

KEMI-TORNIO UNIVERSITY OF APPLIED SCIENCES

Design and Implementation of Cafeteria Menu System Based on
PHP

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PREFACE

There are two instructors involved in my project: they are Mr Thai Bui and Mr Antti Niemela. Mr Thai is a supervisor who is full of experience, and he suggested a lot of constructive ideas during the project. He formulated a very reasonable project schedule for me. Antti usually provided some professional solutions when I was facing some obstacles during the project work. The project could not complete successfully without their guidance.

ABSTRACT

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This project was established on the bases of website development. The system was designed for the cafeteria (Aurinko) of Kemi-Tornio University of Applied Sciences which focuses to two kinds of user groups, and the characteristics of the project are described in the following paragraphs.

Firstly, the application allows the cafeteria authority to visit, modify, add and remove the foods in a menu, and then staff can manage the menus from Monday to Saturday. In addition, if the certain menu has not been edited in the current week, the system checks the menus every day and reminds the staff by E-mail.

Secondly, the students can scan the menu list of current week, and instead the students can quickly find a current day lunch item. This item will be highlighted in the menu view. If a current week menu needs to be printed or saved, students can also download it as a word document.

The whole project adopts Browser/Server (B/S) pattern. Its development mainly includes the web design of browsing page and the background of management. The system was established as an operational environment by using Apache and PHP, and combined with MySQL, the relationship of data connection can be simply managed. The jQuery Mobile was selected as a powerful tool to design the user interface of the project. XML was used to translate the language in the same page.

Keywords: menu, bilingual support, PHP, JavaScript, JQuery Mobile, MySQL.

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EXPLANATION OF CHARCTERS AND ABBREVIATIONS

HTML	HyperText Markup Language
PHP	Hypertext Preprocessor
JavaScript	A scripting language
XML	Extensible Markup Language
UI	User interface
MySQL	A backstage database
JQuery Mobile	A web framework
CSS	Cascading Style Sheets
UML	Unified Modeling Language
SMTP	Simple Mail Transfer Protocol
Ajax	Asynchronous JavaScript and XML

1. INTRODUCTION

The cafeteria of Kemi-Tornio University of applied sciences is still uses MS word document as menu system at the moment, but it is very discommodious and complicated to manage. Therefore, this topic was found to design a new menu system instead of the inconvenient menu which was used in cafeteria nowadays.

The new menu system was established on the bases of website development. The main tool of project development is PHP language. The staff could simply modify and find the content which they needed through website, for example: the menus of different date, various foods, prices and personal information, and students can also check the menu easierly.

Furthermore, because most international students, Finnish students and staff will use this website, the user can select the content language of the website either in English or in Finnish anytime. Students or staff can also review different language names or descriptions of foods when they are selecting the different language interface.

There are two requirements of the web UI design requested from the school cafeteria: the UI needs to be simple and as clear as possible for good accessibility. On the other hand, the website should be designed as mobile UI: the plenty of web users are not only use the computer to surfing internet, but also the telephone. Therefore, this website was created by using mobile UI framework. The computer user and the mobile device customer (including iPhone, iPad and android clients) both can easily surfing this website.

The thesis contains 4 parts in order to introduce the situation of the project: Chapter 2 introduces the development environment, selected technology and tools of the whole project. All project structures and requirements are described in Chapter3. Chapter 4 mainly introduces how those requirements of the website were achieved. At last, Chapter 5 is the conclusions of the project work.

2. BACKGROUND

2.1. Development environment

This development project used WAMP to establish the operational environment. In windows operating system platform, there are numerous independent programs packaged into WAMP, but generally those programs are integrated together in order to increase the high capability.

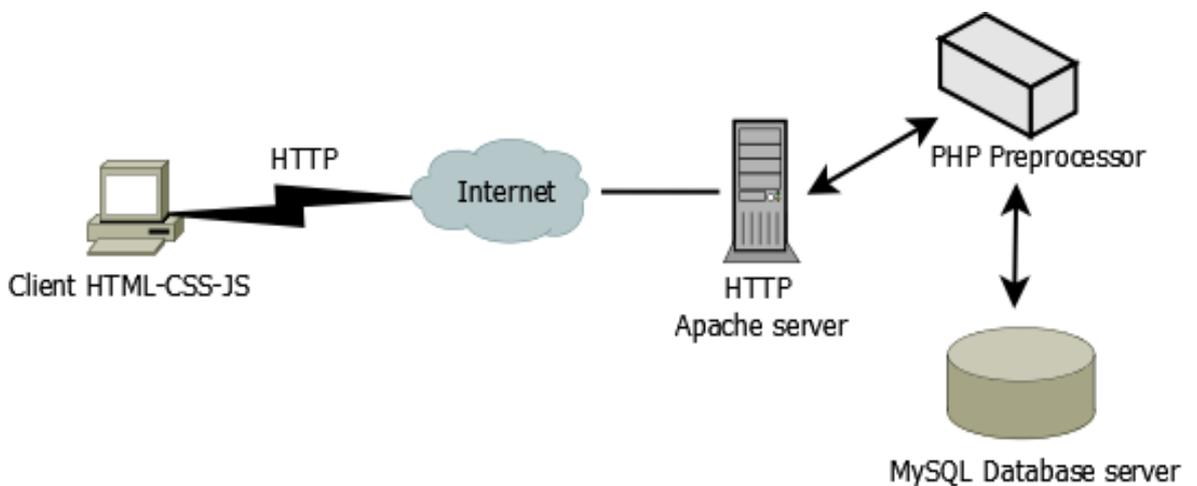


Fig. 1. WAMP is an integrated environment

Apache, MySQL and PHP are the principle components of WAMP which is an acronym form of the initials of the operating system. /1/

In additional, other programs can also be included in the WAMP package, such as phpMyAdmin that have a graphical UI for the MySQL database manager.

2.1.1. PHP

PHP (Hypertext Preprocessor) is an embedded scripting language in the HTML documents and it is executed on the server side. PHP has already been widely used and its

programming syntax is similar to the C language. The following are some features about PHP:

Table 1. Some features about PHP

Feature	Description
Open source code	All PHP source code can be obtained. Therefore, usually PHP do not have bugs and risk is very low.
Free	PHP is free relative to else languages (like ASP, JSP).
Fast	Program development fast, run fast, and learning the technology of PHP is also fast.
Cross-platform	Because PHP is running on the server side script, it can run on UNIX, LINUX, and Windows.
Structured	The program syntax is very like C-language, and it can easily find the mistake when programming.

From this table, we can see that PHP language is more suitable for this website compares with other languages. It does not require other costs and it is also very simple for a developer. In addition, PHP language is the main programming language in this website, a system cannot execute any database operating without PHP language.

2.1.2. MySQL

MySQL is an open source and used for database management, many small and medium-sized websites developer choose MySQL as the website database in order to reduce the cost of the website. Because of its small size, speed, low cost of ownership, almost existing all operating systems (including Linux, Mac OS, Windows...), especially the open source features, the school cafeteria decided to use MySQL to store the needed data and information.

2.1.3. Apache

Apache is the most popular web server software in the world, and it can be run on almost all computer operating systems due to its cross-platform and security. The success of Apache lies in an open source code, and open development team, portability and support cross-platform applications as well as MySQL. Moreover, the Apache has high compatibility with PHP and MySQL, so we selected the Apache as the web server in this operating environment.

2.2. Technology

The purpose of this part is to introduce what kind of technologies were used in this developing project and what functions were created through those technologies.

2.2.1. HTML+CSS

Hypertext Markup Language (HTML) is a markup language and it was usually used to describe Web files, by marking symbols to display the various elements of the pages. The browser will be told how to display the contents when a programmer writes the various tags into a text file, such as word processing, layout pages, and picture arrangements. Browser reads the page element in order, and then displays the contents according to various markers. Therefore, The HTML is the basic language of the whole website, all other languages (including PHP, JavaScript, and CSS) are embedded in HTML to execute.

The presentation semantics (the look and formatting) of a document that can be written in a markup language can be described by Cascading Style Sheets (CSS) which is a style sheet language. It is most common application for web pages' layout written in HTML. /2/

Through using of cascading style sheets, the positions of each element were specified. It can also provide more effectively control of the appearance of the pages, and some special effects.

2.2.2. JavaScript

Usually JavaScript is embedded directly into HTML pages, but it can also exist on an independently JS document. JavaScript is a scripting language and it is widely used to enter dynamic functionality to HTML pages, such as appear a dialog box to response various behaviours of clients, and JavaScript also can read and change the content of an HTML element.

2.2.3. JQuery Mobile

The JQuery mobile is a web framework for programming web user interface, and the webpages can be executed on all popular mobile device platforms by using JQuery mobile (including IOS, Android, Blackberry, and other smartphone and tablet). JQuery mobile allows a developer to design their own web application for a PC or a mobile device.

2.2.4. XML

Extensible Markup Language (XML) is a markup language and usually used to data transmission and store, but not to display data. There are different methods can be used to read XML file on the different browsers, because the different browsers use different XML parser. In this project, XML was used to store and carry different language data for accomplish bilingual website.

Table 2. Example of bilingual XML documents

English.xml	Suomi.xml
<menuinfo>	<menuinfo>
<week>Week:</week>	<week>Vko:</week>
<soup>Soup </soup>	<soup>Keitto</soup>
<username>User name:</username>	<username>K äytt ä ä nimi:</username>
<password>Password:</password>	<password>Salasana:</password>
<logout>Logout</logout>	<logout>Kirjaudu ulos</logout>
<price>Price</price>	<price>Hinnat</price>
<salad>Salad </salad>	<salad>Salaatti</salad>
<lunch>Lunch </lunch>	<lunch>Lounas</lunch>
<email>E-mail</email>	<email>S ähk öposti</email>
<telephone>Telephone:</telephone>	<telephone>Puhelinnumero:</telephone>
</menuinfo>	</menuinfo>

2.2.5. UML

The Unified Modeling Language (UML) is mainly used for visualizing, specifying, constructing, and documenting the artefacts of a software-intensive system which is a graphical language. /3/

In this project, there are some aspects need to be concerned, for example, the different executing result of every function through drawing sequence diagrams and draw basic structure through the flow diagrams. Therefore, Therefore, an overall planning of this project can be achieved through using UML.

2.3. Development tools

2.3.1. Notepad++

Notepad++ is a free source code editor for Microsoft Windows operating system and supports several programming languages. The following are some advantages of this software:

Table 3. Some advantages about Notepad++

Advantages	Description
Multiple windows	Support for editing multiple files at the same time, a user can open multiple pages to edit codes or open multiple windows to contrast various files.
Drag-and-drop	By using the function of drag and drop, a user can open files, change position of file, even open a document from old window to another window.
Spell checker	The Notepad++ can automatic check the syntax of different programming language and remind of mistakes by changing the code colour.

From this table, it can be realized that the Notepad++ provide obvious helps when developer the programs application. The source code of different pages was compared at the same time and easily finds some syntax errors of the programming language.

2.3.2. Dia

As a free and open source diagramming software, Dia can be used to draw entity relationship diagrams, UML diagrams, flowcharts, network diagrams and so on. /4/

In this project, Dia was used to draw the UML diagrams. The interface of Dia is very succinct, so the user can easily find the needed graphs or lines. After a user draws different diagram, Dia can export these diagrams to various picture formats (including PNG, JPEG, WMF, and more). Unfortunately, Dia is the small diagramming software, so the appearance and colour of every diagram is very simple.

2.3.3. Google Translate

Google Translate is a free translation tool which can translate a section of text, document or webpage to another language, and it provides immediate translation between 58 languages. /5/

Through Google Translate, all information will generally become understandable and useful. In this project, the system was required to support English and Finnish at the same time. Therefore, Google Translate is very important when the Finnish interface was created.

3. SYSTEM ANALYSIS AND DESIGN

After project environment has been established, the following things need be considered: what aspects need be involved in the cafeteria menu system.

3.1. Use case diagram

Drawing use-case diagram is very important phase in system analysis, and developer can achieve an overview of user requirements for entire system. For this project, this website was designed for the school cafeteria, so the user groups of website were divided into two parts (general users and cafeteria administrators).

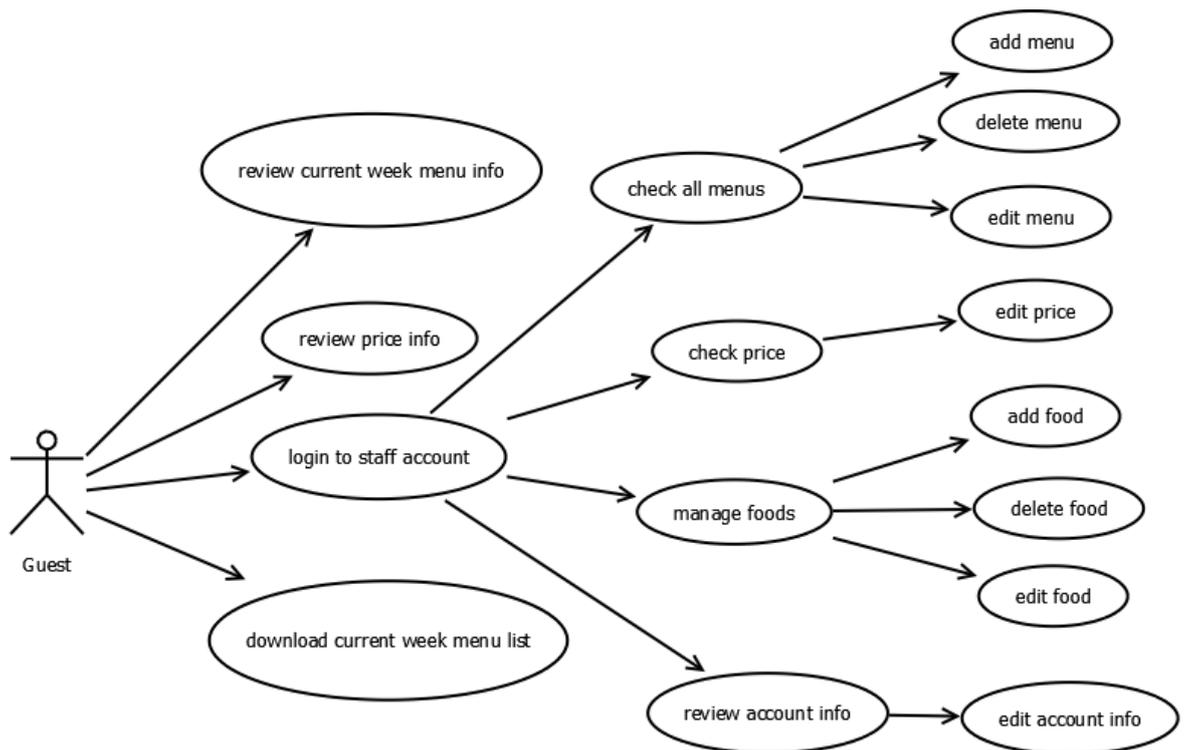


Fig. 2. Use Case Diagram

3.2. User requirement

Based on the use-case diagram, we can easily understand what kinds of functions are needed in different requirements.

3.2.1. General user

1. Information browsing module: This is the homepage of whole website, general user can get needed information from this module. This page just displays the menus from Monday to Saturday of current week. The information of foods includes the food names, descriptions, dietary restrictions. Moreover, the homepage also will display different prices for different customers, such as students, adult students, staffs, and visitors.
2. Menu download module: If a user wants to save or print out the contents which homepage displayed, he can achieve it in this model.

3.2.2. Administrator

1. Login module: This module including login, user identification and logout. Administrator cannot start background management without login, and system will check the username and password when administrator wants log into interface of background management. In addition, system must limit user browsing pages without Login, so every background management pages will check that user was successfully logged in or not. At last, if administrator finished his management, he could logout from this website.
2. Administrator information management module: This module is responsible for the management of personal information, the main features including check and modify personal information. Administrator can browse own user name, E-mail address,

Telephone number, last number and first name. Moreover, this model also allowed administrator to modify their information, including the password as well.

3. Menu management module: This module is responsible for the management of menus, and the main features include adding, removing, and modifying menu. When a administrator creates a new menu, he must select a date and 5 kinds of foods (including soup, salad, lunch, vegetarian lunch, and other) from existing foods in database. Then system will check that all information has been filled in and specified date is free. The Administrator also can change some foods or delete useless menus.
4. Food management module: The main features of this module include adding, removing, and modifying food. If a administrator wants to create a new food, he must first select a type of food from soup, salad, lunch, vegetarian lunch and others. Then he must fill in the English name and description, Finnish name and description, and dietary restrictions. The Administrator also can modify some foods or delete useless foods.
5. Prices management module: This module is responsible for the management of prices, and the main features include check and modify prices. The Administrator can browse the prices of 5 customer groups, such as staff, student, adult student, visitors, and other groups. In addition, this model also allows the administrator to modify these prices.
6. Menu check module: the main function of this module is that system can check the current week menu every day, if the certain menus were not inputted and submitted, and then system will remind all administrators by E-mail. Besides, this module is a backstage function of the website, and the administrator does not need to do any operation.

3.3. Database design

Database design is very important part in new website establishment. As it well known, the database design is directly related to the efficiency of the data accessibility, and a reasonable database design is more important than the upgrading of server hardware configuration sometimes. By draw up the ER diagram, the relationship attributes, and entities were analyzed better.

Three different types of information often represented by symbols involved in ER diagram, in which it is the specialized graph that illustrates the relationships between entities in a database:

The boxes are used as entities, the diamonds are used as relationships between two entities, and the ovals are used as existing attributes in every entity. /6/

Table 4. There are 4 relationships between two entities. /7/

Relationships	Description
One-to-one (1:1)	the entity A is associated with at most another entity B, and the entity B is associated with at most in the entity A.
One-to-many (1: n)	the entity A is associated with any number another entity B, and the entity B is associated with at most the entity A.
Many-to-one (n: 1)	the entity A is associated with at most another entity B, and the entity B is associated with any number in the entity A.
Many-to-many (m: n)	Many-to-many (m: n): Entities in A and B are associated with any number from each other.

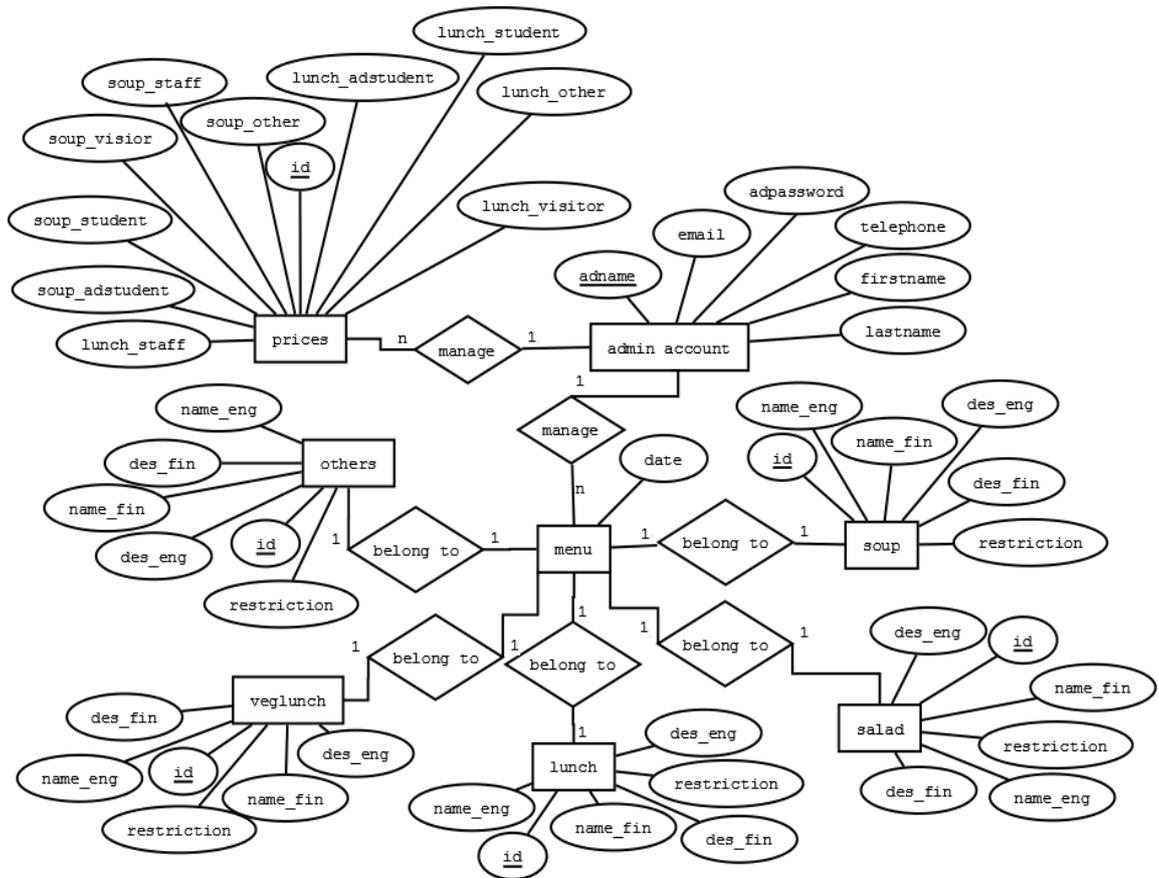


Fig. 3. ER Diagram

There are 8 entities were found from ER diagram and those 8 entities will represent 8 tables in the database.

1. Admin account: This entity includes 6 attributes and “adname account” is primary attribute, this entity is used for administrator log into system or gets the E-mail address when system executes menu checking module.
2. Prices: This entity includes 11 attributes and “id” is primary attribute, this entity is used for storing the information of different menu prices.
3. Menu: This entity includes 6 attributes and “date” is primary attribute, thus database just has a menu in same date. This entity is used for storing the information of menus.

4. Soup, salad, lunch, vegetarian lunch and others: These entities all belong to the entity of menu, includes 6 attributes and "id" is primary attribute. These entities are used for storing various information of different food. In addition, "name_eng" means the English name of this food, "name_fin" means the Finnish name of this food, "des_eng" means the English description of this food, "des_fin" means the Finnish description of this food, and "restriction" means the dietary restrictions of this food.

After that, the database diagram can be drawn up according to ER diagram.

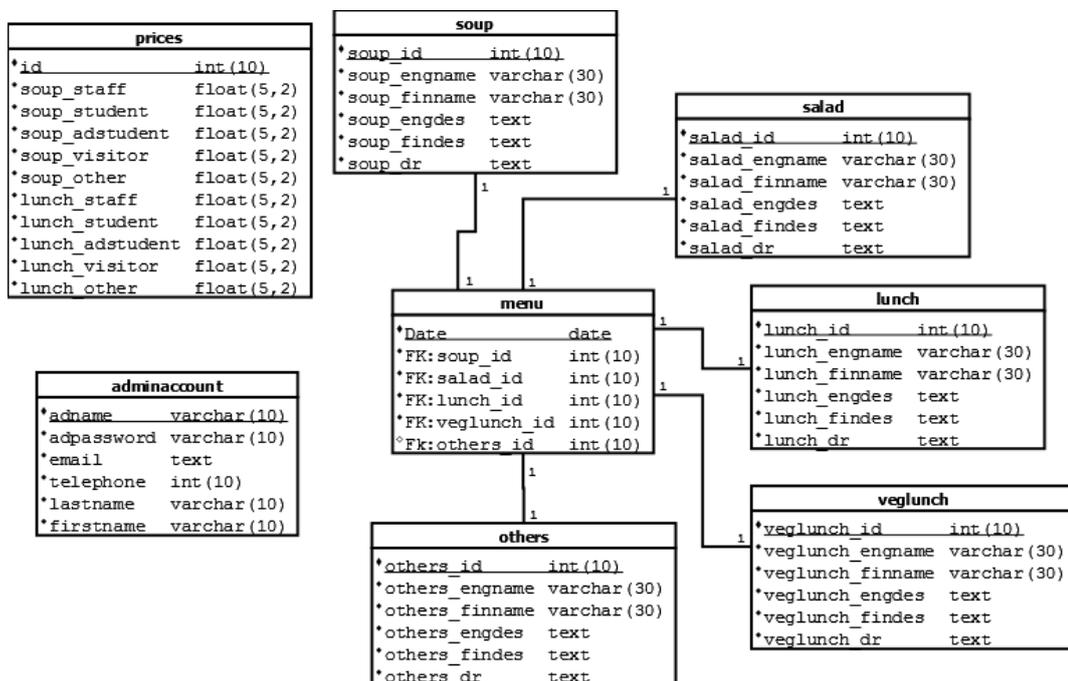
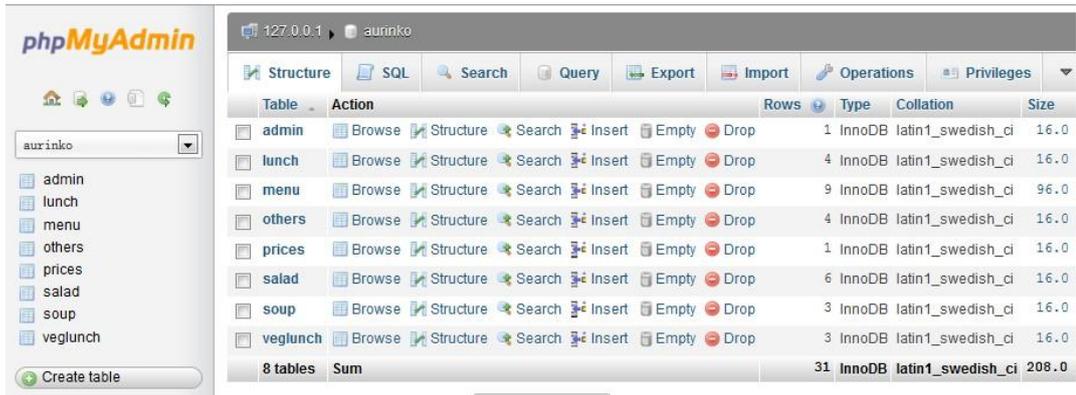


Fig. 4. Database Diagram

Figure 4 shows all needed data in this project, and the type of each data which can be stored as integer, floating-point, text, even a date. The following is the created database:



The screenshot shows the phpMyAdmin interface for a database named 'aurinko'. The left sidebar lists the tables: admin, lunch, menu, others, prices, salad, soup, and veglunch. The main area displays a table with columns: Table, Action, Rows, Type, Collation, and Size. The table lists 8 tables with their respective row counts and sizes.

Table	Action	Rows	Type	Collation	Size
admin	Browse Structure Search Insert Empty Drop	1	InnoDB	latin1_swedish_ci	16.0
lunch	Browse Structure Search Insert Empty Drop	4	InnoDB	latin1_swedish_ci	16.0
menu	Browse Structure Search Insert Empty Drop	9	InnoDB	latin1_swedish_ci	96.0
others	Browse Structure Search Insert Empty Drop	4	InnoDB	latin1_swedish_ci	16.0
prices	Browse Structure Search Insert Empty Drop	1	InnoDB	latin1_swedish_ci	16.0
salad	Browse Structure Search Insert Empty Drop	6	InnoDB	latin1_swedish_ci	16.0
soup	Browse Structure Search Insert Empty Drop	3	InnoDB	latin1_swedish_ci	16.0
veglunch	Browse Structure Search Insert Empty Drop	3	InnoDB	latin1_swedish_ci	16.0
8 tables	Sum	31	InnoDB	latin1_swedish_ci	208.0

Fig. 5. Database table

3.4. Website structure

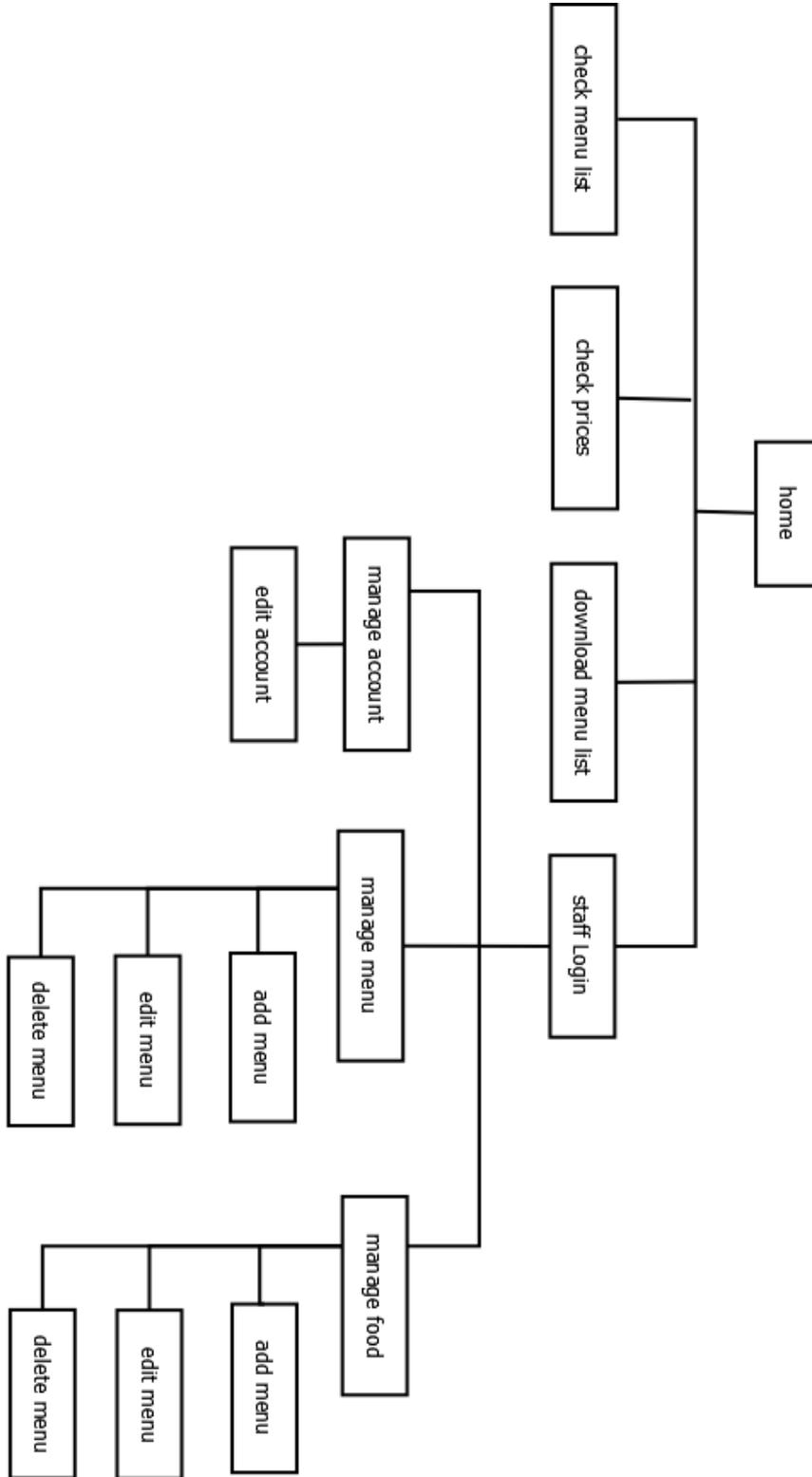


Fig. 6. Website structure

Figure 6 shows the basic structure of this website. Firstly, user can directly see the current week menu list and various lunch prices when s/he enters this website. In addition, the webpage will display the food names and descriptions of selected language.

Secondly, if a user wants download the information displayed in the menu as a word document, he can click the button of download menu. And then system could automatically popup a temporary word document to present menus of current week and prices.

Thirdly, if staff needs to manage the website data, he must log into the background management system. Furthermore, if staff entered the wrong username or password, s/he cannot enter the pages of management system and operates any data.

At last, user can select data (including user information, various foods information and prices, different date menus) which they wanted to operate.

4. IMPLEMENTATION

The purpose of this part is to introduce the main features of this project, and how these features have been achieved.

4.1. UI

At the beginning of developing a JQuery mobile webpage, developer need enter three packages into the “head” tag of HTML document as first step. These three packages define the appearance of each element, some special visual affections and function of webpage.

```
<head>  
  <link rel="stylesheet" href="jquery.mobile-1.0.min.css" />  
  <script src="jquery-1.6.4.min.js"></script>  
  <script src="jquery.mobile-1.0.min.js"></script>  
</head>
```

Usually, a classic JQuery mobile website is categorized in 3 parts: header, content and footer: the header usually contains 2 elements which are the page title and the navigation or action buttons, and it should be located at the top of the page.

The content in JQuery mobile is very flexible and developer can enter required elements within this part, the jQuery Mobile provides a lot of tools and widgets to help developer achieve some special effects, such as collapsible panels and a complete set of finger-friendly form elements, simple operate the content of webpage on mobile devices.

The Footer bar is the last element and it should be located at the bottom of the pages, usually the Footer just contains some buttons. In addition, JQuery mobile can add many effects to user interface, like the page transition effects (slide, pop, slide up, fade, slide down, and flips), add the icon for buttons (arrow-r, arrow-u, arrow-d, delete, plus, minus,

check, gear, refresh, forward, back, grid, star, alert, info, home, search), set different theme for all elements and so on.

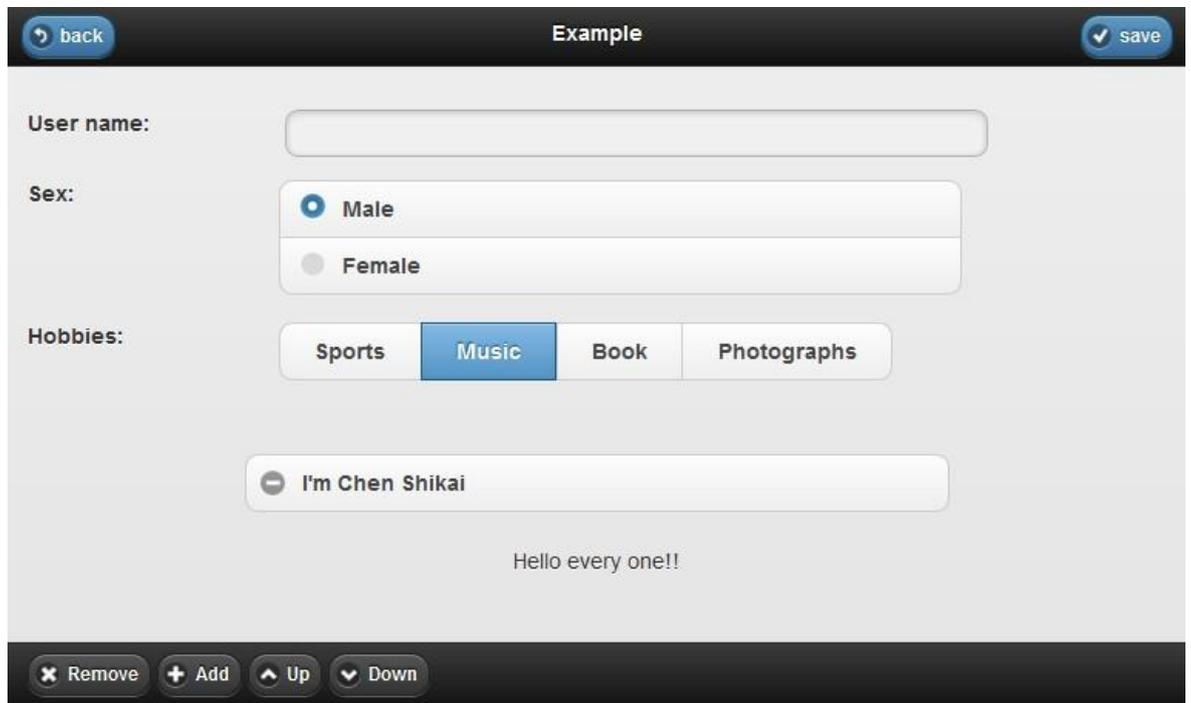


Fig. 7. Example of JQuery mobile UI

4.1.1. DateBox

DateBox is a date and time picker program for JQuery mobile. /8/

The same principles as the JQuery mobile, the developer also needs the packages into the “head” tag of HTML document in the beginning.

```
<link rel="stylesheet" href="jquery.mobile.datebox.css" />  
<script src="jquery.mobile.datebox.min.js"></script>
```

There are six kinds of data-entry modes (which include Android style date picker, Calendar style date picker, Slide style date picker, Flip Wheel style date or time picker, 12 and 24 hour time picker and Duration time picker) involved in DateBox. In this project, the system selected the mode of calendar style date picker. In addition, original configuration of

DateBox is not user-friendly operating. Therefore, some parameters should be designed in order to make the user interface more reasonable and simpler.

```
"calHighToday":false  
"dateFormat":"%d/%m/%Y"  
"calStartDay": 1
```

The code presented above defines that the current day is not highlighted when a user picks date, the selected date is displayed on the bases of the format of “day/month/year”, and the first day of every week starts with every Monday.



Fig. 8. Example of date pick

4.2. Database operations

Database operation is very important for a dynamic website, and the system was mainly used these four statements in this project: select, insert, update and delete. No matter which statement was used, the first thing is to make the page and database connects together. There are four things needed in database connection, they are the username and password of database manager, IP address of web server and the name of selected database.

```
$mysql_server_name = "127.0.0.1";  
$mysql_username   = "root";  
$mysql_password   = "";  
$mysql_database   = "aurinko";
```

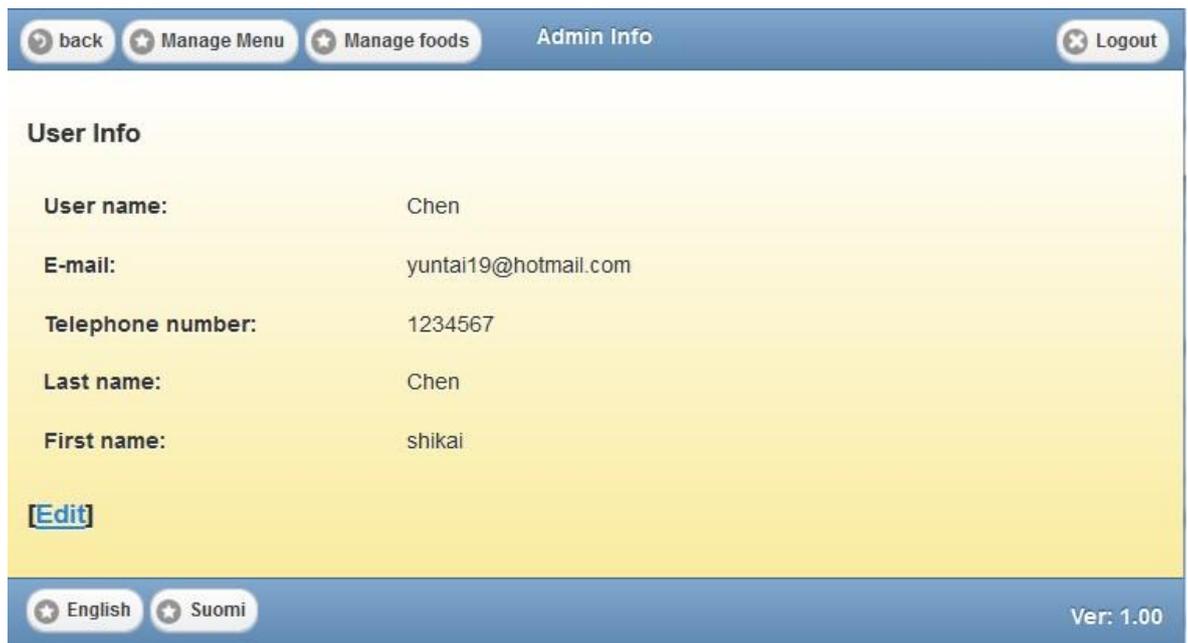
After this part, the developer can start to operate whole website data by PHP scripting language. For example: obtaining data, adding new data to database, updating data and removing data.

4.2.1. Select

The select statement is used to obtain data from a database, and there are a lot of features are achieved by this statement. Such as: checking menus, prices and foods in the information browsing module, reviewing personal information, even system should make the comparison of username and password from database when user log into website.

```
$sql = "SELECT *FROM `admin` WHERE adname='chen';"
```

This part of codes describes how system obtained data from a database. "*" means system selects all column from the selected table, "From admin" means the "admin" is selected database table, and "Where adname=chen" is used to filter useless records and extract specified data which the administrator name is "chen".



The screenshot displays an administrative web interface. At the top, there is a navigation bar with buttons for 'back', 'Manage Menu', 'Manage foods', 'Admin Info', and 'Logout'. The main content area is titled 'User Info' and contains a table of user details:

User name:	Chen
E-mail:	yuntai19@hotmail.com
Telephone number:	1234567
Last name:	Chen
First name:	shikai

Below the table is an '[Edit]' button. At the bottom of the interface, there are language selection buttons for 'English' and 'Suomi', and a version indicator 'Ver: 1.00'.

Fig. 9. Example of select data form database

4.2.2. Insert

The insert statement is used to enter new information to a table, and this statement is mainly used for entering new menu and new food to database in this project. And following code describes how system adds new food to database:

```
<form action="inputfood.php" name="frm" method="post">
```

Firstly, system sends needed food information from a form with the post method to “inputfood.php” page. The main benefits of post method are invisible and no limits on the amount of sending information.

```
$food=$_POST["food"];  
$engname=$_POST["engname"];  
$engdes=$_POST["engdes"];  
$finname=$_POST["finname"];  
$findes=$_POST["findes"];
```

```
$dr=$_POST["dr"];
```

Secondly, “inputfood.php” page should receive these records.

```
$sql="INSERT INTO `aurinko`.`$food` (`$foodid`, `engname`, `finname`, `engdes`,  
`findes`, `dr`) VALUES ('', '$engname', '$finname', '$engdes', '$findes', '$dr')";
```

At last, received records can be added to the database, and the forward part of “VALUES” is used to select needed column, and the backward part means that system insert received record to a specified column.

4.2.3. Update

The update statement is used to modify data in a table and it needs to receive records from a form like insert statement as well. In this project, the update statement is mainly used for modifying administrator information, menus, foods and prices.

```
$sql="UPDATE `admin` SET `adpassword`=`$password`, `email`=`$email`, `telephone`=`$tele  
e`, `lastname`=`$lname`, `firstname`=`$fname` WHERE `adname`=`chen`";
```

This part of codes describes how system modifies personal information. “Update admin” means the “admin” is selected database table, and then system could received records and stored the information, the old data will be replaced by the received information in specified column, “Where adname=chen” is used to filter useless records and extract specified data which the administrator name is “chen”.

4.2.4. Delete

The delete statement is used to remove information from a database table, and this statement is mainly used for deleting useless menus and foods in this project.

```
$sql="DELETE FROM `menu` WHERE Date='$date'";
```

This part of codes describes how system delete menu from database. “From menu” means the “menu” is selected database table, and “Where Date=\$date” specifies which menu of date that should be deleted. If the WHERE clause is missing, all data with “menu” table will be deleted.

4.3. Login, Login Identification and Logout

Login:

Administrator cannot start the background of management before Login and s/he should input correct and valid username and password on the Login page.



The screenshot shows a web application interface for a login page. At the top, there is a blue navigation bar with a 'back' button on the left and the word 'Login' in the center. Below this, the page title 'Staff Login' is visible. The main content area has a light yellow background. It contains two input fields: 'User name:' with the text 'Chen|' and a red error message 'Please input username'; and 'Password:' with the text 'chen' and a red error message 'Please input password'. Below the input fields are two buttons: 'Submit' and 'Reset'. At the bottom of the page, there is a blue footer bar with language selection buttons for 'English' and 'Suomi', and the version number 'Ver: 1.00' on the right.

Fig. 10. Login page

After the user entered username and password, system should send these records to another page for data identification. At the same time, the system will search the result whether the entered username and password are all correct and paired or not through “select” statement.

```
$sql="SELECT* FROM `admin` WHERE adname='$username' and  
adpassword='$password';  
$result=mysql_query ($sql);  
$count=mysql_num_rows ($result);
```

After that, the system will count the amount of result. If the amount is equal to 0, it means that the entered username and password are not valid and the website can remind the user to check his username or password. On the other hand, if the amount is equal to 1, it means that the user has entered correct account name and password, his username will be set as “session” and webpage will be redirected to the background of management page.

Login identification:

The user identification problem was solved through PHP "session" where the user information can be stored on the server for later use (i.e. username, password, etc.). However, if the user leaves the website or closes the browser, the information stored in sessions will be deleted immediately. /9/

This part is used to limit user browsing pages without Login, and a guest could only operate basic function. The security aspect of website need to be considered and all pages need to be checked if the user was successfully logged in or not.

```
session_start();  
if(!isset($_SESSION["username"])){  
header("location:login.php");  
}
```

This part of codes shows how system assessed whether user has logged in or not. The system will set a “session” when user is successfully logged in. Therefore, the system just needs to find this “session” at the beginning of every syntax files of management pages. If system finds the “session”, then the code of page will be executed normally. Otherwise, if this “session” is inexistence, webpage should be redirect to the Login page automatically.

Logout:

```
session_start();  
session_destroy();  
header("location:index.php");
```

System set a “session” when user is successfully logged in. Therefore, if user need log out from website, system just need destroy this “session” and webpage will be turned to the homepage automatically.

4.4. Output as word document format

If the menu list of current week needs to be printed or saved, user just need to click the button of “download menu” in the homepage and the menu list will be downloaded as a form of word document. The following code describes how to create a word file and display needed information:



Fig. 11. Download menu

```
ob_start();  
...  
...  
$data=ob_get_contents();  
ob_end_clean();
```

Firstly, system must get the menu information about current week. The browser cannot parse the content of webpage from the function of “ob_start()” to “ob_end_clean()” and this content will be loaded into the cache in the server. Furthermore, the function of “ob_get_contents()” can obtain data from cache and the variable “\$data” is used to store those data as the content of word document.

```
$fp=fopen("menu.doc","wb");  
fwrite($fp,$data);  
fclose($fp);  
$file = 'menu.doc';  
if (file_exists($file)) {  
    header('Content-Description: File Transfer');  
    header('Content-Disposition: attachment; filename='.$file);  
    readfile($file);  
    unlink($file);  
    exit;  
}
```

After this, the system creates an empty word document and this word document will be written according to the content of variable “\$data”. Because this word document cannot specify the location of the file where user prefers to save, system has to transfer it to a new temporary word document and the old document should be deleted.

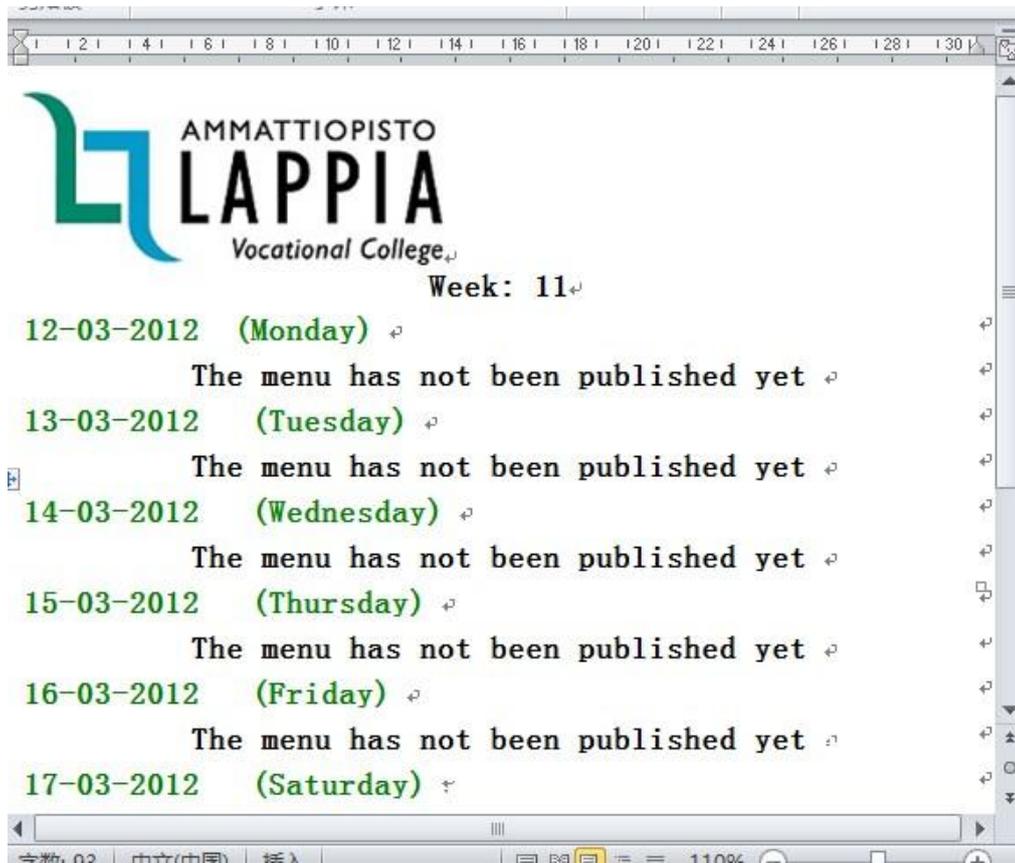


Fig. 12. Example of downloaded menu

4.5. Email reminders

The email reminder is a backstage function in this website, which means that system will check current menu list that the whole week's menus are already been entered. If the system finds that there are certain menus of the current week were not published, it will send an email to all staff automatically. In the following part, these codes describe how the system checks needed menus and sent email to staff:

```
$info="";
$sqlemail="SELECT *FROM `admin`";
$resultemail=mysql_query($sqlemail);
$sql="SELECT *FROM `menu`WHERE Date='$todayt'";
```

```

$result=mysql_query($sql);
$number=mysql_num_rows($result);
    if ($number==0){
        $info=$info."[".$todayt."] ";
    }

```

Firstly, the Email address of staffs and all menu information should be obtained from database by “select” statement. In additional, the content of sent mail also needs to be defined: a variable “\$info” was created and the value of this variable is empty at the beginning, and then system will search needed menu from database. If searched menu is inexistent, the date of inexistent menu will be added to the variable “\$info”.

Secondly, the system must verify the value of variable “\$info” by “if ...else” function in PHP language. If the value of variable “\$info” is still empty, it means that all menus of current week have already been entered and the system will not send Email to staffs. Otherwise, if the value is not empty, the system will write an Email and the content of Email is the date of unpublished menus.

Thirdly, system sends Email which reminds staff to check menus by using PHPMailer, PHPMailer is a full-featured email transfer class for PHP.

sockets

Sockets Support	enabled
-----------------	---------

Fig. 13. Checking the configuration of server

However, there is an important thing when system sends Email by PHPMailer, the protocol of Socket should be confirmed that it have already been opened in server. Furthermore, there are a lot of parameters need to be set up. For example, the SMTP server address, server port, username and password of the account need to be collected when system is automatically sending Email, the title of this Email, the Email address of received mail, the name of sender, and the content of mail also need to be declared.

```

$mail = new PHPMailer();
$mail->IsSMTP(); // telling the class to use SMTP
$mail->SMTPAuth = true; // turn on SMTP authentication
$mail->SMTPSecure = "ssl";
$mail->Host = "smtp.gmail.com";
$mail->Port = 465;
$mail->Mailer = "smtp";
$mail->Username = "yuntai1987@gmail.com"; // SMTP username
$mail->Password = "19871113"; // SMTP password
$mail->FromName = "Chen";
$mail->From = "yuntai1987@gmail.com";
$mail->AddAddress($receive); //Receiving email account
$mail->Subject = "Please input the menu!!!";
$mail->Body = $info."empty, Check please.";

```

Fig. 14. Example of PHPMailer configuration

```

$interval=60*60*24;
while(true){
    ...
    ...
    ...
    sleep($interval);
}

```

At last, system makes the “mail.php” page to be operated every day (60 seconds, 60 minutes and 24 hours).

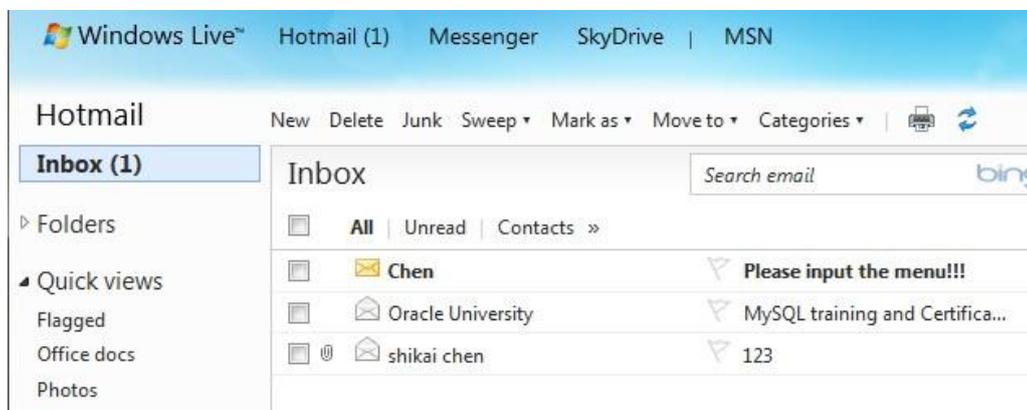


Fig. 15. Example of Email reminders

4.6. Bilingual support

If the website needs to support two languages on the same page, system must select which UI elements need to be switched, and extract various UI texts from XML file through JavaScript language as well. Those UI texts also need to be stored by using XML language.



Fig. 16. Bilingual button

The website sets two buttons (Suomi and English) at the Footer bar for selecting different languages. The system will read different XML documents when user is click different language button.

There is an important thing need be explained: different browser used different parser to read XML document, that means system must analyse which browser is being used in the beginning.

```
if (window.ActiveXObject)
{
    var xmlDoc = new ActiveXObject("Microsoft.XMLDOM");
    xmlDoc.async = false;
    xmlDoc.load(file);
}
```

This part of code is for the Microsoft browser, such as I.E4, I.E5, I.E6, and more.

```
else(document.implementation && document.implementation.createDocument)  
  
    {  
  
        xmlDoc=document.implementation.createDocument("", "", null);  
  
        xmlDoc.async = false;  
  
        xmlDoc.load(file);  
  
    }
```

This is for others browser beside Microsoft browser, such as Firefox, Opera, Safari and so on.

```
<div id="prices">Prices(€)</div>  
  
<div id="ls">Lappia staff</div>  
  
<div id="ks">KTUAS students</div>  
  
<div id="kas">KTUAS adult student</div>  
  
<div id="lv">Lappia vistors</div>  
  
<div id="ov">Other vision</div>
```

System must set an ID for switched element in the HTML document and these elements will be used as translated object by selecting ID.

```
document.getElementById("prices").innerHTML=gobal.getElementsByTagName("prices")  
[0].childNodes[0].nodeValue;  
document.getElementById("ls").innerHTML=gobal.getElementsByTagName("ls")[0].child
```

```
Nodes[0].nodeValue;  
document.getElementById("ks").innerHTML=gobal.getElementsByTagName("ks")[0].childNodes[0].nodeValue;  
document.getElementById("kas").innerHTML=gobal.getElementsByTagName("kas")[0].childNodes[0].nodeValue;  
document.getElementById("lv").innerHTML=gobal.getElementsByTagName("lv")[0].childNodes[0].nodeValue;  
document.getElementById("ov").innerHTML=gobal.getElementsByTagName("ov")[0].childNodes[0].nodeValue;
```

At last, system will extract corresponding text from XML file to replace the content of selected element.

Prices(€)	Lappia staff	KTUAS students	KTUAS adult student	Lappia vistors	Other vision
Soup	5.00	2.00	3.00	4.00	5.00
Lunch and vegetarian lunch:	6.00	7.00	8.00	9.00	8.00

Fig. 17. Example of English version

Hinnat(€)	Lappia henkilökunta	KTAMK opiskelijat	KTAMK aikuisopiskelijat	Lappia vieraat	Muut vieraat
Keitto	5.00	2.00	3.00	4.00	5.00
Lounas ja kasvislounas:	6.00	7.00	8.00	9.00	8.00

Antaa Nollata

English Suomi Ver: 1.00

Fig. 18. Example of Finnish version

5. CONCLUSIONS

First of all, it is the honour to design and develop this website for Kemi-Tornio University of Applied Sciences during these three months. In addition, it is expected that students and staff can browse that website as soon as possible.

From this website development project, the basic process for programming a complete dynamic website was achieved: firstly, developer collected and studied relevant material about used knowledge, such as PHP, XML, JavaScript, HTML and so on. Secondly, some useful software and integrated development environment were selected to execute some special functions and effects. Thirdly, all user interface and website structure were designed in this part. Finally, all requirements have been achieved and some details were improved with the supervisors.

By doing this cafeteria menu system, a lot of experience and knowledge was obtained from the analysis of client's requirements, project design, code implementation, even the English writing skills.

5.1. Problems met

The nearest time of website development in pass time was three years ago. There are a lot of functions in PHP language need to be reviewed, even some functions which were learned previously have been deprecate now. In addition, a number of useful software and application packages are appeared or updated. Therefore, some time was spent on getting familiar with the new development environment and tools.

Compatibility of JQuery mobile: JQuery mobile is a new emerging web framework, so different browser displayed different interface effect sometimes. As the result, to install various browsers to test and adjust the website layout were needed. Moreover, there is an important question about using JQuery mobile as website framework: The file cannot be

read if JavaScript clashes with Ajax during page transitions or all JavaScript file will affect new opened page. Therefore, every web link must define the Ajax function to inactive state (*data-ajax="false"*).

Exactness of language: This website is designed for all students and staff, and users can select languages which they prefer. However, as an international student, the personal Finnish skills are not very good thus the needed words were translated by some open technical tools. Unfortunately, there is a serious question about the exactness of translated Finnish. Therefore, Mr. Antti who is my Finnish supervisor assisted me to check the Finnish part.

5.2. Future work

Although all client requirements are finished, there are a lot of tiny issues can be modified before website is officially used. Therefore, it is necessary to keep contact with the staffs of the university to discuss the maintenance and updating of website.

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APPENDICE

Appendix1. Sequence diagrams

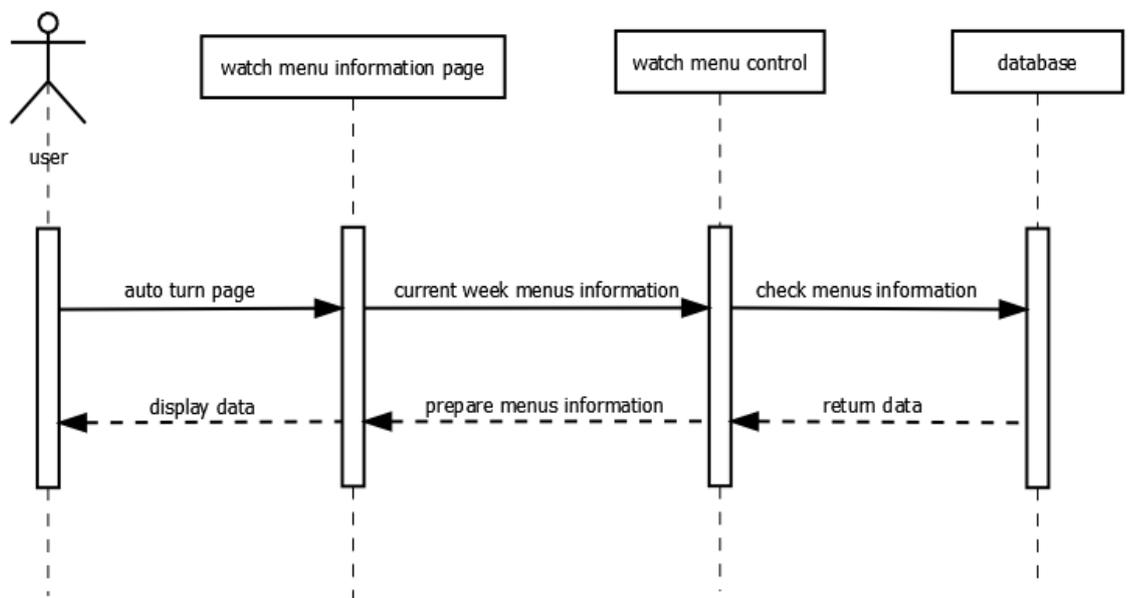


Fig. 19. Review menu Sequence Diagram

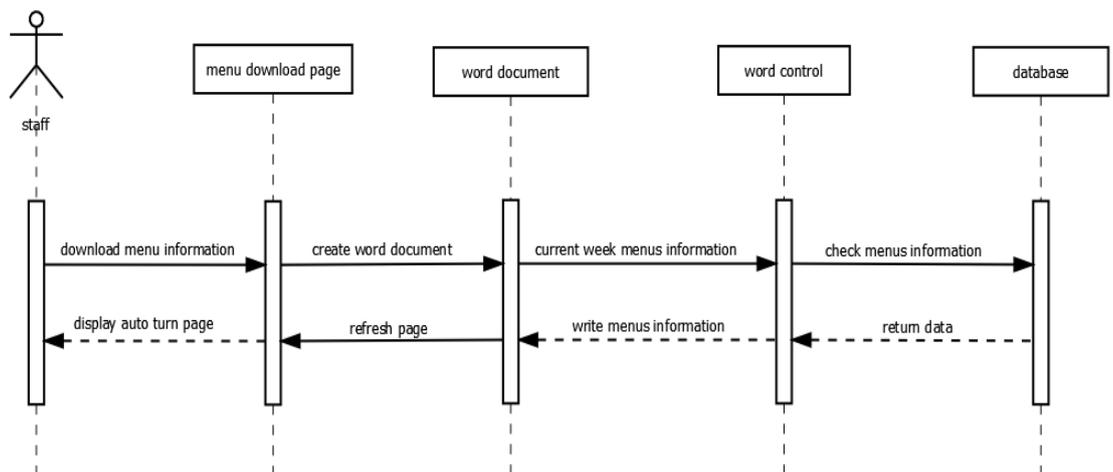


Fig. 20. Download menu Sequence Diagram

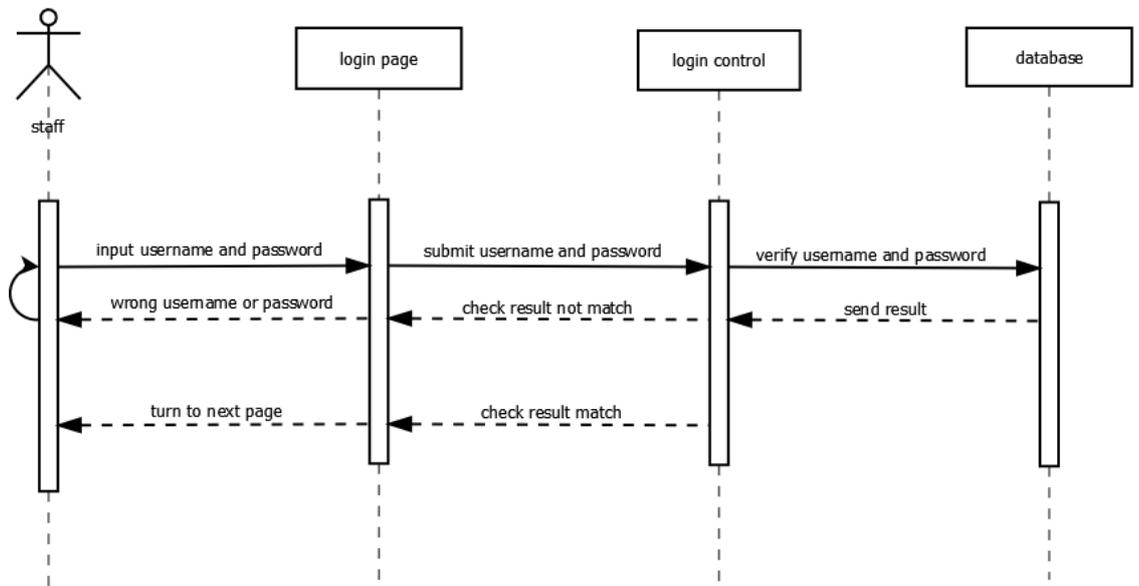


Fig. 21. Login Sequence Diagram

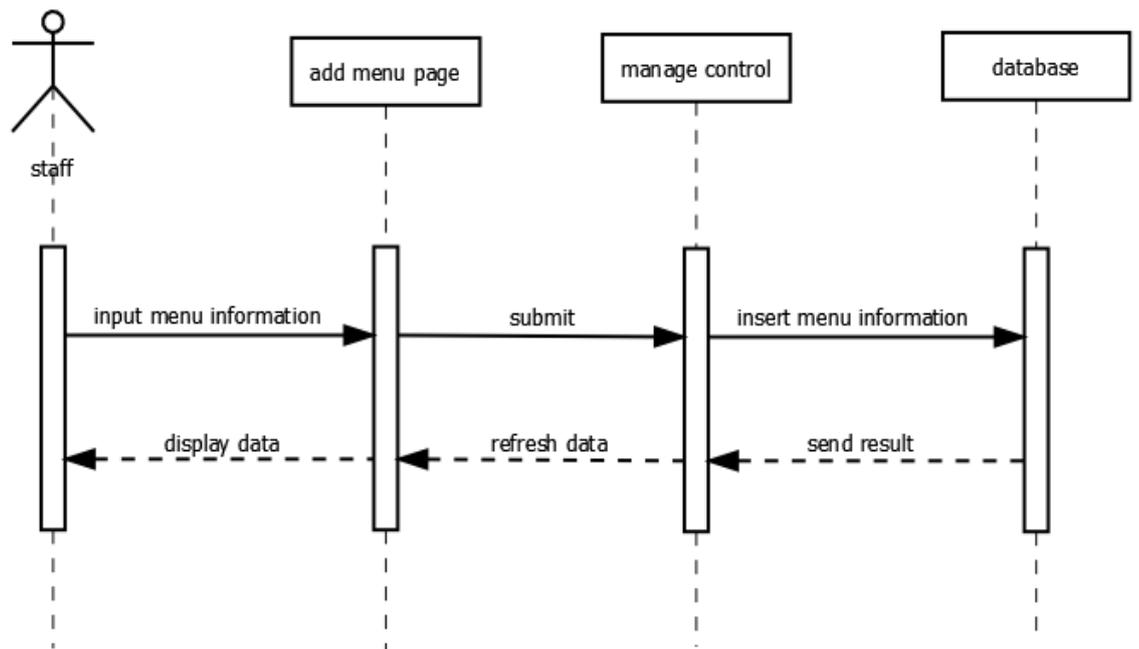


Fig. 22. Add menu Sequence Diagram

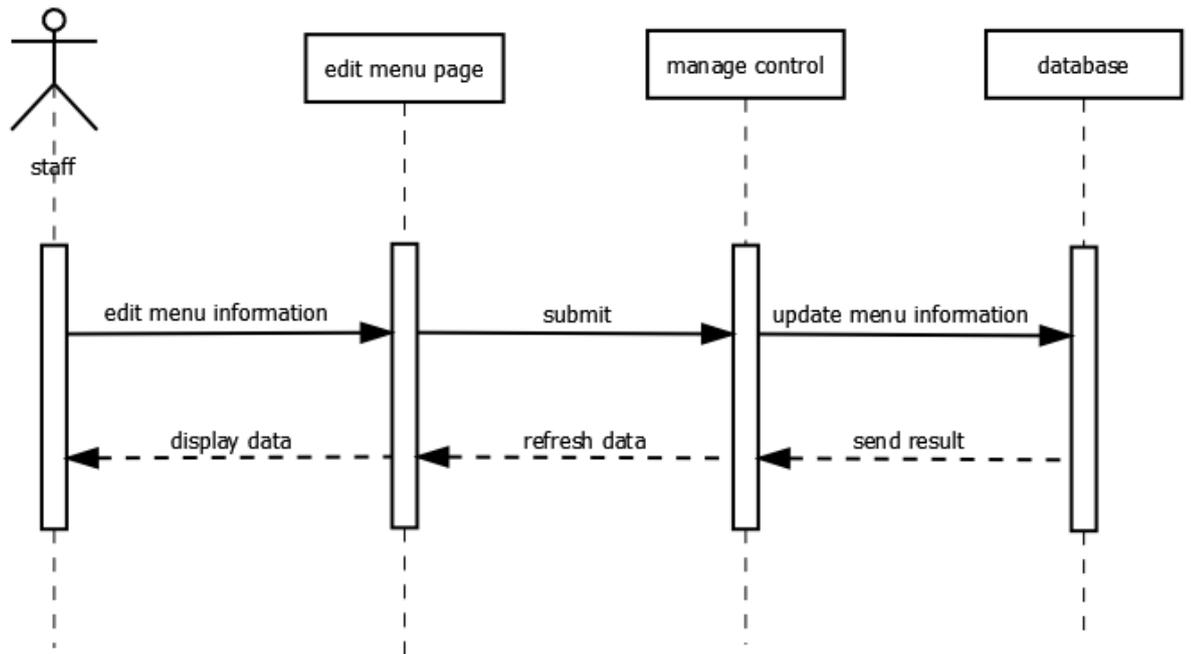


Fig. 23. Edit menu Sequence Diagram

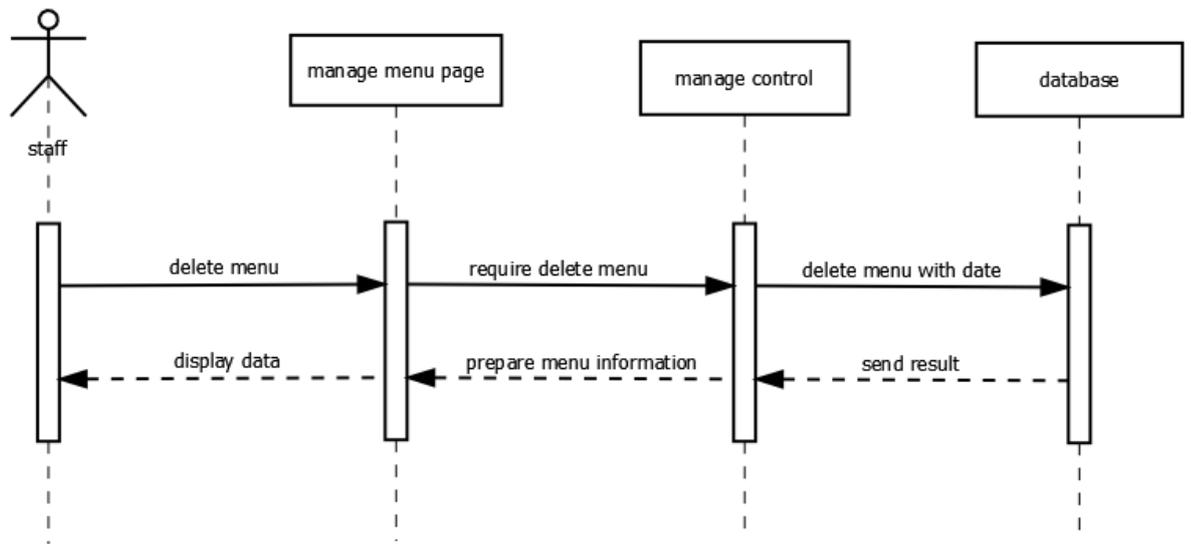


Fig. 24. Remove menu Sequence Diagram

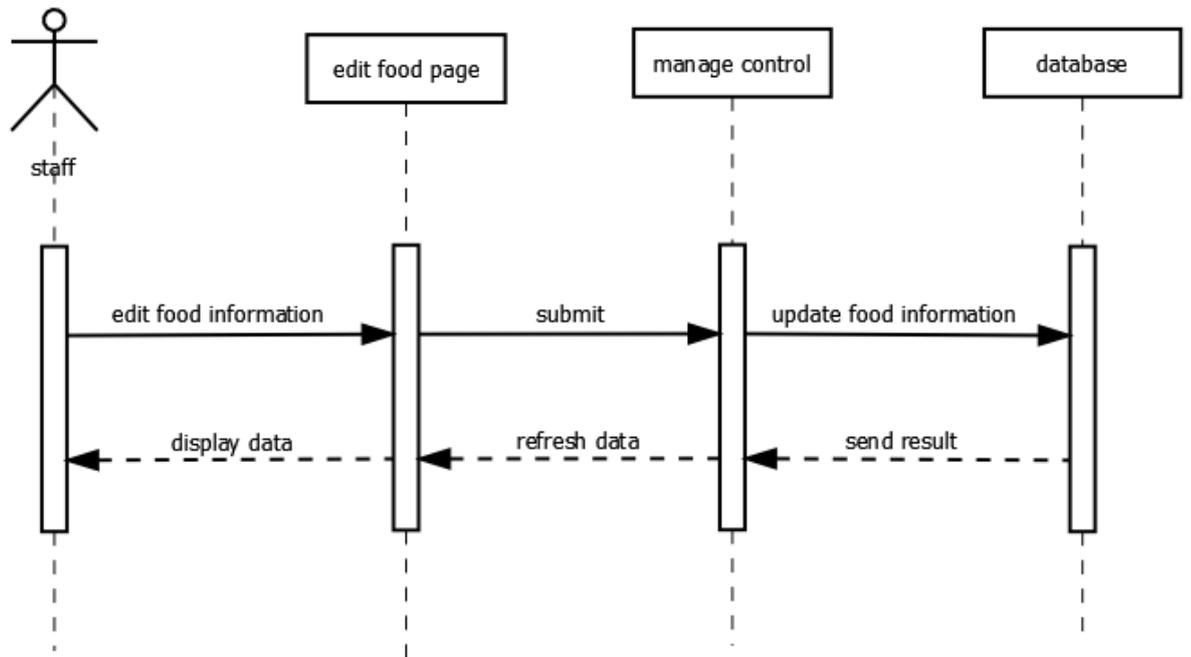


Fig. 25. Edit food Sequence Diagram

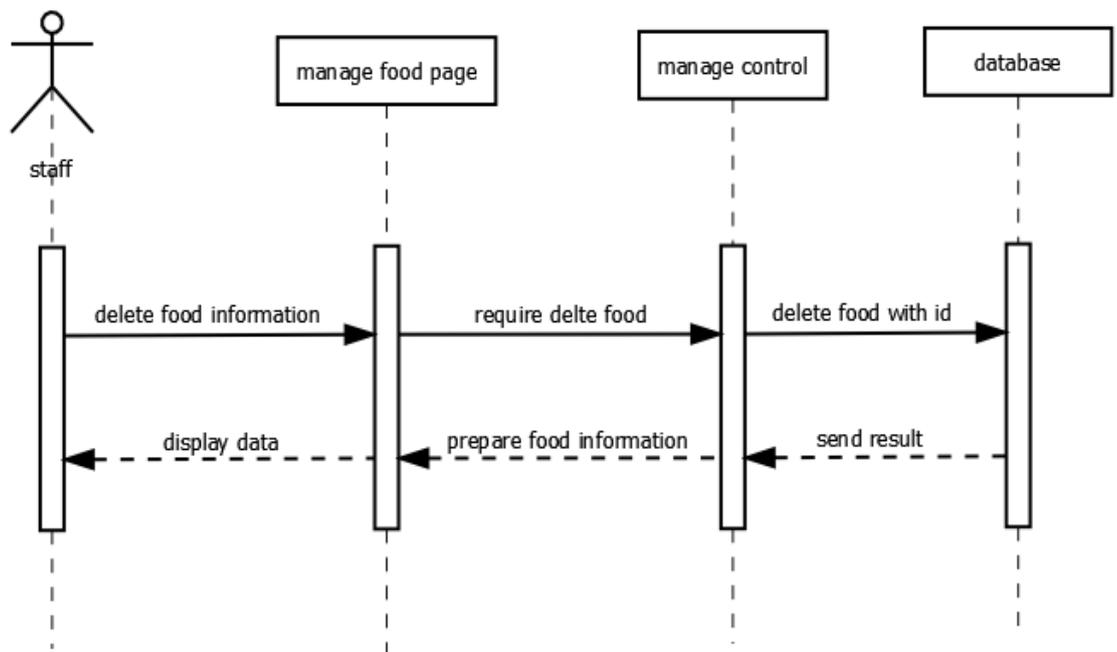


Fig. 26. Delete food Sequence Diagram

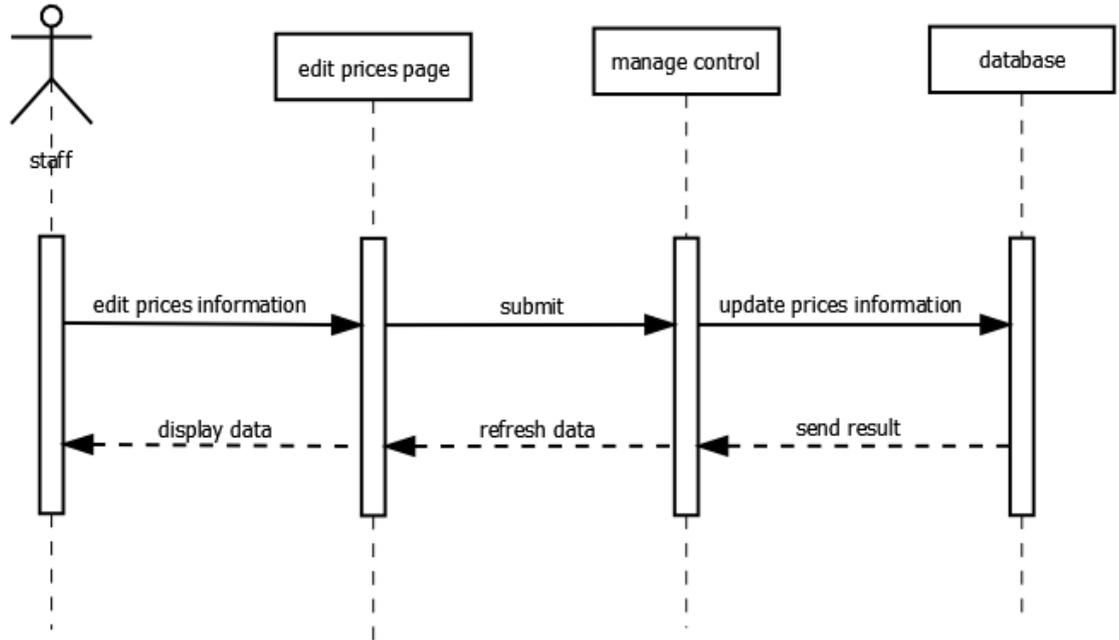


Fig. 27. Edit prices Sequence Diagram