin wants to check the order list from an client and add new cuisine items to a foodstuff, admin must first signup with name, user name, email and password. After registration, he will be able to check the order list after signin, else he can not even see the order list and he will not be able to add cuisine to the food list .
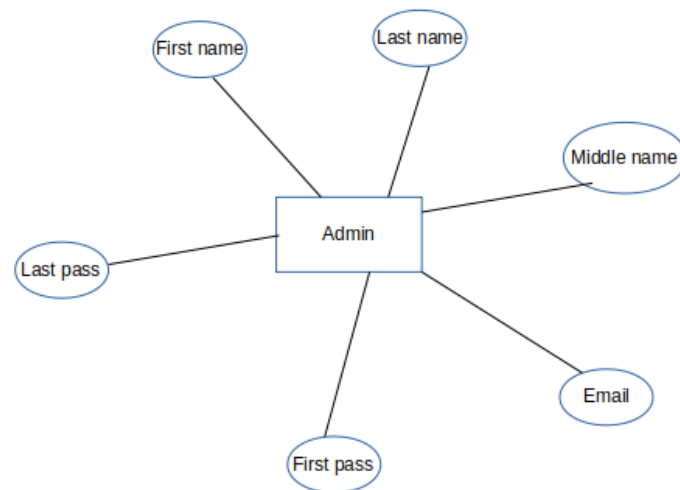
Figure 3.2: Admin signup entity diagram

Client can browse about cuisines name, price and food details from food list. But if client wants to place an order by confirming, client must need to sign up first with client name, username, e-mail and password. And then signin with his username and password. After logging in, he can order the food from the cuisine catagory. After ordering, client can be able to signout.
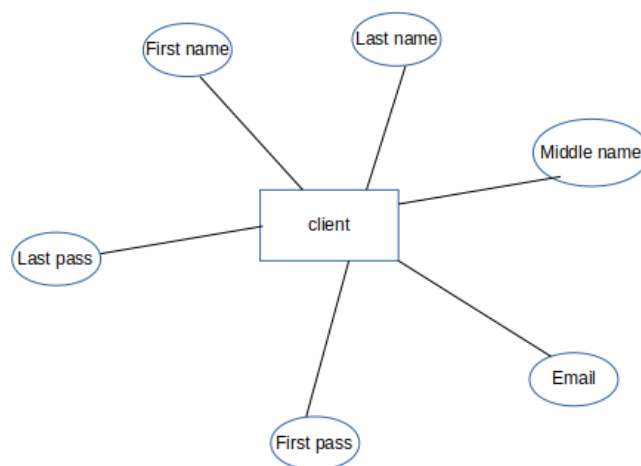
Figure 3.3: Client signup entity diagram

If admin wants to add new cuisine items to a foodstuff/order menu, admin must first signup with name, user name, email and password. After registration, he will be able to check the order list after signin, else he can not even see the order list and he will not be able to add cuisine to the food list.
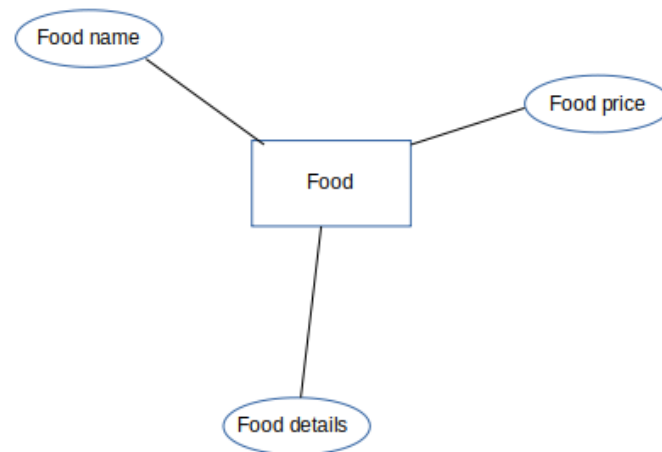
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Figure 3.4: Food add entity diagram

After a placing an order or requesting for home delivery, client can comment on each cuisine items. And also can give scores for a specific item of cuisine. If you want to comment or score, you must signin , write the name of the cuisine in box then write the comment and select the score and post it.
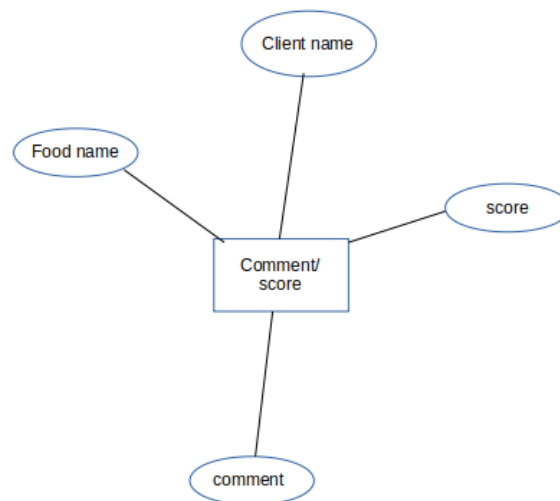
Figure 3.5: Comments/Score entity diagram

3.2.2 E-R Diagram

Client can browse about cuisines name, price and food details from food list. But if client wants to place an order by confirming, client must need to sign up first with client name, username, e-mail and password. And then signin with his username and password. After logging in, he can order the food from the cuisine catagory. After confirming an order, client

can be able to signout. When an admin wants to check the order list from an client and add new cuisine items to a foodstuff, admin must first signup with name, user name, email and password. After registration, he will be able to check the order list after signin, else he can not even see the order list and he will not be able to add cuisine to the food list. But if client wants to place an order by confirming, client must need to sign up first with client name, username, e-mail and password. And then signin with his username and password. After logging in, he can order the food from the cuisine catagory. After ordering, client can be able to signout . After a placing an order or requesting for home delivery, client can comment on each cuisine items. And also can give scores for a specific item of cuisine. If you want to comment or score, you must signin , write the name of the cuisine in box then write the comment and select the score and post it. And the system will be showing top foods based on the client's score and comment. Client can also be albe to search specific cuisine item by it's item catagory, price and name.
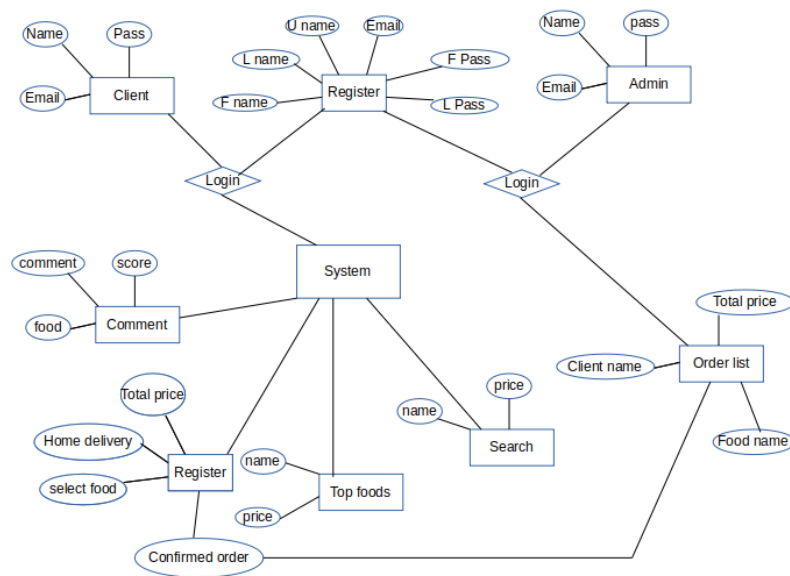
Figure 3.6: Entity Relationship diagram

3.2.3 Database schema

A Database schema [11] represents the logical configuration of all or part of a relational database. It can exist both as a visual representation and as a set of formulas known as integrity constraints that govern a database. These formulas are expressed in a data definition language, such as SQL. As part of a data dictionary, a database schema indicates how the entities that make up the database relate to one another, including tables, views, stored procedures, and more.Typically, a database designer creates a database schema to help programmers whose software will interact with the database. The process of creating a database schema is called data modeling When following the three-schema approach to database design, this step would follow the creation of a conceptual schema. Conceptual schemas focus on an organization's informational needs rather than the structure of a database.

- **RegistrationForAdmin(uid, uf, ul, uu, um, ufp, usp, status):** RegistrationForAdmin is database table which have eight columns, first column is used for uniqe id, second column is used for admin's first name, third column use for admin's last name, fourth column is used for admin's user name, fifth column is used for admin's email,sixth and seventh columns is used for admin's password and last column is used for admin is active or not.

- **Registration(uid, uf, ul, uu, um, ufp, usp, status):** Registration is database table which have eight columns, first column is used for uniqe id, second column is used for client's first name, third column use for client's last name, fourth column is used for client's user name, fifth column is used for client's email,sixth and seventh columns is used for client's password and last column is used for client is active or not.

- **APPTIZERS(appid, appname, appprice, appdetails):** APPTIZERS is a database table which is used for hold the apptizers's types food into table by given apptizer's name, price and about of this type foods.

- **BeefLamb(blid, blname, blprice, bldetails):** BeefLamb is a database table which is used for hold the BeefLamb's types food into table by given BeefLamb's name, price and about of this type foods.

- **Chicken(ckid, ckname, ckprice, ckdetails):** Chicken is a database table which is used for hold the Chicken's types food into table by given Chicken's name, price and about of this type foods.

- **NoddlesRice(nrid, nrname, nrprice, nrdetails):** NoddlesRice is a database table which is used for hold the NoddlesRice's types food into table by given NoddlesRice's name, price and about of this type foods.

- **Pork(poid, poname, poprice, podetails):** Pork is a database table which is used for hold the Pork's types food into table by given Pork's name, price and about of this type foods.

- **Salad(said, saname, saprice, sadetails):** Salad is a database table which is used for hold the Salad's types food into table by given Salad's name, price and about of this type foods.

- **SeaFood(sfid, sfname, sfprice, sfdetails):** SeaFood is a database table which is used for hold the SeaFood's types food into table by given SeaFood's name, price and about of this type foods.

- **Soups(soid, soname, soprice, sodetails):** Soups is a database table which is used for hold the Soups's types food into table by given Soups's name, price and about of this type foods.

- **VegeTofu(vtid, vtname, vtprice, vtdetails):** VegeTofu is a database table which is used for hold the VegeTofu's types food into table by given VegeTofu's name, price and about of this type foods.

- **ClientOrderList(colid, colname, colprice, colUser):** ClientOrderList is a database table which is used for hold the list of foods that are ordered by client and the price also hold the name of client.

- **RankList(rlid, rlname, rlscore, rlcomments):** RankList is database table which is used for show top rated foods depend on score or number of comments.

3.2.4   Database tables structures

The database structure is the collection of record type and field type definitions that comprise your database. These define the type of entities or research objects you wish to capture (e.g. Person) Fields. These are the properties or attributes that describe your record types (e.g. Gender, Age, Height etc).

The table 3.1 is used for signup a user as a admin by giving first name, last name, user name, email and password on the application. If admin already have an account then signin in the application then manipulate the order list or add food on food list by given food name, food price and details of food.In table 3.1 u-id means user uniqe id, which type is integer and default value is not null, u-f-name means user first name which type is varchar, size is 80 and default value is null, u-l-name means user last name which type is varchar, size is 80 and default value is null, u-u-name means user name which type is varchar, size is 80 and default value is null, u-mail means user email which type is varchar, size is 50 and default value is null, u-f-pass means first password which type is varchar, size is 20 and default value is null, u-l-pass means last password which type is varchar, size is 20 and default value is null,

Table 3.1: Registration for admin

Name	Type	Null
u-id	tinyint(3)	NO
u-f-name	varchar(80)	YES
u-l-name	varchar(80)	YES
u-u-name	varchar(80)	YES
U-mail	varchar(50)	YES
u-f-pass	varchar(20)	YES
u-l-pass	varchar(20)	YES

The table 3.2 is used for signup a user as a client by giving first name, last name, user name, email and password on the application. If client already have an account then signin in the application then select the food from food list and befor confrim order must signup by given personal information after signup client signin in the system by given client name and password.In table 3.2 u-id means user uniqe id, which type is integer and default value is not null, u-f-name means user first name which type is varchar, size is 80 and default value is null, u-l-name means user last name which type is varchar, size is 80 and default value is null, u-u-name means user name which type is varchar, size is 80 and default value is null, u-mail means user email which type is varchar, size is 50 and default value is null, u-f-pass means

first password which type is varchar, size is 20 and default value is null, u-l-pass means last password which type is varchar, size is 20 and default value is null,

Table 3.2: Registration for client

Name	Type	Null
u-id	tinyint(3)	NO
u-f-name	varchar(80)	YES
u-l-name	varchar(80)	YES
u-u-name	varchar(80)	YES
U-mail	varchar(50)	YES
u-f-pass	varchar(20)	YES
u-l-pass	varchar(20)	YES

The table 3.3 is used for hold the name of the list of foods and total price of foods choosing by client and name of client.Here col-id means list of food's uniqe id which type is integer and size is 3, col-name means name of list of foods, which type is varchar and size is 255 and default value is null, col-price means total price of list of foods which type is float and user name means which client order the food list and user name type is varchar, size is 255 and default value is null.

Table 3.3: Client order list

Name	Type	Null
col-id	tinyint(3)	NO
col-name	varchar(255)	YES
col-price	float(10, 2)	YES
UserName	varchar(255)	YES

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The table 3.4 is used for hold the list of top ranked food depend on score number and number of comments. These score number and comments are given by client who are taken foods and then put satisfaction score and comments for the foods.

Table 3.4: Top foods

Name	Type	Null
dl-id	tinyint(3)	NO
rl-name	varchar(255)	YES
rl-score	int	YES
rl-comments	varchar(255)	YES

The table 3.5 is used for hold the list of salads by giving name, price and details. Here sl-id is uniqe id for the salad, which type is integer and default value is not null.Sl-name is name of salad which type is varchar, size is 255 and default value is null.Sl-price is price of salad, which type is float and default value null. Sl-details is details of salad which type is varchar, size is 255 and default value is null.

Table 3.5: Salad table

Name	Type	Null
sl-id	tinyint(3)	NO
sl-name	varchar(255)	YES
sl-price	float(10, 2)	YES
sl-details	varchar(255)	YES

This table 3.6 is used for hold the list of Chickens by giving name, price and details.Here ck-id is uniqe id for the chicken, which type is integer and default value is not null.Ck-name is name of chicken which type is varchar, size is 255 and default value is null.Ck-price is price of chicken, which type is float and default value null. Ck-details is details of chicken which type is varchar, size is 255 and default value is null.

Table 3.6: Chicken table

Name	Type	Null
ck-id	tinyint(3)	NO
ck-name	varchar(255)	YES
ck-price	float(10, 2)	YES
ck-details	varchar(255)	YES

This table 3.7 is used for hold the list of Vegetables and Tofus by giving name, price and details.Here vt-id is uniqe id for the Vegetable and Tofu, which type is integer and default value is not null.Vt-name is name of Vegetable and Tofu which type is varchar, size is 255 and default value is null.Vt-price is price of Vegetable and Tofu, which type is float and default value null. Vt-details is details of Vegetable and Tofu which type is varchar, size is 255 and default value is null.

Table 3.7: Vegetable and Tofu table

Name	Type	Null
vt-id	tinyint(3)	NO
vt-name	varchar(255)	YES
vt-price	float(10, 2)	YES
vt-details	varchar(255)	YES

This table 3.8 is used for hold the list of Noodles and Rice by giving name, price and details.Here nr-id is uniqe id for the Noodles and Rice, which type is integer and default value is not null.Nr-name is name of Noodles and Rice which type is varchar, size is 255 and default value is null.Nr-price is price of Noodles and Rice, which type is float and default value null. Nr-details is details of Noodles and Rice which type is varchar, size is 255 and default value is null.

Table 3.8: Noodles and Rice table

Name	Type	Null
nr-id	tinyint(3)	NO
nr-name	varchar(255)	YES
nr-price	float(10, 2)	YES
nr-details	varchar(255)	YES

4 Design

4.1 Chapter Overview

This chapter will focus on the design of the application using diagrams to illustrate graphically certain sections of the software system.

4.2 Detailed Design

A Flowchart is a type of diagram that represents an algorithm,workflow or process. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows. This diagrammatic representation illustrates a solution model to a given problem. Flowcharts are used in analyzing, designing, documenting or managing a process or program in various fields.

In this section, I designed the first flowchart of the Asian Restaurant Management application. The purpose of the flowchart is to show functions the Asian Restaurant Management System has.
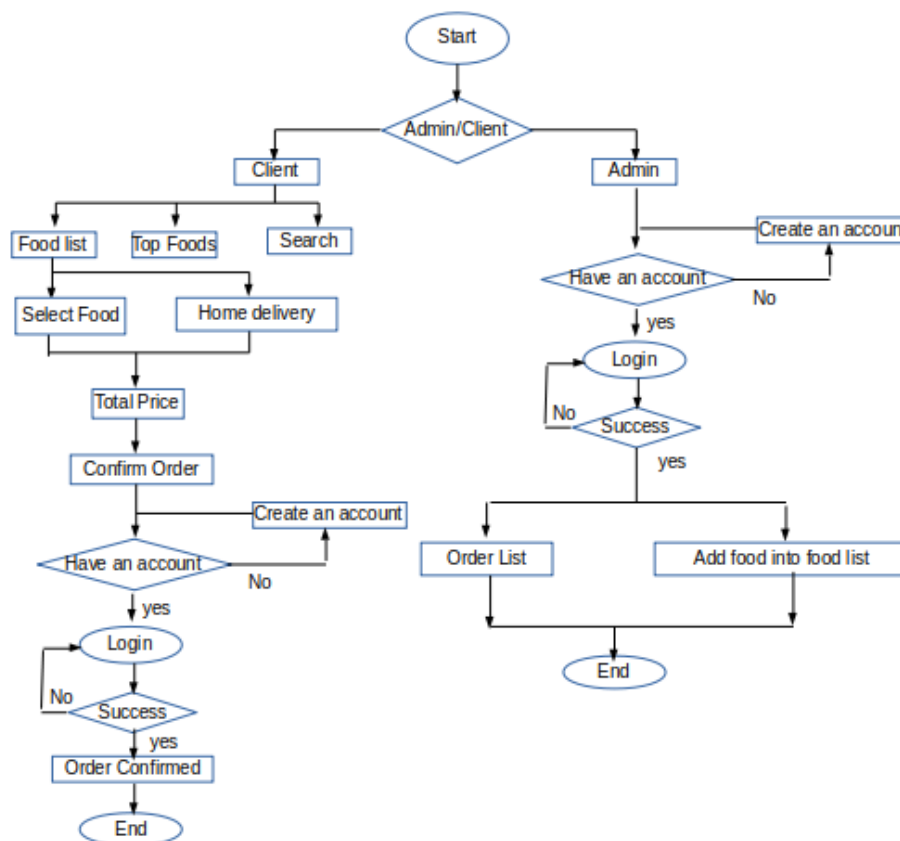
Figure 4.1: System flowchart

4.3   Admin and Client function

Admins have five basics functions. Those function are; planning, organizing, staffing, directing, and controlling. admins must plan, or narrow goals from their broadest to most intricate form. They must organize and create a structure for daily tasks and communication.
We have seen that clients purchase benefits when they buy. For example, when we purchase a car it fulfils the functions of transport, prestige, convenience, etc. When we purchase a watch we purchase time measurement, status, etc. But similar products often serve different use functions (benefits) and hence different markets. Products and services with similar use functions are in similar markets, and hence they are in competition. In this context, let us consider computer software.

4.3.1   signup or signin function

In Registration form, we will have a form to fill all the details which will contain name, username, password, address, contact number, etc. This form will help us to signup with the application. They take all our details and store it in a database or cache.
Every time a signuped user is must to signin in order to client confirmed order or admin see the order list or new food add on table, the user has to input both of the correct user name and the password into the input-form. The application will get the input data and send to the system Server, and the server will communicate with the MySQL database and check if the user name and password are matched. If the input is correct, the the order of clent will display the main window with the name of the user. Otherwise, the error- window will be instead.
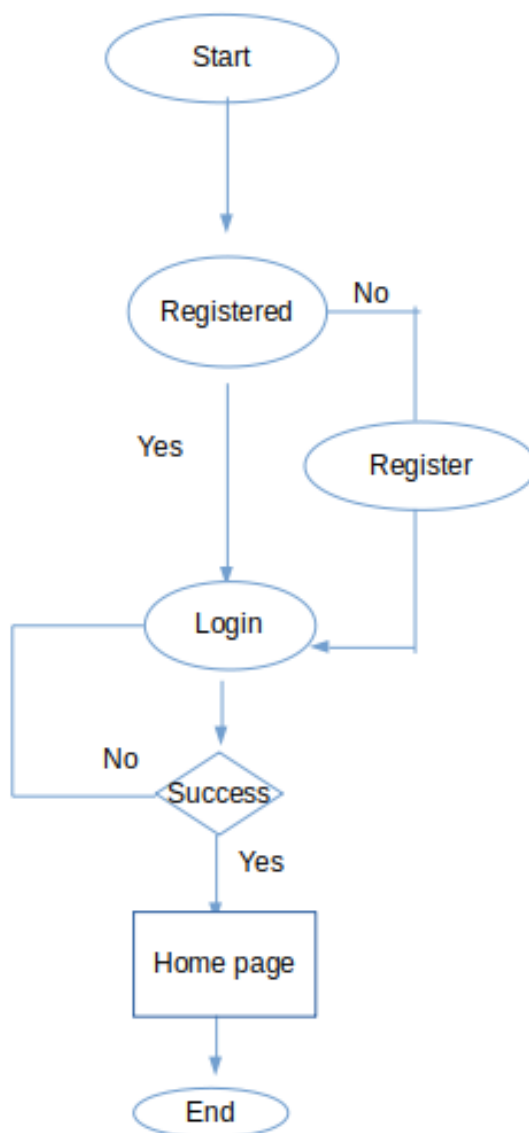
Figure 4.2: Registration flowchart

4.3.2 Order list

Admin must have an account for this application. If admin have no any account, must create an account by giving first name, last name, user name, email, and password then signin into this application by given user name and password. After successfully signin admin can show the order list, total price and ordered by whom.
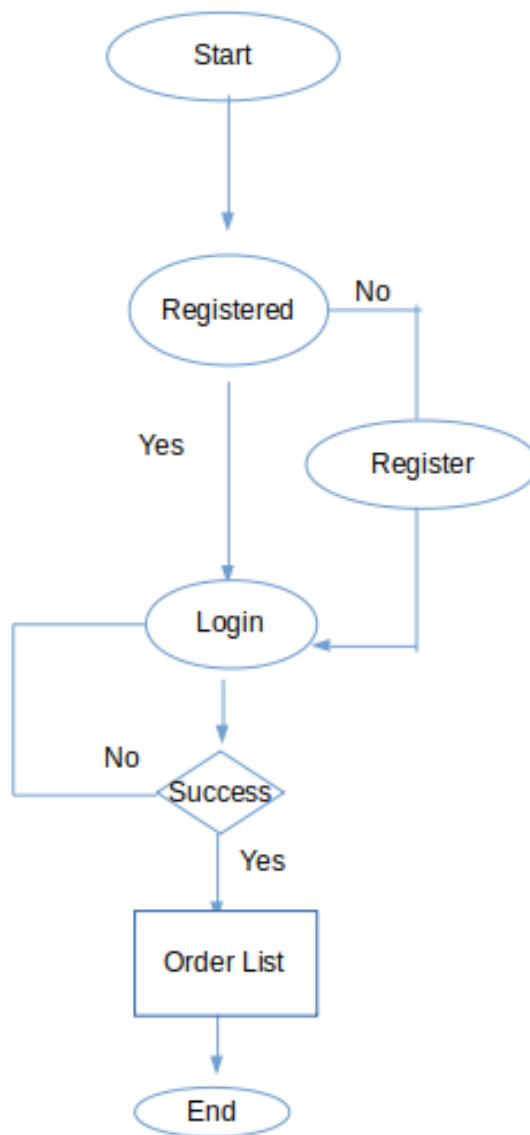

Figure 4.3: Client order list flowchart

4.3.3 Confirmed order after successfull signin

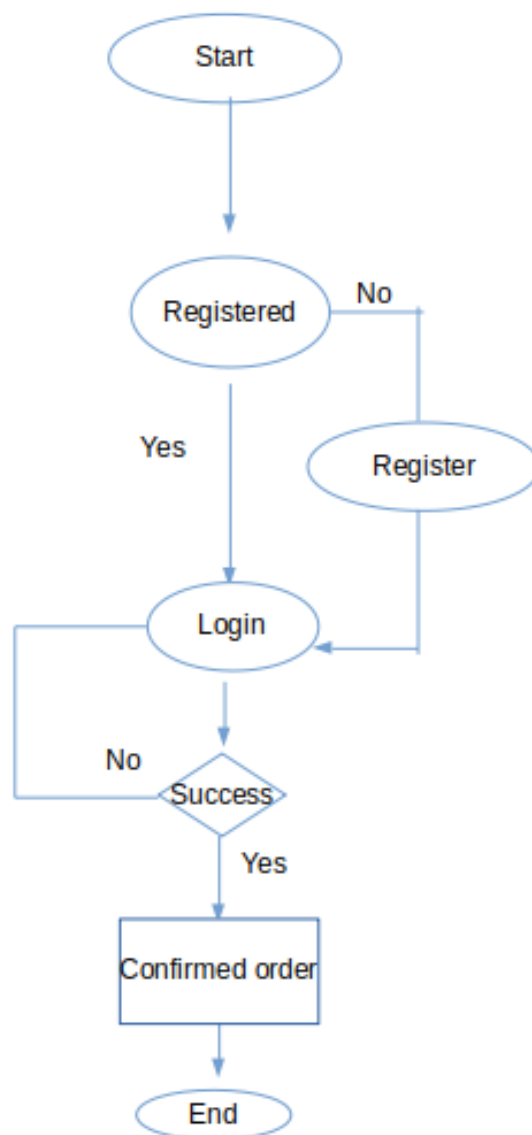After successfully client signin, he/she confirmed the order.

Figure 4.4: Confirmed order flowchart

4.4   Chapter Summary

This chapter has displayed many graphical representations of the design of the system. The implementation of the system is documented in the next chapter.

5 Implementation And Testing

5.1 Chapter Overview

Implementation is the process in the project in which the existing design is changed into working system and is giving assurance confidence on the new system for the users that it will work correctly. It involves careful planning, checkout of the current system and it compulsion or constraints of design, implementation of methods to achieve the changeover, an evaluation of the changeover methods. Apart from it planning major tasks of arranging the implementation are educating and training of users. The more complex the system is being implemented the more involved will be the system analysis and the design efforts requires just for the implementation. The implementation process begins at preparing a plan for the implementation of the system.

5.2 Document List

Table 5.1: Document list

No	Package name	Purpose
1	Database connection	This package use for implementation of database connection with local host using jdbc driver
2	Food add on database	This package use for add food name, price and details into specific table of food
3	Home activity	Home activity package use for design and implementation of homepage
4	Order insert into orderlist table	After confirmed order from client, these order are insert into order list table using this package
5	Order insert into orderlist table	After confirmed order from client, these order are insert into order list table using this package
6	Personal info show	This package use for personal information show on homepage
7	Read data from Database	This package use for read data from database and set into table on home page
8	Registration	This package use for registration purpose of admin and client
9	Search from database	This package use for searching an item by name or price of food from database

5.3   User module

5.3.1   Sign in

Already signuped user will have to signin in the system by inputting username and password in order to enter the system. The screen shot is shown in Fig 5.1

Figure 5.1: Sign in window

5.3.2   Sign up

A new user will have to sign up in the system by providing essential details in order to be a client of the restaurant. The screen shot is shown in Fig 5.2

Figure 5.2: Sign up window

5.3.3 HomePage

After a successful sign in, the client is redirected to the home activity of the application. It includes the activities that happens in the restaurant and rewards top foods also modifying about the personal information. The screen shot is shown in Fig 5.3 and Fig 5.4.
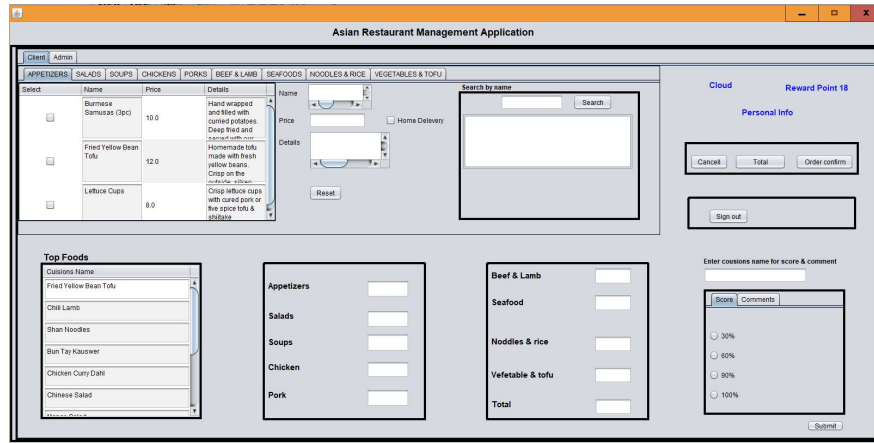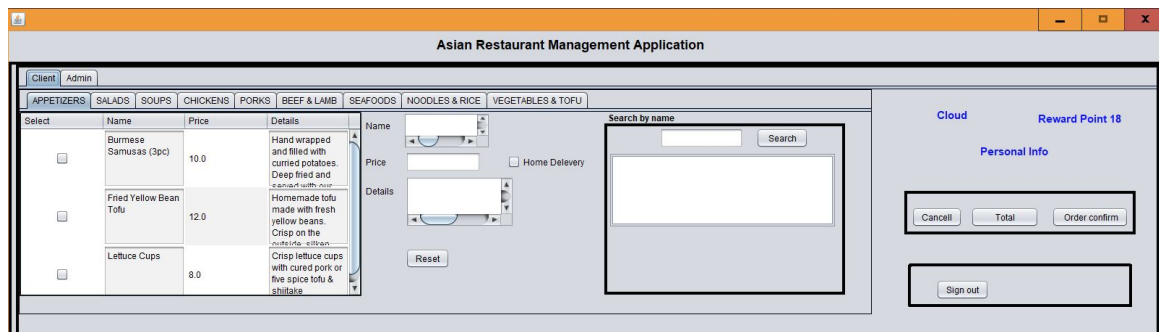

Figure 5.3: Homepage window

Figure 5.4: Order list window

5.3.4 Topfoods

Write user experience or comment on the dish and submit satisfaction score and user get reward points after sharing their experiences. The screen shot is shown in Fig 5.5.
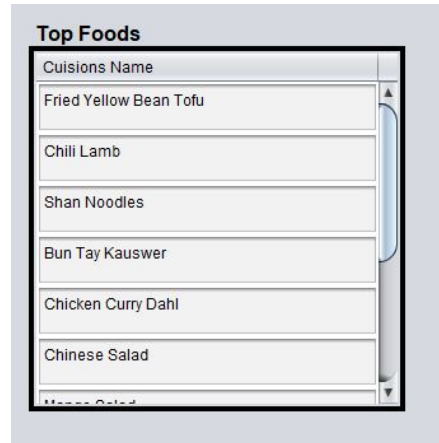

Figure 5.5: Top food window

5.3.5 Modify personal information

Users can modify their information lately if he/she wishes to. But to remind that, apart from the username, other information are changeable (as shown in Fig 5.6).
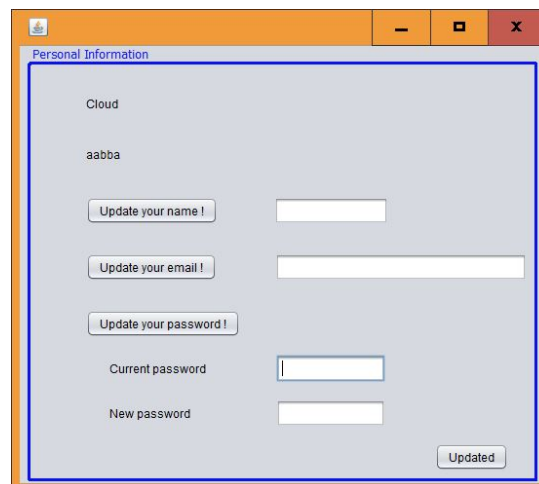

Figure 5.6: Modify information window

5.4 Test Case

A Test cases a set of conditions or variables under which a tester will determine whether a system under test satisfies requirements or works correctly. The process of developing test cases can also help find problems in the requirements or design of an application.

Table 5.2: Test Cases

Scenario	Test Cases	Expected Result	Test Result	Pass or Fail
Registration	Enter null in mandatory fields.	It should not do the registration and show error.	It will show message that please fill out this field.	Pass
	Enter incorrect data	It should not do the registration and show error.	Email: Please enter an email. Password: Password. do not match	Pass
	Enter correct data of all required field	It should lead to successfully registration	It will show the message of successfully registrattion	Pass
Login	Enter null email or password.	It should not do the login and show error.	It will show message that please fill out this field.	Pass
	Enter wrong data of email or password.	It should not do the login and show error.	It will show message that please enter an email or your email address or password are not correct.	Pass
	Enter correct data of email or password.	It should let do the login.	It will redirect to your all purchased products	Pass

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Scenario	Test Cases	Expected Result	Test Result	Pass or Fail
Update password	Enter null in mandatory fields.	It should not do the update and show error.	It will show message that please fill out this field.	Pass
	Enter incorrect data	It should not do the update and show error.	It will show the message that the old password do not match.	Pass
	Enter correct data of all required field.	It should let do registration.	It will show the message that password successfully updated.	Pass
Search Food	Enter null or incorrect data in search fields.	It will not search food	It will show the message that there was no search results!	Pass
	Enter correct data in Search fields.	It should search foods depending the keywords.	It will display the foods regarding the keywords.	Pass
Comment Food	Enter non ASCII character.	It will not let to comment	It will show error as unsupported character.	Pass
	Enter ASCII character.	It will lead a successful comment.	It will view the succession of a comment.	Pass

5.5   Code Documentation

Code documentation is an important part of any software engineering project. Throughout the im- plementation, a JavaDoc tool was used to generate HTML API documentation of the

project. The JavaDoc could then be used to provide assistance to any future developer.

5.6   Version Control

Due to the type of development methodology used for this project, incremental backups of the system were required. Version control systems (also known as Revision control) such as Mercurial manage the changes to documents storing each backup in its own revision with the ability to restore back to a particular version in the event of debugging.

5.7   Chapter Summary

This chapter has discussed the interesting aspects from the implementation stage. The next chapter documents the results by demonstrating the working system.

6　Conclusion

6.1　Chapter Overview

This chapters draws the project report to a close and reflects on the design decisions made throughout. It also discusses possible future development ideas.

6.2　Project Overview

The system achieved all of its proposed priority 1 and priority 2 functional requirements and even some priority 3 outlined in Section **??**. However, the initial project plan and gannt chart had to be modified as the project became about a month behind due to underestimations on the time to implement some desired features. This meant that some of the lower priority requirements had to be scrapped.

6.3　Further Development

This project was developed under time constraints of 120 hours. Therefore the proposed features specified in the requirements were what the developer thought to be realistic targets. However, if more time became available the following could be implemented.

6.3.1　Table Management

A feature that was thought of as a possibility but never documented past the design stage was the use of a table management feature. This would give the system the ability to reserve and allocate tables. The table data could then be used to help predict how busy the restaurant may be and help prepare the staff rota.

6.4　Reflection

On reflection, even though the majority of the proposed features were completed and the project was deemed a huge success, the author felt that he could have been more disciplined in keeping to the plan. He also felt that the proposed features were slightly unrealistic and some even unnecessary. For the general project, the author felt that important aspects of research were not undertaken including interviews with restaurant owners and user questionnaires. This would have provided good insight into existing solutions.

6.5   Skills Attained

This project has helped the author to attain new skills as well as develop existing skills. The skills attained have been both technical and individual with the main individual skill being project manage- ment which required good time keeping and management of the workload. Some technical skills that have been developed include:

- Advanced coding using the Java Swing interface.

- Relational database schema design and trigger coding.

- Advanced coding using Java threads.

6.6   Chapter Summary

This chapter has concluded the project report and provided an insight into possible future development.

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Acknowledgement

Foremost, I would like to express my sincere gratitude to the almighty Allah for His blessings and protection throughout my undergraduate studies.

My sincere thanks to my supervisor, **Dr. LIANG Zhao** of the Institute of Computer Science at Shenyang Aerospace University for the continuous support of my Bachelor's study, patience, motivation, enthusiasm, and immense knowledge. His guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better advisor and mentor.

I also thank my fellow classmates, my friends and for all the fun we have had in the last four years.

Last but not the least; I would like to thank my parents **Mr. Syed Amin Uddin**, **Mrs. Hajera Amin** and **Ms. Noorjahan Khanam** for their prayers, support, encouragement and their admonishment.