



Teaching Service System: Course Resource Sharing Subsystem Software Requirement Specification

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CHAPTER I: INTRODUCTION

1.1 Purpose

This document contains the software requirements for the Course Resource Sharing subsystem, one of the 7 subsystems of the Teaching Service System. The purpose of this document is to specify the software requirements and a logical model of the Course Resource Sharing Subsystem in a clear and consistent manner, providing the important specifications including user interface, features, and supported environments of the system and making it easier for the consumers to understand the design, as well as the developing team to build it.

The purposes are:

- Establishing the basis for agreement between customers and developing team on what the CRS subsystem is to do as well as what it is not expected to do.
- Based on the information provided in this document, providing a guidance for the developing team to complete the design and coding.
- Providing a standard for testing and inspections.

The Intended Audience:

- Software customers
- Project manager
- Project developers
- Software quality evaluation personnel
- Software maintenance personnel

1.2 Scope

1.2a The Current Situation

The existing software for sharing teaching materials have several problems, which includes:

- Function: The sharing system currently used by Zhejiang University doesn't allow students to upload their homework and documents of any kind, which is very inconvenient;
- Efficiency: The sharing system currently used by Zhejiang University is relatively slow, which makes the system unable to process multiple requests in a short period of time;
- Environmental Support: The sharing system currently used by Zhejiang University only supports Internet Explorer 6, this ancient environmental requirement makes it inoperable for users with modern computer softwares. And the website doesn't check the environmental data automatically, causing coding problems in non-GB2312 environments, Figure 1.1 and Figure 1.2 shows a computer running Mac OS X 10.9.3 in its default settings, while most of the websites today provides information regarding its coding environment, the sharing system in Zhejiang University failed to do so (Figure 1.1), and the terrible support for non-IE6 browsers is also intolerable(Figure 1.2);



Figure 1.1



Figure 1.2

- **User Interface:** The user interface of the sharing system currently used by the Zhejiang University appears to be very unfriendly, the most used resource list is very hard to find, and the graphic design just couldn't get uglier.

The main goal of the current system is to solve the problems mentioned above by completely redesign the sharing system from the top.

1.2b The Context of the Work

- **Name**
Teaching Service System
- **Proposer**
Professor Wang Xinyu, Software Engineering Course, Zhejiang University
- **Developer Team**
Students of the Software Engineering Course (22120030) 2013-2014 Summer Semester
- **User**
Teaching Staff, Students, System Administrator.
- **Network Environment for Deploying**
Local area network with several computers including a server and at least one client.
- **Background**
This project is the assignment for students in the Software Engineering Course of Zhejiang University, proposed by Professor Wang Xinyu. The entire system is divided in to 6 parts for the 6 groups of the class to work on.

1.3 Definitions, Acronyms, and Abbreviations

The Product	The product mentioned in this report, Course Resource Sharing Subsystem of The Teaching Service System
User	The users of the system, including three user groups: Teaching Staff, Student and System Administrators

Browser	The application used to access the system.
Certification	Certification is used to restrict the user access to the resources. In details, it identifies the users and stores information of whether or not he has access to certain resources.
Course	Categories of the resources. The basic unit used to sort all the resources stored inside the system in categories.
Course List	Course List is a list of all the courses, including necessary information to identify the course.
Course Resource	A type of resources. The Course Resources resources are available for authorised Students and Teaching Staff, and are expected to be uploaded by the Teaching Staff
Homework	A type of resources. The Homework are expected to be uploaded by the Student.
Homework Assignment	A list for recourses. Homework Assignments is a list of documents required for each Student to upload.
Homework Submitting	Homework Submitting is the process for uploading documents provided in the Homework Assignment.
Deadline	Deadline is a specific date for each Homework Assignment, which requires the Students to do the Homework Uploading for such Homework Assignment before the Deadline.
Teaching Staff	A group of Users. A Teaching Staff is responsible for giving Homework Assignment and uploading Course Resources for Student to download for Courses they have Certification to access.
Student	A group of Users. A Student can download Course Resources and do the Homework Uploading of Courses they have Certification to access.
System Administrator	A group of Users. A System Administrator is responsible for maintaining course information and Certification for courses for Students and Teaching Staff.
Database and File management System	The Database and File management System is the system designed to manage the database which stores all the information related to The Product and the Resources uploaded by the User.

1.4 References

Roger S. Pressman. *Software Engineering: A Practitioner's Approach, Seventh Edition*. Beijing: China Machine Press, 2010.9.

Wang Xinyu. 《教学服务系统软件工程实验(英文)》. Software Engineering Course Resource, Zhejiang University.

CHAPTER II: OVERALL DESCRIPTION

2.1 Product Requirement

The completed Product should contain the following functions:

- Resource sharing: Teachers and students can upload any resources associated with the course such courseware, exercise materials. They can also download any resource from the system.
- Homework assignment and submission: Teachers can publish the homework information and set a deadline for homework. Students should upload their homework or laboratory reports before the deadline.
- Resource management: with the growth of course resource, the administrator should manage a large amount of resource. For example, the administrator can put the resources that have been downloads by most users in a visible place.
- Resource retrieval: provide a search model for the users to retrieval resource.

2.2 The User Classes and Characteristics

The Users of The Product as defined above should be: Teaching Staff, Students, and System Administrators, and most of them are expected to be from Zhejiang University. Considering some of the senior Teaching Staff in Zhejiang University lack the experience with computers, the system should be easy enough for users who has never used a Browser before. Because most of the Students in Zhejiang University seems to be well educated, their good taste makes them very picky, so the user interface should be simple and beautiful. As for the System Administrators, we expect them to be well experienced and qualified to handle any situation they might find themselves in according to the User Documentation.

2.3 User Documentation

The complete Product will contain three documents for users, one for System Administrator, one for Teaching Staff and one for Student.

2.4 Assumptions and Dependencies

This project is an course assignment therefore unfortunately there will be no funding or payment of any kind. The developing team are expected to use any resource they are capable of getting to get the job done. The entire Teaching Service System consist of 6 parts, each of the 6 groups will finish one and do the integration together. The completed project should be delivered to Professor Wang Xinyu before the final class. Due to the experimental nature of the project, the number of requests is limited so the data capacity shouldn't be a problem.

CHAPTER III: USER SCENARIOS

3.1 Use Cases - Table

Table 1: Use case-Viewing Resource

Use case	Viewing Resource
User Group	Student, Teaching Staff, System Administrator
Intention in Context	Viewing the information of a Course Resource uploaded by others
Precondition	User has already logged in
Trigger	User decides to view the resources
Scenario	1. User selects a Course from the Course List on the interface; 2. Server returns a Course page with a Course Resource list; 3. User chooses a specific Course Resource in the Course Resource list; 4. Server returns the Course Resource information page.
Abnormity	1. The browser does not respond after clicking 2. The browser gives an error page: A. Wrong content B. Error, e.g. Page not found 3. User does not have privilege of viewing 4. Authentication timeout
Priority	Must be implemented
When available	User has privilege of viewing
Use frequency	Frequent
Usage mode	By the web browser
Unsolved problems	

Table 2: Use case-Uploading Resource

Use case	Uploading Resource
User Group	Teaching Staff, Student
Intention in Context	Uploading a Course Resource to a Course
Precondition	User has already logged in
Trigger	User decides to upload a Course Resource
Scenario	<ol style="list-style-type: none">1. User selects a Course from the Course List on the interface;2. Server returns a Course page with a Course Resource list;3. User clicks the Upload button on the interface;4. Server returns an Uploading form;5. User fills the uploading form and click the Submit button;6. Server returns the success message or failure message.
Abnormity	<ol style="list-style-type: none">1. The browser does not respond after clicking2. The browser gives an error page:<ol style="list-style-type: none">A. Wrong contentB. Error, e.g. Page not found3. User does not have privilege of uploading4. Authentication timeout5. User enters the wrong information into the uploading form6. Server returns the wrong message7. The resource is uploaded to the wrong category
Priority	Must be implemented
When available	User has the privilege of uploading
Use frequency	Frequent
Usage mode	By the web browser
Unsolved problems	<ol style="list-style-type: none">1. Shall we limit the maximum size of uploading resources?

Table 3: Use case-Downloading Resource

Use case	Downloading Resource
User Group	Student, Teaching Staff, System Administrator
Intention in Context	Downloading a Course Resource
Precondition	User has already logged in and on the Course Resource information page
Trigger	User decides to download the resources
Scenario	1. User clicks the download link; 2. The browser starts downloading;
Abnormity	1. The browser does not respond after clicking 2. The browser gives an error page: A. Wrong content B. Error, e.g. File not found 3. Authentication timeout 4. The downloading stopped accidentally 5. The download speed is very low
Priority	Must be implemented
When available	User has access to the selected Course Resource
Use frequency	Frequent
Usage mode	By the web browser
Unsolved problems	1. How to generate the download link?

Table 5: Use case-Searching Resource

Use case	Modifying Resource
User Group	Teaching Staff, Student, System Administrator
Intention in Context	Modifying a Course Resource
Precondition	User has already logged in and on the Course Resource information page
Trigger	User wants to modify a Course Resource
Scenario	1. User clicks the Modify button on the interface; 2. Server returns an information form; 3. User fills the form and click the Submit button; 4. Server returns the success message or failure message.
Abnormity	1. The browser dose not respond after clicking 2. The browser gives an error page: A. Wrong content B. Error, e.g. Page not found 3. Authentication timeout 4. The server returns wrong message
Priority	Must be implemented
When available	User has the privilege of modifying the selected Course Resource
Use frequency	Frequent
Usage mode	By the web browser
Unsolved problems	

Table 6: Use case-Assigning Homework

Use case	Searching Resource
User Group	Student, Teaching Staff, System Administrator
Intention in Context	Searching the Course Resource in the database
Precondition	User has already logged in
Trigger	User wants to find a specific Course Resource
Scenario	<ol style="list-style-type: none">1. User types in the keywords in the search section on the interface and click the Search button;2. Server returns a Course Resource list containing Course Resources matching the keywords and such User has access to;3. User chooses a specific Course Resource;4. Server returns the Course Resource information page.
Abnormity	<ol style="list-style-type: none">1. The browser does not respond after clicking2. The browser gives an error page:<ol style="list-style-type: none">A. Wrong contentB. Error, e.g. Page not found3. Authentication timeout4. The server always returns "no such resources"5. User enters wrong information in the search form6. User does not have the privilege of viewing
Priority	Must be implemented
When available	User has the privilege of viewing
Use frequency	Less frequent
Usage mode	By the web browser
Unsolved problems	<ol style="list-style-type: none">1. What condition should be provided for searching?2. How to implement the search function?

Table 7: Use case-Submitting Homework

Use case	Assigning Homework
User Group	Teaching Staff
Intention in Context	Assigning homework
Precondition	User has already logged in and on the Course page
Trigger	User decides to assign some homework
Scenario	<ol style="list-style-type: none">1. User clicks the Homework assigning button on the interface2. Server returns a Homework Assignment form.3. User fills the form and clicks the Submit button.4. Server returns the success message or failure message
Abnormity	<ol style="list-style-type: none">1. The browser does not respond after clicking2. The browser gives an error page:<ol style="list-style-type: none">A. Wrong contentB. Error, e.g. Page not found3. Authentication timeout4. The server returns wrong message5. User enters wrong information in the assignment form
Priority	Must be implemented
When available	User has the privilege of assigning homework to this Course
Use frequency	Less frequent
Usage mode	By the web browser.
Unsolved problems	<ol style="list-style-type: none">1. Are the Teaching Staff allowed to modify the already-assigned homework?2. When a homework is assigned, is it necessary to notify the Student? If so, how?

Table 8: Use case-Checking Homework

Use case	Submitting Homework
User Group	Student
Intention in Context	Submitting a Homework
Precondition	User has already logged in
Trigger	User has Homework Assignment on a specific Course
Scenario	<ol style="list-style-type: none">1. User clicks the Homework submitting link on the interface;2. Server returns the list of Homework Assignments;3. User choose a Homework Assignment;4. Server returns an Uploading form;5. User fills the uploading form and click the Submit button;6. Server returns the success message or failure message.
Abnormity	<ol style="list-style-type: none">1. The browser does not respond after clicking2. The browser gives an error page:<ol style="list-style-type: none">A. Wrong contentB. Error, e.g. Page not found3. Authentication timeout4. The server returns wrong message5. Current date is after the deadline of the homework
Priority	Must be implemented
When available	Teachers have assigned some homework
Use frequency	Less frequent
Usage mode	By the web browser.
Unsolved problems	<ol style="list-style-type: none">1. Should allow Students to submit the same homework twice or more times?

Table 9: Use case-Administration

Use case	Checking Homework
User Group	Teaching Staff, System Administrator
Intention in Context	Downloading homework
Precondition	User has already logged in
Trigger	User decides to check the Homework
Scenario	<ol style="list-style-type: none">1. User clicks the Check Homework button on the interface;2. Server returns Homework Assignment list;3. Server returns the list of Homework Assignments;4. User chooses a Homework Assignment;5. The browser starts downloading.
Abnormity	<ol style="list-style-type: none">1. The browser does not respond after clicking2. The browser gives an error page:<ol style="list-style-type: none">A. Wrong contentB. Error, e.g.. Page not found3. Authentication timeout4. The server returns wrong message5. The downloading stop accidentally6. User gets the wrong file7. The download speed is very low
Priority	Must be implemented
When available	Students have submitted homework
Use frequency	Less frequent
Usage mode	By the web browser.
Unsolved problems	<ol style="list-style-type: none">1. If a Student submit the homework again, shall the system notify the Teaching Staff with access to the Course?

Use case	Administration
User Group	System Administrator
Intention in Context	Managing all the Course Resources and Homework Assignments and Submissions.
Precondition	User has already logged in and on a Course page/Course Resource page/ Homework Assignment list
Trigger	User wishes to manage the resources
Scenario	<ol style="list-style-type: none"> 1. User clicks the Modify button on the interface 2. Server returns a form for the Course/ Course Resource/ Homework Assignment 3. User fills the form and clicks the Submit button. 4. Server returns the success message or failure message
Abnormity	<ol style="list-style-type: none"> 1. The browser does not respond after clicking 2. The browser gives an error page: <ol style="list-style-type: none"> A. Wrong content B. Error, e.g. Page not found 3. Authentication timeout 4. The server returns wrong message
Priority	Must be implemented
When available	User has already upload some resources
Use frequency	Less frequent
Usage mode	By the web browser.
Unsolved problems	<ol style="list-style-type: none"> 1. Whether or not the User should be informed when resources uploaded by him/ her is being modified by the System Administrator.

3.2 Use Cases - Graph

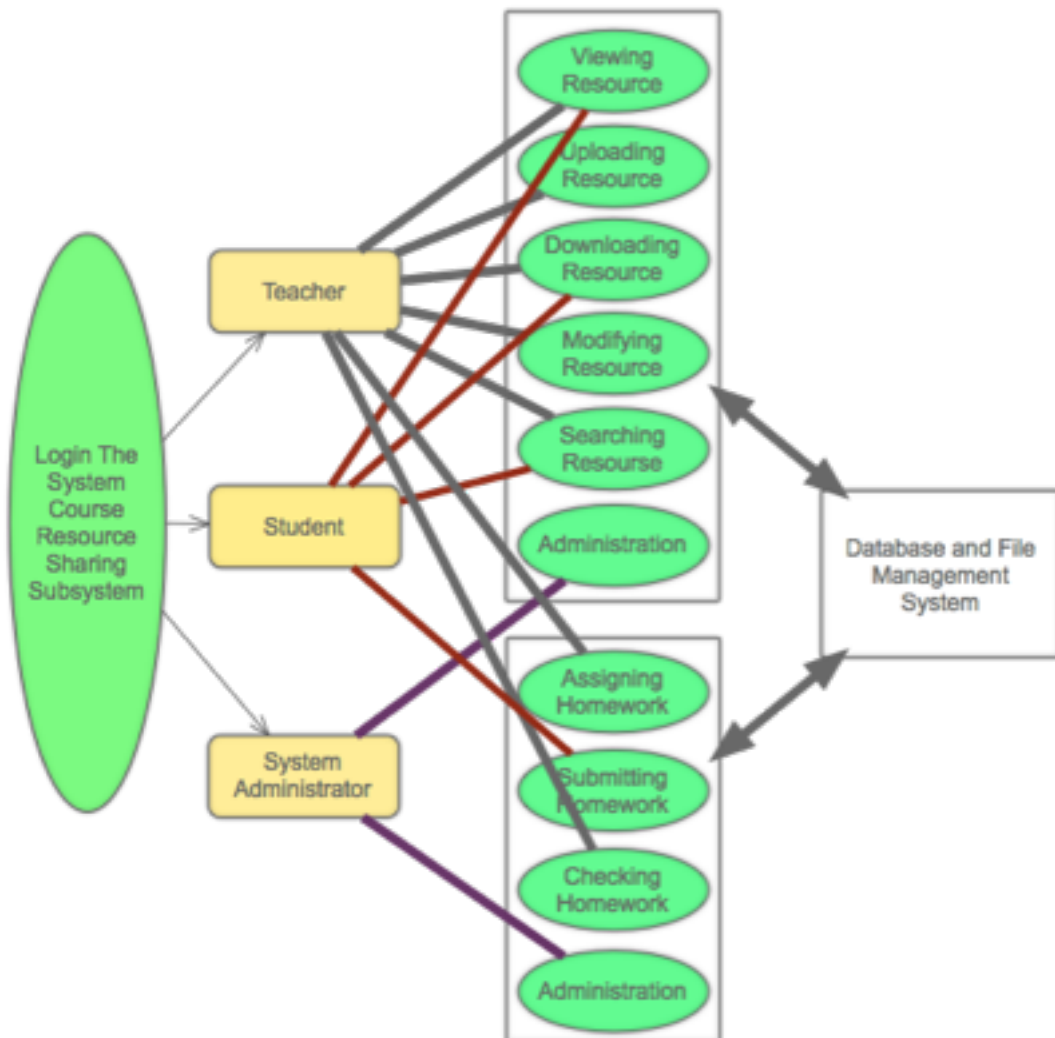


Figure 3.1

3.2 IPO Graph

Though the usage of course resource sharing subsystem, the custom may input / output lots of files and data into the Database and File management System. The following IPO graph emerges the relation of input & output and the tendency of file & data steam.

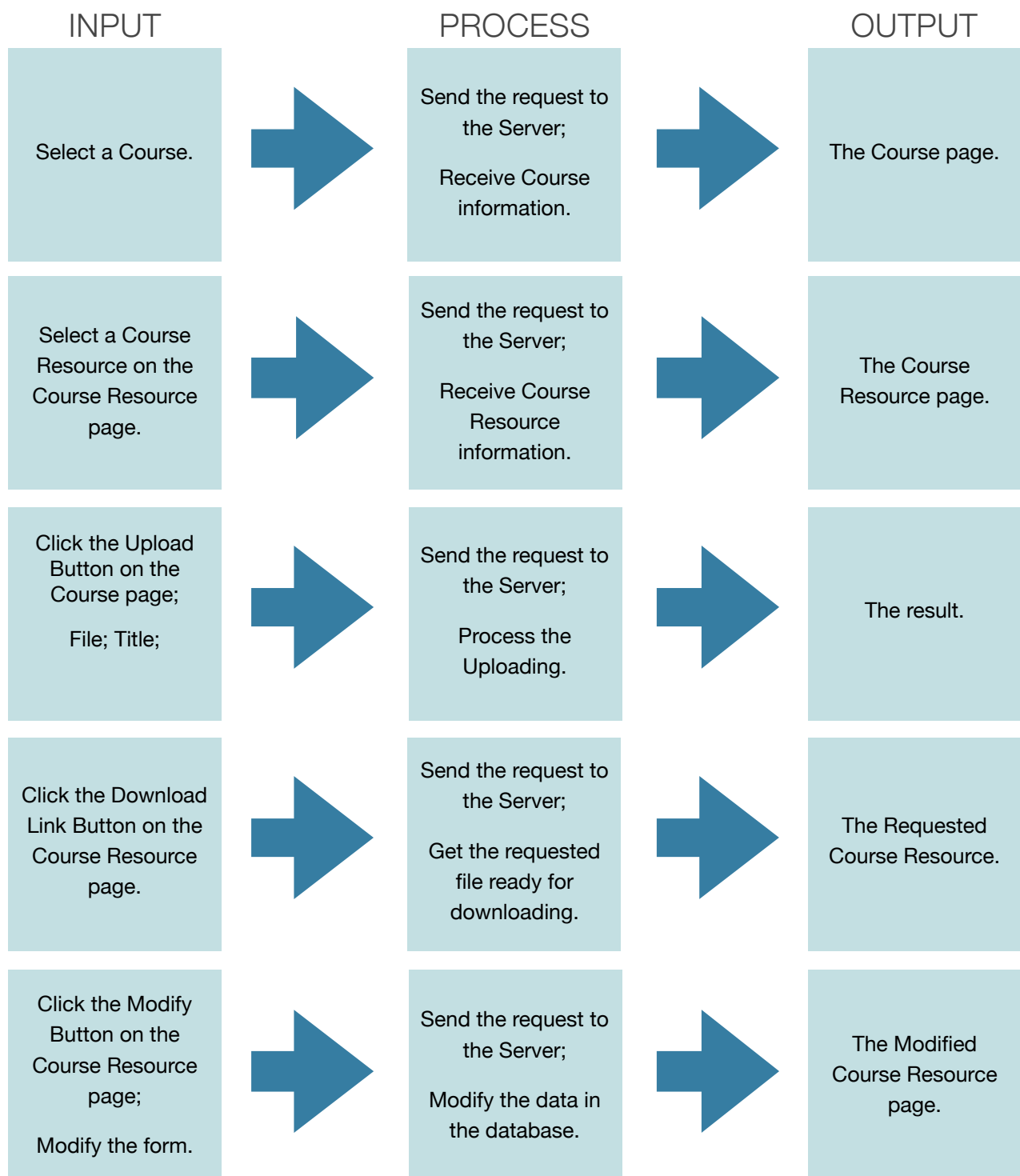


Figure 3.2-1

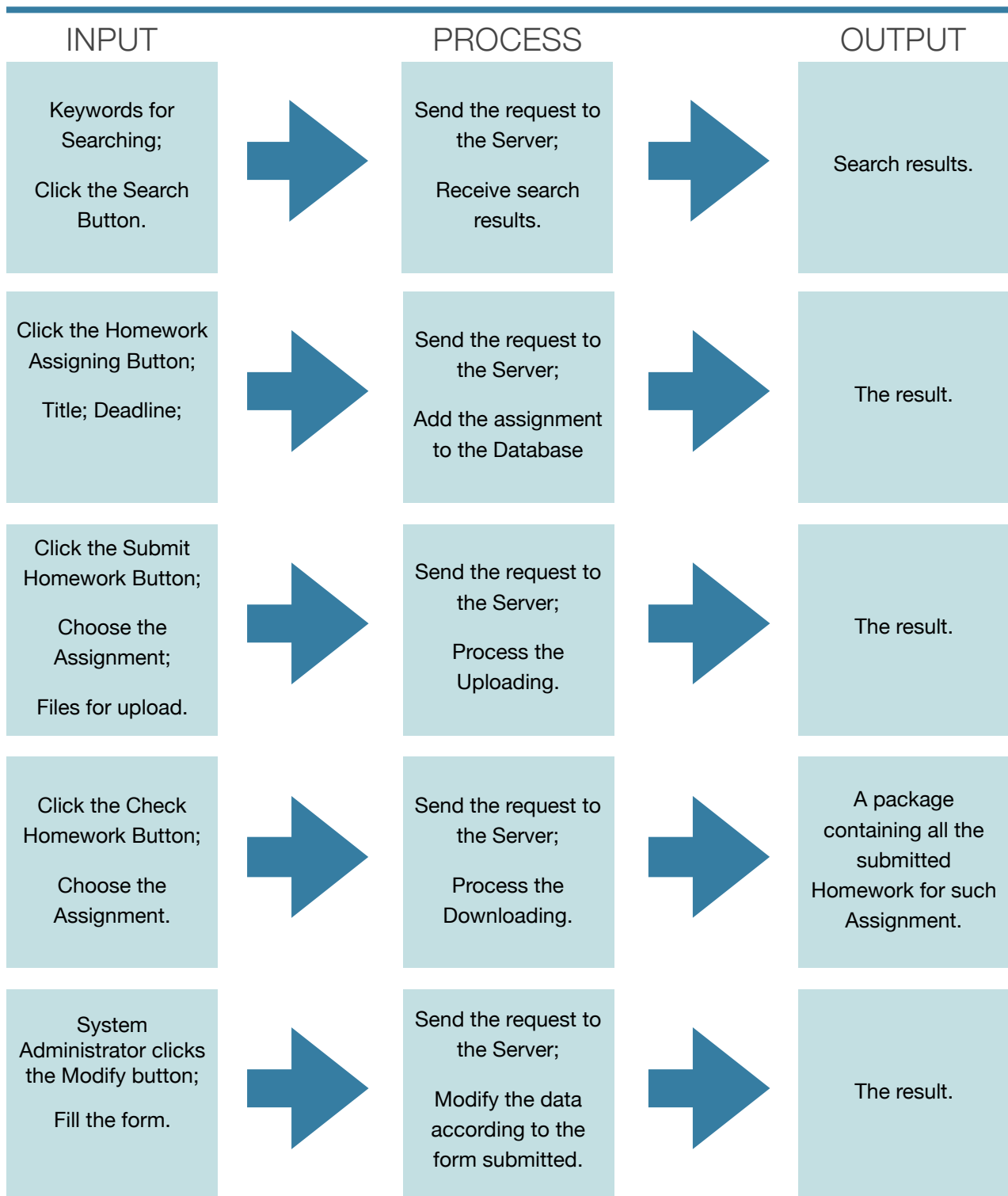


Figure 3.2-2

CHAPTER IV: DATA FLOW DIAGRAM (DFD)

4.1 Context-Level DFD

Figure 4.1 shows the interaction between the system and external agents, including its main system and the database.

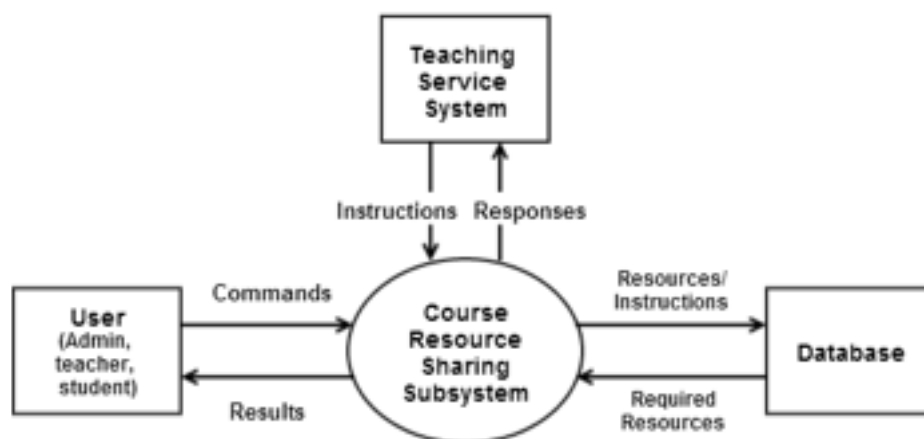


Figure 4.1

4.2 Level 1 DFD

Figure 4.2 shows how the Course Resource Sharing Subsystem is divided into several subsystems (processes). It also shows the flow of data between the various parts of the system.

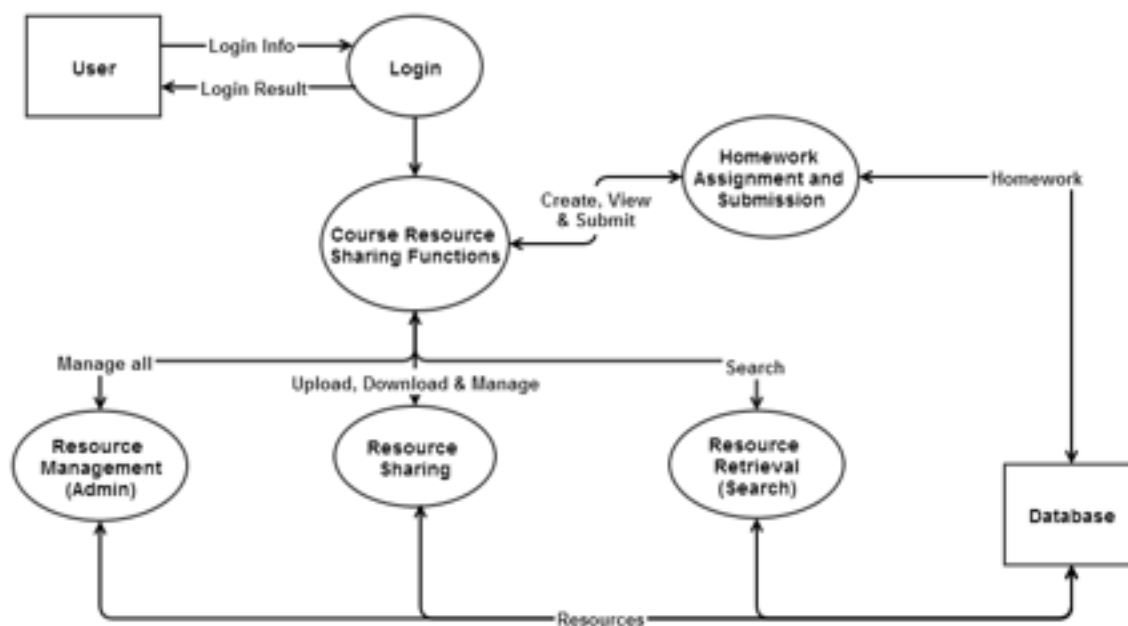


Figure 4.2

4.3 Level 2 DFD

The diagrams below show the detailed data flow information within each subsystem under the Course Resources Sharing System.

4.3.1 Login Processing



Figure 4.3

4.3.2 Homework Assignment and Submission

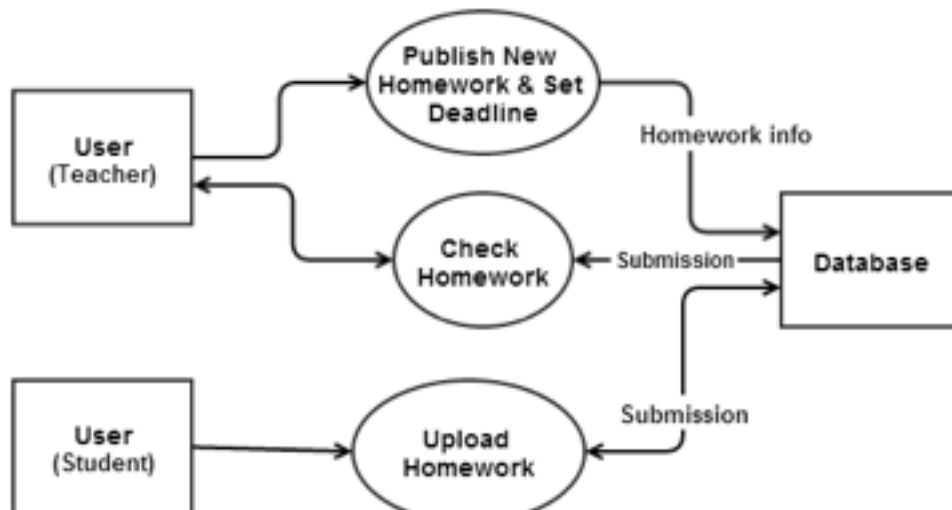


Figure 4.4

4.3.3 Resources and Homework Management (Administration)

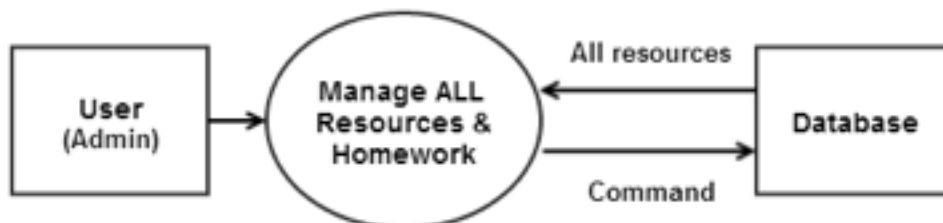


Figure 4.5

4.3.4 Resources Sharing

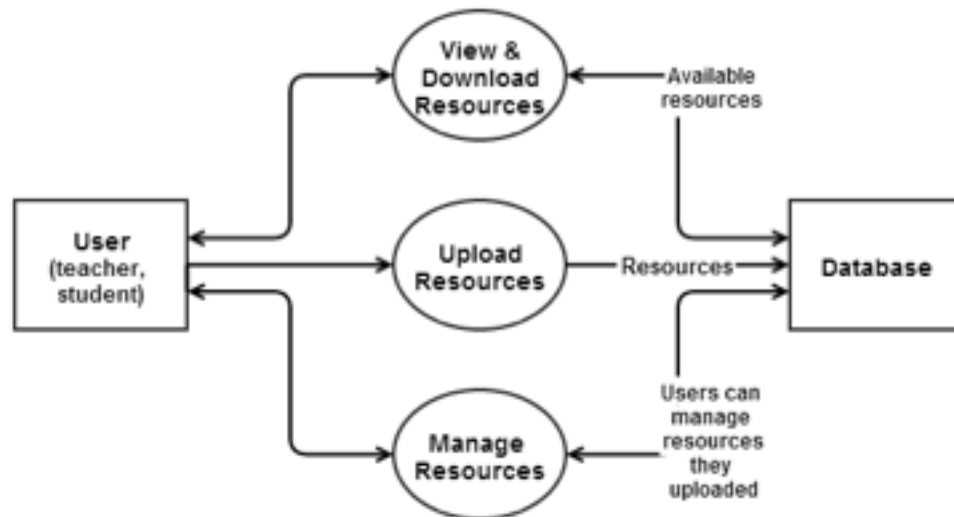


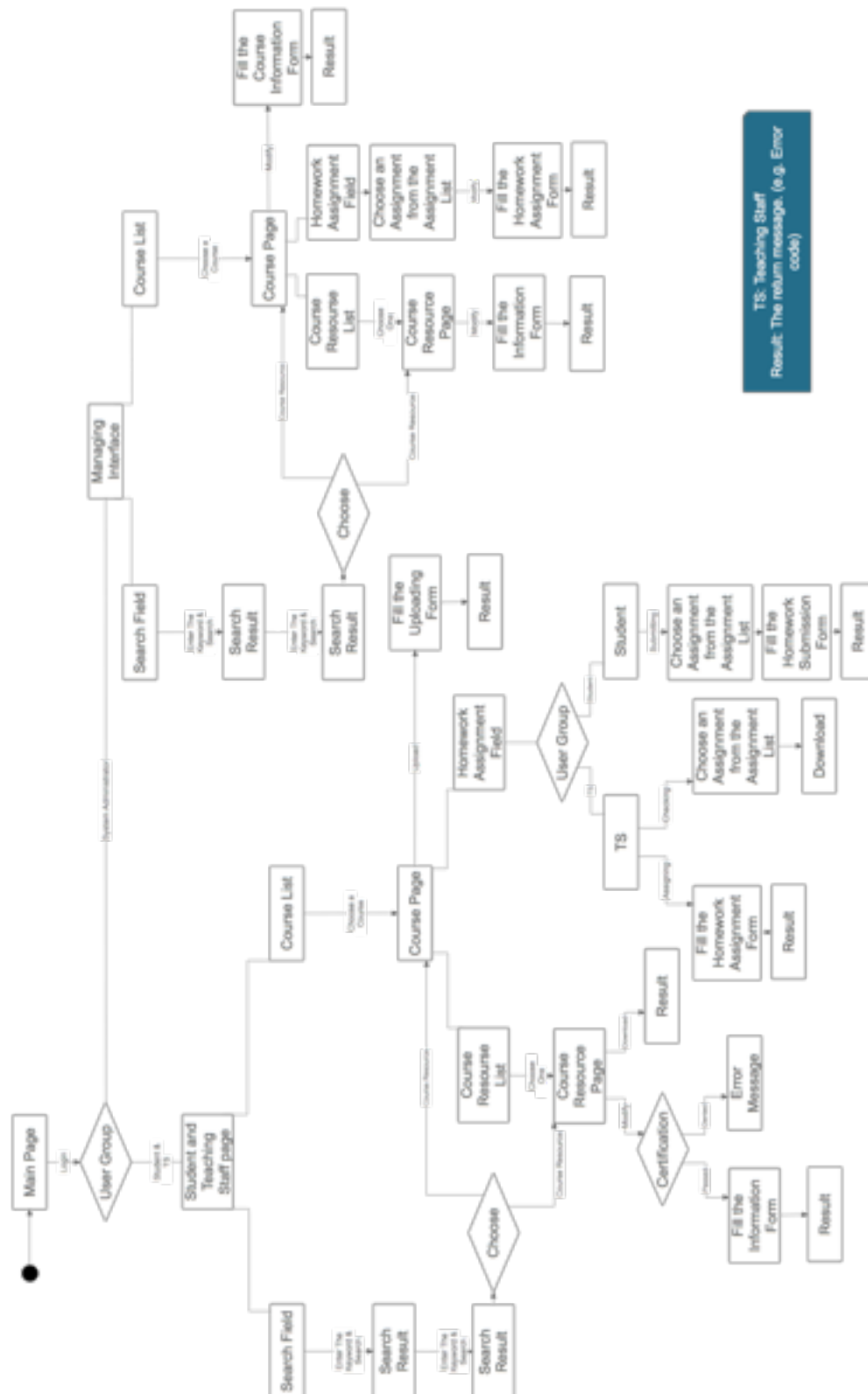
Figure 4.6

4.3.5 Resources Retrieval (Search)



Figure 4.7

CHAPTER V: STATECHART DIAGRAM



CHAPTER VI: CRC CARD

Table 1 CRC card-class View_Resource

Class: View_Resource	
Note:	
When the user need to view resources, submit the request and show the results.	
Responsibility	Collaborator
Submit query request	Connect_Seaver
Show query result	Connect_Seaver
Show Course List	
Show Resource name	
Show Course information	
Show Resource List	
Show Resource name	
Show Resource information	
Show download link	Download_Resource

Table 2 CRC card-class Manage_Resource

Class: Manage_Resource	
Note:	
When the user need to manage resources, submit the request and show the results.	
Responsibility	Collaborator
Submit the management request	Connect_Seaver
Show information Form	Connect_Seaver
Show Course information Form	Connect_Seaver
Show Homework Assignment Form	Connect_Seaver
Submit the management request	Connect_Seaver
Show the success/failure information	Connect_Seaver

Table 3 CRC card-class Search_Resource

Class: Search_Resource	
Note:	
When the user need to search resources, submit the request and show the results.	
Responsibility	Collaborator
Show search page	
Submit the search request	Connect_Seaver
Show the search result	Connect_Seaver
Store the choice of user	
Show the information of the Resource	Connect_Seaver
Show the information of the Course	Connect_Seaver

Table 4 CRC card-class Assign_Homework

Class: Assign_Homework	
Note:	
When a teacher need to assign homework, submit the request and show the results.	
Responsibility	Collaborator
Show assign page	
Store the assign information	
Submit the assign to server	Connect_Seaver
Show the success/fail information	Connect_Seaver

Table 5 CRC card-class Submit_Homework

Class: Submit_Homework	
Note:	
When a student need to submit homework, submit the request and show the results.	
Responsibility	Collaborator
Show homework list	Connect_Seaver
Store the choice of homework	
Show the information of the homework	Connect_Seaver
Upload the homework file	Upload_Resource
Show the success/fail information	Connect_Seaver

Table 6 CRC card-class Check_Homework

Class: Check_Homework	
Note:	
When a teacher need to check homework, submit the request and show the results.	
Responsibility	Collaborator
Show homework list	Connect_Seaver
Store the choice of homework	
Show the information of the homework	Connect_Seaver
Show the submission list of the homework	Connect_Seaver
Show download link of the submissions	Connect_Seaver
Store the choice of submission	
Download the submission	Download_Resource

Table 7 CRC card-class Administration

Class: Administration	
Note:	
When the administrator need to manage resources, submit the request and show the results.	
Responsibility	Collaborator
Show the resources viewing page	
Show the resource list	Connect_Server
Show the management link of resources	
Store the choice of resource	
Show the management page	
Store the choice of management	
Submit the manage request	Connect_Server
Show the success/fail information	Connect_Server

Table 8 CRC card-class Upload_Resource

Class: Upload_Resource	
Note:	
When the user need to upload resources, submit the request and show the results.	
Responsibility	Collaborator
Submit upload request	Connect_Server
Show upload page	Connect_Server
Store the uploading information	
Upload the resource	Connect_Server
Show the success/fail message	Connect_Server

Table 9 CRC card-class Download_Resource

Class: Download_Resource	
Note:	
When the user need to download resources, submit the request and show the results.	
Responsibility	Collaborator
Submit download request	Connect_Seaver
Show fail message when the resource not exist	Connect_Seaver

Table 10 CRC card-class Connect_Server

Class: Connect_Server	
Note:	
Exchange information between the system and the server.	
Responsibility	Collaborator
Submit information to the server	
Get information to the server	
Store the account information	

CHAPTER VII: DATA DICTIONARY

7.1 Table of Data Steam Definition

No.	Name	From	To	Elements	Illustration
L1	Customer information command	Customers/ Browser	Browser/ Server	E1+E2	Including login.
L2	Customer information result	Server/ Browser	Browser/ Customer	/	Feed back from the subsystem.
L3	Searching/ Viewing/ Checking Command	Customers/ Browser	Browser/ Server	E7	Command for search and view resource / homework.
L4	Uploading/ Managing/ Assigning Command	Customers/ Browser	Browser/ Server	E3+E4+E5+E6	Command for uploading and managing resource / homework.
L5	Searching/ Viewing/ Checking Result	Server/ Browser	Browser/ Customer	E3+E4	Feedback for searching and viewing request.
L6	Uploading/ Managing/ Assigning Result	Server/ Browser	Browser/ Customer	/	Feedback for uploading, managing and assigning request.

7.2 Table of Element Definition

No.	Name	Type	Area	Illustration
E1	User name	varchar	["a".."z", "A".."Z", "1".. "9"]	/
E2	User password	varchar	["a".."z", "A".."Z", "1".. "9"]	/
E3	Resource	txt, doc ...	/	Any files permitted to be uploaded.
E4	Homework	txt, doc ...	/	Any files permitted to be uploaded.

No.	Name	Type	Area	Illustration
E5	Resource level	int	["1", "2", "3", "4", "5"]	To determine the visibility of resource.
E6	Deadline	date	[xxxx(year)-xx(month)-xx(day)]	The deadline of homework.
E7	Key words	varchar	["a".. "z", "A".. "Z", "1".. "9"]	Key words for searching.

7.3 Table of External Items Definition

No.	Name	Input Data Steam	Output Data Steam	Illustration
W1	Student	Command and files	Result and files	Could use command to deal with homework and resource with a certain amount of privilege.
W2	Teaching Staff	Command and files	Result and files	Could use command to deal with homework and resource with a certain amount of privilege.
W3	System Administrator	Command and files	Result and files	Use command to deal with homework and resource, but with highest privilege.

7.4 Table of Data Accuracy

Data	Type	Accuracy Requirement	Illustration	Example
User name	varchar	Less than 30 digit.	Usually E-mail address.	3120000358@zju.edu.cn
User password	varchar	6-15 digit.	Numbers and letters	A2n5c8
Resource level	int	1 digit number.	1 to 5	2
Deadline	date	Day.	[xxxx(year)-xx(month)-xx(day)]	2014-5-18

Data	Type	Accuracy Requirement	Illustration	Example
Key words	varchar	Less than 30 digit.	Could be insert with space to illustration relationship of and.	zju software

CHAPTER 8: ACCEPTANCE STANDARD

The course resource sharing subsystem works as a platform for our customers to share educational resources, it also convenience the Teaching Staff to assign and collect Homework. To achieve these functions, the developing team needs to fulfil a lot in this subsystem including viewing, uploading, downloading, managing resources, as well as the assignment and collection of homework.

The following points will be used as the acceptance criteria:

8.1 Functional Requirement

The customer should login in in another subsystem and enter our subsystem by clicking the URL link in main interface. The main interface page will also post the basic information about the customer to our subsystem.

A. Resource Management Interface

A1. Command of Viewing Resource

The customer could choose viewing resource function and the system will list all the resource available for him (according to his privilege).

A2. Command of Uploading Resource

The customer could use this function to upload resource and mark out the title and the level of the resource to avoid irrelevant people from getting these resource.

Following are the levels of resource:

To The Public: All people could get these resource.

School Only: All teachers and students in the appointed school could get these resource.

Class Only: The teachers and students in the appointed class could get these resource.

Group Only: The group members appointed could get these resource.

A3. Command of Resource Management

The system will list all the resource uploaded by the customer, then the customer could change, delete the resource or remark the level of resource which he had upload before in this module.

A4. Command of Downloading Resource

The customer could download any resource available for him by clicking the “download” button under the interface of viewing resource or searching resource.

A5. Command of Searching Resource

The customer input the key word and the system will return and list the related and available resource back to the customer.

B. Homework Management Interface

B1. Command of Homework Assignment

The Teaching Staff could assign a homework in the Homework Management Interface.

When assigning a new homework, teachers should input the following information:

Homework Name: The name of homework.

Students Oriented: Point out which student should complete this homework.

Homework Level: The level of all files submitted as this homework.

Requirement: To inform the students how to complete the homework.

Deadline: The deadline of the homework.

B2. Command of Homework Submission

Students could see the homework assigned for them in the Homework Management System and submit files from local into the system.

B3. Command of Checking Homework

The Teaching Staff could use this module to get all the homework submitted from the students, with a report about the submission circumstances.

B4. Command of Searching Homework

The customer input the key word and the system will return and list the related and available homework back to the customer.

C. Administration Commands (Only for Administrator)

Administrator could input the information and key words to search the related resource and then deal with it.

Search options: (All the options are optional but the administrator can't search with no inputs.)

Type: Homework / Resource.

Author or Assigner.

Title.

Processing means: (Including but not limited.)

Modify the targeted file.

Delete the targeted file.

8.2 Performance Requirement

Font-end / To the customer:

- a. The UI design should be simple and intuitive. The key point should be emphasised.
- b. The font-end should be easy for customer to handle.
- c. Special design should be applied to avoid repeating meaningless request to server, especially under a poor Internet environment. E.g. Add a javascript on each button to tell the user that the system has already receive the input.

Back-end / To the server:

The server should be table. It is also to say that the server should be able to deal with the situation like power cut.

The server should be able to deal with as much online customers as possible and the response time should be as short as possible.

8.3 Security Requirement

File confidentiality:

Prevent irrelevant people from getting access to the files in the system.

Server Security:

The server should be able to defence common attack from hackers. (This is also the mutual problem for other groups to solve.)

8.4 Maintainability Requirement

Documents including but not limited to requirement analysis, operation manual and user manual should be offered. The maintainer and operation staffs should be able to get the structure of system and design ideas though these documents and all these documents should be in line with standards.

The codes should be written in a well coding style, with clear structures and enough notes. These will help the tester to locate and fix any bugs.

CHAPTER IX: SYSTEM REQUIREMENTS

9.1 Development

Due to the lack of funding, we are unable to provide a server for developing. We recommend the developing team to use a computer with high configuration as developing device.

The minimum system requirement for development:

Server:

- CPU: $\geq 2.0\text{GHz}$ (for example Intel Mobile Core 2 Duo T5800)
- Memory: $\geq 4.0\text{GB}$
- Keyboard: Usable
- Mouse: Not required if under linux environment
- Monitor: Usable
- Hard Drive: $\geq 100\text{GB}$, $\geq 7200\text{rpm}$
- Network Interface Card: 100M
- Network Access: Local Area Network

Client:

- OS: Windows Vista or newer; Mac OS X 10.7 or newer; Mobile Platform not supported.
- Web-Browser: Microsoft Internet Explorer 10 or newer; Safari 7.0.3; Chrome 34.0.1847.137 or newer
- Network Access: Local Area Network

9.2 Deployment

Server:

- CPU: $\geq 2.0\text{GHz}$ (for example Intel Mobile Core 2 Duo T5800)
- Memory: $\geq 4.0\text{GB}$
- Keyboard: Usable
- Mouse: Not required if under linux environment
- Monitor: Usable
- Hard Drive: $\geq 100\text{GB}$, $\geq 7200\text{rpm}$

-
- Network Interface Card: 100M
 - Network Access: Local Area Network

Client:

- OS: Windows Vista or newer; Mac OS X 10.7 or newer; Mobile Platform not supported.
- Web-Browser: Microsoft Internet Explorer 10 or newer; Safari 7.0.3; Chrome 34.0.1847.137 or newer
- Network Access: Local Area Network

9.3 Software Requirement

Server:

- Windows Server 2012 or newer; Windows 8 or newer; Mac OS X 10.9 or newer; Ubuntu 13.04 or newer
- PHP 5 or newer version support
- MySQL support
- Apache support
- Web-Browser: Microsoft Internet Explorer 10 or newer; Safari 7.0.3; Chrome 34.0.1847.137 or newer
- Adobe PDF viewer
- Office 2010 or newer version; Pages 5.2 or newer version, Numbers 3.2 or newer version, Keynote 6.2 or newer version