Software Requirements Specification（SRS）

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# 1 Introduction

## 1.1 Scope

### 1.1.1 Identification

|  |  |
| --- | --- |
| Title | Teaching Allocation System |
| Identification No. | DI-IPSC-81533 |
| Version No. | TAS-OCD V2.0 |
| Release No. |  |
| TAS | Teaching Allocation System |
| CSCI | Computer Software Configuration Item |

### 1.1.2 System overview

The purpose of this system is to automatically allocate units for academic staff members according to their information and to support teaching management of an educational institute. The teaching allocation and management is an essential part of educational tasks in a school or faculty of a university, so the teaching allocation system is an important software in educational institutes.

The user of this system is the all of academic staff members and the head of institute is in charge of the users’ account. The educational institute that is as project sponsor funds the developing of this project, and also as the acquirer.

This is\\ the second version of this application system although similar systems have been developed by others and may provide useful design information.

### 1.2.3 Document overview

The purpose of this document is to give a detailed description of the requirements for Teaching Allocation System software.

It will explain the purpose of the system, the interfaces of the system, what the system will do. Specifically, it will address functional and non-functional requirements of TAS, the safety requirements and design information.

This document is subject to being revised as per the requirements from the client/users or the further discussions with the clients/users.

# 2 Referenced documents

# 3 Requirements

## 3.1 Required states and modes

The system should apply the B/S three-tier structure. It should be divided into three parts: Client, Database and Application.

1. Client:

Operating System: Microsoft Windows 7 or higher versions.

Mac Os

Browser: IE 9 or higher versions and other common browsers such as Firefox browser.

1. Database server:

Operating System: Windows2000 Server or later.

Database Systems: SQLServer 2000 or later

1. Application Server:

Operating System: Windows2000 Server or later.

Application servers: Tomcat 5.5 or later.

Database access: JDBC.

## 3.2 CSCI capability requirements

### 3.2.1 Use Class 1-The academic staff member

#### 3.2.1.1 Register Account

|  |  |
| --- | --- |
| ID | UC1-asm1 |
| Capability | Register account |
| Description | The user should be able to register account |
| Inputs | The user’s personal detailed information, e.g. staff id |
| Source | n/a |
| outputs | New user’ account exists in system |
| Requires | Registering person is the member of academic staff |
| Pre-conditions | Registering person doesn’t have account to login in system |
| Post-conditions | User’ account is build, record generated |
| Side efforts | None |

#### 3.2.1.2 User Login

|  |  |
| --- | --- |
| ID | UC1-asm2 |
| Capability | Log in system |
| Description | The academic staff member should be able to log in system |
| Inputs | Account’s No. and password |
| Source | n/a |
| outputs | The user’s profile is presented on the interface |
| Requires | Account’s No. exists and password is accurate |
| Pre-conditions | The user’s account exists in system |
| Post-conditions | The data of user login is recorded in system and get access to the system |
| Side efforts | None |

#### 3.2.1.3 Indicate Preference

|  |  |
| --- | --- |
| ID | UC1-asm3 |
| Capability | Indicate Preference |
| Description | Staff members should be able to indicate the teaching preference |
| Inputs | Number which can represent users’ preference |
| Source | Units’ information |
| outputs | The selected preference is recorded in database |
| Requires | n/a |
| Pre-conditions | The numbers of preference is integer |
| Post-conditions | An Excel worksheet has been recorded in database |
| Side efforts | None |

#### 3.2.1.4 Submit Selection

|  |  |
| --- | --- |
| ID | UC1-asm4 |
| Capability | Submit selection |
| Description | Academic staff member should able to submit selection after indicating teaching preference |
| Inputs | Academic staff member clicks submit button |
| Source | Unit’s information |
| outputs | Excel worksheet generated(preference information) |
| Requires | User has completed filling all options |
| Pre-conditions | The database has stored preference information |
| Post-conditions | The institute received the teaching preference of academic staff members |
| Side efforts | None |

#### 3.2.1.5 Change Preference before Due Date

|  |  |
| --- | --- |
| ID | UC1-asm5 |
| Capability | Change preference before due date |
| Description | Academic staff member should able to change chosen preference before due date |
| Inputs | The course information which want to change |
| Source | Unit’s information |
| outputs | The changed preference is record in an Excel worksheet |
| Requires | n/a |
| Pre-conditions | The system exists previous selecting record |
| Post-conditions | The system records the change preference |
| Side efforts | There are possible clash in system |

#### 3.2.1.6 Confirm Allocated Units

|  |  |
| --- | --- |
| ID | UC1-asm6 |
| Capability | Confirm allocated units |
| Description | The academic staff member should be able to confirm allocated units |
| Inputs | Confirmation message or claim |
| Source | Excel worksheet of teaching preference |
| outputs | Confirmation message or claim is record in system |
| Requires | Access to database |
| Pre-conditions | Preference table displays on screen |
| Post-conditions | The data of confirmation or claim is generated in system |
| Side efforts | None |

#### 3.2.1.7 Receive Email about Result

|  |  |
| --- | --- |
| ID | UC1-asm8 |
| Capability | Receive email about result |
| Description | The academic staff member should be able to receive email about result |
| Inputs | None |
| Source | Email address of staff members |
| outputs | Emails |
| Requires | Address recorded and emails were sent by admin |
| Pre-conditions | Address have been stored in database and valid |
| Post-conditions | The data of email is outputted onto interface |
| Side efforts | None |

### 3.2.2 Use Class 2-The Teaching Administrator

#### 3.2.2.1 Modify and Adjust Allocation Result

|  |  |
| --- | --- |
| ID | UC2-ta1 |
| Capability | Modify and adjust allocation result |
| Description | Some unit information in allocation result need to be modified. |
| Inputs | The number of unit code and modified information |
| Source | By requirement from user |
| outputs | New allocation result |
| Requires | Access to database |
| Pre-conditions | Input code match unit code. |
| Post-conditions | New allocation result exist. |
| Side efforts | None |

#### 3.2.2.2 Verify Whether Selection Finished.

|  |  |
| --- | --- |
| ID | UC2-ta2 |
| Capability | Verify whether selection finished. |
| Description | Administrator need to get allocation result statistics when system finish its allocation. |
| Inputs | Number of all teaching staffs in the institution. |
| Source | By requirement from user. |
| outputs | A status shows whether all teaching staffs finish selecting. |
| Requires | Access to database. |
| Pre-conditions | Number of teaching staffs is integer. |
| Post-conditions | Finishing compare between input number and staff number. |
| Side efforts | None |

#### 3.2.2.3 Send Email to Academic Staffs

|  |  |
| --- | --- |
| ID | UC2-ta3 |
| Capability | Send email to academic staffs |
| Description | The teaching admin should able to send email to academic staff |
| Inputs | The data of email content |
| Source | Email address |
| outputs | Sent emails |
| Requires | The user with priority of teaching admin |
| Pre-conditions | The data of email transits successfully through system and email address are valid |
| Post-conditions | Emails have been sent successfully |
| Side efforts | None |

#### 3.2.2.4 Get Allocation Statistics Report

|  |  |
| --- | --- |
| ID | UC2-ta4 |
| Capability | Get allocation statistics report |
| Description | Administrator need to confirm whether all staff finish their preference selection |
| Inputs | The database that include all selection statistic |
| Source | By requirement from user |
| outputs | The allocation result |
| Requires | Access to database |
| Pre-conditions | Get selection statistic. |
| Post-conditions | A automatic algorithm to generate allocation result. |
| Side efforts | None |

#### 3.2.2.5 Decide Start Date and Due Date

|  |  |
| --- | --- |
| ID | UC2-ta5 |
| Capability | Decide start date and due data. |
| Description | Teaching administrator need to set duration for staff to enter their preference. |
| Inputs | Number of start date and due date. |
| Source | By requirement from user. |
| outputs | Available duration for staff selecting is set. |
| Requires | Access to database. |
| Pre-conditions | The number of start date and due date match date form, start date and due date don’t exist. |
| Post-conditions | Start date and due date exist. |
| Side efforts | None |

#### 3.2.2.6 Submit All Selection Result

|  |  |
| --- | --- |
| ID | UC2-ta6 |
| Capability | Submit all selection result. |
| Description | Administrator has responsibility to submit the selection result form staff to automatic allocation system. |
| Inputs | All selection result. |
| Source | By requirement from user. |
| outputs | The items of database increase. |
| Requires | Access to database. |
| Pre-conditions | Get all selection result and the format of selection result match the format of database. |
| Post-conditions | A database that include selection result exist. |
| Side efforts | None |

#### 3.2.2.7 Add Units

|  |  |
| --- | --- |
| ID | UC2-ta7 |
| Capability | Add units |
| Description | The teaching admin should able to add units |
| Inputs | The module and information of units |
| Source | Information of units |
| outputs | A new unit is added into database |
| Requires | User with priority of teaching admin is able to add units and access the database |
| Pre-conditions | The units didn’t exist the database of system |
| Post-conditions | The data of new units are added into database |
| Side efforts | None |

#### 3.2.2.8 Remove Units

|  |  |
| --- | --- |
| ID | UC2-ta8 |
| Capability | Remove units |
| Description | The teaching admin should able to remove units |
| Inputs | ID or name of units |
| Source | Units information ( Such as identify) |
| outputs | The message of removing units successfully and less units in database |
| Requires | User with priority of teaching admin is able to add units and access database |
| Pre-conditions | The units’ data exists in database of system |
| Post-conditions | The data of the unit was removed from database |
| Side efforts | None |

#### 3.2.2.9 Edit unit information

|  |  |
| --- | --- |
| ID | UC2-ta9 |
| Capability | Edit unit information |
| Description | The teaching admin should able to edit unit information |
| Inputs | The data of editing unit information |
| Source | Information of units |
| outputs | Updated information of units in database |
| Requires | User with priority of teaching admin is able to add units and access database |
| Pre-conditions | The data of editing unit information exits in system |
| Post-conditions | Unit information has been updated in database |
| Side efforts | None |

#### 3.2.2.10 Suspend and terminated accounts

|  |  |
| --- | --- |
| ID | UC2-ta10 |
| Capability | Suspend and terminated accounts |
| Description | The head of institute should able to suspend and terminated accounts |
| Inputs | The command of suspending and terminating accounts |
| Source | n/a |
| outputs | The accounts exist in system no longer |
| Requires | User with priority of the head of institute is able to suspend and terminated accounts |
| Pre-conditions | The command of suspending and terminating accounts is received by system |
| Post-conditions | The data of accounts was recorded unavailable |
| Side efforts | None |

### 3.2.3 User Class 3-The System Administrator

#### 3.2.3.1 Distribute Accounts for Academic Staffs

|  |  |
| --- | --- |
| ID | UC3-sa1 |
| Capability | Distribute accounts for academic staffs |
| Description | System admin should be able to distribute accounts for academic staffs |
| Inputs | The academic staffs personal information |
| Source | Recorded staffs’ information |
| outputs | Accounts for academic staffs |
| Requires | Allocate one account for a person |
| Pre-conditions | academic staffs haven’t account |
| Post-conditions | Each academic staffs is distributed |
| Side efforts | None |

#### 3.2.3.2 System Backup and Restore

|  |  |
| --- | --- |
| ID | UC3-sa2 |
| Capability | System backup and restore |
| Description | Some important system information need to be backup and restored |
| Inputs | Existing system information |
| Source | System information |
| outputs | data store and backup |
| Requires | Have enough memory |
| Pre-conditions | System have the function of backup and restore |
| Post-conditions | The establishment of data backup |
| Side efforts | None |

## 3.3 CSCI external interface requirements

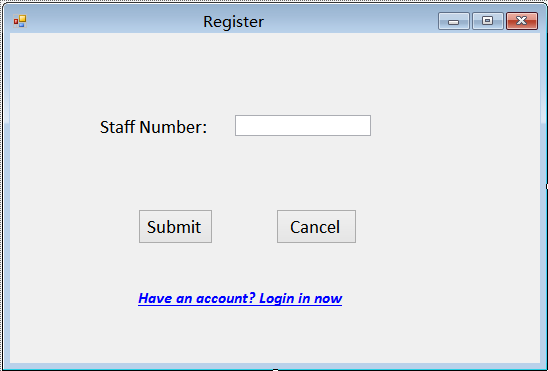
### 3.3.1 Interface identification and diagrams

This paragraph provides the category of interfaces in this teaching allocation system. Those are user interface, hardware interface, software interface and communication interface. The external interface diagram is presented Figure 1 below.

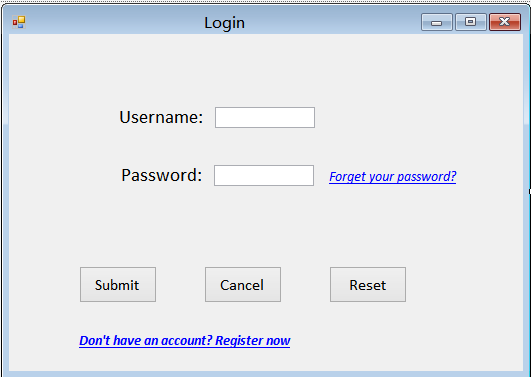
**Figure 1. The External Interface Diagram**

### 3.3.2 User Interface

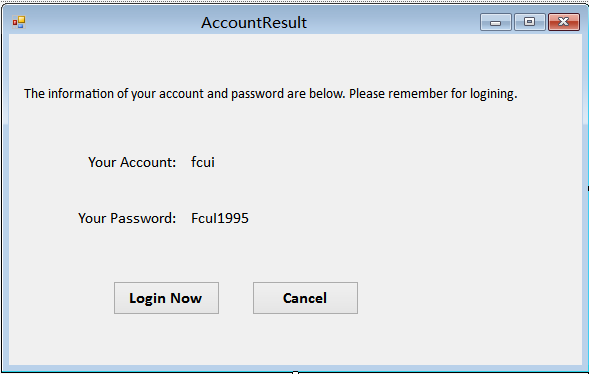
This Section provides the description of user interface. TAS should be designed user register and login interface for users. See Figure 2 and Figure 3. The feedback information should be prompted through the interface of log in result. See Figure 4.



**Figure 2. Register**



**Figure 3. Login**



**Figure 4. Account Result**

### 3.3.3 Hardware Interface

Since the system is web which is designed for automatic teaching allocation, it does not have any obvious and direct hardware. This system should connect to the database server by the operation of web server.

### 3.3.4 Software Interface

This section provides the description of software interface relate to functions of the system. First, the system need to build an interface which links to the email system. This interface is to ensure users can just use the email function through internal commands of the system. Second, the system should has an interface used to transmit data into database. Finally, the system also should has an interface used to transmit the information of database into web server.

### 3.3.5 Communication Interface

This system without special requirement of communication interface.

## 3.4 CSCI internal interface requirements

This system should link to the teaching system of the institute or school, which is convenient for users to access the entrance to system and information about teaching.

## 3.5 CSCI internal data requirements

The internal data should divides into enciphered data and general data, the enciphered data can be accessed by users who have high priority. On the contrary, the general data can be accessed by any user who has account.

## 3.6 Safety requirements

This section will provide the description of safety requirements of CSCI, those requirements as follow:

1. This teaching allocation system should be used under internal network in order to avoid educational information leakage.
2. The ‘auto pilot off’ command should be added in order to avoid data loss or corruption under unexpected situation.
3. The different accounts own different levels of priority should be distinct, which means should set up limits of authority to different user identities.
4. The system is required to take database backup in order to avoid database get crashed due to virus and operating system failure.

## 3.7 Security and privacy requirements

A secured database should be built for the Teaching Allocation System. There are different levels of priority for users. That is for different namely users, such as teaching staffs, teaching administrator, the head of institute and system administrator. Depending upon the category of the user the access rights are decided.

## 3.8 CSCI environment requirements

The system should be operating in windows environment, and it should be compatible with Internet Explorer 9 or higher version. Meanwhile, it should be compatible with the Mozilla Firefox & Opera 7or higher version.

## 3.9 Computer resource requirements

### 3.9.1 Computer hardware requirements

Minimum requirements

1. CPU Intel MMX 233MHz

2. Memory: 64 MB

3. Hard disk space: 1.5 GB

4. Video card: more than 4 MB memory PCI, AGP card

5. Sound card: the latest PCI sound card

6. CD-ROM: more than 8 xCD-ROM

### 3.9.2 Computer hardware resource utilization

Maximum allowable use of processor capacity: less than 75% of storage

Memory capacity: no more than 70% of physical storage

Input/output device capacity: no more than 20% of storage

Auxiliary storage device capacity: no more than 60% of storage

Communications/network equipment capacity: no more than 40% of storage

### 3.9.3 Computer software requirements

Operating systems: Windows operating system

Database management systems: SQL Server

Communications/ network software: Email

Utility software: Compression backup tool, Compression decompression tool, Instant communication tools, Mail processing tools, Download tool

Test software: Auto Runner and Test Center

Manufacturing software: Oracle

### 3.9.4 Computer Communication requirements

Computer communication needs to call following communication interface:

1. The TCP/IP communication protocol interfaces  
   2. GSM/CDMA wireless communication protocol interfaces  
   3. SMS short message communication protocol interfaces  
   4. Uni-com gateway interface communication agreement  
   5. The firewall communication interface  
   6. The router communication interface  
   7. Switch communication interface

Data transfer rates: 30MB/S

Type of the data to be transmitted a received: Integer, String.

Peak volumes of data: 100MB/S

## 3.10 Software quality factors

Quantitative requirements regarding CSCI functionality (the ability to perform all required functions),

Reliability: this system could generate correct and consistent results.

Maintain ability: this system could be easily corrected.

Availability: this system could be accessed and operated when needed

Flexibility: this system could be easily adapted to changing requirements

Portability: the system could be easily modified for a new environment

Re-usability: the system could be used in multiple applications

Test-ability: the system could be easily and thoroughly tested

Usability: the system could be easily learned and used

## 3.11 Design and implementation constrains

The system is to be run on the Internet/Intranet in a centralized manner, but the initial demonstration of the application may be on a standalone or isolated system. The system operations must conform to the teaching allocation policies

A particular programming language: C#

Flexibility and expandability that must be provided to support anticipated areas of growth or changes in technology, threat, or mission

## 3.12 Personnel-related requirements

The system must record relevant personnel information .e.g. the academic staffs.

## 3.13 Training-related requirements

The staff must be trained and have a certain professional knowledge.

## 3.14 Logistics-related requirements

There need to logistics for supporting this system.

## 3.15 Other requirements

Some requirements are easy to be ignored, such as manpower and material resources.

## 3.16 Packaging requirements

The appearance of the system needs to conform to the humanized design.

## 3.17 Precedence and criticality of requirements

Assign priorities based on the importance of the requirements.

# 4. Qualification provisions

1) Set up specialist update and check regularly.

2) The maintenance of data dictionary.

# 5. Requirements traceability

The system without special requirements of traceability.