System Development of FYP Portal

(Registration Module)

By

Yau Qian Heng

A REPORT

SUBMITTED TO

Universiti Tunku Abdul Rahman

in partial fulfillment of the requirements

for the degree of

BACHELOR OF INFORMATION SYSTEMS (HONS)

INFORMATION SYSTEMS ENGINEERING

Faculty of Information and Communication Technology

(Perak Campus)

MAY 2011

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DECLARATION OF ORIGINALITY

I declare that this report entitled "**FINAL YEAR PROJECT PORTAL**" is my own work except as cited in the references. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

Signature　　　: _____

Name　　　　 : _____

Date　　　　 : _____

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I would like to give sincere thanks to the God because of what the God has done for me. The God has given me a lot of strength, love and wisdom during the final year project developing period.

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ABSTRACT

This project is going to develop a computerize system that can ease the process of Final Year Project (FYP) for Faculty of Information and Communication Technology (FICT) in Universiti Tunku Abdul Rahman (UTAR). Current system that used in processing FYP is a manual process which means all processes include compilation, calculation, data filing, data storage and etc are done my human in manual way. Therefore, a system that can reduce human workloads shall be developed in this project. Target users of this system are all academic staffs from FICT include FYP committees, supervisors and moderators and final year students from FICT. Since the target users that involve in this project are from various positions, a Local Area Network Based system does not suitable to develop this project whereas a Web Based system should be developed. For the convenient purpose, a FYP Portal will be developed so that every user can access to this system anytime, anywhere as long as there is internet provided. FYP Portal shall support all the important processes in FYP such as project title registration, grade entry, report to summary necessary information, and etc. A database shall be included in this system in order to store all the data and organize it to ease the process of retrieve. Once FYP Portal is developed and implemented, all processes that related to FYP should be done through this system. All target users should able to use this system through internet.

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LIST OF ABBREVIATIONS

FYP   Final Year Project

UTAR   Universiti Tunku Abdul Rahman

FICT   Faculty of Information and Communication Technology

FGO   Faculty General Office

TUC   Taylor University College

XP   eXtreme Programming

SDLC   System Development Life Cycle

ERD   Entity-Relationship Diagram

UI   User Interface

CHAPTER 1: INTRODUCTION

1.1 DESCRIPTION OF FINAL YEAR PROJECT

Final Year Project (FYP) is often the final required step towards a degree. It also represents the culmination of student learning process. In FYP, students must carry out their previously learned knowledge and personal skills during their years at university. FYP is important for students before joining into their industrial field or continuing with their academic career. Students of Faculty of Information and Communication Technology (FICT) in Universiti Tunku Abdul Rahman must complete their FYP in Year 3 under supervision of FICT academic staff or an external supervisor from the industry. They can choose either to develop an application or to do academic research. For those students who choose to develop application, they will need to come out with an application design and prototype for an application which can be in form of hardware or software or a mix with both hardware and software. On the other hand, students who choose to come out with an academic research will need to investigate a research question. From this project, students should be able to gain more knowledge on documentation such as data collection and report writing. Besides, they will learn the way to develop a work with high quality relevant to both research and industries' needs.

1.2 FINAL YEAR PROJECT WORK PROCESS

Before Year 3 started, academic staffs from FICT will prepare a list of projects' title that may suitable for students to complete as their FYP. They will send their projects' title to FYP committees for verification. FYP committees will verify, compile and publish the full projects list to final year students. Students may choose a project title from the list or propose an idea to any academic staff in FICT.

Students have to make appointment with their selected supervisor for a face-to-face meeting about their ideas. If supervisor agree to undertake the students, both student and supervisor will sign undertaking letter as registration.

After registration is closed, FYP committees will compile the registered students' details and assigned a supervisor to those students who do not register to any academic staff. FYP committees will assign a moderator who responsible to moderate problems between supervisor and student to every student. A moderator must be someone from the related-discipline from FICT and expertise/background is related to the project so that he/she needs to evaluate Oral Presentation and Product Demonstration.

Students are required to meet with their supervisors to discuss about progress and problems encounter in their project at least once per week/biweekly. Students have to submit biweekly report to their supervisor for verification. Biweekly report is used to show the progression of the student's project work. Supervisor may keep a record if needed.

Basically, this FYP project is divided into two parts: Project 1 and Project 2. Students need to complete Project 1 during Year 3 Trimester 1 and Project 2 during Year 3 Trimester 2. Project 1 is more about the documentation for planning and analysis phases and methodology to be used in design phase. Project 2 is focus on design, implementation, testing and evaluation phases includes a final report for this project.

After students have submitted their report for Project 1 and Project 2, supervisors and moderators will mark their reports and submit the result to FYP committees. FYP committees will compile the results and screen through the results for any inconsistency and discrepancies. Both supervisors and moderators may need to justify the result if any inconsistency and discrepancies are found and send the justified result to FYP

committees for re-compilation. FYP committees will hold a meeting for marks confirmation and last compilation will send to Faculty General Office (FGO).

1.3 PROBLEM STATEMENT

FYP committees are manually processing FYP procedures. They are facing troublesome and inconvenient in compilation. For examples, supervisors need to collect all undertaking letters from students in order to make sure every student is undertaken by one by supervisor. A registered students list will be compiled by FYP committees with supervisors' name and projects' title. FYP committees may need to enter each collected data into computer which cost a lot of time to complete. Moreover, they have to check those students who do not register under any supervisor and assign a supervisor to them. This process is complicated. First, FYP committee must check and list out those students who do not register under any supervisors. Then, they need to assign a supervisor whose work loads are allowed to undertake more students. Lastly, assign a suitable supervisor to unregistered students. FYP committees may miss out some unregistered students or assign a supervisor who experts is not aligned with the project title.

Manual documentation caused problems too. Manual documentation that used by FYP committees is neither efficient nor effective. Increasing of manpower, time and space to store documents are needed in manual documentation. Yet, processing speed does not increase. Manual documentation may decrease information accuracy too. Redundancy or incomplete of data may not be noticed in manual documentation.

Many reports are needed in processing FYP subject. Reports of results, registered/unregistered students, project list and etc are needed for FYP committee to make decisions and analysis. It is complicated to produce these reports manually. They may need to gather all information and enter it into computer for simple query in order to create a useful report. Since FYP committees are using manual documentation, incorrect of information may not produce an accurate report.

1.4 TARGET USERS

Everyone who participates in FYP subject will be users for this system. Head of FYP committees will be admin of this system which means that only Head of Department are allowed to make changes on system settings and access to database. Other committees may use to compile data, report printing for analysis, and etc.

Academic staffs from FICT include supervisors and moderators may need to provide information such as project title, marks, etc for FYP committees to process. They can enter data into the system and view report but not to make changes on report.

Year 3 students list that collect from FICT Faculty Office will be convert into database. Each student will be given a login account. Only those students who have an account can use this system to view project title list, registration, submission of biweekly report and etc. Academic staffs and students can view all compiled information but not to edit it.

1.5 OBJECTIVES

Main objective of this project is to develop a computerize system that can increase efficiency and effectiveness of FYP process. A web portal shall be used to implement this system. A web portal can present information from diverse sources in unified way. Data can be collected from all users and automatically compile into more organize way for ease of access. FYP Portal shall able to connect all users in order to provide and sharing information.

Reports generation shall implement in FYP Portal because reports are important for users to make decisions. FYP committees may need reports to decide assignment of moderator to students. Statistic shall include in reports depends on their necessarily. Results of students should show in chart so that users can easily do analysis based on the statistic.

FYP Portal will contribute an ease of access system for users to retrieve information they want. Since FYP Portal is a web based portal, users can access the system anytime, anywhere through internet.

1.6 SCOPE OF WORKS

In order to fulfill the objectives that stated above, a system with some interrelated functional modules should be developed. Each module should include various features such as data entry and retrieve, maintenance and report generation according to their necessary. All these modules have their own unique functions and will be developed separately according to their relationship with other modules and sequences. For examples, Project List Module and Registration Module should come before all other modules because FYP process is began with these two modules. List of modules that will be included are listed with description as below:-

- Module 1: Project List

  This module is used to collect project's titles that propose by supervisors. Supervisor will enter their project's details into system for compilation. Before publish to students, FYP committees will verify and approve those projects which suitable for students to complete. Students may go through the projects' list when final compilation is done. On the order hand, supervisors and FYP committees should able to generate a report of all projects list.

- Module 2: Registration

  Registration module will replace the process of submission of undertaking letters. This can ensure that each student is only undertaken by one supervisor. Students will register themselves in this system and approval will send to their particular supervisor. If approved, student will be officially undertaken by the supervisor. For those students who do not register before due date, FYP committees will assign a supervisor to them through sub-modules 2.1.

  ✓ Module 2.1: Supervisor Assignment

    System will automatically calculate the supervision and moderation workload for every supervisor. FYP Committee is allowed to print the workload report and unregistered student report. Therefore, FYP Committee can assign a supervisor to those students who do not undersigned by any supervisors. After supervisor assignment, unregistered

student must submit their project title through the system their assigned supervisor.

✓ Module 2.2: Moderator Assignment

Every student will be assigned a moderator who is expert in the field which related to their projects. Assignment of Moderator shall be done under consideration of academic staffs' workloads. FYP committees shall able to read information such workloads and expertise in this module for ease of assignment.

- Module 3: Grade Entry

Students' reports, presentation and system implementation will be graded by supervisors and moderators. After submission of final reports, supervisors and moderators will evaluate the reports and award a grade to every student. System will compile the grades and generate a report according to it necessary. Any discrepancy in the two grades that given by supervisor and moderator shall be detected by system and should alert to FYP committees and supervisors or highlighted in the report.

- Module 4: Report Generation

As mention before, report generation is very important for information summarization. Report will help users in decision making and analysis. For example, FYP committees may need reports for marks adjustment. By query from database according to requirements and organize in clearer view format, FYP committees able to point out any discrepancy and make adjustment as needed. Supervisor, moderator and students may need report for overview of information they want such as project list, student list and etc. They are only allowed to generate the report but to make any changes such as arrangement of field columns. Only FYP committees are allowed to make changes on report.

- Module 5: Maintenance

  For the flexibility issue, all settings and information in FYP Portal should be able to change if required. Besides flexibility, security issue shall be emphasized too. Different authority shall give to different users in order to avoid any unnecessarily changes that can affect the accuracy of data and performance of the system. For example, Head of FYP Committees should have the database access authority so that he/she can make changes when needed whereas other users have only the authority to make changes on their own account. Flexibility issue shall come after security issue to avoid any illegal entry.

CHAPTER 2: LITERATURE REVIEW

Before system development started, research and study on various aspects are needed. For example, study on the users' requirements gathering techniques can ensure clear and detail requirements are gathered. Besides, tools and techniques need to be studied too. Better understanding on available choices of tools and techniques are important to make the best decision for tools and techniques to be used. Here are studies and researches that have been done:-

2.1 COMPARISON OF EXISTING EDUCATIONAL PORTAL

FYP Portal is portal which will be implemented in educational field. Therefore, portal of two universities which are Taylor University College (TUC) and Universiti Tunku Abdul Rahman (UTAR) are chosen for further study. Both universities' portal have their own design and features. First impressions of both universities' portal is TUC had put more affords in designing the interface compare to UTAR portal.

2.1.1 Comparison on interface design

TUC's portal is designed with brighter color which is orange by default but UTAR's portal is design with darker blue. Obviously, TUC's portal is more attractive. Moreover, color of interface for TUC's portal can be customized but UTAR's portal does not have this feature. TUC's portal has used some images and icons to increase their portal attractiveness but UTAR's portal is full with texts. Although icons and images that used in TUC's portal are simple and easy to understand. Compare to UTAR's portal, portal with icons are more user friendly and easier to catch attention from users.

Layouts that used in both portals are different too. Layout that used in TUC's portal is Layout A which divides contents into 3 columns and UTAR's portal is using layout B which only divides the contents into 2 columns. As we can see, layout B is simpler compare to layout A which means design of UTAR's portal is simpler. Users of UTAR's portal can easily go through all the menus which are located at the top of the page and submenu at the left hand side of the page. Contents are located at the center of the page that can easily catch users' attention. In TUC's portal, contents are divided into

2 columns which cause the portal looks messy and difficult to search for information. Sometimes, users may miss out some of the information.

Layout A   Layout B
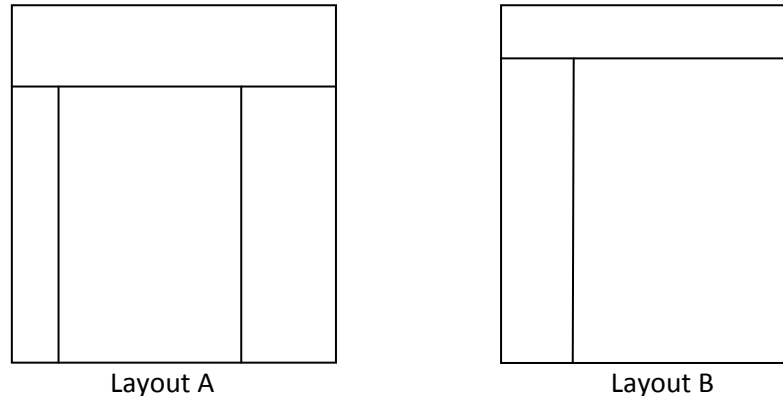
Figure 2.1 Layouts for 2 portal websites

2.1.2 Comparison of available features

Next, we are going to compare the available features that integrated in both portals. There are many features that available in TUC's portal but not in UTAR's portal. First, TUC have provided short cut key features to their students but UTAR did not. In TUC's portal, users can add their favorite's links into the short cut key features. After added in, users can access their favorite's link through the short cut page. Users are able to remove the links from short cut key if necessary. UTAR's portal did not provide this feature. Therefore, their students need click the links from level 1 to level n in order to get the links in level n. Luckily UTAR's portal did not design their links in many levels.

Secondly, TUC's portal has search feature which UTAR's portal does not have. In TUC's portal, users are allowed to search the posted attachments with keywords. All attachments that related to the keywords will be shown as results. Weakness of this feature in TUC's portal is that it only allows searching the contents in attachment which is not much useful. Although UTAR's portal does not have this features, simplicity of UTAR's portal design has ease users to search information by themselves.

Thirdly, TUC's portal has labeled their announcement with "new" for the latest announcement. In the other hand, UTAR's portal only labels their announcement with date which may cause users to miss some important announcements. Announcements that only label with dates may not attract users' attention. Therefore, labeling the announcements with some words such as new, updated, etc are needed to get users

attention. TUC's portal has done a good job in designing this feature. Moreover, TUC's portal has group announcements into few categories such as general announcements, programs announcements and other announcements. UTAR's portal has put general announcements and programs announcement under same category and co-curriculum announcements under another category. Since most announcements are related to general and programs issues, announcements list in UTAR's portal are long and messy.

2.1.3 Outcome of existing systems comparisons

	Taylor University College	**Universiti Tunku Abdul Rahman**
Interface Design	• Brighter colors are used. • Icons are used to replace text • Too many columns and complex.	• Dark colors are used. • Full text without any images and icons • Design is keep simple.
Features	• Short cut keys are provided and can be customized. • Have search function but limited to attachments only • Labeling for announcements are easier to catch users' attention • Announcements are group into according to its purpose	• Do not have any quick links or short cut keys • Do not have search function • Labeling with date are difficult to catch users' attention • All announcements are put together

Table 2.1 Comparisons of TUC's portal and UTAR's portal

From the comparisons, we can conclude that TUC's portal has better design and features than UTAR's portal. Interface design of TUC's portal which with brighter color and icons is more attractive compare to UTAR's portal. But its design is too complex compare to UTAR's portal. Therefore, we should learn and implement the design of TUC's portal but keep it simple as UTAR's portal. Features that provided in TUC's portal can also be considered to add into FYP Portal.

Figure 2.2 Screen shot of TUC's portal

Figure 2.3 Screen shot of UTAR's portal

2.2 STUDY ON USER REQUIREMENTS GATHERING TECHNIQUES

According to Sommerville (2007), user requirements are statements, in a natural language plus diagram, of what services the system is expected to provide and constraints under which it must operate. User requirements gathering techniques are to collect and gather expectation or needs of users in order to develop a system that can fulfill users' needs. There are a lot of techniques that can be used to collect users' requirements such as interviews, questionnaires, on-site workflow observation, documents reading, survey, etc. Some techniques which may suitable for this project have been chose to be discussed such as interviews, documents reading and questionnaires.

2.2.1 Interviews

An interview is a conversation with stakeholders to elicit or validate needs and requirements (PMO Office, 2004) and it is the most commonly used requirements gathering technique. Interview sessions that involve users in system development phase are invaluable. Opinions and preferences from users help developers to shape and understand the process workflow (O'Brien, 2003). There are several steps to be followed in interview process.

2.2.1.1 Steps to perform interview

Step 1: Selecting Interviewees

Create an interview schedule to list all the people who will be involved in interview sessions, time and purpose. The project sponsor and key users must be interviewed in order to collect the most important information.

Step 2: Designing Interview Question

There are three types of interview questions can be design: closed-ended questions, open-ended questions and probing questions. Closed ended questions are those that require a specific answer such as multiple choices. Open-ended questions are those needs to elaboration by interviewee with rich information. Probing questions follow up on what has just been discussed in order to learn more, and they often are used when the interviewer is unclear about an interviewee's answer. Combinations always been used in interview sessions.

Usually, the interview process is begun with open-ended questions since developers are unclear with the workflow process.

Step 3: Preparing for the Interview

Interviewer should prepare a general interview plan which listing the questions to be asked in the appropriate order. Interviewees shall be prepared too. Time, venue, areas will be discussed and etc shall be informed to interviewees.

Step 4: Conducting the Interview

Before interview started, interviewer should build rapport with interviewees so that they thrust the interviewer and are willing to tell the whole truth. During the interview, interviewer shall carefully record all the information that the interviewee provides. Interview can choose to take notes or tape-record with approval by the organization. Before interview ended, interviewees should have chance to ask questions or provide more information if needed.

Step 5: Post interview Follow-up

Prepare an interview report soon after interview. Interview report should contain interview notes, information that was collected and summarize in useful format.

2.2.1.2 Advantages and disadvantages of interview

Next, advantages and disadvantages of interview technique will be discussed for clearer view of this technique. Both advantages and disadvantages are collected from article of PMO Office (2004) and shown in the table below. From the table, we could conclude that interview technique is suitable for project that involve small group of stakeholders.

Advantages	Disadvantages
Easier to prepare	Difficult to analysis because of conflicts and inconsistent between stakeholder information
Suitable to individuals and small groups interview session. It needs less planning and stakeholder commitment.	Not suitable for large projects that involve many stakeholders. It is time consuming and inefficient to plan.
Provide an opportunity to explore or clarify topics in more details.	Information that provided by interviewees may contain their own opinions which may cause inaccurate.

Table 2.2 Advantages and disadvantages of interview technique

2.2.2 Questionnaire

According to Dennis, Wixom and Tegarden (2010), questionnaire is a set of written questions used to obtain information from individuals. Questionnaire is more suitable to gather information and opinions from large number of people. Questionnaire is usually used outside the organization. For example, in this project, questionnaire is more suitable to gather information from students rather than FYP committees. Evolution of technology has brought questionnaire to more convenient way of distribution. As other techniques, there are several steps to follow when performing questionnaire.

2.2.2.1 Steps to perform questionnaire

Step 1: Selecting Participate

Identify the individuals to whom the questionnaire will be sent. Select only a sample or subset of people who are representative of an entire group but not the all people from the group. For example, we should choose only 20 to 30 students from every course.

Step 2: Designing a Questionnaire

Develop questions for questionnaire is more critical compare to questions for interview. Questions on questionnaires must be very clearly written and leave little room for misunderstanding (Dennis et al., 2010). Therefore, closed-ended questions should be used to design questions for questionnaire.

Step 3: Administering the Questionnaire

Task to be done in this step is to getting participants to complete the questionnaire and sent it back. Here are several techniques that can be used to improve the response rate (Dennis et al., 2010):

- Clearly explain why the questionnaire is being conducted and why respondent has been selected
- State a date to return the questionnaire
- Offer an inducement to complete the questionnaire

Step 4: Questionnaire Follow-up

Process the returned questionnaires and develop a questionnaire report after questionnaire session is closed so that analysis process can be completed on time.

2.2.2.2 Advantages and disadvantages of questionnaire

Based on the article from PMO Office (2004), advantages and disadvantages of questionnaire have been collected and shown in table below. We can conclude that questionnaire is excellent to gather statistical and precise information from large number of participants but designing of questionnaires is critical and time consuming.

Advantages	Disadvantages
Can reach a large number of participants	Response level is often low especially to large surveys.
Excellent tool to gather a significant amount of focused data in a short period of time.	Difficult to design questionnaires.
Provide good results when used to validate assumptions.	Responses are usually limited to the realm of the questions asked, which reflect the analyst's preconceived ideas or assumptions of the survey designer.
A tool to gather statistical preference data	Difficult to analysis because of conflicts and inconsistencies of gathered information.
Little scheduling effort is needed	Time consuming to develop questionnaires
Require little participants commitment of time and effort	

Table 2.3 Advantages and disadvantages of questionnaire

2.2.3 Document analysis

In order to understand the current system, developers can choose to study documents that produced by developers of current system and updated by all subsequent projects. By reviewing the documents and examining the system, developers are able to analysis the strengths and weaknesses of current system. There are many other documents that developers can refer to such as paper reports, memorandums, policy manual, user-training manuals, organization charts, forms, and users interface with existing system (Dennis et al., 2010). By reading all the available documents, development team should able to gain fundamentals understanding of process work flow for the particular organization.

Document review and analysis is not sufficient to gather requirements but it able to build a fundamental understanding of process work flow. Therefore, other requirements gathering techniques must be included for more details.

2.2.4 Outcome of study on requirements gathering techniques

After few study of requirements gathering techniques, decision of using interview and analyze of available documents as users' requirements gathering techniques that will be implement in this project has made. Interview can be used to gather users' expectation, needs and requirements. Documents analysis is able to help developers in understanding of FYP work flow. Therefore, combination of both techniques is able to gather complete users requirements. On the other hand, questionnaire that may include a lot of students from FICT may not provide the accurate requirements from students. Moreover, the main target users of this system are FYP committees. Therefore, questionnaire does not implement in requirements gathering for this project. Requirements specification will be discuss in details in Chapter 3.

2.3 STUDY ON SYSTEM DEVELOPMENT METHODOLOGY

In system development, there are a series of activities need to be completed during the system development which known as system development life cycle (SDLC). SDLC is a common methodology for system development in many organizations, featuring several phases that mark the progress of the systems analysis and design effort (Hoffer, George, & Valacich, J.S.,1999). It contains four fundamentals phases: planning, analysis, design, and implementation. According to Dennis et al. (2010), different projects may emphasize different parts of the SDLC or approach the SDLC phases in different ways, but all projects have elements of these four phases. Therefore, studies of few system development methodologies are needed before implement the most suitable methodology. In this chapter, 3 methodologies will be studied: waterfall development, prototyping and Extreme Programming.

2.3.1 Waterfall development
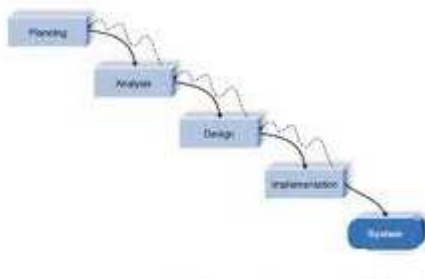
Figure 2.4 Waterfall development

Waterfall development is a traditional system development life cycle approach that still used today. In waterfall approach, users and developers proceed in sequence from one phase to another. In order to proceed to next phase, developers are required to present the key deliverables to project sponsor for approval. When a new phased started, it is difficult to go back to the previous phase. Therefore, requirements are hardly to change. Due to the characteristic of this approach, it has brought both advantages and disadvantages to system development activities. Table 2.4 is shown its advantages and disadvantages.

Advantages	Disadvantages
Clear requirements are identified before programming begins.	Design must be completed before implementation stage.
Minimize changes to requirements as the project proceeds.	Cost a lot if changes are required because it is difficult to change.
Complete and detail documentation.	Long time elapses between the completion of the system proposal and the delivery of the system.
	Little of users' involvement.

Table 2.4 Advantages and disadvantages of waterfall

Step-by-step approach of waterfall development is benefit to system development to gain a clear understanding and requirements of a particular project. Developers are easier to design and program the system with the clear understanding and requirements. Good documentation that produced during the waterfall development is important to develop a consistent system within a team. Besides, it can ease the works of other development teams to take over the system. Inflexibility of waterfall development has caused the difficulty of making changes. Cost will be increased if changes are required especially after the implementation phase. Users are only allowed to involve in planning and implementation phase which include requirements determination and testing activities. Therefore, developers may not know the changes of users' requirements since there is long time elapses between completion of system proposal and delivery of system.

2.3.2 Prototyping
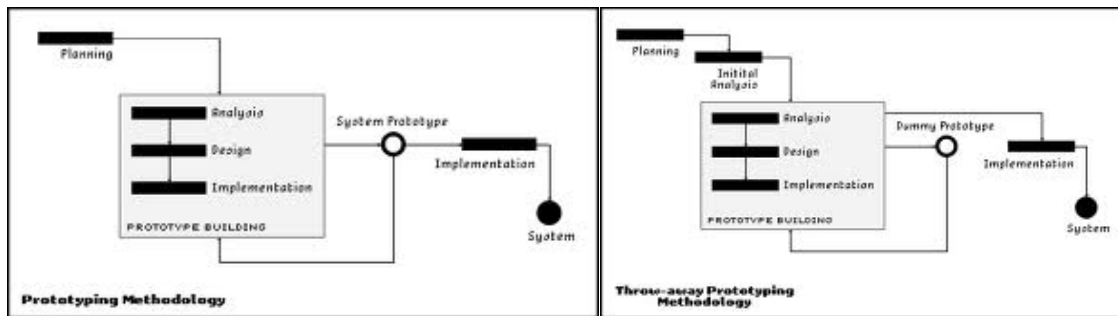
Figure 2.5 Prototyping (left) and throwaway prototyping (right)

There are two different prototyping methods: system prototyping and throwaway prototyping (also known as design prototyping). System prototyping is to design and build a scaled down but functional version of a desired system (Hoffer et al, 1999). Prototyping is developed begin with first part of the system and show to the users and project sponsor after first prototype is completed. Users and project sponsor will provide their feedback after review. Developers will make changes on the prototype according to their feedback. This iterative process will continue until users are satisfied with what they have seen and now the final prototype is ready to implement.

Throwaway prototyping is different from system prototyping. Methodology with throwaway-prototyping approach will go through analysis phase in details in order to gather information and develop ideas for the system concept. Prototype will only be developed if users are doubt with the features that suggested. Throwaway prototype is not a functional system. It contains only enough details that able to clear users' doubt. Once users are understood, developers will move to next phases, design and implementation. The prototype will be threw away after moved to next phase.

Although prototyping is good to determined the requirements, it has some negative effect of the system development activities. Next, advantages and disadvantages for both types of prototyping will be discussed and shown in Table 2.5.

Advantages	Disadvantages
Clear understandings between users and developers.	Quality problems occur due to rapid pace of development.
Accurate specifications are created based on the prototype.	Other requirements such as reliability and maintainability cannot be tested adequately using a prototype.
Evaluation on a functional model is easier than a paper specification.	Prototype is difficult to manage in complex system.
Prototype can use to develop testing and training procedures.	
Reduces the financial risks if a finished system fails to fulfill users' requirements	

Table 2.5 Advantages and disadvantages of prototyping

Prototype is a low quality of functional system so it cannot be implemented as a real system that ready for users to use. As conclusion, prototype is suitable to gain better understandings and ready to produce better documentation but not suitable for implementation. With prototyping, users are guaranteed to have a useable system that fulfilled their requirements.

2.3.3 Extreme Programming

Extreme Programming (XP) is one of the agile development methodologies. According to Dennis et al. (2010), three principles that used in XP are continuous testing, simple coding performed by pairs of developers, and close interactions with end users to build system very quickly. XP is start with brief users' requirements gathering. Then, programmers will perform analysis, design and implement phase iteratively until users' are satisfied with the features and design of the system. High involvements of users are needed during the development because users should be ready to answer developers' questions.

XP approach is not suitable for large project that have complicated work processes and need to be completed by more programmers. It does not produce a lot of documentation which may useful to other development team when upgrading the system. Therefore, this approach may not suitable for this project because documentations are important for improvements if necessary. Although it is not suitable, XP has it advantage to deliver the system in shorter time compare to other methodologies. This advantage should be considered to implement in this project. Advantages and disadvantages are shown in the Table 2.6.

Advantages	Disadvantages
Suitable only for small project.	Lack of analysis and design documentation.
System can be delivered in shorter time.	Not suitable for critical system.

Table 2.6 Advantages and disadvantages of Extreme Programming

2.3.4 Outcomes of study on system development methodology

With the considering from all aspects such as project size, delivery time, documentations, and etc, we choose to develop FYP Portal using waterfall development with support of prototyping approach. A prototype of system can use to ensure users' requirements are fulfilled before implementation. Changes can be made through the prototype before implementation phase. This can overcome the inflexibility of waterfall that may not fulfill the requirements of users at the end of the system development cycle after implementation. The chosen of methodologies will be discussed in details in Chapter 4.

2.4 CRYSTAL REPORT

As mention before, report is important and significant to every user especially to FYP committees because they need report for decision making. Report is an organize information that allow users to easily access and share information in database among themselves. A tool that enables the presentation of stored data sources is needed to generated report (Deitel, Deitel & Nieto, 2002) and Crystal Reports is the best choice.

Crystal Reports was first released in 1992 as a Window-Based report writer, and Microsoft adopted the reporting software as the standard for Visual Basic in 1993 (Deitel, et al., 2002). Now, Microsoft Visual Studio has bundle a Crystal Reports as a general purpose reporting tool. Since Visual Studio .NET has supports multiple languages, Crystal Reports is support Unicode too. Crystal Reports in Visual Studio .NET has maintained it powerfulness that will be discuss in details.

Data connection and report layout can be design in Crystal Reports. Flexibility of Crystal Reports allows users to connect from several data sources such as database (Microsoft Access, Microsoft SQL Server, MySQL, Oracle, etc), spreadsheets (Microsoft Excel), ODBC, JDBC or OLAP (McAmis, 2002). Flexibility of Crystal Reports has eased the development of database. Developers are allowed to use any language that they are familiar to.

Crystal Report 10 offers support for .NET APIs as well as JAVA (Dragan, R.V., 2004). It is a good news for developers and organizations that running both platforms. Features in Visual Studio .NET Crystal Reports allows developers and database administrator to control the processing and distribution of reports. They can set permissions by users and groups, coordinate job processing and tune performance (Dragan, R.V., 2004). Reports that created can be viewed in different formats such as Microsoft Word, Adobe's Portable Document Format (PDF), Hypertext Markup Language (HTML) and others so that information can be distributed easily and used in wide variety of documentation (Deitel, et al., 2002).

Most of the available features that provided in Crystal Report can ease the development tasks. Developers have more flexibility when designing the database that can use for report generating. Crystal Reports is the best choice of tools for generating reports since it has many features and has been bundled in Visual Studio .NET.

CHAPTER 3: REQUIREMENTS SPECIFICATIONS

3.1 REQUIREMENTS GATHERING

As mention in Chapter 2, requirements gathering techniques that have been chosen are interview and document analysis. Both techniques are studied and chosen under considering of situations for this project. In this chapter, outcomes and analysis of gathered requirements will be discussed.

First interview with user who is a FYP Committee was hold. Firstly, an introduction to FYP process was explained. Then, problems and expectations were informed. At the end of interview, a FYP booklet was given for references. After the first interview, information was gathered and analyzed. Outcomes for the first interview are understanding of FYP workflow, definition of objective and problem statements and target of users.

The given FYP booklet was gone through in details. Every single task that perform by different users such as supervisors, moderators, students and FYP committees are explain clearly in this booklet. Most of the activities that included in FYP process can be found in the booklet with explanation. With all information gathered in first interview and analysis of FYP booklet, functionality that should include in the system could be defined. All functionalities were group into different modules based on their similarity and dependency.

Second interview with FYP Committee was hold for modules verification. Modules that have been defined are showed to FYP Committee. FYP Committee has provided her feedback and more modules were added to support the system. After the interview, changes are made according to feedback from FYP Committee. Outcome of this interview is a completed modules definition.

In order to ensure users' requirements are fulfilled, more interview sessions with FYP Committees should be hold. Design, prototype, etc of system shall show to users for verification before implementation. Interview is the best way to communicate with users and to make sure system is built as users required.

Chapter 3: Requirement Specifications

3.2 SYSTEM REQUIREMENTS

Users' requirements that gathered need to be analyze and group into the module accordingly. By considering the feasibility, users' requirements that manage to complete will gather into system requirements as below.

1.0 Registration Module

1.1 Students register a project under a supervisor

System should able to prompt data entered by students. System should automatically validate data that entered by users. Each student are only allowed to register for once, system should able to track for duplicate registration. System should not allow registration after due date. System should pass the registration to the particular supervisor for verification.

1.2 Supervisor verify the registration

System should show the students registration to the particular supervisor. Supervisor should be allowed to verify and approve or reject the request from students. System should able to prompt supervisor's choice and send the feedback of supervisor to the particular student. System should able to keep track workloads of supervisor. If supervisor's workloads are overloaded, system should not allow supervisors to approve any registration.

1.3 FYP committees

1.3.1   Assign supervisor to unregistered students

FYP committees should able to print unregistered student report and supervisor workload report so that they can assign supervisor to those unregistered student.

1.3.2   Assign moderator to every registered students

System should able to match the expertise of moderator and project related field. FYP committees should able to choose a moderator from the match list and assigned to student if

and only if the moderator has lighter workloads. System should able to send information of assignment of moderator to both student and moderator.

1.4 Report Listing

System should allow all users to view and print the report of registered students, assigned supervisors and moderators. System should able to filter the results according to users' needs.

2.0 Maintenance

2.1 FYP Committee

2.1.1 Import list

System should allow FYP Committee to import student list, room available list, etc which collected from FGO into system. System should able to read Excel file and automatically convert into database system.

2.1.2 Add or edit area of expertise

System should give the authorization to FYP Committee to make changes on area of expertise. They should be allowed to add or edit any the area of expertise but not to delete the existing area of expertise.

2.1.3 Change marks criteria

System should allow FYP Committee to change the calculation for marks allocation.

2.1.4 Set due date for project milestone

System should be able prompt due date for milestone from FYP Committee and keep track on it.

2.1.5   Change personal details

System should able to restrict authorization of FYP Committee from making unnecessary changes. FYP Committee should only be allowed to make changes on their own profile and account but not for others.

2.2 Supervisor

System should able to restrict authorization of supervisor from making unnecessary changes except to add or edit the area of expertise. Supervisor is also allowed to make changes on their own profile and account.

2.3 Student

System should able to restrict authorization of student from making unnecessary changes. Student should only be allowed to make changes on their own profile and account.

CHAPTER 4: METHODOLOGY APPLICATION

A suitable methodology for this FYP Portal development can ensure the successfulness of this system. Methodology provides step by step guidelines to complete the system. In this chapter, decision on which methodology should be used and how to apply the methodology in FYP Portal development will be discussed.

4.1 METHODOLOGY CHOSEN

In order to develop FYP Portal successfully, 2 methodologies will be chosen which are waterfall development and prototyping. Waterfall will be used as the main methodology to develop the system and prototype will be used to support implementation phase. Critical issue of waterfall development that always been discussed which is the developed system may not fulfill users' requirements. This is because users' requirements may change during the system development. Therefore, waterfall development that does not review users' requirements from time to time may not realize the changes.

Users should have the rights to review the system before implemented into their environment. A prototype can be developed for this review session but waterfall development does not support this feature. Therefore, prototyping is needed to overcome the flaw of waterfall development. Prototype will be developed during the implementation phase before deploy to users environment and show it to users for feedback. Changes will be made according to users' feedback.

Waterfall development with the virtue of consistency and completeness of documentation are the main reasons why it has been chosen as the main methodology in this system development. Step-by-step approach of waterfall development has provides clear guidelines to developers to develop a complete functional system. Moreover, completeness of documentations that produce in waterfall development can help further upgrading tasks and study of this system.

Next session of this chapter will discuss about how waterfall development and prototyping been applied in FYP Portal development. Every phase of system development life cycle will be discussed in detail.

4.2 APPLICATION OF CHOSEN METHODOLOGY

Each phase of System Development Life Cycle (SDLC) will be included in this session of discussion. There are 4 phases: planning, analysis, design and implementation. Discussion will proceed according to waterfall development sequence.

4.2.1 Phase I: Planning

Main tasks:

- o Requirements gathering
- o Define problem statement, objective and project scope
- o Feasibility study
- o Define modules to be included
- o Develop Gantt chart

Every system development is started with planning. Planning is important to define the worthiness of developing this system. First, an interview session should be hold between project sponsor and developers. Gather all requirements from project sponsor as well as users. With the understanding of requirements, developers are able to define the problem statement, objective and project scope of the system that going to develop.

Next, developers need to study the feasibility of the system in order to decide whether it is worthwhile to proceed further. Four feasibilities need to be considered: operational feasibility, technical feasibility, economic feasibility and schedule feasibility. If the system is not worthy to proceed, developers will inform the project sponsor and terminate the project. Else, the project will continue to next task in planning phase.

After developers decided to build the system, they will review and verify the users' requirements again. Second review and verification help developers to understand better of users' requirements and determines processes to be included. All determined processes will be group into few modules according to their dependencies. Show the define modules to project sponsor and make changes if needed. Last task to be completed before proceed to next phase is to develop a Gantt chart. Gantt chart is a horizontal bar chart that

illustrates a system development schedule (Shelly, et al, 2008). All processes need to be included in Gantt chart.

4.2.2 Phase II: Analysis

Main tasks:

- o Analyze users' requirements
- o Produce users' requirements document
- o Develop use case diagram
- o Develop class diagram

After users' requirements are defined, system development will continue to analysis phase. Analyze gathered users' requirements will be the first step in analysis phase. Second interview may need to be held for further study of users' requirements. Any questions about the requirements may rise during the interview to clear developers' doubt. Final users' requirements should be determined and documented in this phase.

Next, a use case diagram needs to be developed to show the steps that represent the processes of FYP. This can make sure that developers are fully understood FYP works flow and users' requirements. Use case that developed should able to illustrate the activities performed by the users of the system (Dennis et al., 2010). Completed use case diagram should present to project sponsor and users for verification.

Beside use case diagram, class diagram that shows system's class, their attributes, methods, and relationships between classes shall develop in this phase too. Class diagram shall develop based on users' requirements document and use case diagram. Class diagram is a logical model which evolves into a physical model and finally become a functioning system (Shelly et al., 2008). Therefore, it may not necessary to show to project sponsor or users as it contain more about system development elements that they may not understand.

After both users' and system's requirements are clearly defined, system development can proceed to next phase which is design phase. Document of users' requirements, use case diagram and class diagram should be completed and ready for references in design phase.

4.2.3 Phase III: Design

Main tasks:

- o Develop design for report
- o Develop design for database
- o Develop design for user interface
- o Develop a system test plan

According to waterfall development, design of system must be completed before implementation. Therefore, design of user interface, database, and report must be determined before continue to implementation phase. All designs can be started simultaneously if necessary since they are not interrelated. But due to the limitation of workforce, each design should develop separately.

Design phase should start with the simplest module which is report. Report should be attractive and easy to understand. Therefore, information that printed in report should not overflow or deficient. Users are the most important to determine the usefulness of report so they must be included in activity of report design. A report layout should be draw based on users needs.

Next, develop database design which started with Entity-Relationship Diagrams (ERD) creation. By referring to the class diagrams that produce in analysis phase, system entities need to be identified and add into ERD. Then, verify all data elements that need to be included and assign it according to their entity in ERD. Primary key, foreign key, candidate key, etc must be assigned to each entity according to their dependencies. Lastly, create a third normal form (3NF) designs for all tables to ensure that nonkey field data are fully depends on its primary key. These 3 steps must be completed before the database is created.

User interface design shall be design after database design is completed. A user interface (UI) describes how users interact with the computer system (include hardware, software, screens, menus, functions, output, and features) (Shelly et al, 2008). Therefore, a user-centered interface should be designed. Developers must learn to think like a user and design the interface from user's aspect. There are few principles that recommended by Shelly et al (2008) in UI design:

- ✓ Understand the work processes and objective of the system.
- ✓ Maximize graphical effectives to increase the users friendly (as the Taylor's University College Portal).
- ✓ Understand the experience, knowledge, and skills levels of users in using computer system
- ✓ Use prototyping (prototype will be developed in implementation phase). Storyboards and sketches will be used as first draft and show to users for approval.
- ✓ Design a comprehensive interface that includes all tasks, commands, and communication between users and the system.
- ✓ With the prototype in implementation phase, design may change according to users' feedback.
- ✓ Document all user-approved sketches and storyboards that related to interface design.

A system test plan should be developed in this phase too. A test plan consists of detailed procedures that specify how and when the testing will be preformed, who will participate, and what test data will be used (Shelly et al, 2008). Scenarios may be included if necessary. This test plan will be used after the prototype of the system is developed.

4.2.4 Phase IV: Implementation

Main tasks:

- o Implement the database
- o Develop prototype for FYP Portal
- o Testing
- o Deploy FYP Portal into server
- o Documentations

Implementation is the most critical and complicated phase in SDLC. Therefore, every step and process must be completed prudently. First step, create a database based

on the database design that produced in design phase. Database will be created using oracle and implement into Visual Studio.NET.
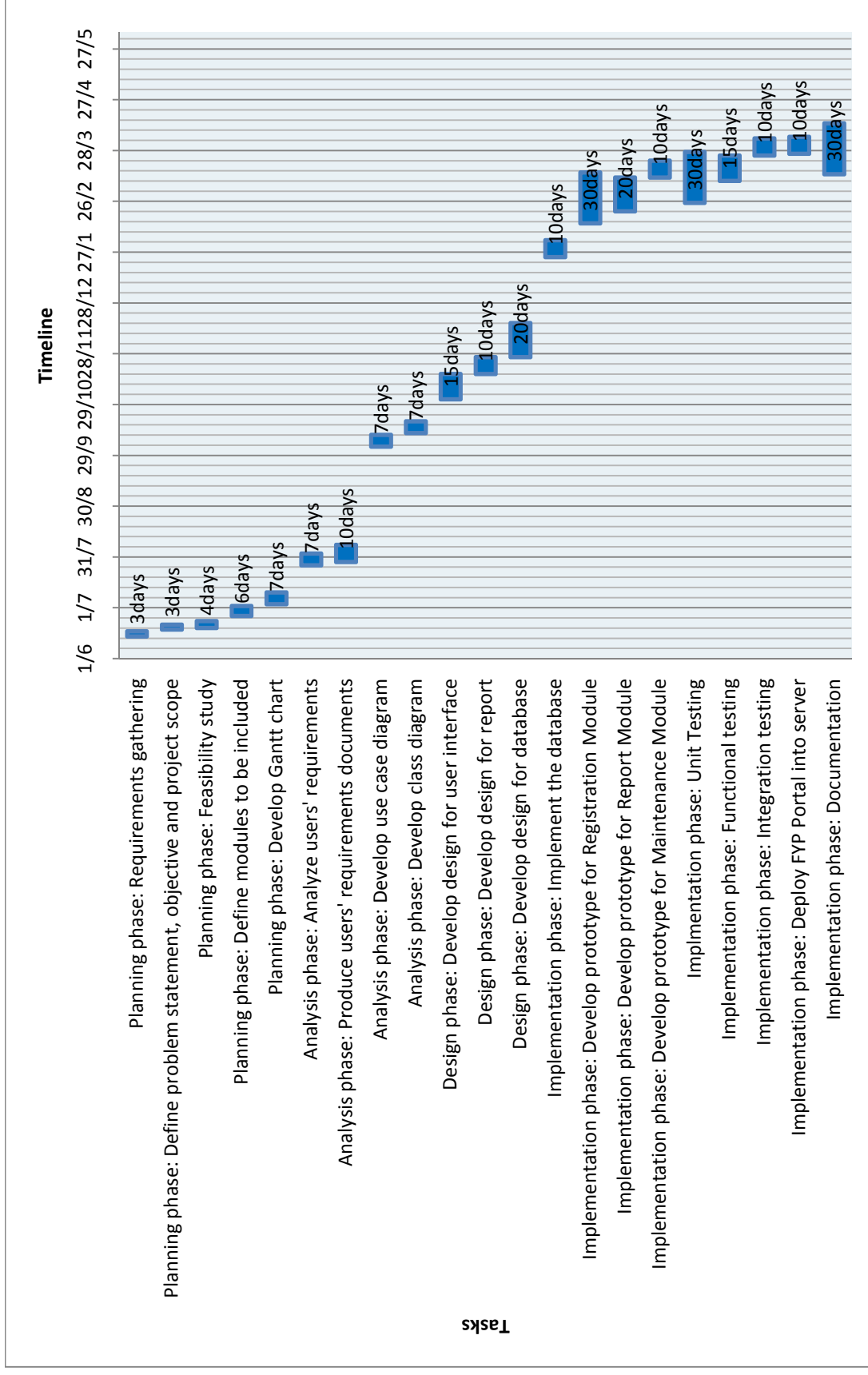
After database is created, prototype of FYP Portal will be developed. Prototype is developed according to the interface design and requirements that have been define in previous phase. Prototype will be built follow by the modules dependency. Modules that do not depend on other modules will be developed first. For example, Project List Module which does not depend on other modules should be developed first and Grade Entry Module that may need data of students, supervisor and project may develop later. Every completed and tested prototype will be shown to users for feedback. Changes in interface, features, functionality and requirements are allowed. Developers will edit the prototype according to users' feedback. This iterative process will continue until users are satisfied with the prototype. Continue on prototyping for next module when users are satisfied.

Unit testing shall be performed to every developed prototype before shows to users for verification. Objective of unit testing is to identify and eliminate execution errors that could cause the program to terminate abnormally, and logic errors that could have been missed during desk checking. After all prototypes are developed, tested and approved by users, integration testing shall be performed on two or modules which are depend on each others. This can make sure than the modules can work together properly. After completing integration testing, system testing that involves the entire system must be performed. System test plan that created during the design phase can be used in system testing. During this system test, users enter data, including samples of actual, or live, data, perform queries, and produce reports to simulate actual operating conditions. Scenarios testing may be performed if scenarios are provided. Successful completion of system testing and approved by project sponsor will lead to deployment of whole system into server. Connection of server will be tested too.

At the end of SDLC, all documents that related to this system development need to be documented. Documentation is essential for successful system operation and maintenance. It may help admin in modifying the system and help users to operate the system.

Chapter 4: Methodology Application

4.3 GANTT CHART

Timeline

Tasks	
Planning phase: Requirements gathering	3days
Planning phase: Define problem statement, objective and project scope	3days
Planning phase: Feasibility study	4days
Planning phase: Define modules to be included	6days
Planning phase: Develop Gantt chart	7days
Analysis phase: Analyze users' requirements	7days
Analysis phase: Produce users' requirements documents	10days
Analysis phase: Develop use case diagram	7days
Analysis phase: Develop class diagram	7days
Design phase: Develop design for user interface	15days
Design phase: Develop design for report	10days
Design phase: Develop design for database	20days
Implementation phase: Implement the database	10days
Implementation phase: Develop prototype for Registration Module	30days
Implementation phase: Develop prototype for Report Module	20days
Implementation phase: Develop prototype for Maintenance Module	10days
Implmentation phase: Unit Testing	30days
Implementation phase: Functional testing	15days
Implementation phase: Integration testing	10days
Implementation phase: Deploy FYP Portal into server	10days
Implementation phase: Documentation	30days

Timeline axis: 1/6 1/7 31/7 30/8 29/9 29/10 28/11 28/12 27/1 26/2 28/3 27/4 27/5

CHAPTER 5: INTERFACE DESIGN AND SYSTEM DESIGN

In order to design a successful program, interface design of the program must be designed carefully so that it meets users' expectation and it is suitable to users' skills and experience. Beside interface design, data flow design (DFD) is important in the design phase especially to FYP Portal which includes large amount of data processing.

5.1 INTERFACE DESIGN

Most of the users of FYP Portal are students and staffs from Faculty of Information and Communication Technology (FICT). Therefore, interface design for FYP Portal must suitable to these groups of people. For them, FYP Portal is a media to share their information and complete FYP process through an easier way. Therefore, attractive but fancy design is not suitable for FYP Portal. While simple and comfortable design is preferred to ease the process and faster the processing.

Template of FYP Portal will group into 3 main parts: header, navigation and main content so that its simplicity is kept. Navigation menu which located on the left hand side on the webpage will allow users to navigate to other pages anytime when needed. Without using too much level of navigations, users can easily find their way to complete their task. Therefore, maximum of level for the navigation menu will be set to 3 levels.

Since this is an application website for FICT staffs and students, so design based on the FICT official website will benefits to users because of familiarity. Main colour that used in the official website is orange, therefore, FYP Portal will be coloured in orange too but a lighter orange will be used so that users will feel warm and comfortable. Figure 5.1 is the design template for FYP Portal.
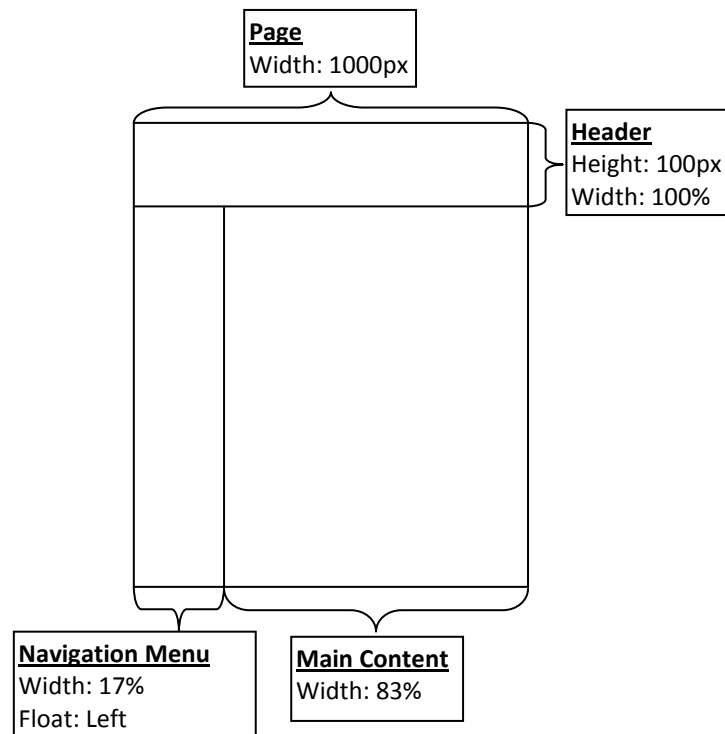
Figure 5.1 Master Page Template

As a data processing system, FYP Portal needs different types of form in order to get accurate data from users and some reports to summary data in a proper format. In Registration Module, students need a form during the registration. This form must catch and validate all the information needed such as project title, objectives, innovatives, deliverables, area related, supervisor and etc. Users must fill in all the required data else they are not allowed to proceed and records will not be save into database so that integrity of data is ensured. In order to keep the data accuracy and minimize the error that may caused by users, field that required users input should be cut off and replace with drop down list or check boxes. In registration form, drop down list will be used for supervisor selection and check boxes for related area selection. On the other hand, accurate of data can increase the accuracy and completeness of report which may help FYP committees to make decision. Students' ID and name are chosen to retrieve from database according to their login ID so that no errors of accuracy will occur. Figure 5.2 is an example of registration form.

Figure 5.2 Design of Registration

Due to the different roles that needed in FYP Portal, different interface design maybe needed depends on users' tasks. Overall view of records or data may need by supervisor and committee to perform their task but supervisor are only allowed to view information that related to their supervision or moderation students. Therefore, a table will be used to show the summary of information that related to their students. Figure 5.3 is an example of table that shows all registered students that need to be approved by supervisor. By clicking the student ID, supervisor can read more details about the project and student. Supervisors' workload page will also be design using the same method.

Student ID	Name	Course	Project Title	Project Objective	Project Innovative	Project Deliverables	Status
0303003							Pending
0404004							Pending
0707007							Pending
0806105							Pending
0909009							Pending

to

Basically, design for committees' pages will also use the same theory as supervisor pages. But due to the necessary to view other information that needed to make decision, committees' pages will include more information of data summary. For example, during the moderator assignment, committees need a lot of information such as students' registration information, supervisor workload and their expertise. Therefore, we will divide that information into few parts. Figure 5.4 shows the moderation page which divided into 3 parts: moderation table (shows all information about registered project), related area of the project and lecturer's expertise (shows workload of the lecturer who expert in the selected area).

ɡure 5.4 Design of moderation page

Lastly, design a good presentation of reports. For FYP committees, a good presentation of reports will help a lot in the process of decision making. With considering of necessary during the initial stage of FYP registration, we choose to come out with some reports such as registered and unregistered student reports, supervisor workload reports and etc. These reports will show summary of data from database which easily to go through by committees before decision making. From Figure 5.5, we can see that

committees can choose to display any reports from the drop down list. There are some functionalities provided in Crystal Reports and will be included in our reports printing page such as printing, exports to other types of file, keywords searching and zoom in or out. All data will be presented in table form as shown in Figure 5.5.

5.5 Design and presentation of reports

5.2 DATA FLOW DIAGRAM (REGISTRATION MODULE)
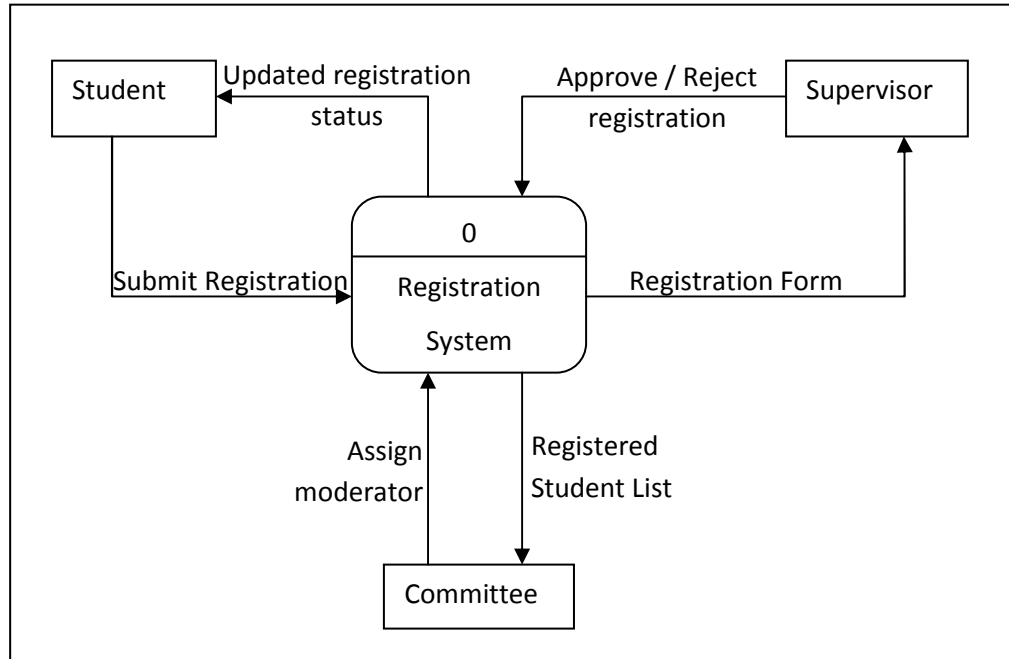
5.2.1 Context Diagram

Figure 5.6 Context Diagram (Registration Module)
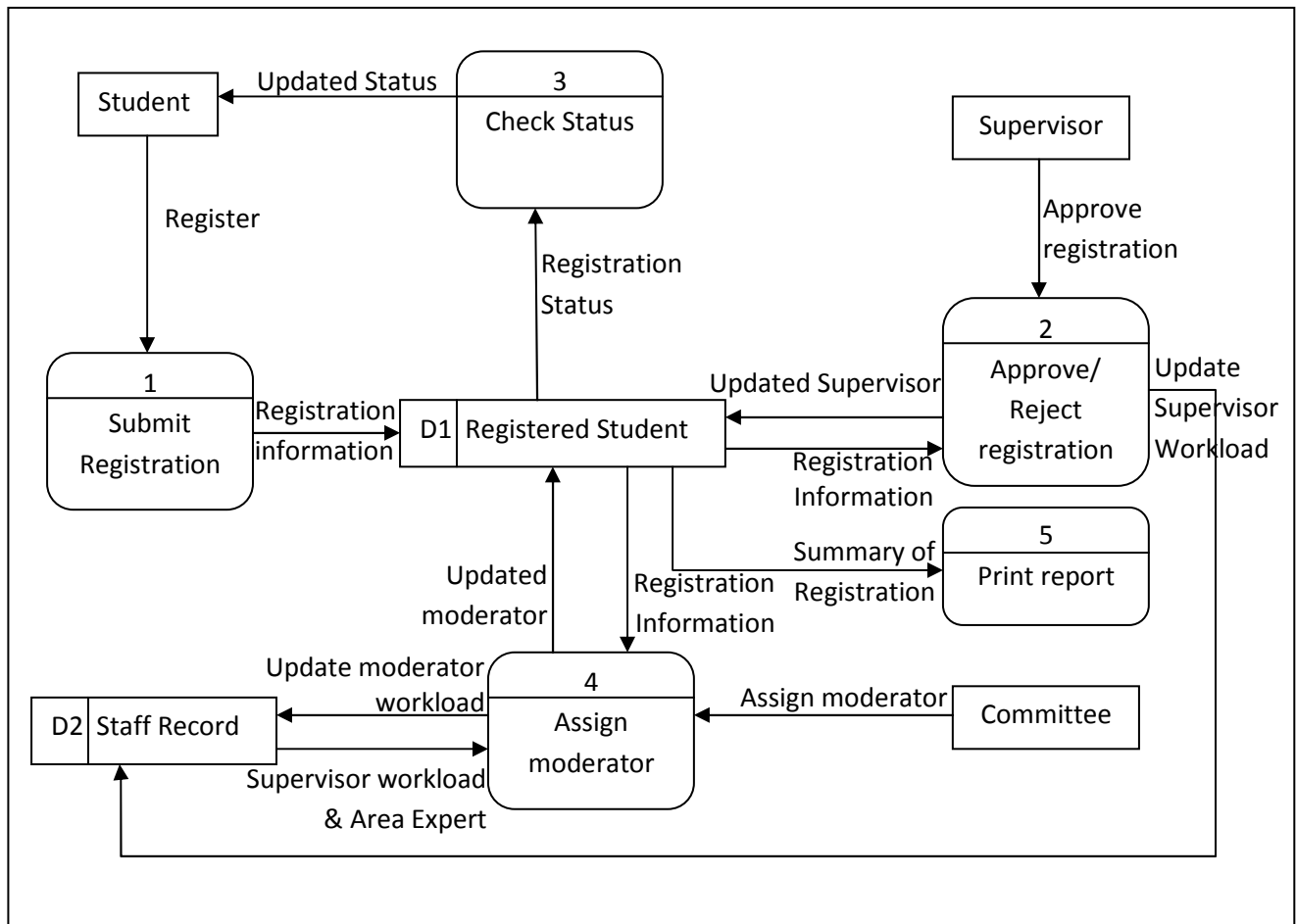
5.2.2 Level-0 Data Flow Diagram

Figure 5.7 Level-0 DFD

CHAPTER 6: DATABASE DESIGN

As we understand the importance of database in system development, designation of database must be seriously considered before implementation. Since this is the most crucial part of this project, we must follow the step by step of database design process. Firstly, we must come out with an Entity Relationship Diagram (ERD). Then, we must decide the behavior of each attributes in the database. Next, design of ERD and Data Dictionary will be shown and discussed.

6.1 ENTITY RELATIONSHIP DIAGRAM (ERD)

Entity Relationship Diagram (ERD) is used to design a relational database so that all data can be stored in tables and organized in rows and columns. In order to design a good ERD, we must completely understand the requirements of this system. Then, we need to define which data we need to store in database and group them accordingly in tables. All tables must be normalized in third normal form so that no duplicate data is needed in the same table. For example, we do not need to duplicate all information of supervisor in Student tables. What we need to do is just store the staff ID in Student table and retrieve supervisor information using the staff ID. In this way, we can ensure the consistency of data in our database. Lastly, we have to link all tables together depends on their relationship among tables.

Figure 6.1 is the ERD that specially designed for FYP Portal database. Tables and relationships that coloured are needed in Registration Modules. Most of the queries are from these tables. Primary keys are label with PK and foreign keys are label with FK beside the primary keys and foreign keys attributes.
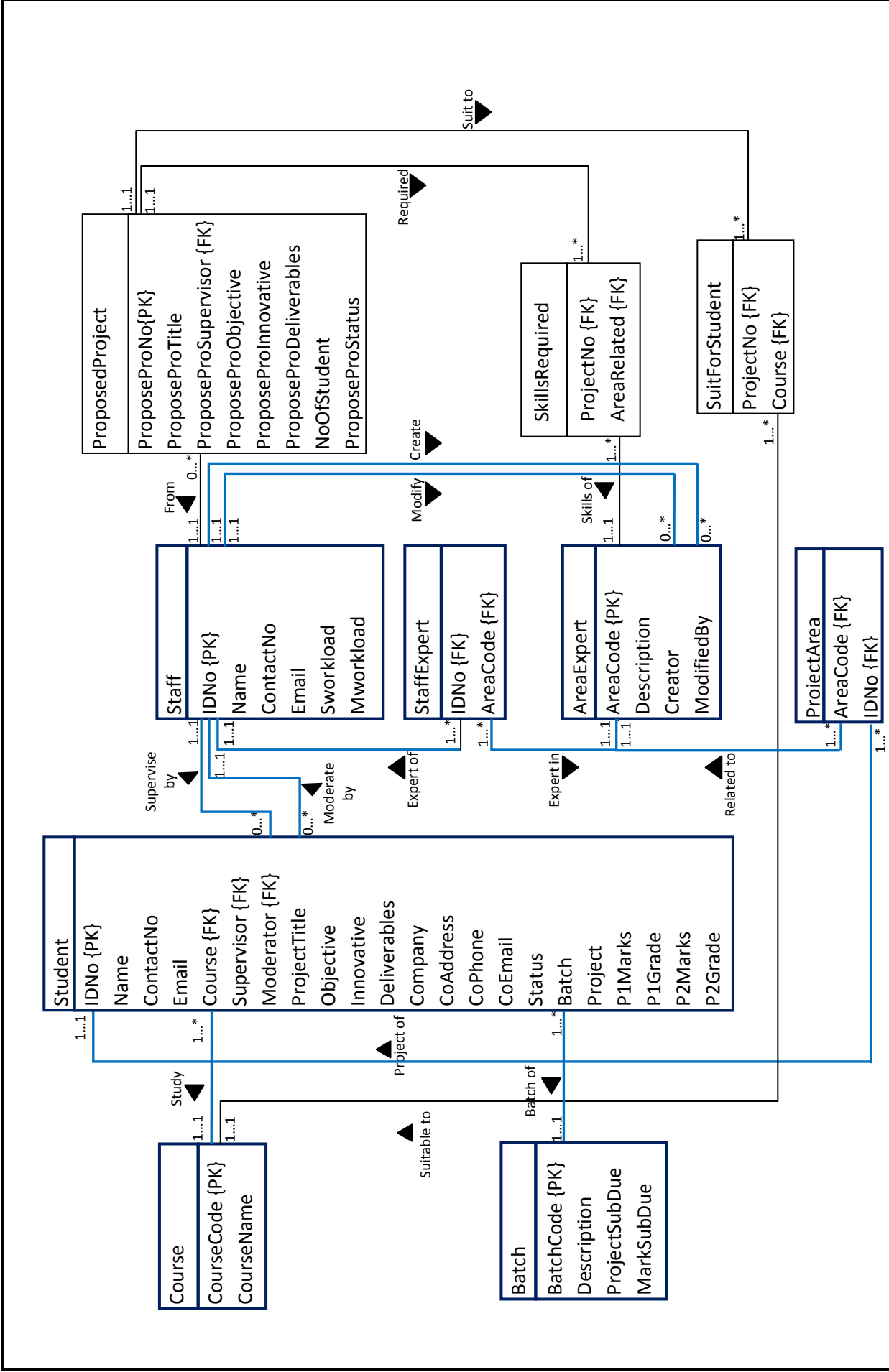
Figure 6.1 Entity Relationship Diagram

6.2 DATA DICTIONARY

Course Entity – Store all information about course existing in FICT.

Entity Name	Attributes	Description	Data Type	Nulls
Course	CourseCode	Unique identity of course	char(3)	No
	CourseName	Full name of the course	varchar(100)	No

Table 6.1 Course Entity

Batch Entity – Store all information related to the batch such as description for the batch and due date of submission for the particular batch.

Entity Name	Attributes	Description	Data Type	Nulls
Batch	BatchCode	Unique identity of batch	char(4)	No
	Description	Description of batch (Month, Year)	varchar(50)	No
	ProjectSubDue	Due date of project submission for the batch	DateTime	Yes
	MarkSubDue	Due date of marks submission of the batch	DateTime	Yes

Table 6.2 Batch Entity

Staff Entity – Store all information about every lecturer in FICT including their workload for Final Year Project.

Entity Name	Attributes	Description	Data Type	Nulls
Staff	IDNo	Unique identity of staff	char(8)	No
	Name	Name of staff	varchar(50)	No
	ContactNo	Contact number of staff	char(11)	No
	Email	Email of staff	varchar(50)	No
	sWorkload	Supervision workload of staff	Integer	No
	mWorkload	Moderation workload of staff	Integer	No

Table 6.3 Staff Entity

StaffExpert Entity – Store expertise of every lecturers.

Entity Name	Attributes	Description	Data Type	Nulls
StaffExpert	IDNo	Unique identity of staff	char(8)	No
	AreaCode	Unique identity of area of expert	char(4)	No

Table 6.4 StaffExpertEntity Entity

Student Entity – All information about students such as personal details, their registered project information and grades that awarded to them will be stored in this table.

Entity Name	Attributes	Description	Data Type	Nulls
Student	IDNo	Unique identity of student	char(8)	No
	Name	Name of student	varchar(50)	No
	ContactNo	Contact number of student	char(12)	No
	Email	Email of student	varchar(50)	No
	Course	Course studied by student	char(3)	No
	Supervisor	Supervisor of student	char(8)	Yes
	Moderator	Moderator assigned to the student	char(8)	Yes
	ProjectTitle	Project title that registered by student	varchar(100)	Yes
	Objective	Objective of the registered project	varchar(MAX)	Yes
	Innovative	Innovative of the registered project	varchar(MAX)	Yes
	Deliverables	Deliverables of the registered project	varchar(MAX)	Yes
	Company	Collaboration company (if any)	varchar(50)	Yes
	CoAddress	Company address	varchar(300)	Yes
	CoPhone	Company phone	char(11)	Yes
	CoEmail	Company email	varchar(50)	Yes
	Status	Status of registration	char(10)	No
	Project	Project 1 / 2	Integer	No
	Batch	Batch of student taking FYP subject	char(5)	No
	Comment	Comment from supervisor about the registration	Varchar(1000)	Yes
	P1Marks	Marks for Project 1	Numeric(3,0)	Yes
	P1Grade	Grade for Project 1	Char(1)	Yes
	P2Marks	Marks for Project 2	Numeric(3,0)	Yes
	P2Grade	Grade for Project 2	Char(1)	Yes

Table 6.5 Student Entity

AreaExpert Entity – Store all existing area of expertise of lecturers.

Entity Name	Attributes	Description	Data Type	Nulls
AreaExpert	AreaCode	Unique identity of area of expert	char(4)	No
	Description	Description of area of expert	varchar(50)	No
	Creator	Staff that creates this area	char(8)	No
	ModifiedBy	Staff who last modified this area	char(8)	No

Table 6.6 AreaExpert Entity

ProjectArea Entity – Store related area of the registered project.

Entity Name	Attributes	Description	Data Type	Nulls
ProjectArea	AreaCode	Unique identity of area of expert	char(4)	No
	IDNo	Unique identity of student	char(8)	No

Table 6.7 ProjectArea Entity

ProposeProject Entity – Store all information that related to project that propose by lecturers.

Entity Name	Attributes	Description	Data Type	Nulls
ProposePro ject	ProposeProNo	Unique identity of propose project	char(5)	No
	ProposeProTitle	Title of propose project	varchar(50)	No
	ProposeProSupervisor	Supervisor that propose the project	char(8)	No
	ProposeProObjective	Objective of the propose project	varchar(MAX)	No
	ProposeProInnovative	Innovative of the propose project	varchar(MAX)	No
	ProposeProDeliverables	Deliverables of the propose project	varchar(MAX)	No
	NoOfStudent	No of student that needed for the propose project	Integer	No
	ProposeProStatus	Status of the propose project (Available/Active/Deactive)	char(10)	No

Table 6.8 ProposeProject Entity

SkillsRequired Entity – Store area of expertise that needed for the project that proposed by lecturers.

Entity Name	Attributes	Description	Data Type	Nulls
SkillsRequired	ProjectNo	Unique identity of propose project	char(5)	No
	AreaRelated	Unique identity of area that related to skills required	char(4)	No

Table 6.9 SkillsRequired Entity

SuitForStudent Entity – Record course that suitable for student to complete the proposed project.

Entity Name	Attributes	Description	Data Type	Nulls
SuitForStudent	ProjectNo	Unique identity of propose project	char(5)	No
	CourseCode	Unique identity of course that that the project suitable to	char(3)	No

Table 6.10 SuitForStudent Entity

CHAPTER 7: IMPLEMENTATION AND INSTALLATION

After all requirements and designs have discussed and agreed by users, system implementation can be started. All the system development tools must be prepared and installed before implementation stage is started. A new system will be installed when implementation stage is completed. The server for installation must meet the minimum requirements needed for the implemented system to operate.

7.1 SYSTEM IMPLEMENTATION

After all consideration, decision is made to use ASP.NET as the main programming language in implementation stage. ASP.NET is suitable for web development. It uses ASP language for web page design and VB language for code behind coding. Combination of these two languages brings a lot of convenience and keeps the simplicity in coding. By separating design and function into two difference files, it makes other developers can easily understand the coding and this will benefit to the future developers who are going to enhance this system.

In order to develop system using ASP.NET, Microsoft Visual Studio is needed. Microsoft Visual Studio 2010 Professional is available in Microsoft Development Network Academic Alliance (MSDNAA). Throughout this project, ASP.NET 4.0 framework is used to develop the system. ASP.NET 4.0 is a latest framework that integrated in Visual Studio 2010.

Microsoft Visual Studio 2010 has bundled with SQL Server and Crystal Report (Trial Version) which has save my cost and time to download and install separately. Since the available Crystal Report in Visual Studio is a trial version, a full version is needed to download separately from SAP official website. After all development tools are installed and ready to use, implementation will be started by developing database. Database is developed using the integrated SQL Server in Visual Studio. All tables and attributes that stated in the data dictionary are created accordingly. Then, all tables will be linked together with its primary and foreign keys as stated in the ERD.

When database is ready to use, system construction will be started. Security control is implemented at the beginning of system implementation. All roles that needed such as student, supervisor and FYP committee are created. Then, Registration Module is

implemented starting with coding on interface and functions. When all pages are completed, access authority for each page will be set accordingly so that there are no unauthorized damages. Lastly, generate all reports that needed by FYP Committee for decision making. All data in the reports are retrieved from the database that created before.

7.2 SYSTEM INSTALLATION

Microsoft Visual Studio 2010 Professional is the main development tools that used in this system development. Therefore, it is needed in client server for deployment. During development stage, the implemented system is run under Visual Studio's built in web server by default so Microsoft's production web server named Internet Information Services (IIS) is not installed during implementation stage. In order to serve the system to other users, client's server must install this IIS.

IIS must be installed before Visual Studio is installed. All Windows Server are installed with IIS while other Windows such as Windows XP, Windows Vista and Windows 7 are not provided with IIS in Home Edition and Starter Edition. IIS is only available in other editions. After IIS is installed and ready to use, Visual Studio 2010 Professional will be installed in client server. Before installation, client server must be ensured to fulfill the minimum system requirements for Visual Studio 2010 Professional. Below are the minimum requirements for installation of Microsoft Visual Studio 2010 Professional:

- Hardware Requirements

Description	Minimum Requirements
Processor	1.6GHz or faster processor
Memory	1 GB (32 Bit) or 2 GB (64 Bit) RAM (Add 512 MB if running in a virtual machine)
Hard Drive	3GB of available hard disk space 5400 RPM hard disk drive
Video Card	DirectX 9 capable video card running at 1024 x 768 or higher-resolution display

Table 7.1 Hardware Requirements for Visual Studio

- Software Requirements

Windows	Architecture	Edition
Windows XP	32-Bit (x86)	Service Pack 3 - all editions except Starter Edition
Windows 7	32-Bit (x86) 64-Bit (x64)	All edition except Home Edition and Starter Edition
Windows Server 2003	32-Bit (x86) 64-Bit (x64)	Service Pack 2
Windows Server 2003 R2	32-Bit (x86) 64-Bit (x64)	All edition
Windows Server 2008	32-Bit (x86) 64-Bit (x64)	Service Pack 2
Windows Server 2008 R2	64-Bit (x64)	All edition

Table 7.2 Software requirements for Visual Studio

During the installation of Visual Studio, .Net framework, Development Web Server and SQL Server Express will be installed. After both IIS and Visual Studio are ready to use, FYP Portal application is ready to install into client server. Details to work web application using IIS will be stated in user manual in Appendix A.

CHAPTER 8: SYSTEM TESTING

When system implementation is successfully completed, system testing is needed to uncover as many errors as possible before integrated into client's server. Client's server may be serving other services to their user so new integrated system must be tested without any crash to the server. There are few types of testing to ensure the system is errors free which are unit testing, functional testing and integration testing. Each type of testing must go through carefully before integrated into client's server.

8.1 UNIT TESTING

Unit testing is used to test individual part of coding where the test plan is design based on the specific module. In this project, unit testing is used to test every individual form and web page in order to make sure they are working as our expected. Main objective of unit testing is to ensure appearance and validation of each form is performing correctly. Every form in the system will test with valid, invalid and null value to ensure it is working as our expected. Any error that found in unit testing will be fixed immediately by developer when the error is found. Unit testing can also ensure that all input data is in correct format and no error when passing the data into database. Therefore, data integrity and accuracy of database are guaranteed. Following is test plan that used to test the Registration and Security Module.

Unit Testing 1: Login as admin of portal

Testing Objective: To ensure the login form is working correctly.

No	Event	Attribute and Value	Expected Result	Result
1	Verify user login after click on the 'Login' button on login form with correct input data	Login ID: admin Password: portaladmin	Successfully log into the default page of admin.	Pass
2	Verify user login after click on 'Login' button on login form with null value	Login ID: null Password: null	Login fail and error messages are shown to request user input data.	Pass
3	Verify user login after click on 'Login' button on login form with invalid value	Login ID: admin Password: wrong	Login fail and error message is shown to request user to re-enter correct login ID or password.	Pass

Table 8.1 Unit testing 1 – Login as admin of portal

Unit Testing 2: Register New Account by FYP Committee

Testing Objective: To ensure new account registration form is working properly.

No	Event	Attribute and Value	Expected Result	Result
1	Verify new account registration after click on the 'Create User' button on registration form with correct input data	Login ID: 0033003 Password: 0033003 Confirm Password: 0033003 Roles: Staff is selected	A successful message will pop out and return to main page when 'OK' is clicked.	Pass
2	Verify new account registration after click on the 'Create User' button on registration form with null value	Login ID: null Password: null Confirm Password: null Roles: Not selected	No account is created and error message is shown to request user input data.	Pass
3	Verify new account registration after click on the 'Create User' button on registration form with invalid password	Login ID: 0033003 Password: 123 Confirm Password: 123 Roles: Staff is selected	No account is created and error message stated minimum password length is shown.	Pass
4	Verify new account registration after click on the 'Create User' button on registration form with password not match.	Login ID: 0033003 Password: 0033003 Confirm Password: 1234567 Roles: Staff is selected	No account is created and error message stated password not match is shown.	Pass

Table 8.2 Unit Testing 2 - Register New Account by FYP Committee

Unit Testing 3: Register Lecturer Information for First Time Login

Testing Objective: To ensure lecturer information registration form is working properly.

No	Event	Attribute and Value	Expected Result	Result
1	Verify lecturer information after click on the 'Submit' button on staff registration form with correct input data	Staff ID: 0033003 Name: Yau Qian Heng Email: yau@utar.edu.my Contact Number: 0123458769 Area of Expert: Information Systems & Database is selected	All entered data is shown for confirmation. When 'Confirm' buttons is clicked, a successful pop out message is shown.	Pass
2	Verify lecturer information after click on the 'Submit' button on staff registration form with null value	Staff ID: 0033003 Name: null Email: null Contact Number: null Area of Expert: null	No account is created and error message is shown to request user input data.	Pass
3	Verify lecturer information on staff registration form with invalid email and contact number	Staff ID: 0033003 Name: Yau Qian Heng Email: yau@utar Contact Number: 012345 Area of Expert: Information Systems & Database is selected	No account is created and error message required valid information is shown.	Pass
4	Verify lecturer information after click on the 'Submit' button on staff registration form with no area of expertise is selected.	Staff ID: 0033003 Name: Yau Qian Heng Email: yau@utar.edu.my Contact Number: 0123458769 Area of Expert: null	No account is created and error message require user to select at least one area of expertise is shown.	Pass

Table 8.3 Unit Testing 3 - Register Lecturer Information for First Time Login

Unit Testing 4: Create New Batch

Testing Objective: To ensure create new batch form is working properly.

No	Event	Attribute and Value	Expected Result	Result
1	Verify new batch information after click on the 'Create Batch' button on create new batch form with correct input data	Batch Code: 0510 Description: May 2010	A new batch created successfully message is pop out and directed to import student list.	Pass
2	Verify new batch information after click on the 'Create Batch' button on create new batch form with null value	Batch Code: null Description: null	New batch is not created and error message is shown to request user input data.	Pass
3	Verify new batch information on create new batch form with invalid batch code	Batch Code: May2010 Description: May2010	No account is created and error message required user to enter valid batch code.	Pass

Table 8.4 Unit Testing 4 - Create New Batch

Unit Testing 5: Import Student List

Testing Objective: To ensure only excel file is uploaded and student list is successfully imported into database.

No	Event	Attribute and Value	Expected Result	Result
1	Verify file type after click on the 'Upload' button on import student list form with selected excel file	-	File uploaded successfully and total of successfully updated rows is shown.	Pass
2	Verify file type after click on the 'Upload' button on import student list form with no file is selected.	-	No file is uploaded and nothing is imported to database. Error message required user to select a file is shown.	Pass
3	Verify file type on import student list form with not a excel file is selected.	-	No file is uploaded and nothing is imported to database. Error message required user to select a correct excel file is shown.	Pass

Table 8.5 Unit Testing 5 - Import Student List

Unit Testing 6: New Project Title Registration

Testing Objective: To ensure new project title registration form is working properly.

No	Event	Attribute and Value	Expected Result	Result
1	Verify new project registration after click on the 'Submit' button on registration form with correct input data	Supervisor Name: Yap Seok Gee Project Title: FYP Portal Related Area: Database Objectives: To develop a system to process FYP Innovative: Improve way of process FYP Deliverable: A portal that allow to share and process FYP information	All entered data is shown for confirmation. When 'Confirm' buttons is clicked, a successful pop out message is shown.	Pass
2	Verify new project registration after click on the 'Submit' button on registration form with null value	Supervisor Name: null Project Title: null Related Area: null Objectives: null Innovative: null Deliverable: null	Registration fail and error message is shown to request user input data.	Pass

Table 8.6 Unit Testing 6 - New Project Title Registration

8.2 FUNCTIONAL TESTING

After unit testing is completed, functional testing will be continued. Functional testing is to test the functionality of each module to ensure the requirements of user are met. In this section, functionality of Registration Module will be the main focus of testing. Security Control such as Login features will also be tested to ensure the tasks can be performed according to the role of login user. In Registration Module, functional testing will be tested on different scenario and make sure the result is met user expectation. Following is the text plan that prepared by developer for functional testing.

Functional Testing 1: Login with different roles

Objective: To ensure correct master is loaded according to the role of login user and tasks to be performed by the role is operating.

No	Event	Attribute and Value	Expected Result	Result
1	Login as a 'FYP Committee'.	Login ID: 0044004 Password: 0044004	- Master page for FYP Committee is loaded. - Navigation Menu includes Moderation, Register New Account, Import Student List and so on.	Pass
2	Login as a 'Supervisor'.	Login ID: 0011001 Password: staff11	- Master page for Staff is loaded. - Navigation Menu includes Registration, Workload, Add/Edit Data Field and so on.	Pass
3	Login as a 'Student'.	Login ID: 0805100 Password: 123456-12-1234	- Master page for Student is loaded. - Navigation Menu includes Registration, Project List and so on.	Pass

Table 8.7 Functional Testing 1- Login with different roles

Functional Testing 2: Approve a new registration

Objective: To ensure correct information is reading from database and workload is added to particular supervisor if new registration is approved.

No	Event	Attribute and Value	Expected Result	Result
1	Login as 'Student'	Login ID: 0805100 Password: 123456-12-1234	- Login successfully. - Student Master Page is loaded.	Pass
2	Create a new project title registration.	Supervisor Name: Yap Seok Gee Project Title: FYP Portal Related Area: Database Objectives: To develop a system to process FYP Innovative: Improve way of process FYP Deliverable: A portal that allow to share and process FYP information	- New registration is created successfully.	Pass
3	Click registration to check status of registration.	-	- Status of registration is pending.	Pass
4	Login as a 'Supervisor' name 'Yap Seok Gee'	Login ID: 0044004 Password: 0044004	- Login successfully. - Master page for staff is loaded.	Pass
5	Click registration to view student that register under the login user.	-	- A registration with student ID – 0805100 will be listed.	Pass
6	Click on the ID of the student to view details of registration.	-	- All details of new registration are display correctly.	Pass

7	Click 'Accept' button to accept student.	-	- Student registration is accepted. - Supervisor workload will be added.	Pass
8	Click 'Supervision Workload' to check latest workload	-	- Supervision workload will be added by 1.	Pass
9	Login as 'Student' to check the latest status of registration.	Login ID: 0805100 Password: 123456-12-1234	- Login successfully. - Student Master Page is loaded.	Pass
10	Click on registration to check status of registration.	-	- Status of registration is updated to 'Approved'.	Pass
11	Click 'OK' button to return to main page.	-	- Return to main page.	Pass

Table 8.8 Functional Testing 2 - Approve a new registration

Functional Testing 3: Reject a new registration

Objective: To ensure correct information is reading from database and no workload is added. Student is allowed to create new registration.

No	Event	Attribute and Value	Expected Result	Result
1	Login as 'Student'	Login ID: 0805101 Password: 123456-12-1235	- Login successfully. - Student Master Page is loaded.	Pass
2	Create a new project title registration.	Supervisor Name: Yap Seok Gee Project Title: Restaurant Ordering System Related Area: Database Objectives: To develop a system to for restaurant Innovative: Improve way of process ordering system in restaurant Deliverable: A system to automate the ordering system in restaurant	- New registration is created successfully.	Pass
3	Login as a 'Supervisor' name 'Yap Seok Gee'	Login ID: 0044004 Password: 0044004	- Login successfully. - Master page for staff is loaded.	Pass
4	Click registration to view student that register under the login user.	-	- A registration with student ID – 0805101 will be listed.	Pass
5	Click on the ID of the student to view details of registration.	-	- All details of new registration are display correctly.	Pass
6	Click 'Reject' button to reject student.	Comment: - Project title is taken by other student.	- Student registration is rejected.	Pass

7	Login as 'Student' to check the latest status of registration.	Login ID: 0805101 Password: 123456-12-1235	- Login successfully. - Student Master Page is loaded.	Pass
8	Click on registration to check status of registration.	-	- Status of registration is updated to 'Rejected'.	Pass
9	Click 'New Registration' button to create a new registration.	-	- All information about the rejected project is deleted from database. - Student can create a new registration	Pass

Table 8.9 Functional Testing 3 - Reject a new registration

Functional Testing 4: Assign moderator to registered project

Objective: To ensure moderation tasks can be performed correctly.

No	Event	Attribute and Value	Expected Result	Result
1	Login as 'FYP Committee'	Login ID: 0044004 Password: 0044004	- Login successfully. - Staff Master Page is loaded.	Pass
2	Click moderation to assign moderator	-	- All registered projects are listed.	Pass
3	Select a student ID to check the related area of the particular project.	Select '0805100'	- Project related area which is 'Database' will be shown.	Pass
4	Select an area of expertise to check on the supervisor workload.	Select 'Database'	- All lecturers who expert in 'Database' will be listed with their supervision and moderation workload.	Pass
5	Select lecturer to assign as a moderator for the particular project.	Select 'James Ooi'	- Moderator is assigned to the project. - Moderation workload for the 'James Ooi' is added by 1.	Pass
6	Login as 'James Ooi' to check the moderation student	Login ID: 001101 Password: staff11	- Login successfully. - Staff Master Page is loaded.	Pass
7	Click moderation to check moderation student.	-	- Student with ID '0805100' is listed under the moderation workload.	
8	Click on the student to view details of registered project.	Select '0805100'	- Registered project and student details are shown.	Pass

Table 8.10 Functional Testing 4 - Assign moderator to registered project

Functional Testing 5: Print registered student report

Objective: To ensure the data of the report is correct.

No	Event	Attribute and Value	Expected Result	Result
1	Login as 'FYP Committee'	Login ID: 0044004 Password: 0044004	- Login successfully. - Staff Master Page is loaded.	Pass
2	Click report to view report	-	- All available report is listed in a drop down list.	Pass
3	Select a report and click 'View' button	Select 'Registered Student Report'	- Registered Student Report will be displayed.	Pass
4	Check all data in the report. Make sure it is correct.	-	- All data is correct.	Pass

Table 8.11 Functional Testing 5 - Print registered student report

8.3 INTEGRATION TESTING

When both unit and functional testing are completed and Registration Module is guaranteed as error free system, Registration Module is ready to integrate with other part of modules. Integration testing is performed in IIS using localhost before install in client's server to ensure it working properly in virtual directory. Unit testing and functional testing are repeated in integrated system to ensure each module is performed correctly.

CHAPTER 9: CONCLUSION

There is no perfect system exist in this world. Every developed system must have their limitation and the necessary of future enhancement. As a new developed system, FYP Portal has the necessary to enhance to include more features. In this section, some recommendation of future enhancement will be discussed.

9.1 FUTURE ENHANCEMENT

Currently, FYP Portal is focusing more on ease the tasks of FYP Committee. In future, FYP Portal may provide more services to Supervisor and Student regarding to final year project. Forum may be provided for students to discuss about their progress, problems, project suggestion and so on. Supervisor can also join this forum to answer the problems that facing by students or post any research project that need assistant. With these features, usability of FYP Portal will increase and able to attract students to surf into FYP Portal.

Besides, announcement shall include in FYP Portal. With the announcement features, FYP Committee can easily inform any news or changes of due date to all students and supervisors. Moreover, supervisor can send information to their supervisee through announcement rather than inform them one by one or send email to them. Currently, there are no media for FYP Committee to make announcement regarding final year project so this feature will help a lot in spreading information that related to final year project.

FYP Committee is also facing the problem in presentation slot assignment and lab reservation. Therefore, FYP Portal shall provide a way to show available lab during the presentation weeks in table format so that students and supervisor can easily choose the slot that suitable to them. All reservation is done through FYP Portal. This can overcome the problems of time crash and also reduce a lot of works which include request the available slot, reserved it, confirmed and so on.

As conclusion, FYP Portal has much more features to be included in the future. It may able to replace all the manual processes after enhancement is completed. Besides, it may become a good communication tools between supervisor and student.

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Appendix

APPENDIX

1.0 SYSTEM INSTALLATION

Assuming you are using an approved client version of Microsoft Windows (either XP Professional, Vista, or Windows 7), the order of installation is:

1. First install Internet Information Services (IIS). (For deployment)

2. Install Visual Studio including SQL Server Express.

3. Install Crystal Report Version for Visual Studio.NET.

4. Import Final Year Portal System into visual studio. (For deployment)

1.1   INTERNET INFORMATION SERVICES (IIS) INSTALLATION

- Reminder: Install IIS before Microsoft Visual Studio 2010

Installation in Windows XP

1. Select the Windows **Start** button then **Control Panel**.
2. Double-click **Add or Remove Programs**.
3. Click **Add/Remove Windows Components** shown in this Figure 1.1 – this displays the Windows Components Wizard.

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- NOTE: To add Windows Components you'll most likely need the original Windows Server or Windows XP operating system CD-ROM provided with your computer.
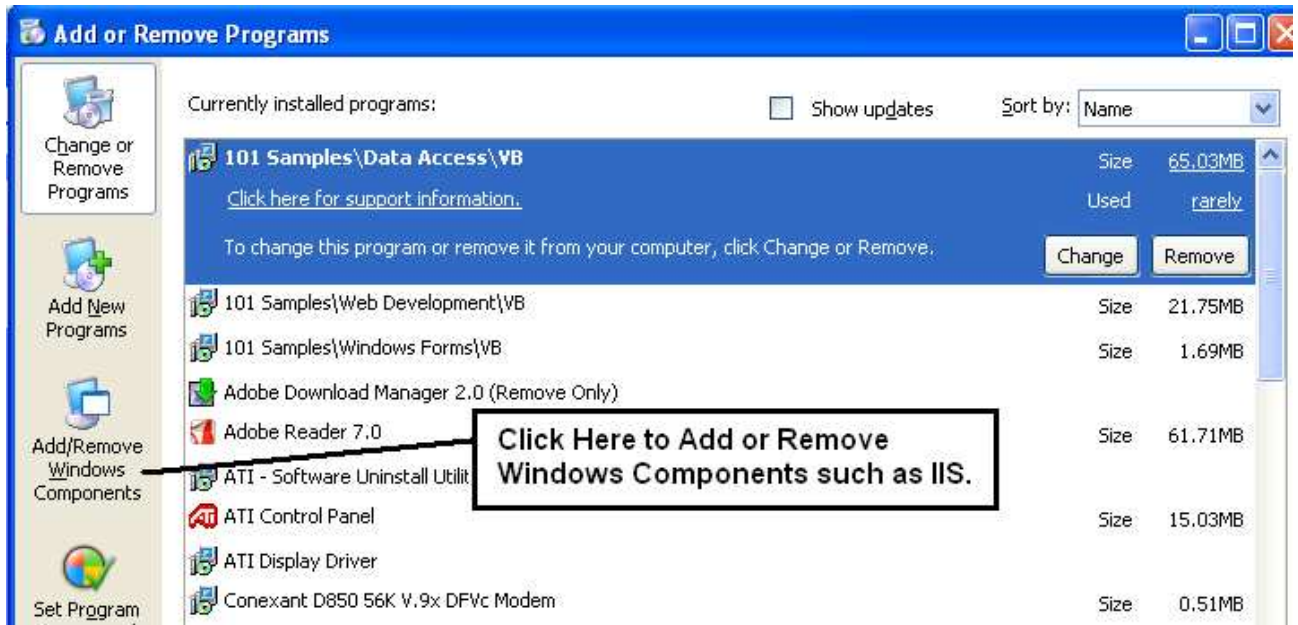
Figure 1. 1 Add/Remove Programs

4. Select IIS from the component listing.
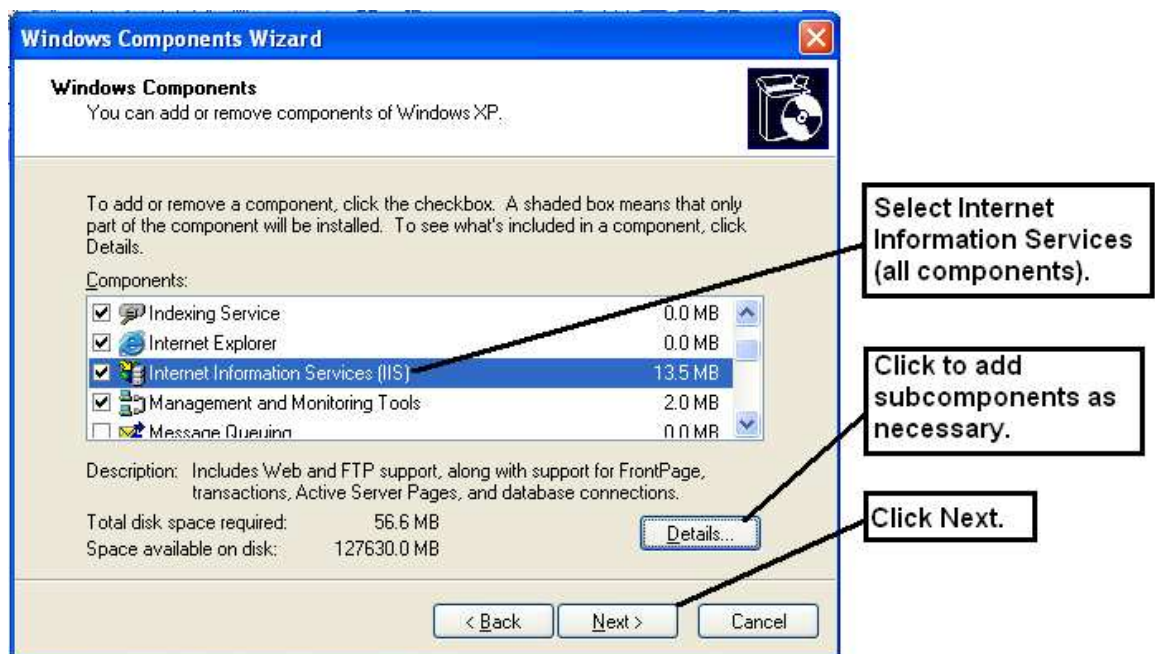
Figure 1. 2 Windows Components Wizard

Appendix

5. Insert the Windows operating system CD-ROM if required.

6. Click the **Details** button to add all subcomponents of IIS. *Front-Page Server Extensions* must be installed to use IIS as a remote compute and *FTP Service* to use IIS as an FTP server (we will not be using the FTP server feature in this class).

7. Click **Next** to complete the installation – installation takes just a few minutes or less.

Installation in Windows Vista and Windows 7

- Note: If you've already installed Visual Studio and then only install IIS, go to Visual Studio Command Prompt and execute the command "aspnet_regiis -i".]

1. Display the **Control Panel** – make sure it's in Classic View – click the **Turn Windows Features** link.

2. In the **Windows Features** dialog box select *Internet Information Services* from the list of components.

3. If you want to configure IIS as a **FTP Server**, expand the node and select the *FTP Publishing Service* component.

4. Click **OK** to complete installation.

1.2 MICROSOFT VISUAL STUDIO 2010 INSTALLATION

1. Download **Microsoft Visual Studio 2010 Professional** from Microsoft Development Network Academy Alliance (MSDNAA).
2. Double click the downloaded file and follow the instructions.

1.3 CRYSTAL REPORT INSTALLATION

1. Download Crystal Report Version for Visual Studio.NET from SAP official website.
2. Double click the downloaded file and follow the instructions.

1.4 CREATE VIRTUAL DIRECTORY FOR FINAL YEAR PROJECT PORTAL

IIS has a software graphical interface known as the *IIS Management Console*. You can use it to create a *virtual directory* for a file-system web site.

1. Click the **Windows Start** button, select **Control Panel** (displayed in classic view, not category view).

2. Double-click **Administrative Tools**.

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3. Double-click **Internet Information Services** to open the *IIS Management Console*.

4. In the tree display, find and **right-click** the **Default Web Site** node – choose *New-Virtual Directory* as shown in this Figure 1.3 – this will start the *Virtual Direction Creation Wizard (Figure 1.4)*.
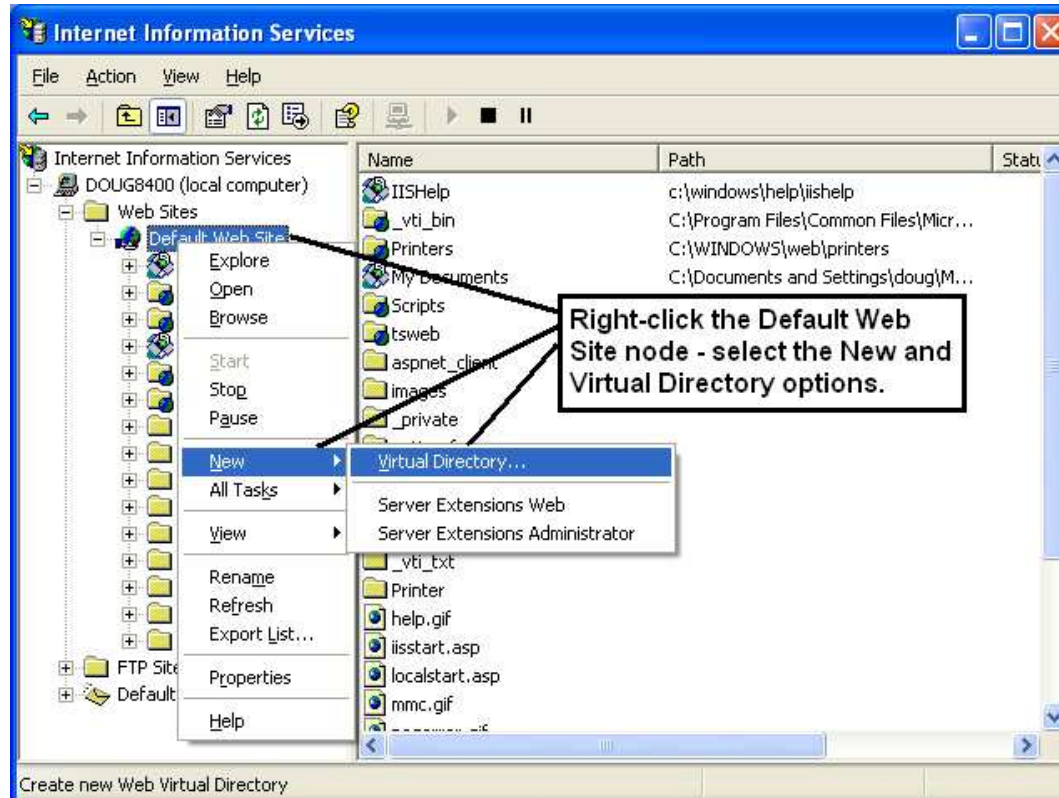
Figure 1. 3 Internet Information Services

Appendix

Figure 1. 4 Virtual Diretory Creation Wizard

5. Type a name for the virtual directory on the *Virtual Directory Alias* page.
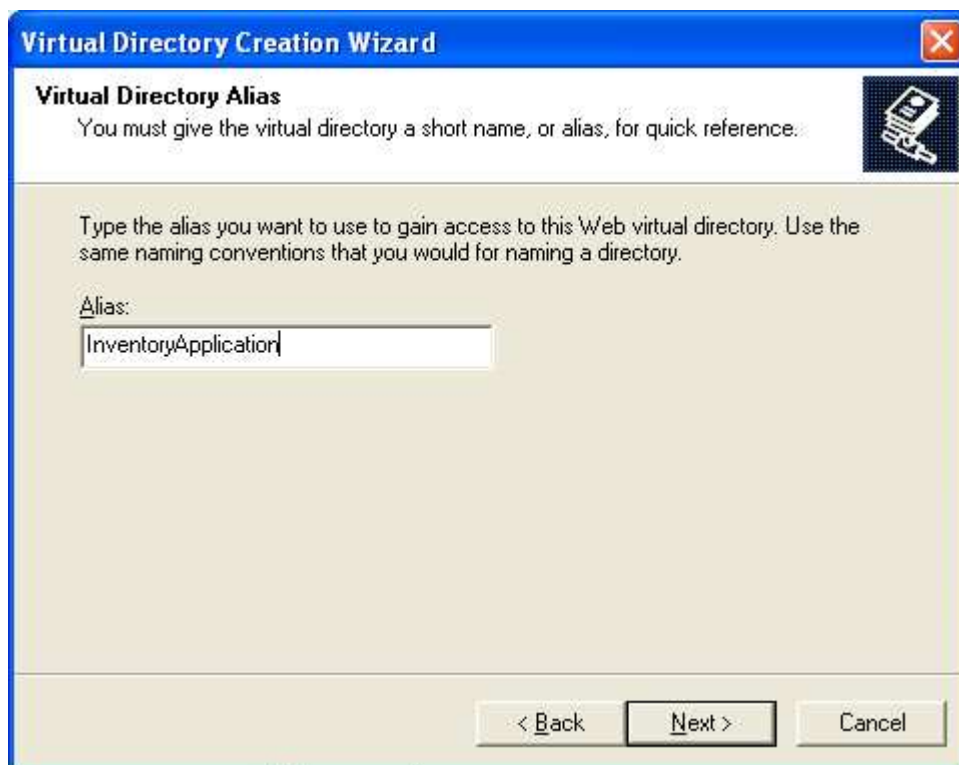
Figure 1. 5 Enter a alias for new virtual directory

6. Enter a path for the directory that contains the web site on the *Web Site Content Directory* page. You can use the Browse button to find the web site of to be mapped as a virtual directory.

Appendix

Figure 1. 6 Link the website project to virtual directory

7. Accept the default settings on the ***Access Permissions*** page as shown in this figure.

Figure 1. 7 Select the access permission for the new virtual directory

Appendix

8. Click the **Next** button and then **Finish** on the final *Virtual Directory Creation Wizard* page to complete use of the wizard as shown here.

Figure 1. 8 Virtual directory creation is finished

- Note that the new virtual directory is created as a web site under the Web Sites folder for IIS. The **icon** for a web site **"*virtual directory*"** is different than that for a plain folder as shown in this figure.
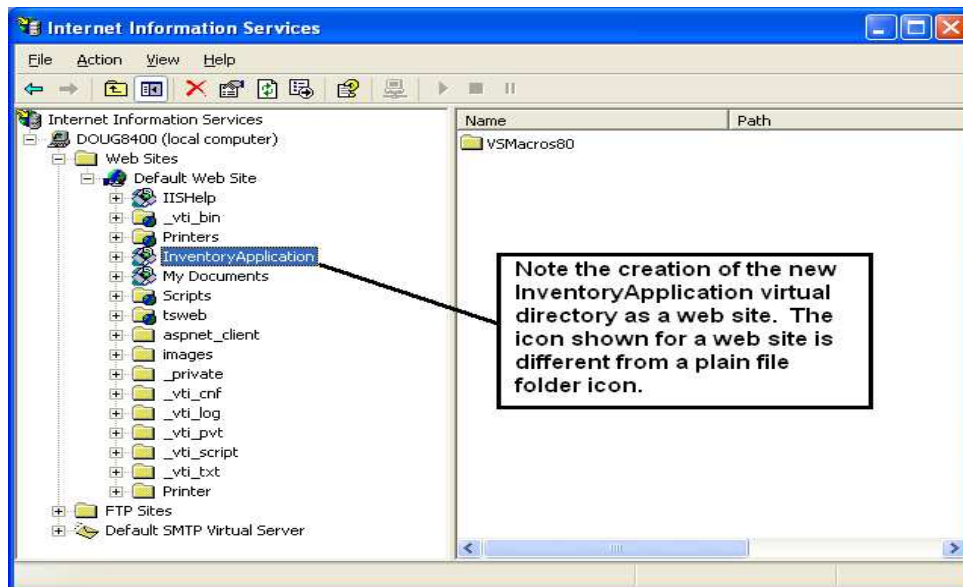
Figure 1. 9 New virtual directory is created

Appendix

2.0 GUIDELINES FOR FINAL YEAR PROJECT COMMITTEE MEMBER

Step by step guidelines will be provided in the following section. FYP Committee members can refer to these guidelines in order to complete some tasks. An admin account will be provided initially. One of the FYP Committee has to login using admin account to create new account for other lecturers. Login ID for admin account is 'admin' and password is 'portaladmin'. Admin account is only used for initial stage and it is not an account for FYP Committee so no tasks should be performed except create new account.

2.1   CREATE NEW ACCOUNT

1. Enter 'admin' in Login ID text box and 'portaladmin' in password text box to login as Admin
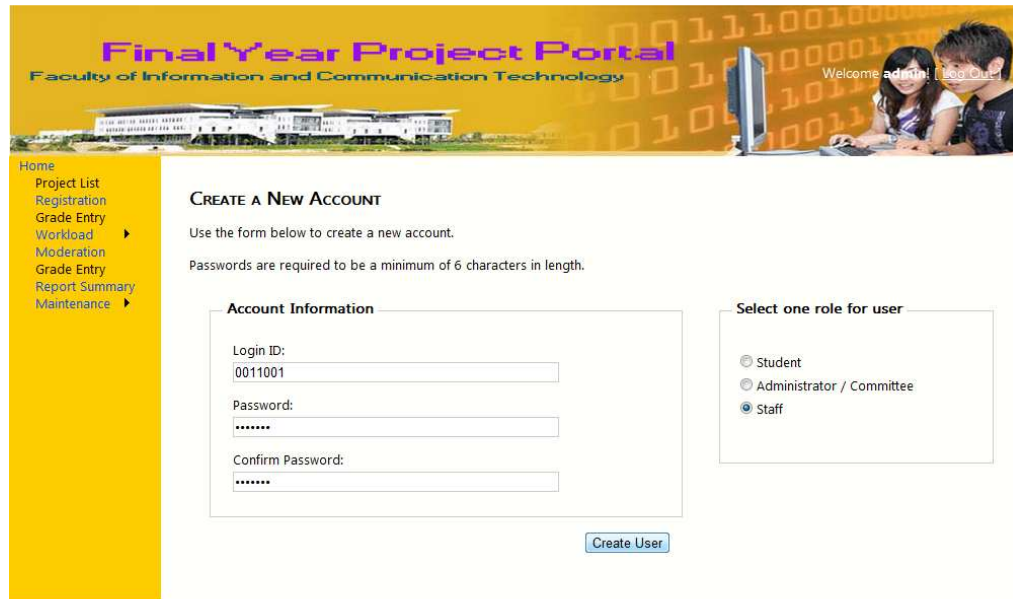
2. Hover to 'Maintenance' and click 'Register New Account'.

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3. Enter Staff ID of lecturer in Login ID, password and confirm password text boxes. Select 'Staff' if register for new lecturer or 'Administrator / Committee' for new committee member or 'Student' for new student. User is allowed to make changes of password when successfully login.
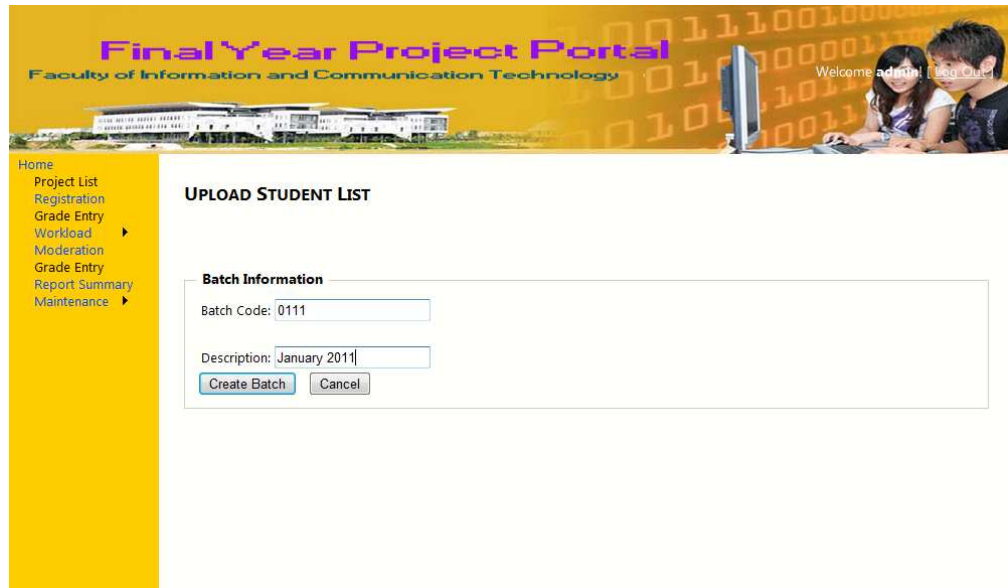
2.2   IMPORT STUDENT LIST

1. Hover to 'Maintenance' and click 'Import Student List'.

Appendix

2. Enter batch code and description for new batch.
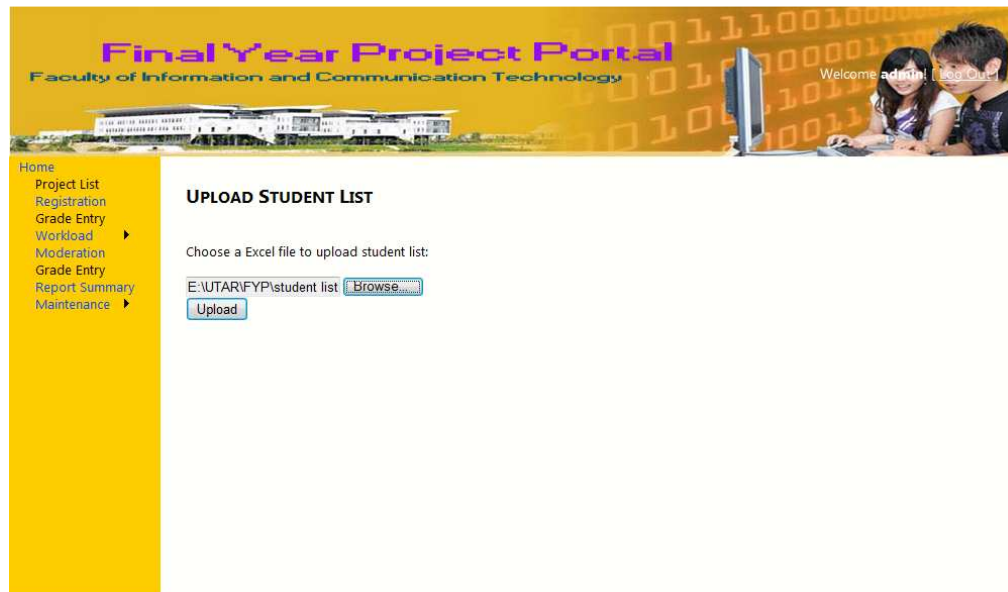
3. Click 'Browse' and select a Excel file that include all students in new batch. Click 'Upload' to upload the file and import the student list.

Appendix

4. Successful and error message (if any) will be shown.

- Note: Student List should be formatted as following in Excel file

Name	ID	IC	Email	Contact	Course
YAP HENG LIN	0805100	123456-12-1234	student1@utar.com	0161234567	IA
SOO MING FU	0805101	123456-12-1235	student2@utar.com	0161234568	IA
CHIN YIK SOON	0805102	123456-12-1236	student3@utar.com	0161234569	IA
OH SIEN WEI	0805103	123456-12-1237	student4@utar.com	0161234570	IA
SHI LIK JIAN	0805104	123456-12-1238	student5@utar.com	0161234571	IA
ALVIN YEO ZONG YUN	0805105	123456-12-1239	student6@utar.com	0161234572	IA
CALVIN CHEONG WEI LIM	0805106	123456-12-1240	student7@utar.com	0161234573	IA
TAN CHEAH JIE	0805107	123456-12-1241	student8@utar.com	0161234574	IA
TEE YAW HING	0805108	123456-12-1242	student9@utar.com	0161234575	IA
CHIW KAR KING	0805109	123456-12-1243	student10@utar.com	0161234576	IA
CHONG SIAN	0805110	123456-12-1244	student11@utar.com	0161234577	IA

Appendix

2.3 ASSIGN MODERATOR TO REGISTERED STUDENT

1. Click on 'Moderation' from the Menu Navigation.
2. A list of registered student will show in table. Click 'Select' to view the related area of the registered project.

3. Select a expertise from drop down list to view lecturers that expert in the area and workload of the particular lecturer will be shown in table.

Appendix

4. Based on the expertise and workload, FYP committee can assign a suitable moderator by choosing a lecturer from the drop down list in moderator column.

2.4 ADD / EDIT AREA OF EXPERTISE

1. Click 'Add/Edit of Expertise' from Maintenance.
2. Enter Area Code and Description for new expertise. Click 'Add' to add new expertise.

3. Select 'Edit' if want to edit existing expertise.
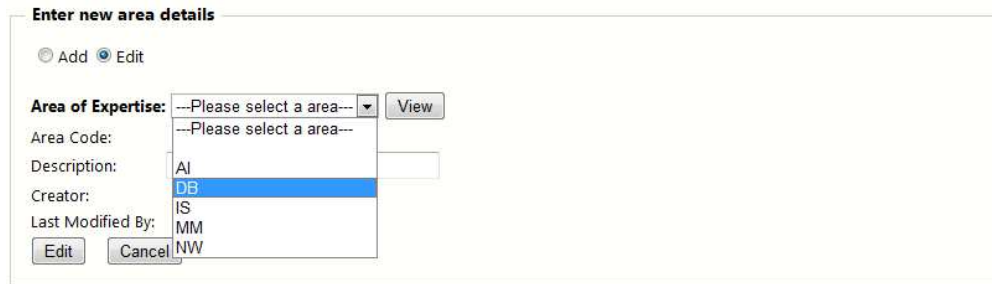
Appendix

4. Choose one area of expertise from drop down list. Click 'View' to view details of the expertise.

5. Make changes on description for the area of expertise. Click 'Edit' to update the changes.