Project on

University Management System

Submitted by

Name

in partial fulfilment of the requirement for the degree of Bachelor of Science in Computer Science and Engineering

Department of Computer Science and Engineering
Faculty of Engineering and Technology
Eastern University
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Declaration

We hereby declare that the work is being presented in this project entitled **"Project Title"** in partial fulfilment of the requirement for the degree of Bachelor of Science in Computer Science & Engineering under the faculty of Engineering and Technology, Eastern University, Bangladesh is an authentic record of our own work carried out under the Supervision of Supervisor Name**.** It is also declared neither this report nor any part of it has been submitted elsewhere for the award of any kind of degree.

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Last of all we are grateful to our family and our teachers, who are always with us.

ABSTRACT

Modern world are adopting IT very fast. We are not so behind on that part, so our country also tries to adopt the technology with the outer world. Internet is the main weapon to communicate with the outer world. Now days most of the university does their internal work by online. They manage the student, teacher and the stuff section by software. But every university has individual software to maintain.

Every year some new university is getting established. And they also maintain their process by software.

So, we are trying to develop an application or software that will manage the university at a time, the whole system will run into online.

TABLE OF CONTENT

Abstract ----------			v
List of Figures ----------			viii
List of Tables ----------			ix
Chapter 1: Introduction			**1-4**
1.1	Introduction		1
1.2	Motivation		1
1.3	Objectives		1
1.4	Tools		3
1.5	Methodology		3
	1.5.1	Project Schedule	4
1.6	Expected Outcome		4
Chapter 2: Literature Review			5-10
2.1	Introduction		5
2.2	Feasibility Study		5
	2.2.1	Technical Feasibility	5
	2.2.2	Operational Feasibility	6
	2.2.3	Economical Feasibility	6
2.3	System Design		6
2.4	General Function Description		7
2.5	Requirements		7
2.6	Modelling		8
2.7	Main Functionalities		9
2.8	Challenges		10
Chapter 3: System analysis and design			**11-25**
3.1	Use Case Modelling and Description		11
	3.1.1	Use case Diagram	12
	3.1.2	Use case Description of Admin	13
	3.1.3	Use case Description of Faculty	14
	3.1.4	Use case Description of Student	15
3.2	E-R Diagram		16
3.3	Data Flow Diagram		18
3.4	System Flowchart		21
	3.4.1	Activity Diagram for Assign Task	21
	3.4.2	State-Chart Diagram for Project	22
3.5	Snapshot of Database		23
3.6	Snapshot of Front-end		24
	3.6.1	home page	24
	3.6.2	profile	25
Chapter 4: Implementation and testing			26-31

4.1	Implementation Requirements		26
	4.1.1	Requirements for a Web Development Process	26
	4.1.2	Design Requirement	27
	4.1.3	Completion	28
	4.1.4	Project Deliverables	28
	4.1.5	Resource Allocation	28
4.2	Pass/Fail Criteria		29
4.3	Testing Environment		29
4.4	Testing Implementation		30
4.5	Test Results and Reports		31

Chapter 5: Conclusion and future works		**32**
5.1	conclusion	32
5.2	Future works	32
References ----------		33

List of Figures

Figure No.	Figure Name	Page
Fig. 2.5.2	Prototyping process	08
Fig. 3.1.1	Use Case Diagram	12
Fig. 3.2	E-R Diagram	17
Fig, 3.3.1	DFD Level 0	18
Fig. 3.3.2	DFD Level 1	19
Fig. 3.3.3	DFD Level 2	20
Fig. 3.4.1	Activity Diagram for Assign Task	21
Fig. 3.4.2	State-Chart Diagram for Project	22
Fig. 3.5	Screenshot of the database Code	23
Fig. 3.6.1	Screenshot of the Home Page	24
Fig. 3.6.2	Screenshot of the Admin Profile	25
Fig. 3.7.1	Website Working Procedure	27
Fig. 4.5	Login interface of our project	31

List of Tables

Table No.	Table Name	Page
Table 1.5.1	Project Schedule	04
Table 3.1.2	Use case description of Admin	13
Table 3.1.3	Use case description of Faculty	14
Table 3.1.4	Use Case Description of Student	15
Table 4.2.1	Testing Schedule	29

Chapter 1
Introduction

1.1 Introduction

Every university has lots of tasks to perform. So in order to perform all the tasks in a controlled and systematic manner we need to automate and accomplish all the frantic and baffling work with the help of easy decision making system. This software is about “University Management System”. This software gives many facilities to user to manage all administrative works of a university.

University Management System is a software for a university handling regular management work. By going through the flow of application Admin can easily maintain its student detail, faculty detail, class scheduling. University Management System could make university student and faculty's life easier than ever. Using University Management System, finding student information is just a few seconds away which might have cost hours, or even days. This System is designed to perform the efficient security, reliability and maximum accuracy of information.

1.2 Motivation

Internet is a global system of interconnected computer networks that serve billion of people worldwide. It is a network that consist of millions of public, private, academic and business and government networks from being local to worldwide scope. The internet carries a vast range of information resources and service. Now a days, most of the university of Our Country are Managed by the online software. By this software they maintained the Student, Teacher and other information. But all the University are maintained by the individual software. So, we are trying to develop a software or application that can manage the University. We are Using PHP based frame work Code igniter to develop this software, and we are following the prototyping method.

1.3 Objectives

The objective of the project on university is to manage the details of Students, Classes, faculty, and Courses. The project is totally built at administrative end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Students and Classes. It tracks all the details about the students, faculties, courses.

The main features of our website are:

Admin

a. Login
b. Logout
c. User profile
d. Update profile
e. Manage department
f. Manage courses
g. Manage programs
h. Manage semesters
i. Manage classes
j. Manage faculty
k. Manage students
l. Manage notice

Faculty

a. Login
b. Logout
c. User profile
d. Update profile
e. Assigned courses
f. Class schedule
g. Take attendance
h. Result published
i. See notice

Student

a. Login
b. Logout
c. User profile
d. Update profile
e. My courses
f. Offered courses
g. Class schedule
h. Result published
i. See notice

1.4 Tools

1. Local server
2. Visual studio

- # Front-end

1. HTML
2. CSS
3. bootstrap

- # Back-end

1. PHP
2. MySQL

1.5 Methodology

Methodology is a collection of procedure, techniques, tools, and documentation that helps us in the system development process. To complete this project in time, we wanted to meet the goal in such way:

1.5.1 Project Schedule

Activities	Duration (in Week)	Total week
Brainstorming	Week 1, Week 2	2
Problem identification	Week 3, Week 4	2
System Analysis	Week 5, Week 6, Week 7	3
System Design	Week 8, Week 9, Week 10	3
Database Design	Week 11, Week 12, Week 13	3
Front-end Design	Week 14, Week 15, Week 16	3
Backend part & connection with database	Week 17, Week 18, Week 19	3
Test case	Week 20, Week 21	2
Website Released	Week 22	1

Table 1.5.1 Project Schedule

1.6 Expected Outcome

We are expecting the outcome of our project will be according to our plan and it is going smooth so far. We think that the way we are progressing the outcome will be satisfactory and users will get a such platform where someone can manage any university management related issue using this university management system.

CHAPTER 2

PRJOECT SPECIFICAION

2.1 Introduction

The main objective of our project is to maintain information about students, teachers and other activities like attendance, student marks, class schedule etc.

2.2 Feasibility Study

Preliminary investigation examine project feasibility, the likelihood the system will be useful to the organization. The main objective of the feasibility study is to test the technical, operational and economical feasibility for adding new modules and debugging old running system. All system is feasible if they are unlimited resources and infinite time. There are aspects in the feasibility study portion of the preliminary investigation:

• Technical Feasibility

• Operational Feasibility

• Economical Feasibility

2.2.1 Technical Feasibility

Technical Feasibility centres on the existing computer system hardware, software, etc. and to some extent how it can support the proposed addition. This involves financial considerations to accommodate technical enhancement. Technical support is also a reason for the success of the project. The techniques needed for the system should be available and it must be reasonable to use. Technical Feasibility is mainly concerned with the study of function, performance, and constraints that may affect the ability to achieve the system. By conducting an efficient technical fesibility we need to ensure that the project works to solve the existing problem area.

Since the project is designed with HTML as Front- end and SQL Server as Back- end, it is easy to install in all the systems wherever needed. It is more efficient, easy and user-friendly to understand by almost everyone. Huge amount of data can be handled efficiently using SQL Server as back - end. Hence this project has good technical feasibility.

2.2.2 Operational Feasibility

People are inherently instant to change and computers have been known to facilitate change. An estimate should be made to how strong a reaction the user staff is likely to have towards the development of the computerized system. The staff is accustomed to computerized systems. These kinds of systems are becoming more common day by day for evaluation of the software engineers. Hence, this system is operationally feasible. As this system is technically, economically and operationally feasible, this system is judged feasible.

2.2.3 Economical Feasibility

The role of interface design is to reconcile the differences that prevail among the software engineer's design model, the designed system meet the end user requirement with economical way at minimal cost within the affordable price by encouraging more of proposed system. Economic feasibility is concerned with comparing the development cost with the income/benefit derived from developed system. In this we need to derive how this project will help the management to take effective decisions. Economic Feasibility is mainly concerned with the cost incurred in the implementation of the software. Since this project is developed using HTML, php and SQL Server which is more commonly available and even the cost involved in the installation process is not high. Similarly it is easy to recruit persons for operating the software since almost all the people are aware of PHP and SQL Server. Even if we want to train the persons in these area the cost involved in training is also very less. Hence this project has good economic feasibility. The system once development be used efficiently. Otherwise there is no meaning for developing the system. For this a careful study of the existing system and its drawbacks are needed. The user should be able to distinguish the existing one and proposed one, so that one must be able to appreciate the characteristics of the proposed system, the manual one is not highly reliable and also is considerably fast. The proposed system is efficient, reliable and also quickly responding.

2.3 System Design

In this phase, a logical system is built which fulfils the given requirements. Design phase of software development deals with transforming the client's requirements into a logically working system. Normally. Design is performed in the following in the following two steps:

1. **Primary Design Phase:**
   In this phase, the system is designed at block level. The blocks are created on the basis of analysis done in the problem identification phase. Different blocks are created for different functions emphasis is put on minimising the information flow between blocks. Thus, all activities which require more interaction are kept in one block.

2. **Secondary Design Phase:**

   In the secondary phase the detailed design of every block is performed.

The general tasks involved in the design process are the following:

1. Design various blocks for overall system processes.
2. Design smaller, compact and workable modules in each block.
3. Design various database structures.
4. Specify details of programs to achieve desired functionality.
5. Design the form of inputs, and outputs of the system.
6. Perform documentation of the design.
7. System reviews.

2.4 General Function Description

For us the more helping way to analyse the big picture and its relations between system elements are through diagrams, which basically helps to discover or explore the relations, while allowing us to ignore or hide uninteresting details. To conclude, we can say that it is the most essential value of the UML and can be said that also the simplest value of the UML or any diagramming language.

2.5 Requirements

Hardware requirements:

Number Description1 PC with 2 GB hard-disk and 256 MB RAM

Software requirements:

1. MS SQL server.
2. Visual studio
3. MS Internet explorer

Requirements for a Web Development Process

From experience in developing Web applications, have derived a list of requirements for Web development process. The most important requirements are to provide end-user involvement, prototyping, change management, immediate response, risk minimization, no administrative overhead and transparency and guidance. Knowing the end users requirements is essential for the development of successful Web applications. Defining the main goals for the development of a Web application, then customer is not the actual end-user and, therefore, he or she is not able to define all the requirements that are important to end-user. Prototyping is used to leverage the involvement of end-users in Web application development. Prototyping produces a preliminary version of the required system that can be reviewed by end-users. After review, the prototype is added to and altered to produce another version closer to the one that is wanted. Figure gives a diagram of prototyping process.

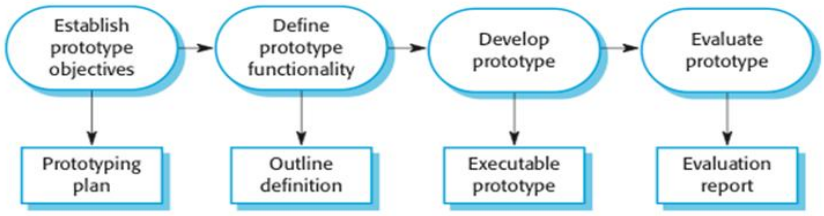


Figure 2.5.2 Prototyping process

Project development prototyping is essential, because finding the way to solution is much faster and more effective way to speed up the process of the project and find the best option for best results. Prototyping in our case influences the project development process.

2.6 Modelling

Modelling is like building a representation of things in the „real world“ and allowing ideas to be investigated. In fact, model is more likely a way of expressing a particular view of a system.

Mainly modelling is used to:

- understand the problems involved in building some system
- an aid to communication between those involved in the project
- a component of the methods used in development activities such as the analysis of the
- Requirements.

The way modelling is used in this project is called Unified Modelling Language(UML) that is a standard language for specifying, visualizing, constructing, and documenting the artefacts of systems, as well as for business modelling and other non-software systems. The UML represents a collection of best practices that have proven successful in the modelling of large and complex systems. It is an important part of developing system and their development process. The UML uses mostly graphical notations to express the design of projects, it helps project teams communicate, explore potential designs, and validate the architectural design of the system.

The primary goals in the design of the UML were:

1. Provide users with a ready-to-use, expressive visual modelling language so they can develop and exchange meaningful models
2. Provide extensibility and specialization mechanisms to extend the core concepts.
3. Be independent of particular programming languages and development Processes.

Provide a formal basis for understanding the modelling language.

2.7 Main Functionalities

Use Cases are text stories, widely used to discover and record requirements. Use cases need to be more detailed or structured and emphasize the user goals and perspective. A use case diagram in the Unified Modelling Language (UML) is a type of behavioural diagram defined by and created from a use case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals, and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted. On the Figure below is shown a functionality of university management system, where user and administrator have different functionalities to run. While user is modifying or upload / download or delete files in a system modifying or upload / download or delete files in a system while user is logged in, then for our administrators has more rights to control in the system. Namely administrator has the right to add, modify or delete users in a system or add new projects and definitely available to modify projects as the user or add new projects to the system. The Figure below illustrates exactly what kind of possibilities or options are for user and administrator of the system.

2.8 Challenges

To do our project we faced some problems and challenges-

- Due to large amount of our data, there was a problem organizing the dataset.
- While updating the class schedule, there was a problem of conflict.

CHAPTER 3

SYSTEM DESIGN AND ANALYSIS

3.1 Use Case Modelling and Description

A use-case model is a model of how different types of users interact with the system to solve a problem. As such, it describes the goals of the users, the interactions between the users and the system, and the required behaviour of the system in satisfying these goals.

A use case diagram consists of the system, the related use cases, and actors and relates these to each other to visualize: what is being described? (system), who is using the system? (actors) and what do the actors want to achieve? (use cases), thus, use cases help ensure that the correct system is developed by capturing the requirements from the user's point of view.
Here are the actors using the system:

1) Admin
2) Faculty
3) Student

Every time one of these users tries to log in there will be an username and password verification. If there is something wrong with their username or password, there will be a login error shown.

3.1.1 Use case Diagram

Fig.3.1.1 Use Case Diagram

3.1.2 Use case description of Admin

Goal	Admin can login into the system and will manage Faculty, Student.
Success and condition	Admin successfully login into the system and will manage Faculty, Student.
Failed end condition	Admin failed to login and contact with system owner.
Secondary actor	Admin
Main Scenario	User browse the system
	Click on “Sign in”
	Pop-up window will show up
	System redirects to the log in condition
	Click on edit on admin users and update record (User id, email, password)
	Manage faculty
	Manage student

Table 3.1.2 Use case description of Admin

3.1.3 Use case description Faculty

Goal	Faculty can login into the system. Faculty can take attendance and published result. Also will able to see class schedule and notice.
Success and condition	Faculty successfully login into the system.
Failed end condition	If faculty failed to login then will not able to any task.
Primary actor	Faculty
Main Scenario	Faculty browse the system
	Login successfully
	See courses and class schedule
	Take attendance
	Published result

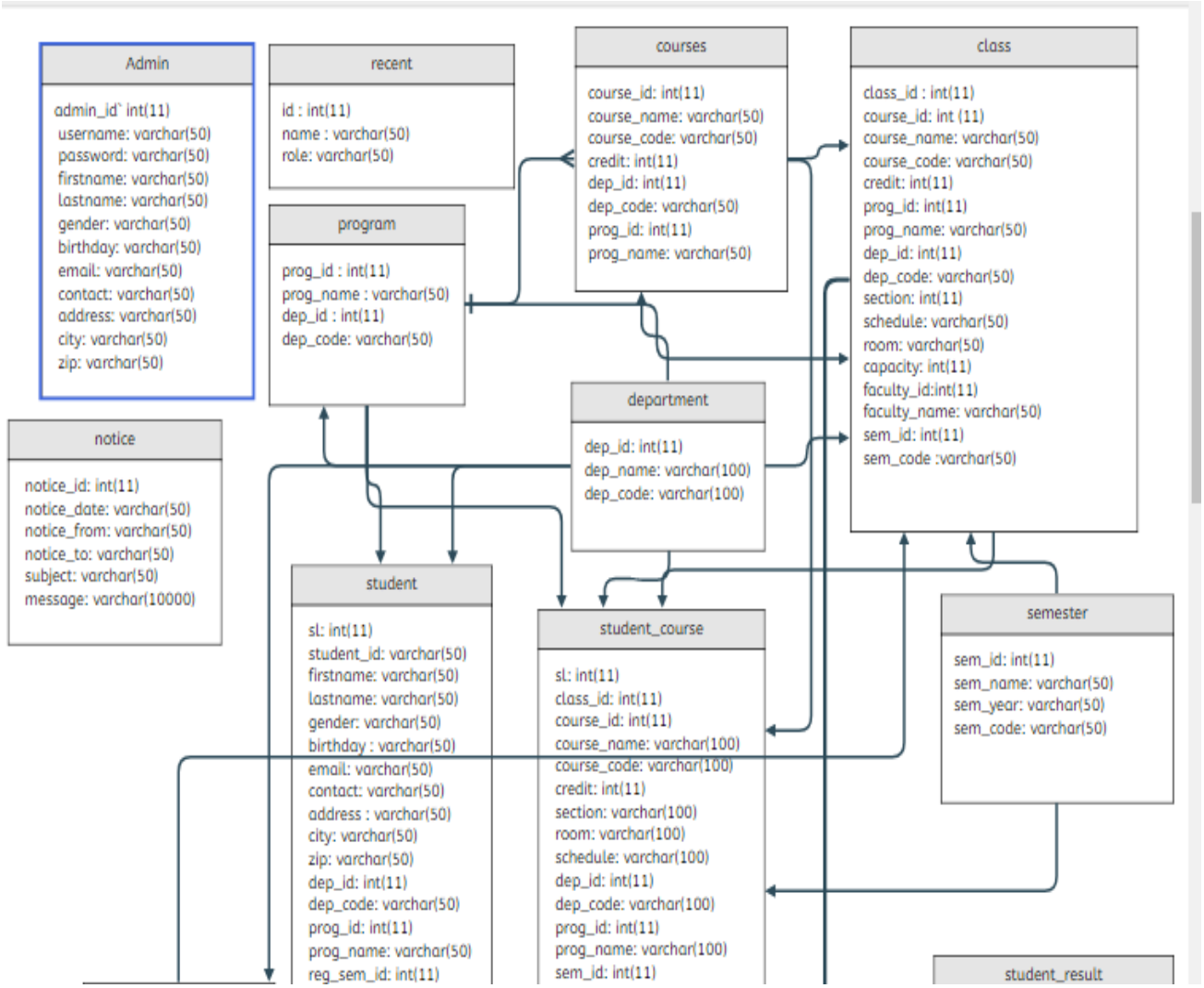
Table 3.1.3 Use case description of faculty

3.1.4 Use case description of student

Goal	Student can login into the system. Student can response attendance and see published result. Also will able to see class schedule and notice.
Success and condition	Student successfully login into the system.
Failed end condition	If student failed to log in then will not able to any task.
Primary actor	student
Main Scenario	Student browse the system
	Login successfully
	See courses and class schedule
	response attendance
	See result

Table 3.1.4 Use Case Description of student

3.2 E-R diagram



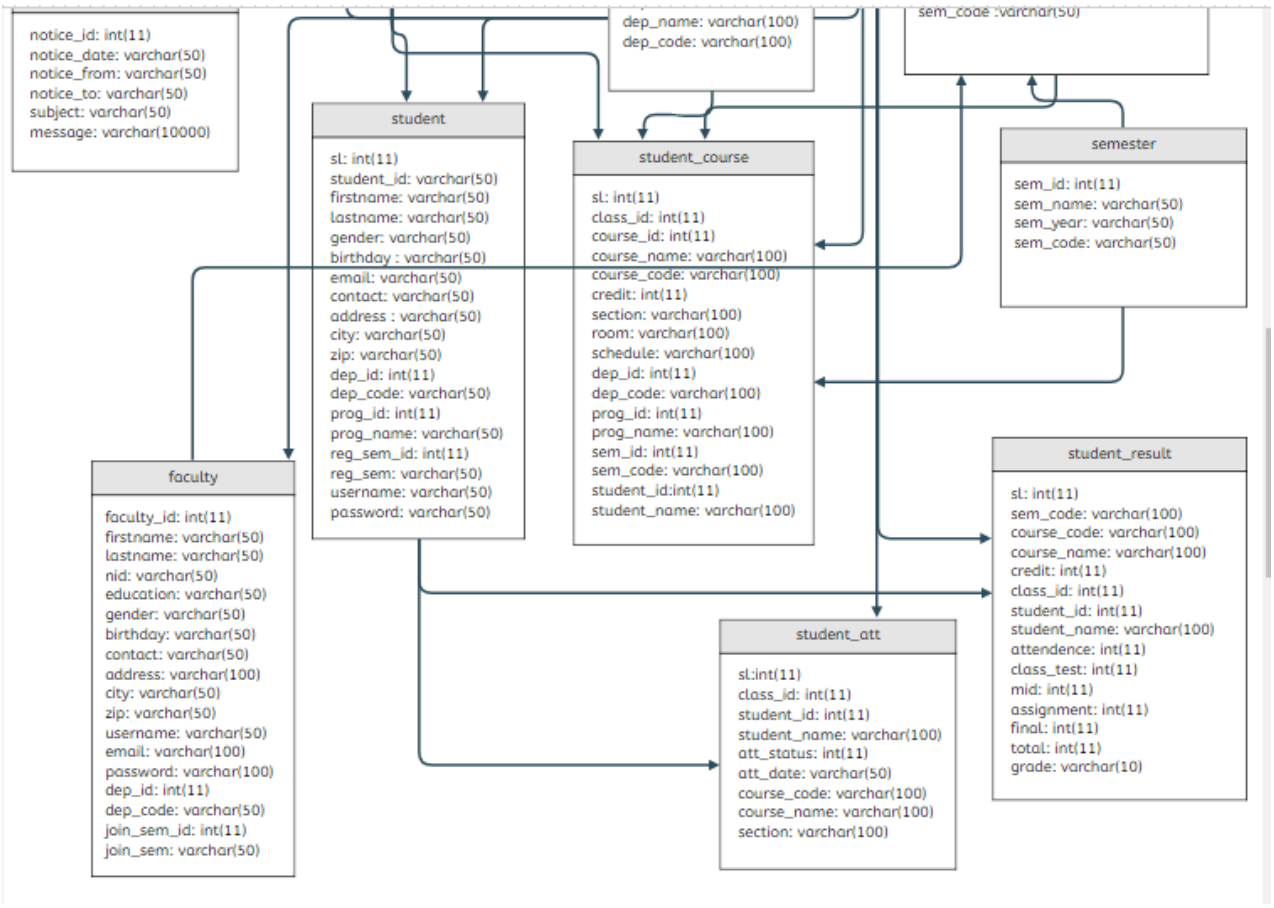


Fig.3.2 E-R Diagram

3.3 Data Flow Diagram

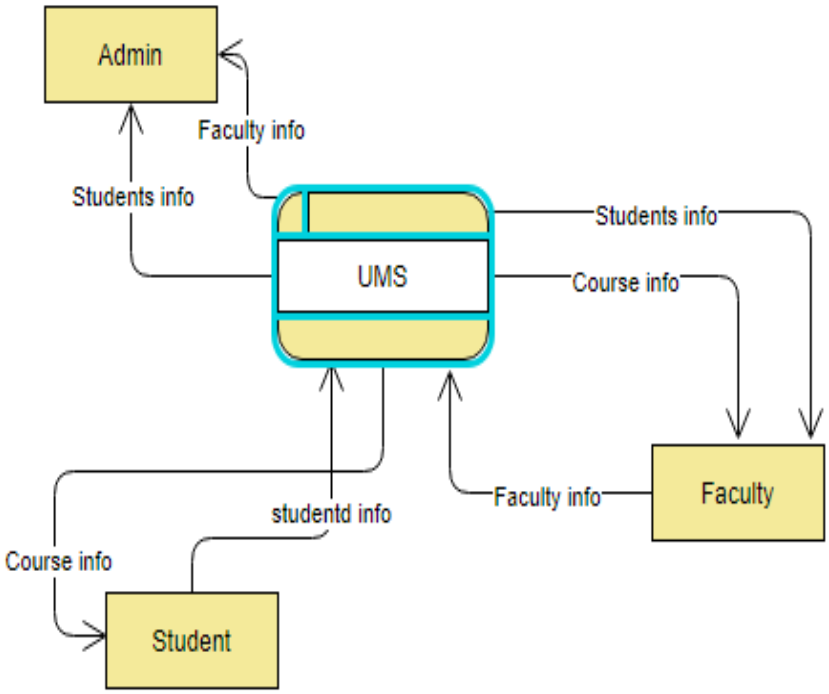


Fig. 3.3.1 DFD Level 0

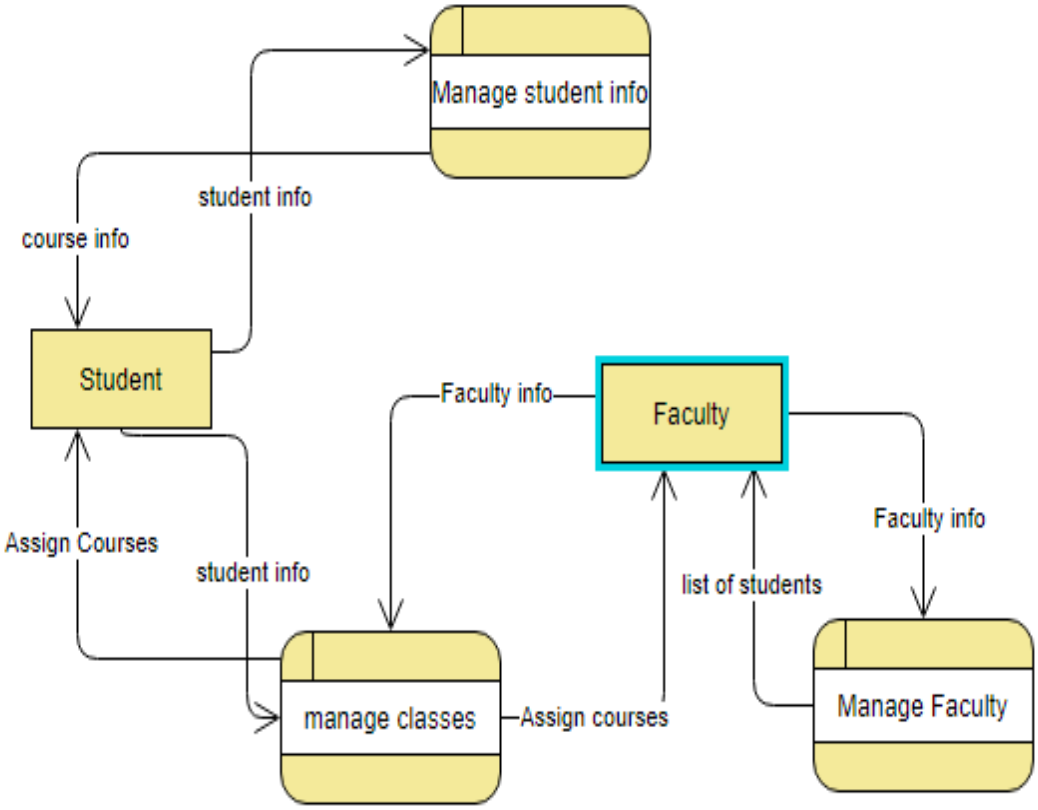


Fig. 3.3.2 DFD Level 1

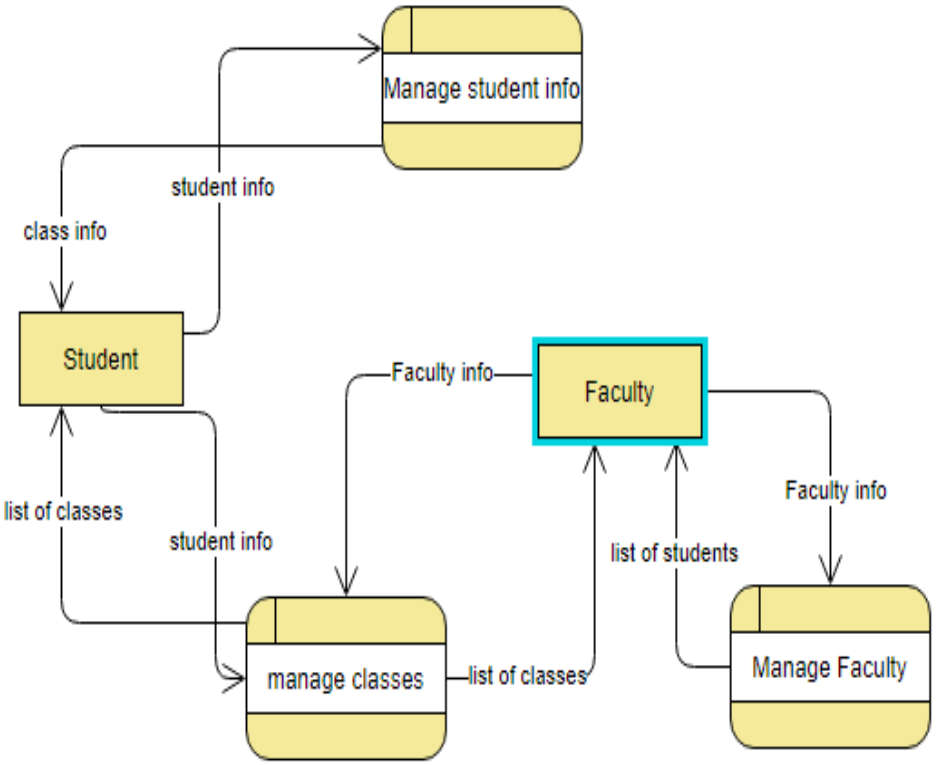


Fig. 3.3.3 DFD Level 2

3.4 System Flow Chart

3.4.1 Activity Diagram for Assign Task

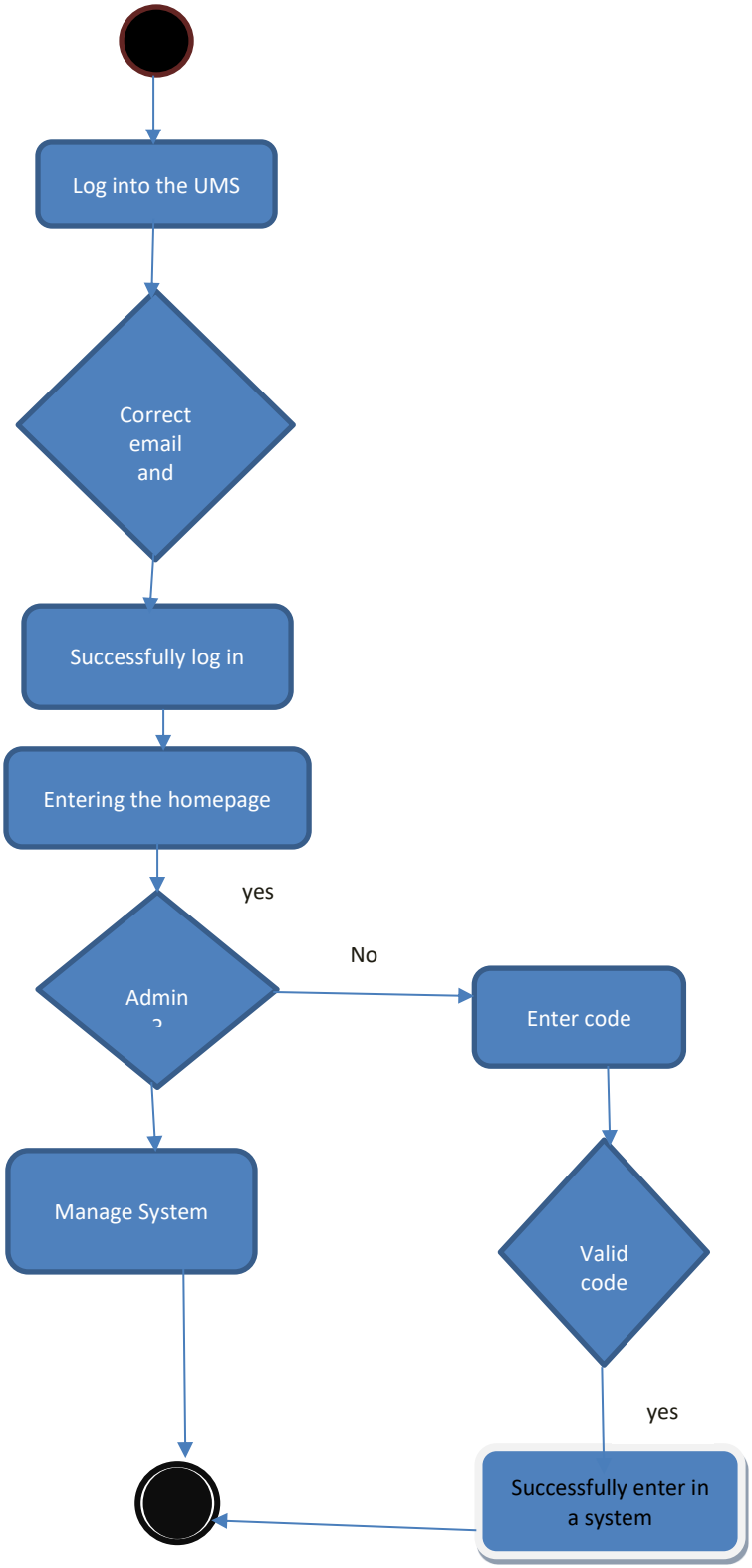


Fig.3.4.1 Activity Diagram for Assign Task

3.4.2 State-chart Diagram for project

Fig.3.4.2 State-Chart Diagram for Project

3.5 Snapshot of Database

This is the screenshots of our website's database. All the records of Admin, Faculty, Student, Project maintains are stored here. In our projects, we used phn local server software.

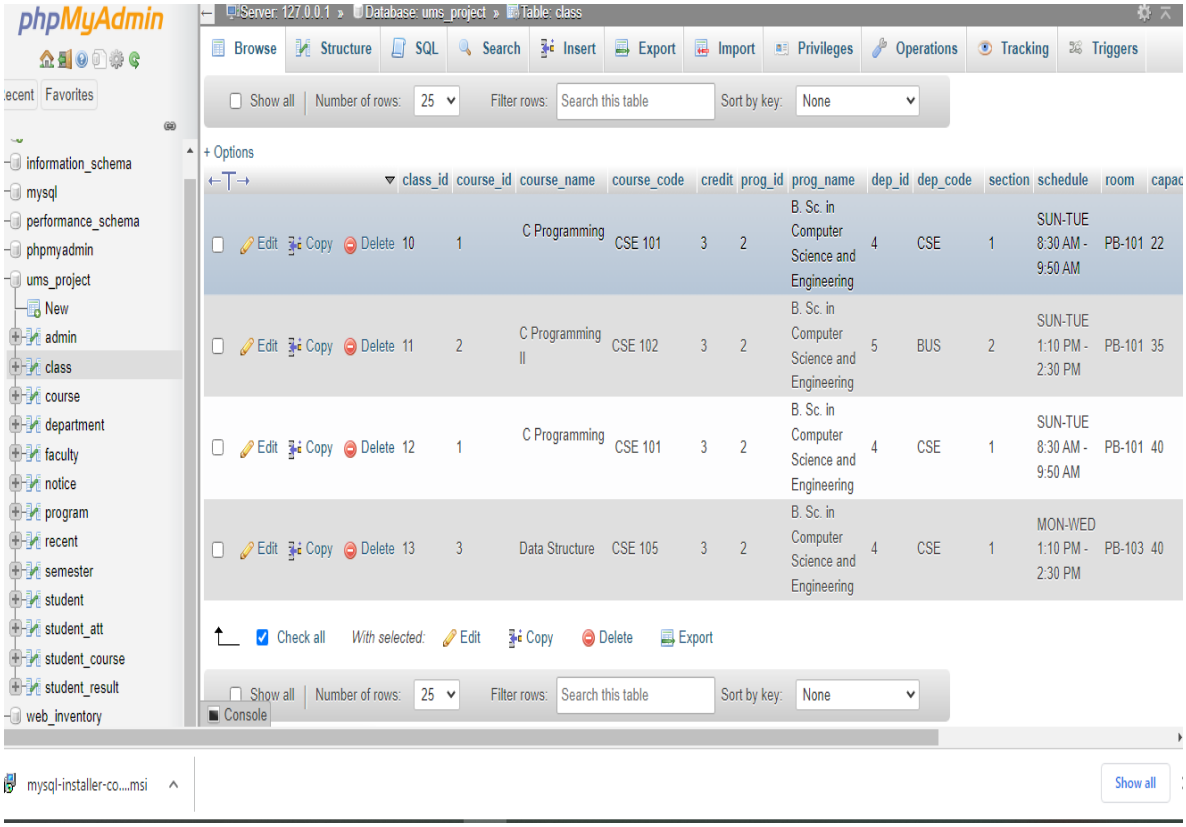


Fig. 3.5 Screenshot of the Database Code

3.6 Snapshot of Front-end

3.6.1 Home Page

This is the screenshot of our website's homepage and on this page, there are many buttons for linking with other pages.

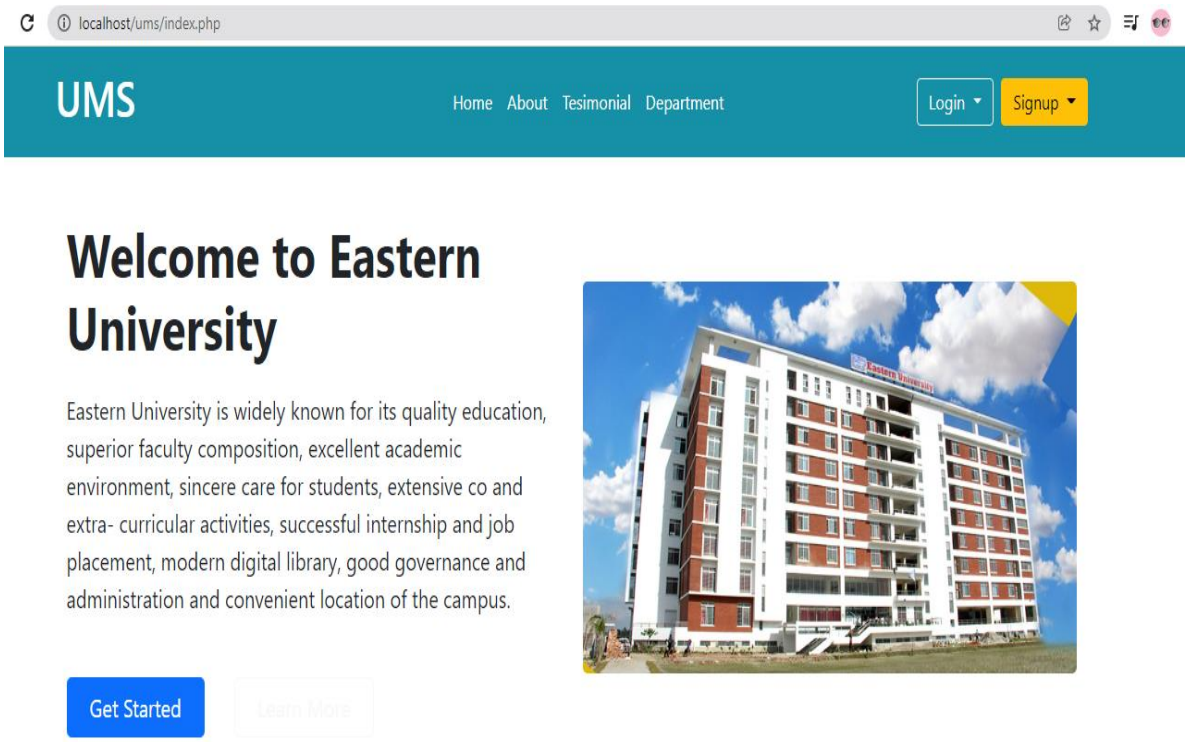


Fig. 3.6.1 Screenshot of the Home Page

3.6.2 Profile

This is the profile section of Admin. Here he can see his details. He can also update his information from here by clicking on necessary section of profile.

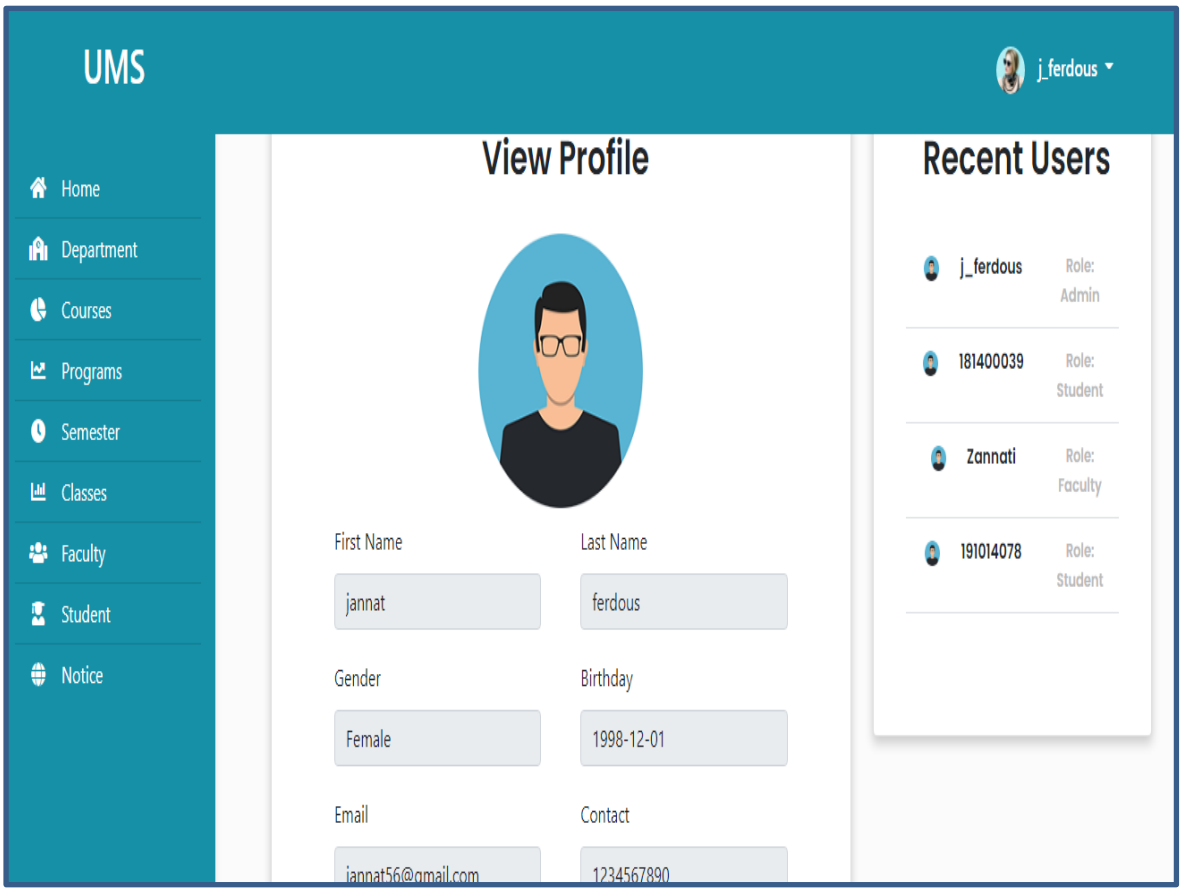


Fig. 3.6.2 Screenshot of the Admin Profile

CHAPTER 4

IMPLEMENTATION AND TESTING

4.1 Implementation Requirements

Requirement analysis is very early phase to developing a website. project. Requirements analysis is helpful to determine the needs or conditions that must meet as a new or altered product. Therefore, a requirements analyst takes account of the possibly conflicting. requirements of the various stakeholders and documents.

4.1.1 Requirement Collection and Analysis

Requirement analysis is critical to the success or failure of a systems or software project. The requirements should be documented, actionable, measurable, testable, traceable, related to identified business needs or opportunities, and defined to a level of detail sufficient for system design. We analyzed the requirements of these activities with the help of our honourable project supervisor.

Here are the main activities involve in requirement analysis:

- Admin, Faculty and Student log into the system.
- Admin manage the system.
- Faculty can take attendance and published result.
- Student can response attendance and see result.
- Log out.

4.1.2 Design Requirements

The website design and development procedure for our project has been shown using a use case diagram, use case description, E-R diagram, system flow-chart. Whole design is user friendly and any non-technical person will understand about the design procedure easily just viewing the described diagram and flowchart. In future any kind of edit is allowed as time permits. The website working procedure is given below –

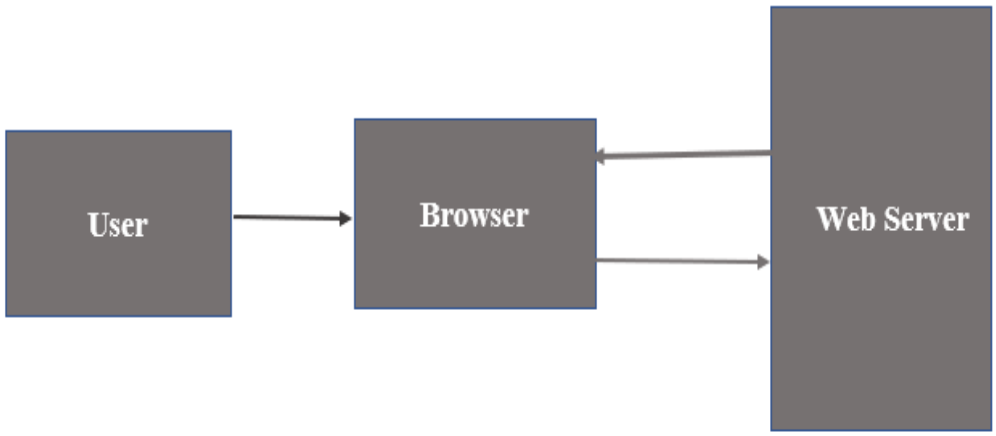


Fig 3.7.1 Website Working Procedure

4.1.3 Completion

This project is all about management a university properly. This website is easy to use. We have more features and update in our mind. In future we will try to add those features.

4.1.4 Project Deliverables

Deliverable is a term used in project management to describe a tangible or intangible object produced as a result of the project that is intended to be delivered to a customer. A deliverable could be a report, a document, a server upgrade or any other building block of an overall project.

A deliverable may be composed of multiple smaller deliverables. It may be either an outcome to be achieved or an output to be provided. A deliverable differs from a project milestone in that a milestone is a measurement of progress toward an output whereas the deliverable is the result of the process. For a typical project, a milestone might be the completion of a product design while the deliverable might be the technical diagram of the product. A deliverable also differs from a project document in that a project document is typically part of a project deliverable, or a project deliverable may contain a number of documents and physical things.
In technical projects, deliverables can be further classified as hardware, software, or design documents. In contracted efforts, deliverable may refer to an item specifically required by contract documents, such as an item on a Contract Data Requirements List or mentioned in the statement of work

4.1.5 Resource Allocation

Resource allocation is the process of assigning and managing assets in a manner that supports an organization's goals. We gathered all our resources from various places in internet. Then we made a plan how to utilize all our resources for finishing the project. But our most precious resource is our unity, punctuality and trust for each other.

4.2 Pass/Fail Criteria

Generally, test engineers set the pass or fail criteria. They prepare the pass/fail criteria according to which input data worked and which did not work. Pass criteria are the worked data and rest of the input data are considered as fail criteria.

For this system pass/fail criteria are given below:

- One criterion should always be passing accurately to be considered as pass criteria.
- System crush will be considered as fail criteria.
- Not showing expected results will be considered as fail criteria.

Test Phase	Time
Testing plan creation	1 week
Test specification	1 week
Unit Testing	During development time
Validating use case	2 weeks
User Interface Test	1 week
Load Test	1 week
Release to production	1 week

Table 4.2.1 Testing Schedule

4.3 Testing Environment

Test engineers need to prepare an environment with hardware and software to execute test cases as required, this is called a testing environment. Sometimes network configuration needed to execute a test plan.

Some key environment areas for testing are given below.
- Test data
- Operating system.
- Browser.
- Database server.
- Network.
- Project documentation.
- Hardware with server operating system.

4.4 Testing Implementation

Testing is a major part of embedded system implementation. Otherwise, there can be errors when the real user uses the system. There can be some unexpected thing happens and the system can be crashed. That's why we need to test our system. In our system, authentication is required to get all access to our system. We have checked different inputs for login credentials. And we got the expected result and after successful login, we enter the main screen of our software. From the main screen, there are three different screens for navigation. And we can navigate successfully without any error.

On the Homepage, we can control our hardware device switches. And we got the desired result. Also, we can successfully able to update and add a new task into the store without any issue

4.5 Test Results and Reports

We can manage any university related issue using the university management system. Basically, our system is designed for various purposes. We will now talk about what the university management system actually does. The project manager explains his tasks to his team members. All this we can easily control through our university management system.

With this system we can easily control any university. Admin, Faculty and student can log in with their login credentials by clicking on sign in.

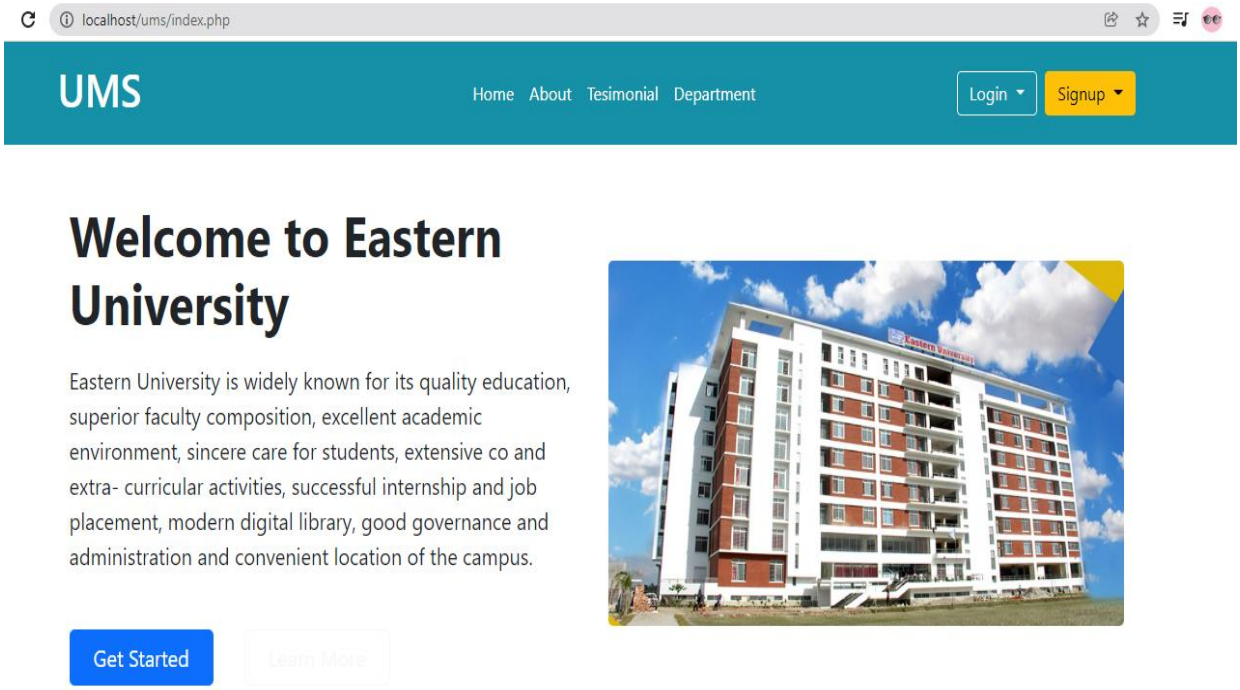


Fig 4.5 : Login interface of our project

CHAPTER 5

CONCLUSION AND FUTURE WORKS

5.1 Conclusion

We are developing this software by using prototyping model. After developing the prototype version, we will get some error and we will face some problem, and user also will give the software. We look forward to our next version

5.2 Future Plan:

- Add account part to this existing software.
- Add hostel management system.
- Add transport management system.
- And add Library management system.

References

[1] Ralph Moseley, M. T. Savaliya, "Developing Web Applications", Wiley India Pv. Ltd., 2011.
[2] https://newsoft.ps/?page_id=1065
[3] http://www.ifnoss.com/edu/college-university-software/management-erp-system.aspx