

CHAPTER 4

SYSTEM ANALYSIS AND DESIGN

The purpose of analysis and requirements for this thesis is to provide description of what this system should do to. The case study is called **ACIS** (Asynchronous Collaboration Information Sharing).

4.0 Methodology

The waterfall model and prototyping techniques have been chosen as the framework for the analysis and design of the thesis. This is due to the reason that the analysis and design should be done thoroughly and systematically to ensure the effectiveness of the system and also to ensure the correct requirements have been gathered before proceeding to the next phase.

4.1 Investigations and Domain Analysis

The primary research methods adopted in this thesis include investigation techniques and observations.

4.1.1 Investigation techniques

Investigation facilitates a better understanding on how the existing applications works and aid in establishing the requirements that meet the objectives of the proposed system. In order to make **ACIS** more realistic, various investigation

techniques such as observation and sampling of the documentations from existing applications were adopted together for analysis and extracting information.

4.1.2 Observations

This method is the most convenience fact finding technique. Main activity in observation is visiting and trying various applications on the web sites and studied their interfaces and navigation of information.

4.1.3 Prototyping

Prototyping technique has been chosen to allow users test the system and make quick changes based on the testing done. The main purpose of using a prototype is to capture major requirements of users. Users are allowed to work with the interfaces, modules and navigations of the system. The testing is analyzed and modified via feedback supplied by users.

4.2 Analysis of ACIS

ACIS has two main modules, which are Assignment module and Discussion module. Figure 4.0 shows the flow of **ACIS**. Assignment module consists of three sub modules namely Viewing and Selection, Assignment Creation and Submission.

In Viewing and Selection sub module:

- a) Students choose their assignments
- b) Assignment chosen is based on the program/courses that they undergo.

In Assignment Creation sub module:

- a) Students accomplish the assignment and able to discuss with their colleagues via Discussion module.

In Submission sub module:

- a) Students post the finished assignments to their respective lecturers.

In Discussion module:

- a) Students to interact and communicate with their colleagues and lecturers.
- b) Students are able to post issues arise when doing the assignment
- c) Able to response to the posted messages to collaborate with other students.

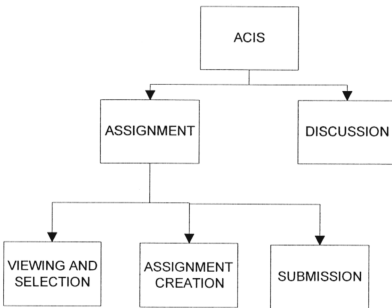


Figure 4.0 ACIS modules

Figure 4.1 shows the context diagram for ACIS application system. There are five sources of input and output namely; Assignment Viewing, Assignment Creation,

Assignment Submission and Discussion/Forum linked to a bubble called ACIS system. Every source have input and output going in and out from ACIS to gather and collect information to complete the application.

Assignment entity concerns with getting information right to students in order to complete the assignment given. It also deals with phase-to-phase steps to complete the assignment. Discussion entity deals with discussion details on any topics posted by users.

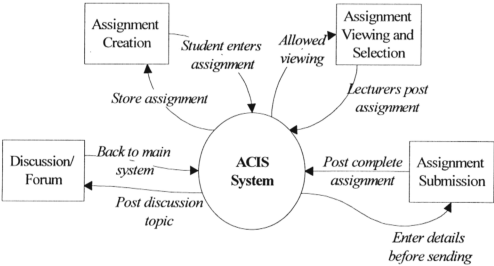


Figure 4.1 Context Diagram for ACIS

Figure 4.2 shows the flowchart for the application and what/who involves in the system. Students get the assignments and complete the task phase by phase and when they have completed the assignment, post it to their lecturer. Students can enter

discussion room at any time they want and can start on their assignments as soon as they left the room.

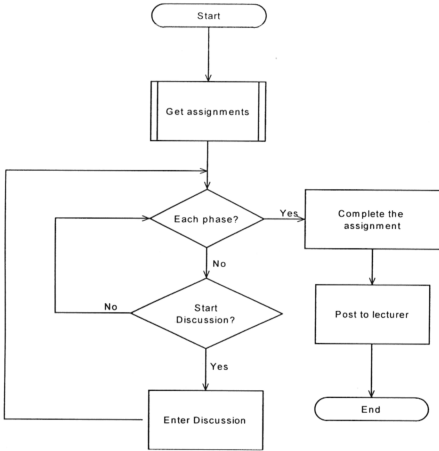


Figure 4.2 Flowchart for ACIS

4.3 Design of ACIS

4.3.1 System Architecture

ACIS consists of two separate components: the file server that contains the administration client and the user client as shown in Figure 4.3.

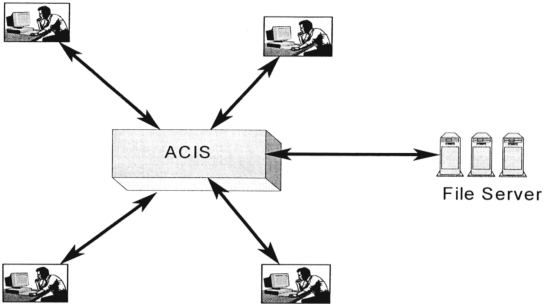


Figure 4.3 ACIS architecture

Based on the diagram above, the server acts as a communication hub, for clients to communicate with each other as they connected to the server. A database of registered users is maintained, and clients must supply a valid username and password to connect.

The administration client is used by whoever maintains the server. It can be used to create and delete accounts, change access permissions. For example, administrator can specify that a particular user cannot create new programs or database or can give other users privilege to use their system.

4.3.2 Data and Requirement Analysis

Two main modules associated in ACIS are Assignment and Discussion modules. In Assignment module, three main screens are Assignment Viewing and Selection, Assignment Creation and Assignment Submission. In Discussion, a main Discussion screen is the main entry.

4.3.2.1 Assignment Viewing and Selection

Form Name: **AssignDetails**

Description: The form contains information on course questions/assignment that lecturers posted for students to view and choose.

Attribute	Type	Description
course_code	Text	Display code for the course. Compulsory field.
course_desc	Text	Display the description of the course. Compulsory field.
question	Text	Question is entered in the field. Compulsory field.

Table 4.0 AssignDetails form

4.3.2.2 Assignment Creation

Form Name: **start_assign**

Description: Students doing their assignment using this module.

Attribute	Type	Description
studentid	Text	Student enters his/her valid ID. Compulsory field.
stu_name	Text	Student enters his/her name. Compulsory field.
courses	Text	Student enters the course for the assignment.
assignment	Text	Student enters brief description about the assignment.

Table 4.1 Start_assign form

4.3.2.3 Assignment Submission

Form Name: **assignment**

Description: The entity contains information on the assignment that student has completed and ready to submit.

Attribute	Type	Description
cId	Text	Enter studentID. Compulsory field.
cName	Text	Enter student name. Compulsory field.
Course_id	Text	Enter course id. Compulsory field
Course_name	Text	Enter course name for the course id.
Ass_no	Num ³	Enter assignment no.
cDescription	Text	Enter in detail about the assignment details.
file_attach	Text	Attachment for the assignment. Optional field.

Table 4.2 Assignment form

4.3.2.4 Discussion

Form Name: **Discussion**

Description: The entity contains only important attributes in the entity.

Attribute	Type	Description
Subject	Text	Users enter subject. Compulsory field.
Author	Text	Name of the author that creates the discussion
Created_date	Date	Date of creation

Table 4.3 Discussion form

4.4 Non-Functional Requirement

This section gives detail overview on the user interface created for Asynchronous Collaborative Information Sharing (**ACIS**). Design is the stage of system development where the requirements for the system are translated into the system characteristics.

ACIS application screen design is presented in the form of database document on the screen. Users' needs, skills level and preferences are the major considerations to be taken in here. Data should be displayed in an organized pattern. **ACIS** is an information sharing application and it is important to ensure that all screen designs must be user-friendly and easy to use.

Despite a set of functional requirements, **ACIS** also includes some non-functional requirements. These requirements are very subjective but are as important as the functional requirements.

4.4.1 User Friendliness

The system is required to have a user-friendly interface because most of the users are students, who are non-technical users and most of them are novice users. **ACIS** should apply the Graphical User Interface (GUI) approach for better visual effect to the user. The usage of suitable and meaningful captions and icons are to help the user to use the system with more confidence.

4.4.2 On-line Help

The system should assist an on-line help to guide the user in using the system. The help module may consist of help contents and how to go about in the screen.

4.5 Summary

From the interfaces shown in this chapter, it is clearly stated that Graphical User Interface is the most suitable design for the ACIS. Not only it is widely used, but also it is the most easiest and user-friendly interface available especially for novice users.

The next chapter discusses on the implementation of **ACIS**.