



ONLINE STUDENT MANAGEMENT INFORMATIONSYSTEM

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BIT Reg. No. : R031462

Index No : 0314625

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August 2007

This dissertation is submitted in partial fulfillment of the requirement of Degree of
Bachelor of Information Technology (External) of the
University of Colombo School of Computing

DECLARATION

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ABSTRACT

In a Institutes where hundreds of students registered and doing there studies, it's very difficult to manage students as well as manage resources, manage their information and manage institutes services. When they manually manage these operations it's very complicated, need more human resources and error-prone. So it will be very easy, if there is an automated system for manage those operations correctly, without any error, with fewer resources and with less effort. So when fewer resources are used it reduces the expenses and produces more profit. It's what they want as the company's point of view. And on the other hand the students the lecturers and the other parties who interact with these kinds of institutes are suffering from lot of problems when working with it. As a Student of BIT at the Base2 I have experience of that and it was very helpful for me to collect user requirements and information, which should needed to develop this kind of system. So when there is a complete and correct system for manage students, lecturers, resources, etc it will attract more students here because of it is ease to work there and it will lead the company to earn more profits.

As an information technology institute there are four main functionalities. They are Library, student registration, computer laboratory time slot allocating, resource allocation. These are the operations the outsiders are directly interacting with. So these functionalities should be properly organize, there should be less work for the people who are interact with the system and should be attractive.

Currently Base2 institute working with all these manual systems. This means every student has to come to the institute to register for a class. And all the operations of the library are done by librarian and library staff. It took much more time at the lending and returning counters and also more manpower is needed to do those works. Also at the computer laboratory the student are very much suffering with reserving computer for there practical. And the lecturers are also suffering with resource allocation. That is, there are no resources for lecturers when they come to the class, because an other lecturer

has taken the relevant resource (eg: a multimedia projector, a laptop etc).

Students can search the classes he need and can register for that class online even when they are at home. But they can not pay for any service provided by the institute. After he enter his details and register for a class, a seat will be allocated for him. And he had to pay for the class he registered by visiting the institute before 2 weeks to commencing of the class. His inability to that, will cancel the registration he made for a particular class. And when he made the payment the receipt and the class entrance card will be issued.

When consider the library now lending, returning, reserving a book, search a book, book catalog and all function of the library is computerized. So it very easy for librarian and for library staff to work with the computerized system. As well as it helps students to search a book online, reserve a book, and check his membership status. And library staff can send reservation notices, reminders to students by this system. It reduces lot of work of the library staff.

From the system students can allocate a time slot for his practical and cancel the allocation he made before. Laboratory staff can check the uses id and verify the students who made this allocation and allow his to do his practical at he lab. So this system made lot of things much easier for students and for institute staff.

Before commencing the project the feasibility study was done to ensure the current technology and budget is sufficient to accomplish the ongoing project's requirements. Here the attention was focused on the Open Sources Technology because the cost of operating system and software packages can be drastically reduced by using these technologies. According to the above I have used WAMP technology for the production environment and for development task. Evolutionary prototyping method was used as the software process model and also SSADM was used to support the above methodology. And one milestone of the project will deliver the user manuals, documentations, test plans and test cases in the system development process.

The system was developed using PHP language, the MySQL data base Server is used as back end's Data Base Management System, the Apache web server is used as the web server for production environment. And Windows XP was used as the production server's operating system. The FPDF PDF generator, AMANDA backup utility, MySQL Administrator & MySQL query browser to interact with database, Macromedia Dreamweaver & Zend development environment as php editing software, Macromedia flash & Adobe photoshop as graphic editing software and Sendmail were used to facilitate the peripheral requirements and as background support utility programs. The complete system provides the online access of students, lecturers, staff and other persons who work with the institute via the Internet and intranet. Also it supplies the various documentations and policies of the entire group and separate companies.

ACKNOWLEDGEMENT

First and foremost I owe my deep admiration to the Director and all the academic staff of University of Colombo School of Computing, for facilitating us to follow the BIT program, which greatly covers the present day Information Technology. I also thank them on behalf of forever pulling us and giving all the resources of latest technology on the computer field. And also I would like to thank for the all lecturers and all staff of the Base2 School of Computing to giving me knowledge and courage to follow the BIT and to come this far as a student of information technology.

I wish to express my sincere appreciation and deeper thanks to my project supervisor Mr. W.A. Chanura Hemal, without whom this project would simply never have been completed successfully. His expertise on Internet Application Development, System and Network Administration and shortly entire Information Technology made the whole task possible without that much of difficulty.

Mr. Chamila Hewawasam (BSc [Engineering] Hons) the co-supervisor (Client) a Director of Base2 School of Computing has given greater guidance for completes software project management and the security of the computer system and network system regarding the whole project. I also greatly appreciate, a undergraduate of University of Colombo Dilina Perera, for facilitating all the resources to fulfill this particular job come true and giving me ideas to develop this system up to now. And also I should remind the Lahiru Perera, a undergraduate of University of Colombo, who helps me with design the layout of this system and the graphic works.

Here the system used the FPDF Library as the grater support for PDF generator. I very much owe to them and offer my gratitude by heart. And I refer their online help to learn more about it.

I also offer my gratefulness all the community and individuals they answered my questions put on the on-line forums and orally. Finally I am grateful to online documentation of Apache, Linux, MySQL and PHP the Open Source giants.

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LIST OF ACRONYMS

| | |
|---------------|---------------------------------------------------|
| BSO | – Business System Option |
| CGI | – Common Gateway Interface |
| DFD | – Data Flow Diagram |
| HTTP | – Hyper Text Transfer Protocol |
| HTML | – Hyper Text Markup Language |
| ISP | – Internet Service Provider |
| LAMP | – Linux, Apache, MySQL, PHP |
| LAN | – Local Area Network |
| PDA | – Personal Digital Assistant |
| PHP | – PHP Hypertext Preprocessor |
| RDBMS | – Relational Database Management System |
| SQL | – Structured Query Language |
| SSADM | – Structured System Analysis and Design |
| TCP/TP | – Transmission Control Protocol/Internet Protocol |
| URL | – Uniform Resource Locator |
| WAN | – Wide Area Network |
| WAP | – Wireless Application Protocol |
| WML | – Wireless Markup Language |
| WWW | – World Wide Web |
| XML | – Extensible Markup Language |
| XSL | – Extensible Stylesheet Language |
| XSLT | – Extensible Stylesheet Language Transformations |

CHAPTER 1

INTRODUCTION

1.1 General Information

Base2 School of Computing is an academic institute specializing in providing information technology education for professional and graduate levels. It provides educational services leading to professional qualifications and degrees in information technology. Base2 is equipped with modern facilities and a qualified panel of lecturers dedicated to provide IT education of the highest quality. Now Base2 Institute of Computing has become one of the leading institutes for Information Technology education. It provides courses for the beginners of IT industry and up to professional level courses and diplomas.

1.2 The Organization of the Company

The Base2 School of Computing is situated at the No. 26 Vajira Road, Colombo 04, Sri Lanka. And this is the head office of institute and it has no branches. All the classes, library and practical are situated here. So it is very easy for students to work with it. There are four Directors of this institute and they are the main decision makers. As well as they are teaching at the institute. And also many lecturers are visiting here to conduct lectures for different courses and diplomas conducted by the instituted.

There are hundreds of students studying and lecturers working in the institute. So they all need to interact with institute staff to carry on their works. And also institute need to keep track of all the student details and the payments they made and the payments they need to make in future. And also in library everyone need to search manually and check in & check outs are done by manually. Computer

laboratory have a manual system to reserve time slots for students, but currently they don't have a system to allocate resource for lecturers. They normally give the resource the lecturer want, if it's available. If the lecturer does not get the resource he wants, he could not proceed with his plans for the day. So they need a computer system for manage all this situations and make their work easy and fast.

1.3 The Communication Layer of The Company

The Base2 School of Computing has many sections on there building such as library, laboratory, reception counter and etc. All of these sections are interconnected via a local area network using many layer3 switches and a router. The network is designed as star topology. The each and every section is an individual subnet so every action with in the subnet is only valid for that subnet. And all of these subnets are connected to internet via ADSL router and using STL office express connection (2Mbps download speed & 512Kbps upload speed). The intranet server located at the computer laboratory manage all user accounts user privileges and user logins inside the institute. And all section of the institute have internet and email facilities from SLT net.

1.4 The Requirement of the Proposed Project

The Company manage all the operations such as student registrations, library system etc, manually in a conventional way. And it is very complex and time consuming. As a one of the leading IT education institutes in the city they have to compete with other institute. It is a principal requirement to optimum utilization of both human and other resources they have.

Therefore they must have an efficient, simple and automated system for their manual procedure. And the main reason for setup an automated computer system to overcome the difficulties of existing manual procedure. There are lots of side advantages of making their system computerize, such as every student can register him for a class without going to the institute and a existing student can reserve book check their status of the library & can reserve a time slot of the computer laboratory, and also lecturers can allocate resources for his upcoming class. On-line Student Management Information System is one of the solutions to realize the above main necessities.

1.5 Structure of the Student Management System

The remaining communication system of institute is not stable since it is a manual and not efficient. And in this new system all the communication with in the sub system are doing in electronic media. The complete system is upload to the server of the web hosting service and assign to the registered domain name of the company. Then everyone can login to the system with their user names & passwords proceed with their works without considering their geographic location. Since every section of the company has internet connection they can login to the relevant sub system and do their work. The user names are managed by the administrator and there are several privilege levels and everyone can not login to the complete system without having relevant password. It protects the sensitive data of the company and protect from unauthorized access. Every machine capable of retrieving & updating data from the database.

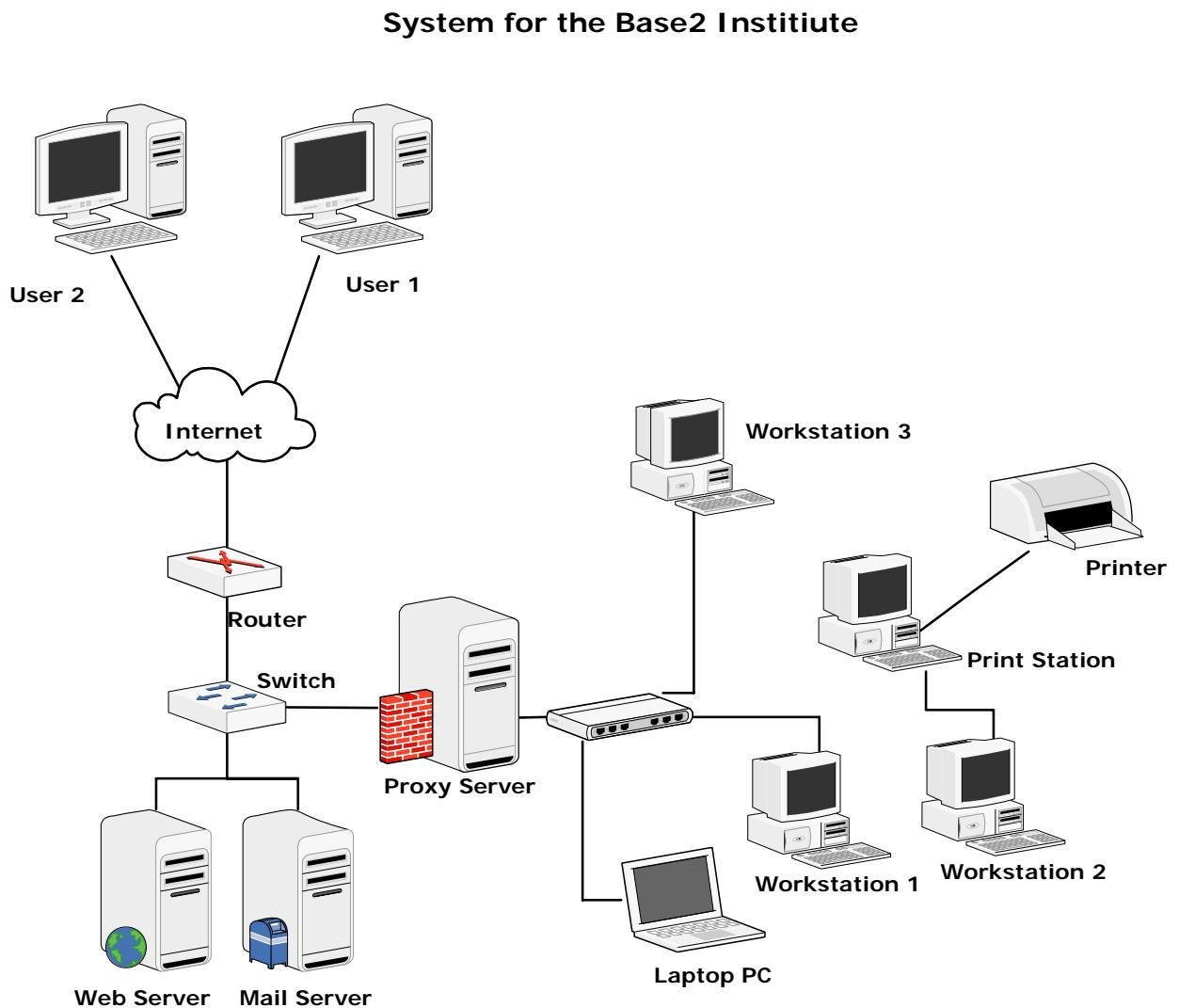


Figure 1.1 – Structure of the system

1.6 The Project Objectives

The Base2 School of Computing has a very complex and time consuming manual system for student management and a static web site about the institute & details of their programs.

The main objectives of this project are,

- The objective is to construct the online student registration system from the scratch which will help students to register with the institute online.
- Design & implement the library system for the institute with every normal operations of a library.
- Design & implement online time slot reservation system for the computer laboratory of the institute.
- Construct a resource allocation system for lecturers, which they need for upcoming class. Lecturers can login and allocate the resources they need.
- Integrate all the above sub systems and the static web site as a one single system.
- Also need to manage user accounts. There are many types of users interacting with the system such as students, staff, lecturers etc so all of them should be different type of login and they could not be able to go to other sections. (E.g. Student not be able to go to resources allocation system with his user account)
- Account profile should be created for all users to see their status in different sub systems. Which means students can view the book they borrowed from the library and the returned date of them and all the information.
- The MySQL database should create for all of there operations and PHP scripts must interact with the database. As and when an event occur the database should be updated. Because everyone using the same database which is at the hosting server.
- Create an interactive and simple user interface. Because lot of non IT persons may visit this site.

1.7 User And System Requirements

1.7.1 User Requirements

The main requirement of this system is to manage the student in every manner and make it easy for students to work with the institute. Therefore to serve this purpose four subsystem were identified. They are,

- i. Student registration system
- ii. Library system
- iii. Time slot reservation system
- iv. Resource allocation system

According to the system's main objectives there are several types of users with various privileges levels assign them to allowing or denying some sensitive information. There are f types of users namely:

- Administrator
- Staff members
- Students
- Lecturers

1.7.2 System Requirements

In this institute the users had to logon and continue their work with system by using the web site which means they need a good internet connection. But the computer need not be much powerful, because they only need a web browser to browse internet and from this they can do their work.

Institutes main Server

| The Server - Back-end | |
|---------------------------------------------------|---------------------------------------------|
| Hardware Requirements | Software Requirements |
| Intel Core2 duo 1.8 Processor | Windows 2003 Server |
| 160 GB hard disk space | Apache Web Server 2.0.54 |
| 1 GB RAM | Mail Server |
| Network Interface card with the connection of LAN | Microsoft Internet Explorer 6.0 web browser |
| | PHP 5.2.0 |
| | MySQL 5.0 |

Table 1.1 – Main Server Requirement

Development Environment

| The Server – Development | |
|-------------------------------------------------------------------------------|------------------------------|
| Hardware Requirements | Software Requirements |
| AMD Athlon 64 3200+ processor | Windows XP – SP 2 |
| 1 GB RAM | Apache Web Server 2.0.54 |
| 160 GB hard disk | PHP 5.2.0 |
| Network Interface Card with LAN connection with broadband Internet connection | MySQL 5.0 |
| | HTMLDOC |
| | Sendmail |

Table 1.2 – Development Environment

Users Machine

| The Client – Front-end | |
|--------------------------------------------------|-------------------------------------------------------|
| Hardware Requirements | Software Requirements |
| Pentium III 1000 MHz or higher processor | Windows 2000 or higher |
| 10 GB or higher hard disk space | Microsoft Internet Explorer 5.0 or higher web browser |
| 128 MB or higher RAM | |
| Network Interface card with the LAN connectivity | |

Table 1.3 – User Machine Requirement

1.8 Methodologies And Standards

Since there did not have any computer system for student management it is very hard to collect all the requirements from the users, which means from students & staff. And when we think from students' side they may not have an idea which new features will easier their work than before. So its difficult to extract all the requirements from users and manual procedures. To satisfy this scenario the Evolutionary Development Methodology and Evolutionary Prototyping Methodology are the best methodologies for the system.

Therefore one format approach to Evolutionary Development; the Spiral Method is used as the system development process model for the system. System development is proceed by the development of successive prototypes, with each new prototype adding additional functionality and begin integrated with the previous prototype.

Special consideration is made to produce all the deliverable and documents in a standard manner. Therefore recognized academic standards are used thought the project (Ex: Standards defined by IEEE will be used to document the Requirements Specification and the Bibliography).

1.9 Report Structure

The structure of this report is as described follows.

Chapter 2: Background

Covers details about background material and other related works.

Chapter 3: System Analysis and Design

Provides details of identification and documentation of requirements, the design models, database specifications and user interfaces of the system.

Chapter 4: User Interfaces

Describes all aspects of major user interfaces of the system

Chapter 5: Implementation

Provides details of all aspects of the system including major codes and development environment.

Chapter 6: Testing

Describes testing strategy, test plan and test cases used for system testing.

Chapter 7: Evaluation

Results of the project are discussed. And lessons learnt through the course of the project are also described.

Chapter 8: Conclusion

Describe further work to be carried out and summary of what is achieved.

CHAPTER 2

BACKGROUND

2.1 New Trends in online Systems

The increasing use of Web technologies has led to significant changes in the role covered by computers that can be now considered as enhanced terminals through which several web-based applications can be accessed. So the fast and quicker data availability in 24 hours is day today task of the business community of all part of the world (data accessibility). The accessibility of data in the Internet from any where in the world (data transparency) is one of the greater advantage of World Wide Web. As well as the Internet is very cheapest and efficiency media available today.

Now not only in developed countries, but in Sri Lanka also the internet is getting more popular in rural areas. Because the broadband connection starts to grow over Colombo district and now it is available in many areas in the country. So it has become a very good platform for this kind of system. Since lot of external people need to interact with the system it become an advantage for the users to use it through the internet. Otherwise users always need to go to the institute for everything.

2.2 Web-based Student Management Systems

The Online Student Managements Systems are becoming an important component in the educational institutes all around the world. They are making students to do lot of administration works from home. Also it helps the staff of these institutes to do their routine work quickly, cleanly and easily. Since they are web-based systems it need less effort on training the existing staff for the new system. Also these kinds of systems provide lot of information for management of the institute to make some decisions and to solve the problems. The institutes also interested in invest money on developing these kinds of systems, because it make their work easier and attract it students. So they can save more money on administration activities and earn more.

2.3 Overview of Student management System

The Student Management Information System is interacting with students, staff and lecturers who are working there. And the client, Basse2 School of Computing did not have any Student Management System. They only have a static information web site. The HR System will run on Windows operating system. It is PHP application and used MySQL Server as backend database.

MS SQL Server is the one of market dominant database management system highly coupled with Windows platform and MySQL Server is the most popular open source database management system running healthy on both Windows & Linux platforms and with PHP. Because the above reason and the nature of the project is web based the architecture of the proposed system is to maintain Web Server in house, which means obtain a public IP address from the Sri Lanka Telecom and run a powerful server machine with Windows Server 2003 using Apache Web Server.

As a database server MySQL is the fastest database in the world (Reese G et al., 2002). As well as market giants used the MySQL as their backend.

“The MySQL database server is the world's most popular open source database. With more than five million active installations, MySQL has quickly become the core of many high-volume, business-critical applications.”

“Customers such as Yahoo!, Google, Cisco, Sabre Holdings, HP and NASA are realizing significant cost savings by using MySQL's high performance, reliable database management software to power large Web sites, business-critical enterprise applications and packaged software applications.” (MySQL, 2004). As well as there are lot of utility programs for MySQL Server such as MySQL Control Centre, phpMyadmin, MySQL Administrator and MySQL Query Brower. We can use them to make our development quick and easy and to test our database.

PHP is the most popular and powerful web scripting language dominate current web development environment. “PHP is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML.” (PHP, 2004). Also it has very steep learning curve. Windows Operating System is the most widely used operating system in the world.

Apache web server has been the number one choice among the web server in enterprise level production server due to several reasons. Apache is a free web server from Apache Software Foundation. Although this server runs on Windows NT, it runs best on a variety of Unix hardware including low-end PCs running the Linux Operating system, has a number of functions and features found with more expensive servers, and is supported by a large number of third-party tools (Apache Software foundation, 2002).

2.4 Literature Survey

There are lot of student management information system in Sri Lanka and all around the world, to support student management & Library systems. But almost all of those systems are stand alone and they are not online systems and therefore students can not interact with the institute without going there. And most of these are not integrated systems. They have individual separate system for several tasks, but not like integrated system like this system. The main components of this system are Student registration system, Library system, resource allocating system, laboratory time slot allocating system.

2.5.1 Similar Systems

Here concerned some similar systems in on-line and got idea how to develop and how should it look like. Some of them are 30 day evaluation systems and some are with the limited primary functionalities.

- **Blackbaud's Student Information System™**
(<http://www.blackbaud.com/products/school/sis.aspx>)

Blackbaud's Student Information System™ is an integrated solution specifically designed for small higher education institutions to manage every aspect of campus administration and student information. Blackbaud's Student Information System™ allows you to manage all constituent information across all campus offices – admissions, registrar's, advancement, business, etc

- The Education Edge™: Student Information Systems and Management (<http://www.education-edge.com/>)

The Education Edge is a comprehensive student information management system developed from the ground up to fulfill the needs of independent schools as they guide their students to success. The Education Edge integrated information management system connects daily operations in the school environment ranging from Admissions and Registration to Finance, Faculty. This reduces data error and ensures that information is always up-to-date throughout the school.

- CampusCE : International Student Management System (http://campusce.com/services/ISMS_main.asp)

ISMS provides comprehensive Case Management PLUS SEVIS and US INS compliance monitoring powered by the latest Microsoft .Net technologies with information available 24/7.

2.5.2 Online Student Management Information System Vs Other Publicly Available Systems

This system (Web based On-line Student Management Information) has several plus points over the other publicly available system. The main differences are listed below.

| Feature | Student Mgt System | Black Baud | Education Edge | Campus CE |
|----------------------|---------------------------|-------------------|-----------------------|------------------|
| Online Access | YES | YES | YES | YES |
| e-mail notifications | YES | NO | NO | NO |
| Student Forum | NO | YES | NO | NO |
| Response time | MODERATE | MODERATE | MODERATE | HIGH |
| Online Library | YES | NO | NO | NO |
| Student Information | YES | YES | YES | YES |
| Resource allocation | YES | NO | NO | NO |
| Lab allocation | YES | NO | NO | NO |
| Student Billing | YES | YES | YES | YES |
| Class Scheduling | NO | NO | YES | YES |
| Report Generating | YES | YES | YES | YES |
| Payroll System | NO | YES | NO | NO |
| Attendance System | NO | YES | YES | NO |

Table 2.1 – This System Vs other systems

CHAPTER 3

ANALYSIS AND DESIGN

3.1 System Analysis

The main objective of requirements analysis is to identify and discover the user requirements and expectations of the new system. A combination of methods was used to gather the user requirements of the proposed system. And we need to develop the system based on these requirements.

3.1.1 Requirements Gathering Technique

Before conducting a detailed facts gathering about the system, detailed study was carried out about the application domain in order to improve the domain understanding. Domain understanding (Sommerville, 1998) is one of the major steps in the requirements analysis process.

➤ Interviews

The author aims to gain a better understanding of the user requirements by using Interviews as an information gathering technique Interviewed official staff and gathered information from them and collected the copies of the documents they use to enter data in the manual system.

➤ Observations

This unobtrusive technique involves the analyst physically watching employees carry out their duties and day to day work in their natural setting. Further, collected data by distributing questionnaires among selected staff of the Institute. This was helpful to identify the requirements and limitations carefully.

3.1.2 Functional Requirements

As each requirement was found, it was recorded and prepare a list of different requirements and give them to the client organization to verify the requirements we found. After they check this report add the additional fact that they mentioned and remove the thing that they do not want us to be developed. The out put of this process will be the Requirement Specification document which we use to develop the system.

Software requirements are specified based on the standards defined by IEEE. Special consideration was made to document each requirement consistently. “Language should be used consistently. In particular, distinguishing between mandatory and desirable requirements. It is usual practice to define mandatory requirements using ‘Shall’ and desirable requirements using ‘Should’ ” (Sommerville, 1998).

| ID | Description |
|----|-------------------------------------------------------------------------------------------------------|
| 1 | Shall be able to keep access more secure. |
| 2 | Shall be able to keep unauthorized access to the system prevent |
| 3 | Shall be able to keep authorized person allow log in to the system |
| 4 | Shall be able to prevent one level of privileges to entering to another level of privileges. |
| 5 | Shall be able to register students online |
| 6 | Shall be able to calculate the amount to be paid according the subjects he selected. |
| 7 | Shall be able to calculate the discount if he is paying the hole amount at once. |
| 8 | Shall be able to create user accounts, who are registering there. |
| 9 | Shall be able to print users registered derails by themselves. |
| 10 | Shall be able to modify user accounts online |
| 11 | Shall be able to generate password changing mechanism |
| 12 | Shall be able to generate application administrating sub systems used by system administrator |
| 13 | Shall be able to prepare the manual backups procedure of the database if the site administrator wants |

| | |
|----|---------------------------------------------------------------------------------------------------------------------------------|
| 14 | Shall be able to integrate different two platforms working together |
| 15 | Shall be able to prepare help files to used for system users |
| 16 | Shall be able generate a report of all the students who has to pay their final installment. |
| 17 | Shall be able to generate the list students who has to pay their initial payment before automatically cancel their registration |
| 18 | Shall be able to send notification to the students, whose registration suppose to cancel soon. |
| 19 | Shall be able to search library for book online by users |
| 20 | Shall be able to check availability of a book |
| 21 | Shall be able to reserve books online for registered users |
| 22 | Shall be prevent users to reserve book when he has a overdue book |
| 23 | Shall be able to check their library status online. |
| 24 | Shall be able to prevent user to borrow not more than 3 book at time |
| 25 | Shall be able to prevent user to borrow book if he has one or more overdue books |
| 26 | Shall be able to calculate fines for overdue books |
| 27 | Shall be able to notify users about overdue book, reserve books etc, by email. |
| 28 | Shall be able to add new book to library system |
| 29 | Shall be able to add new copy to the library |
| 30 | Shall be able to remove book from the library |
| 31 | Shall be able to remove a copy from the library |
| 32 | Shall be prevent user to borrow reference book. |
| 33 | Shall be able generate a report of all overdue book s and their fines |
| 34 | Shall be a reserve time slot at the computer lab online. |
| 35 | Shall be prevent reserve a time slot if he has more than 3 unsuccessful reservations here. |
| 36 | Shall be able to reset the unsuccessful reservation by the system administrator or laboratory head. |

| | |
|----|----------------------------------------------------------------------------------------|
| 37 | Shall be able to generate the report of display all the reservation at a specific day. |
| 38 | Shall be able to check availability of a specific time slot. |
| 39 | Shall be able to allocate a resource by lecturer. |
| 40 | Shall be able to generate report of all the allocation at a specific date. |
| 41 | Shall be able to check availability. |
| | |

There are four main sub systems within this Student Management System. They are

- Online registration system
- Online library system
- Online time slot reservation system
- Online resource allocation system

All four systems are protected against unauthorized access and also one level of user can not login to another level. The security is one of the main aspects of this system. A new user can fill the form and register with the institute. If he wants to register with a course then he has to select the subjects he want, and the amount to be paid for the subjects will be displayed below there so here he can print all the details with his student id and course. Then he has to pay amount to institute by visiting there before one week to commence the class. If not his registration for the class will be canceled. If you are already registered at the institute you can just enter your user id and select the course you want and proceed with the above procedure. You are given a user name and a password when you registering with the institute but it is inactive until you register even with a single class.

In library system you can login with you user id & password and then you can borrow, return, reserve books. You can only borrow 3 books at time. If you have any overdue book you can not neither borrow nor reserve a book. User from the outside only can search for a book with the library system. When you are returning an overdue book the fine will be automatically calculated and you have to pay the fine. When you reserve a book you will

be immediately inform by email when the book you reserve return back. Also you are continuously inform when you have overdue book.

Also you can also reserve time slots of the computer laboratory to do your practical. One student can only reserve a one time slot per day. When you present at the laboratory to do you practical the lab assistant will delete your reservation record form the database. Lab assistant have a report of all the reservation of the day and he delete the records when they present at the laboratory. If you reserve a time slot you should come to laboratory on time and if you late more than 30 minutes you are considered as absent. And if you have more than 3 incomplete reservations you can not reserve time slots any more. Then you should go for the administrator of the laboratory to delete your past records.

As a lecturer you can allocate resources for your future class. At beginning of the day staff member generate a report of allocation of the day then he send the items each an every lecturer reserves.

3.1.3 Non-Functional Requirements

These refer to the requirements that describe aspects of the system that are concerned with how well it provides the functional requirements. Additionally, these requirements are seen as constraints on the development and implementation of the system.

These non functional requirements ensure the production of a high quality system and the relevant factors which have been recognized for this project are listed below.

| ID | Description |
|----|-------------------------------------------------------------|
| 1 | Shall have low response time |
| 2 | Shall be able to implement on both platform |
| 3 | Shall be able to provide GUI support |
| 4 | Shall be able to provide faster downloading time |
| 5 | Shall be highly Reliable |
| 6 | Shall be simple GUI |
| 7 | Shall be consistence |
| 8 | Shall be highly secure |
| 9 | System & user manuals |
| 10 | Shall be able to use without internet inside the institute. |

➤ Usability

International Standards Organisation (ISO) defines the usability of a product as “*the degree to which specific users can achieve specific goals within a particular environment; effectively, efficiently, comfortably, and in an acceptable manner.*”

This requirement requires the system to be easy to learn and use, hence any errors should be handled appropriately and advise the user accordingly. It is important that any error messages are but are simple, informative and effective. This is also increased by user-friendly interfaces and this is achieved by using GUI's with buttons, combo box, text boxes, radio buttons and all other GUI items in HTML.

➤ Reliability

This deals with whether the user can rely on the information gathered from the system

➤ Correctness

The correctness could be measured by how successfully the system can get close to the objectives stated at the beginning of the project.

➤ **User friendliness**

The system should be able to handle functions easily and this basically deals with the workload of the users.

➤ **Accuracy**

This is important since the system maintains financial details. The system should be able to produce output data and forms accurately and any data when updated etc, should get valid values. Validity, accuracy, precision of the output data shall be maintained by the system and will control entering of incorrect data and omission of data by using input data validation mechanisms.

➤ **Consistency**

In most of the forms the text, buttons etc, has been designed in the same pattern to increase the consistency. This is imperative to support usability of the system.

➤ **Security**

This is an important requirement since this system is multi user system and there should be specific login user name and passwords for the system. Since this system handling financial aspects it should be highly secure.

➤ **Efficiency and Effectiveness**

The new system is less time consuming than the manual system and in handling records and generating reports.

➤ **User manuals**

The user manual includes, all the facilities of the system and how to use the system functionalities in a proper way. Printed user manuals help the users to use the system with out any difficulty.

➤ **System manuals**

System manuals included how to install and configure the system properly in a network environment. System manual helps systems administrator to configure user settings and computer settings.

➤ **Low response time**

Since this is a web based online system the response time should be minimum. Because lot of user in sri lanka uses internet via dial up lines. So if it takes lot of time to do an operation the users will disappoint with the system and also they may not be able to do what ever task they expected to do.

System Design

The objective of system design is to arrive, non-program specific and non-procedural system specification based on the requirements gathered. Special consideration was made on system design as it acts as a basis for detailed implementation; provides information to system maintainers about the original intention of the system design, and so on (Sommerville, 1998).

Therefore the top-down approach defined in SSADM was used as the system design strategy. As information moves through the system, it is modified by a series of transformations. Data Flow Diagrams (DFD) would be used to depict information flow and the transforms that are applies as data moves from input to output.

Initially in early stages an abstract, high-level design model was created and then progressively refined it into a detailed implementation model. As the initial design is decomposed into smaller subsystems some errors in the initial design could be identified and system understanding could be improved.

There are three level dfd diagrams.

Context Diagram

Level One DFD Daigram

Level two DFD diareams

1.Student Registration

2.Library System

3.Allocate time

4.Allocate Resources

5.User login

Level three DFD diagram

2.Library System

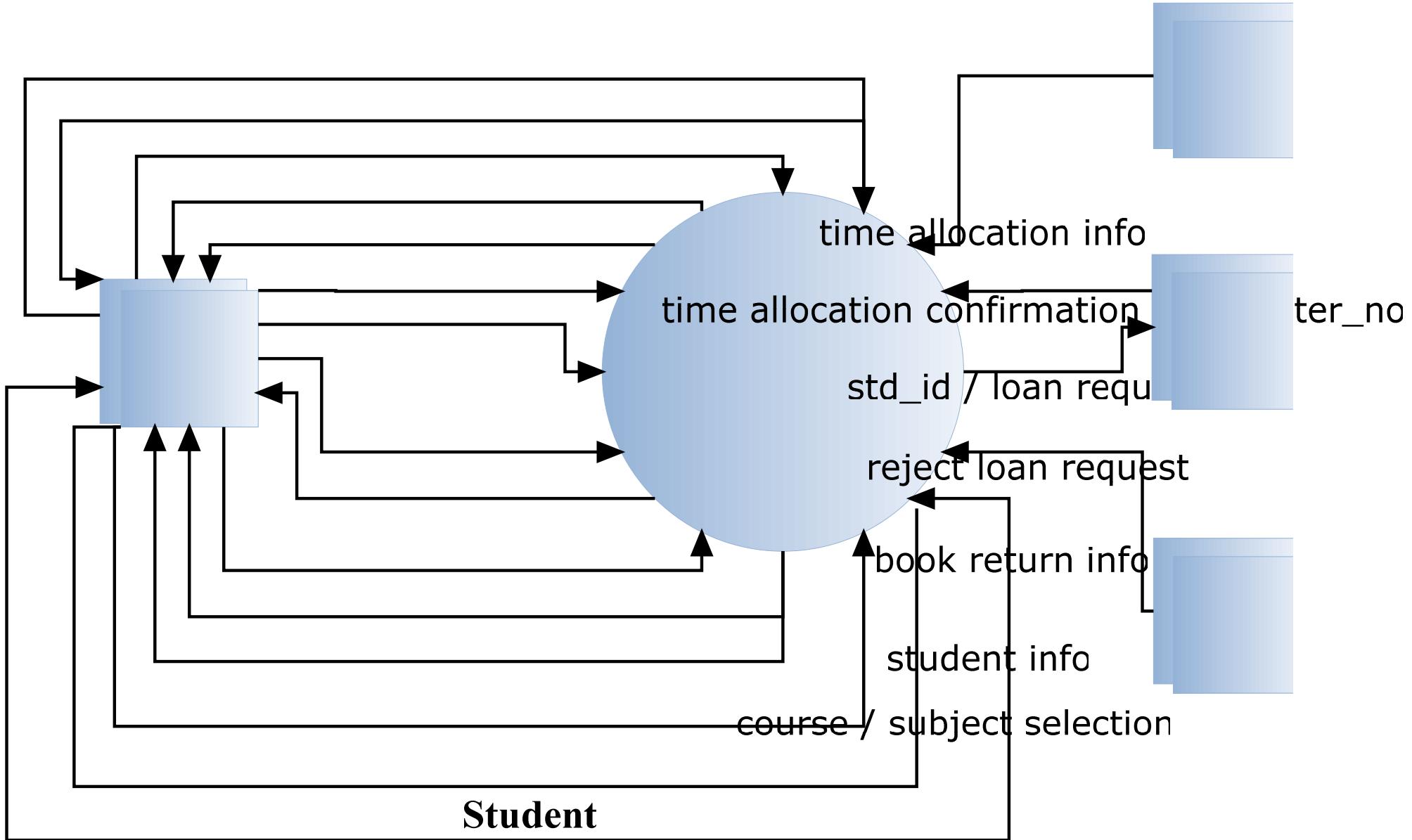
2.1.Lend Book

2.2Return Book

2.3Reserve book

2.4Search Book

2.5Add book copy



In sake clarity some data flows pointing towards login sub system were not illustrated.

Figure 3-0 :Context Diagram

student status /
payment method

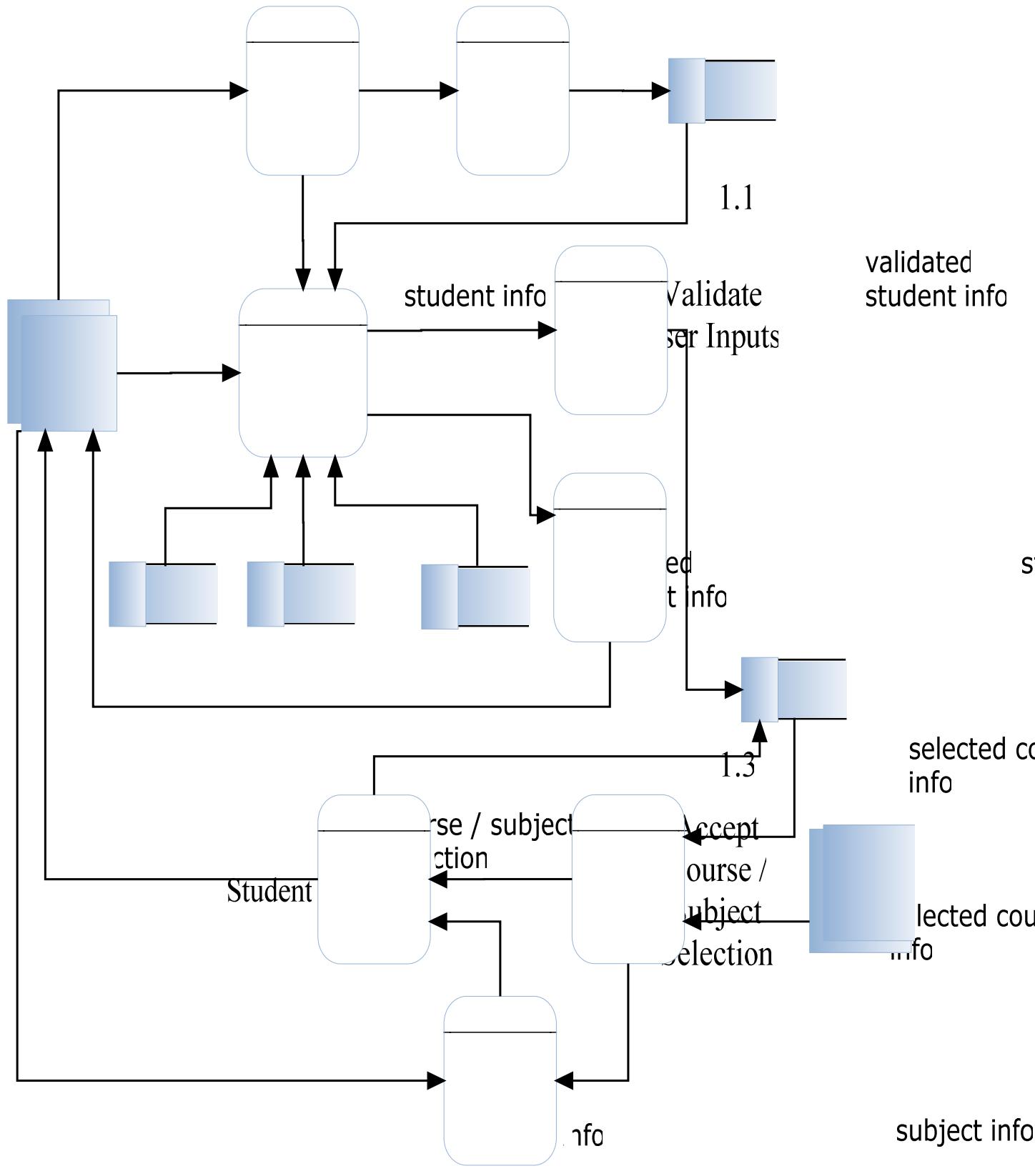
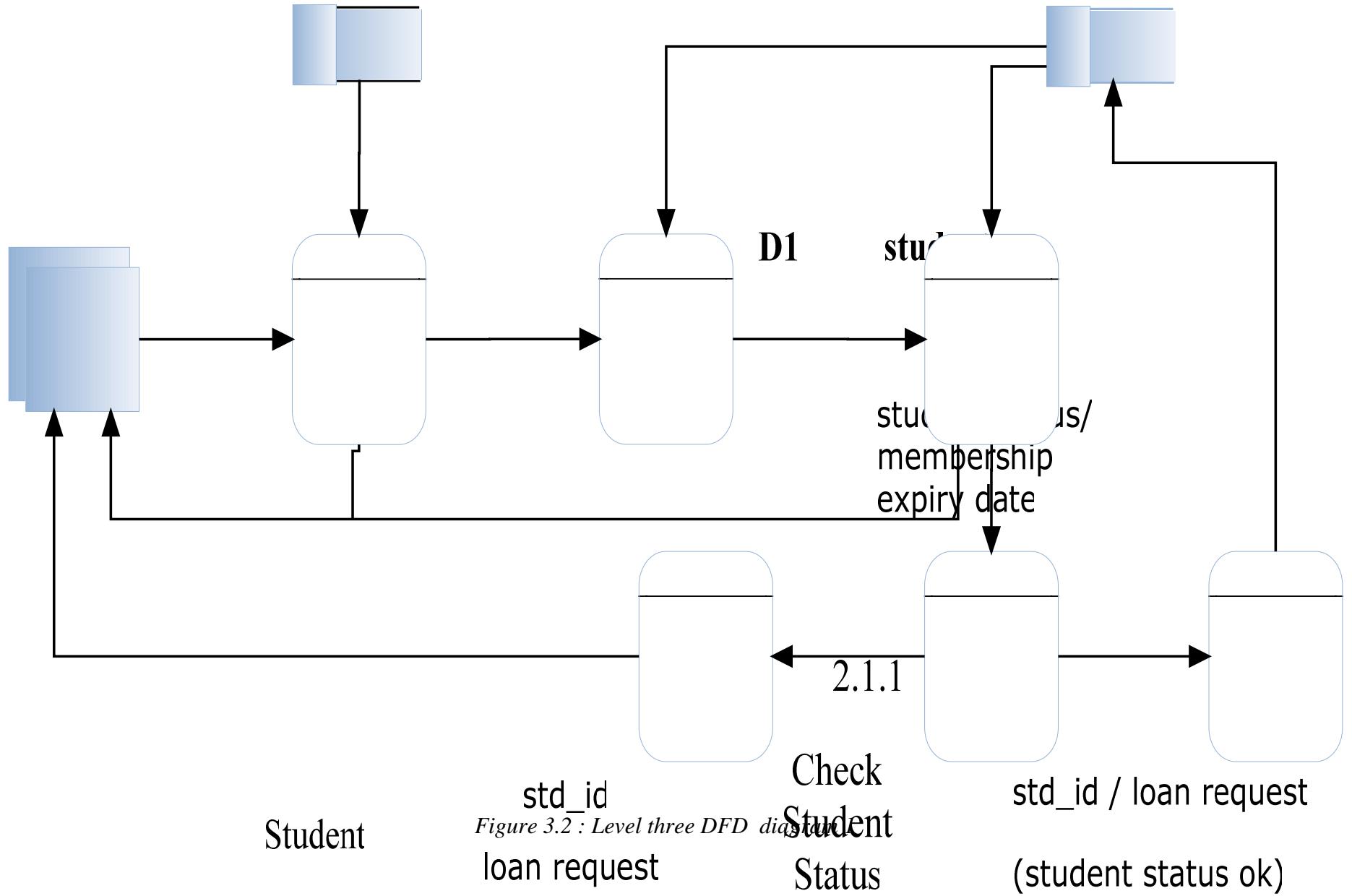


Figure 3.1 : Level two DFD diagram 1



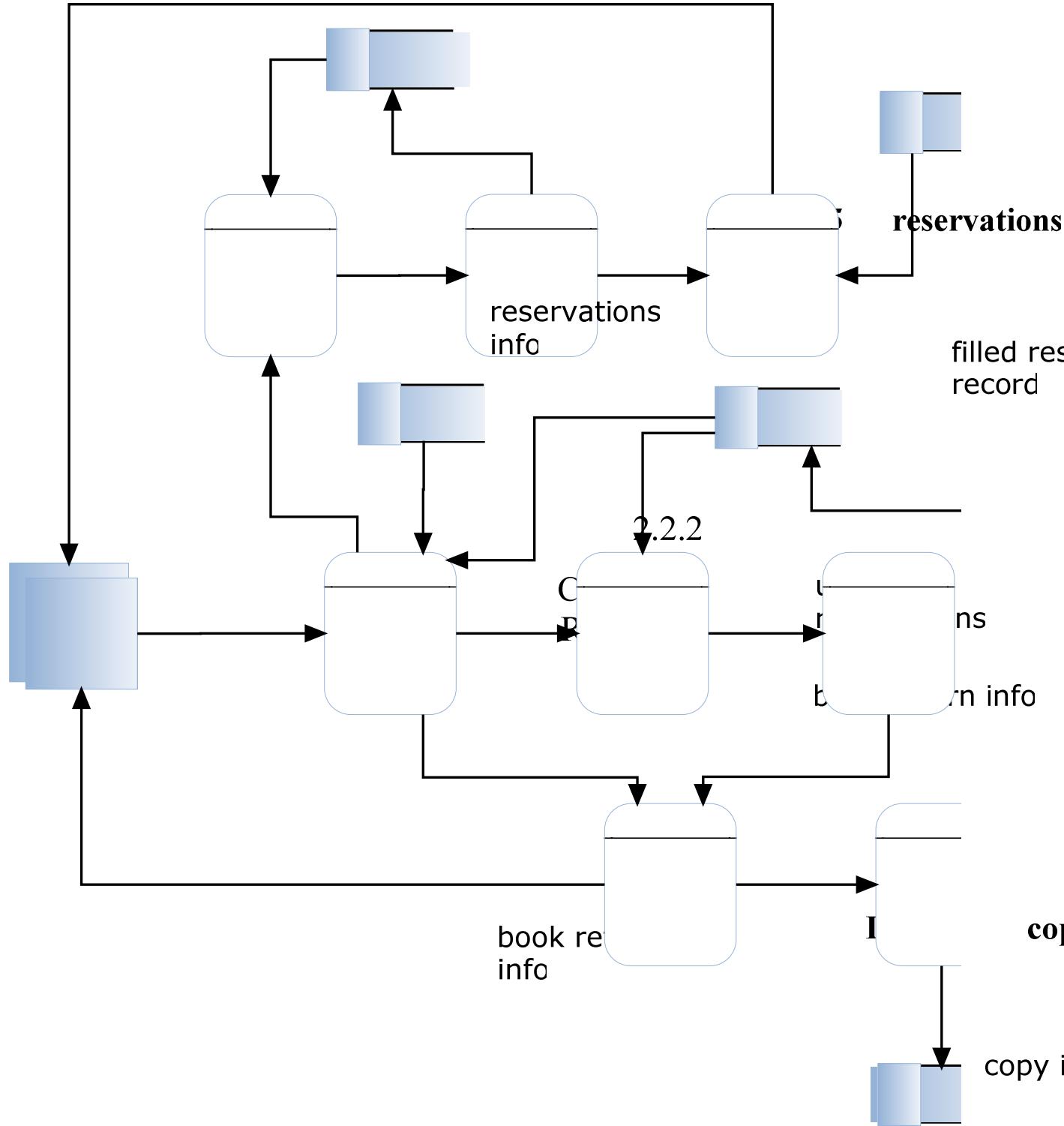


Figure 3.3 : Level three DFD diagram 2

Student

returned book's
accession_no & shelf_no

2.2.1

Retrieve
Book/Lo
an Info

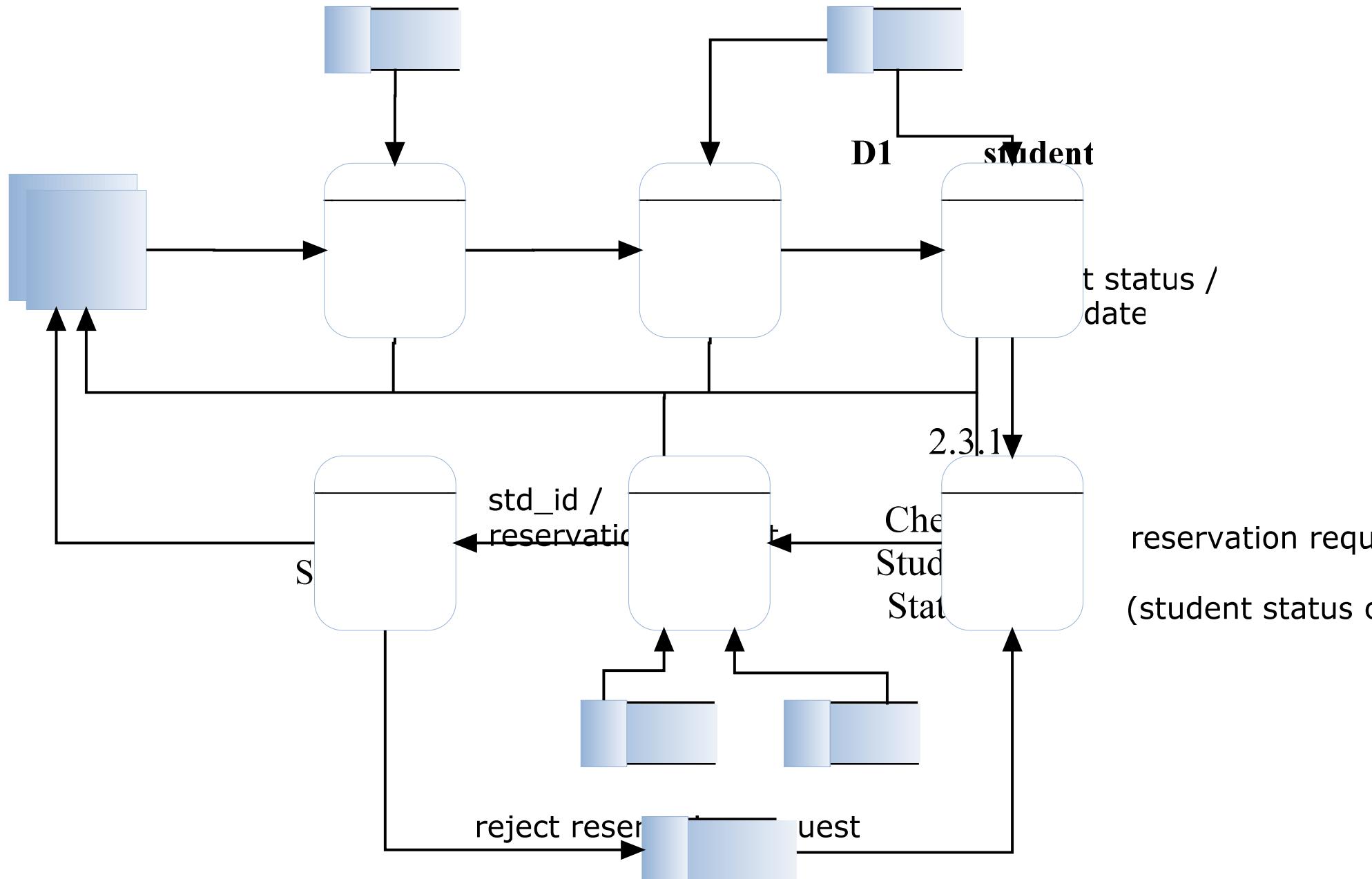


Figure 3.4 : Level three DFD diagram 3

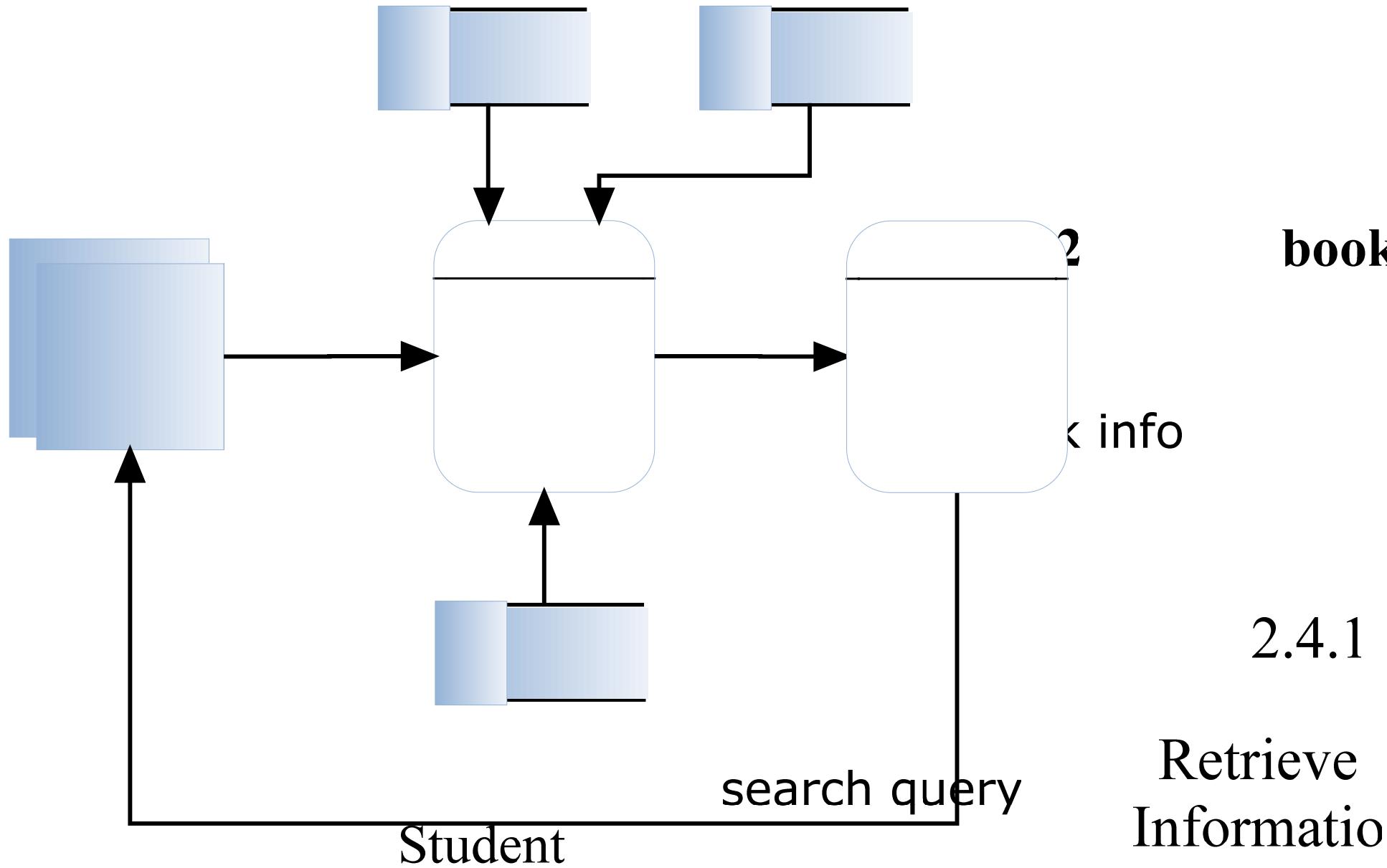
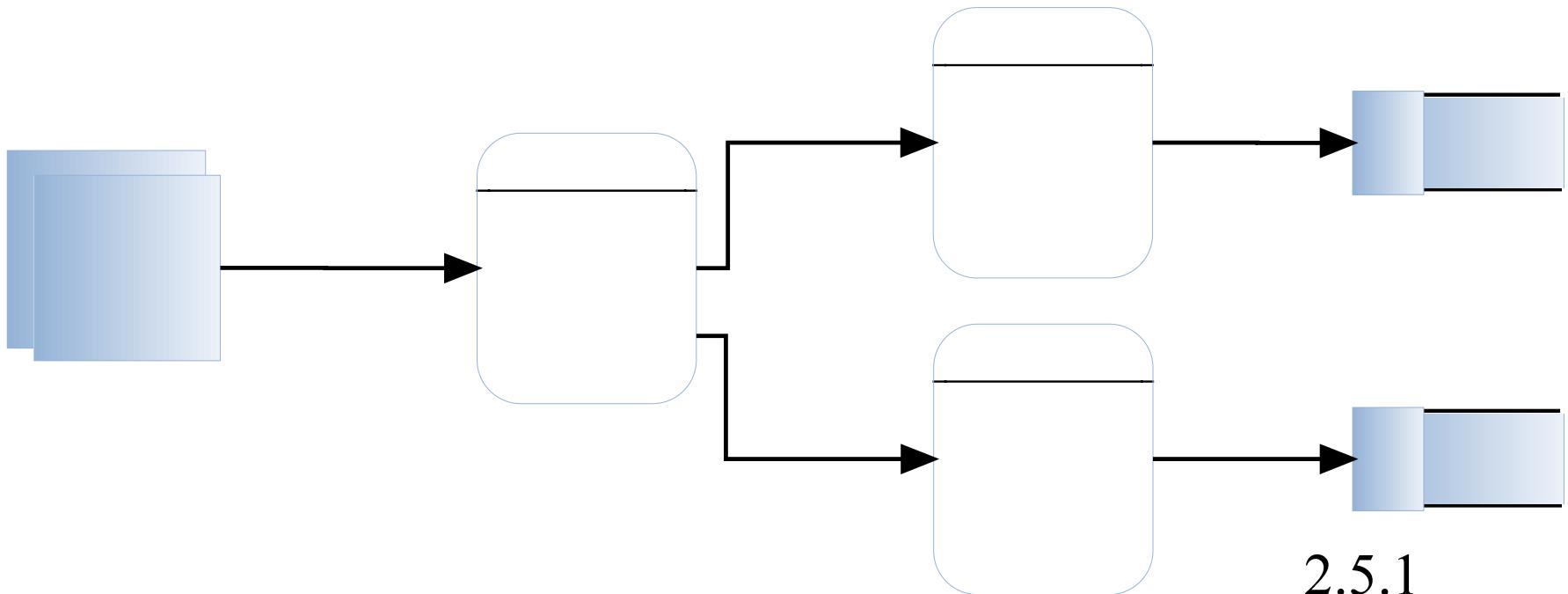


Figure 3.5 : Level three DFD diagram 4



Librarian

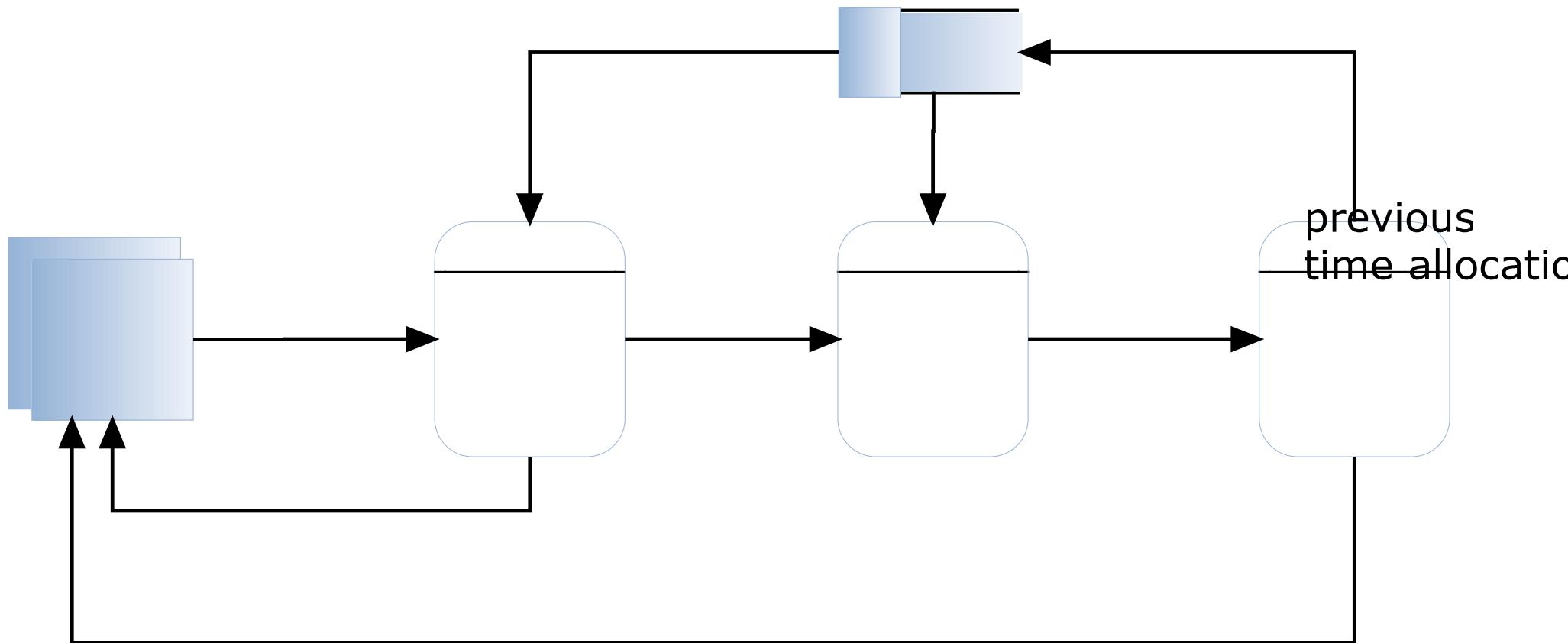
new book / copy
info

Validate
User Inputs

2.5.1

valid
info

Figure 3.6 : Level three DFD diagram 5



3.1

Check
for
Conflicts

Student

Figure 3.7 : Level two DFD diagram 3

time allocation info

verified
time all

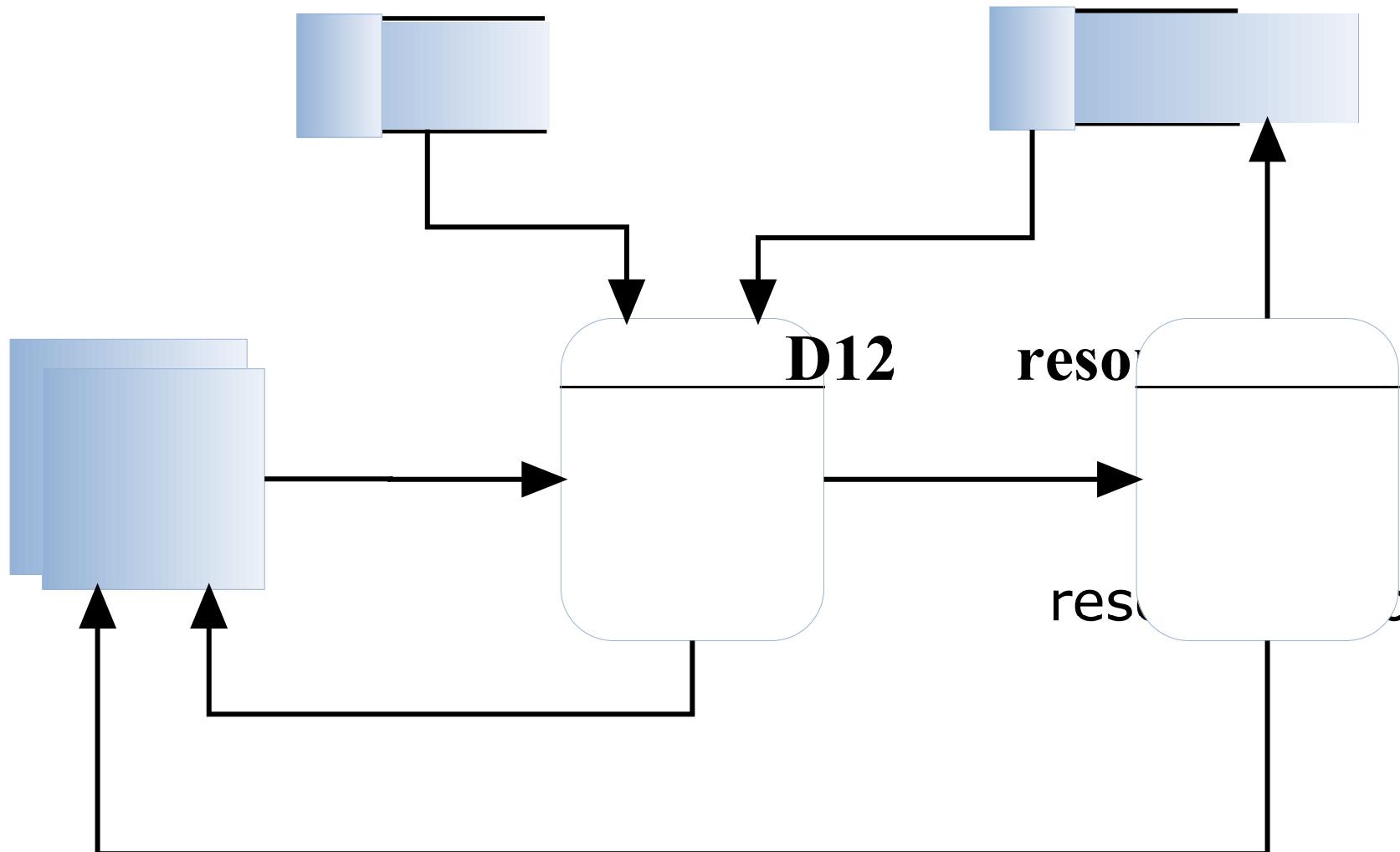
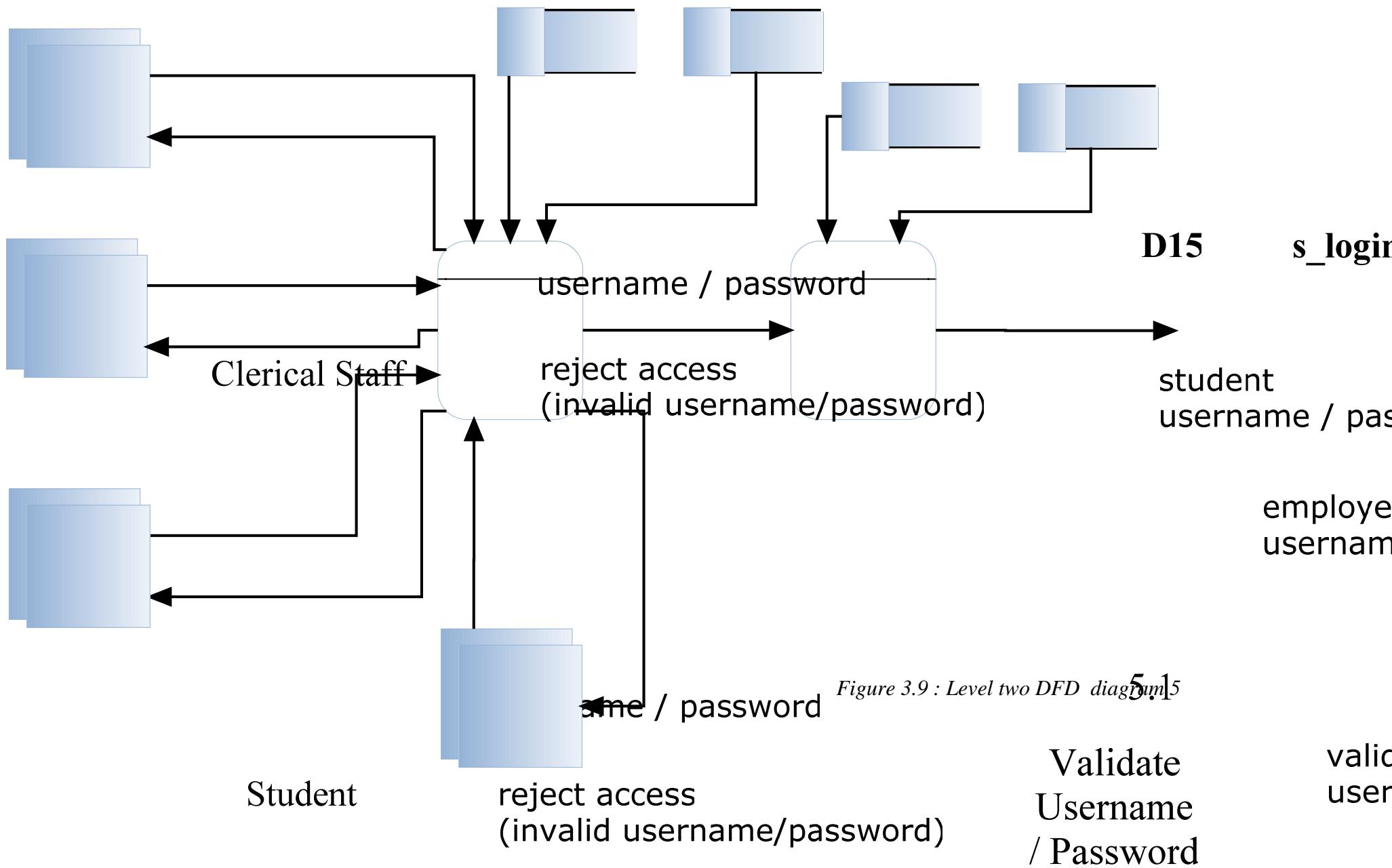


Figure 3.8 : Level two DFD diagram 4

resource allocation
info

Check
for

4.1



CHAPTER 4

USER INTERFACES

4.1 Introduction

User interfaces play a major role in the computer system, because they act as the yardstick by which the system is judged. One of the main objectives of this system was to visualize the contents in the database by presenting information using graphs, charts and tables. Therefore special attention was made to design and develop user interfaces as it is the only way that the user is allowed to communicate with the system.

In the requirements analysis stage few web based user interfaces were developed as prototypes which included menus, graphs and icons. These prototypes were taken as the guide to develop the main user interfaces for the system. Most of the interfaces of the system are the web pages which show analysis information, while other interfaces take the user requests to the system.

4.2 Main User Interfaces

4.2.1 User Login



The image shows a user login form with a light blue header containing the text "Please login to the system by providing User ID and password." Below the header are two input fields: "User ID" and "Password", each with a corresponding text input box. To the right of the "User ID" input box is a small "Required" validation message. Below the input fields is a blue "Log in" button with white text. At the bottom of the form, there is a note in a smaller font: "If you have any problem in log in [click here](#) to contact Administrator."

Figure 4.1 – User Login

The web system user initially interacts with the system using the login interface which asks the user for the user id and the password. Every student have login using this window.

The system student can enter the user id and the password in the text boxes provided and these user id and password are checked with predefined user id and password for the user. If the checking succeeds the user is allowed to log into the system. Otherwise user would not be allowed to login to the system.

On a successful login session the user can obtain all required information by selecting appropriate links in menus provided in the web interface. And user and any task he wants to do with institute by this online system.



A screenshot of a staff login form. The background is red. At the top, there is a message in white text: "Please login to the system by providing Staff ID and password." Below this are three input fields arranged vertically. Each field has a label on the left and a text input box on the right. The first field is labeled "Staff ID", the second is "Password", and the third is "Staff Level". At the bottom right of the form is a blue "Log in" button.

Figure 4.2 – Staff Login

The staff members should have to login to the system using this interface. There are 3 user levels. They are,

- Staff member
- Lecturer
- Administrator

According to the type of the staff member the privileges are different. Each level authorize for one part of the system.

Web based On-line Student Management Information System



Figure 4.3 – Staff Login

This the main window users will redirect to when you are login to the system. You can go to any sub system using this window.

The figure 4.4 shows the registration window of the system. That is the to users who need to register with the system should go to this page and submit your details the register with the system. Then you can register with the class if you wan.

Web based On-line Student Management Information System

The screenshot shows a Microsoft Internet Explorer window with the title bar "Register... - Microsoft Internet Explorer". The address bar contains the URL "http://localhost/register/register.php". The page has a red header with the text "BASE Master the binary revolution". Below the header is a navigation menu with links: Register, Library, Laboratory, Resources, Information, Contact Us, and Staff. The main content area contains a form for registering a student. The form fields are as follows:

| | |
|----------------------|----------------------|
| First Name * | <input type="text"/> |
| Middle Name | <input type="text"/> |
| Surname * | <input type="text"/> |
| Date of Birth * | <input type="text"/> |
| Sex * | <input type="text"/> |
| NIC / Passport No. * | <input type="text"/> |
| Password * | <input type="text"/> |
| Re-enter * | <input type="text"/> |
| Address * | <input type="text"/> |
| Phone No. | <input type="text"/> |
| E-Mail | <input type="text"/> |
| Fax | <input type="text"/> |
| Work Place | <input type="text"/> |
| Designation | <input type="text"/> |
| Office Address | <input type="text"/> |
| Office Phone No. | <input type="text"/> |

At the bottom of the form are three buttons: "Reset", "Back", and "Register".

Figure 4.4 – Register form

The screenshot shows a Microsoft Internet Explorer window with the title bar "Search Your Books... - Microsoft Internet Explorer". The address bar contains the URL "http://localhost/library/member/search_availability.php". The page has a red header with the text "BASE Master the binary revolution". Below the header is a navigation menu with links: Register, Reserve Book, Availability, and Search. The main content area displays a message "Welcome Thisara !". Below this, the text "Search Page!!!" is centered. The search form consists of the following fields:

| | |
|-----------|---------------------------------------------------|
| ISBN | <input type="text"/> |
| Title | <input type="text"/> |
| Author | <input type="text"/> |
| Publisher | <input type="text"/> |
| Series | <input type="text"/> |
| Category | <input type="button" value="Choose Category..."/> |

At the bottom of the form are two buttons: "Reset" and "Search".

Figure 4.5 – Search Book form

Web based On-line Student Management Information System

The screenshot shows a Microsoft Internet Explorer window displaying the 'Search availability' page of a library management system. The title bar reads 'Results - Microsoft Internet Explorer'. The main content area has a red header with 'BASE 2 SCHOOL OF COMPUTING' and a logo for 'Master the binary revolution'. Below the header, there are links for 'Register', 'Reserve Book', 'Availability', and 'Search'. A welcome message 'Welcome Thisara!' is displayed. The central part of the page is titled 'Search Results' and contains a table showing two book entries:

| ISBN | Title | Author | Publisher | Edition | Series | Category | Ref. Shelf No. | Lend Shelf No. | Total Copies | Reference Copies | Availability |
|----------------|-------|----------|-----------|---------|----------|----------|----------------|----------------|--------------|------------------|--------------|
| 43766674676476 | dhdb | dhgdhd | vzbvgegn | dhdb | dhgdhdgs | Web Prog | 1 | 2 | 0 | 0 | 0 |
| 245354365 | PHP | Thilanka | Oxford | 2004 | 24 hours | Web Prog | 1 | 2 | 0 | 0 | 0 |

Below the table, there is a form titled 'Reserve a Book...' with fields for 'Student ID' (355681) and 'ISBN', and buttons for 'Reset' and 'Reserve'.

Figure 4.6 – Search results

The screenshot shows a Microsoft Internet Explorer window displaying the 'Library status' page for a specific user. The title bar reads 'sProfiles - Microsoft Internet Explorer'. The main content area has a red header with 'BASE 2 SCHOOL OF COMPUTING' and a logo for 'Master the binary revolution'. Below the header, there are links for 'Register', 'Library', 'Laborotory', 'Resources', 'Information', 'Contact Us', and 'Staff'. A link for 'Reservations' is highlighted. The central part of the page displays a message: 'These are the books you have borrowed currently.' Below this, a table shows the details of two borrowed books:

| Book ID | ISBN | Title | Author | Edition | Borrowed Date | Due Date | Over Due | Fine |
|---------|----------------|---------|--------|---------|------------------------|------------------------|-----------------|------------|
| 7_5 | 83092116812345 | Thisara | sdffd | 2007 | 2007-05-21 00:15:20 | 2007-06-04 00:15:20 | 60d 0h 28m 11s | Rs. 600.2 |
| 7_10 | 83092116812345 | Thisara | sdffd | 2007 | 2007-05-21 11:05:32 | 2007-06-04 11:05:32 | 59d 13h 37m 59s | Rs. 595.68 |

Below the table, a message states: 'You have one or more over due books.
You have to pay Rs. 1195.88'. A note at the bottom says: 'So You can not borrow any more books'.

Figure 4.7 – Borrowed book for specific user

Users can check their status of the library by login to their account. Which means they can see the book they borrowed and overdue books, fines, and reservations and their status.

The screenshot shows a Microsoft Internet Explorer window with the title bar "Profiles - Microsoft Internet Explorer". The address bar displays "http://localhost/profile/reservation_status.php". The page content is from "BASE2 SCHOOL OF COMPUTING". It features a red header with the school's name and a logo. Below the header, there is a navigation menu with links: Register, Library, Laborotory, Resources, Information, Contact Us, Staff, and [Borrowings]. A message states, "These are the books you have reserved currently." A table lists three reservations:

| Reservation ID | Reserva Date | Book No | Shelf No | Accession No | Status | Cancel Date |
|----------------|------------------------|---------|-----------|--------------|-----------|------------------------|
| 10 | 2007-05-20 19:56:17 | 4 | Not Ready | Not Ready | Not Ready | 2007-06-03 19:56:17 |
| 11 | 2007-05-20 23:13:57 | 11 | Not Ready | Not Ready | Not Ready | 2007-06-03 23:13:57 |
| 12 | 2007-05-21 14:35:54 | 13 | 7 | 1 | Ready | 2007-05-24 09:30:53 |

Below the table, a message says, "You have one or more over Due books. So you can not reserve any more books!"

Figure 4.87 – ReservedBorrowed book for specific user

CHAPTER 5

IMPLEMENTATION

5.1 Introduction

The web based on-line student management system consist of mainly 4 systems namely student registration system, library system, laboratory time slot reservation system, and resource allocation system. But all of these systems are situated at a single physical location. Everyone can access the system through the internet.

The system does host in house. First we have to obtain public IP address from our local internet provider and then maintain the web server with the configured student management system, at the laboratory of Base2 institute which is assigned with that public IP. Therefore everyone all around the world can access this system with that IP address or domain name of the system. But they need the internet service to do this. If internet is not available you can not access the server. Anyway it is not a problem for the users inside the Base2 institute. Because the system is available for the internal user as a local service via intranet. So they do not need internet to continue their work. This system and the server are located at the institute itself. Frequent backups are taken by the administrator.

5.2 Module and Code Structure

The system was developed, tested and implemented at the user location. When developing the system, special consideration was made on develop in a modular structure as much as possible. Since the system been developed, was based on structured programming discipline it is not much easy to modularize the system. (not like object-oriented system) But modular structure is very helpful in avoiding same code repeating everywhere. And also if you want to make some changes to the system, you may need to change everywhere it appears. This may also lead to inconsistence of software.

Database connection (connect.php)

```
<?php  
$conn = mysql_connect('localhost', 'root', 'thisara') or  
die(mysql_error());  
$db = mysql_select_db('base2') or die(mysql_error());  
?>
```

This file can directly include to place where it needed. So code repetition had been reduced. As well as the code structure becomes more organized.

Redirecting (redirect.php)

```
<?php  
function redirect($url)  
{  
    if (!headers_sent())  
        header('Location:  
http://'. $_SERVER['HTTP_HOST']. dirname($_SERVER['PHP_SELF']) )  
        .$url);  
    else  
        die ('Could not redirect, Headers already sent (output).  
');  
}  
?>
```

Function can be use with the parameter specify there.

Sign out (sign_out.php)

```
<?php  
require_once 'redirect.php';  
  
session_start();  
session_unset();  
session_destroy();  
  
redirect("../index.php");  
  
?>
```

This is a separate file and can include this file in every time we need use sign out.

Security (session handling.php)

```
<?php
session_start();
if ( !isset($_SESSION['user_logged']))
{
    $string = $_SERVER['PHP_SELF'];
    $redirect = substr($string , 1);
?
<html>
<head>

    <style type="text/css">
<!--

.table {
    background-color:#D50000;
    border: 1px solid #FFFFFF;

}

.tableRow {
    border: 1px solid #FF7171;
}

.noBorder
{
    border:none
}
-->
</style>

</head>
<body bgcolor="#EA2222">
<table align="center" class="table" cellpadding="30"><tr><td>
<p align="center">www.base2.lk</p>
<p>&nbsp;</p>
<p>You are currently not authorized to view this page.<BR><br>
<a href="http://<?php echo
$_SERVER['HTTP_HOST'];?>/index.php?redirect=<?php echo $redirect;
?>">Click here</a> to log in to the system as a Student.<br>
<br>
After you have logged on, you will be automatically redirected to this
page.</p>
</td></tr></table>
</body>
</html>
<?php
die();
}
?>
```

I have included this file to every file of this system which need user authentication. This will check whether the user is login the system or not. If he is not he will redirect to the login page.

Header

```
<html>
<head>
<title>Base2 Online</title>
<link href="css/style.css" rel="stylesheet" type="text/css">
</head>
<body>



<a href="register/home.php" class="style1">Register</a> | <a
href="library/home.php" class="style1">Library</a> | <span
class="style2"><a href="laborotory/home.php"
class="style1">Laborotory</a></span> | <span class="style1"><a
href="resources/home.php" class="style1">Resources</a></span> |
<span class="style1"><a href="infomation/home.php"
class="style1">Information</a></span> | <span class="style1"><a
href="contact/home.php" class="style1">Contact Us</a></span> |
<span class="style1"><a href="all_staff/home.php"
class="style1">Staff</a></span>

</body>
</html>
```

Footer

```
<!--<hr width="100%"/><!--
&lt;div align="center"&gt; &lt;a href="register/home.php"&gt;Register&lt;/a&gt; | &lt;a
href="library/home.php"&gt;Library&lt;/a&gt; | &lt;a
href="laborotory/home.php"&gt;Laboratory&lt;/a&gt; | &lt;a
href="resources/home.php"&gt;Resources&lt;/a&gt; | &lt;a
href="profile/home.php"&gt;Profile&lt;/a&gt; | &lt;a
href="infomation/home.php"&gt;Infomation&lt;/a&gt; | &lt;a
href="contact/home.php"&gt;Contact us&lt;/a&gt;&lt;br /&gt;
Copyright © 2007 Base2 School of Computing. All Rights Reserved.
(Best review at 1280*1024 resolution)
&lt;/div&gt;</pre>
```

(For more detail codes refer to the Appendix F)

5.3 Development Environment

PHP, Apache, and MySQL are all part of the *open source* group of software programs. The open source movement is basically a collaboration of some of the finest minds in computer programming. By allowing the open exchange of information, programmers from all over the world contribute to make a truly powerful and efficient piece of software available to everyone. Through the contributions of many people to the publicly available source code, bugs get fixed, improvements are made, and a “good” software program becomes a “great” one over time. (WORX – Beginning PHP, Apache and MySQL)

5.3.1 The Development Language

There are lots of web based server side programming languages. Such as PHP, JSP, ASP, Pearl, etc. We can use any language and can develop a system using object-oriented or structured programming discipline.

PHP (PHP: Hypertext Preprocessor) is a programming language devised by Rasmus Lerdorf in 1994 for building dynamic, interactive Web sites. Since then, it's been evolving into a full-fledged language in its own right. As well as PHP is a free programming language and it is one of the most popular & most widely used server side programming language. Also most PHP code can be processed without alteration on computers running many different operating systems (Cross Platform Technology). For example, a PHP script that runs on Linux generally also runs well on Windows. And PHP allow users to develop there systems both in structured or object-oriented manner. PHP add this feature from the version 5.0 and upwards. Before version 5.0 we can develop systems only by structured manner. As well as there are lot of Integrated Development Environments such as Zend Development Environment, Active State's komodo, Waterproof's PHPEdit, NuSphere's phpED, Macromedia Dreamweaver, EditPlus, PHPCode etc. So we can make the development easy by using them and they will help to manage the system as well.

One of the best things about PHP is the large number of Internet service providers (ISPs) and Web hosting companies that support it. Today there are hundreds of thousands of developers using PHP, and it's not surprising that there are so many, considering that several million sites are reported to have PHP installed.

Plus points for PHP

- This system requires records based data processing. PHP contains extremely powerful records manipulation capabilities.
- This system will make use of a database. PHP interface with external applications (e.g. Databases) very easily and provide its own file system functions.
- PHP was conceived for various platforms, which is exactly what this system will use.
- This system makes use of CGI scripts. Therefore PHP is a well established and powerful language used in CGI environment.
- PHP allows rapid development because it is interpreted.

PHP and the ASP are the two most demanded sever-side scripting language. These are the differences exist between those two languages.

| Feature | PHP (Hypertext Preprocessor) | ASP (Active Server Pager) |
|----------|-------------------------------------------------------|----------------------------------------------------------|
| Speed | Faster | Limited by COM-Object model |
| Cost | Free | Need more money |
| Extras | Many components for free | Limited components for money |
| Platform | OS X, Win NT, Windows, Linux, BSD, Solaris, Unix etc. | Windows, with commercial adaptations for other platforms |

5.3.2 Web Server

Apache becomes the most powerful and most widely used web server in the world in many surveys. According to the Netcraft Web site (www.netcraft.com), at the time of this writing Apache is running over 27 million Internet servers, more than Microsoft, Sun ONE, and Zeus combined. Its flexibility, power, and, of course, price make it the best choice for our Student Management system. It can be also used to host a Web site to the general public, or a company-wide intranet, or for simply testing your pages before they are uploaded to a secure server on another machine.

Apache is also a free and open source product from the Apache Software Foundation. As I mentioned earlier this is a pure example for a software which converts a good software from great one by the alteration of the user. Low cost of software is also became important when choosing the database.

5.3.3 Database

MySQL is the database construct that enables PHP and Apache to work together to access and display data in a readable format to a browser. It is a Structured Query Language server designed for heavy loads and processing of complex queries. As a relational database system, MySQL allows many different tables to be joined together for maximum efficiency and speed.

As we consider about web based systems the speed of the system, is a main requirement. Because everyone need to download these files from the server to their machines. Therefore speed of the data retrieval and storing to the hard disk is also crucial. In this case MySQL server becomes the best choice. From many researches and surveys it is proved that MySQL server is the fastest database in the world. As MySQL is open source and free it is also financially advantageous for projects of the medium scale. So it is the best suitable database for this Student Management System.

5.3.4 Configuration

In order to ensure all the chosen technologies are working together in the expected way ,it was necessary to carry out some configuration. Therefore as the first step of this it was necessary to set up the server settings by installing the needed software and the database to implement the system.

5.3.5 Development System

| Hardware Requirements | Software Requirements |
|--------------------------------------------|--------------------------|
| AMD Athlon 64 3200+ processor | Windows XP - SP2 |
| 1 GB RAM | Apache Web Server 2.0.54 |
| 160 GB SATA hard disk | PHP 5.0 |
| Network Interface Card with LAN connection | MySQL 5.0 |
| | Sendmail |
| | Dreamweaver 8 |
| | Zend Studio |
| | Adobe Photoshop CS2 |

5.4 Implementing Environment

5.4.1 Web Server

The web server need to maintain at the institute and currently they are running a server for their static web site and this system should also suppose to host at that server.

| Hardware Requirements | Software Requirements |
|--------------------------------------------|--------------------------|
| Intel Core2 duo 1.8 processor | Windows Server 2003 |
| 1 GB RAM | Apache Web Server 2.0.54 |
| 160 GB SATA hard disk | PHP 5.0 |
| Network Interface Card with LAN connection | MySQL 5.0 |
| | Sendmail |
| | Dreamweaver 8 |
| | Zend Studio |

5.4.2 User Machine

Users who wish to use the system need the following minimum requirement.

| Hardware Requirements | Software Requirements |
|--------------------------------------------------------------|----------------------------|
| Intel Pentium III 1.0GHz or higher processor | Any Operating system |
| 20 GB hard disk space | Any compatible web browser |
| 256 MB RAM | |
| Network Interface card with the connection of LAN & internet | |

5.5 Development Tools

There are lots of tools & utility software for these PHP and MySQL to make our works easier. As Integrated Development Environment for the PHP, the Zend Development Environment is one of the best tools in the world now. It has all the features to manage files, manage database, debug the code etc. As well as it gives the auto complete feature. And also use the Macromedia Dreamweaver 8 as the HTML editor.

The software like Adobe Photoshop, Macromedia Flash, and Macromedia Firework use to edit pictures which are posted on the system.

MySQL utility software uses to manage the database and to enter the row data to test the system. There are,

- MySQL Administrator
- MySQL query browser
- MySQL Control Center

All theses software use to make this development process rapid but error free.

CHAPTER 6

TESTING

6.1 Introduction

“ Testing is an unavoidable part of any responsible effort to develop a system software - William Howden ”

[Somerville, 2000]

This is one of the most important phases in the system development life cycle. Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and code generation.

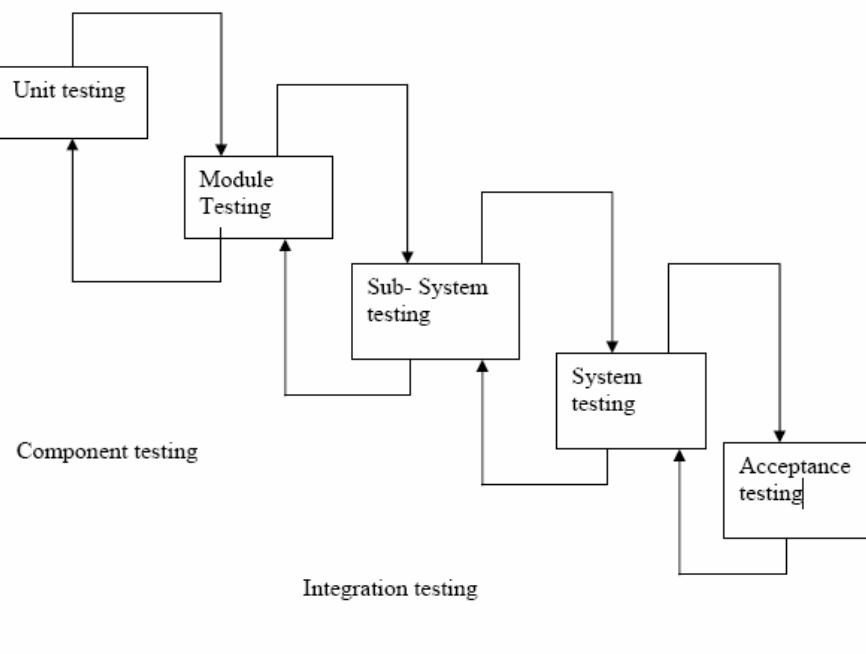
The software testing phase was carried out in order to ensure that the system conforms to its specifications and meets the needs of the user. Therefore software testing was done to validate and verify the software system.

This testing process focuses on both logical internals of the software, ensuring that all statements have been tested and on the functional externals, to uncover errors and ensure that defined input test data will produce expected results.

6.1.1 Test Process

Unit testing and module testing is carried out at the development stage when the programs are developed. In the testing phase of the project schedule, system testing and acceptance testing are done. System testing is done in order to find out errors which result from unanticipated interactions between sub-systems and system components. It is also concerned with validating that the system meets its functional and non-functional requirements. Structural or white-box testing is used for defects testing. Code is analyzed and the knowledge about the structure of the component is used to find out the number of test cases and test data (Sommerville, 2000). Acceptance testing is done before the system

is accepted for operational use. This testing is done with data supplied by the intended system user rather than simulated test data.



Testing Process

[Sommerville – 2000]

6.1.2 Identification Defects

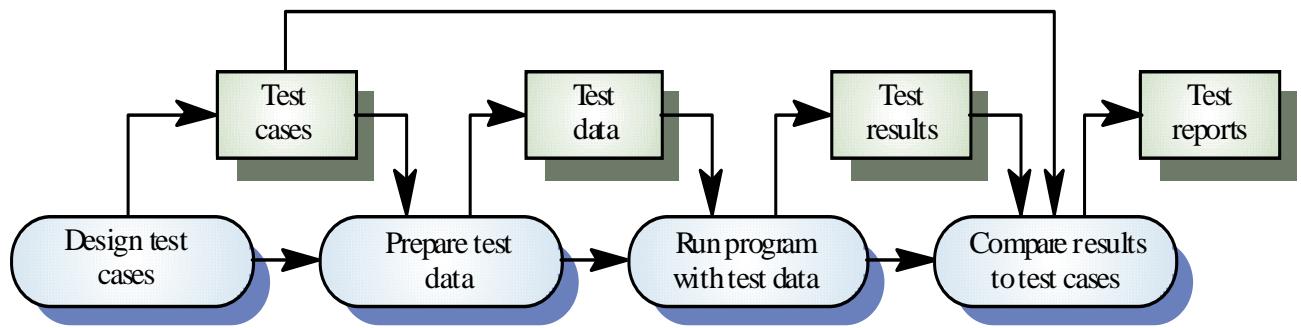
Defect testing was done to find areas where the program does not conform to its specification. The test cases were designed to identify the errors in the system.

“ When defects have been found in a program, these must be discovered and removed .This is called debugging”.

The functions identified in the analysis and design phase were used to prepare the test cases and test data.

And then run the program with tests data to identify the results. These results were compared with the test cases designed.

This identifies the usability of the system.



[Sommerville 2000]

6.1.3 Test Schedule

Specific time period is allocated for testing, in the main project development schedule. According to that, testing process spans over more than three weeks. Even though unit testing and module testing (i.e. component testing) are carried out in the development phase, these components are independently tested in the testing phase.

6.1.4 Test Cases

Here primarily concerned the core functionality of the system. E.g. password reminder, invalid e-mail entering, invalid format of the e-mail address etc. In the format of the Test Case is considering four features. Namely;

Testing What:

Here consider the core functionality of the module.

E.g. password reminder, allocating user privileges etc.

Action:

What is the action had done to check the functionality.

E.g. entering invalid password, miss formatted e-mail, trying to enter lower level privileges users in to the higher level privileges areas etc.

Input Specification:

Enter data to the system bearing in mind the possible inputs in the real time environment could be happened.

E.g. entering the URL without properly logged in to the system, changing the system clock to check the session expiration etc.

Expected Out Put:

According to the “Testing What” the result may be just like the expected out put or completely unexpected. If the result is in just like the expected format, proceed the testing with possible other inputs. If it is in unexpected format check the logic again and get action to further corrections of the module.

E.g. if the system is accepted the invalid form of e-mail address check the logic and do further corrections to the module. If it is not accepted input again it with deferent changes and find out other possible efficiency way that it could be done.

6.1.5 Test Data

The test data for the Student Management System was acquired by the manual system. The data was entered in to the MySQL database and test cases were apply on these data.

6.1.6 Test Evaluation

System testing was done based on the test cases and test data. Based on the Test Results it is clear that all the test cases were passed and the system is consistent with the design specifications.

Please login to the system by providing User ID and password.

User ID

Password

If you have any problem in log in [click here](#) to contact Administrator.

Your Membership has been expired!

If you have any problem in log in [click here](#) to contact Administrator.

User ID

Password

Invalid User ID or Password!

If you have any problem in log in [click here](#) to contact Administrator.

User ID

Password



| | |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Case ID | 1 |
| Tested Component | User login |
| Tested date | 01/04/2007 |
| Test Description | Check the user login whether it working properly. |
| Methods | 1) Login logout with different user id & passwords. 2) Try login invalid user id & passwords. 3) Use passwords using upper & lower case letter. 4) Enter with leaving text boxes null. 5) Enter expired user name |
| Expected output | 1) login successfully 2) Invalid user id or password 3) Invalid user id or password 4) One of the fields are empty 5) Your membership has been expired. |
| Actual Output | Test was successful |
| Variance | - |
| Reasons for variance | |
| Remedial action | |
| Tested by | Thisara Rupasinghe |

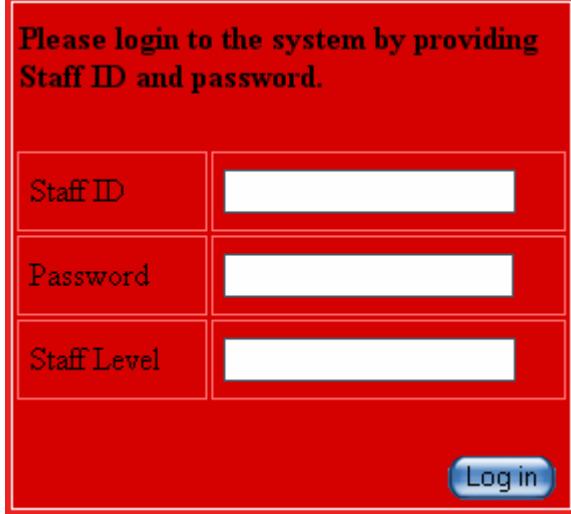
| | |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Case ID | 2 |
| Tested Component | Staff login |
| Tested date | 01/04/2007 |
| Test Description | Check the staff login whether it working properly. |
| Methods | 1) Login logout with different staff levels & passwords. 2) Try login invalid staff id & passwords. 3) Use passwords using upper & lower case letter. 4) Enter with leaving text boxes null. |
| Expected output | 1) login successfully 2) Invalid staff id or password 3) Invalid staff id or password 4) One of the fields are empty |
| Actual Output | Test was successful |
| Variance | - |
| Reasons for variance | |
| Remedial action | |
| Tested by | Thisara Rupasinghe |



Invalid Staff ID or Password!

| | |
|-------------|--------------------------|
| Staff ID | <input type="text"/> |
| Password | <input type="password"/> |
| Staff Level | <input type="text"/> |

Log in



Please login to the system by providing Staff ID and password.

| | |
|-------------|--------------------------|
| Staff ID | <input type="text"/> |
| Password | <input type="password"/> |
| Staff Level | <input type="text"/> |

Log in

| | |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Case ID | 3 |
| Tested Component | Student Registration form |
| Tested date | 03/04/2007 |
| Test Description | 1) Check the compulsory fields. 2) Check the DOB in correct format. 3) Check the email validation. 4) Check the NIC format 5) Compare password & re-enter password 6) Check the database connectivity 7) Check whether the user details are printing correctly. |
| Methods | 1) Make some fields empty & submit. 2) Enter different date formats and submits. 3) Enter emails of several persons and some with error. 4) Submit error nic formats 5) Submit different passwords for two fields. 6) Submit the form and find this record in the database. 7) After pay the amount click the Print button and check the printed details with submitted facts. |
| Expected output | If no error should go to the next step otherwise prompt the error, stop processing and wait to correct the error. |
| Actual Output | Test was successful. |
| Variance | |
| Reasons for variance | |
| Remedial action | |
| Tested by | Thisara Rupasinghe |

| | |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Case ID | 4 |
| Tested Component | Payment System |
| Tested date | 04/04/2007 |
| Test Description | 1) Check for Student type. 2) Check the installment type for correct calculating. 3) Check printing. |
| Methods | 1) Select different student types and submit the form. 2) Select different installment schemas and check whether the correct calculations are done with this. 3) After printing there should be bill printed. |
| Expected output | When click on pay button there should be no error and proceed the process.. |
| Actual Output | There was some alignment error and some text were missing at the printed bill. |
| Variance | The printed bill was different with the details showing on the monitor. |
| Reasons for variance | Some Syntax errors were there. |
| Remedial action | Correct those syntax errors and the run the test process again than test process was successfully completed. |
| Tested by | Thisara Rupasinghe |

| | |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Case ID | 5 |
| Tested Component | Library System |
| Tested date | 07/04/2007 |
| Test Description | 1) Check the search process 2) Test the check out process 3) Test the check in process 4) Test the reservation process 5) Check fine calculation 6) Send Email notification to overdue book 7) Send overdue reminder to reservations. |

| | |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methods | <ol style="list-style-type: none"> 1) Search for a book with different parameters like name, author, edition and should get the correct book details. 2) Get some book ids and check them out. 3) Using the items checked out in the above case try to check in them like overdue & normal books. 4) Do reservations from different user id's and using different book which are available and not 5) Take some book ids and enter them to the database as overdue and return them again and check whether the fines were calculated correctly. 6) Take those overdue books and check whether these notifications are sending to these people. 7) Return a reserve book then it will prompt to put this book on to reservation and notify the user. |
| Expected output | <ol style="list-style-type: none"> 1) Correct book details should come. 2) No error should come & proceed to check out 3) Should be check in properly if it's a over due then fine should be calculated. 4) If the book is not available the reservation should be placed. 5) Overdue should be calculated properly according to the overdue days. 6).The notification should be going to those members. 7) The notification should be going to those members. |
| Actual Output | Every thing worked perfectly according to the methods and expected outputs. No error occur during this test session. |
| Variance | |
| Reasons for variance | |
| Remedial action | |
| Tested by | Thisara Rupasinghe |

| | |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Case ID | 6 |
| Tested Component | Resource Allocation System |
| Tested date | 07/04/2007 |
| Test Description | 1) Check for the invalid date allocation 2) Test the search availability 3) Check the report generating of all allocations of a day. |
| Methods | 1) Enter invalid days and try to allocate resources (like 30th of February). And also enter passed time of the same day. 2) Search for a resource to a specific day and to a specific time. 3) Generate the report of the all the allocation for the day. And check whether they are correct. |
| Expected output | 1) Should prompt Invalid date. 2) The allocation of that time should be displayed. 3) All the allocation for that day should be displayed as a form of a report. |
| Actual Output | Every output matched with the expected output. |
| Variance | |
| Reasons for variance | |
| Remedial action | |
| Tested by | Thisara Rupasinghe |

| | |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Case ID | 7 |
| Tested Component | Time Slot Reservation System |
| Tested date | 10/04/2007 |
| Test Description | <ul style="list-style-type: none"> 1) Test the search availability of time slot. 2) Check for the invalid date reservation. 3) Check the report generating of all allocations of a day. 4) Test placing a reservation 5) Delete the reservation at completion of the reservation. 6) Cancel reservation. |
| Methods | <ul style="list-style-type: none"> 1) Search for a resource to a specific day and to a specific time. 2) Enter invalid days and try to allocate resources (like 30th of February). And also enter passed time of the same day. 3) Generate the report of the all the allocation for the day. And check whether they are correct. 4) Login to the system from several user id's and place reservation for the several time slots. 5) Login as staff user and delete the reservations upon completion of the reservation at the reserved time. 6) Cancel some reservations which are placed in earlier tests. |
| Expected output | <ul style="list-style-type: none"> 1) The allocation of that time should be displayed 2) Should prompt Invalid date. 3) All the allocation for that day should be displayed as a form of a report. 4) The reservation should be placed properly, since they were available. 5) Reservations should be deleted, if the current time is smaller than the reservation time of the record plus 30 minutes. 6) Should be cancel the reservation, if it did not pass the reserve time. |

| | |
|----------------------|-----------------------------------------------------------------------------------------------------------|
| Actual Output | Reservation did not deleted (ref.4) as mentioned on the expected output. It deletes in an unexpected way. |
| Variance | Did not match with the expected output. |
| Reasons for variance | The logical error exists in the code. |
| Remedial action | Correct the error and tested again. The test passed successfully. |
| Tested by | Thisara Rupasinghe |

CHAPTER 7

EVALUATION

The main goal of the project was to provide an efficient and reliable Web Based On-line Student Management Information System integrating to the Basic Static Information web site, for Base2 School of Computing Ltd.

Ultimately the system has achieved most of its objectives to replace the manual system and it was successfully implemented within the company.

7.1 Project Assessment

There were several objectives at the beginning of the project that had to be satisfied with this project. All the major objectives could be successfully satisfied at the end of the project. Earlier they had only a manual system, so this is a totally a new computer system for them. The major objectives of the project are to develop 4 sub systems namely,

- Student Registration
- Library System
- Time slot reservation of the Laboratory
- Resource allocation system

When developing the student registration system the main objective is to register students at the institute and for class. The students are not allowed to pay class fees online. Because from the institutes point of view it is not financially feasible to purchase a payment gateway for them. That is they can not earn the amount of money they spent on the developing and buying the payment gateway, from online payments. As well as still our people afraid to do online transaction due to credit card frauds and other misuses of credit cards exists on the internet. So they are not interested on allowing users to do online transaction.

Therefore to make payments everyone need to go to the institute. So the student who need to register at the institute can go to the site and first register at the institute and he can register to a class. After that he can view all the details of his registration details and can print them as well. After that he need to go to the institute before a week to commence of the class and pay the amount he should pay. His inability to do that will cancel his registration automatically.

The library system loaded with all the general features like adding new books, adding new copies, check in book, check out books, calculate fines & generate reports. As well as this has a feature of notifying the users who have overdue book and who reserve a book etc. Also user can check their library status online. That is they can check what are the book they have borrowed and due dates, reservation they have made, overdue book & fines etc. This is a good system for them since they manage their library manually. And it saves their time and human resource a lot.

The Laboratory time slot reservation system is a very helpful for the students because it is easy for them to reserve a time slot by online rather than visiting the laboratory. And since there is a lot of students want to do their practical in the lab it became problem for reserving a time slot in their free time. Now users can just login and search for their free time and allocate the available time slot.

And when interviewing lecturers the biggest problem they had was can not have the resource they want for particular class in time. But when considering that they had enough resource but they did not manage them well. The procedure is the one who comes first and who need that resource will get it. So the second one comes with thinking that resource is available. But he could not get it. This can solve by introducing the resource allocation system. Lecturers can login using their staff id and can allocate the resource he want for the particular day at particular time.

Considering the whole system this is a very helpful system for this institute. And all the users who interact with the system have benefits of the system.

7.2 Achievements

7.2.1 Efficient Student Management system

This system helps students, lecturers and staff members of the institute to make their work easier. And everyone who interacts with the institute will gain the benefits from this system. The efficiency of the system will increase and institute can extract the maximum use of the resources they have.

7.2.2 User Friendly Interfaces

The user friendly graphical user interfaces (GUI) has been used to increase the usability of the system. The combo boxes, text boxes, option buttons, menus and check boxes etc has been used to reduce the learning curve of the system and to make it more reliable. Any one can get use to this system easily within very short period of time.

7.2.3 Generate reports

In the manual system it was time consuming to generate the reports but this system handle this process easily as and when required. Therefore the manual method of hand written documents are eliminated and the over all efficiency has been increased. It saves lot of time of human resources.

7.2.4 On-line System

Since this is an on-line system anyone can login to the system using his user id and password and can do the task he need to do. This make very easy for students because they may need to go to the institute for every single work. (Eg. To allocate a time slot at laboratory). Students get lots of benefits from the system.

7.3 Critical Appraisal

The main objective of the project is to provide an efficient, user friendly and reliable online student management information system. The system was successful in achieving most of the objectives and the company is very much happy with the system.

The testing phase was very important to ensure the requirements of the system.

Most of the time of the project was devoted for System analysis and Design. For system analysis, different facts gathering methods were used. They were interviewing, past reports referring and prototyping. The main facts gathering method used was Interviewing. As each requirement was found, it was recorded and due care was made to maintain the Requirements specification correctly because it servers as the main referring document for next stages of the project. IEEE standards were used to document the requirements specification. Regular requirements reviews were carried out to ensure the accuracy of the requirements gathered.

Data Flow Diagrams (DFD) were used to depict information flow and the transforms that are applies on data. Logical data modeling was done and logical data structures were identified. Entities were normalized according to database normalizing rules and the database specification in 3rd normal form was generated. And also user interface were designed and test cases were developed in this stage of the project.

The system was developed using PHP programming language.

The system was tested using the test cases and test data developed in the design stage of the project. The test results were documented and compared with the expected results in the original test cases. All the test results were agreed with expected results.

The total project completion time was extended than projected time in the original project schedule, because of the excessive development time. Most of the concepts and technologies were new and comprehensive initial knowledge was required to develop appropriate applications. Therefore development time extended than the projected time.

7.3.1 Relevance to Degree Program

By completing this project, the author will have to draw upon skills attained through modules studied in the last three years.

- The course units such as System analysis and designing, Software Engineering and Project Management were useful through out the project.
- Internet Application Development and Web Development Technologies subjects were helpful in using PHP and to code the system.
- DBMS and ADBMS were helped to develop a better database management system.

7.3.2 Lessons Learnt

During the course of this project lot of new concepts and lessons was learnt.

- The main lesson learnt was software project management. All the phases in a typical software project, beginning from project proposal to final system implementation were comprehensively covered.
- Thorough understanding on software requirements analysis and design was gained through this project. It was learnt how to conduct and produce appropriate specifications at each phase in a structured manner.
- The main knowledge got from this project was the writing real web application using PHP and MySQL. Here highly concern to writing web application for state maintenance using session and cookies.
- Also learnt MySQL Server and database administration, Apache Sever administration and SQL query language.
- The other main subject area learnt was Apache web server administration on windows platform. Many lessons were learnt from installing Apache web server to setting up together with PHP and MySQL to achieve full functioning web server.

- Another main concept learnt was how to practically handle the business logic in the middle tier of the 3-tier architecture. Since this application spans over different platforms and hardware over different tiers the variations were learnt well.
- Learnt how the system was designed and managed within the given constraints like time schedule, human, technical and monetary resources etc.
- Also we gain more communication skills from working with lot of people with the client organization and from getting help from the people who were there for long time in this industry.

CHAPTER 8

CONCLUTION

8.1 Major Achievements

The main objective this project is to supply a efficient and effective system for base2 School of computing to manage their students and to optimize their resources to gain maximum use of it, to serve their students.

Throughout the course of this project lot of useful and interesting goals were achieved. Mainly almost all goals of the client were satisfied. Also student database was created at the client place to serve clients requirement.

And generating reports and reminders has been used to ensure hassle free working environment.

Apart from above mentioned, the system provides all features of Graphical User Interfaces (GUI) which is similar to other windows based applications. The user communication was very useful in order to develop the system more user friendly.

Major achievements accomplished

- Students database
- Library system
- Email notification
- Student registration
- Payment detail maintaining
- Resource allocation system
- Time slot reservation at the Laboratory

8.2 Possible Future Enhancements

- If the client interested in the future, the online payment system can be develop and allow users to pay online. We can purchase a payment gateway from a bank and develop a shopping cart to server this purpose.
- If the Library system grows with the time, it will be difficult to handle check ins and check outs. So we can implement a barcode reader system for this. So we can generate bar codes for every single book and every user. Then it will be very easy, efficient and effective to check in and check out.
- The resource allocation system can be expands to allocate all the classes and lecturers without crashing.

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[James, 2001] James, A.F Freeman, Edward Daniel,R 2001. Management Sixth Edition.

[Pressman, 2001] Pressman, Roger S 2001. Software Engineering: A Practitioner's approach. McGraw-Hill International Edition.

[Sommerville, 2000] Sommerville, Ian 2000. Software Engineering. Addison Wesley Publishing Ltd

PHP 5 User Manual

[WWW1] Microsoft Web site. <http://www.apache.org>

[WWW2] Wrox Publishing Web site <http://www.wrox.com>

[WWW3] ZLC Software Corporation Web site. <http://www.zlcsoftware.com>

[WWW4] Several Online Forums

APPENDIX A

DESIGN DOCUMENTATION

Complete Database

| Table Name | Engine | Rows | Data length | Index length | Update time |
|---------------------|--------|------|-------------|--------------|-------------|
| all_resources | InnoDB | 3 | 16 kB | 0 B | |
| book | InnoDB | 12 | 16 kB | 16 kB | |
| category | InnoDB | 5 | 16 kB | 16 kB | |
| class | InnoDB | 12 | 16 kB | 0 B | |
| copy | InnoDB | 13 | 16 kB | 16 kB | |
| course | InnoDB | 12 | 16 kB | 0 B | |
| employee | InnoDB | 4 | 16 kB | 16 kB | |
| e_login | InnoDB | 4 | 16 kB | 0 B | |
| fees | InnoDB | 4 | 16 kB | 0 B | |
| grade | InnoDB | 7 | 16 kB | 0 B | |
| lab_time | InnoDB | 2 | 16 kB | 0 B | |
| on_loan | InnoDB | 2 | 16 kB | 0 B | |
| reservations | InnoDB | 3 | 16 kB | 0 B | |
| resources | InnoDB | 2 | 16 kB | 0 B | |
| resource_allocation | InnoDB | 7 | 16 kB | 0 B | |
| student | InnoDB | 4 | 16 kB | 16 kB | |
| subject | InnoDB | 9 | 16 kB | 0 B | |
| s_login | InnoDB | 4 | 16 kB | 0 B | |
| transactions | InnoDB | 34 | 16 kB | 0 B | |

All_resources

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|--------------|----------|----------|
| item_no | INTEGER | ✓ | ✓ |
| resource_id | INTEGER | ✓ | |
| description | VARCHAR(500) | ✓ | |

category

| Column Name | Datatype | NOT NULL | AUTO INC |
|---------------|---------------|----------|----------|
| category_no | SMALLINT(3) | ✓ | ✓ |
| category_name | VARCHAR(100) | ✓ | |
| discription | VARCHAR(1000) | | |
| ref_shelf_no | INT(5) | ✓ | |
| lend_shelf_no | INT(5) | ✓ | |

E_login

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|-------------------|----------|----------|
| emp_id | INT(6) | ✓ | |
| password | VARCHAR(50) | ✓ | |
| staff_level | ENUM('a','l','s') | ✓ | |

resource_allocation

| Column Name | Datatype | NOT NULL | AUTO INC |
|---------------|----------|----------|----------|
| allocation_id | INTEGER | ✓ | ✓ |
| emp_id | INTEGER | ✓ | |
| item_no | INTEGER | ✓ | |
| date | DATE | ✓ | |
| start_time | TIME | ✓ | |
| end_time | TIME | ✓ | |
| res_time | DATETIME | ✓ | |

student

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|------------------|----------|----------|
| std_id | INT(6) | ✓ | ✓ |
| first_name | VARCHAR(50) | ✓ | |
| mid_name | VARCHAR(50) | | |
| surname | VARCHAR(50) | ✓ | |
| dob | DATE | ✓ | |
| sex | ENUM('m','f') | ✓ | |
| nic | VARCHAR(10) | ✓ | |
| address | VARCHAR(100) | ✓ | |
| phone | VARCHAR(20) | | |
| email | VARCHAR(50) | | |
| reg_date | DATETIME | ✓ | |
| fax | VARCHAR(20) | | |
| work_plc | VARCHAR(50) | | |
| designation | VARCHAR(50) | | |
| off_address | VARCHAR(100) | | |
| off_phone | VARCHAR(20) | | |
| expire_date | DATE | ✓ | |
| status | ENUM('yes','no') | ✓ | |

s_login

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|-------------|----------|----------|
| user_id | INTEGER | ✓ | |
| password | VARCHAR(50) | ✓ | |

class

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|--------------|----------|----------|
| class_id | INTEGER | ✓ | ✓ |
| subject_id | INTEGER | ✓ | |
| start | DATE | ✓ | |
| end | DATE | ✓ | |
| lecturer | VARCHAR(500) | ✓ | |
| date | VARCHAR(45) | ✓ | |
| no_students | INTEGER | ✓ | |
| start_time | VARCHAR(45) | ✓ | |
| end_time | VARCHAR(45) | ✓ | |

Employee

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|---------------|----------|----------|
| emp_id | INT(6) | ✓ | ✓ |
| first_name | VARCHAR(50) | ✓ | |
| mid_name | VARCHAR(50) | | |
| surname | VARCHAR(50) | ✓ | |
| dob | DATE | ✓ | |
| sex | ENUM('m','f') | ✓ | |
| nic | VARCHAR(10) | ✓ | |
| address | VARCHAR(100) | ✓ | |
| phone | INT(15) | | |
| email | VARCHAR(50) | | |
| assign_date | DATE | ✓ | |
| grade_id | SMALLINT(5) | ✓ | |

copy

| Column Name | Datatype | NOT NULL | AUTO INC |
|--------------|---------------|----------|----------|
| shelf_no | INT(6) | ✓ | |
| accession_no | INTEGER | ✓ | |
| book_no | INTEGER | ✓ | |
| type | ENUM('L','R') | ✓ | |
| date | DATETIME | ✓ | |

book

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|-------------|----------|----------|
| book_no | INTEGER | ✓ | ✓ |
| isbn | CHAR(14) | ✓ | |
| title | VARCHAR(50) | ✓ | |
| author | VARCHAR(50) | ✓ | |
| publisher | VARCHAR(50) | ✓ | |
| edition | VARCHAR(50) | ✓ | |
| series | VARCHAR(50) | | |
| pages | INTEGER | ✓ | |
| category_no | SMALLINT(3) | ✓ | |

resources

| Column Name | Datatype | NOT NULL | AUTO INC |
|---------------|---------------|----------|----------|
| resource_id | INTEGER | ✓ | ✓ |
| resource_name | VARCHAR(50) | ✓ | |
| no_items | INT(5) | ✓ | |
| description | VARCHAR(1000) | ✓ | |

reservations

| Column Name | Datatype | NOT NULL | AUTO INC |
|----------------|---------------|----------|----------|
| reservation_id | INTEGER | ✓ | ✓ |
| std_id | INTEGER | ✓ | |
| reserve_date | DATETIME | ✓ | |
| book_no | INTEGER | ✓ | |
| reminder_date | DATETIME | ✓ | |
| shelf_no | INTEGER | ✓ | |
| accession_no | INTEGER | ✓ | |
| status | ENUM('1','0') | ✓ | |

transaction

| Column Name | Datatype | NOT NULL | AUTO INC |
|---------------|--------------|----------|----------|
| transact_id | INTEGER | ✓ | ✓ |
| std_id | INT(6) | ✓ | |
| shelf_no | INT(5) | ✓ | |
| accession_no | INTEGER | ✓ | |
| borrowed_date | DATETIME | ✓ | |
| due_date | DATETIME | ✓ | |
| returned_date | DATETIME | ✓ | |
| fine | DOUBLE | ✓ | |
| comment | VARCHAR(500) | | |

course

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|--------------|----------|----------|
| course_id | VARCHAR(20) | ✓ | |
| course_name | VARCHAR(50) | ✓ | |
| fee | DOUBLE | ✓ | |
| duration | INTEGER | ✓ | |
| no_subjects | INTEGER | ✓ | |
| description | VARCHAR(500) | | |

subject

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|--------------|----------|----------|
| subject_id | INTEGER | ✓ | ✓ |
| course_id | VARCHAR(50) | ✓ | |
| name | VARCHAR(100) | ✓ | |
| fees | DOUBLE | ✓ | |

fees

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|-------------|----------|----------|
| std_id | INTEGER | ✓ | |
| class_id | VARCHAR(45) | ✓ | |
| full_amount | INTEGER | ✓ | |
| paid_amount | INTEGER | ✓ | |
| date | DATETIME | ✓ | |

lab_time

| Column Name | Datatype | NOT NULL | AUTO INC |
|----------------|----------|----------|----------|
| reservation_id | INTEGER | ✓ | ✓ |
| std_id | INT(6) | ✓ | |
| date | DATE | ✓ | |
| start | TIME | ✓ | |
| end | TIME | ✓ | |
| computer_no | INTEGER | ✓ | |

on_loan

| Column Name | Datatype | NOT NULL | AUTO INC |
|---------------|----------|----------|----------|
| shelf_no | INT(5) | ✓ | |
| accession_no | INTEGER | ✓ | |
| std_id | INT(6) | ✓ | |
| borrowed_date | DATETIME | ✓ | |
| due_date | DATETIME | ✓ | |
| fine | INTEGER | ✓ | |

grade

| Column Name | Datatype | NOT NULL | AUTO INC |
|-------------|-------------------|----------|----------|
| grade_id | SMALLINT(5) | ✓ | ✓ |
| staff_level | ENUM('a','l','s') | ✓ | |
| designation | VARCHAR(50) | ✓ | |
| salary | INTEGER | ✓ | |

APPENDIX B

SYSTEM DOCUMENTATION

Introduction

This documentation gives detailed description of the system from a technical point of view. Entire Student Management system is a web based system and hosted in house. That is hosted at their server at Base2 institute.

Prerequisites

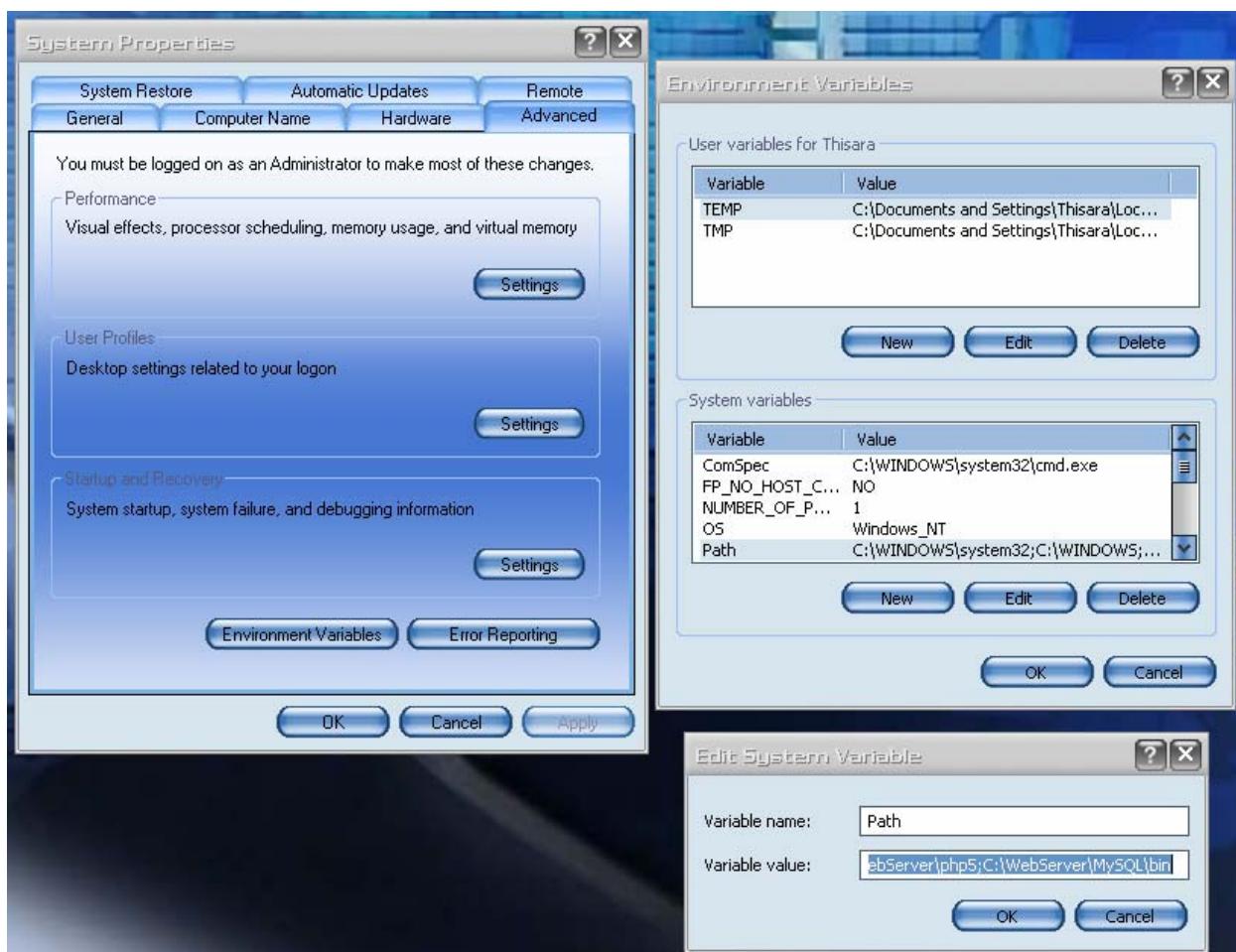
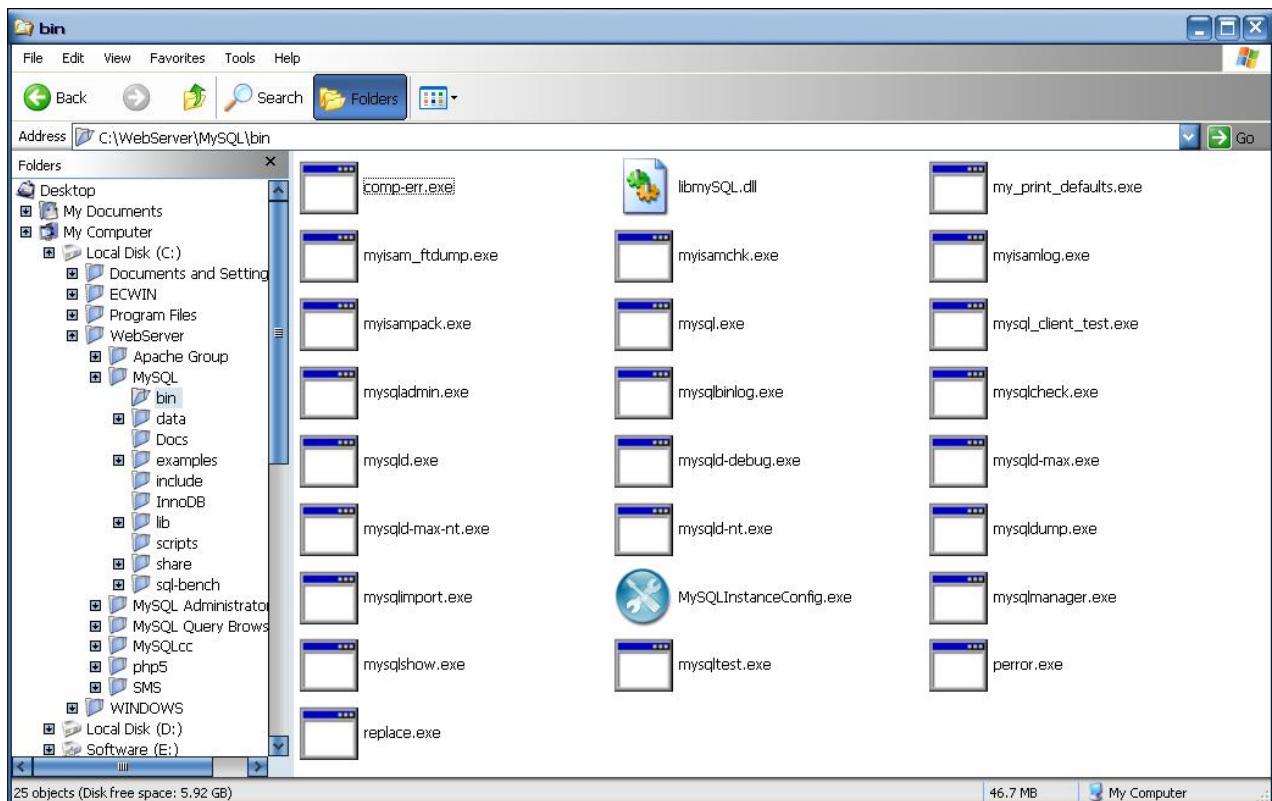
- **The Database Server** - MySQL Server 5.0
- **The Application Server** - PHP 5.2
- **The Web Server** – Apache, MySQL Server and PHP Application Server shipped with the system distribution.

The Database Server Installation

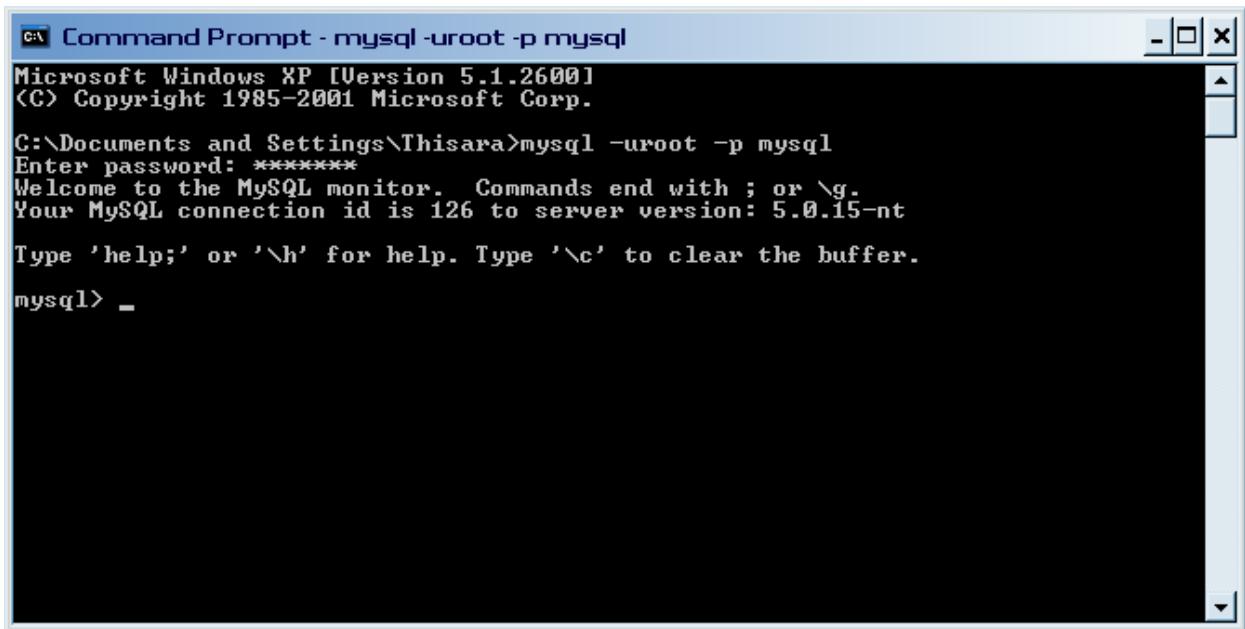
MySQL Server Installation

- Download the latest stable version of the MySQL server Windows distribution from the URL of <http://dev.mysql.com/download/> or used distributed copy.
- Unpack and run the setup program.
- The setup program gives wizard to follow and install according to your choice. The native place is C:\mysql. (The documentation proceeded assuming the above path as the place for MySQL' S installation path).
- If the service is not started double click on the following “C:\mysql\bin\winmysqladmin.exe” file. Then the MySQL server is ready to serve.
- Then set the path for the MySQL Server to be accessible in any where of the local computer. Go to Desktop -> My Computer -> Right click -> Properties -> Advance tab -> Environment Variables -> System variables -> Select “path” -> click “Edit” button -> add “;” to the end of the line and type “C:\mysql\bin”.

Web based On-line Student Management Information System



- Then log to the MySQL Server user as “root” and password as “”. Type in command prompt as: “C:\>mysql –uroot –p mysql”



The screenshot shows a Windows Command Prompt window titled "Command Prompt - mysql -uroot -p mysql". The window displays the following text:

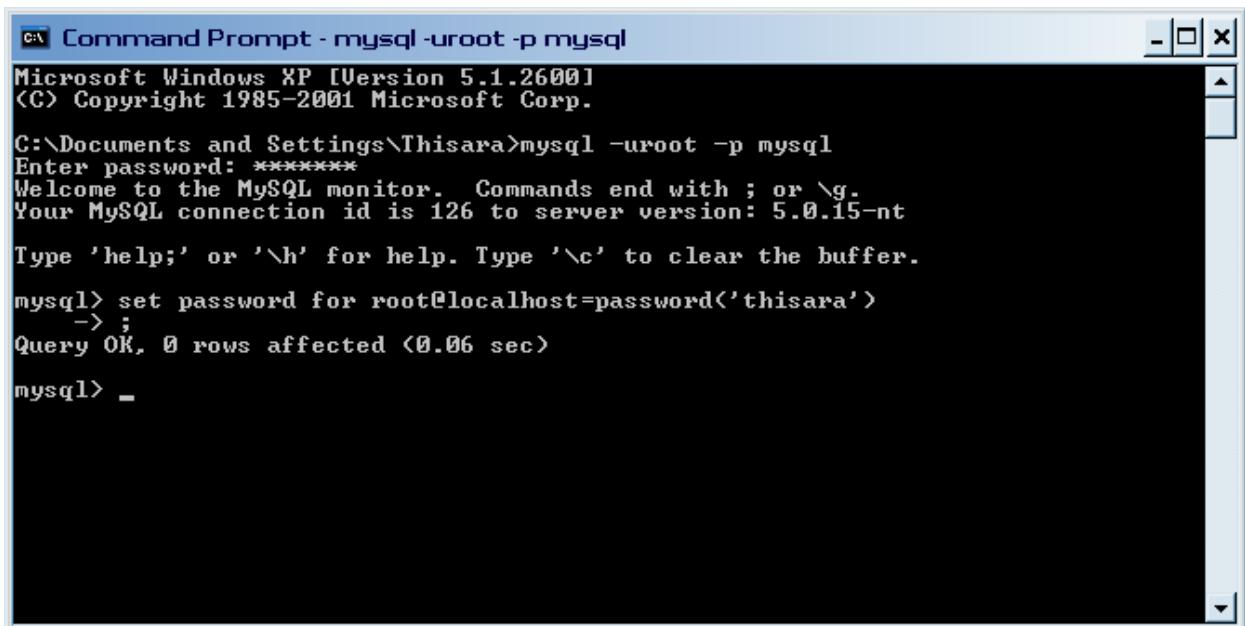
```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Thisara>mysql -uroot -p mysql
Enter password: *****
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 126 to server version: 5.0.15-nt
Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> _
```

And press enter. The system will ask for the password and press enter. Then the prompt may change to “mysql>”.

- Next set “root” (mysql database’s native database administrator) password as bellow:
“C:\>set password for root@localhost=password(‘newpassword’)”



The screenshot shows a Windows Command Prompt window titled "Command Prompt - mysql -uroot -p mysql". The window displays the following text:

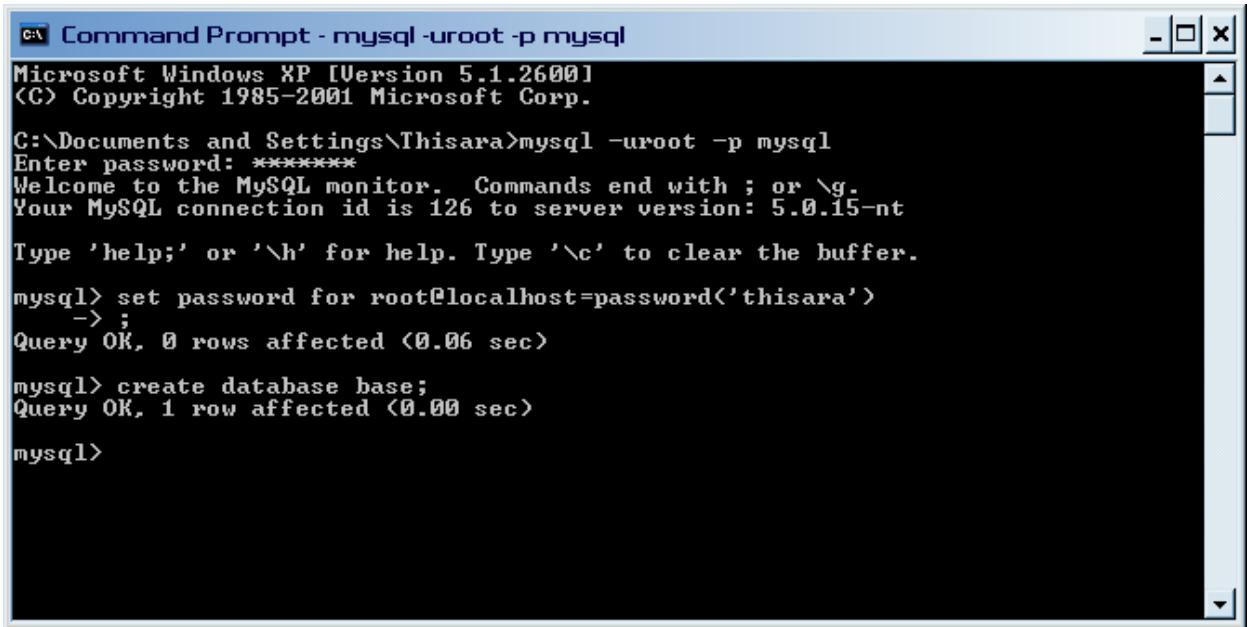
```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Thisara>mysql -uroot -p mysql
Enter password: *****
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 126 to server version: 5.0.15-nt
Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> set password for root@localhost=password('thisara')
->;
Query OK, 0 rows affected (0.06 sec)

mysql> _
```

- Then create a database typing as “mysql> create database base;” in the prompt.



The screenshot shows a Windows Command Prompt window titled "Command Prompt - mysql -uroot -p mysql". The window title bar also displays "Microsoft Windows XP [Version 5.1.2600] <C> Copyright 1985-2001 Microsoft Corp.". The main area of the window shows the following MySQL session:

```
C:\Documents and Settings\Thisara>mysql -uroot -p mysql
Enter password: *****
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 126 to server version: 5.0.15-nt

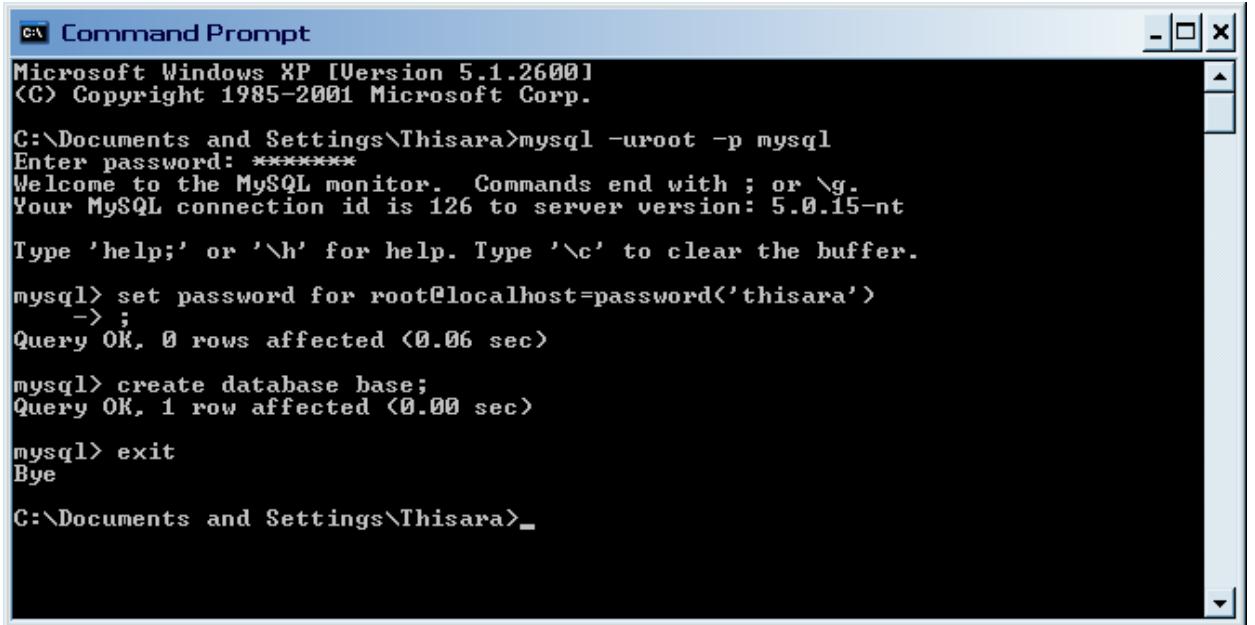
Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> set password for root@localhost=password('thisara')
->;
Query OK, 0 rows affected (0.06 sec)

mysql> create database base;
Query OK, 1 row affected (0.00 sec)

mysql>
```

- Then type “mysql> exit;” and then return to the “C:\>”.



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The window title bar displays "Microsoft Windows XP [Version 5.1.2600] <C> Copyright 1985-2001 Microsoft Corp.". The main area of the window shows the same MySQL session as the previous screenshot, followed by the exit command:

```
C:\Documents and Settings\Thisara>mysql -uroot -p mysql
Enter password: *****
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 126 to server version: 5.0.15-nt

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

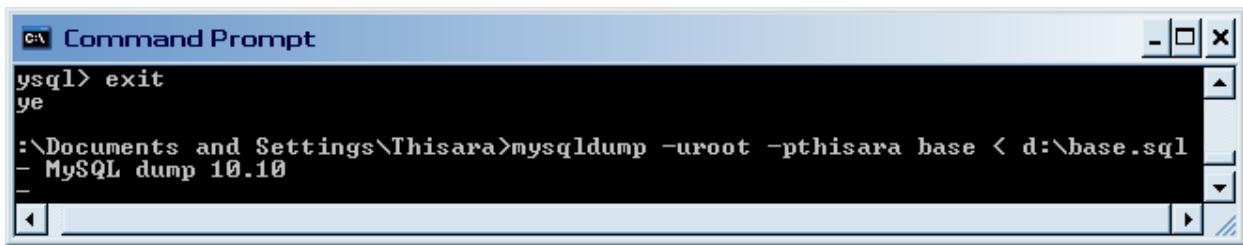
mysql> set password for root@localhost=password('thisara')
->;
Query OK, 0 rows affected (0.06 sec)

mysql> create database base;
Query OK, 1 row affected (0.00 sec)

mysql> exit
Bye

C:\Documents and Settings\Thisara>
```

- There is a SQL script name as “base.sql” in the folder “dbschema” in the root directory of the CD. After type as follows: “C:\>mysql -uroot -p”[password]” base < D:\dbschema\base.sql ” and press Enter (assuming that CD diver as D:).



```
mysql> exit
ye
:C:\Documents and Settings\Thisara>mysqldump -uroot -pthisara base < d:\base.sql
- MySQL dump 10.10
-
```

- Next log into the MySQL server username as “root” and password as “[password]” exactly previous step. After create the user account user name as “thisara” and password as “thisara123”. The command for that is as bellow: “mysql>insert into user (host,user,password) values('localhost','thisara',password('thisara123')) ;”.
- Grant privileges for the new user “thisara” as follows. “mysql> grant select,insert,update,delete,create,drop on base.* to thisara@localhost identified by password('thisara123')”;
- Then type “mysql>flush privileges;” and press enter.
- Then there is a user name as “thisara” and password “thisara123” with the privileges which are given by above on “dase” database.

PHP Application Server Installation

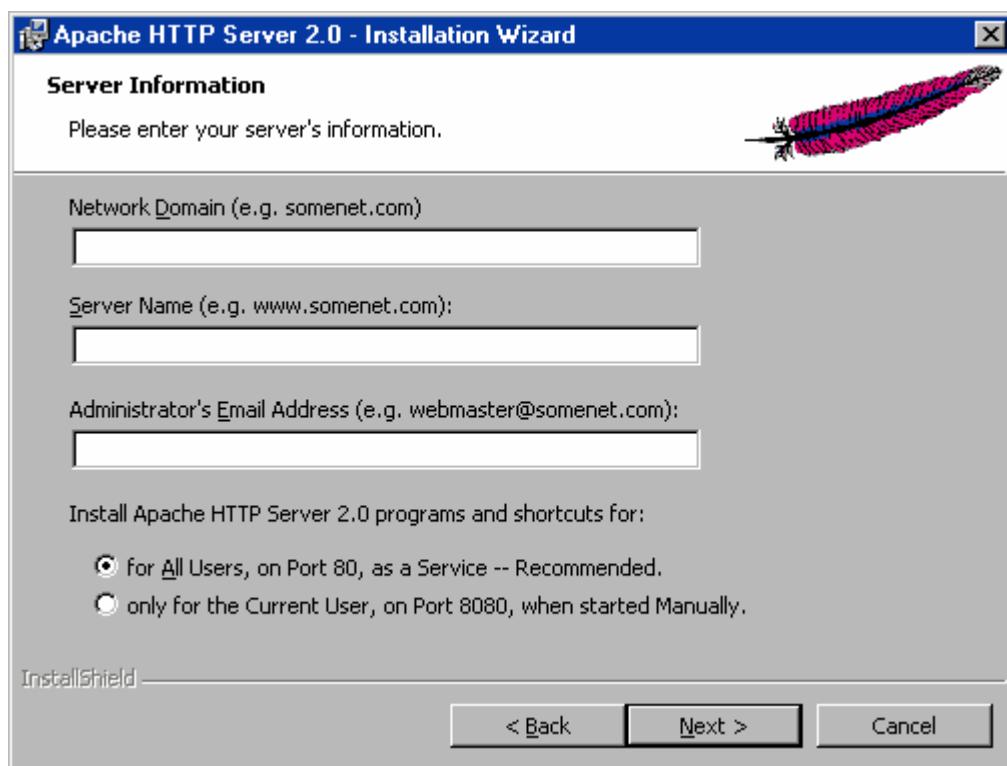
- Get the latest stable version of the PHP distribution with extension from the www.php.net/download.php or used distributed copy.
- Unpack the distribution. Create a directory on “C:\PHP”. Copy the all files “php-5.2.0-Win32” and “extensions” to the “C:\PHP” folder. Then copy all the “*.dll” files in to the “C:\WINNT\System 32” folder.

- Then open the file “php.ini-recommended” and open it with notepad. Then make following settings.

```
doc_root = C:\program files\Apache2\htdocs
extension_dir = C:\php\PHPext
```
- Next type “C:>php -i” and then the display long text. If it is show text assume as the installation was succeeded.

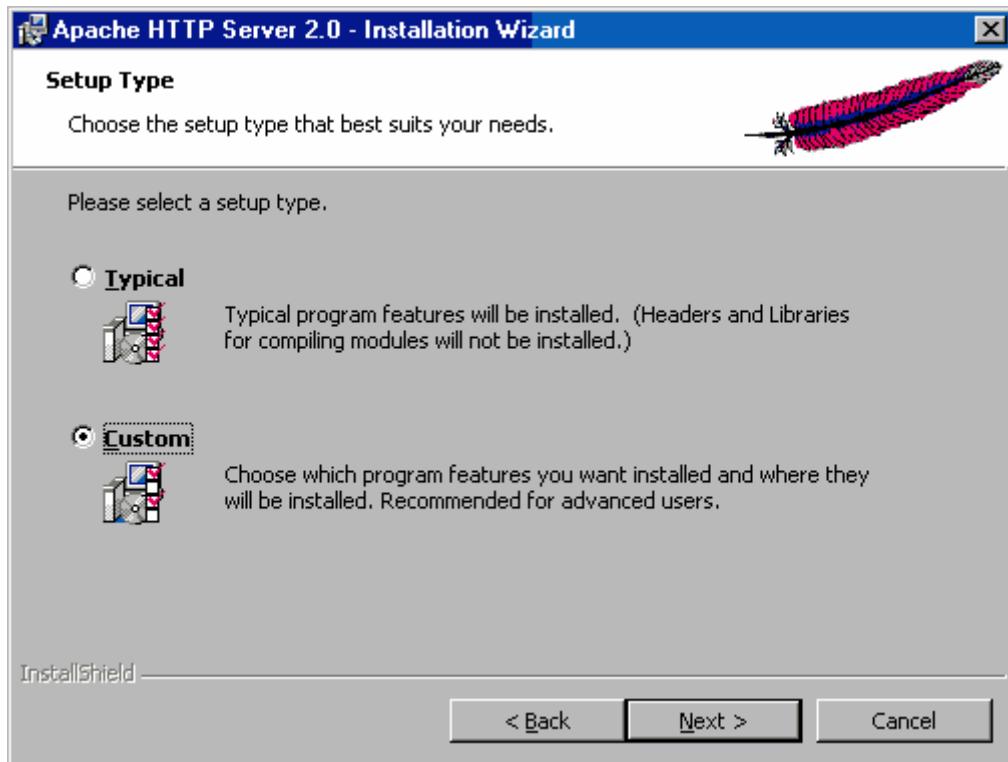
Installing Apache

- Download a stable version of the apache server and install.



- Here you can use,
 - domain network as base2.com
 - Server name as www.base2.com
 - email address as webmaster@base2.com

- Select the custom installation



- After installing configure the httpd.conf file of the apache/apache2/conf folder. Open it on notepad. And the following settings.

```
LoadModule php5_module "C:/ /PHP/php5apache2.dll"  
AddType application/x-httpd-php .php  
AddType application/x-httpd-php .php .html  
PHPIniDir "C:/PHP/"
```

- After these setting were done you can place the source files at the apache\apache2\htdocs\ folder and user the system.

APPENDIX C

USER DOCUMENTATION

- You can open this system by log in to internet and type the <http://www.base2.com>. When you just open the system comes to the following window.

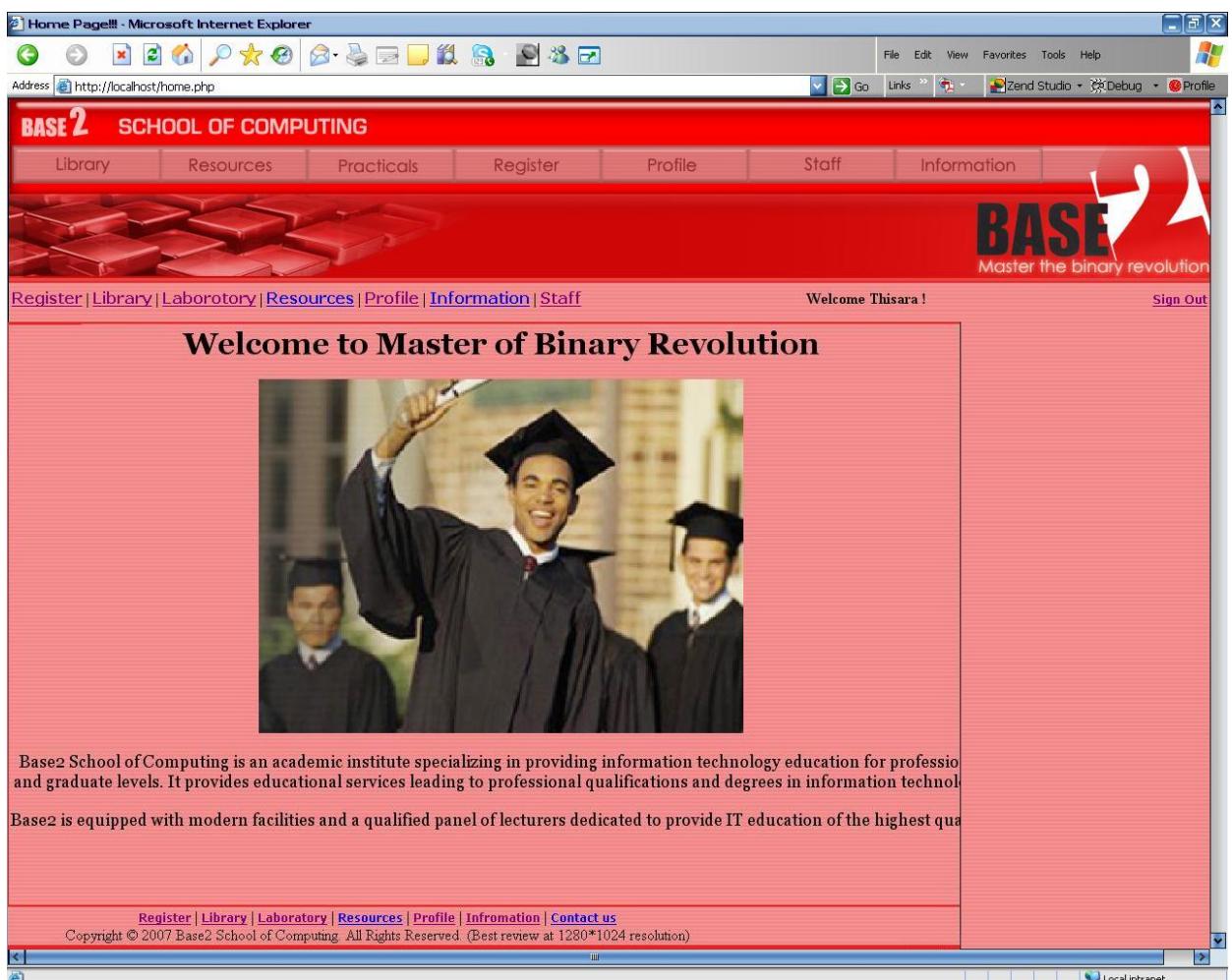


- So the user just need to log on to the system using his user id and password. He will be privileged to do certain tasks. As well as staff members also have to use the same system to do their administrative tasks. So staff members have a separate user login and when they login they are privileged to do some certain tasks according to their user level.

Two user login s are as follows,

| | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------|----------|--------------------------|-------------|----------------------|
| <p>Please login to the system by providing User ID and password.</p> <p>User ID <input type="text"/></p> <p>Password <input type="password"/></p> <p style="text-align: center;"><input type="button" value="Log in"/></p> <p>If you have any problem in log in click here to contact Administrator.</p> | <p>Please login to the system by providing Staff ID and password.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Staff ID</td> <td style="width: 50%;"><input type="text"/></td> </tr> <tr> <td>Password</td> <td><input type="password"/></td> </tr> <tr> <td>Staff Level</td> <td><input type="text"/></td> </tr> </table> <p style="text-align: right;"><input type="button" value="Log in"/></p> | Staff ID | <input type="text"/> | Password | <input type="password"/> | Staff Level | <input type="text"/> |
| Staff ID | <input type="text"/> | | | | | | |
| Password | <input type="password"/> | | | | | | |
| Staff Level | <input type="text"/> | | | | | | |

- This is the home page of the general users. They can do every task that they are allow to do from this home page.



The screenshot shows a Microsoft Internet Explorer window displaying the homepage of the BASE2 School of Computing. The title bar reads "Home Page!! - Microsoft Internet Explorer". The address bar shows "http://localhost/home.php". The main content area has a red header with the text "BASE2 SCHOOL OF COMPUTING" and a logo featuring the word "BASE" with a large '2' and the tagline "Master the binary revolution". Below the header, there is a navigation menu with links: Register, Library, Resources, Practicals, Profile, Staff, and Information. A welcome message "Welcome Thisara !" is displayed. The main content area features a large image of a graduate in a cap and gown. The footer contains copyright information: "Base2 School of Computing is an academic institute specializing in providing information technology education for professional and graduate levels. It provides educational services leading to professional qualifications and degrees in information technology. Base2 is equipped with modern facilities and a qualified panel of lecturers dedicated to provide IT education of the highest quality." At the bottom, there is a footer menu with links: Register, Library, Laboratory, Resources, Profile, Information, and Contact us. The copyright notice at the very bottom states: "Copyright © 2007 Base2 School of Computing. All Rights Reserved. (Best review at 1280*1024 resolution)".

- A new user who need to register at the institute should submit a form and register and also after that he can also register with a class. To do all that he need to submit the following registration form.

The screenshot shows a Microsoft Internet Explorer window with the title bar "Register... - Microsoft Internet Explorer". The address bar displays the URL "http://localhost/register/register.php". The page content is a registration form with a red header featuring the text "DASE Master the binary revolution". The form fields are as follows:

| | |
|----------------------|----------------------|
| First Name * | <input type="text"/> |
| Middle Name | <input type="text"/> |
| Surname * | <input type="text"/> |
| Date of Birth * | <input type="text"/> |
| Sex * | <input type="text"/> |
| NIC / Passport No. * | <input type="text"/> |
| Password * | <input type="text"/> |
| Re-enter * | <input type="text"/> |
| Address * | <input type="text"/> |
| Phone No. | <input type="text"/> |
| E-Mail | <input type="text"/> |
| Fax | <input type="text"/> |
| Work Place | <input type="text"/> |
| Designation | <input type="text"/> |
| Office Address | <input type="text"/> |
| Office Phone No. | <input type="text"/> |

At the bottom of the form are three buttons: "Reset", "Back", and "Register".

- You can also edit the detail of the user account. For that you have to go to the profile section of the system and click the edit user profile link. The following window will open when you click that.

Web based On-line Student Management Information System

Profiles - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/profile/edit_profile.php Zend Studio Debug Profile

BASE2 SCHOOL OF COMPUTING

BASE Master the binary revolution

Register | Library | Laboratory | Resources | Information | Contact Us | Staff

| | |
|-----------------|--------------------------|
| Student ID | 355681 |
| First Name | Thisara |
| Middle Name | Thilanka |
| Surname | Rupasinghe |
| Date of Birth | 1983-04-01 |
| Sex | Male |
| NIC No. | 830921168v |
| Address | No.119, Colombo Rd, P... |
| Phone | 0777-355681 |
| Email | thisarattr@yahoo.com |
| Registered Date | 2007-04-20 10:58:30 |
| Fax | 0365674752 |
| Work Place | Thisara Construction |
| Designation | CEO |
| Office Address | Puwakpitiya, Avissawella |
| Office Phone | 0362222446 |
| Expire Date | 2007-12-30 |
| Status | yes |

Cancel Apply

Done Local Intranet

Loan a book - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/library/staff/loan_book.php Zend Studio Debug Profile

BASE2 SCHOOL OF COMPUTING

BASE Master the binary revolution

Welcome Thisara ! s Sign Out

Add Book | Add Copy | Loan Book | Return Book | Search

Loan a Book...

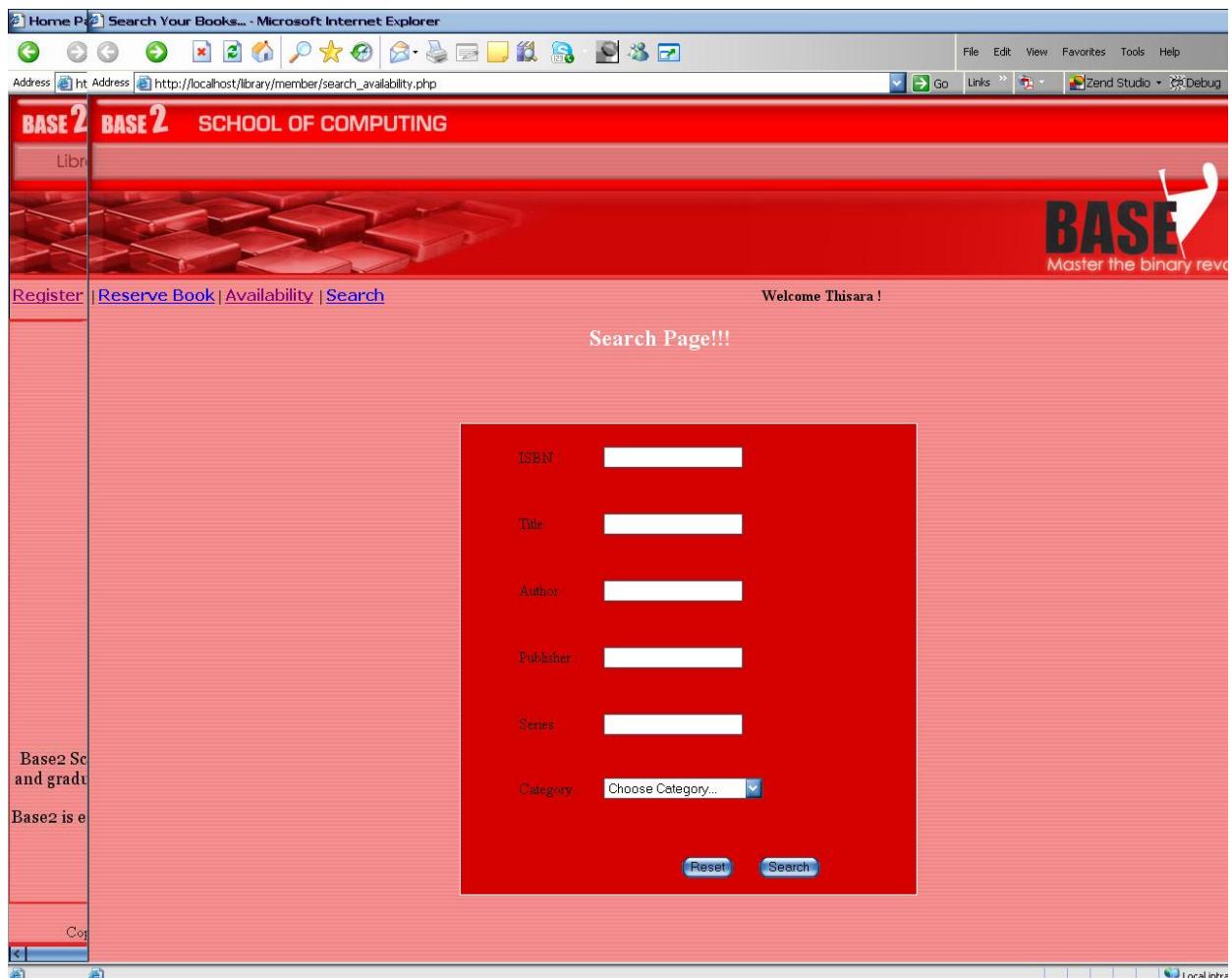
| | | |
|--------------------------------------------------------------------------|----------------------|-------------------------------------------|
| Student ID | <input type="text"/> | <input type="button" value="Check User"/> |
| BookID | <input type="text"/> | <input type="text"/> |
| <input type="button" value="Reset"/> <input type="button" value="Loan"/> | | |

Local Intranet

- The staff user can login and check in and check out book from the library. So he need to use the above interface to do those tasks.
- AS well as when the library arrive new book or new copies they should be submitted to the system. It can be only done by staff members and they can do that task by using following window.

The screenshot shows a Microsoft Internet Explorer window with the title bar "Add A Book to Library - Microsoft Internet Explorer". The address bar contains "http://localhost/library/staff/add_book.php". The page header includes the BASE logo and the text "SCHOOL OF COMPUTING". The main content area is titled "Add a Book to the Library". At the top, there are two radio buttons: one selected for "A New Book" and one for "A New Copy". Below these are input fields for ISBN*, Title*, Author*, Publisher*, Edition*, Series, Pages*, Number of Copies*, Category*, and Book Type*. Each field has an asterisk indicating it is required. There are "Choose Category..." and "Choose type..." dropdown menus. At the bottom are "Reset" and "Add" buttons.

- Users need to search for the books when working with the library. He may know the part of the name and part of the author so he can type those details he know and search for the book. He need the following interface for that.



- Also lecturers can allocate resources for their next class from this system. He also have a staff id and password so he can log in and can do his tasks with the system.

The screenshot shows a Microsoft Internet Explorer window with the title "Reserve a resource - Microsoft Internet Explorer". The address bar displays "http://localhost/resources/reserve_resource.php". The page header features the "BASE2 SCHOOL OF COMPUTING" logo and a red banner with a keyboard image. On the right, there is a "BASE" logo with the tagline "Master the binary revolution". Below the header, a navigation menu includes links for Register, Library, Laborotory, Resources, Information, Contact Us, and Staff. The main content area contains a form for reserving a resource. The form fields are:

| | |
|--------------|----------------------|
| Lecturer ID: | 234567 |
| Resource: | Multimedia Projector |
| Date: | 2007 8 2 |
| Start Time: | 07:00:00 |
| End Time: | 08:00:00 |

At the bottom of the form is a blue "Reserve" button. The browser interface includes standard toolbar icons, a menu bar with File, Edit, View, Favorites, Tools, Help, and a status bar indicating "Done" and "Local intranet".

APPENDIX D

MANAGEMENT REPORTS

This report says all the students who are learning at the institute without paying their due amounts. This is in the HTML format to make it easier for user to see online. If you are interested in printing this report the pdf format is also available.

The screenshot shows a Microsoft Internet Explorer window displaying a web page from 'http://localhost/test.php'. The page has a red header with the text 'BASE 2 SCHOOL OF COMPUTING' and a logo for 'BASE Master the binary revolution'. Below the header is a navigation menu with links: Register, Library, Resources, Practicals, Register, Profile, Staff, and Information. The main content area is titled 'Students who have Due Payments' and contains a table with the following data:

| Staff ID | Name | Due Date | Total Amount | Due Amount |
|----------|-----------------|------------|--------------|------------|
| 355681 | Thisara Rupadsj | 06-05-2007 | 10000.00 | 5000.00 |
| 126545 | Anjanji Riuisdn | 28-04-2007 | 20000.00 | 10000.00 |
| 233566 | Nipuni roiaao | 12-05-2007 | 50000.00 | 25000.00 |
| 874543 | Ruisdh rijfjk' | 06-05-2007 | 10000.00 | 5000.00 |
| 521651 | Thiaknal ilfei | 08-05-2007 | 50000.00 | 25000.00 |
| 654564 | Suehi kaniri | 06-05-2007 | 20000.00 | 10000.00 |
| 745646 | Lahiru per ep | 28-04-2007 | 8000.00 | 4000.00 |
| 456454 | Dihna djfdpf | 12-05-2007 | 10000.00 | 5000.00 |
| 545412 | Madutru djfjkt | 08-05-2007 | 50000.00 | 25000.00 |
| 654851 | Sahnaka ieeppi | 06-05-2007 | 20000.00 | 10000.00 |
| 564654 | Takka pererpa | 28-04-2007 | 8000.00 | 4000.00 |
| 654512 | Saman jayeoi | 06-05-2007 | 10000.00 | 5000.00 |
| 548665 | Manisha joere | 08-05-2007 | 20000.00 | 10000.00 |
| 213456 | Nipuni pe easpd | 12-05-2007 | 50000.00 | 25000.00 |
| 654865 | Ranasinghch | 06-05-2007 | 10000.00 | 5000.00 |
| 645612 | Nirasha | 28-04-2007 | 20000.00 | 10000.00 |

There are reports generating for the resources saying the allocation for that day to that resources. As example this report is about the names of lecturers who have allocate this projector for him within a day to a specific time period. The staff people of the office get that report and send the specific resources to the class who have allocate.

The screenshot shows a Microsoft Internet Explorer window with the title bar "Untitled Document - Microsoft Internet Explorer". The address bar contains "http://localhost/test.php". The main content area displays a report from "BASE2 SCHOOL OF COMPUTING". The report is titled "All Allocations for Projector of 24-05-2007". It features a table with three columns: "Staff ID", "Name", and "Time Slot". The data in the table is as follows:

| Staff ID | Name | Time Slot |
|----------|-----------------|---------------|
| 355681 | Thisara Rupadsj | 08:00 – 09:00 |
| 126545 | Anjanji Ruiisdn | 08:00 – 09:00 |
| 233566 | Nipuni roiao | 10:00 – 11:00 |
| 874543 | Ruisdh rijfk' | 11:00 – 12:00 |
| 521651 | Thaknal ihfei | 11:00 – 12:00 |
| 654564 | Suchis kaniri | 12:00 – 01:00 |
| 745646 | Lahiru per ep | 12:00 – 01:00 |
| 456454 | Dilina djfdpf | 01:00 – 02:00 |
| 545412 | Madutra dfijkt | 01:00 – 02:00 |
| 654851 | Salmaka ieeppi | 02:00 – 03:00 |
| 564654 | Takka pererpa | 03:00 – 03:00 |
| 654512 | Saman jayeoii | 03:00 – 04:00 |
| 548665 | Manisha jocire | 04:00 – 05:00 |
| 213456 | Nipuni pe easpd | 04:00 – 05:00 |
| 654865 | Ranasinghch | 05:00 – 06:00 |
| 645612 | Nirasha | 05:00 – 06:00 |

The reservation for the computer laboratory also listed here. This report says the students who have reserve a time slot for practical at that day. Lab assistant take that report printed and check the students who coming to practical were reserve before or not. Reserved students get the priority and others can do practical if there are free space.

The screenshot shows a Microsoft Internet Explorer window with the following details:

- Title Bar:** Untitled Document - Microsoft Internet Explorer
- Address Bar:** http://localhost/test.php
- Menu Bar:** File, Edit, View, Favorites, Tools, Help
- Toolbar:** Standard toolbar icons (Back, Forward, Stop, Home, etc.)
- Content Area:**
 - Header:** BASE2 SCHOOL OF COMPUTING, Library, Resources, Practicals, Register, Profile, Staff, Information, BASE Master the binary revolution logo.
 - Sub-Header:** Register | Library | Laboratory | Resources | Profile | Information | Staff
 - Section:** All Reservation of 24-05-2007
 - Table:** A grid showing student reservations with columns: User ID, Name, and Time Slot.

| User ID | Name | Time Slot |
|---------|-----------------|---------------|
| 355681 | Thisara Rupadsj | 08:00 – 10:00 |
| 126545 | Anjanji Riusdn | 08:00 – 10:00 |
| 233566 | Nipuni roiao | 08:00 – 10:00 |
| 874543 | Ruisdh rijfk' | 08:00 – 10:00 |
| 521651 | Thiaknal ihfei | 10:00 – 12:00 |
| 654564 | Suchis kaniri | 10:00 – 12:00 |
| 745646 | Lahiru per ep | 10:00 – 12:00 |
| 456454 | Dilima djfdpf | 12:00 – 02:00 |
| 545412 | Madutru dfjikt | 12:00 – 02:00 |
| 654851 | Sahnaka iceppi | 12:00 – 02:00 |
| 564654 | Takka pererpa | 12:00 – 02:00 |
| 654512 | Saman jayeoij | 02:00 – 04:00 |
| 548665 | Manisha jocire | 02:00 – 04:00 |
| 213456 | Nipuni pe easpd | 02:00 – 04:00 |
| 654865 | Ranasingheh | 02:00 – 04:00 |
| 645612 | Nirasha | 04:00 – 06:00 |
| 564564 | Harsha | 04:00 – 06:00 |

And also library generate the report saying the students who are having overdue books and full amount of fine collected by the library with in a specific time period.

APPENDIX E

CODE LISTING

1. index.php

```

<?php require_once "common/redirect.php";
session_start();

//Redirect users and administrators who have already logged in, to the home page.
if (isset($_SESSION['user_logged']))
{
    redirect("home.php");
    die();
}

?>

<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Please Login</title>
<link href="css/style.css" rel="stylesheet" type="text/css">
<style type="text/css">
<!--
.style4 {font-family: Georgia, "Times New Roman", Times, serif}
.style5 {font-family: Georgia, "Times New Roman", Times, serif; font-size: 18px; }
-->
</style>
</head>

<body>
<table width="100%" border="0">
    <tr>
        <td height="230" colspan="2" valign="top"> <?php $text="Home Page"; require_once
"header.php"; ?> </td>
    </tr>
    <tr>
        <td width="20%" height="609" valign="top" bordercolorlight="#000000"
background="images/bg2.jpg">

<?php

if (isset($_POST['submit'])) //When user has pressed the submit button
{
    require_once "common/connect.php";
    $user_id = trim($_POST['user_id']);
    $password = $_POST['password'];
    $ok = false;
    $msg = ""; //Error message to display if the log in is unsuccessful.

    $query = "SELECT * FROM s_login WHERE user_id = '$user_id' AND password =
md5('$password')";
    $result = mysql_query($query) or die(mysql_error());

    $query1 = "SELECT * FROM student WHERE std_id='$user_id'";
    $result1 = mysql_query($query1) or die(mysql_error());
    $row1 = mysql_fetch_array($result1);
    $expire_date = $row1['expire_date'];
}

```

```

$first_name = $row1['first_name'];

$query2 = "SELECT now()";
$result2 = mysql_query($query2) or die(mysql_error());
$row2 = mysql_fetch_array($result2);
$now = $row2['now()'];

if (mysql_num_rows($result) == 1 && $expire_date > $now )
{
    $row = mysql_fetch_array($result);

    $_SESSION['user_id'] = $row['user_id'];
    $_SESSION['user_logged'] = 1;
    $_SESSION['user_name'] = $first_name ;
    $ok = true;
    $redirect = $_POST['redirect'];
    redirect("$redirect");
}

elseif(mysql_num_rows($result) != 1)
{
    $msg .= "<P>Invalid User ID or Password!</p>
    <p>If you have any problem in log in <a
    href='register/register.php'>click here</a> to contact Administrator.</p>";
}

elseif( $expire_date < $now )
{
    $msg .= "<P>Your Membership has been expired!</p>
    <p>If you have any problem in log in <a
    href='register/register.php'>click here</a> to contact Administrator.</p>";
}

if ($ok) //If the log in is successful, redirect users to their requested page.
{
    $redirect = $_POST['redirect'];
    redirect("$redirect");
}
else
{
    //if User ID and password are incorrect... (Log in is unsuccessful)
    //require_once "header.php";
    echo "<table>";
    echo "<tr><td colspan='2'>$msg</td></tr>";

    ?>
    <table border="0">
    <tr><td colspan='2'> <?php $msg ?> </td></tr>
        <form method="post" action="index.php" name="fm" onSubmit="return formOK();">
            <input type="hidden" name="redirect" value="<?php echo $_POST['redirect'] ?>">
    >
        <tr><td height="20"></td></tr>
        <tr><td>User ID</td><td><input type="text" name="user_id"
tabindex="1"></td></tr>
        <tr><td>Password</td><td><input type="password" name="password"
tabindex="2"></td></tr>
        <tr><td height="20"></td></tr>
        <tr><td colspan="2" align="right"><input type="submit" name="submit"
value="Log in" tabindex="3"></td></tr>
    </form>
</table>

<?php      }

}

else
{

```

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```
//if user hasn't clicked on the submit button yet... (Initial view of the
document)

if (!isset($_SERVER['HTTP_REFERER']) || $_SERVER['HTTP_REFERER'] ==
='http://localhost/index.php' || !isset($_GET['redirect']))
$redirect = '/index.php';
else
$redirect = $_GET['redirect']; //Check for the page that users have requested.
//After a successful log in, users will be redirected to this page.

?>

<?php //require_once "header.php"; ?>
<table width="249" border="0">
<tr><td colspan="2"><h4>Please login to the system by providing User ID and
password.</h4></td></tr>
<form method="post" action="index.php" name="fm" onSubmit="return formOK();" >
<input type="hidden" name="redirect" value="<?php echo $redirect ?>" >
<tr><td width="86" height="20"></td>
</tr>
<tr>
<td>User ID</td>
<td width="151"><input type="text" name="user_id" tabindex="1" /></td>
</tr>
<tr><td>Password</td><td><input type="password" name="password"
tabindex="2" ></td></tr>
<tr><td height="20"></td></tr>
<tr><td colspan="2" align="right"><input type="submit" name="submit"
value="Log in" tabindex="3" >&nbsp;&nbsp;&nbsp;</td></tr>
</form>

<tr><td height="20"></td></tr>
<tr><td colspan="2"><p>If you have any problem in log in <a
href="register/register.php">click here</a> to contact Administrator.</p></td></tr>
</table>

<?php
}
?></td>

<td width="80%" valign="top" background="images/bg2.jpg"> <h1 align="center"
class="style4"> Welcome to Master of Binary Revolution </h1>
<div align="justify"></div>
<div align="center"></div>
<p align="center" class="style5">Base2 School of Computing is an academic
institute specializing in providing information technology education for professional
and graduate levels. It provides educational services leading to professional
qualifications and degrees in information technology.</p>
<p align="center" class="style5"> Base2 is equipped with modern facilities
and a qualified panel of lecturers dedicated to provide IT education of the highest
quality.</p></td>
</tr>

<tr><td colspan="2" background="images/bg2.jpg"><?php include "footer.php";
?></td></tr>
</table>
</body>
</html>
```

2. header.php

```
<html>
<head>
<title>Base2 Online</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<link href="css/style.css" rel="stylesheet" type="text/css">

<script type="text/javascript">
<!--
function formOK(){
ok = true;

if (document.fm.user_id.value=="" && document.fm.password.value=="")
{
alert("User Name and Password fields are empty!");
ok = false;
}
else if (document.fm.user_id.value=="")
{
alert("User Name field is empty!");
ok = false;
}
else if (document.fm.password.value=="")
{
alert("Password field is empty!");
ok = false;
}
return ok;
}
//-->
</script>

</head>

<body>

![You browser does not support images.](images/my_header.jpg)
```

3. footer.php

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>footer</title>
</head>

<body>

<!--<hr width="100%"/>-->
<div align="center"> <a href="register/home.php">Register</a> | <a href="library/home.php">Library</a> | <a href="laborotory/home.php">Laboratory</a> | <a href="resources/home.php">Resources</a> | <a href="profile/home.php">Profile</a> | <a href="infomation/home.php">Infromation</a> | <a href="contact/home.php">Contact us</a><br />
Copyright © 2007 Base2 School of Computing. All Rights Reserved. (Best review at 1280*1024 resolution)
</div>
</body>
</html>
```

4. checked_logged.php

```
<?php
session_start();
if ( !isset($_SESSION['user_logged']) )
{
    $string = $_SERVER['PHP_SELF'];
    $redirect = substr($string , 1);
    ?>
<html>
<head>

<style type="text/css">
<!--

.table {
    background-color:#D50000;
    border: 1px solid #FFFFFF;
}
.tableRow {
    border: 1px solid #FF7171;
}
.noBorder
{
    border:none
}
-->
</style>

</head>
<body bgcolor="#EA2222">
<table align="center" class="table" cellpadding="30"><tr><td>
<p align="center">www.base2.lk</p>
<p>&nbsp;</p>
<p>You are currently not authorized to view this page.<BR><br>
<a href="http://<?php echo $_SERVER['HTTP_HOST'];?>/index.php?redirect=<?php echo $redirect; ?>">Click here</a> to log in to the system as a Student.<br>
<br>
After you have logged on, you will be automatically redirected to this page.</p>
</td></tr></table>
</body>
</html>
<?php
die();
}?>
```

5. redirect.php

```
<?php
function redirect($url)
{
    if (!headers_sent())
        header('Location:
http://'.$_SERVER['HTTP_HOST'].dirname($_SERVER['PHP_SELF']).$url);
    else
        die ('Could not redirect, Headers already sent (output).  ');
}
?>
```

6. connect.php

```
<?php
$conn = mysql_connect('localhost', 'root', 'thisara') or
die(mysql_error());
$db = mysql_select_db('base2') or die(mysql_error());
?>
```

7. sign_out.php

```
<?php
require_once 'redirect.php';

session_start();
session_unset();
session_destroy();

redirect("../index.php");

?>
```

8. search_availability.php (Search for a book)

```
<?php
require_once "../common/check_logged.php";
include "../common/connect.php";

if (isset($_POST['search'])) //if search button is pressed...
{
    echo "<head> <link href='../css/style.css' rel='stylesheet' type='text/css'
/>
    <title>Results </title>
    </head>
    <body background='../images/bg2.jpg'>" ;

    include "header.php";

    $isbn = trim($_POST['isbn']);
    $title = trim($_POST['title']);
    $author = trim($_POST['author']);
    $publisher = trim($_POST['publisher']);
    $series = trim($_POST['series']);
    $category_name =$_POST['category_name'];

    if($category_name == 'Choose Category...') {
        $category_name = " " ;
    }
}
```

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```
$query = "SELECT b.isbn, b.title, b.author, b.publisher, b.edition, b.series,
b.pages, c.category_name, c.description, c.ref_shelf_no, c.lend_shelf_no FROM book AS
b, category AS c";

$option = "";

if ($isbn != "")  
    $option .= " isbn LIKE '%$isbn%'";  
  
if ($title != "") {  
    if ($option != "") $option .= " AND";  
    $option .= " title LIKE '%$title%'";  
}  
  
if ($author != "") {  
    if ($option != "") $option .= " AND";  
    $option .= " author LIKE '%$author%'";  
}  
  
if ($publisher != "") {  
    if ($option != "") $option .= " AND";  
    $option .= " publisher LIKE '%$publisher%'";  
}  
  
if ($series != "") {  
    if ($option != "") $option .= " AND";  
    $option .= " series LIKE '%$series%'";  
}  
  
if ($category_name != "") {  
    if ($option != "") $option .= " AND";  
    $option .= " category_name LIKE '%$category_name%'";  
}  
  
if ($option != ""){  
    $query .= " WHERE b.category_no = c.category_no AND " . $option;  
}  
else  
{  
    $query .= " WHERE b.category_no = c.category_no " ;  
}  
  
$query .= " ORDER BY title , author";  
  
$result = mysql_query($query) or die(mysql_error());  
  
if (mysql_num_rows($result) == 0 || $option=="")  
{  
    echo "<hr width='350'>";  
    echo "<h2 align='center'>No Results Found!</h2>";  
    echo "<hr width='350'>";  
}  
  
else  
{  
    echo "<h2 align='center'> Search Results </h2><br><br><br>";  
    echo "<table class='table' align='center' cellspacing='3'  
cellpadding='10'>\n";  
    echo "<tr> <th>ISBN</th> <th>Title</th> <th>Author</th>  
<th>Publisher</th> <th>Edition</th> <th>Series</th> <th>Category</th> <th>Ref. Shelf  
No.</th> <th>Lend Shelf No.</th> <th>Total Copies</th> <th>Reference Copies</th>  
<th>Availability</th> </tr>";  
  
    while ($row = mysql_fetch_array($result, MYSQL_ASSOC) )  
    {  
        $isbn= $row['isbn'];  
        $query1="SELECT * FROM book WHERE isbn=$isbn";
```

```

$result1 = mysql_query($query1) or die(mysql_error());
$row1 = mysql_fetch_array($result1);
$book_no = $row1['book_no'];

$query6 = "SELECT * FROM copy WHERE book_no=$book_no";
$result6 = mysql_query($query6) or die(mysql_error());
$total_copies = mysql_num_rows($result6);

$query2 = "SELECT * FROM copy WHERE book_no=$book_no AND
type='L'";
$result2 = mysql_query($query2) or die(mysql_error());
$lending_copies = mysql_num_rows($result2);

$temp = 0 ;
$availability = 0 ;

while ($row2 = mysql_fetch_array($result2, MYSQL_ASSOC) )
{
    $shelf_no=$row2['shelf_no'];
    $accession_no=$row2['accession_no'];

    $query3 = "SELECT * FROM on_loan WHERE shelf_no=$shelf_no
AND accession_no=$accession_no";
    $result3 = mysql_query($query3) or die(mysql_error());

    if (mysql_num_rows($result3) == 1)
    {
        $temp += 1;
    }
}

$query7 = "SELECT * FROM reservations WHERE book_no='$book_no'";
$result7 = mysql_query($query7) or die(mysql_error());
$reserved = mysql_num_rows($result7) ;

$availability = $lending_copies - $temp - $reserved;

$query5 = "SELECT * FROM copy WHERE book_no=$book_no AND
type='R'";
$result5 = mysql_query($query5) or die(mysql_error());
$referance_copies = mysql_num_rows($result5);

if($availability >= 0)
{
    $available_copies = $availability ;
}
else
{
    $available_copies = 0 ;
}

echo "<tr>\n";
echo "<td> . $row['isbn'] . "&nbsp;". "</td>\n";
echo "<td> . $row['title'] . "&nbsp;". "</td>\n";
echo "<td> . $row['author'] . "&nbsp;". "</td>\n";
echo "<td> . $row['publisher'] . "&nbsp;". "</td>\n";
echo "<td> . $row['edition'] . "&nbsp;". "</td>\n";
echo "<td> . $row['series'] . "&nbsp;". "</td>\n";
echo "<td> . $row['category_name'] . "&nbsp;". "</td>\n";
echo "<td width='50' align='center'>" . $row['ref_shelf_no']
. "&nbsp;". "</td>\n";
    echo "<td width='50' align='center'>" . $row['lend_shelf_no']
. "&nbsp;". "</td>\n";
    echo "<td width='50' align='center'>" . $total_copies . "&nbsp;" .
"</td>\n";
    echo "<td width='50' align='center'>" . $referance_copies
. "&nbsp;". "</td>\n";

```

```

echo "<td width='50' align='center'> " . $available_copies . 
" &nbsp; " . "</td>\n" ;
}

echo "</tr>\n";
}

echo "</table>\n";
}

$std_id = $_SESSION['user_id'];

?>
<br><br><br>
<h2 align="center">Reserve a Book...</h2>

<form name="reserve_book" action="search_availability.php" method="post">
    <table align="center" width="412" class="table">
        <tr>
            <td width="159" height="50" class="tableRow">&nbsp;Student ID</td>
            <td colspan="3" class="tableRow">&nbsp;<input type="text" name="std_id" 
tabindex="1" maxlength="6" size="15" value="<?php echo $std_id ?>" 
disabled="disabled"/></td>
        </tr>
        <tr>
            <td height="50" class="tableRow">&nbsp;ISBN</td>
            <td colspan="3" class="tableRow">&nbsp;<input type="text" name="isbn" 
tabindex="2" maxlength="14" size="15"/></td>
        </tr>
        <tr>
            <td height="50">&nbsp;</td>
            <td width="149" align="right" valign="bottom"><input type="reset" 
name="reset" value=" Reset " tabindex="4" /></td>
            <td width="14">&nbsp;</td>
            <td width="62" valign="bottom"><input type="submit" name="reserve" 
value=" Reserve " tabindex="3" /></td>
        </tr>
    </table>
</form>

<?php
echo "</body>" ;
}

elseif(isset($_POST['reserve'])) //When you pressed the reserve button...
{
    $std_id = $_SESSION['user_id'];
    $isbn = trim($_POST['isbn']);
    $error = "";

    $query1 = "SELECT * FROM book WHERE isbn=$isbn";
    $result1 = mysql_query($query1) or die(mysql_error());
    if(mysql_num_rows($result1)==1)
    {
        $row1 = mysql_fetch_array($result1);
        $book_no = $row1['book_no'];

        $query2 = "SELECT * FROM copy WHERE book_no=$book_no AND type='L'";
        $result2 = mysql_query($query2) or die(mysql_error());
        $total_copies = mysql_num_rows($result2);
        $temp = 0 ;
        $availability = 0 ;

        if($total_copies > 0)
        {
            while ($row2 = mysql_fetch_array($result2, MYSQL_ASSOC) )

```

```

        {
            $shelf_no=$row2['shelf_no'];
            $accession_no=$row2['accession_no'];

            $query3 = "SELECT * FROM on_loan WHERE shelf_no=$shelf_no
AND accession_no=$accession_no";
            $result3 = mysql_query($query3) or die(mysql_error());

            if (mysql_num_rows($result3) == 1)
            {
                $temp += 1;
            }

        }
    else
    {
        $error .= "There is no any Lending item from this book at the
librrary. <br>";
    }

    $availability = $total_copies - $temp;

    $query0 = "SELECT * FROM book WHERE isbn=$isbn";
    $result0 = mysql_query($query0) or die(mysql_error());

    $query3 = "SELECT * FROM on_loan WHERE std_id=' $std_id' AND due_date <
now() " ; //here we should check whether these books are over due or not...
    $result3 = mysql_query($query3) or die(mysql_error());

    $rows = 1 ;

    if(mysql_num_rows($result0)==1)
    {
        $row0 = mysql_fetch_array($result0);
        $book_no = $row0['book_no'];

        $query1 = "SELECT * FROM reservations WHERE std_id=$std_id AND
book_no=$book_no";
        $result1 = mysql_query($query1) or die(mysql_error());
        $rows = mysql_num_rows($result1) ;
    }

    $query4 = "SELECT * FROM reservations WHERE book_no=' $book_no '";
    $result4 = mysql_query($query4) or die(mysql_error());
    $reserved = mysql_num_rows($result4) ;

    if($availability > 0 && $availability > $reserved)
    {
        $error .= "The Book you choose is now available to borrow<br>";
    }

    if(mysql_num_rows($result3) > 0)
    {
        $error .= "You have one or more over due books SO you cant reserve
a book. <br>";
    }

    $query = "SELECT * FROM reservations WHERE std_id=$std_id"; //A one user
only can make 3 reservation at time.
    $result = mysql_query($query) or die(mysql_error());

    if (mysql_num_rows($result) < 3 && $rows ==0 &&
mysql_num_rows($result2)>0 && mysql_num_rows($result3) == 0 && $availability <=
$reserved)
    {

```

```

?>

<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-
8859-1" />
<title>Reserve a Book</title>
<link href="../../css/style.css" rel="stylesheet" type="text/css"
/>
</head>

<body>
<?php include ("header.php");?>
<h2 align="center">Reserve a Book...</h2>
<br><br><br>

<?php
$query2 = "INSERT INTO reservations (std_id, reserve_date,
book_no, reminder_date) VALUES ('$std_id', now(), '$book_no', adddate(now(),14) )";
$result2 = mysql_query($query2) or die(mysql_error());
?>

<hr align="center" width="350">
<div align="center">
<h3>Your Reservation was placed Properly.</h3>
<br><br><br>
<input type="button" name="ok" value="      Ok      "
onClick="location.href='search_availability.php';" tabindex="1" />
</div>
<hr align="center" width="350">

</body>
</html>

<?php
}

else
{
?>

<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-
8859-1" />
<title>Reserve a Book</title>
<link href="../../css/style.css" rel="stylesheet" type="text/css"
/>
</head>

<body>
<?php include ("header.php");?>
<h2 align="center">Reserve a Book...</h2>
<br><br><br>

<hr align="center" width="500">
<h3 align="center">
<?php
if ( ($availability > 0 && $availability > $reserved) ||

mysql_num_rows($result3) > 0 || $total_copies <= 0)
{
    echo $error ;
}

else
{
    echo "You have reached the Reserving Limit <br>";
}

```

```

        echo " OR <br>";
        echo "You have Already Reserve this book!!!";
        echo "<BR><BR><div align='center'><input type='button'
name='ok' value=' Ok
tabindex='1' /></div>";
    }

?>
</h3>
<hr align="center" width="500">

</body>
</html>

<?php
}
}
else
{
    echo "<link href='../../css/style.css' rel='stylesheet' type='text/css'
/>";
    include ("header.php");
    echo "<br><BR><BR><hr width='400'><h3 align='center'>This book is
not available in the Library.</h3><BR><BR>
<div align='center'><input type='button' name='ok' value=' Ok
onClick=location.href='search_availability.php'; tabindex='1' /></div>
<hr width='400'>";
}
}

else //Initial page(form). still user didnt press the search button...
{
?>

<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Search Your Books...</title>

<link href="../../css/style.css" rel="stylesheet" type="text/css" />

</head>
<body background="../../images/bg2.jpg">
<?php
    $text = "Home Page";
    include "header.php"; ?>
<table align="right" border="0"><a href="../../common/sign_out.php" onClick="return
confirm('Are you sure you want to sign out?');" >Sign Out</a> </table>
<h2 align="center" > Search Page!!! </h2>
<BR><BR><BR>

<table width="480" height="495" class="table" align="center">
<form id="search_availability" name="search_availability" method="post"
action="search_availability.php">
<tr>
    <td width="54">&ampnbsp</td>
    <td width="85">ISBN : </td>
    <td colspan="3"><input name="isbn" type="text" id="isbn" tabindex="1" /></td>
</tr>
<tr>
    <td>&ampnbsp</td>
    <td>Title</td>
    <td colspan="3"><input name="title" type="text" id="title" tabindex="2" /></td>
</tr>
<tr>
    <td>&ampnbsp</td>
    <td>Author : </td>

```

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```
<td colspan="3"><input name="author" type="text" id="author" tabindex="3">
/></td>
</tr>
<tr>
    <td>&nbsp;</td>
    <td>Publisher : </td>
    <td colspan="3"><input name="publisher" type="text" id="publisher" tabindex="4">
/></td>
</tr>
<tr>
    <td>&nbsp;</td>
    <td>Series : </td>
    <td colspan="3"><input name="series" type="text" id="series" tabindex="5">
/></td>
</tr>

<tr>
    <td>&nbsp;</td>
    <td>Category : </td>
    <td colspan="3"><select name="category_name" tabindex="6">

        <option>Choose Category... </option>
        <?php //This query all the categories in the category table and add to
the select menu.

$query = "select * from category";
$result = mysql_query($query) or die(mysql_error());

while ($row = mysql_fetch_array($result, MYSQL_ASSOC) )
{
    ?>
        <option> <?php echo $row['category_name'];?> </option>

    <?php } ?>

    </select></td>
</tr>
<tr>
    <td height="5" >&nbsp;</td>
    <td>&nbsp;</td>
    <td colspan="3">&nbsp;</td>
</tr>
<tr>
    <td height="52">&nbsp;</td>
    <td>&nbsp;</td>
    <td width="137" align="right"><input name="Reset" type="reset"
id="reset" value="Reset" tabindex="8"></td>
    <td width="19">&nbsp;</td>
    <td width="163"><input name="search" type="submit" id="search"
value="Search" tabindex="7"></td>
</tr>
</form>
</table>
</body>
</html>

<?php
}
?>
```

9. reserve_lab.php (reserve time slot in lab)

```

<?php require_once "../common/check_logged.php";
      include("../common/connect.php");

if (isset($_POST['reserve']))
{
?>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title> Reserve a Time Slot</title>
<link href="../css/style.css" rel="stylesheet" type="text/css" />
</head>

<body>

<?php
$text = "Reserve a Computer";
include("header.php");
echo "<br>";

$std_id = $_SESSION['user_id'];
$year = trim($_POST['year']);
$month = trim($_POST['month']);
$day = trim($_POST['day']);
$time = trim($_POST['time']);
$start = $time.":00:00";
$end = ($time+2).":00:00";
$date = $year."-".$month."-".$day ;
$num = cal_days_in_month(CAL_GREGORIAN, $month , $year);
$today = getdate();
$this_year = $today['year'];
$this_month = $today['mon'];
$this_day = $today['mday'];

$this_hour = $today['hours'];
$this_hour += 6 ;
if (strlen($this_hour)==1)
{
    $this_hour = "0".$this_hour ;
}
$this_minute = $today['minutes'];
$this_sec = $today['seconds'];
$time_now = $this_hour.":".$this_minute.":".$this_sec ;

if($year > $this_year || ($month >= $this_month && $day >= $this_day) )
{
    if($day <= $num)
    {
        $query = "SELECT * FROM lab_time WHERE std_id='".$std_id."'";
        $result = mysql_query($query) or die(mysql_error());

        if(mysql_num_rows($result) < 3 )
        {
            $query2 = "SELECT * FROM lab_time WHERE std_id='".$std_id' AND
date='".$date."'";
            $result2 = mysql_query($query2) or die(mysql_error());

            if(mysql_num_rows($result2) == 0)
            {

                $query0 = "SELECT * FROM lab_time WHERE date='".$date' AND
start='".$start."'";
                $result0 = mysql_query($query0) or die(mysql_error());

                if(mysql_num_rows($result0) <= 20)
                {
                    if(($start > $time_now) || ($year > $this_year ||
($month >= $this_month && $day > $this_day) ))
                    {
                        $com_no = mysql_num_rows($result0);
                        $com_no += 1;
                        $query1 = "INSERT INTO lab_time
(std_id,date,start,end,computer_no) VALUES ('".$std_id."','".$date "','"$start','$end','".$com_no"')";
```

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```
$result1 = mysql_query($query1) or
die(mysql_error());

echo "<h3>Your Reservation has been placed
properly. Reservation details are as follows.</h3><br><br>";

echo "<blockquote>";
echo "<table border='1'>";
echo "<tr height='30'><td width='150'>User
ID :</td><td width='100'>".$std_id."</td></tr>";

echo "<tr height='30'><td>Reserve Date
:</td><td>".$date."</td></tr>";

echo "<tr height='30'><td>Start Time
:</td><td>".$start."</td></tr>";

echo "<tr height='30'><td>End Time
:</td><td>".$end."</td></tr>";

echo "<tr height='30'><td>Computer No
:</td><td>".$com_no."</td></tr>";

echo "<tr height='50'><td valign='bottom'
align='right'><input type='button' value=' Cancel '
onClick=location.href='delete.php?std_id=$std_id&date=$date'; tabIndex='1'></td>";
echo "<td valign='bottom'
align='right'><input type='button' name='finish' value=' Finish '
onClick=location.href='reserve_lab.php'; tabIndex='2' /></td></tr>";

echo "</table>";
echo "</blockquote><br><br>";

}
else
{
    echo "<hr align='center' width='400'><h3
align='center'>The time slot you enter just passed.</h3><hr align='center' width='400'>";
}

}
else
{
    echo "<hr width='550' align='center'><h3
align='center'>All Computers are unavailable on ".$date." from ".$start." to ".$end." . So Try
another slot.</h3><hr width='550' align='center'>";
}

}
else
{
    echo "<hr width='800' align='center'><h3 align='center'>You
have already reserve a time slot this day. A one student can reserve a one slot a day.</h3><hr
width='800' align='center'>";
}

}
else
{
    echo "<hr width='800' align='center'><h3 align='center'>One Student
only can made 2 reservation at time. If You have any problem Please contact
Administrator.</h3><hr width='800' align='center'>";
}

}
else
{
    echo "<hr align='center' width='500'><h3 align='center'>The Day you
entered is not a Valid date. Try again</h3><hr align='center' width='500'>";
}

}
else
{
    echo "<hr align='center' width='400'><h3 align='center'>You entered a passed
date.</h3><hr align='center' width='400'>";
}

?>
</body>
</html>
<?php
}
```

```

elseif (isset($_POST['check']))
{
?>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title> Reserve a Time Slot</title>
<link href="../../css/style.css" rel="stylesheet" type="text/css" />
</head>

<body>

<?php
$text = "Reserve a Computer";
include("header.php");
echo "<br>";

$std_id = $_SESSION['user_id'];
$year = trim($_POST['year']);
$month = trim($_POST['month']);
$day = trim($_POST['day']);
$time = trim($_POST['time']);
$start = $time.":00:00";
$end = ($time+2).":00:00";
$date = $year."-".$month."-".$day ;
$num = cal_days_in_month(CAL_GREGORIAN, $month , $year);
$today = getdate();
$this_year = $today['year'];
$this_month = $today['mon'];
$this_day = $today['mday'];

$this_hour = $today['hours'];
$this_hour += 6 ;
if (strlen($this_hour)==1)
{
    $this_hour = "0".$this_hour ;
}
$this_minute = $today['minutes'];
$this_sec = $today['seconds'];
$time_now = $this_hour.":".$this_minute.":".$this_sec ;

if($year > $this_year || ($month >= $this_month && $day >= $this_day) )
{
    if($day <= $num)
    {
        $query = "SELECT * FROM lab_time WHERE std_id='".$std_id."'";
        $result = mysql_query($query) or die(mysql_error());

        if(mysql_num_rows($result) < 3)
        {
            $query0 = "SELECT * FROM lab_time WHERE date='".$date' AND
std_id='".$std_id."'";
            $result0 = mysql_query($query0) or die(mysql_error());

            if(mysql_num_rows($result0) == 0)
            {
                $query1 = "SELECT * FROM lab_time WHERE date='".$date' AND
start='".$start."'";
                $result1 = mysql_query($query1) or die(mysql_error());

                if(mysql_num_rows($result1) <= 20)
                {
                    if(($start > $time_now) || ($year > $this_year ||
($month >= $this_month && $day > $this_day) ))
                    {
                        $com_no = mysql_num_rows($result0);
                        $com_no += 1;
                        // $query1 = "INSERT INTO lab_time
($std_id,date,start,end,computer_no) VALUES ('".$std_id."','".$date."','".$start."','".$end."','".$com_no')."";
                        // $result1 = mysql_query($query1) or
die(mysql_error());
                    }
                }
            }
        }
    }
}
echo "<h3>The Following time slot is
available for you.</h3><br><br>";

```

```

ID :</td><td width='100'>".$std_id."</TD></tr>";
:</td><td>".$date."</TD></tr>";
:</td><td>".$start."</TD></tr>";
:</td><td>".$end."</TD></tr>";
:</td><td>".$com_no."</TD></tr>";
echo "<blockquote>";
echo "<table border='1'>";
echo "<tr height='30'><td width='150'>User";
echo "<tr height='30'><td>Reserve Date";
echo "<tr height='30'><td>Start Time";
echo "<tr height='30'><td>End Time";
echo "<tr height='30'><td>Computer No";
echo "<tr height='50'><td valign='bottom'";
align='right'><input type='button' name='calcel' value=' Cancel ' onClick=location.href='reserve_lab.php'; tabIndex='1' /></td>";
echo "<td valign='bottom'";
align='right'><input type='button' name='reserve' value=' Reserve ' onClick=location.href='reserve.php?std_id=$std_id&date=$date&start=$start&end=$end&com_no=$com_no'; tabIndex='2' /></TD></tr>";
echo "</table>";
echo "</blockquote><br><br>";
}
else
{
    echo "<hr align='center' width='400'><h3 align='center' width='400'>";
align='center'>The time slot you enter just passed.</h3><hr align='center' width='400'>";
}
else
{
    echo "<hr width='550' align='center'><h3 align='center' width='550'>All Computers are unavailable on ".$date." from ".$start." to ".$end." . So Try another slot.</h3><hr width='550' align='center'>";
}
}
else
{
    echo "<hr width='550' align='center'><h3 align='center' width='550'>You have already reserve a time slot this day. A one student can reserve a one slot a day.</h3><hr width='550' align='center'>";
}
}
else
{
    echo "<hr width='1000' align='center'><h3 align='center' width='1000'>One Student only can made 2 reservation at time. If You have any problem Please contact Administrator.</h3><hr width='1000' align='center'>";
}
}
else
{
    echo "<hr align='center' width='500'><h3 align='center'>The Day you entered is not a Valid date. Try again</h3><hr align='center' width='500'>";
}
}
else
{
    echo "<hr align='center' width='400'><h3 align='center'>You entered a passed date.</h3><hr align='center' width='400'>";
}
?>

</body>
</html>

<?php
}
else
{
?>
```

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```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Reserve a Resource</title>
<link href="../../css/style.css" rel="stylesheet" type="text/css">
</head>

<body>
<?php $text="Reserve a Computer"; include "header.php";
$today = getdate();
$year = $today['year'];
$month = $today['mon'];
$day = $today['mday'];
$user_id = $_SESSION['user_id'];
?>

<h4>Please Enter the date time you want to allocate a computer.</h4>

<blockquote>
<form name="date" method="post" action="reserve_lab.php">
<table border="1">
<tr height="40">
<td width="100">User ID : </td>
<td colspan="3"><input type="text" name="user_id" tabindex="1" size="10" maxlength="6" value="<?php echo $user_id ; ?>" disabled></td>
</tr>

<tr height="40">
<td>Date : </td>
<td width="80">
<select name="year" tabindex="2">
<option value="<?php echo $year ; ?>" selected="selected"><?php echo $year ; ?></option>
<option value="<?php echo ($year+1) ; ?>" ><?php echo ($year+1) ; ?></option>
</select></td>
<td width="65">
<select name="month">
<?php
for($i=1 ; $i<=12 ; $i++)
{
?>
    <option value="<?php echo $i; ?>" <?PHP if($i==$month) echo "selected" ; ?> > <?php echo
$ i ;?> </option>
<?php
}
?>
</select></td>
<td width="65">
<select name="day">
<?php
// $num = cal_days_in_month(CAL_GREGORIAN, $month , $year);

for($i=1 ; $i<=31 ; $i++)
{
    ?
        <option value="<?php echo $i; ?>" <?PHP if($i==$day) echo "selected" ; ?> > <?php echo $i
;?> </option>
        <?php
}
?>
</select></td>
</tr>

<tr height="40">
<td>From : </td>
<td colspan="3">
<select name="time" tabindex="3">
<option value="08">08:00 - 10:00</option>
<option value="10">10:00 - 12:00</option>
<option value="12">12:00 - 14:00</option>
<option value="14">14:00 - 16:00</option>
<option value="16">16:00 - 18:00</option>
</select></td>
</tr>

<tr height="60" valign="bottom">
```

```
<td>&nbsp;</td>
<td colspan="2" align="center"><input type="submit" name="check" value=" Check " ></td>
<td><input type="submit" name="reserve" value=" Reserve "></td>
</tr>
</table>
</form>
</blockquote>

</body>

</html>
<?php
}
?>
```

[Refer to the CD Source files folder for more source code]