

KEMI-TORNIO UNIVERSITY OF APPLIED SCIENCES

Research and Implementation of Online Project Management
System

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PREFACE

I would like to show my gratitude to my instructor, Mr Antti Niemelä I had not been able to complete my thesis without his suggestions and help.

I would like to thank my best friends. They always give me some help during I completed my thesis. I also would like to thank all the teachers and staff of Kemi-Tornio University of Applied Sciences. Because of their hard work, I learned a lot of knowledge

ABSTRACT

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This is a project of the development of online project management system which is used to support a website to manage the working conditions of all employees in this site.

The main functionality of the website is to be designed and developed to co-ordinate the work of different employees in different Research & Development Group (R&D Group). Thus, this website is a platform to facilitate the information exchange and then improve the working conditions.

Different users and R&D Groups have been added to this site, including public users, ordinary employees, team managers, and system administrator. They were assigned with different level of privilege to view and operate on the web content. Therefore, different characters will be guided to different pages in which different functionalities were enabled.

Many common computer technology is applied to this project, including PHP, HTML, CSS, MySQL and JavaScript, to achieve the functionalities of the system.

In this project, the basic objectives of the website had been accomplished successfully. A lot of practical knowledge of computer technology was studied by me through this project.

Keyword: HTML, PHP, CSS, MySQL, JavaScript.

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EXPLANATION OF CHARCTERS AND ABBREVIATIONS

HTML	HyperText Markup Language
ASP	Active Server Page
ASP.NET	Active Server Page in NET
PHP	Hypertext Preprocessor
CLR	Common language runtime
C #	C language series
J #	Java series
MySQL	My Structured Query Language
LDAP	Lightweight Directory Access Protocol
POSIX	Portable Operating System Interface of Unix
Perl	Practical Extraction and Report Language
ASCII	American Standard Code for Information Interchange
UEX	UltraEdit for Linux
WML	Wireless Markup Language

1. INTRODUCTION

1.1. Selection of the topic

Nowadays, information technology is highly developed, more and more people began to enter the Internet. Not only in the life, but also people are increasingly dependent on the Internet at work.

More and more people and companies began to seek more effective and convenient way to communicate and coordinate their work in the business process and working pattern. Therefore, convenient work environment was continuously been researched and developed. In recent years, the online working platform became more and more popular to support the business affairs and organizational communication. Not only is the reason that it is an easy method for people to work, but also it provides a more effective management method for company managers.

According to discussions with the instructor, learning and programming this website is a good choice.

Therefore, the thesis topic was identified as Online Project Management System

1.2. Website Description

According to the subject of my research, direction and scope of the study were decided through the discussions with my instructor. The main functions of the website would include individual pages for different sort of user groups respectively and an assisting function of uploading and downloading work records.

1.2.1. Different view

In the website, there are four different levels of privilege to be added, including:

- Public view
- Staff view
- Project manager view
- System administration view

The following is the privileges introduction:

- Public view: According to the home page of the site, the public users of non-employees can view all projects which completed through this website view
- Staff view: Through the home page, the staff can log into the staff dedicated page to view their own information.
- Project manager view: The leader of the development teams also have their own dedicated page, in order to more easily manage the project they are responsible for.
- System administration view: System manager can check all the information, and manage the website and user through the webmaster exclusive page.

1.2.2. Message board

Message board is one of the main functions of the website. In different view, public users and employees can use this function to look over the project information. Public users can input their message in the board for their own interest project. Employees can use it to communicate the information and working conditions. System manager also can issue the order through the message board.

1.2.3. Upload and download

This function is used by employees and administrators.

Employees and administrators can download and upload the results of their work and their reports during work.

1.3. Research methods

In order to complete this thesis and fulfill the requirements, multiple approaches about learning knowledge and techniques are found out, including:

- Google
- Wikipedia
- Network video tutorial

In the course of the project, some problems were solved according to searching the internet by Google, also according to Wikipedia and network tutorial to learn how to complete the entire website. /2/

The most suitable programming language had been learned and selected, in order to make the website to achieve better results.

1.4. Expected results

The following are several expected objectives on the website:

- Completed the expected effect
- No bug and errors
- Novel site

In this project, all plans have been completed well, and all planned functions are working properly through the testing. The management functions of the site would be easy to understand. Various functions can be smooth used in interfaces of staff and administrator. There are no any bug and errors in different pages.

A good website was being expected to complete, including novel style and interesting topics. Of course, this is difficult for designers.

2. Programming language applications

It was considered how to develop this site, selecting what programming language was the first problem. After finding and research, some current mainstream web programming languages are good choice. The follow are mainstream web programming languages:

- ASP
- ASP.NET
- PHP

In a preliminary study, the situation and characteristics of these languages were understood. OK then compare them with each other; the most appropriate programming language had been determined.

2.1. ASP

ASP is the acronym for Active Server Page. As a simple and convenient programming tool which was developed by Microsoft. ASP as a server-side script authoring environment includes HTML, plain text, script commands and so on. Usually it is used to create and run Active web pages. Nowadays, not only ASP can be used to make the web site in combining with HTML, but also it can be combined with XHTML and WML to make web mobile sites. It has some obvious advantages and disadvantages. For example, the user will not see original program codes, in order to prevent ASP codes are stolen. Conversely, if the developer does not have enough experience, the program vulnerabilities will appear. This will cause hacker can easily attack. /3/

2.2. ASP.NET

ASP.NET is in short of Active Server Pages.NET. ASP.NET is generally regarded as the second generation of ASP language. As a unified Web development model, designers can use code as little as possible to generate a variety of Web applications to complete necessary services. ASP.NET as part of the .NET Framework is based on the Windows NT4.0 platform. There are some programming languages, including Microsoft Visual Basic, C #, JavaScript. NET and J #, they can be used to write application programs through ASP.NET. /4/

The following are some advantages and functions of ASP.NET:

- Page and controls framework
- ASP.NET compiler
- Security infrastructure
- State management function
- Application configuration
- Health monitoring and performance features
- Debug Support
- XML Web services framework
- Scalable hosting environment and application life cycle management

/5/

2.3. PHP

PHP is in short of Hypertext Preprocessor. The PHP web programming language has the characteristic of “open source”, as the inventor of PHP language engaged into the development and designing of PHP language. Therefore, till now, PHP language became a gradually developed web programming language, and more and more people are aware of its usefulness. The history of PHP is that Rasmus Lerdorf released the first version of PHP in 1994. It entered a period of rapid development when it appeared. After numerous improvements in the original release, it has now grown to version PHP5.

To be specified, PHP is categorized as a scripting language which is embedded in HTML and interpreted by the server. It can be used to manage dynamic content, support database, tracking sessions, and even build entire e-commerce site. /6/

It supports many popular databases, including:

- MySQL
- PostgreSQL
- Oracle
- Sybase
- Informix
- the Microsoft SQL Server

/6/

It has a lot of powerful advantages:

- Practicality
- Powerful functions
- Selectively

2.3.1. Practicality

It is a minimalist language, not only requirements of users are very low, but also the requirement of the syntax of programming language is low. For some people who are just getting started, a useful PHP script may contain only a single line of code; unlike C language, it does not need to import the library functions.

Compactness is highly stressed for PHP language, this is reflected in which can embed the other functions. For example, in a single line of code, the function can be called in a particular order, and a series of modifications can be carried out on a value

From the format point of view, PHP is a loose type of language, this means that you do not need to explicitly create variables, assign type or revocation of variables, of course, and there is no absolute prohibition to do these operations. PHP will handle these situations internally. When variables are used in script, PHP will dynamically create variables and use the best guess rules automatically to assign the variable type. /7/

2.3.2. Powerful functions

When each new version is released, PHP will add a lot of new functions. Nowadays, it already has very detailed features. Its recognized function is to access the database, processing the form information and dynamically created pages. There are many other important functions. The following are some of the features:

- Creating and dealing with Macromedia Flash, images and PDF files
- Through compared password and database data to prevent the possibility of illegal access.
- Communicating with LDAP
- Through using regular expression library which is based on POSIX and Perl, resolving the most complex string.
- PHP authenticate the user's identity, according to login credentials which are stored in plain text files, databases or Microsoft Active Directory.
- Communicating with multiple protocols, including IMAP, POP3, NNTP, DNS and so on.
- Communicating with a large number of credit card processing solutions

2.3.3. Compatibility

PHP developers rarely confined to the programming of websites or web application. Conversely, this programming language provides the user with sufficient choice. For example, considering supports of PHP database, PHP provides built-in support for at least 25 kinds of database products, including Adabas D, d Base, Empress FilePro, FrontBase, Hyperwave, IBM DB2 Informix, Ingres, Interbase, mSQLdirect MSSQL, MySQL, and so on.

Functions of string parsing also provide users with a wealth of options. In addition to more than 85 strings handling functions, PHP also supports POSIX and Perl-based regular expression format. This flexibility can benefit different levels of users. Not only so that developers can begin immediately to complete the complex string manipulation, but also similar functionality can be quickly ported to PHP.

PHP provides full support for functional programming languages and object oriented paradigm language. PHP allows developers to take full advantage of the current master of the skills. Just putting very little time, developers can quickly start PHP development

2.4. Comparison and Selection

Through study and research, those programming languages are compared from several angles and characteristics. The following are some overview of their differences: /8/

2.4.1. The learning curve

For a novice, differences in used time when learning these webs programming language are huge. ASP.NET as a Microsoft product, inherited its usual characteristics, easy-to-learn and easy-to-use; Even if the learner do not have to encode, relying on the mouse to drag and drop, a site can be completed. Of course, the website cannot be applied. Not only the code duplication using rate is too low, but also the flexibility is too small and the efficiency is low. And then author must also mention its development tools, series of Visual Studio are very powerful. When there have been bugs in the program, it can provide the greatest degree of description of the problem, allowing developers to locate the problem as soon as possible.

In contrast, ASP has a very large learning curve. Just configuring a development environment, you have to spend a lot of effort. The most troublesome problem is on the program debugging for ASP language. When the program notice there is a problem, the developer cannot get friendly tips of errors. Debugging is very time-consuming. Compared with ASP and ASP.NET, the learning curve of PHP is moderate because the syntax of PHP inherited C language.

2.4.2. Resources

The resources can be used about these three web languages, including:

- The learning materials
- Open Source
- A variety of plug-ins
- Data libraries

PHP is far ahead in this regard. Because the various well-known open source products of websites mostly use PHP to implement, such as blog of Wordpress forum of Discuz, Wikipedia of MediaWiki; various plug-ins, libraries, the quantity and quality of open source code cannot be compared to other languages.

Resources of ASP.NET are also rich, because it has MS which is a background of strong technical support

Because of high requirements of ASP, its resources are less.

2.4.3. Maintenance and management

In web management, managers often access remotely to manage the website.

Whether remote management is convenient or not, depends on support of the command-line tool and operating convenience of scripting environment.

ASP.NET only runs on the platform of Windows. Administrators generally make remote operation by using mouse on a graphical interface. The administrator's operating difficulty is even greater when the network speed is slow. The command-line environment of Windows platform is very poor. Functions of the IIS command-line tool are less, and bat script is hard to learn and use.

PHP and ASP has the advantage of cross-platform compatibility. Generally their system is deployed in Linux. In Linux, not only remote operating has security guarantees, but also network bandwidth that is consumed by scripts is only one percent of consumption of the graphical interface. Therefore, network management is more fluid.

2.4.4. Selection

When taking the conclusion above into account, PHP programming language is considered as a more appropriate solution to the research. Because it can be studied more easily; more resources can be applied; it can be managed safely; it also can be maintained more conveniently.

Of course, HTML has also been studied since the content of the site is based on HTML.

3. Software applications

Before using PHP web language, firstly necessary environment software and language editor must be downloaded and installed.

The following are the environment software and language editor:

- Wamp5
- UltraEdit.

3.1. Wamp

WAMP5 is an excellent the integrated software of Wamp. Wamp5 is Apache + PHP + Mysql integrated environment. When developers install wamp5, the environment of PHP5 + MySQL + Apache will also be installed at the same time. The current version of Wamp5 has satisfied the requirement of most PHP users, it integrated:

- PHP5.2.X,
- Mysql5,
- Apache2,
- phpMyAdmin 2.11.2.1
- SQLiteManager 1.2.0

3.1.1. Setting phpmyadmin

Through opening `http://localhost/`, a simple page of WampServer was found out. There are three tools in it, including Localhost, phpMyAdmin and SQLiteManager. When phpMyAdmin was opened, the system prompt was displayed in which the user of root need to set password. Through clicking the “privileges” in the middle of the phpMyAdmin page, the “User List” could be seen; there is a “root localhost” in it. And then clicking its Icon of edit permissions, found the “change password” in the new page, set a password for the root user, and clicked “run”;

Phpmyadmin directory also need to be found out in the the WampServer installation directory, then opened the file of “`config.inc.php`” in the phpmyadmin directory, and found the following line:

```
$cfg['Servers'][$i]['password'] ='';
```

Then inputting the password which was set just now in the single quotes;

At the same time, the password of the Database had been set through completed these steps.
/9/

3.1.2. Allow external network to access

The default configuration of WAMP is to prohibit that external network access Apache. It needs to be set so that it can be accessed by external network.

By checking the function of Config files – `httpd.conf` in WampServer page, the file of `httpd.conf` could be found out. According to searching keyword “deny form all” in the file, the command was found out below it:

```
"Allow from 127.0.0.1"
```

Increased a symbol so that it becomes:

```
"# Allow from 127.0.0.1"
```

In order that it was turned into a commend;

Then inputting a new command and save it:

```
"Allow from all"
```

At the same time, all settings had been completed.

3.1.3. PHP configuration

Searching the command in Wamp files:

```
"short_open_tag = Off"
```

Changed to " short_open_tag = ON"

Because this site required to add the function of Upload and Download, the command of the limit of upload attachment size need to be modified:

```
"upload_max_filesize = 2M"
```

When the program displays the memory is not enough, its command of memory limit also need to be modified:

```
"memory_limit = 128M"
```

3.1.4. Automatically run Apache, MySQL service

Because of study requirement, Wamp environment software should be set to run automatically. According to the following operating:

Windows - Control Panel - Administration Tools – Services;

Found out icons of wampmysqld and wampapache;

Modified the startup type form "Manual" to "Automatic".

3.2. UltraEdit

UltraEdit is a powerful text editor; developers can edit the text, hexadecimal and ASCII code. Its function can replace Notepad. The following are its characteristics:

- Checking English words
- C++ and VB command highlighted
- Editing multiple files simultaneously
- Running fast
- HTML tags are displayed with different colors
- Search and replace
- Unlimited restore feature

And UltraEdit was being ported to the Linux platform. The transplant named UEX, meaning UltraEdit for Linux. The following is the interface of the latest version of UltraEdit:

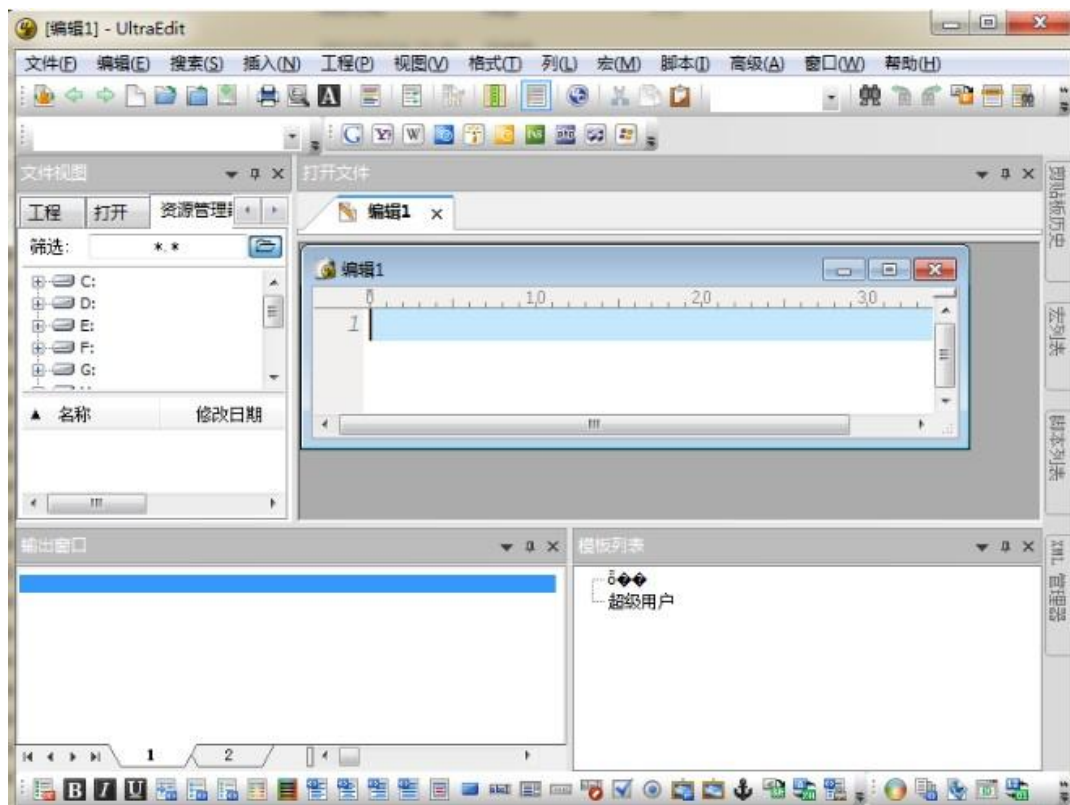


Fig.1. UltraEdit interface

4. Analysis and design

According to requirements of building this website, interface and database for different page were needed to be analyzed and designed, including public view, staff view, project managers' view and system administration view.

4.1. Interfaces design

According to four different view, different functions needed to be designed ,since the website was needed to face different utility groups. Some clear pages should be designed for them, so that different utility groups are able to use more conveniently. Therefore, interfaces should contain several major titles and links, so that users could roughly read what the major information contained by this website is.

The following is the use case diagram of the website:

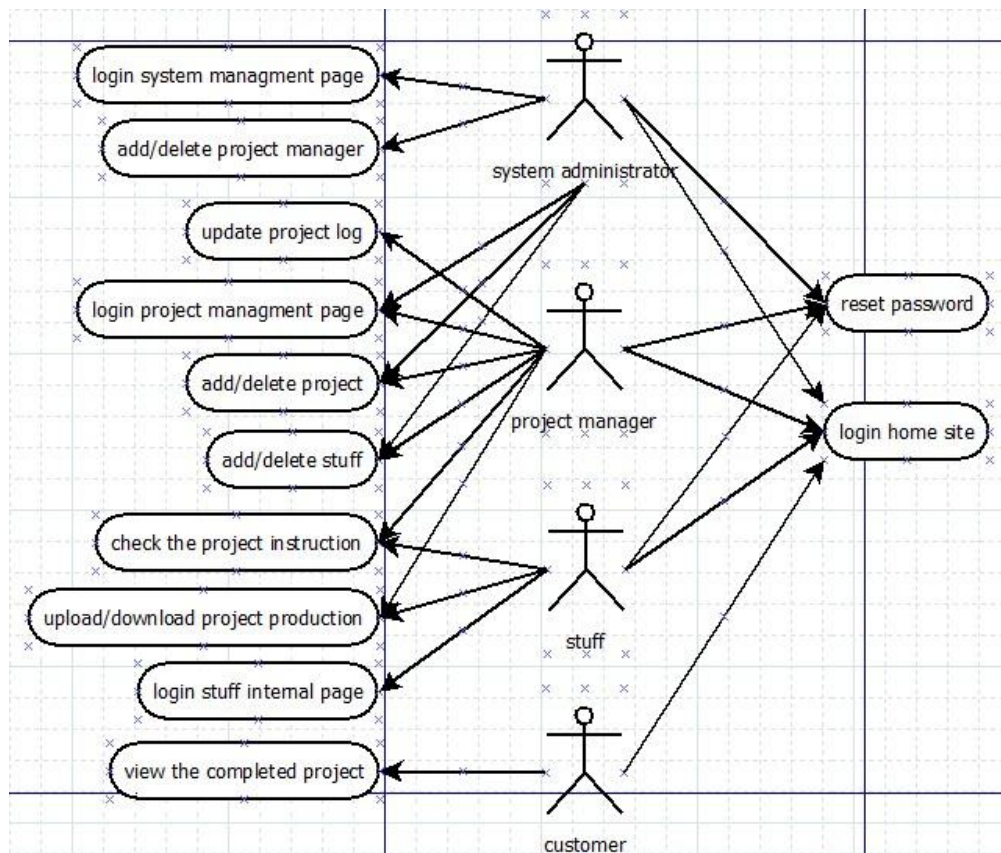


Fig.2. Use case of System

4.1.1. Public interface

The home page would contain two kinds of main functions, including:

- Displaying projects information
- Providing the login function for the other users

Firstly, from this website database, it is able to show all projects information which had been completed through this platform for public users.

Secondly, from database validation point of view, the home page could be used to log into their own exclusive page by the other users who including employees, project managers and system administration.

The following is the sequence diagram of login for system administrators.

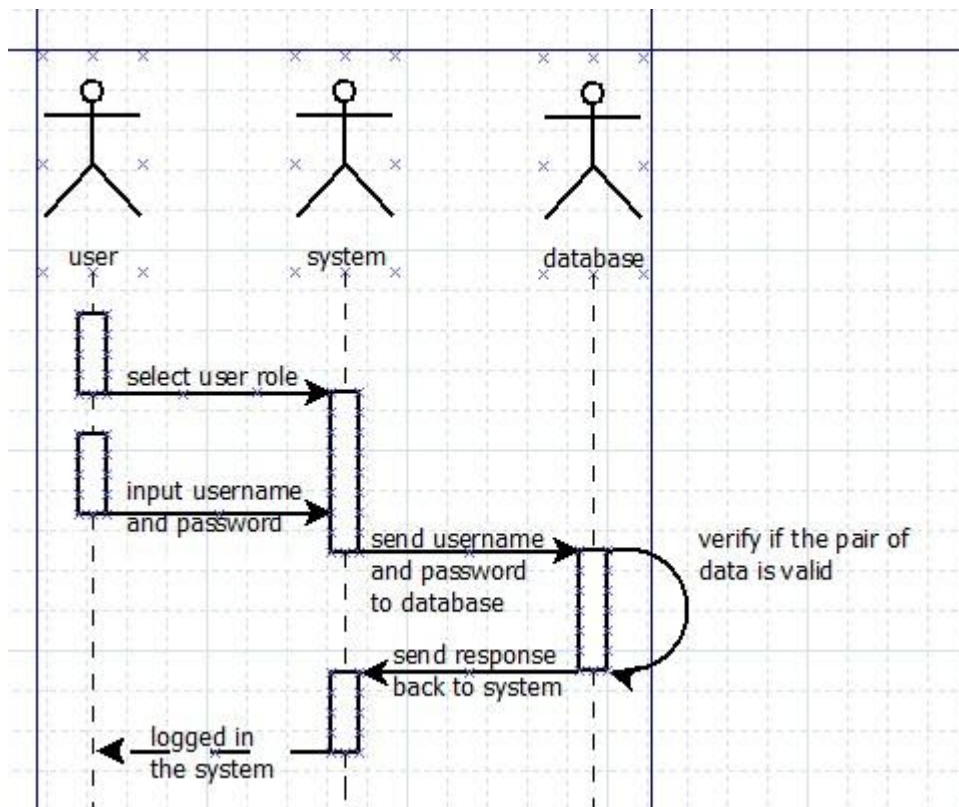


Fig.3. Sequence diagram of Login

Fig.3 expresses the process of login use case. Users can login into the system to jump their exclusive pages when entering their own username and password, and selecting their own role.

4.1.2. Staff interface

This page is specifically designed for employees.

Staff interface is designed to contain three main functions, including:

- Displaying the information of own project and R&D group
- Uploading and downloading work results and instructions
- Logout function

Firstly, from this website database, the main portion of the interface was used to display which project was being run by the current employee, and which project team was assigned to the current employee. In addition, it would be used to display the current status of the project.

Secondly, employees could use the function of upload to submit their work results and questions. At the same time, they are also able to use the function of download to get work instructions for each step and communications during the working. The following is the sequence diagram of the function of uploading file:

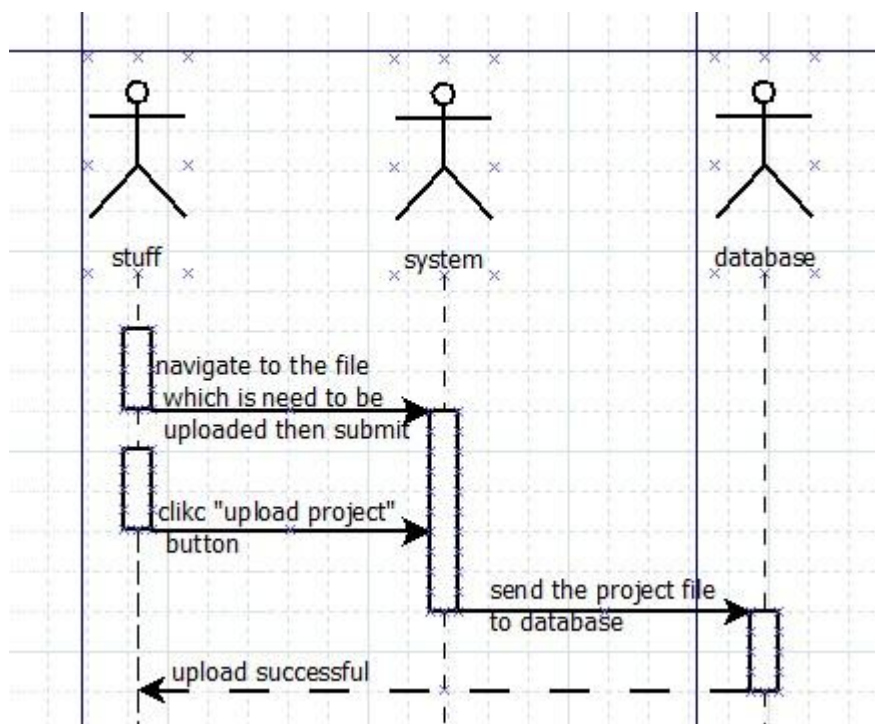


Fig.4. Sequence diagram of uploading project

Fig.4 expresses to employees and project managers how to use the system to upload files. When they open the page of files list, they can use the function of upload. Of course, they are able to download files, its sequence just like fig.4. Through the button of downloading file in the interface, they can download what they need.

In addition, when employees complete their work, they could use the logout function to quit the system.

4.1.3. Project managers' interface

By comparing with staff interface, project managers' interface is designed to contain all the functions of staff interface. Moreover, it would have two additional features, including:

- Adding and deleting projects
- Adding and deleting employees

When the project was completed by the current team, manager was able to use this function to add new project for his team. Of course, he was also able to delete the project.

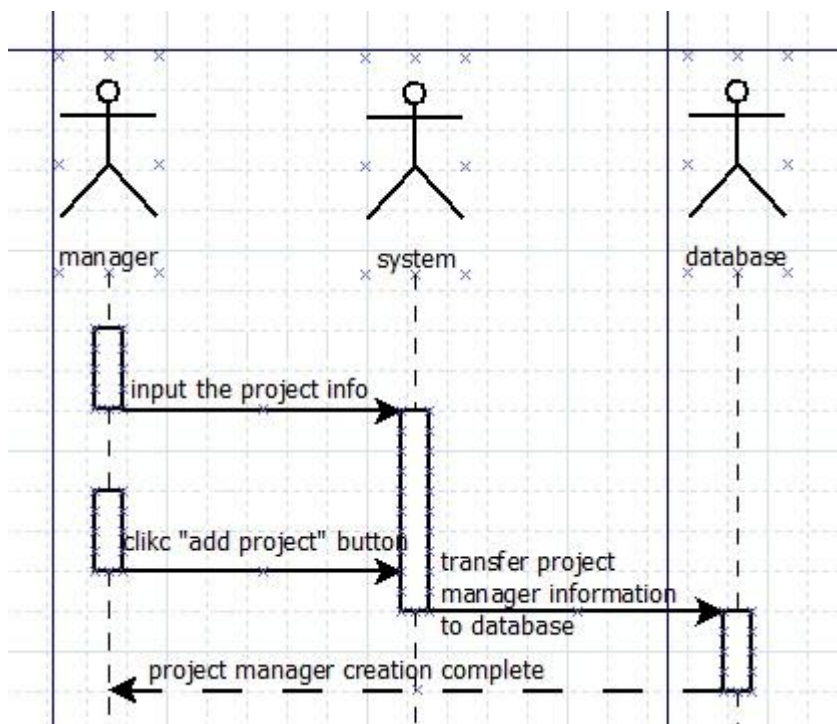


Fig.5. Sequence diagram of adding project

Fig.5 expresses project managers how to use the system to include the new project to the database. When they open the page of adding project, they are able to add a new project by inputting some necessary information. In addition, fig.5 also expresses that project managers are able to delete the project. Through the interface of files, they can use the button to delete the project.

The manager was also able to add and delete the members for new and old project, it is just like fig.5.

4.1.4. System administration interface

System administration held the highest authority in this site. The administrator is enabled to manage the entire site through the website and database.

Compared with project managers, system administration had more functions in his interface:

- Adding and deleting project managers

The following is the sequence diagram of adding project manager for system administrator.

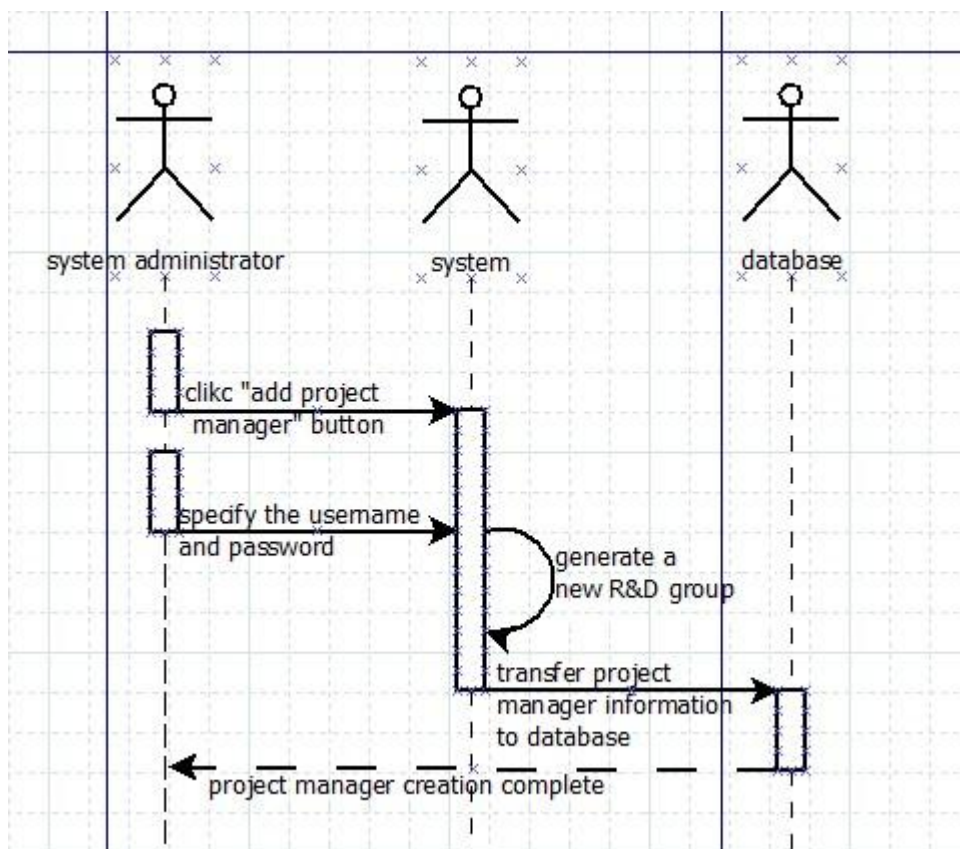


Fig.6.Sequence diagram of increasing project manager

Fig.6 expresses system administrator how to add a new project manager for an exciting project. After the new project is being added to the database, the system will automatically increase the R&D group for the manager. Of course system administrator can also reduce project managers, it is just like fig.6.

5. Introduction of the website

The website has been completed; most of features of the plan have been completed.

Moreover, some parts have been designed well then plan. The following is the introduction for the whole site.

5.1. Database introduction

According to the class diagrams, elementary objects of overall database structure were generated to describe the different groups of system user and physical objects involved in the system. As can be seen in Fig.7, for this purpose, there are 7 inter-related primary tables were defined according to the user table, manager table, engineer table, administer table, rdgroup table (short of research and development), project table and file table. For adding accessorial functions and facilitating the illustration of M to M (short of Multiple to Multiple) relationship between primary objects, 2 additional assistant table has also been founded which are project_file table and rdgroup_user. Each table is introduced shortly below.

	Table	Action					Records	Type	Collation	Size	Overhead
<input type="checkbox"/>	administer						~1	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/>	engineer						~1	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/>	file						~7	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/>	manager						~1	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/>	project						~6	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/>	project_file						~0	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/>	rdgroup						~1	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/>	rdgroup_user						~3	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/>	user						~6	InnoDB	latin1_swedish_ci	16.0 KiB	-
	9 table(s)	Sum					~26	InnoDB	latin1_swedish_ci	144.0 KiB	0 B

Fig.7. database overview diagram

As illustrated in Fig.8, the user table is the part of the database that stores the information of every individual staff who has assigned an account with the lowest access privilege to the website by system administer. It has 6 main fields which include the user_name (in string), user_birthday (in integer), user_sex (in char), user_address (in string), user_email (in string) and of course the user_id (in integer) which is the primary key. It is worth noticing that user_id field was given an extra attribute which is “auto increment”.

Therefore, the value of `user_id` will be increased by 1 after every new record inserted into the table to render each piece of record has unique and ordered identity number. On the one hand, it can help server to count how many is total records stored in this table. On the other hand, it facilitates the management and searching of records among this Field since every user is allocated unique id.

























































	Field	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/>	<code>user_id</code>	int(10)		UNSIGNED	No		auto_increment	      
<input type="checkbox"/>	<code>user_name</code>	char(50)	latin1_swedish_ci		No			      
<input type="checkbox"/>	<code>user_birthday</code>	date			Yes	NULL		      
<input type="checkbox"/>	<code>user_address</code>	char(100)	latin1_swedish_ci		No			      
<input type="checkbox"/>	<code>user_sex</code>	char(30)	latin1_swedish_ci		No			      
<input type="checkbox"/>	<code>user_email</code>	char(100)	latin1_swedish_ci		No			      
<input type="checkbox"/>	<code>username</code>	char(100)	latin1_swedish_ci		No			      
<input type="checkbox"/>	<code>password</code>	char(100)	latin1_swedish_ci		No			      

Fig.8. User table

Moreover, in the “attribute” section, the “unsigned” attribute is given to the `user_id` field to limit the value in this field could only be the positive integer number. This setting is important to records management and improve the readability as it can avoid the using of minus and float numbers. In addition, in the “Null” section, the option “No” is set to ensure each pieces of record have a valid `user_id`, which can prevent the important data losing the identify number and disturbing the searching process.

Basic information of users will be stored in the Fields of `user_sex`, `user_address`, `user_birthday` and `user_email`. Those fields are assigned with different data type and data length to minimize the waste of database space and maximize the searching effectiveness. For example, “`user_birthday`” is assigned with “date” type of data to facilitate the store and extract of this data through PHP language. The length of “`user_sex`” is limit to 30 Bits to save prevent the waste of disk volume. At the last, “`username`” and “`password`” field is designed to store the user log information and secure the system with illegal access and identify of user identity. The length of both fields is set as 100bits length which is 12 characters long to provide the code complexity and then improve the security.











































	Field	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/>	administer_id	int(10)		UNSIGNED	No		auto_increment	     
<input type="checkbox"/>	administer_name	char(50)	latin1_swedish_ci		No			     
<input type="checkbox"/>	administer_address	varchar(200)	latin1_swedish_ci		No			     
<input type="checkbox"/>	administer_sex	char(30)	latin1_swedish_ci		No			     
<input type="checkbox"/>	administer_birthday	date			Yes	NULL		     
<input type="checkbox"/>	username	char(100)	latin1_swedish_ci		No			     
<input type="checkbox"/>	password	char(100)	latin1_swedish_ci		No			     

Fig.9. Administer table

As can be seen in fig.9, it can be stored personal information of the administrator. There are 5 main fields which include administer_name (in string), administer_address (in string), administer_sex (in string), administer_birthday (in integer) and administer_id (in integer).

















































	Field	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/>	file_id	int(10)		UNSIGNED	No		auto_increment	     
<input checked="" type="checkbox"/>	file_name	char(50)	latin1_swedish_ci		No			     
<input type="checkbox"/>	file_uploaddate	date			Yes	NULL		     
<input type="checkbox"/>	file_description	text	latin1_swedish_ci		No			     
<input type="checkbox"/>	file_uploader	char(50)	latin1_swedish_ci		Yes	NULL		     
<input type="checkbox"/>	file_type	char(100)	latin1_swedish_ci		No			     
<input type="checkbox"/>	file_size	char(100)	latin1_swedish_ci		No			     
<input type="checkbox"/>	file_address	char(100)	latin1_swedish_ci		No			     

Fig.10. Files table

Fig.10 expresses it can be used to store all uploading files. There are 8 fields which include file_id (in integer), file_name (in string), file_uploaddate (in integer), file_description(), file_uploader (in string), file_type (in string), file_size (in string) and file_address (in string). When a new file is uploaded to store the database, the information in this table is recorded automatically. And file type and size will be displayed in the file page of the website.









































































	Field	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/>	project_id	int(10)		UNSIGNED	No		auto_increment	     
<input type="checkbox"/>	project_name	char(50)	latin1_swedish_ci		No			     
<input type="checkbox"/>	project_description	text	latin1_swedish_ci		No			     
<input type="checkbox"/>	project_status	char(30)	latin1_swedish_ci		No			     
<input type="checkbox"/>	project_startdate	date			Yes	NULL		     
<input type="checkbox"/>	project_enddate	date			Yes	NULL		     
<input type="checkbox"/>	rdgroup_id	int(10)		UNSIGNED	Yes	NULL		     
<input type="checkbox"/>	project_measure	char(100)	latin1_swedish_ci		No			     
<input type="checkbox"/>	project_system	char(100)	latin1_swedish_ci		No			     
<input type="checkbox"/>	project_testlab	char(100)	latin1_swedish_ci		No			     
<input type="checkbox"/>	project_service	char(100)	latin1_swedish_ci		No			     
<input type="checkbox"/>	project_view	char(50)	latin1_swedish_ci		No			     

Fig.11. Project table

As can be seen in fig.11. it is used to store projects' information. When the project is added, project's information can be added to the project table. In addition, when the project is updated, these data can also be modified.

	Field	Type	Collation	Attributes	Null	Default	Extra	Action					
<input type="checkbox"/>	engineer_id	int(10)		UNSIGNED	No		auto_increment						
<input type="checkbox"/>	engineer_name	char(50)	latin1_swedish_ci		No								
<input type="checkbox"/>	engineer_sex	char(30)	latin1_swedish_ci		No								
<input type="checkbox"/>	engineer_address	char(200)	latin1_swedish_ci		No								
<input type="checkbox"/>	engineer_birthday	date			Yes	NULL							
<input type="checkbox"/>	rdgroup_id	int(10)		UNSIGNED	No								
<input type="checkbox"/>	username	char(100)	latin1_swedish_ci		No								
<input type="checkbox"/>	password	char(100)	latin1_swedish_ci		No								

Fig.12. Engineer table

Obviously, fig.12 is used to store engineers' information, just like fig.8 and fig.9.

According to observing fig.11 and fig.12, these two tables have the field which is rdgroup_id. It is important to note that engineer.rdgroup_id(this is database language, it means the field of rdgroup_id in engineer table) and project.rdgroup_id(the field of rdgroup_id in project table) are foreign keys of rdgroup.rdgroup_id(as can be seen in fig.13).

	Field	Type	Collation	Attributes	Null	Default	Extra	Action					
<input type="checkbox"/>	rdgroup_id	int(10)		UNSIGNED	No		auto_increment						
<input type="checkbox"/>	rdgroup_name	char(50)	latin1_swedish_ci		No								
<input type="checkbox"/>	rdgroup_description	text	latin1_swedish_ci		No								

Fig.13. Rdgroup. rdgroup_id

Fig.13 can be display by clicking the field of rdgroup in fig.7.

5.2. Interface introduction

The interface introduction is given below. There are 5 kinds of permissions on my website, including:

- Public
- User
- Engineer
- Manager
- Administer

Public users just open the home page. Permissions of employees are divided into two kinds, such as User and Engineer, engineer jobs equivalent to deputy leader of the R&D group. But permissions of User and Engineer are the same. Manager works equivalently to the leader of the R&D group. Administer has the greatest authority. Main pages will be introduced.



Fig.14. Login interface

From the home page (fig.26 in Appendix), staff and managers can click the button of login on the navigation bar to open the login interface which is fig.14. Obviously, all users can login into their dedicated page through using this function. When users input their username and password, they must choose their permissions at the same time. If choosing the wrong permission, they are not able to login successfully.



Project Name	Project Status	Measure	System	Lab
Iphone Application	Completed	application users and download times	IOS5	E102
Iphone Game	Preparation	user amount a	IOS5.1	E102
OLS delivery	Completed	operation speed	Apchae server	E110
Win8 developing	Reporting	number of bugs	C language	E202

Fig.15. Personal project information (all users have)

After login, users can go to “my project” page to view which project he has done, and which project he will do, also can view which project is being done. Users can find all of the information of projects what they want.

The priorities of systems administrator, project managers and engineer of priority also got this page, and they can use the same function as users.



The screenshot shows a web application interface with a navigation bar at the top. The navigation bar includes links for 'My Project', 'Public Projects' (which is the active tab), 'My R&D Group', 'Files', 'Logout', and 'Your Priority: user'. Below the navigation bar, there is a section titled 'Project information' which contains a table of project data.

Project Name	Project Status	Measure	System	Lab
Iphone Game	Preparation	user amount a	IOS5.1	E102
OLS delivery	Completed	operation speed	Apchae server	E110
Win8 developing	Reporting	number of bugs	C language	E202

Fig.16. Information of the public projects (all users have)

All projects are divided into two categories, such as private projects and public projects. User can use the function to view what public project has been done in this platform, form fig.16.

Actually, the main page shows the same information of project as the public projects. But it can show only information in website. Administer, manager and engineer of priority can also use this function in website.

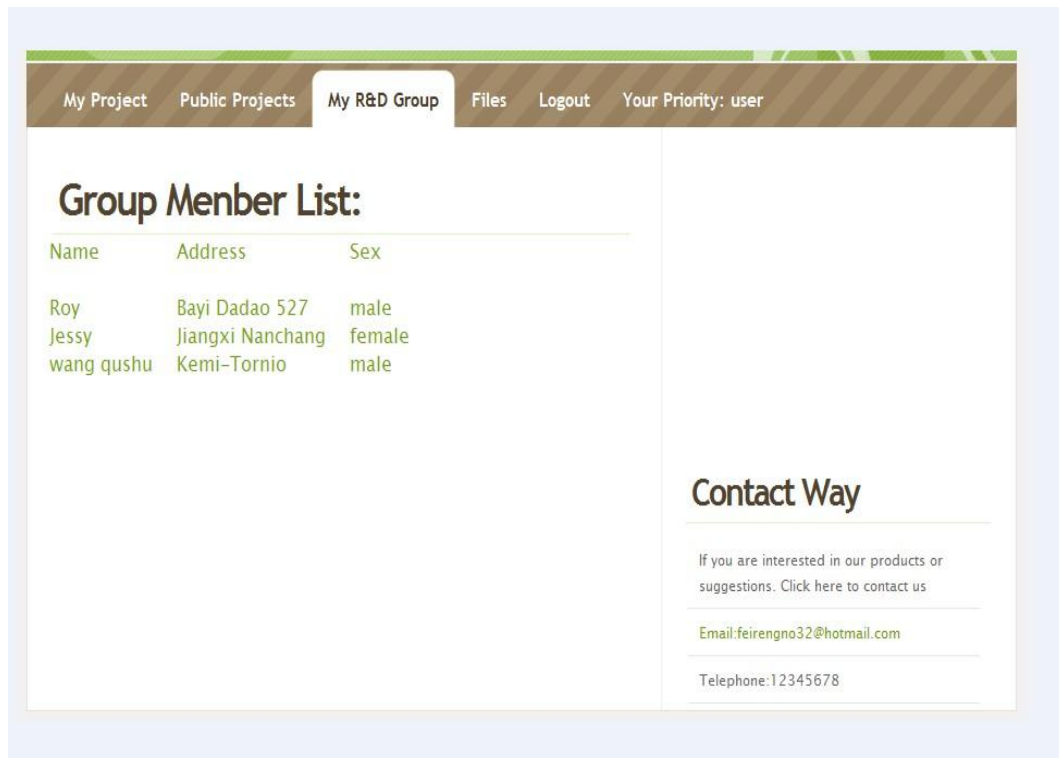


Fig.17. R&D group (all users have)

Fig.17, the R&D group page can show in what project group the user has been, it shows the members of the project group and member information of team mates. When engineers and project managers login into their pages, they can also use this function.

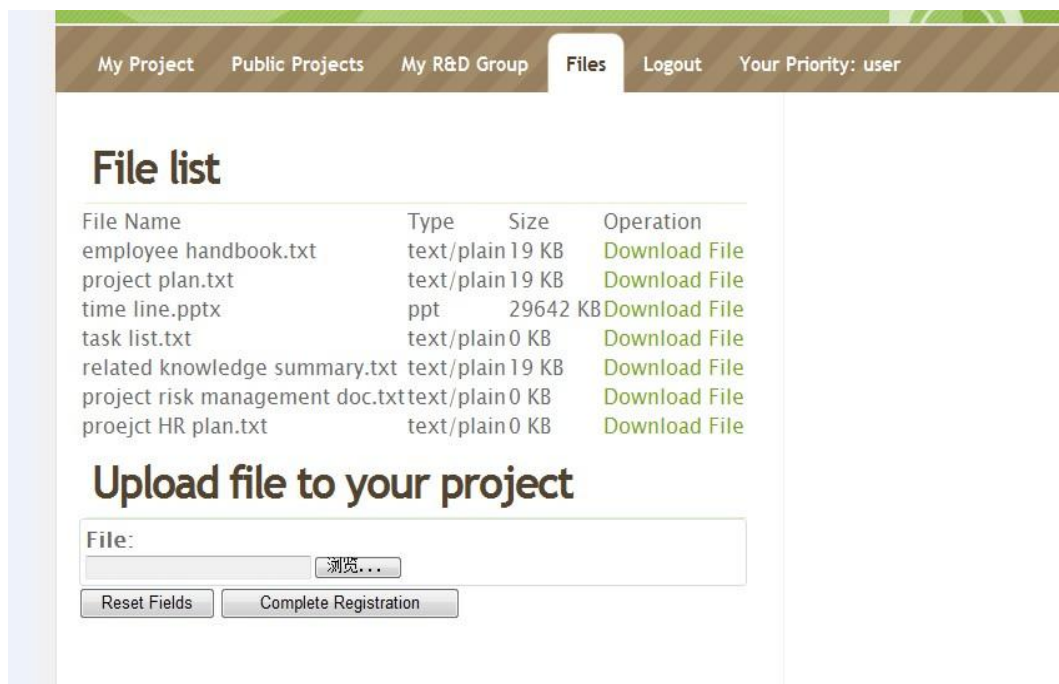


Fig.18. Files list page (all users have)

From fig.18, it shows the file list. There is some important information in this list, such as their type and size. When users use the function to upload a file, the page will refresh automatically.

Fig.19. Project update

Form fig.19, expresses that the project manager can choose what project he wants to be changed in the project menu. Then the manager can change the information in p-update page, it can show all of the information which manager wants to be changed in this page. It should be noted that “project information” only can be displayed in home page; it cannot be showing in project list. And parts of information will be displayed to other pages (it can be seen in fig.15 and fig.16).

Project List Project Add Project Delete User Add User Move Your Priority: administrator

Project Initialization

Project Name:

Project Status:

Project Visibility:

Optical Measurements:

Embedded Systems:

Material Usability:

Testing Labs:

Maintenance & Services:

Research Group Allocated:

Project Information:

Overall Project Menu

- Express System
- Iphone Application
- Iphone Game
- OLS delivery
- OS research
- Win8 developing

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Telephone: 12345678

Fig.20. Increasing the new project (manager also have)

In the Project add page, Administrator can add a new project to this system. There is some information which needs to be filled in, such as necessary information and information which can be filled by selecting. The necessary information is Project name, Project status, Project visibility and Project information. The other information in this table is optional to be filled.

The right part of website can show which projects are already been added.

Project List Project Add **Project Delete** User Add User Move Your Priority: administer

Project information

Project Name: Iphone Game
Project Status: Preparation
Optical Measurements: user amount a
Embedded Systems: IOS5.1
Material Usability:
Testing Labs: E102
Maintenance & Services: Game experience

Project Information: The project in 2004, when Apple started to gather a team of 1000 employees to work on the highly confidential "Project Purple".[27] Apple CEO Steve Jobs steered the original focus away from a tablet, like the iPad, and towards a phone.[28] Apple created the device during a secretive collaboration with AT&T Mobility and Cingular Wireless at the time at an estimated development cost of US\$150 million over thirty months.[29]

Delete Reset

Project Menu

- 5 Express System
- 2 Iphone Application
- 1 Iphone Game
- 3 OLS delivery
- 4 OS research
- 6 Win8 developing

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Telephone: 12345678

Fig.21. Deleting the project (manager also)

From fig.21, If administer wants to delete one of the projects in this system, he can use project delete page to realize this function, in the right part of this page, he can choose one of project that he wants to delete, after that it can show the project information to prevent the deletion of the wrong project information.

The screenshot displays a web application interface with a navigation bar at the top containing links for 'Project List', 'Project Add', 'Project Delete', 'User Add' (which is the active tab), 'User Move', and 'Your Priority: administrator'. The main content area is divided into three sections:

- Add user:** A form with fields for 'User Login ID', 'User Password', 'Please input again:', 'Sex' (a dropdown menu), 'Email address', 'Address', and 'Nick Name'. Below the fields are 'Adding' and 'Reset' buttons.
- Add Project Manager:** A form with fields for 'Manager Login ID', 'Login Password', 'Input again:', 'Sex' (a dropdown menu), 'Address', 'Real Name', 'R&D Group', and 'R&D Group Description'. Below the fields are 'Add' and 'Reset' buttons.
- User Menu:** A list of user names: 'Jessy', 'lala', 'Robot', 'Roy', 'Selina', and 'wang qushu'.
- Contact Way:** A section with a message: 'If you are interested in our products or suggestions. Click here to contact us', followed by 'Email: feirengno32@hotmail.com' and 'Telephone: 12345678'.

Fig.22. Increasing users (manager also)

It can be seen in fig.22 that administrator can add a new user for doing the project in this system, also administrator can add a new manager for the project. The manager also can add a new user for projects, but cannot add a new manager in this website. When a new user or manager is added to the database, the user menu will be refreshed to display the new menu. Of course, the user menus only display members of user in project manager page.

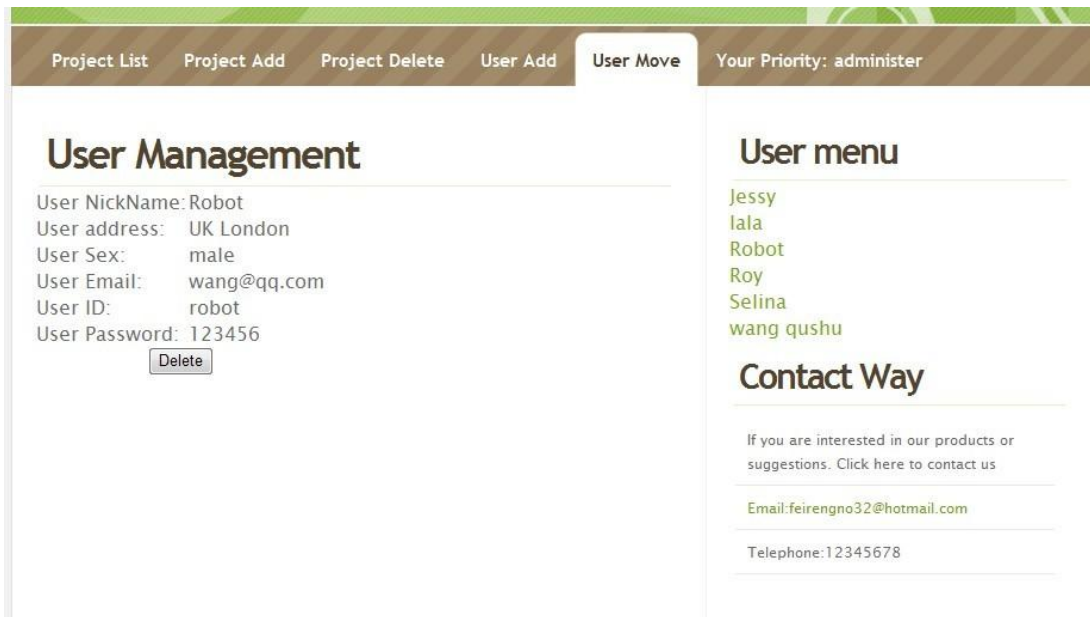


Fig.23. Deleting users (manager also)

It can be seen in fig.23, in the right part of website, the part of user menu can show all of the users and project managers who have been working in project. When he chooses one user, information of the user will be displayed in the left side. Then administrator can delete it. In project manager page, the manager also can delete users, but it only can be done upon the low privilege user group.

It can be seen in fig.26 in appendix, this is the home page of the website. All users can open this page, including public customers, staff, project managers and system administrator. Customers can check all completed projects in this platform.

As to be seen in fig.27 in appendix, this page was designed to change the password for all users. When project managers and system administrator add a new user, he is able to use this function to change his personalized password. This greatly increases the security of the account.

When users complete their work, they are able to use the function of logout. Then they will exit the system and jump to the home page, just like fig.26.

5.3. Functions codes, Login and Upload

```

1 <?php
2 session_start();
3 $username=$_POST["username"];
4 $password=$_POST["password"];
5 $category=$_POST["category"];
6 $_SESSION['category']=$_POST["category"];
7 $_SESSION['username']=$_POST["username"];
8 require_once ("database.php");
9
10 if ($category=="user"){
11     $sql="SELECT * FROM user WHERE username='$username' and password='$password'";
12 }
13 else if($category=="engineer"){
14     $sql="SELECT * FROM engineer WHERE username='$username' and password='$password'";
15 }
16 else if($category=="manager"){
17     $sql="SELECT * FROM manager WHERE username='$username' and password='$password'";
18 }
19 else if($category=="administer"){
20     $sql="SELECT * FROM administer WHERE username='$username' and password='$password'";
21 }
22
23 $result=mysql_query($sql, $con) or die ('Can not execute the query to the database!');
24 if($row=mysql_fetch_array($result))
25 {
26
27     if ($category=="user")
28     {
29         echo "<script> location.href='user.php'</script>";
30     }
31     else if($category=="engineer"){
32         echo "<script> location.href='engineer.php'</script>";
33     }
34     else if($category=="manager"){
35         echo "<script> location.href='manager.php'</script>";
36     }
37     else if($category=="administer"){
38         echo "<script> location.href='administer.php'</script>";
39     }
40 }
41
42 else
43 {
44     //incrrect username or password, back to login
45     mysql_close($con);
46     echo "<script> alert('wrong username or password!');location.href='home.html'</script>";

```

Fig.24. MySQL code for the function of login

As can be seen in fig.24, users can input the username, password, and select the priority, the database will automatically determine whether username and password is right or not, whether the priority is matched or not, according to these languages which has been written. When they are input correctly, the page will successfully jump; just an input error could make failed login, the system will be prompted that “wrong username or password”.

```
<?php
    $sql2="SELECT * FROM file ORDER BY `file_id`ASC";
    $result=mysql_query($sql2);
    while ($row=mysql_fetch_row($result))
    {
?>
        <tr>
            <td>
                <?php echo $row[1]; ?>
            </td>
            <td>
                <?php echo $row[5]; ?>
            </td>
            <td>
                <?php echo $row[6]; ?> KB
            </td>
            <td>
                <a href="downloadfile.php?filename=<?php echo $row[1]; ?>" target="view">Download File</a>
            </td>
        </tr>
    <?php
    }
?>
```

Fig.25. PHP and MySQL codes of download function

As to be seen in fig.25, according to these codes, the system automatically lists all file name and some other information, and increasing links of download for these files in the right side.

6. Conclusion

6.1. The remaining issues

In the beginning of website design, it is a good idea that the function of online message board is designed in the website. This feature provides an exchange platform for the work, so that employees can work effectively. But author did not realize this function, because there are many difficulties.

Firstly, the designer needs to build a data table for every user in database, including user_id, time, content, title of message and so on. Message board means put the title, content, and user_id which is saved in Session into the table. However, how to check message is based on different post topic.

The most important target is to design the table well. Usually designer must establish one message table for each user (if the designer creates two tables, it is seen better, one for recording published message and another one for establishing messages received). And then the design needs to design links to manage, it is best to use proprietary links page.

In fact, the existing database and pages are very complicated. Author tried to modify it, but a lot of errors were found, they could not be resolved.

6.2. Self-evaluation and learning experience

The thesis purpose is that author needs to study to design a website platform, in order to provide the work environment for users. Another core of this website is to design a database, so that the system administrator is able to manage complex information of projects. Users can also use this platform to complete their work easily.

After discussion with the instructor, a lot of necessary knowledge has to be learned, just like PHP, only learning some of HTML language is not enough. Some other web programming languages need to be learned for this thesis, including HTML, PHP, CSS, JSP and MySQL language.

After a period of study, the importances of these languages are understood on the website. HTML is a front desk language. What user can see is designed by HTML on the website; CSS is used to design the framework of the page and font size, so that the website become more beautiful; the purpose of JavaScript is to design special effects so that pages become more brilliant. Secondly, it can be used to check data. So that illegal content are not allowed to be passed to the server, only allowing legitimate data; MySQL is database language, it makes that database can be used to store user information (registered user name and password, grouping, grade, etc.), configuration information (administrative privileges configuration template configuration), and content links (html, images, sound, video, etc.);

However, there are many choices for web language, including ASP, .NET and PHP. Compared them comprehensively, PHP have some big advantages. Not only PHP is free to use, but also PHP have some more powerful functions.

Technical knowledge has been accumulated according to searching so many videos and materials for a long time, so that a lot of difficulties are overcome, and the thesis has been completed. From this thesis, it really improved my learning skills. In fact, the website is a very useful system in future. Not only it can be used in communication between staff and managers, but also projects can be completed more conveniently.

However, there are a lot of inadequacies. This site has been completed, but cannot making it become more beautifully. Compared with anticipation, functions have not so much.

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7. Appendix

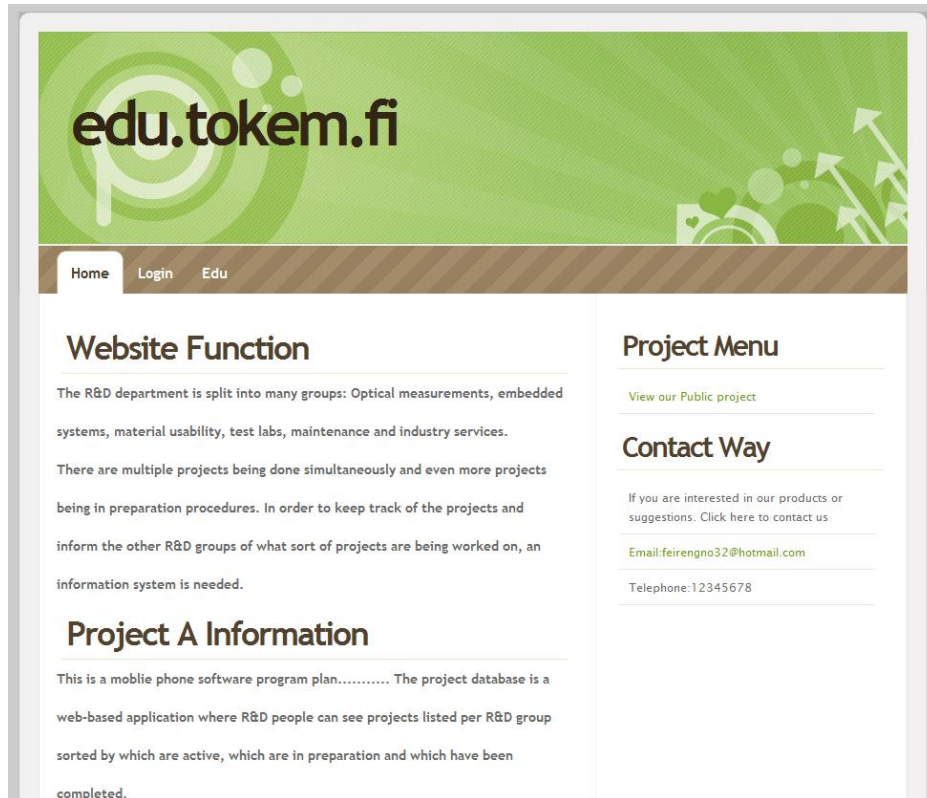


Fig.26. Home page

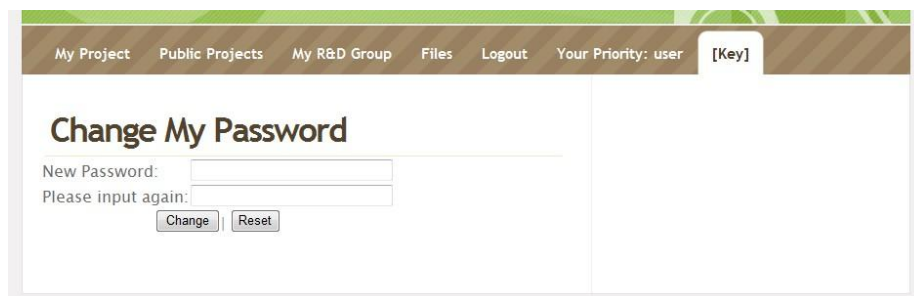


Fig.27. Change password