

**FYP Library System Using Taxonomy Data Representation**

by

**Abu Hanifah Bin Ayob**

Dissertation submitted in partial fulfillment of  
the requirements for the  
Bachelor of Technology (Hons)  
(Information Communication Technology)

JANUARY 2007

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CERTIFICATION OF APPROVAL

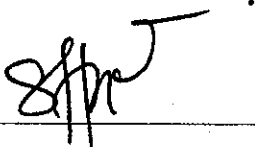
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A project dissertation submitted to the  
Information Communication Technology Programme  
Universiti Teknologi PETRONAS  
in partial fulfilment of the requirement for the  
BACHELOR OF TECHNOLOGY (Hons)  
(INFORMATION COMMUNICATION TECHNOLOGY)

Approved by,



(Syarifah Bahiyah Rahayu Syed Mansoor)

UNIVERSITI TEKNOLOGI PETRONAS

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1) JAVA (computer program language)  
2) web servers

## CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



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ABU HANIFAH BIN AYOB

## **ABSTRACT**

Final Year Project (FYP) is a compulsory course for all students as a requirement to graduate. Currently, Universiti Teknologi Petronas (UTP) has no library system to store information about FYP. All information about FYP is recorded by FYP coordinator but does not share among lecturers and students. All FYP reports are kept in the room at building 1. The FYP reports are kept in cabinet without sort out according to semester or cluster. The objective of the project is to develop a web based library system to store information about FYP using taxonomy data representation. This system is computerized all functions in the current system. This system provides features to view all projects, view selected project and search at a particular project. Author has done analysis regarding user preference and based on the analysis's result, author found that there is a need to develop a web based library system to store information about FYP using taxonomy data representation. It stated that users prefer to view data in taxonomy rather than in table. This system is developed using JavaServer Pages (JSP) and has undergone functional, integration and user acceptance testing. As the result, FYP library system is developed in three modules, administrator, lecturer and student. All features in the system have solved the problems stated. Data in this system are presented in taxonomy where user can view data as specific as possible. As a conclusion, this system has achieved the objective stated and presented data in taxonomy.

## **ACKNOWLEDGEMENTS**

With the name of Allah, Most Gracious, Most Merciful

Praise to Allah SWT, for His blessing and guidance for the successful completion of my Final Year Project, Final Year Project Library System Using Taxonomy Data Representation.

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## **ABBREVIATIONS AND NOMENCLATURES**

AA	Academic Assistant
BIS	Business Information System
FYP	Final Year Project
HCI	Human Computer Interaction
ICT	Information and Communication Technology
IRC	Information Resource Center
SME	Subject Matter Expert
UTP	Universiti Teknologi PETRONAS
WWW	World Wide Web

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

In this new evolution, web site is becoming one of the main medium for people to interact, communicated and worked. The World Wide Web (WWW) is a transformative medium, as important as electricity [1]. The web also has been a medium to people nowadays, and has been placed where user/people gain knowledge [2]. A web based system has advantages of supports interlinking of all kind content, easy for end-user to access and supports easy content creation using widely-available tools [3]. Based on these advantages, FYP Library System is developed as a web based system.

Final Year Project (FYP) is a compulsory course for all final year students as a requirement to graduate. Students from Information and Communication Technology (ICT) and Business Information System (BIS) department required to accomplish the FYP in two semesters; one semester for research and another one semester for development of the project. Firstly, students are required to propose a project title to their respective supervisor. Usually, students meet their respective supervisor to discuss about the research project. Supervisor may propose previous research project for enhancement or a new research project to student. However, student can also propose their own research project. Students may refer to any resources or previous FYP for their research project.

Currently, there is no library system to store information about FYP. All information about FYP is recorded by FYP coordinator but does not share among lecturers and students. At the end of every semester, students who are undertaking FYP will submit one copy of FYP report to their respective supervisor, Academic Assistant (AA) and Information Resource Center (IRC). There are about 150 copies submitted every semester. AA keeps the reports in a room at Building 1 without sorting them accordingly. The reports are kept there for five years, before transfer to a store. There are about 1500



reports in the room at one time. It is time-consuming for students to look at the every single report only to find a particular information. Students who want to borrow the report need to fill up their personal information in the book provided by AA. Since the personal information is manually written in the book, it is difficult for AA to monitor the records for every report borrowed.

Besides, students can also look the report at IRC. There are about 5000 reports from all departments at IRC. However, students cannot borrow the report from IRC. They can only look at the report in the IRC.

Currently, there is no shared information of FYP among lecturers. Meaning, lecturer has no information about the projects under other lecturers' supervision. The problem is there are clashes of FYP project or reuse of a same project from previous semester under supervision of different lecturers. Lecturer might not notice that the project they proposed to student or the projects proposed by students are the same with other lecturers.

Most of the systems today are developed by presenting data in a table. The disadvantage of presenting data in table is data are displayed as general especially in a case of long data. This system is developed using taxonomy data representation. Taxonomy is the study of classification [4]. According to Human Computer Interaction (HCI) principle, one key way information access interfaces can help with memory load is to provide mechanisms for keeping track of choices made during the search process, allowing users to return to temporarily abandoned strategies, jump from one strategy to the next, and retain information and context across search sessions [5]. Presenting data in taxonomy provides feature where data are displayed as specific as possible. Data at parent node can be specified into several child nodes where users may view data specifically. Thus, users will not get lost when viewing a long data.

## **1.2 Problem Statement**

Information about FYP is important to lecturers and students. The process of conducting FYP course is becoming ineffective if there is no information sharing about FYP among lecturers and students. As FYP course is conducted every semester, there is a need to develop a web based system to store and share information about FYP among lecturers and students.

### **1.2.1 Problem Identification**

Here is the list of problems caused by no system to store and share information about FYP:

- Student

It is time-consuming for students to check every single report in the room at Building 1 for references because the reports are not sorted out accordingly.

- Lecturer

There are problems of clashes or reuse of FYP project as there is no shared information of FYP among lecturers.

- AA

It is difficult for AA to monitor the records of student borrowing reports since the record is manually written in the book.

### **1.2.2 Significant of the Project**

This system provides features to solve all problems stated. Students can view information about FYP including project title, owner, serial number and details about the project. Based on the serial number, students can directly search and borrow at a particular report without having to check every single report. Besides, students can search at a particular project based on project title, owner or tools used. This system provides information sharing among lecturers. Lecturer can insert information about FYP and the information will be shared among lecturers and students. AA can use this system to record students

borrowing reports through on-line. This system also provides reminder to AA for every report borrowed which has exceeded borrowing duration.

### **1.3 Objectives & Scope of Study**

#### **1.3.1 The Relevancy of Project**

This project is develop to solve all problem stated. The objectives of the project are:

- to computerize processes of the current system
- to display data in taxonomy at the searching and viewing information about FYP

As the scope of study, the FYP Library System is developed to be implemented for Department of ICT and BIS, UTP. This system is using actual data from FYP Part 2 for three semesters; July 2006, January 2007 and July 2007.

#### **1.3.2 Feasibility of the Project within the Scope and Time Frame**

The duration of time is estimated for two semesters which is consisting of about twelve months. The first part of the project (five months) is allocated for research of the project (research on data representation in taxonomy implementations and technical research). Technical research is focus on how the ideas could be implemented. It is including the research on how to develop the system, learning on programming language that feasible to implement the system and complete the system prototype. This first part covers the paperwork writing as well. The analysis of the ideas is also implemented in this part. The second phase is the implementation phase. Four months are allocated for development process. The system is anticipated to be completed within the duration. The remaining three months is for testing purposes and deployment.

## CHAPTER 2

### LITERATURE REVIEW AND/OR THEORY

The proposed solution for this research project is to develop a web based system to store information about FYP. Author found that web based system is becoming important nowadays and have advantages over paper based system.

#### 2.1 Web-Based Application

Definition of the web is a universe of networking-accessible information, and breaks the “full potential” into two by looking at it first as a means of human-to-human communication, and then as a space in which software agents can, though access to vast amount of everything which is society, science and its problem, become tools to work with human [6]. The web is a very general concept; one universal space of information. The concept required such as identifiers and information resources (documents) are as general and abstract as possible [7].

In this new evolution web site is becoming one of the main medium for people to interact, communicated and worked. As people know, mostly web is known as World Wide Web (WWW), and it was a transformative medium, as important as electricity [1, 8]. The web also has been a new medium to people nowadays, and has been a placed where user/people gain knowledge. As web helps establish a culture that honors the fluid boundaries between production and consumption of knowledge, it recognizes that knowledge can be produced wherever serious problems are being attacked and followed to their root. Furthermore, with the Web it is easier for various experts to interact casually-in the academy or in the firm-and to mentor or advice students of any age [9].

Organizations perceive a number of advantages in using the Web in enterprise computing, a particular advantage being that it provides an information representation which [10]:

- supports interlinking of all kinds of content

- is easy for end-users to access
- supports easy content creation using widely-available tools

Web resources provide advantages over paper resources. The Web makes possible interactive resources encouraging student involvement, a fundamental requirement of the currently popular constructivist theory of learning. The Web enables immediate changes to information; resources may be accessed by students on or off campus and at any time [11]. There is a significant correlation between the student's opinion of the quality of the web resources and usefulness of each web resource indicating that the quality of resources influences student opinions of their usefulness [12].

Author found that one key in developing a web based system is to fulfill Human Computer Interaction (HCI) challenges in order to maximize user satisfaction.

## **2.2 Human Computer Interaction (HCI) Challenges**

Information access is an iterative process, the goals of which shift and change as information is encountered. One key way information access interfaces can help with memory load is to provide mechanisms for keeping track of choices made during the search process, allowing users to return to temporarily abandoned strategies, jump from one strategy to the next, and retain information and context across search sessions. Another memory-aiding device is to provide browsable information that is relevant to the current stage of the information access process [13].

No autonomy can exist in the absence of control, and control cannot be exerted in the absence of sufficient information. Status mechanisms are vital to supplying the information necessary for users to respond appropriately to changing conditions [14].

Most users cannot and will not build elaborate mental maps and will become lost or tired if expected to do so. Once users reach the applications, a web based developer must take care to reduce navigation to a minimum and make navigation left clear and natural.

Present the illusion that users are always in the same place, with the work brought to them. This not only eliminates the need for maps and other navigational aids, it offers users a greater sense of mastery and autonomy. As with the inherent statelessness of the web, a web based developer job is not to accept blindly what the architects have given them, but to add the layers of capability and protection that users want and need. That the web's navigation is inherently invisible is a challenge, not an inevitable [15].

In order to fulfill these challenges, author decided to present data in taxonomy. Taxonomy organized data into system of classification. Thus, user can keep track of a long data they viewed as it has been classified in taxonomy. Taxonomy also provides autonomy or mastery of data where users can select data they want to view by clicked at any node in taxonomy. It will reduced users memory load of a long data.

### **2.3 Taxonomy**

Taxonomy is the science of identifying and naming species and organizing them into systems of classification [16]. The taxonomy module is one of the most popular features because users often want to create categories to organize content by type. Users also use categories to help in site navigation. The taxonomy module can automatically classify new content, which is very useful for organizing content on-the-fly. A simple example would be organizing a list of music reviews by musical genre [17].

Taxonomy is also the study of classification. The taxonomy module allows you to define vocabularies (sets of categories) which are used to classify content. The module supports hierarchical classification and association between terms, allowing for truly flexible information retrieval and classification. The taxonomy module allows multiple lists of categories for classification (controlled vocabularies) and offers the possibility of creating thesauri (controlled vocabularies that indicate the relationship of terms) and taxonomies (controlled vocabularies where relationships are indicated hierarchically) [18].

The taxonomy representation is translated into a computer model. Relationship can be conveyed to a software model that evaluates them. Information is translated from the taxonomy and is visualized in tree form in a decision support tool with the example of spar manufacture information [19].

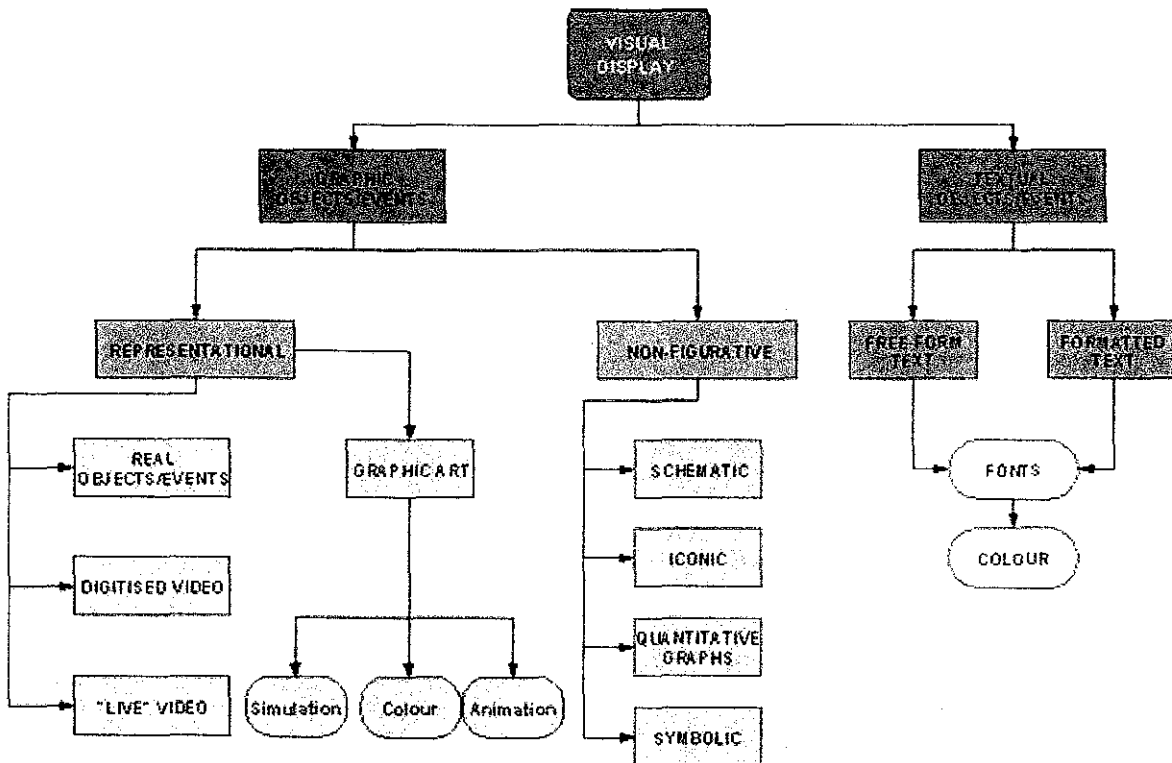


Figure 2.1: Example of Taxonomy

In a case of long data, the problems of presenting data in table is becomes not clear, consistent and not properly in order. All data presented must be well done, because without the data being understood, the credibility of the entire result disintegrates before user's eyes. It is difficult to add extraneous information in table. If something important is missing, the omission will stare the reader viciously in the face and reader will be lost. Therefore, be sensible and do present data in clear and understandable way [20].

## **CHAPTER 3**

### **METHODOLOGY AND PROJECT WORK**

The project is running in one year time; five months for project research, four months for project development and remaining three months for system testing. Project research involves the processes of studying the problem statements by conducting survey and interview sessions, analyzing the data obtained from survey and interviews, proposing a solution, defining system requirements and system flow, designing system interfaces and installing the hardware and software required.

Below are the phases of project work during project research:

#### **3.1 Studying the Problem Statements**

##### **3.1.1 Students**

A predevelopment survey was conducted to gather students' opinions towards matter related to project being research. Survey is used because there is a large of number of students from whom information and opinions are needed. The objective of this questionnaire is to gather information, opinion and feedback for the research work on behalf of students.

The questionnaire consists of 9 questions related to the problems of the students with the current system. These questions also mine the preferable type of presenting data. The author distributed questionnaires randomly to 100 students undertaking FYP.



### **3.1.2 Lecturers**

The author conducted interview sessions with:

- Mr. Nordin Zakaria  
FYP Coordinator July 2005-January 2006
- Ms. Aliza Sarlan  
FYP Coordinator July 2006-January 2007
- Mr. Mohd Hilmi Hasan  
Lecturer, Cluster of Multimedia & Communication Systems

The objective of this interview sessions are to gather information, opinion and feedback for the research work on behalf of lecturers. The questions during interview sessions related to the problems of the lecturers during conducting FYP course and supervising students undertaking FYP with the current system. This interview is also intended to get permission from FYP coordinator to use actual data about FYP.

### **3.1.3 Academic Assistant**

The purpose of this interview is to determine the flow of the system to be matched with the current flow of recording student borrowing reports.

## **3.2 Analyzing the Data Obtained**

Based on the surveys and interviews conducted, the author analyzed the results gathered. The results of survey are converted into pie chart while the results of interview sessions are analyzed in a feasibility study.

## **3.3 Proposing a Solution**

After reviewing the current problems, the author has identified with several objectives to be achieved on. These objectives are to identify the proper solution to be made. The

author has planned to develop a web based library system named as FYP Library System and asked for supervisor approval.

The author has reviewed several similar system related to the library system via the Net. The author has found there are many opportunities to increase the efficiency of the available system in the market especially in data representation.

### **3.4 Defining System Requirements and System Flow**

The author defined system requirements and system flow for students, lecturers and administrator (AA). Different modules have different requirements and different flow. Then, the author conducted discussion with students, lecturers and AA about the system requirements and the system flow defined for an agreement.

### **3.5 Designing System Interfaces**

The author understands that this phase decides how the system would operate, in term of hardware, software, user interface, and database. Based on the information collected earlier, the author has designed the logical flow of the system. The author designed system interfaces according to HCI principle. Then, the author conducted discussion with students, lecturers and AA about the system interfaces designed for an agreement.

### **3.6 Installing the Hardware and Software Required**

The author installed software; Adobe Photoshop CS2, Macromedia Dreamweaver MX, Microsoft Front Page, NetBeans 5.0 IDE and PostgreSQL 8.0. The author chooses JavaServer Pages (JSP) technology and Apache Tomcat Web Server since the author experienced on using these during the eight-month Industrial Internship Program.

Project development involves the processes of developing system. Below is the phase of project work during project development.

### **3.7 Developing System**

The author has specified two sub components in this phase:

- System Construction (Development)
- System Installation and Closing

#### **3.7.1 System Construction**

The objective of implementing system construction is to build the system to ensure it performs as designed. Application code, databases development, and interfaces design are constructed during system construction. The author understands that this phase usually gets the most attention because for most systems it is the longest and most expensive single part of the development process. The author has completed all system design and support documentation. Based on those documents, author would proceed with the system development.

The author prepared database architecture for the system. Backend design of the system includes relation database, file database and user information database. The system use PostgreSQL 8.0 as the database architecture. PostgreSQL 8.0 was chosen because of the availability of the software and the most suitable database tool to be integrated with Java software.

#### **3.7.2 System Installation and Closing**

Upon the completion of system development, the installation of the system takes place. System is installed in department of ICT and BIS. This would require user support as well such as training. New users required training. At the closing stage, activities

involved finalizing the system, presenting the system and preparing final documentation and lesson learnt.

System testing involves functional, integration and user acceptance testing. Below are the phases of project work during system testing.

### **3.8 Functional Testing**

Each module is tested once developed. This is to detect and debug any flaws before it is made as a whole system. It is also to ensure each subsystem is well-functioning. All modules are tested by using functional testing. A successful functional testing is when expected result or output achieved from the respective input.

### **3.9 Integration Testing**

Integration testing is conducted when each module completely developed in the system as a whole. It is to ensure there is no flaw or error each time integration of subsystems is performed. In case of error found, debugging will be carried out. Under this testing, the system linkages are also being tested. It is to ensure each link or successfulness of connection between the system and other system components, including database.

### **3.10 Users Acceptance Testing**

Even though the system has been put to a rigorous testing in both functional and integration earlier, the author feels that it is also important for the user acceptance test to be also conducted. This is in line with the objective of system development is to develop the system that meets the true needs of the user, not just the system specifications. Another objective of the test is to actually test on the business process flow of the system. However, the test is conducted to students only.

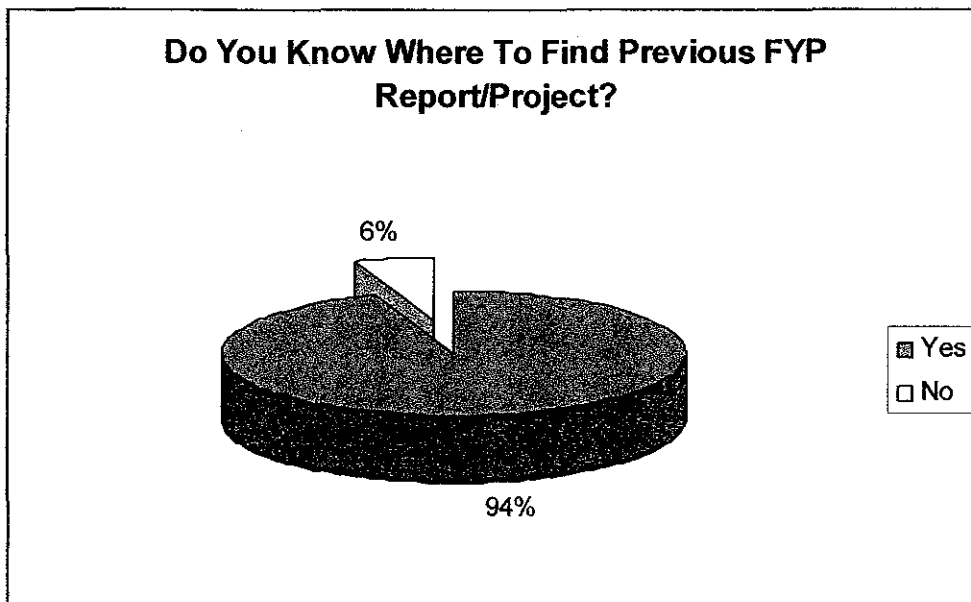
## CHAPTER 4

### RESULTS AND DISCUSSION

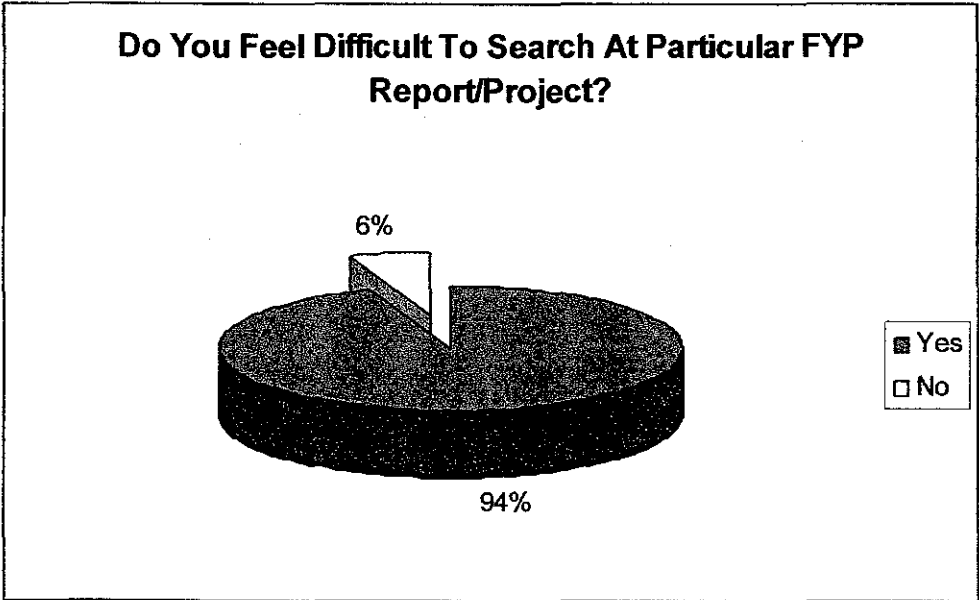
#### 4.1 Data Obtained

##### 4.1.1 Survey

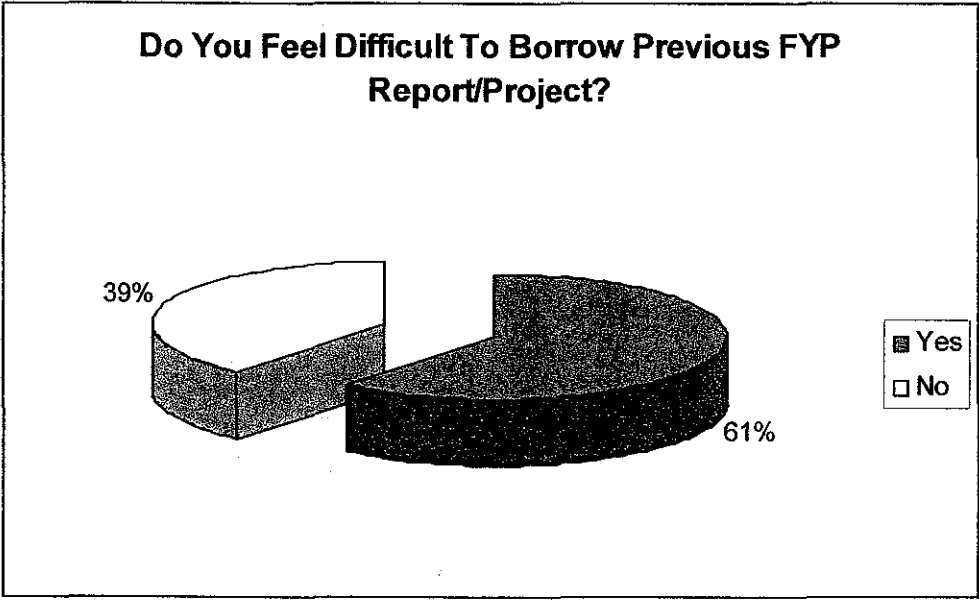
Below are the pie charts of students' consent:



Majority of students are conscious where to find previous FYP report/project which is from AA and IRC.

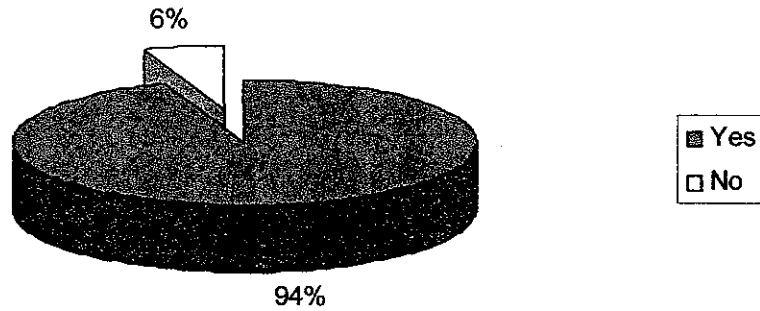


Majority of students feel difficult to search at a particular FYP report/project with the current system.



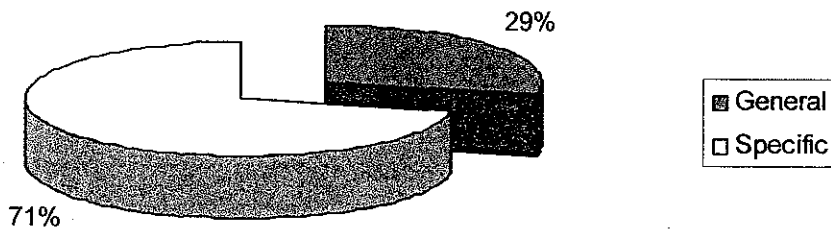
Majority of students feel difficult to borrow previous FYP report/project with the current system.

### Do You Prefer To Have FYP Library System?

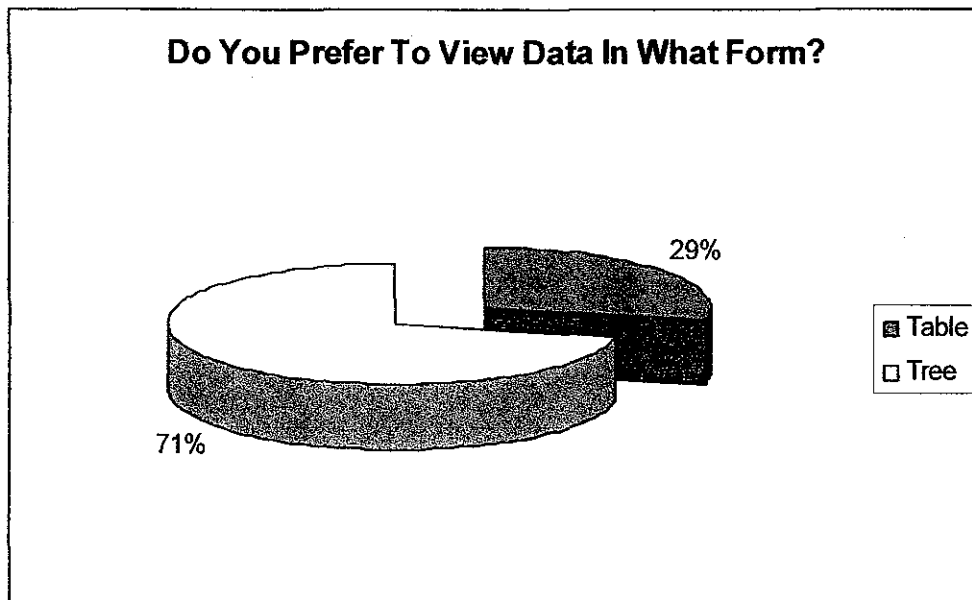


Majority of students prefer to have FYP library system replacing the current system.

### Which Type of Data You Prefer?



Majority of students prefer to view data as specific rather than as general.



Majority of students prefer to view data in tree form rather than in table form.

From this outcome, the author found that there is a major need to develop the FYP library system using taxonomy data representation to solve the problems faced by students.

#### 4.1.2 Interviews

Below are the results from interview sessions with lecturers;

- Mr. Nordin Zakaria

Mr. Nordin Zakaria agreed that the problem in current system is no library system to store information about FYP. Current system provides no facility for FYP coordinator to store information about FYP for a longer time. He agreed that library system to store information about FYP is necessary for lecturers and students as a source of reference.

- Ms. Aliza Sarlan

Ms. Aliza Sarlan agreed that she faced many difficulties during coordinating FYP course. One of the contributors is there is no library system to store information about FYP. When she takes over the position as FYP coordinator from Mr. Nordin Zakaria, she is not



received information about FYP from previous semester. She agreed that a web based library system could help her coordinates FYP course more effectively.

- Mr. Mohd Hilmi Hasan

Mr. Mohd Hilmi Hasan agreed that he usually faced a problem of same or reuse of project with other lecturers. He said that the problem is caused by the current system which provides no information sharing among lecturers about FYP. He agreed that a web based library system could help lecturers to make sure that the project is not same or reuse from other lecturers.

- AA

AA agreed that it is difficult for him to monitor record of students borrowing FYP report. The record is manually written in a book. He said that he always over look at student return FYP report late because there is no reminder. He said that there are cases where students do not fill up their personal information completely. Thus, it is difficult for him to track student who do not return FYP report. He agreed that a web based library system could help him monitor record of students borrowing FYP report more effectively.

## **4.2 System Requirements & System Flow**

From the analysis, all important information that needs to be included in the design phase is identified. Project analysis captured the requirements and solves problems mentioned in the problem statement.

The architecture of the system is divided into four parts:

- Presentation Layer
- Application Layer
- Server Layer
- Database Layer

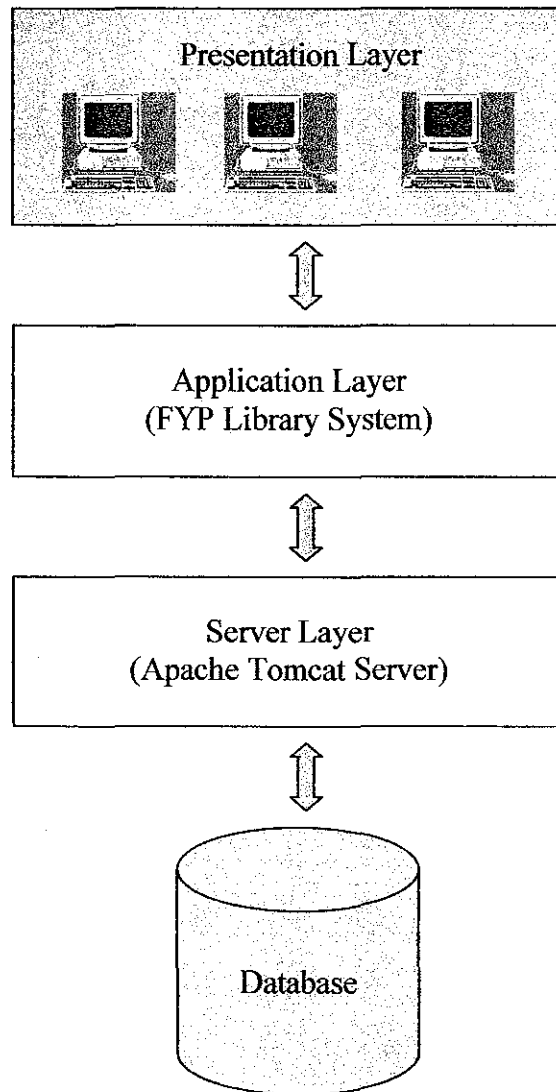


Figure 4.1: FYP Library System Architecture Diagram

FYP Library System Architecture Diagram illustrates the interaction between interdependent layers. The interconnections between layers are designed according to the standard of general information system development. It illustrates how clients are interacting with the server. It could be seen in the presentation layer which is consisting of several clients issuing the requests to the server. Application layer consists of the application software that provide presentation layer with the data and model. Server layer is an intermediary for connection between application layer and database layer.

## **4.2.1 Presentation Layer: Users Module, User Interface and System Flow**

### **4.2.1.1 Users Module**

The author has determined that the users of the system are:

- **Student**

Student is able to:

- view all projects
- view selected project
- search at a particular project
- change password

- **Lecturer**

Lecturer is able to:

- view, edit and delete all projects
- view, edit and delete selected projects
- search at a particular project
- insert new project
- change password

- **Administrator (AA)**

Administrator is able to:

- view announcement and reminder
- insert serial number for a new FYP report
- view, edit and delete password record
- insert new password
- view, edit and delete lecturer profile

## **4.2.2 Application Layer**

Application Layer would accommodate the interaction between users.

## **4.2.3 Server Layer**

The server is a middle tier between application layer and the database layer. All requests by the clients through application layer would be process in this server layer.

## **4.2.4 Database Layer**

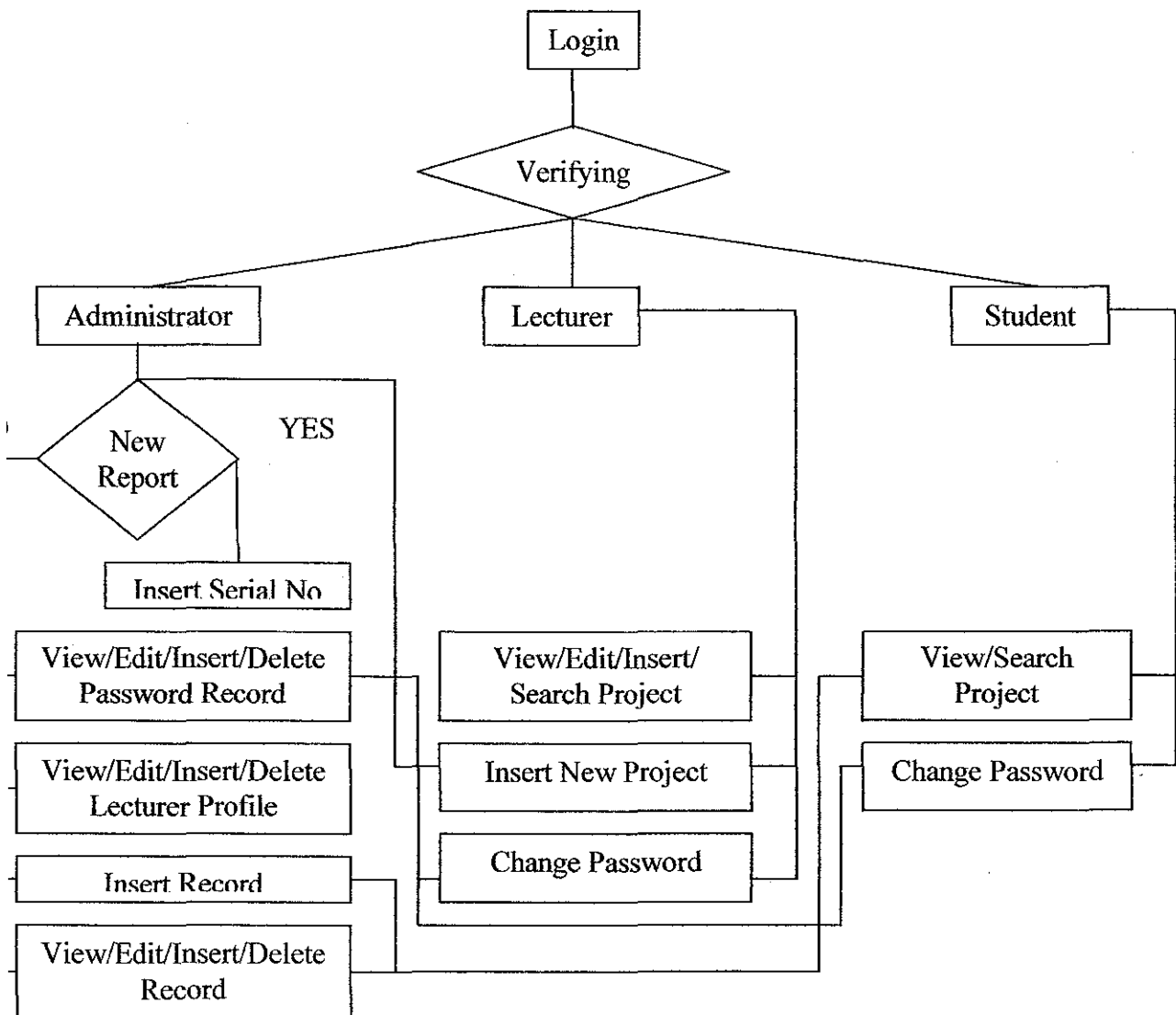
The database is organized around problem reports and suitable data structure to record entries. The author has chosen to use PostgreSQL for project's database management system.

- insert new lecturer profile
- insert record of student borrowing FYP report
- view, edit and delete record of student borrowing FYP report

#### 4.2.1.2 User Interface

This system is a web-based system. The usage of intensive user-friendly User Interface (UI) is implemented here. The combination between HTML and JSP make it possible for author to implement interactive UI.

#### 4.2.1.2 System Flow



## 4.3 Project Development

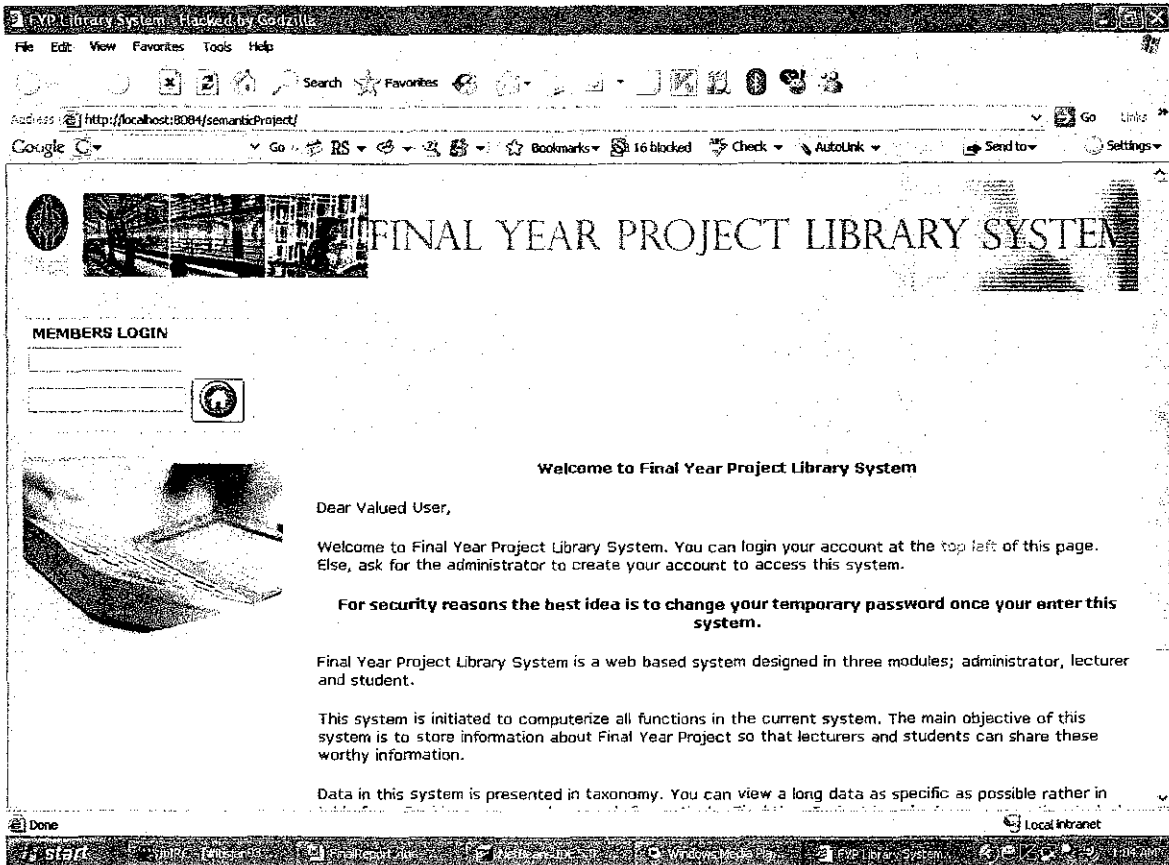


Figure 4.2: Login Page

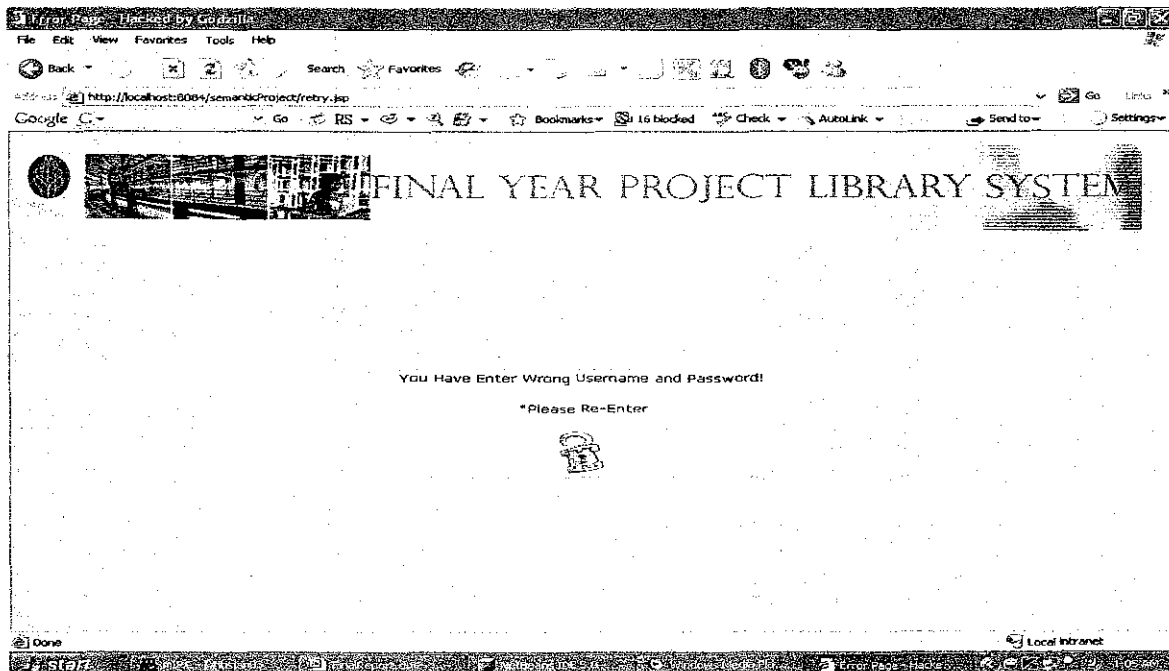


Figure 4.3: Error Page

### 4.3.1 Student Module

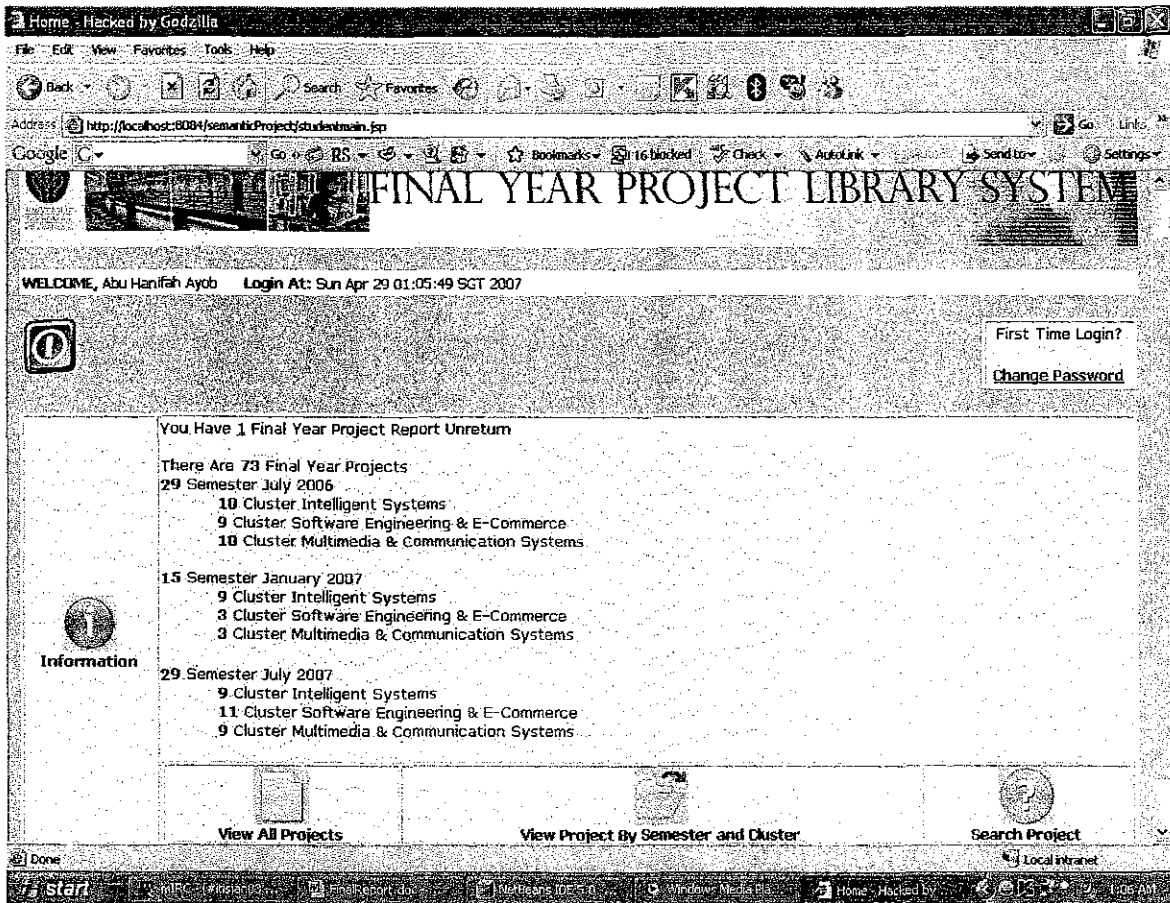


Figure 4.4: Student Main Page

The functions in student modules are:

- View All Projects

Student can view all projects in table. Information about the project consists of semester, cluster, supervisor, student name, student id, title and details. Details about the project consist of abstract, tools used, recommendation status, note, serial number and availability status. Besides, student can sort data accordingly.

- View Selected Projects

Student can view at a selected project. Data presented in taxonomy where student can view at a selected project according to semester, cluster and lecturer. New windows will be shown when student clicks at specific node.

- Search Projects

Student can search for a particular project by enter a keyword and type of the keyword. Data presented in taxonomy where taxonomy is shown at left frame and result is shown at right frame.

- Change Password

Student is encouraged to the password during first time login.



### 4.3.2 Lecturer Module

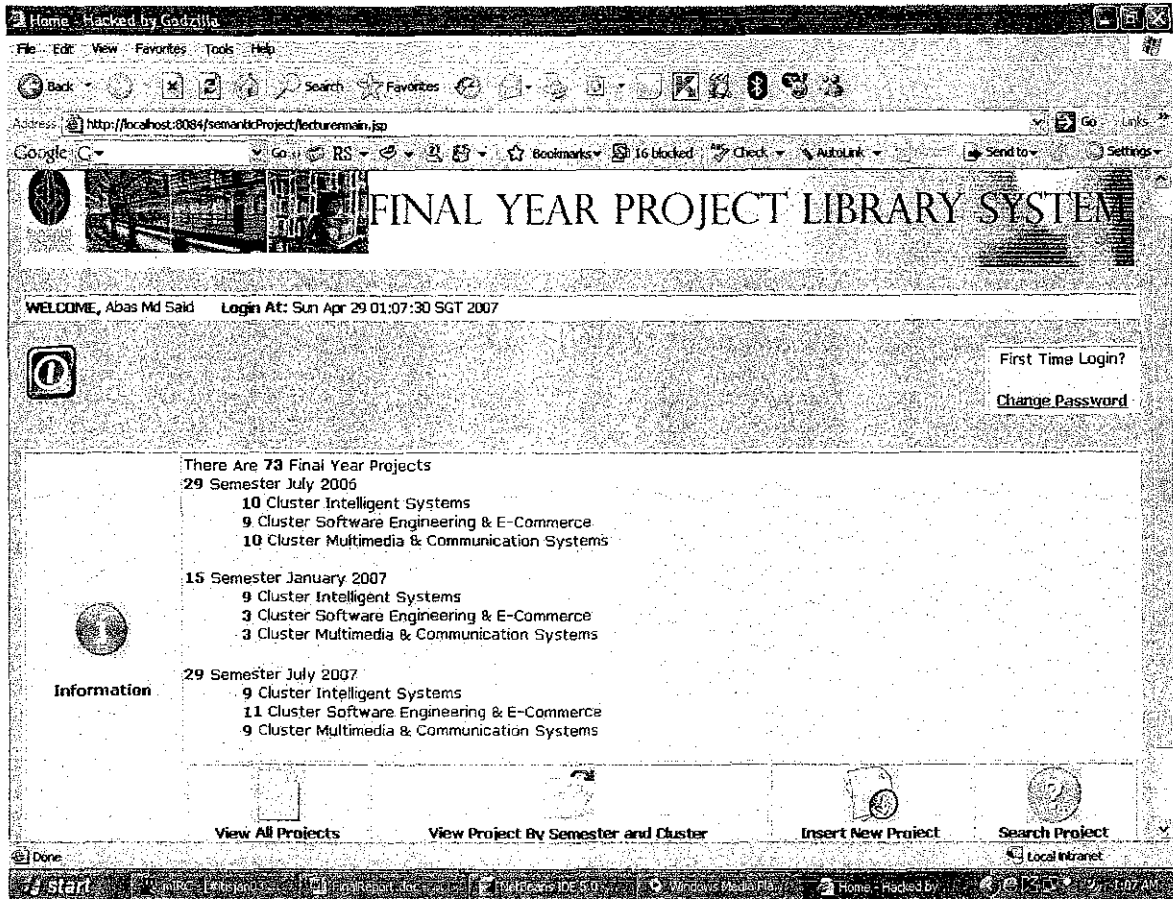


Figure 4.5: Lecturer Main Page

The functions in lecturer modules are:

- View All Projects

Lecturer can view, edit and delete all projects in table. Information about the project consists of semester, cluster, supervisor, student name, student id, title and details. Details about the project consist of abstract, tools used, recommendation status, note, serial number and availability status. Besides, lecturer can sort data accordingly.

- View Selected Projects

Lecturer can view, edit and delete at a selected project. Data presented in taxonomy where lecturer can view at a selected project according to semester, cluster and lecturer. New windows will be shown when lecturer click at specific node.

- Insert New Project

Lecturer can insert new project. Compulsory information need to be inserted are student name, student id, semester, supervisor, project title, abstract, tool used, recommended and note.

- Search Projects

Lecturer can search for a particular project by enter a keyword and type of the keyword. Data presented in taxonomy where taxonomy will be shown at left frame and result will be shown at right frame.

- Change Password

Lecturer is encouraged to the password during first time login.

### 4.3.3 Administrator Module

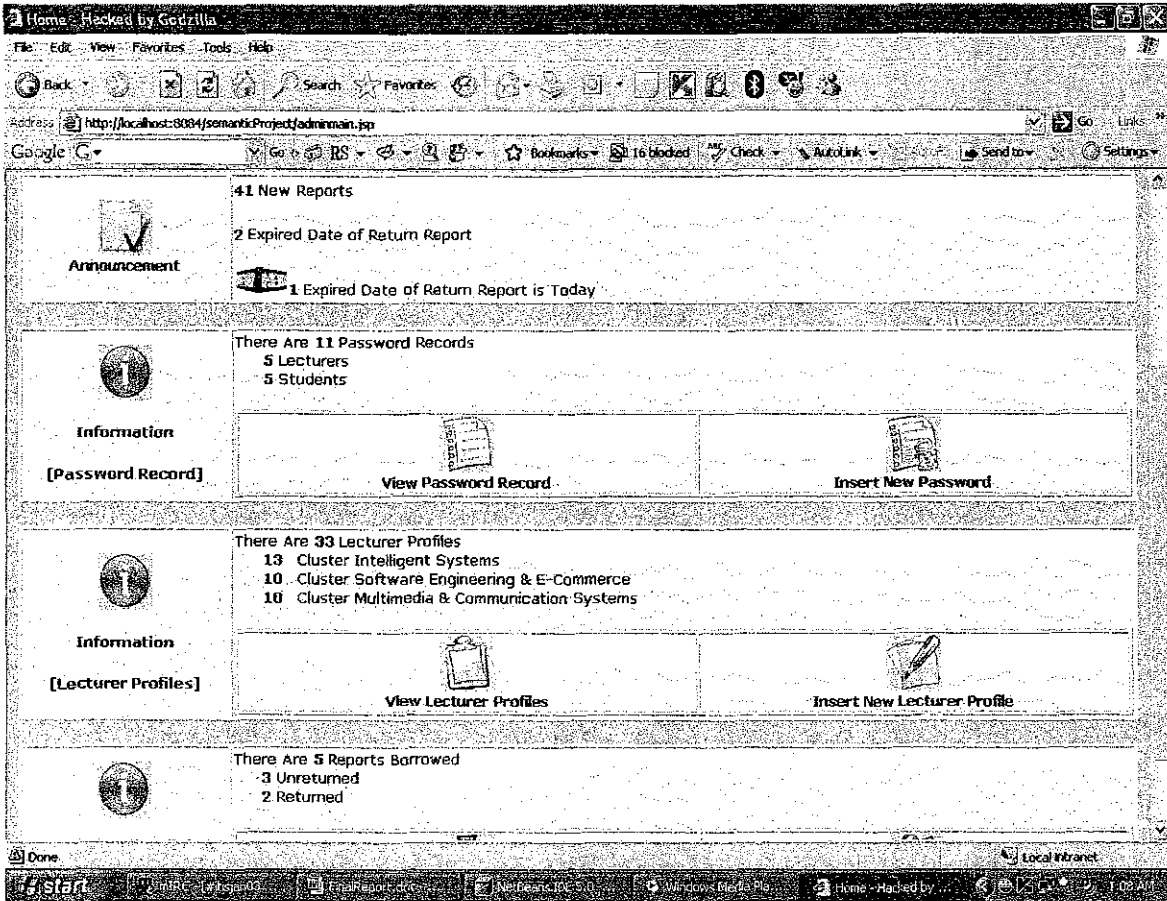


Figure 4.6: Admin Main Page

The functions in administrator modules are:

- View announcement and reminder

Administrator can view number of new report. Administrator need to insert a serial number for every new report inserted by lecturer. Besides, administrator can view reminder with number of report borrowed which has exceeded borrowing duration.

- View password record

Administrator can view, edit and delete password record of all authorized users of this system. Password record consists of user name, user id, password and access level. There

three access level; 1 for administrator, 2 for lecturers and 3 for students. Besides, administrator can sort data accordingly.

- Insert New Password

Administrator can insert new password for new authorized user. Compulsory information needs to be inserted are user name, user id, password and access level.

- View Lecturer Profile

Administrator can view, edit and delete lecturer profile. Lecturer profile consists of name, id, area of specialization, cluster, email and contact number. Besides, administrator can sort data accordingly.

- Insert New Lecturer Profile

Administrator can insert new lecturer profile. Compulsory information needs to be inserted are name, id, area of specialization, cluster, email and contact number.

- Insert Record

Administrator can insert record of student borrowing FYP report. Compulsory information needs to be inserted are student name, student id, contact number, email, serial number of the report, date of borrow and date of return.

- View Info Record

Administrator can view, edit and delete record of student borrowing FYP report. Info record consists of student name, student id, contact number, email, serial number of the report, date of borrow, date of return and status. Status can be either return or unreturn. When student returned the report borrowed, administrator will click at icon return and

status will change from unreturn to return. The status of the report will also be changed from unavailable to available at student module. Besides, administrator can sort data accordingly

### 4.3.4 System Features

- Taxonomy Data Representation

Data presented in taxonomy for view selected project and search for a particular project functions.

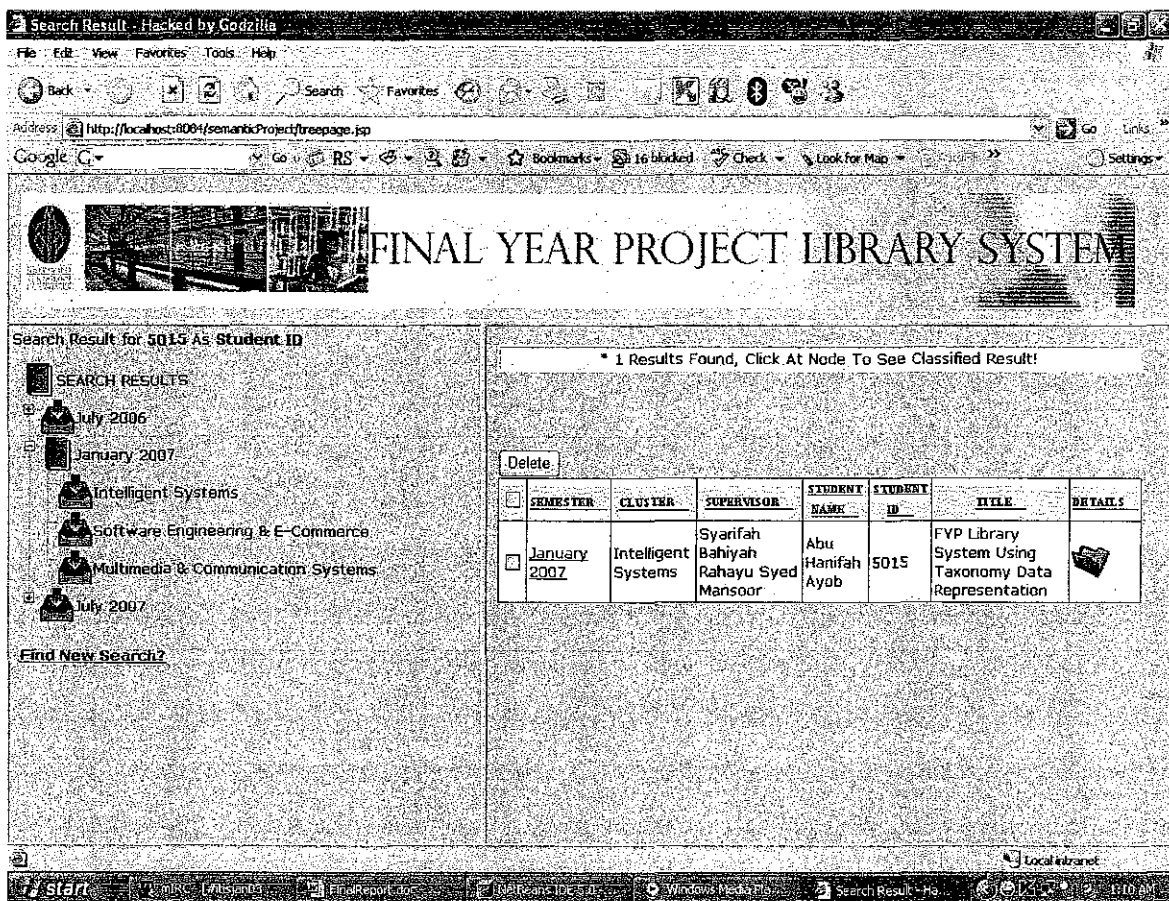


Figure 4.7: Taxonomy Data Representation at Search Project Page

- Error Control

Users are not allowed to leave the compulsory field blank.

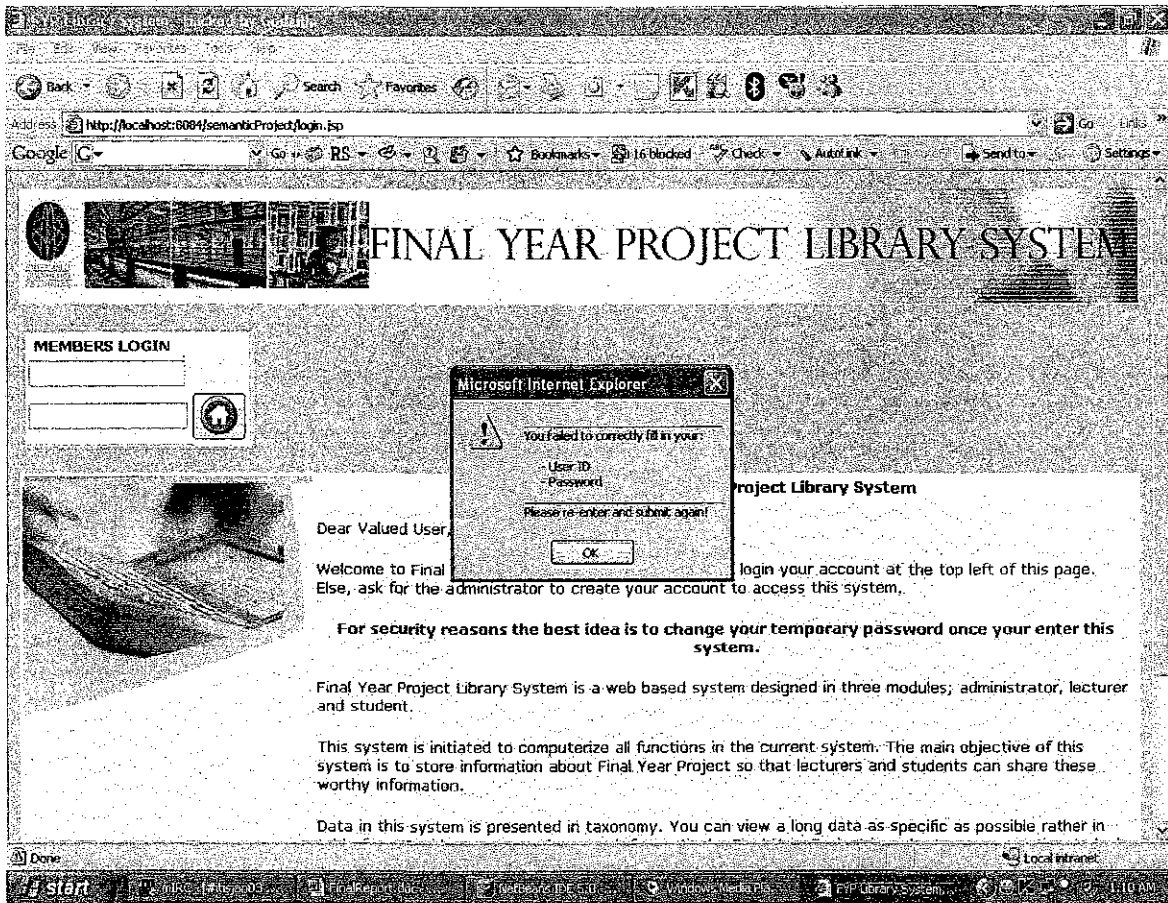


Figure 4.8: Error Control at Login Page

- Users Navigation

All pages are provided with button back to make sure users are not lost when navigating the system.

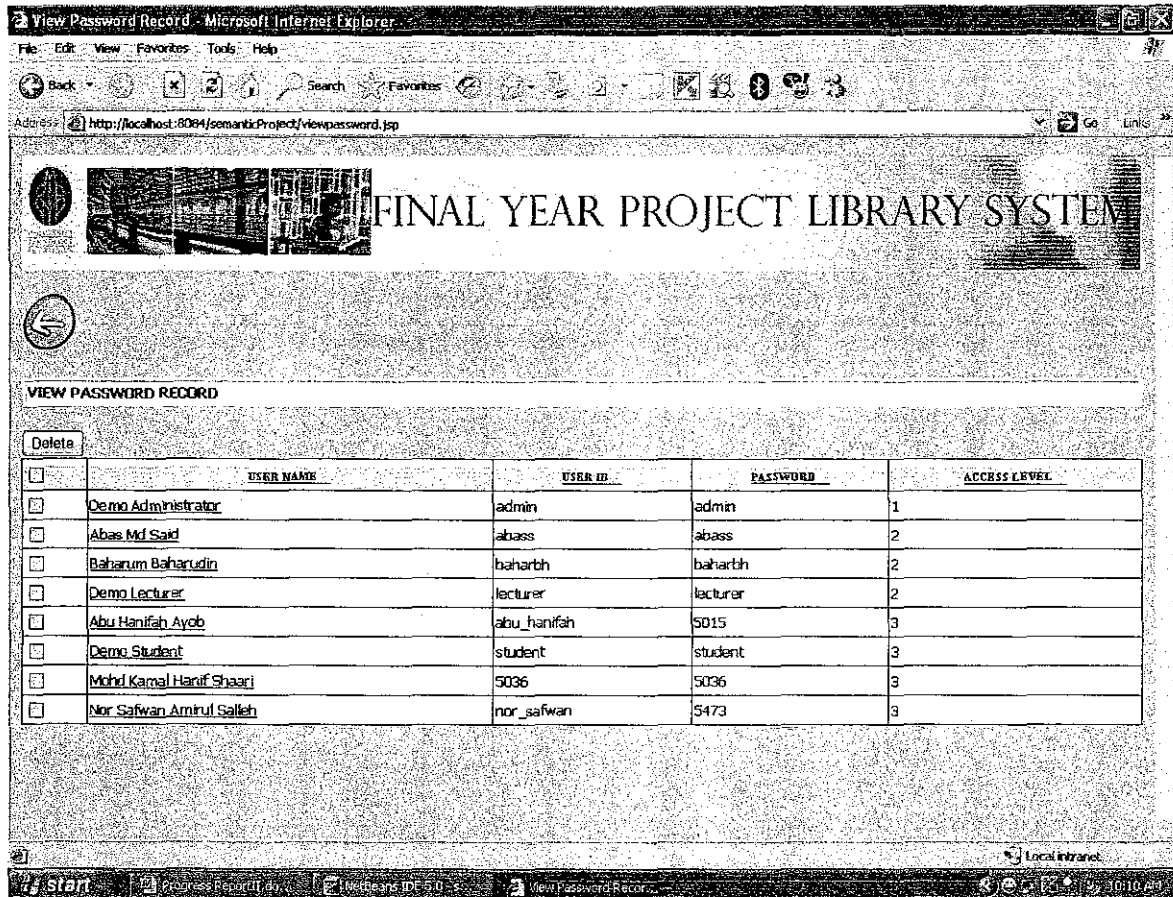


Figure 4.9: Button Back at View Password Record Page

- Session Expired

Users are not allowed to browse to any page before login.

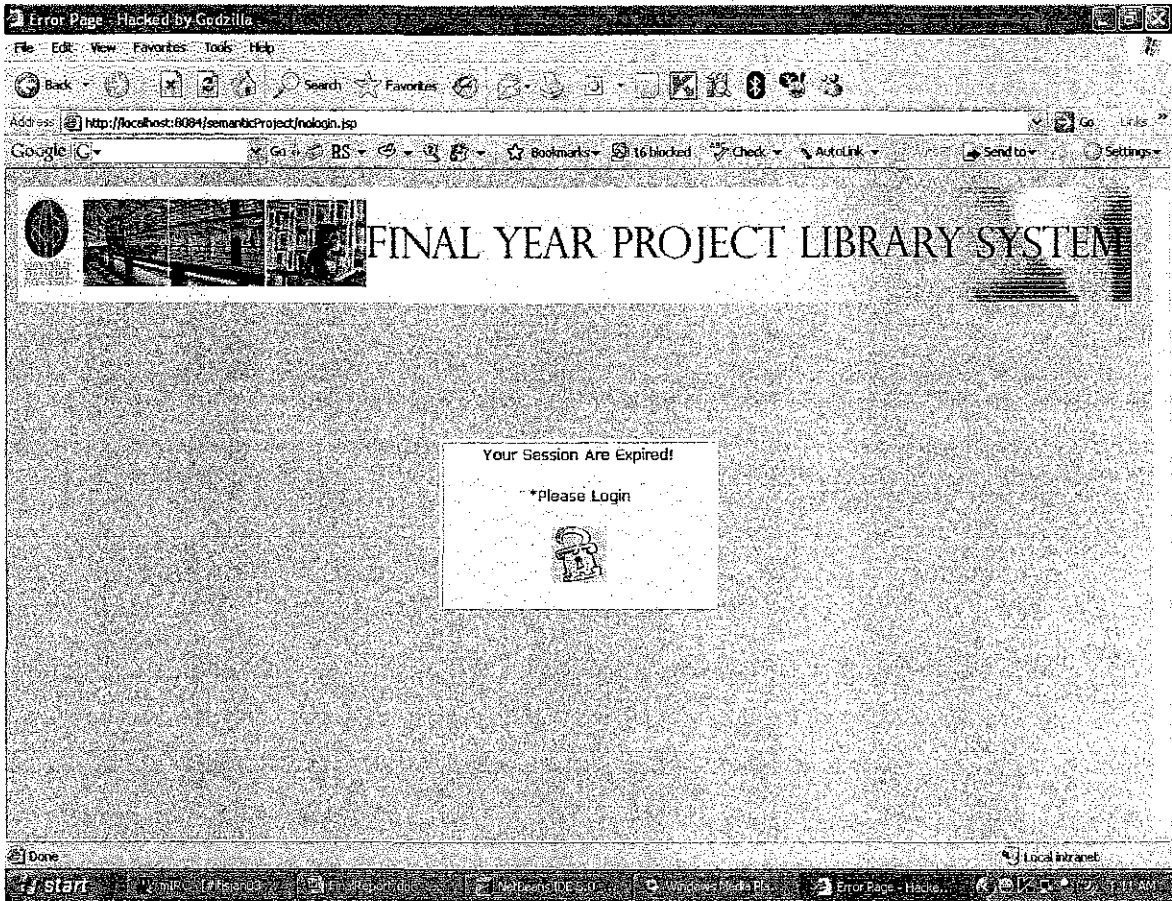


Figure 4.10: Session Expired Page



## 4.4 Functional Testing

Below are the results from functional testing conducted:

### 4.4.1 Administrator Module

Component	Result
Login	Authentication successful. Permit administrator's access. User's session is successfully set.
Administrator Control Panel	Appear after administrator login in. Administrator alerts new reports, expired date of return report appear. Administrator console appear.
View Password Record	List of password record successfully appeared. Administrator could edit and delete the list successfully. Record changed is successfully saved in database.
Insert New Password	Administrator could successfully insert new password. New password inserted is successfully saved in database.
View Lecturer Profile	List of lecturer profile successfully appeared. Administrator could edit and delete the list successfully. Record changed is successfully saved in database.
Insert New Lecturer Profile	Administrator could successfully insert new lecturer profile. New lecturer profile inserted is successfully saved in database.
Insert New Record	Administrator could successfully insert new record. New record inserted is successfully saved in database.
Info Record	List of record successfully appeared. Administrator could edit and delete the list successfully. Record changed is successfully saved in database.
Logout	User session is successfully terminated. Logout page is successfully appeared.

#### 4.4.2 Lecturer Module

Component	Result
Login	Authentication successful. Permit lecturer's access. User's session is successfully set.
Lecturer Control Panel	Appear after lecturer login in. Lecturer alerts number of reports appears. Lecturer console appear.
View All Projects	List of project successfully appeared. Lecturer could edit and delete the list successfully. Record changed is successfully saved in database.
View Project By Semester and Cluster	Lecturer could successfully view project by semester and appear. Lecturer could edit and delete the list successfully. Record changed is successfully saved in database.
Insert New Project	Lecturer could successfully insert new project. New project inserted is successfully saved in database.
Search Project	Lecturer could successfully search project. Lecturer could edit and delete the list successfully. Record changed is successfully saved in database.
Logout	User session is successfully terminated. Logout page is successfully appeared.

#### 4.4.3 Student Module

Component	Result
Login	Authentication successful. Permit student's access. User's session is successfully set.
Student Control Panel	Appear after student login in.

	Student alerts number of reports appears. Student console appear.
View All Projects	List of project successfully appeared.
View Project By Semester and Cluster	Student could successfully view project by semester and appear.
Search Project	Student could successfully search project.
Logout	User session is successfully terminated. Logout page is successfully appeared.

#### 4.5 Integration Testing

Below are the results from integration testing conducted:

Module/Component	Test Result
Integration between subsystem	Integration among subsystem is successfully integrated. Each subsystem is well functioning.
Integrated subsystem as a whole system	Successfully integrated as a whole system. No error/bugs.
Linkage of the links, command link and button	All linkage between pages to another is successfully linked. Linkage from link, command link and button is successfully integrated.
System integration with database	Integration between the system and postgresQL is successfully done. No error/bugs during the integration.

## 4.6 Acceptance Testing

Below are the results from acceptance testing conducted to ten students:

### 4.6.1 System Requirements

- All ten students agreed that the system solved problem statement
- 6 out of 10 students agreed that functions in the system are satisfactory
- 5 out of 10 students agreed that functions in the system are completed

### 4.6.2 System Functionality

- 8 out of 10 students agreed that the system provides user friendly interfaces
- All students agreed that the system is easy to navigate

### 4.6.3 Overall Rating

- From scale 1 (Worst) to 10 (Best)

Scale	No of Students
1	0
2	0
3	0
4	0
5	1
6	3
7	4
8	1
9	1
10	0

- **Suggestion:** Students suggest this system should provide user support such as info for new user. Students also suggest this system to store demo of the FYP, so that students can download it. Lastly, students comment that the interfaces are empty and should be more interactive.

## CHAPTER 5

### CONCLUSION AND RECOMMENDATION

As conclusion, this project had achieves objectives stated and fulfilled all requirements. The functions in the system helps to overcome problems stated. FYP Library System provides function for searching which can save the time for student to search for a particular FYP. Searching function also allow students to search for any FYP that does not finished or required for enhancement. Besides, FYP Library System computerized the process of borrowing FYP report which provides more efficient system for AA to keep record of every FYP report borrowed. FYP Library system also overcome the problem of late return of FYP report as AA is reminded with the date of return for every FYP report borrowed. Lecturers can use FYP Library System to search for information of FYP to make sure there is no clash or reuse of project. Searching function also allow lecturers to share information about FYP with other lecturers. FYP Library System displays data in taxonomy instead of in table. Displaying data in taxonomy gives advantage to users to view data as specific as possible according to the HCI principle. Perhaps, future enhancement of this project is to implement ontology based application using protégé plug-in. Besides, this project can be broadening to all departments in UTP. However, it required modification as other departments might have different structure of FYP.

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## **APPENDIXES**



## SURVEY FORM

This survey is to help in getting information towards the acceptance of Final Year Project (FYP) Library System to store information of FYP using taxonomy data representation.

Please take a moment to answer this survey. Thank You.

What Course You Are Undertaking?

- A- FYP Part A
- B- FYP Part B

Have You Refer Any of Previous FYP Report/Project?

- A- Yes
- B- No

Do You Prefer To Refer Any of Previous FYP Report/Project?

- A- Yes
- B- No

Do You Know Where To Find Previous FYP Report/Project?

- A- Yes
- B- No

Do You Feel Difficult To Search At Particular FYP Report/Project?

- A- Yes
- B- No

Do You Feel Difficult To Borrow Previous FYP Report/Project?

- A- Yes
- B- No

Do You Prefer To Have FYP Library System?

- A- Yes
- B- No

Which Type of Data You Prefer?

- A- General
- B- Specific

Do You Prefer To View Data In What Form?

- A- Table
- B- Tree

## **INTERVIEW DETAILS**

**Mode of Interview:**

**Date of Interview:**

**Time of Interview:**

### **Interviewee Information**

Name:

Designation:

Organization:

Department:

### **List of Interview Questions**

- What are the responsibilities as FYP coordinator/lecturer/AA in FYP course?
- What are your individual work responsibilities in FYP course?
- What is the system flow in FYP course currently being used?
- What are the problems currently being faced?
- What is the alternative to solve these problems?
- What are the features you want to be in FYP library system?
- What are your suggestions to make FYP library system more effective?

## ACCEPTANCE TESTING

Name:

Course:

Year:

### System Requirements

Do you think that the system solved problems?

A- YES

B- NO

Do you think that functions in the system are satisfactory?

A- YES

B- NO

Do you think that functions in the system are completed?

A- YES

B- NO

### System Functionality

Do you think that the system provides user friendly interfaces?

A- YES

B- NO

Do you think that the system is easy to navigate?

A- YES

B- NO

### Overall Rating

From scale 1 (Worst) to 10 (Best), please rate the system:



Suggestion/Comment:

---

Announcement - Microsoft Internet Explorer


File Edit View Favorites Tools Help

Address http://localhost:8084/semanibProject/announcement.jsp

# FINAL YEAR PROJECT LIBRARY SYSTEM

NEW PROJECT

SEMESTER	CLUSTER	SUPERVISOR	STUDENT NAME	STUDENT ID	TITLE	INSERT SERIAL NO
January 2007	Intelligent Systems	Syarifah Bahiyah Rahayu Syed Mansoor	Abu Hanifah Ayob	5015	FYP Library System Using Taxonomy Data Representation	

EXPIRED DATE OF RETURN REPORT



Local intranet

Administrator Announcement Page

View Password Record - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost:8084/semanibProject/viewpassword.jsp

# FINAL YEAR PROJECT LIBRARY SYSTEM

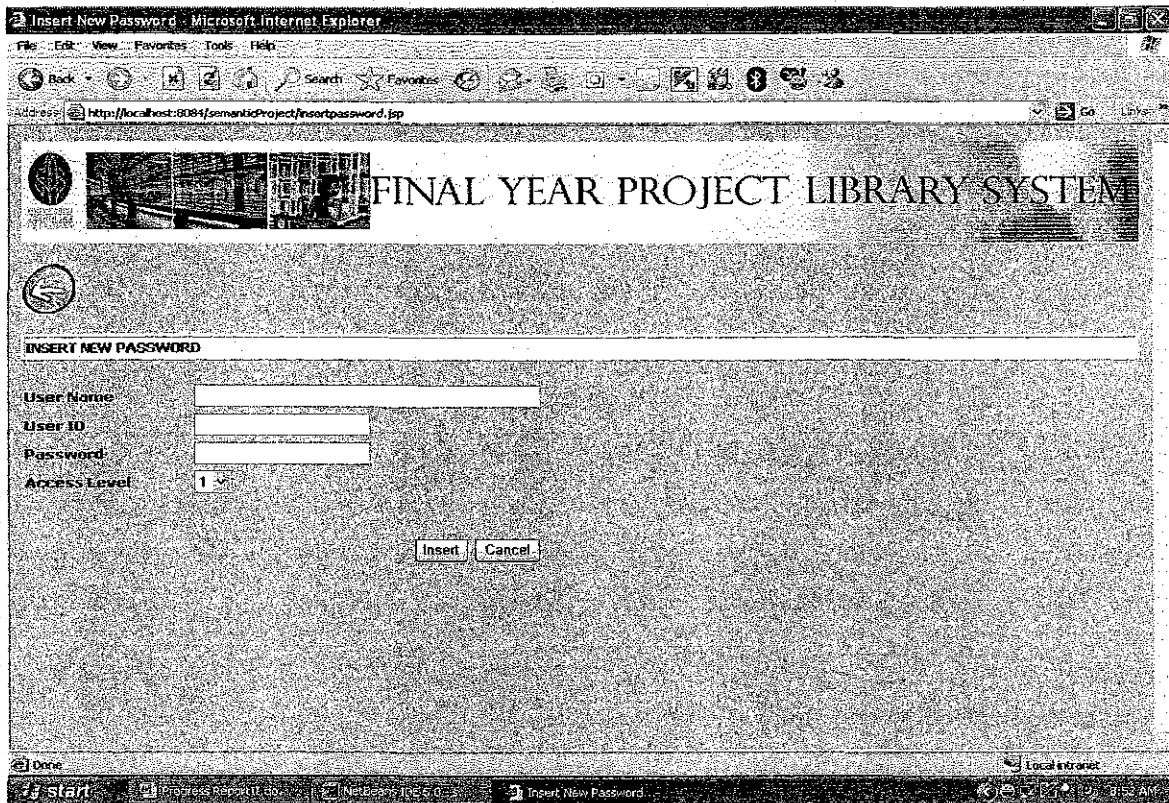
VIEW PASSWORD RECORD

Delete

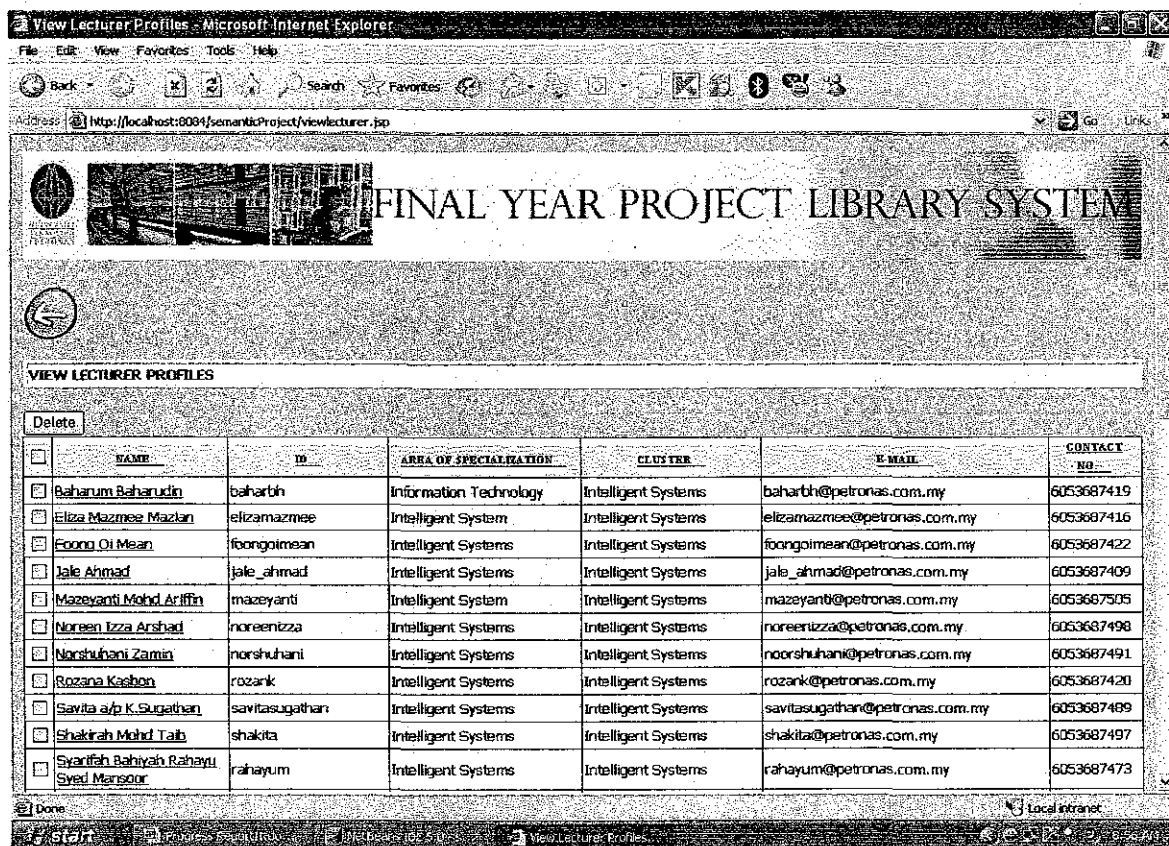
<input type="checkbox"/>	USER NAME	USER ID	PASSWORD	ACCESS LEVEL
<input type="checkbox"/>	Demo Administrator	admin	admin	1
<input type="checkbox"/>	Ahas Md Sadi	abass	abass	2
<input type="checkbox"/>	Baharum Bahaudin	baharbh	baharbh	2
<input type="checkbox"/>	Demo Lecturer	lecturer	lecturer	2
<input type="checkbox"/>	Abu Hanifah Ayob	abu_hanifah	5015	3
<input type="checkbox"/>	Demo Student	student	student	3
<input type="checkbox"/>	Mohd Kamal Hanif Shaari	5036	5036	3
<input type="checkbox"/>	Nor Safwan Amirul Salleh	nor_safwan	5473	3

Local intranet

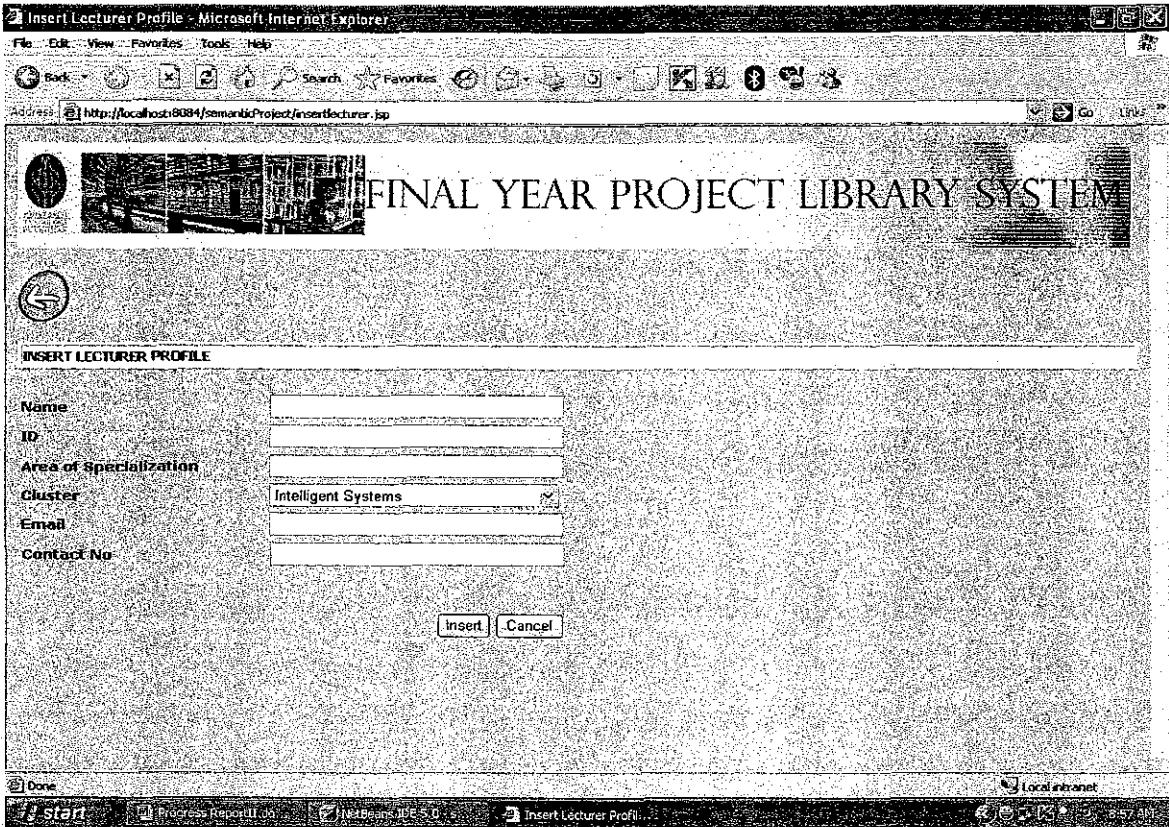
Administrator View Password Page



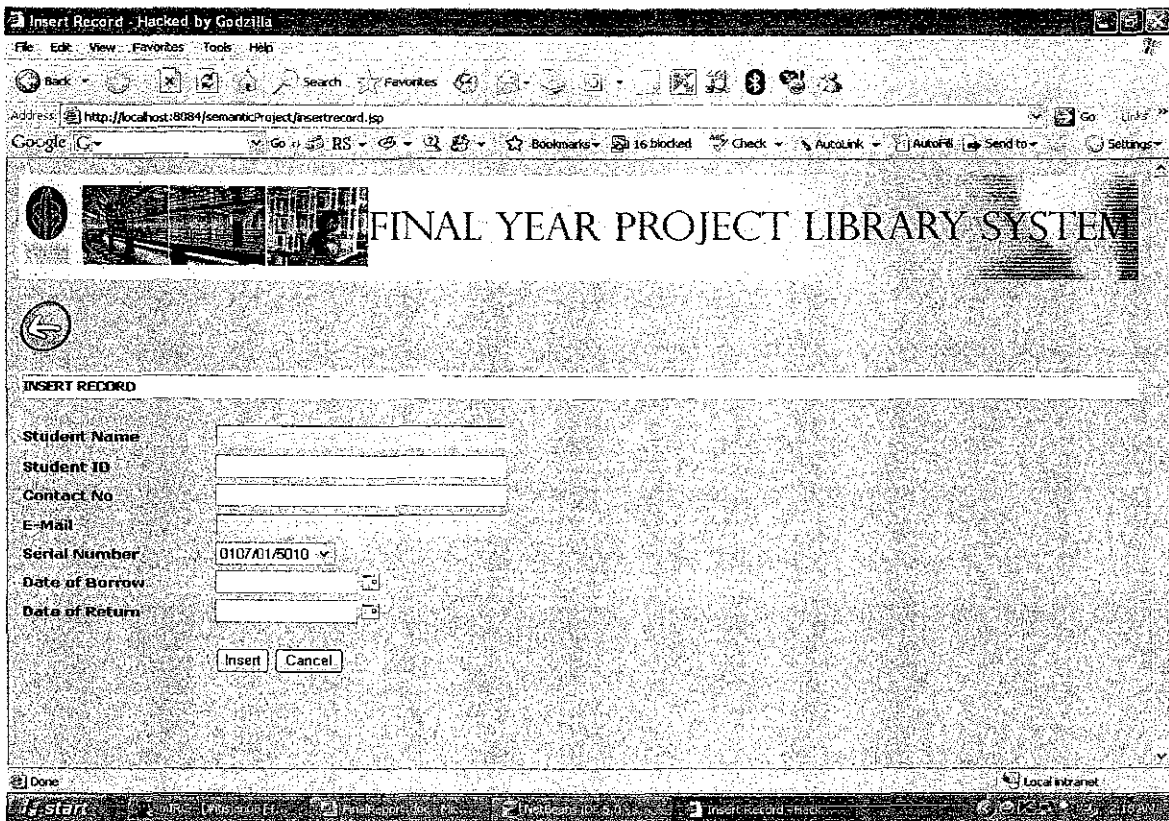
Administrator Insert New Password Page



Administrator View Lecturer Profile Page



Administrator Insert Lecturer Profile Page



Administrator Insert Record Page

Info Record - Microsoft Internet Explorer

Address: http://localhost:8084/semarbidProject/infoRecord.jsp

## FINAL YEAR PROJECT LIBRARY SYSTEM

INFO RECORD

Delete

STUDENT NAME	STUDENT ID	CONTACT	E-MAIL	SERIAL NO	DATE OF BORROW	DATE OF RETURN	STATUS	RETURN
Abu Hanifah Ayob	5015	0192538617	abu_hanifah@utp.edu.my	0107015006	2007-04-03	2007-05-03	UNRETURN	
Mohd Zulfadli Roslan	5381	01966602461	zulfadli_roslan@yahoo.com	0207017033	2007-04-04	2007-05-04	RETURN	

Administrator Info Record Page

View All Projects - Microsoft Internet Explorer

Address: http://localhost:8084/semarbidProject/viewall.jsp

## FINAL YEAR PROJECT LIBRARY SYSTEM

VIEW ALL PROJECTS

Delete

SEMESTER	CLUSTER	SUPERVISOR	STUDENT NAME	STUDENT ID	TITLE	DETAILS
January 2007	Intelligent Systems	Sawita a/p K.Sugathan	Amin Kamil Mohammad	5010	Final Year Project Portal	
January 2007	Intelligent Systems	Sawita a/p K.Sugathan	Khuzaili Hairizam Zaman	5363	JCT / BIS Research Cluster Sharing System	
January 2007	Intelligent Systems	Syarifah Bahiyah Rahayu Syed Mansoor	Abu Hanifah Ayob	5015	FYP Library System Using Taxonomy Data Representation	
January 2007	Intelligent Systems	Syarifah Bahiyah Rahayu Syed Mansoor	Mohd Kamal Hanif Shaari	5036	Searching in Moodle	
January 2007	Intelligent Systems	Yong Suet Peng	Mohamad Hasbullah Abu Bakar	5005	Content Based Image Retrieval	
January 2007	Multimedia & Communication Systems	Abas Md Said	Nik Hasni Hajar Nik Anuar	6054	Vote Through SMS for Student Council Election	
January 2007	Multimedia & Communication Systems	Mohd Hilmi Hasan	Mohd Zulfadli Roslan	5381	Mobile Information Lock in Mall Using Wi-Fi	
January 2007	Software Engineering & E-Commerce	Aliza Sarlan	Mohd Nor Salleh	5273	Feedback Management System	

Lecturer View All Projects Page

Project Details - Hacked by Gadzilla

File Edit View Favorites Tools Help

Address: http://localhost:8084/semanticProject/details.jsp?id=5082

Google

### PROJECT DETAILS

<b>Student Name</b>	Nurdyana Leham
<b>Student ID</b>	5082
<b>Semester</b>	January 2007
<b>Supervisor</b>	Justin Dinesh Devaraj Daniel
<b>Title</b>	Vehicle Parking Space Locator with Surveillance System
<b>Abstract</b>	Vehicle Parking Space Locator with Surveillance System is developed to help drivers to locate available parking space in a parking area using their mobile devices via Bluetooth application. The system will provide information about the location of the parking space as well as the image of the parking area. The objective of the service is to enhance the existing parking system, to provide better service for drivers in searching of available parking space, and to utilize the Bluetooth application in mobile devices as the medium of the services. The service also looks forward in reducing the traffic congestion, high CO2 emission, and the drivers precious time which are derived from parking surveys activities. The methodology is based on the Rapid Application Development (RAD) model, which is the enhancement of waterfall model, since it is the most appropriate model to be used for fast project development and delivery of high quality system at low cost of investment. The service is hope would benefits mobile users and drivers in lowering their fuel consumption, saving cost of services, and reducing users time for parking surveys. The system will be integrating Visual Basic.NET with Matlab 7.0 tools. When a client/mobile user requests for available parking space information from the system via Bluetooth application, the system would respond to the request by providing the image of the current parking lot as well as the exact locations information. The parking area would be captured using Visual Basic .NET and the captured images would be processed using Matlab Image Processing Toolbox.
<b>Tools Used</b>	
<b>Recommendation</b>	Yes
<b>Note</b>	
<b>Serial No.</b>	0107/01/5082
<b>Availability</b>	Available

Done Local intranet

Start [Project Details - Hack...]

## Lecturer Project Details Page

Edit Project Details - Hacked by Gadzilla

File Edit View Favorites Tools Help

Address: http://localhost:8084/semanticProject/edit/details.jsp

Google

### EDIT PROJECT DETAILS

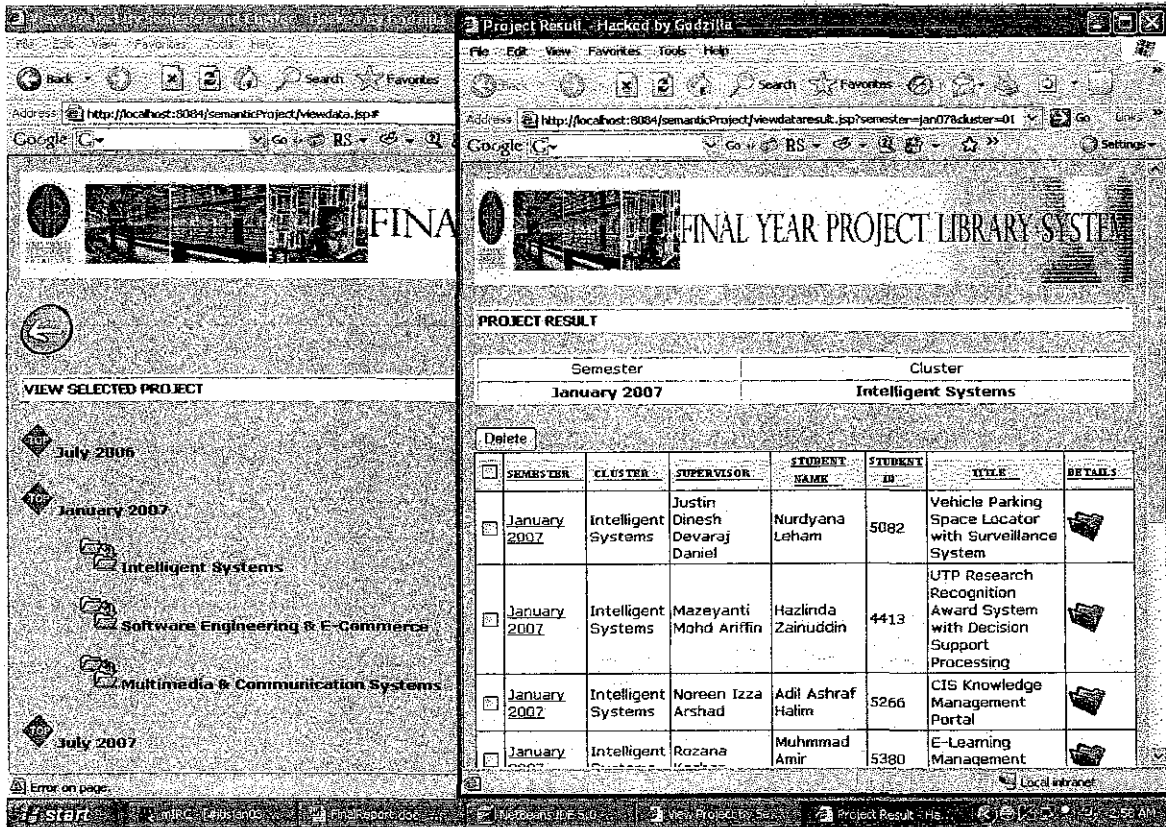
<b>Student Name</b>	Nurdyana Leham
<b>Student ID</b>	5082
<b>Semester</b>	January 2007
<b>Supervisor</b>	Justin Dinesh Devaraj Daniel
<b>Title</b>	Vehicle Parking Space Locator with Surveillance System
<b>Abstract</b>	Vehicle Parking Space Locator with Surveillance System is developed to help drivers to locate available parking space in a parking area using their mobile devices via Bluetooth application. The system will provide information about the location of the parking space as well as the image of the parking area. The objective of the service is to enhance the existing parking system, to provide better service for drivers in searching of available parking space, and to utilize the Bluetooth application in mobile devices as the medium of the services. The service also looks forward in reducing the traffic congestion, high CO2 emission, and the drivers precious time which are derived from parking surveys activities. The methodology is based on the Rapid Application Development (RAD) model, which is the enhancement of waterfall model, since it is the most appropriate model to be used for fast project development and delivery of high quality system at low cost of investment. The service is hope would benefits mobile users and drivers in lowering their fuel consumption, saving cost of services, and reducing users time for parking surveys. The system will be integrating Visual Basic.NET with Matlab 7.0 tools. When a client/mobile user requests for available parking space information from the system via Bluetooth application, the system would respond to the request by providing the image of the current parking lot as well as the exact locations information. The parking area would be captured using Visual Basic .NET and the captured images would be processed using Matlab Image Processing Toolbox.
<b>Tools Used</b>	
<b>Recommendation</b>	Yes

Done Local intranet

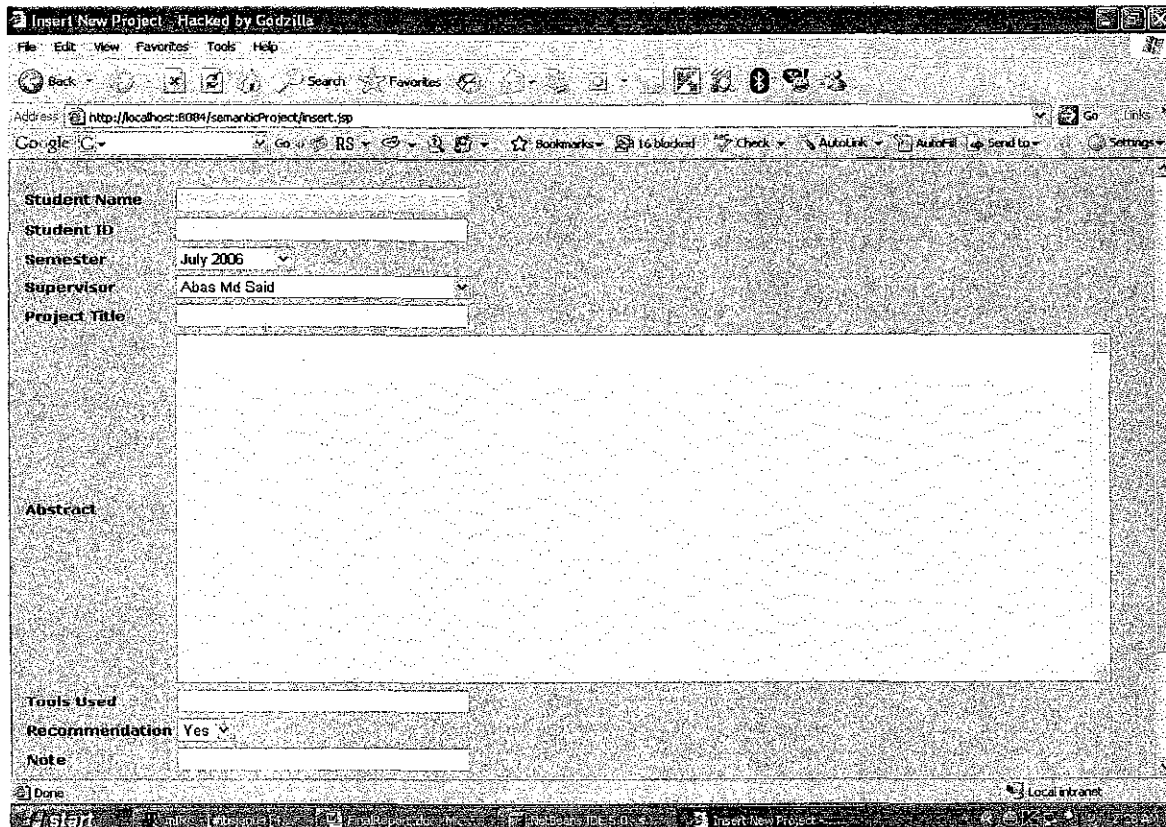
Start [Edit Project Details...]

## Lecturer Edit Project Details Page

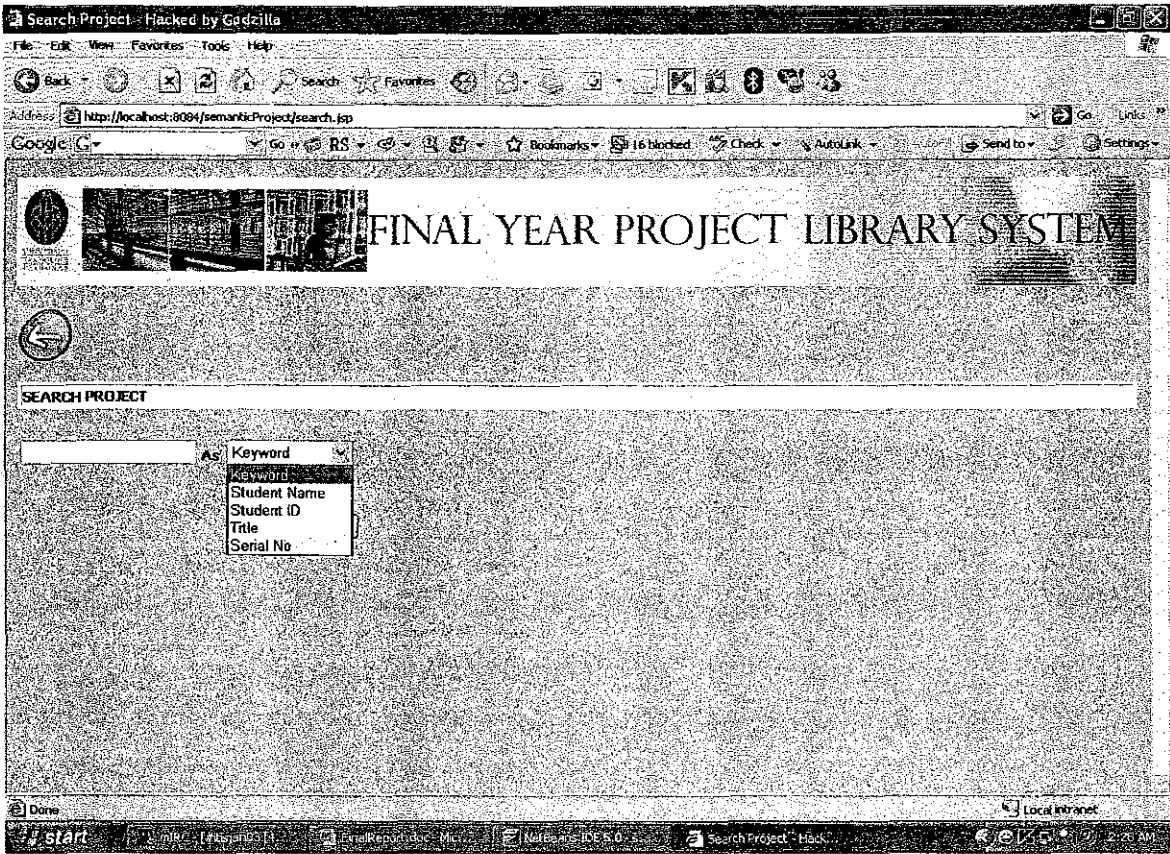




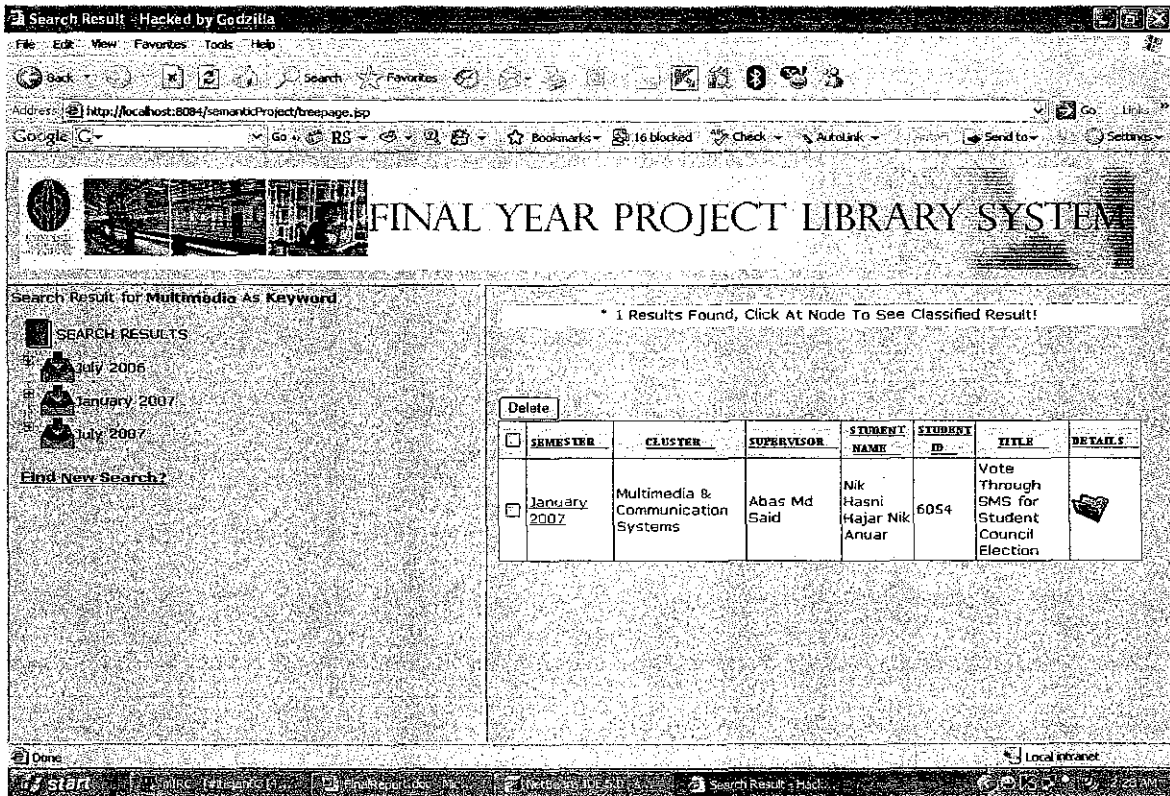
Lecturer View Selected Project and Selected Project Result Page



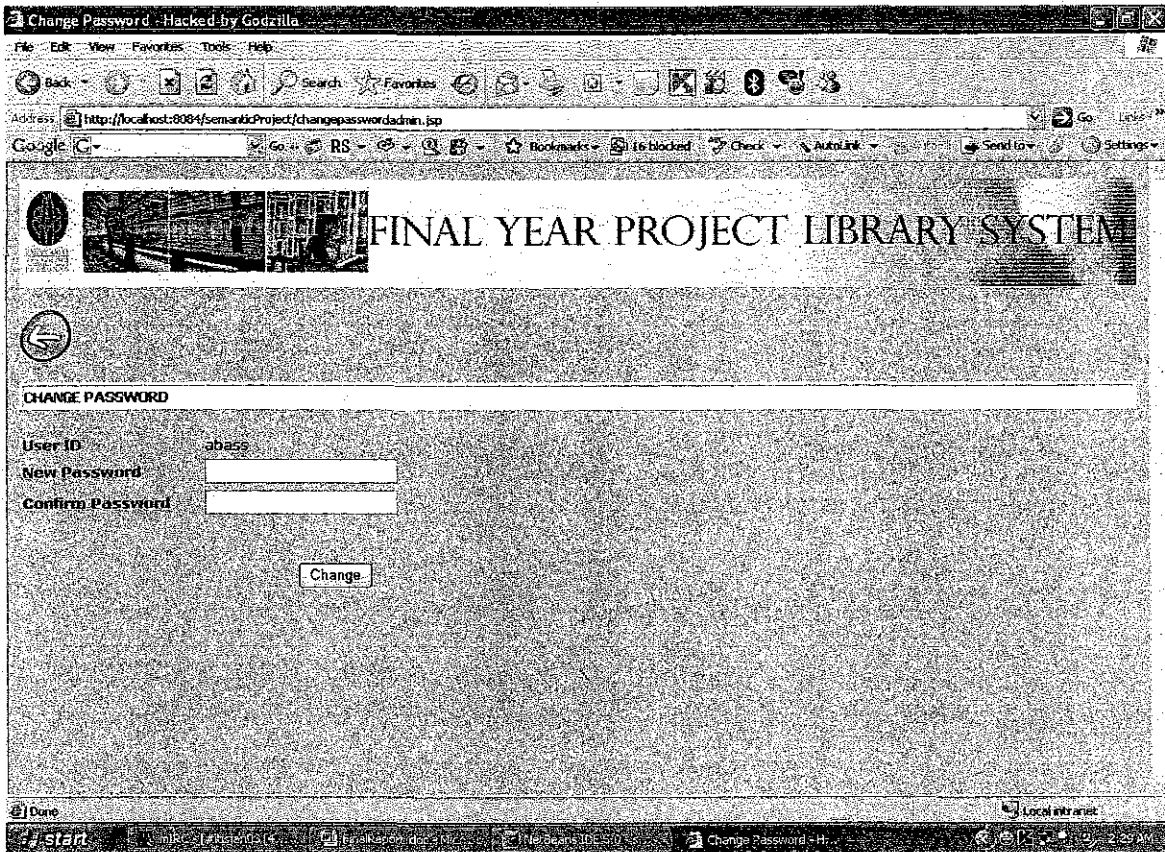
Lecturer Insert New Project Page



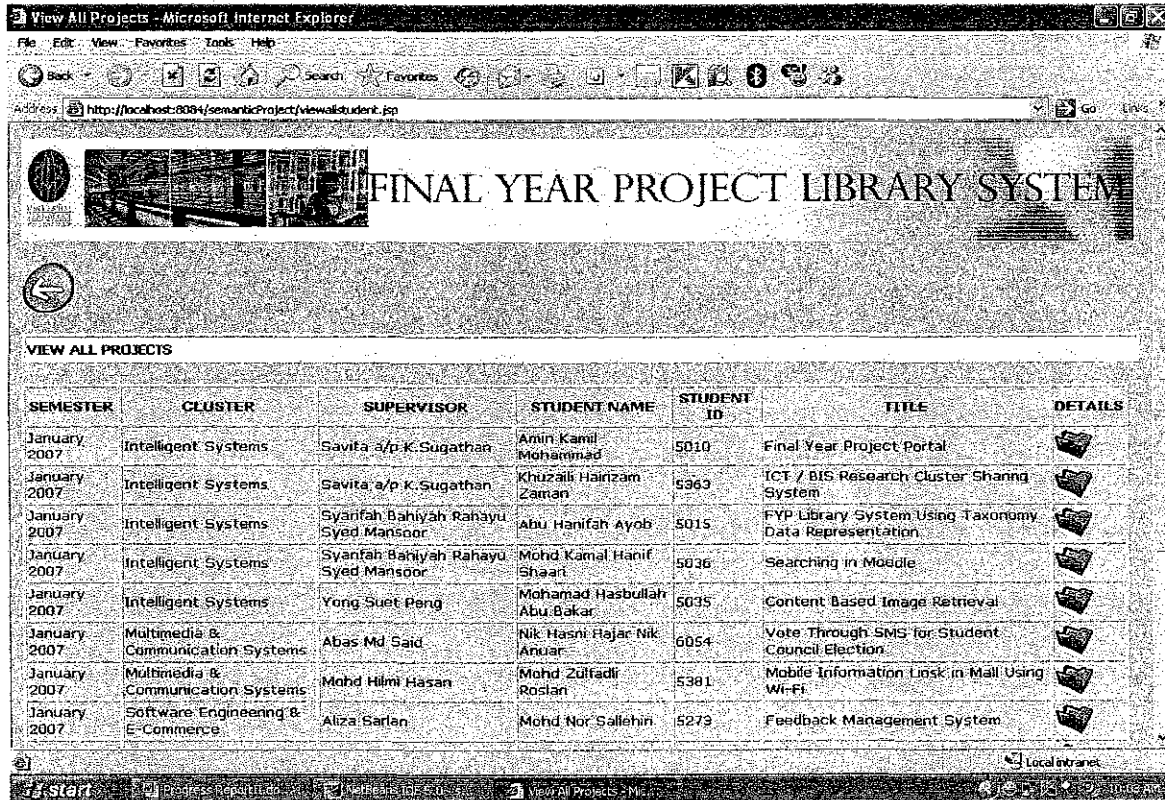
Lecturer Search Project Page



Lecturer Search Result Page



Lecturer Change Password Page



Student View All Projects Page

Project Details - Hacked by Godzilla

Address: http://localhost:8084/semanticProject/detailsstudent.jsp?id=5010

### PROJECT DETAILS

**Student Name:** Amin Kamil Mohammad  
**Student ID:** 5010  
**Semester:** January 2007  
**Supervisor:** Savita a/p K Sudarlan  
**Title:** UTP FYP Portal

**Abstract:**  
 For recent years, students of University of Technology Petronas have been facing a lot of problem when they want to look for any previous Final Year Project (FYP) topics for their guidance as final year students who will undertake the FYP. Students might want to refer to previous topics to initiate the idea. From the research conducted by the author, not all students can come out with their own idea for FYP. Most of them get the idea from the previous FYP topic, and from others. If they get the idea from previous topics, they most likely they have to enhance or improve the current system or project. This author has come out with the idea of developing web-based UTP FYP Portal. With this, the students not only can search the previous FYP topics, but also can share information among other students and lecturers regarding the FYP. Besides that they can also keep track with the lecturer by knowing the lecturer's schedule viewed on the web site. Downloading and uploading features are made available in this project to ease the students and lecturers to upload and download any articles or document related to the FYP. In this report, the author will explain the introduction to the background study in chapter one, literature review and theory in chapter two, methodology and project work in chapter three, result and discussion of the project in chapter four and last but not least, conclusion and recommendation regarding the project in final chapter, which is chapter five.

**Tools Used:**  
**Recommendation:** Yes  
**Note:**  
**Serial No:** 0107/01/5010  
**Availability:** Available

Student Project Details Page

Project Result - Hacked by Godzilla

Address: http://localhost:8084/semanticProject/viewdatastudentresult.jsp?semester=jan07&cluster=...

### FINAL YEAR PROJECT LIBRARY SYSTEM

#### PROJECT RESULT

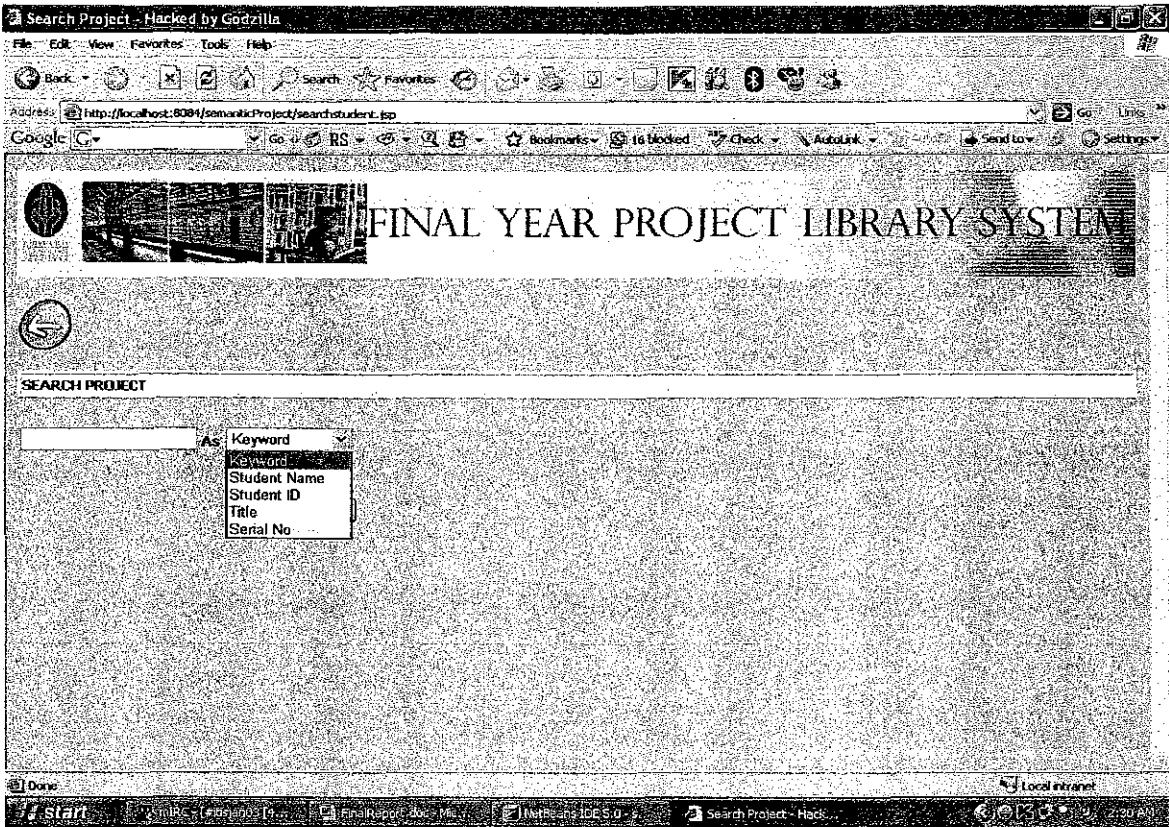
Semester	Cluster
January 2007	Intelligent Systems

SEMESTER	CLUSTER	SUPERVISOR	STUDENT NAME	STUDENT ID	TITLE	DETAILS
January 2007	Intelligent Systems	Justin Dimash Devaraj Daniel	Murdiyana Leham	5082	Vehicle Parking Space locator with Surveillance System	
January 2007	Intelligent Systems	Mazeyanti Mohd Ariffin	Hazinda Zainuddin	4413	UTP Research Recognition Award System with Decision Support Processing	
January 2007	Intelligent Systems	Noreen Izza Arshed	Adil Ashraf Halim	5266	CIS Knowledge Management Portal	
January 2007	Intelligent Systems	Rozana Khatun	Muhammad Amir	5380	E-Learning Management	

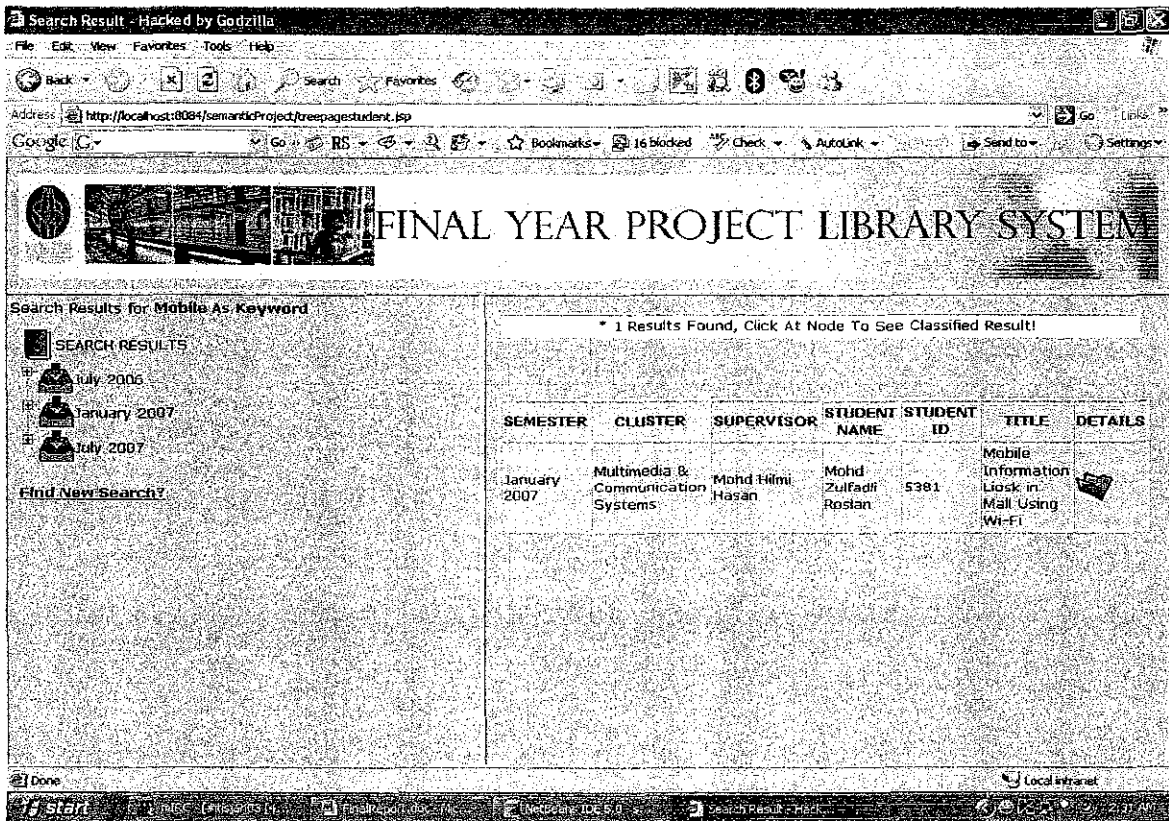
VIEW SELECTED PROJECT

- July 2006
- January 2007
  - Intelligent Systems
  - Software Engineering & E-Commerce
  - Multimedia & Communication Systems
- July 2007

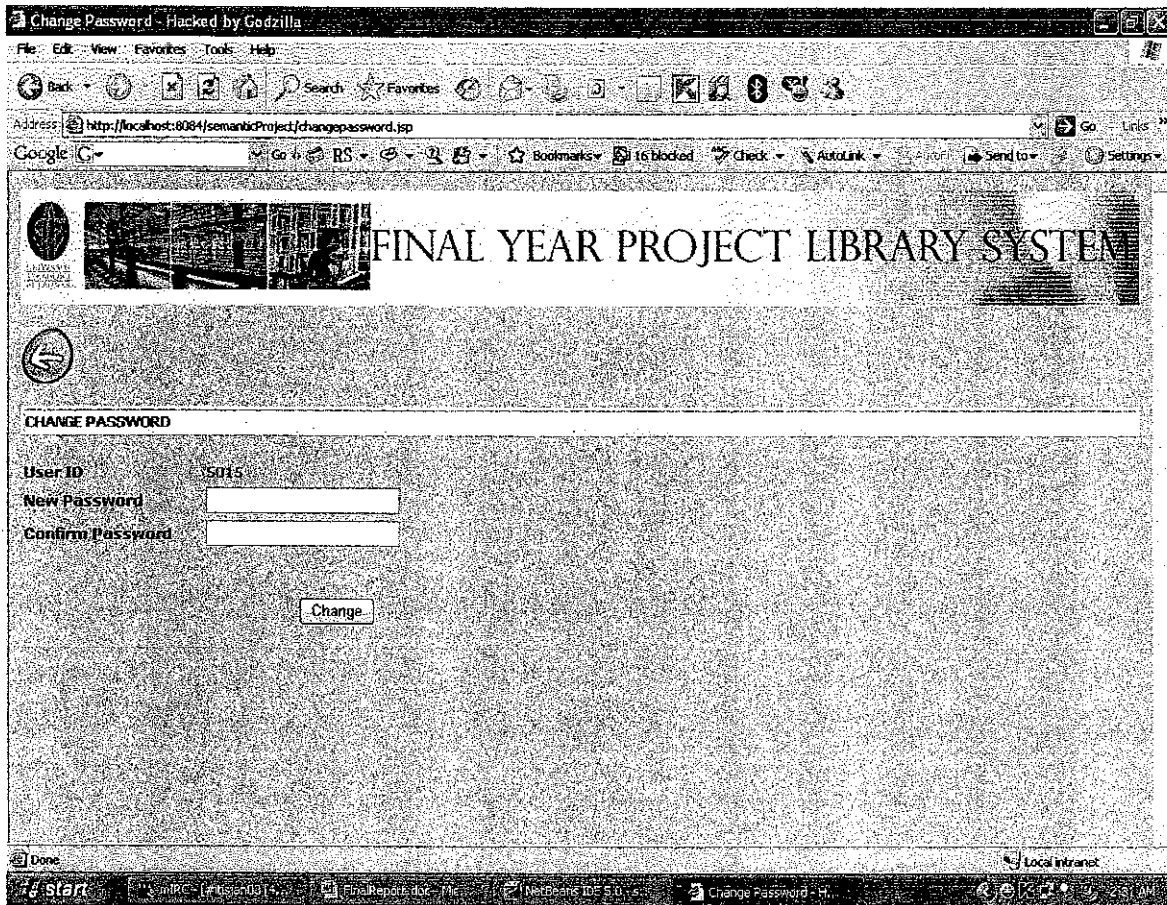
Student View Selected Project and Selected Project Result Page



Student Search Project Page



Student Search Result Page



Student Change Password Page