

WEB-BASED ATTENDANCE AND RESULT MANAGEMENT SYSTEM

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This project report submitted to partially complete the requirements
for the Master of Engineering in
Information and Communication Engineering degree.

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SUPERVISOR'S DECLARATION

We hereby declare that we have reviewed this project and that, in our opinion, it satisfies the requirements for the Master of Engineering degree in the Department of Information and Communication Engineering at Noakhali Science and Technology University in terms of scope and quality.

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I hereby declare that the work in this project is entirely mine, with the exception of properly mentioned quotations and summaries. This project report is not currently being considered for any degree awards and has not been accepted for any degree awards.

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ABSTRACT

The Web-Based Attendance and Result Management System is a website-based project which is created for the institution (NSTU) to process and store student results. HTML, CSS, and JavaScript are used for the front-end development, and PHP, Laravel framework, and MYSQL database are used for the back-end development. The project aims and manage semester results automatically. The project has four types of users such as Register, Department or Department Head (Chairman), Teachers, and Students. Firstly, the Register could add, update and delete departments, Sessions, Halls, and designation of teachers. Secondly, the Department or Chairman could add, update and delete teachers of the departments, courses of a specific semester of a specific batch, course teachers, 2nd examiner, 3rd examiner (if necessary) of any course, and students of the departments. The department or chairman could also view the result of any batch or student and also see the processing results and which teachers submitted their course results. He could also download specific batch results and manage the result processing systems. Thirdly, Teachers can take attendance, submit their class test marks, assignment marks, lab report marks, quiz marks, viva voce marks and final term marks as a course teacher. As a 2nd examiner and 3rd examiner teachers can only add term final marks. And finally, the students could see their attendance percentage, class test marks and assignment marks according to subject wise. They also download the mark sheets after publishing the result. The students and teachers can't access the website if the department doesn't give access to them. The Department give the students and teacher username and password to them for secure purpose and easy maintenance and then the student and teacher could access the website. The full results system will be under the control of the department head (Chairman) to manage and maintain the whole system.

KEYWORDS: Keywords are HTML, CSS, JAVASCRIPT, PHP LARAVEL and MYSQL.

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LIST OF ABBREVIATIONS

SQL	Structured Query Language
CSS	Cascading Style Sheet
GPA	Grade Point Average
PHP	Hypertext Preprocessor
SDLC	Software Development Life Cycle
PL/SQL	Oracle Procedural Language/Structured Query Language
IP	Internet Protocol
URL	Uniform Resource Locator
ER	Entity Relationship
ACID	Atomicity, Consistency, Isolation and Durability
API	Application Programming Interface
JS	Java Script
SDLC	Software Development Life Cycle
DB	Database
DBMS	Database Management System
RDBMS	relational database management system
GUI	Graphical User Interface
UML	Unified Modeling Language
HTML	Hyper Text Markup Language
HDD	Hard Disk Drive
XML	Extensible Markup Language

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Overpopulated Countries like Bangladesh where the population is increasing day by day, but every works on every sector is not digital yet. As a result, sometimes we face different kinds of trouble where the works need to complete with adjustment of time. But due to a lack of technological advancement, we were unable. The educational system is a good example of a system that needs to be updated, if we take it into consideration. The educational site is not capable enough to walk with our modern generation that's why I proposed Web-based attendance and Result Management System for our university which is fully automated and operates through internet. Using this system a department can generate and maintain the attendance mark and result processing system easily. Students can see their attendance percentage, results and download online transcripts for a particular semester.

1.2 PROBLEM STATEMENT

At present, people in Bangladesh like teachers and students have become more conscious and are taking necessary steps to ensure that they have digital technology to fulfill their requirements. They want to do anything digitally. That is why students don't come to the university to check-ups and their updated marks. But in our university students spend a vast amount of time in universities to get marks sheets manually. The existing process of getting information for the student is done manually. All the wanted information needs to be provided by the administration. If the students want to know the results of a particular subject so the students should wait for a long

time because work is done manually. The information about their courses, results, and other information access is not possible. Sometimes the existing system has time-consuming to fetch the data in a proper manner. The teacher also takes attendance analog system which is very time-consuming and complex to calculate attendance marks.

1.3 PROPOSED SYSTEM

We have successfully proposed the “Web-based attendance and Result Management System-” for replacing the manual work of the institution. This application is flexible and can easily access by the user. Once the data can be saved to the system then the data can be stored in the database in a safe and proper manner.

The Proposed system of the project will emulate the existing paper-based system of the institute and it will help the students to make an online transcript. The system allows the teachers to browse the student’s information. To make a marks sheet the teachers need to log in by using the User ID and Password, which are given during the registration on the website. The teachers can take attendance by using the project. It gives the opportunity to teachers to easily process the results. It will increase the working performance of all the departments. A student can easily check his/her result details by using this system.

1.4 OBJECTIVES

Offline result processing is so challenging for teachers. Because of the multiple problems this framework faces. There are a few objectives that are identified during the development of this system:

- i. To diminish the complexity of result creation manually.
- ii. To Decrease the time of result publication.
- iii. To evaluate the performance of attendance marks and result management system.
- iv. To develop an easy and efficient system that can handle and manage the activities involved in an efficient result management system.

- v. To publish the result in an accurate time.

1.5 SCOPE

The study aims at developing and implementing a web-based attendance and result management system for the Noakhali Science and Technology University, replacing the old manually done offline and minimizing the security issues and problems it possesses. The proposed system is a multi-user system, developed using PHP and Laravel framework with Apache Server and MySQL DBMS support. The students possess privileges to check their results after he/she is provided with a specific username and password for secure login. The entire system is managed by the department head (Chairman), who possesses full control of the system. And the teachers have the privilege to assign the student's marks and attendance, through which, a result will be generated automatically and each student will have access to their results only, using their respective username and password.

1.6 PROJECT SIGNIFICANCE

Web-based attendance and Result Management System is a web application that mainly focuses on providing the results to the student and the Department. The student checks their respective attendance percentage of a particular subject and class test marks, assignment marks and GPA using their username and password. The students can download their mark sheets after publishing their results. The system is divided into four modules- Registers, Department Head (Chairman), Teachers, and Students. The student using his username and password can view his attendance percentage and results. The system is used to give students a quick and easy way to verify their grades and assess the total aggregate and the percentage of the accessible semester results. It helps the department and the student analyze their performance in a subject and the performance of the entire class. The goal of this project is to find solutions to the problems associated with longer waiting times and the computation of grades and percentages throughout various semesters. Students have better access to the findings when they are posted on institutional websites. The analysis work is made easier by the percentage of overall performance across all subjects.

The system will allow the teachers to grade the students even from home, then automatically perform the calculation of the grade, and the students could easily access and print them. This avoids the teachers from doing all the work manually and has better work quality and management that would reduce time, human effort, and errors.

1.7 SUMMARY

Lastly, in this chapter, we discussed how and why we develop an application by writing the topics such as the problem statement, proposed system, objectives of the project, scope of the system, and significance. Here we discuss the system's efficiency for the institution. The system is very useful for the departments, teachers, and students.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Nowadays every sector is becoming online-based. Education is not lagging behind in this regard. There are different online-based systems in the education sector such as online payment systems, online registration systems, online class systems, online exam systems, online library management systems, e-booking systems, etc. Web-based Attendance and Result Management System is one of them. This will help the teacher to take attendance easily and calculate marks or GPA faster and more effectively.

2.2 RELATED WORKS

There are many works done with university result management systems not only in our country but also in the world. Among these some remarkable works are briefly explained here:

Mohammad Gulam Lorgat [1] proposed a Website based Student Result Management System which focuses on student's result management system that saves time and effort and improves security. The proposed system is a multi-user system that is based on web technology with architectural patterns and developed using Java object-oriented programming language which supports Apache Server and MySQL Database System support.

Vivek, Ayush and Hradesh [2] developed a website-based Student Result Management System which is designed to process and store student results. The administrator or admin will be in control of the system, and they will have the complete

ability to read, write, and display the results. The administrator also provides users access rights. The HTML, CSS, JS, and PHP programming languages are used to develop the system. Both students and administrative authorities will benefit from the optimization and acceleration of results planning, management processes, and activities. The project's aim is to easily deliver test results to students. It helps organizations and students to get results quickly.

Isbudeen Noor Mohamed, Ahmad Tasnim Siddiqui, Syed Ajaz, S Mohamed Idhris (2010) [3] proposed a system which is an application program that aims to start conductive and direct statistical exchange in a secure manner. Platform to bring together faculty, students, and the school or college administration. The pupil can examine their outcomes by sending an SMS to the contact info for parents and students.

According to E. O. Ukem et al. [4], backup processes and audit logs may be utilized to strengthen result systems. Despite the fact that he used java and a MySQL database to construct his solution, it did not offer any proof for processing results batched in files to improve data integrity and reduce fraud. The study could not answer what happens to a student following a suspension, medical treatment, deferment of studies, supplemental tests, or other similar kinds that were not addressed by the study. We investigated these facts and created an audit trail for future use.

According to Akinmosin James' [5] solution at Nasarawa State University Keffi, features a login form for user authentication and Student Registration forms for registering students each semester following payment of dues, before results are uploaded using internet browsers. Forms and reports are used to implement his solution, which was developed using PL/SQL. However, the interface frequently employs the "Grades form for entering student grades and Grades Edit form for amending incorrectly recorded grades." This is a security risk and a design flaw that might allow outsiders to access the database. It's a flaw that might lead to grade tampering by users who discover a way to access such forms.

Payal Sahu, Gulshan Kumar Sahu, Prince Kumar Sahu [6] developed a project where a computerized platform for managing the results of all student categories in a smooth and interactive manner is presented. PHP, CSS, HTML, and MYSQL were used to construct the system, which was locally hosted by an Apache webserver. The current search intends to develop a web-based student result management system while

saving time, effort, and boosting security. A qualitative study served as the foundation for the approach used to develop the lookup. This system is developed with three different types of users: administrators, faculty, and students.

Bijoy, Sanjay, Bhibak, Nishal, and Zarmit [7] developed a system where PHP is object-oriented, cross-platform, and usable on a variety of systems, including Microsoft Windows, Linux, Apple Macintosh, and others. Instead of using manual processes, such automated methods reduce duplication and data loss.

An automated system was created by Akpasam Joseph Ekanem, Simeon Ozuomba, and Afolayan J. Jimoh [8] using PHP, CSS, HTML, MYSQL, and it was hosted locally using the Apache web server. It was decided to use a participatory incremental process model (PIP Model) for software development. The Department of Electrical, Electronic, and Computer Engineering at the University of Uyo provided the information used. To clarify the main features supplied by the system, a functional breakdown of the system and its essential parts is given. Additionally, a use case diagram is provided to illustrate the various system user types and the corresponding functionality. Screenshots of several system functions from the functional system's test run are shown.

A web-based student information management system was developed in India by Bharamagoudar, Geeta, and Totad [9] that could email students to confirm their inbox after they registered. They were able to do this by making use of tools like HTML, CSS, JavaScript, PHP, and SQL. According to its definition, it is a paperless task that assists in automating present manual activities and may be remotely monitored and managed on a server-based network.

A technique that can provide students with both general and instructional information was developed in China by Hemn and Wu Fei [10]. They assert that a student's information can be created, read, and updated using the Students Information Management System (SIMS), and that reports on the student's skills and background can also be produced using the system. These methods shorten retrieval times and prevent data loss.

The main functional components of the University Study-Oriented System (USOS) in Poland, according to Mariusz C. [11], are the administration, web, student admission/registration, results database, course and certificate catalog, statistics, and so on. He claims that 27 Polish higher education institutions are using this solution.

Each module in such a system must first pass a database test and a sample database before it can be utilized in production. The system definition and implementation were included in the documentation, which was routinely updated. These techniques enhance communication between professors and students.

According to Ajay and Abhishek [12], a good database prevents anomalies and saves crucial data in an ordered way for data integrity. Tables must therefore be normalized for accuracy and retrieval simplicity. Additionally, they used Php MyAdmin, which works with both WAMP and LAMP, to link to a MySQL database and integrate PHP into HTML to construct their solution. PHP was selected because of its ease of use across many platforms with minimal script modification, as well as its quick compilation time. They added an "export" feature to their system to cut down on the time needed for each student's registration. It might move a large number of students from one level to another.

According to a Wikipedia article titled Student Information System, a SIS [13] offers capabilities for course registration, grade documentation, transcript generation, and students test results and assessment scores recording, students' schedules including disciplinary records, attendance monitoring, and the overall management of student-related data in a school (SIS). It should not be confused with a learning management system, which enables the publication of readings, homework, and tests.

Bhatt et al. [14] created a Credit-based Grading Scheme in India (CBGS). For compiling student outcomes, it is essentially a PHP-MYSQL system. The system creates reports in either Excel or PDF format depending on the use. The methodology for determining Grade Point Average (GPA), despite the fact that the grading system has changed from the Nigerian system, is still the same: the sum of the product of credit hours and grade points divided by the number of credit hours. Such automated solutions have a substantial advantage over manual processes in the ease of searching and list creation.

Nmaju et al. [15] suggested an Academic Records Information System (ARIS) at the University of Port Harcourt, Nigeria, using the incremental software model and prototyping approach. Their suggestion that reporting sheets only be made when there are no unresolved grades for students' registered courses was also adopted, meaning that all of these courses' grades had to have been approved by University Senate and uploaded on time.

M. Manogna, M. Alekhya, T. Reshma, M. Arshiya, M. Bhavani [16] developed a web-based application called Student Result Management System which was created to maintain the results of the students. Here, the front-end tools are HTML, CSS, and JavaScript, whereas the back-end tools are MySQL and PHP. It will serve as a tool for eliminating manual work while also simplifying and speeding up the creation of results, management processes, and tasks. It will also eliminate the need for maximum optimization, which prevents both students and administrative authorities from accessing the results. The goal of the project is to give the student easy access to the exam results. A straightforward method of results possession is useful for students and institutions. Being a result analyzer, students help to look at the results, displaying subject status and grades.

L. Varun Ramesh, R. Sai Anusha Priyanka, SNSS Venkata Lakshmi, V. Mounika [17] developed a web-based application called Student Result Management System which was created to provide results to the students in an easy way. In this system, students get their results through their institution roll numbers. The results are provided with individual scores and the corresponding percentage after reviewing the result status and using the university's standard calculating method. The student is the system's intended user. The student can log in using their login information and password to view each of their results. Web development tools like HTML, CSS, PHP, JavaScript, and MySQL can be used to achieve this. The faculty can obtain a subject-by-subject breakdown of the students' overall performance on the semester exams. Fusion charts can be used to visualize the overall results by subject (the percentage of passes and failures in a particular subject).

The University of Ruhuna in Sri Lanka was advised to use an open-source web based MIS by Gunathilake et al. [18]. The LAMP/WAMP technologies made this possible. They were able to categorize their users into categories such as administrator, super administrator, top administrator, general, professor, and student. The primary DES method was used to successfully encrypt passwords in the prototype version, which was intended for their Faculty of Science.

The objectives of creating a web-based framework for results processing, according to Walia and Gill [19], are to shorten the time needed to access students' records and to make a platform that is more secure. Over time, this has proven to be a more effective strategy for managing universities.

2.3 WEB APPLICATION TECHNOLOGIES

The term "web technologies" describes the use of markup languages in computer and device communication. It involves utilizing hypertext markup language, it is communication over the internet and the creation, delivery, or management of web content (HTML). A web page is an HTML written web document. It is claimed to have reduced the world to a tiny town where people and objects may speak with one another without any difficulty. Information that was previously unavailable or could have been challenging to discover is now accessible thanks to the www. Some important Web Technology terms are Webpage, Website, Web Server, Web Browser, URL, Protocol, Internet Protocol (IP) Address, Gateway and API [23].

Webpage: A document that can be displayed in a web browser such as Google Chrome, Firefox, Opera, Internet Explorer, Safari etc. These are also often called just "pages."

Website: A collection of webpages which are usually connected together in various ways and grouped together. It is often called a "web site" or simply a "site".

Web Server: A specialized high end computer that contains a website on the Internet. Now a days we have Cloud services that act as a web server.

URL: URL stands for Uniform Resource Locator. To identify a network resource on the Internet, a URL is a formatted text string used by Web browsers, email clients and other software. Network resources are files that can be text documents, plain Web pages or graphics.

Protocol: A protocol is a set of rules that govern data communications. It represents an agreement between the communicating devices. Without a protocol, two devices may be connected but not communicating, just as a person speaking Portuguese cannot be understood by a person who speaks only English. A protocol defines what is communicated, how it is communicated, and when it is communicated.

API: API stands for Application Programming Interface. API constitutes a language and message format is set of data structures, routines or protocols used by an application to communicate with other control program, communication protocol or operating system. Exemplified would be a "Places API" which is called by many web based applications.

2.4 ARCHITECTURE FOR WEB APPLICATIONS

An architecture for a web application shows the structure of all the software elements, including middleware, databases, and applications. It specifies the HTTP data delivery protocol and guarantees that both the client-side server and the backend server can understand it. Additionally, it ensures that all user requests contain proper data. It provides authentication and access based on permissions while also creating and managing records. Your company's future IT requirements, reliability, and growth depend on the design you choose. Understanding the elements that make up the architecture of web apps is essential.

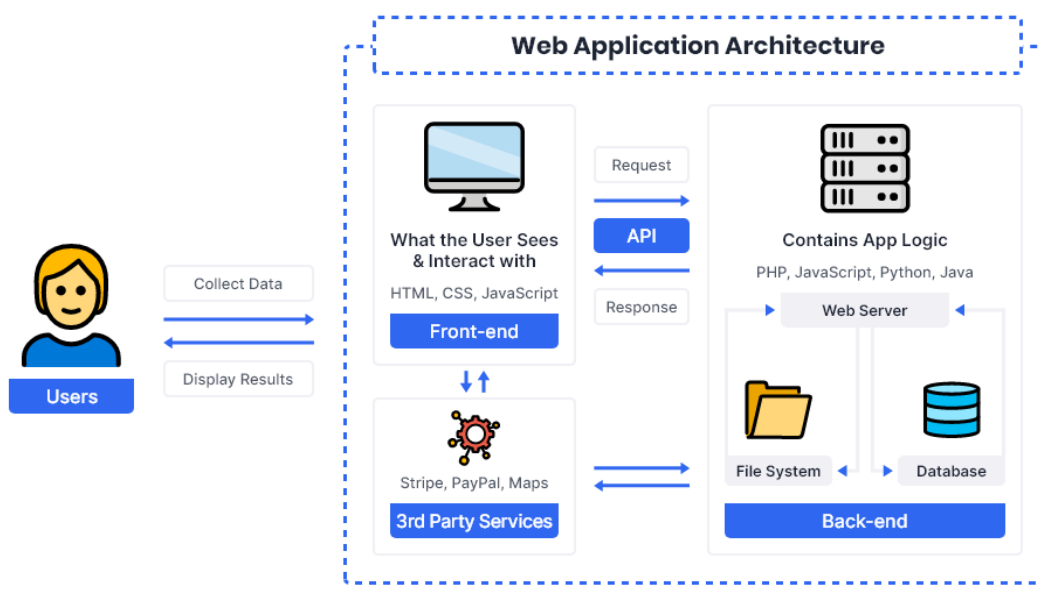


Figure 2.1: Web application Architecture

2.4.1 WEB APPLICATION ARCHITECTURE COMPONENTS

Web application architecture is can be simplified into two broad categories of components:

1. **User Interface (UI) Components:** These application components are any that impact the UI or the user experience (UX) including dashboards, notifications, activity logs, settings, layouts, and design.

2. **Structural Web Components:** The structural components are hidden from the end-user and include the server, logic or workings of the web app, and the database. Structural components can be divided into client and server sides.
- a) **The client component** is created with HTML, CSS and JavaScript. It exists in the user's web browser. So there is no need for an operating system. The client component represents the application's functionality to the application users.
 - b) **The server component** is usually built with .Net, Java, Python, Node JS etc. The server has two parts. The first one is app logic and the second one is database. The app logic is mainly the control center of the web app. And the database is responsible for storing all the information.

2.5 SUMMARY

Literature review means, to study a lot of research paper that similar to our project topic. We mentioned those papers and references for better study and future scope. We also describes some web technologies, web technology terms and web application architectures which is important to know for understanding this project.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

A set of procedures, techniques, and technologies used in the creation of any system are referred to as a methodology. This chapter outlines the methods for creating an online system for processing results. Software Development Life Cycle (SDLC) is used since the system under discussion is a software system to give the necessary advice for a working system to be completed successfully. The system's modeling and design utilizing object-oriented techniques are covered in this part. There are many different ways to implement the Software Development Life Cycle, including the Waterfall model, prototype model, agile mode, V model, incremental model, and others. The agile model is the one which is a combination of iterative model and incremental model. The model works best for this project since it enables the division of requirements into different modules. Each module consists of several development cycles, each of which is broken down into a smaller, more manageable module. Each module in this paradigm goes through the processes of requirements, design, implementation, and testing. With this strategy, the initial module creates the working software, and each succeeding module release updates the working program with additional features.

This model is appropriate for the project because the major requirements are clear and can be used easily by a single person who is developing the system, and because the requirements of the full real-time online result processing system are well defined and understood, even though minor requirements change over time. This paradigm is effective because it produces a functioning piece of software quickly, is

very adaptable, allowing for easy changes to its needs and scope, and has a cheap initial investment.

3.2 MODEL

In a production method, users must provide certain data and information in order to develop a system. It is a very important part of the Software Development Life Cycle (SDLC). The main aim of our system is to establish final result. In the project we follow the agile model (a combination of incremental model and iterative model). We can easily understand what specifications we need to process result from this requirement collection component, such as software requirements, hardware requirements etc. And we get simple ideas and a functional specification of a device from this research section.

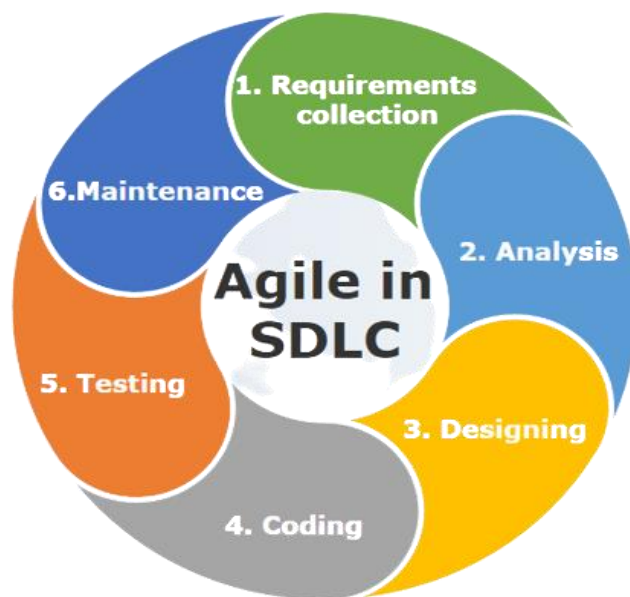


Figure 3.1: Agile Model.

Some important features of agile development model are given below:

- ❖ It can be used to develop more Complex projects.
- ❖ It is quick in the development of application.
- ❖ It is more flexible for customer requirements.
- ❖ It requires few resources.

- ❖ Every iteration is a separate model
- ❖ It provides early delivery of partial working solutions.
- ❖ It is easy to manage.
- ❖ It requires little or no planning.

3.3 DESIGN

We use both the front end and the back end in our system. In front-end design we use HTML, CSS and Java Script for creating a user friendly interface. To easily understand our process and easily find user requirements, we create a navigation bar. We use the PHP programming language and Laravel web platform in the back-end portion for a user-friendly interface. The data of every teacher, student and other user is stored in a relational database, we use MySQL server to create the database. The records are processed using logical gates and retrieved according to the query.

All of the ACID properties are maintained through the database's design. ACID properties are Atomicity, Consistency, Isolation and Durability. The commit happens after the completion of every successful transaction. If any error occurs, the rollback is executed and the data is returned to its previous committed state. The database is not publicly available; it was maintained in a private subnet so that nobody can access it, only the application server can access it. The students, teachers, department head (Chairman) and register will have a smart management of their results, which helps them to keep track of their progress with easy access, from anywhere, anytime and any device that has an internet connection by providing basic details such as registered no, password, name. The faculty while login will automatically get the results of students, as well as an analysis of the result. By implementing all the ACID properties, the system secures the data. We try to keep our design simple and easy to use.

3.3.1 Front End Design

Markup language standardized automated management framework. We gather a specific vision from our nearest customer for a simple graphical user interface and their understanding when we develop our web application. We gave Bellow the name of our language used and its explanation.

- a) HTML
- b) CSS
- c) Java Script

HTML

Hypertext Markup Language (HTML) is the standard markup language used to create web pages and web applications. With CSS and JavaScript, It is one of three foundational technologies for the World Wide Web. [4] Web browsers receive HTML documents from a web server or from local storage and render them into multimedia web pages. HTML originally featured cues for the document's design and semantically explains the structure of a web page. When we want to collect some data from the user or add data we need HTML Forms. For example, during user login or add student or add teacher we would like to gather information such as user name, password, email etc. A form will take input from the user and then post it to a back-end application such as CGI (Common Gateway Interface), ASP (Active Server Pages) Script or PHP (Hypertext Preprocessor) script etc. Based on defined business logic inside the application, the back-end application will perform required processing on the passed data.

CSS

Along with HTML and JavaScript, CSS is a fundamental technology used by most websites to create visually engaging webpages, user interfaces for web applications, and user interfaces for many mobile applications. Cascading Style Sheets (CSS) is a style sheet language used for styling and describing the presentation of a document written in a markup language. Although most often used to set the visual style of web pages and user interfaces written in XHTML and HTML, the language can be applied to any XML (extensible markup language) document, including plain XML, XUL (XML User Interface Language), and SVG (Scalable Vector Graphics) and is applicable to rendering in voice, or on other media. CSS is used to create and change the style to make a global change, and all the elements on all the web pages will be modified automatically. CSS defines how HTML elements are to be shown on a computer, document, or in other media. CSS is used in a clear and simple way to monitor the layout of a web document. For each HTML feature, we can assign one or many style and use it to many Web pages as we

like. CSS is preferred instead of HTML attributes. It's a smart idea to start using CSS to make it compliant with future browsers on all HTML sites.

JavaScript

JavaScript abbreviated as JS, is a high-level, lightweight programming language and interpreted programming language. It is a language that is also characterized as dynamic, weakly typed, multi-paradigm, and prototype-based. JavaScript is one of the three fundamental technologies of World Wide Web content engineering, along with HTML and CSS. It is simple to use since JavaScript is compatible with HTML. It's free to use and cross-platform based programming language. It is used to make dynamic web pages interactive and provide online programs, including video games, mobile app development, and desktop app development. Most websites use it, and because of a built-in JavaScript engine, all current web browsers support it without the need for plug-ins. Although all of the various JavaScript engines are based on the ECMA Script specification, some engines do not completely support it, and many engines provide capabilities that go beyond ECMA (European Computer Manufacturers Association). Each JavaScript engine represents a unique implementation of the language.

3.3.2 Back End Design

The back-end is the most important portion of our project. For the development of the project we use mainly web-based framework “Laravel” which is basically a framework of PHP. We use the MYSQL database for web application storage and analyzing results. It is given bellow as follows:

- a) PHP
- b) Laravel web framework
- c) MYSQL database

PHP

When PHP first started off as a little open-source project, it quickly grew to be large and more people realized how important it was. In 1994, Rasmus Lerdorf released the initial iteration of PHP. PHP is a server-side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session monitoring, and even develop entire e-commerce sites. It is integrated with a number of popular databases, including MySQL, Oracle, PostgreSQL, Microsoft SQL Server, Sybase, and Informix. PHP is capable of handling forms, which include gathering data from files, saving data to a file, sending data via email, and returning data to the user. PHP allows you to create, remove, and alter database components. PHP can handle forms, i.e. gather data from documents, and prevent data to a file, by using the email we can send data, and return data to the user. We can add, delete, and modify any components within our database through PHP. We can restrict users to access some pages of our website by using PHP. PHP can produce dynamic content for web pages. PHP is capable of sending and receiving cookies. PHP allows you to add, delete, and alter database records. PHP can control user access. PHP can encrypt data or information [20].

Laravel Web Framework

Laravel is a popular open-source PHP framework, which is easy to understand and robust. It follows a model-view-controller design pattern. Laravel reuses the existing components of different frameworks which helps to create a web application. Thus the web application design is more structured and practical. If we are familiar with Core PHP and Advanced PHP, Laravel will make our task easier. It saves a lot of time if we are planning to develop a website from scratch. Moreover, a website built in Laravel is secure and prevents numerous web assaults. Laravel offers a rich set of functionalities that incorporates the basic features of PHP frameworks like CodeIgniter, Yii, and other programming languages like Ruby on Rails. Laravel has a very rich set of features that will boost the speed of web development. The Laravel command-line interface is known as Artisan. It includes a number of commands that help with creating web applications. [21]

MYSQL Database

Based on Structured Query Language (SQL), MySQL is an open source relational database management system (RDBMS). MySQL is a mostly used database for creating in web applications, and is a central component of the widely used LAMP open-source web application software stack. LAMP is an abbreviation for Linux, Apache, MySQL, and Perl/PHP/Python. MySQL is frequently used in free software open-source projects that need a robust database management system. Applications that use the MySQL database includes: MODx, Drupal, Joomla, TYPO3, phpBB, MyBB, WordPress and other software. MySQL is also used in many high-profile, large-scale websites, including Google (though not for searches), Facebook, YouTube, Flickr and Twitter. MySQL follows the principle of Client-Server Architecture. Using network services, this model is designed for the end-users called clients to access the resources from a central computer known as a server. The clients make requests through a graphical user interface (GUI), and the server responds with the desired output as soon as the instructions are matched with the server instructions. [22]

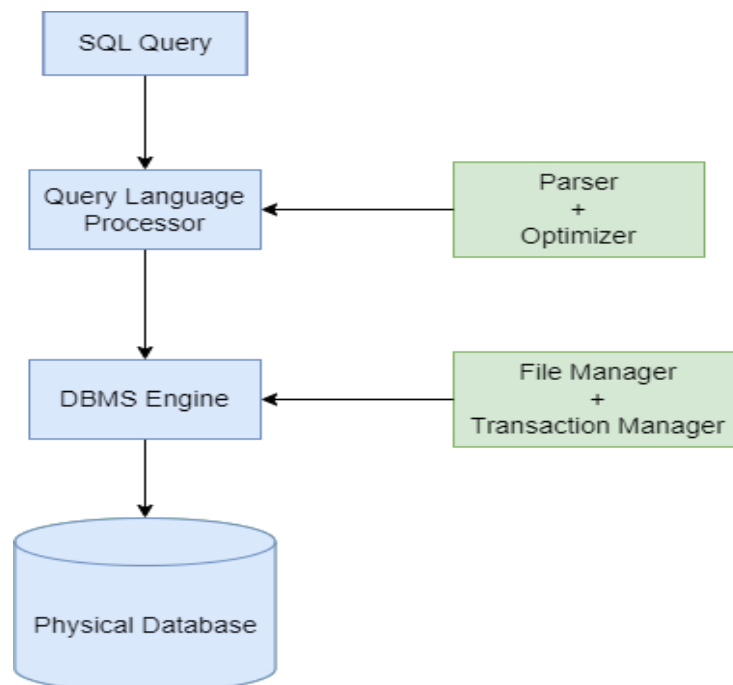


Figure 3.2: SQL Process

3.4 REQUIREMENT ANALYSIS

An important guideline for a project is requirement analysis. Formulation, requirements collection, and analysis modeling are the three main components of requirement analysis for web applications. During formulation, the basic motivation and goals for the web application are identified, and the categories of users are defined. In the requirements gathering phase, the content and functional requirements are listed and interaction scenarios written from end-user's point-of-view are developed. This intent is to establish a basic understanding of why the web application is built, who will use it, and what problems it will solve for its users.

3.4.1 Users

The project is mainly dependent on user requirements. Users of the online result management system are:

1. Register,
2. Department or department head (chairman),
3. Teachers and
4. Students

1. Register Panel

- a. Can login into the panel using username and password
- b. Can add, update, delete and view departments
- c. Can add, update, delete and view sessions.
- d. Can add, update, delete and view Halls
- e. Can add, update, delete and view Designation of teachers
- f. Can logout from the panel

2. Department or department head (chairman) Panel

- a. Can login into the panel using username and password
- b. Firstly can see a dashboard where he see number of courses running, number of batches, number of teachers of the department, number of course teachers and number of students.
- c. Can see processing results of a specific session which are submitted or not

- d. Can approve result when publish. Without his approval result can't publish
- e. Can also see results of a specific batch or a student
- f. Can download the result sheet of a specific batch
- g. Can add, update, delete and view teachers of the department
- h. Can add, update, delete and view course teachers according to semester wise
- i. Can add, update, delete and view 2nd examiner, 3rd examiner
- j. Can add, update, delete and view students
- k. Finally can logout from the panel

3. Teachers Panel

- a. Can login into the panel using username and password
- b. Can take attendance, add class test marks, assignment marks, lab exam marks, lab quiz marks, lab viva-voce marks and final term marks and see the marks as an in-course teacher.
- c. Can update and delete the marks before final submission as an in-course teacher.
- d. Can only add, update, delete and view final term marks as a 2nd examiner and 3rd examiner.
- e. Can logout from the panel

4. Students Panel

- a. Can login into the panel using username and password
- b. Can see all the taken courses and course teachers
- c. Can see attendance percentage, class test marks, assignment marks and best two counting average marks.
- d. Can see their TGPA and CGPA after the semester result publication.
- e. Can download the mark sheet.
- f. Can logout from the panel

3.4.2 Hardware Requirements

Table 3.1: Hardware Requirements

Computer Processor	Intel Pentium Core i5 4 th gen
Hard Disk (HDD)	More than 20 GB

Ram	More than 512 MB
Motherboard	Anyone
Internet Connections	Broadband or Wi-Fi or Mobile Networks
Monitor	Any

3.4.3 Software Requirements

Table 3.2: Software Requirements.

Operating System	Windows 10 pro 64 bits
Code editor	Visual Studio
Local server	XAMPP
Database	MySQL
Browsers	Google Chrome
Diagram tools	Online Diagram tools

3.5 DIAGRAMS AND SYSTEM OVERVIEW

Recognizing the effect, it is necessary to choose instruments, technologies and software for design and implementation phases. Research more than one potential technology in certain design decision cases and take the best performance for the best outcome. We used here mainly three diagrams. These are: Architectural flow diagram, ER diagram and Use case diagram.

3.5.1 General Block Diagram

The architectural diagram defines how the system is physically and technically implemented. The output of the physical modeling is the database model. The database model contains the database table which holds the data as described in the logical model, it also contains the physical data files in which the database tables together with their data will be stored. I will be designing an application software utilizing oracle's database, forms and reports. This application will run on a server (computer) with network connectivity to the client systems. It is recommended that both the application

server and database server be on separate computers, but because of the cost implication we will run both applications on the same computer, which is also fine. A local area network (LAN) or intranet for this research will be set up for connectivity between the application server, database server and client computers. Data will be stored in database tables, users will be able to key in data to tables though forms which have been designed for this purpose, these forms will be the interface between users and the database.

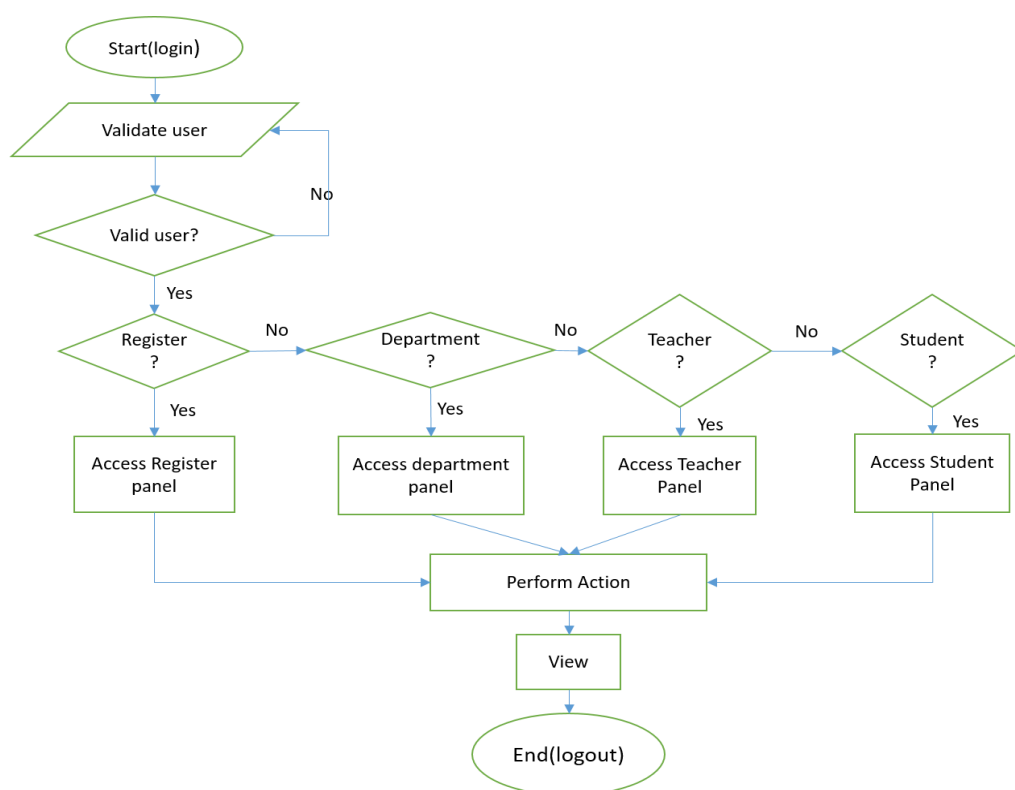


Figure 3.3: Basic block Diagram.

These forms will run in web browsers, preferably internet explorer or Mozilla Firefox. Users will be authenticated at the Welcome and Login pages before they can interact with the application and database, therefore usernames and passwords will be required from users at the point of login, once successfully authenticated by the system at login, users are re-directed to the appropriate page, depending on their system defined privileges, where they can perform whatever actions their user privilege is entitled to perform. Student records from the manual process already in use will be utilized in order to obtain data for testing the application.

3.5.2 Entity Relationship Diagram

The relationships of entity sets stored in a database are illustrated by an entity relationship diagram (ERD). An entity is an object, a data component in this context. A series of similar entities is an entity set. Such entities which have characteristics which define their properties. An ER diagram illustrates the relationship between sets of individuals. A collection of similar entities is an entity set and these entities may have attributes. In DBMS terminology, an object is a table or a table attribute in the database, so the ER diagram demonstrates the complete logical structure of a database by showing the relationship between tables and their attributes. To grasp this idea, let's take a look our ER diagram. Our ER diagram described our full project and connected all important attributes. It also described not only project system but also whole information and contents. Three basic concepts are based on this model:

- i. Entities
- ii. Attributes
- iii. Relationships

The location, person, object, event or concept that stores data in the database may be an entity. An attribute and a specific key must be present in the characteristics of entities. Each entity consists of certain 'attributes' representing that entity. In the following diagram, for example, some entities are: Department, Teacher, Course Teacher and Student. Attribute is either an entity type or a relation type single valued property. In this diagram, entities has some several attributes name, id, designation, session _code, email. Here are some geometric shapes in ER diagram. These are called diamond, rectangle, ellipse, lines.

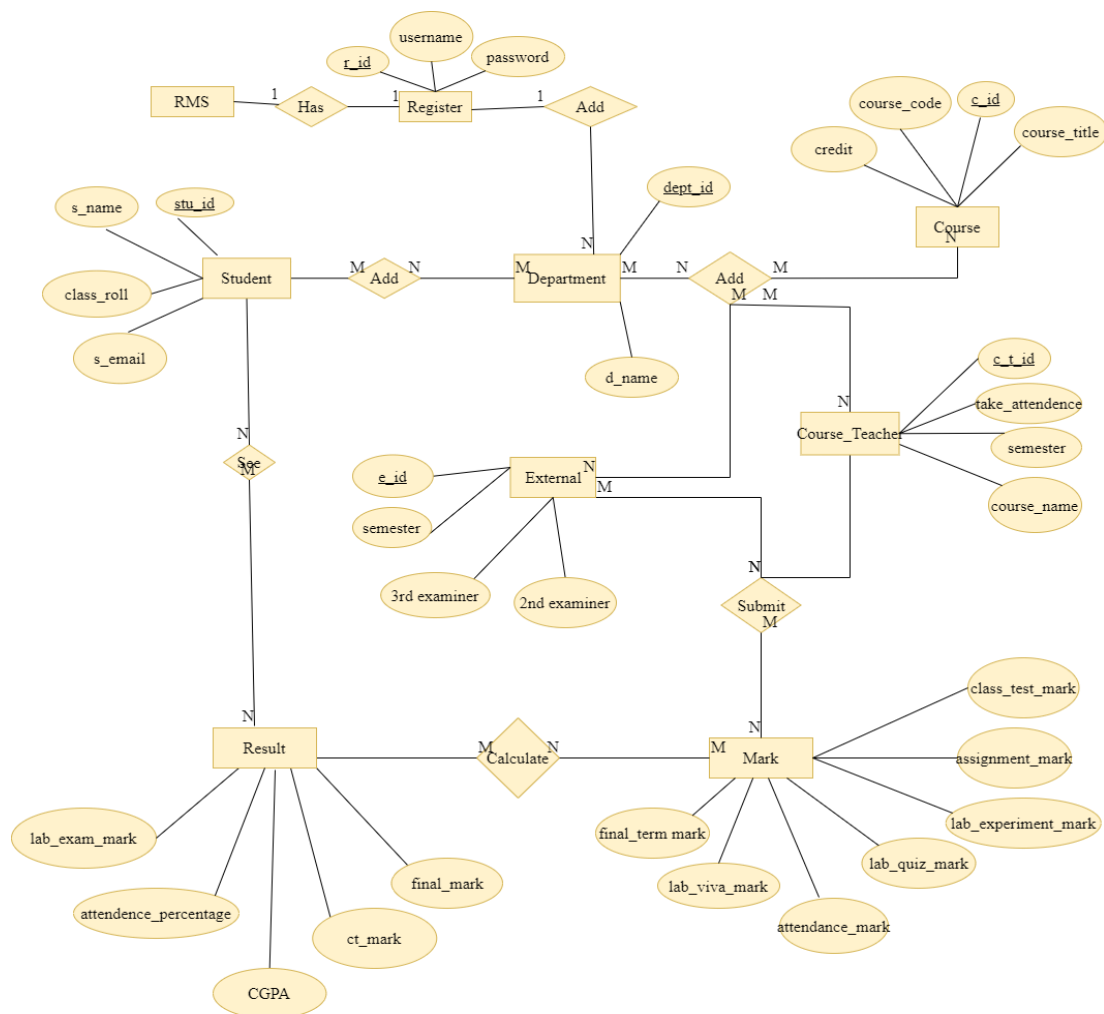


Figure 3.4: ER diagram of RMS.

3.5.3 Use case Diagram

Use case diagrams can show a set of actions that a system or systems should take independently or in cooperation with an outside user of the system. A use case, which is depicted as a horizontal ellipse, more precisely defines a series of behaviors that gave an agent something of quantifiable value. Actor, association, system boundary, and packages are the most typical components of a use case. Our online patient management system is divided into various subsystems, each of which has a specific use case.

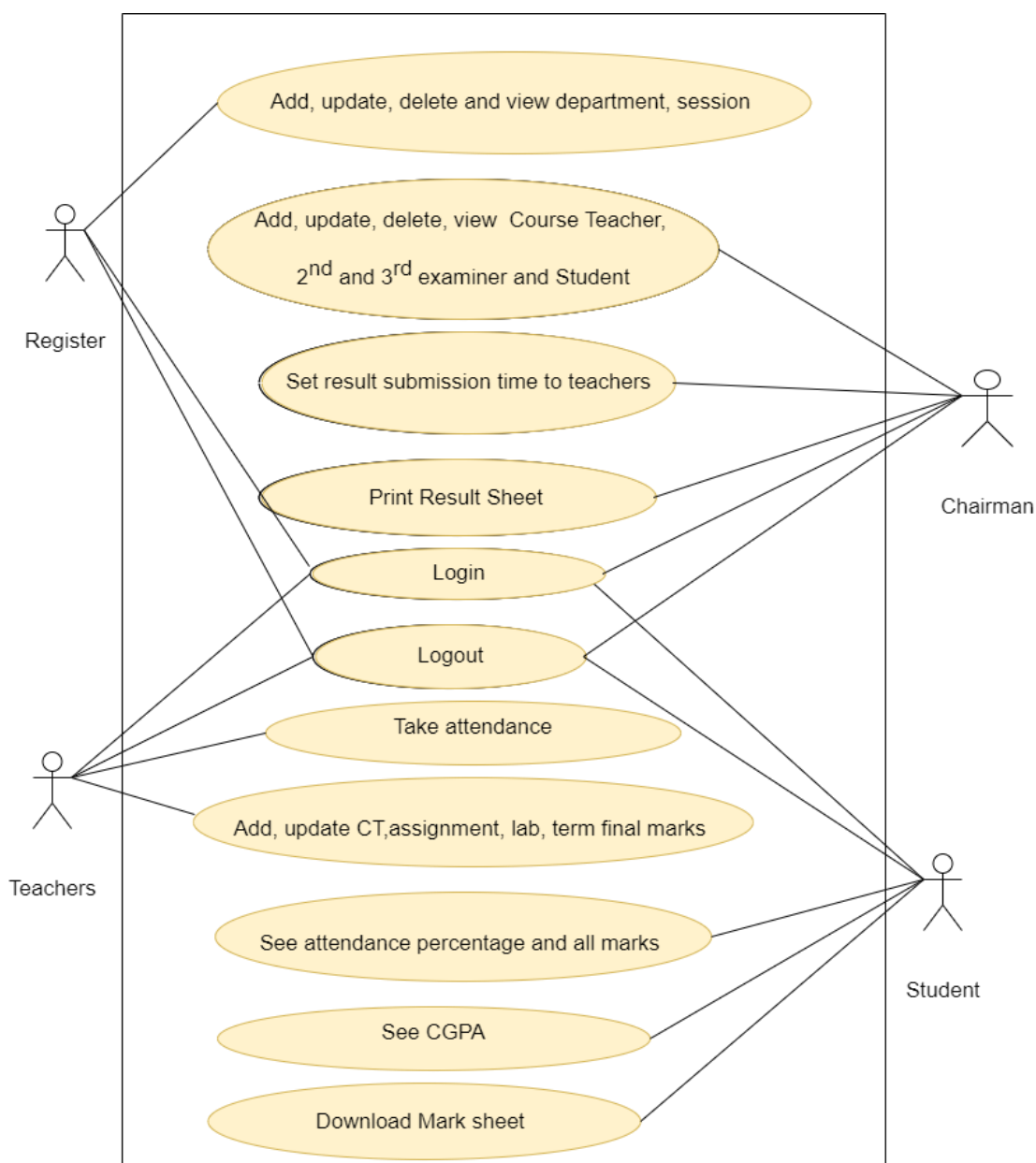


Figure 3.5: Use Case Diagram

3.6 THE GRADING SYSTEM

The total performance of a student in a given theoretical course is based on a scheme of continuous assessment made through a set of quizzes/class test, class attendance and participation, homework assignments and a Term Final Examination. The assessment in sessional courses is made through observation of the student at work in class/field work, viva-voce during laboratory hours and quizzes. A letter grade with

a specified number of grade points is awarded in each courses for which a student has been registered. A student's performance is measured by the number of credits that he or she has completed satisfactorily and the weighted average of the grade Point is required to be maintained for satisfactory progress. Similarly, a minimum number of earned credits should be acquired in order to qualify for the degree.

3.6.1 Grading System

Letter grade and corresponding grade points will be awarded in accordance with provisions shown below:

Table 3.3: Grading System

Numerical Grade	Letter Grade	Grade Point
80% or Above	A+	4.00
75% - 79%	A	3.75
70% - 74%	A-	3.50
65% - 69%	B+	3.25
60% - 64%	B	3.00
55% - 59%	B-	2.75
50% - 54%	C+	2.50
45% - 49%	C	2.25
40% - 44%	D	2.00
<40%	F	0.00

3.6.2 Distribution of Marks

Thirty percent (30%) of marks will be allotted to continuous assessment, i.e. quizzes and homework assignment, class attendance and class participation. The remaining mark will be allotted to term final examination, which will be conducted centrally by the University. Final term examination will be of 2, 3 and 4 hours duration for credit hours 1, 2 and 3 respectively.

The distribution of marks for a given theory courses will be as follows:

Table 3.4: Theory courses mark distribution

SL. No	Description	Marks
1	Class Participation	5
2	Quizzes/ class test and Homework assignment(s)	25
3	Final Examination	70
Total		100

The distribution of marks for a given sessional courses will be as follows:

Table 3.5: Sessional courses mark distribution

SL. No	Description	Marks
1	Class Participation/contact with teacher	10
2	Lab report	20
3	Quiz	20
4	Lab viva	20
5	Lab exam	30
Total		100

In a similar manner, the distribution of marks for a given thesis/Project paper courses will be as follows:

Table 3.6: Thesis/Project paper courses mark distribution

SL. No	Description	Marks
1	Evaluation	60
2	Viva-voce	20
3	Presentation	20
Total		100

Basis for awarding marks for class attendance and participation will be as follows:

Table 3.7: Attendance mark distribution

SL. No	Attendance and participation	Marks
1	90% and above	5
2	80% - 89%	4.5
3	70% - 79%	4.0
4	65% - 69%	3.0
5	60% - 64%	2.0
6	<60%	0.0

3.7 CALCULATION OF GPA

Grade Point Average (GPA) is a weighted average of grade points obtained in all the courses passed/completed by a student. For example, if a student has passed or completed five forces in a term having credits of C1, C2, C3, C4 and C5 and his or her points in these courses are G1, G2, G3, G4 and G5 respectively then

$$\text{GPA} = \frac{\sum C_i G_i}{\sum C_i}$$

A numerical Example:

Suppose a student has completed the courses in a term and obtained the following grades:

Table 3.8: The course list in a term (1)

Course Code	Course Title	Credits	Grade Points	Grade
ICE-1101	Information Technology Fundamentals	3	4.00	A+
ICE-1103	Electrical Circuits	3	3.00	C+
ICE-1105	Introduction to Programming Environment	2	3.75	A
PHY-1103	Physics	2	3.25	B
HUM-1106	Economics	2	3.50	B+

ENG-1109	Technical & Communication English	2	3.00	C+
MATH-1111	Differential & Integral Calculus	3	4.00	A+
ICE-1102	Information Technology Fundamental Lab	1	3.50	B+
ICE-1104	Electrical Circuit Lab	1	3.25	B
ICE-1108	Engineering Drawing (Lab)	1	3.75	A

Then his/her GPA for the term will be computed as follows:

$$\text{GPA} = \frac{3(4.00)+3(3.00)+2(3.75)+2(3.25)+2(3.50)+2(3.00)+3(4.00)+1(3.50)+1(3.25)+1(3.75)}{3+3+2+2+2+2+3+1+1+1}$$

$$= \frac{70.5}{20} = 3.53$$

Suppose a student has completed five courses in a term and obtained the following grades:

Table 3.9: The course list in a term (2)

Course Code	Course Title	Credits	Grade Points	Grade
ICE-1101	Information Technology Fundamentals	3	4.00	A+
ICE-1103	Electrical Circuits	3	3.00	C+
ICE-1105	Introduction to Programming Environment	2	0	F
PHY-1103	Physics	2	3.25	B
HUM-1106	Economics	2	3.50	B+
ENG-1109	Technical & Communication English	2	3.00	C+
MATH-1111	Differential & Integral Calculus	3	4.00	A+
ICE-1102	Information Technology Fundamental Lab	1	3.50	B+

ICE-1104	Electrical Circuit Lab	1	3.25	B
ICE-1108	Engineering Drawing (Lab)	1	3.75	A

Then his/her GPA for the term will be computed as follows:

$$\text{GPA} = \frac{3(4.00)+3(3.00)+2(0)+2(3.25)+2(3.50)+2(3.00)+3(4.00)+1(3.50)+1(3.25)+1(3.75)}{3+3+0+2+2+2+3+1+1+1}$$

$$= \frac{63}{18} = 3.50$$

3.8 PERFORMANCE EVALUATION (TGPA & CGPA)



The performance of a student will be evaluated in terms of two indices, Term Grade Point Average (TGPA) and Cumulative Grade Point Average (CGPA). The TGPA is computed by dividing the total grade points earned in a term by the number of credits hours taken in the term. The CGPA is computed by dividing the total grade points accumulated up to date by the total completed credits. Thus student who has earned 3.50 grade points in attempting 100 credit hours of courses would have an overall CGPA of 3.50.

3.9 SUMMARY

As a result of the above research, we now understand the device's design methodology, hardware, and software. Information for first-time registration and login is given to the user. The software maximized and counted the best degree of f^* using different approach. The module processes the complete automa intelligent scheme.

CHAPTER 4

IMPLEMENTATION & ANALYSIS

4.1 INTRODUCTION

The system implementation and testing analysis has to do with the conversion of the system's conceptual and logical designs into a physical implementation. Selection and installation of chosen language, coding, debugging and testing are called Implementation activities. To complement and improve this system, a number of open source tools, programming languages, and databases have been used. In this project, a web server Apache and a cross-platform web server XAMPP was installed on a system and the software was coded using Sublime text and Visual Studio Code IDE. The coding process involves a systematic representation of the system's model in an automated form under a choice suitable development environment. To debug and test the software we remove the errors of the system at the different stages of its development and running the system numerous times while fixing each error. The software runs well on a local server.

4.2 IMPLEMENTATION

The implementation or coding of the proposed system was performed using PHP programming language with its Laravel framework. PHP is based on the object-oriented paradigm. It organizes the system in modules or classes within their respective packages. And has become a popular approach not only in the field of programming but for system analysis and design. To render the web program, we have to collect various types of application or software such as text editor (like Notepad++, Sublime Text, Visual studio code) a browser (like Chrome, Firefox, Opera mini etc.) and used

to install PHP executing servers such as: Laravel. And it is just right to be installed in our source code management software.

4.2.1 Database Implementation

Database is a management system that is used to distribute and store the data to the users on their request to save our project data. A database is a method for storing data. We use MYSQL database to store our data in our system. The protocol of our system is fully designed and developed on an online module system. It uses MYSQL database. Because the whole system is developed with PHP and PHP is totally comfortable with SQL database server. Firstly we created our total database design that means, quantity of entity and attributes are essential for our system, and then we choose the remark about the integrity and choose acerbity. Finally we construct our total database module. Steps to create database table are given below:

- a) XAMPP Installation
- b) XAMPP Setup
- c) Running on a browser
- d) Creating Databases
- e) Table Construction in the Database

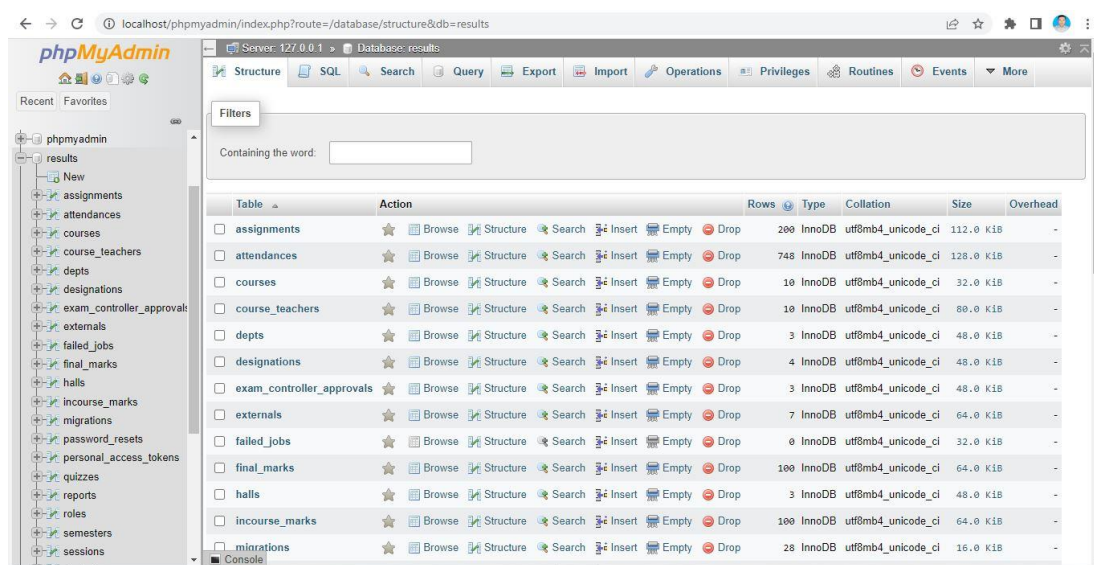


Figure 4.1: Database Implementation

4.2.2 Interactions

The implementation of interaction is really essential for the development of an application or website. It is a part of websites and web applications being created. And implementation is a component of an application development. It is important to ensure that our framework or system communicates with user activities in our web application (Registers, Students, Teachers, Department Head or Chairman). It's very essential for users to be highly interactive. We've made our application for users highly interactive. In our system, we have introduced a sensitive application management system.

4.3 TESTING

This is the process of system testing and getting results. Here we test usability testing, database testing, system testing and acceptance testing.

Unit Testing It focus on a smaller unit of a software design. In this we test an individual unit or group of inter-related units. It is often done by programmer by using sample Input and observing its corresponding outputs. For example,

- a. In a program we are checking if loop, method or function is working fine.
- b. Misunderstood or incorrect or arithmetic precedence.
- c. Incorrect initialization.

Integration testing Integration testing is a testing in which a group of components are combined to produce output. Black box testing and White box testing are the two example of integration testing.

- a) **Black box testing:** Black box testing it is used for validation. In this we ignore internal working mechanism and focus on what is the output?
- b) **White box testing:** White box testing it is used for verification in this we focus on internal mechanism i.e. how the output is achieved?

System Testing The complete system of an application is tested during a system test. Internal application work is being done. We check the functionality of our application using this system test. After testing the entire system, we obtained the output results.

The project is tested such that it works fine for different operating system. It is cover under the black box testing techniques. In this we just focus on required input and output without focusing on internal working. In this we have security testing, recovery testing, stress testing and performance testing. This includes functional as well as non-functional testing.

Usability Testing User interface testing is the Usability testing. It is to assume that this is how the device interacts with users. Finding out the interaction of the user in a device and handling versatility in control is the main focus of usability testing.

Database Testing Database verification is a test to make sure the data in a system is accurate and of high quality. Both front-end and back-end access are available to our database. Since our application is intended to function online, there is a chance of retaining inaccurate data.

4.3.1 Testing Features and Strategy

A software function can be effective as a result of system modifications that provide new functionality or modify existing functionality. Every characteristic should have functional, understandable, and efficient qualities. A fresh test set is really created to test that feature in accordance with the announcement's cycle. The critically significant and often used new features need to be thoroughly tested in every build of that release, and reversion testing should be done in relation to those regions as well. An outline of the testing methodology for the software development cycle is known as a test strategy. It is intended to alert users, testers, and project managers to some crucial testing process issues. They are produced based on design documents for development.

4.3.2 Testing Environment

A software and hardware configuration known as a testing environment is used by testing teams to run test cases. In other words, it verifies how hardware, software, and network configurations have been implemented. The following items make up the core part of the test environment setup:

- i. Hardware requires the operating system server
- ii. Framework and software
- iii. Browser
- iv. Network
- v. Client method of service
- vi. Front end running setting
- vii. Server database
- viii. Research results
- ix. Needed documentation

4.4 SUMMARY

A significant aspect of an errorless system is checking. We have absolutely completed all the testing stages for that. We have to carefully manage the device for a long-lasting operable module. For the right facilities, the web based device still requires extra care.

CHAPTER 5

RESULTS & DISCUSSION

5.1 INTRODUCTION

Several graphical user interfaces (GUIs) are included in the web-based results management system that allows users to interact with the created system. There are four types of different users. The four types of users have different GUIs according to their task or responsibility. It is possible to further develop or merge existing systems with other systems, which helps to make the system more fast, stable, and user-friendly. For teachers and students, it is a time- and money-saving approach that is very effective. The screen that appears when the website opens is displayed.

5.2 USER INTERFACE

The user interface of the system is the medium with which the users interact with the system without seeing or knowing the inner functionalities of the system. The screen that appears when the website opens is shown in figure 5.1. It is the login screen in which the users have to login to the result management system with his username (email) and password which is shown in figure 5.2. Actually only authorized the register, teachers and students can access the system. There are four types of user interfaces or dashboard are available in this project.

1. Register dashboard
2. Department Head Dashboard
3. Teachers dashboard
4. Students dashboard

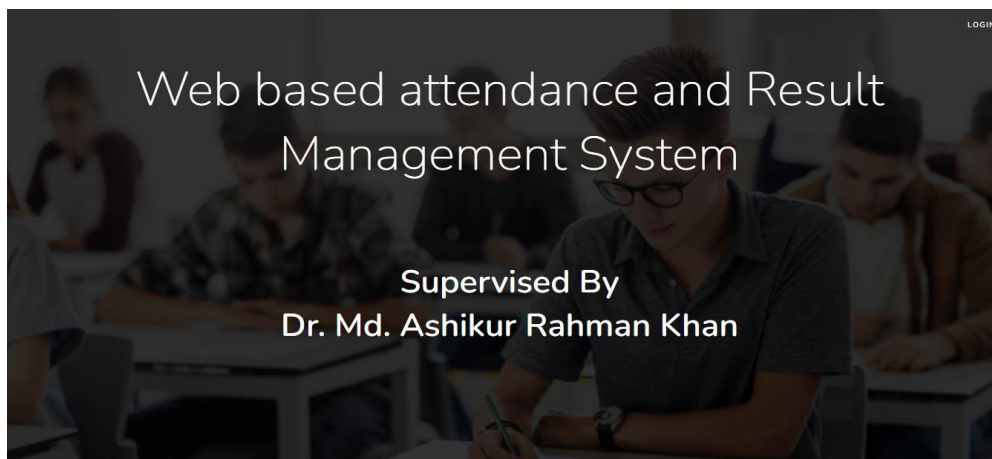


Figure 5.1: Home page of web based attendance and result management system

Figure 5.2: Login page of web based attendance and result management system

5.2.1 Register Dashboard

After successfully login, the register dashboard is shown in figure 5.3.

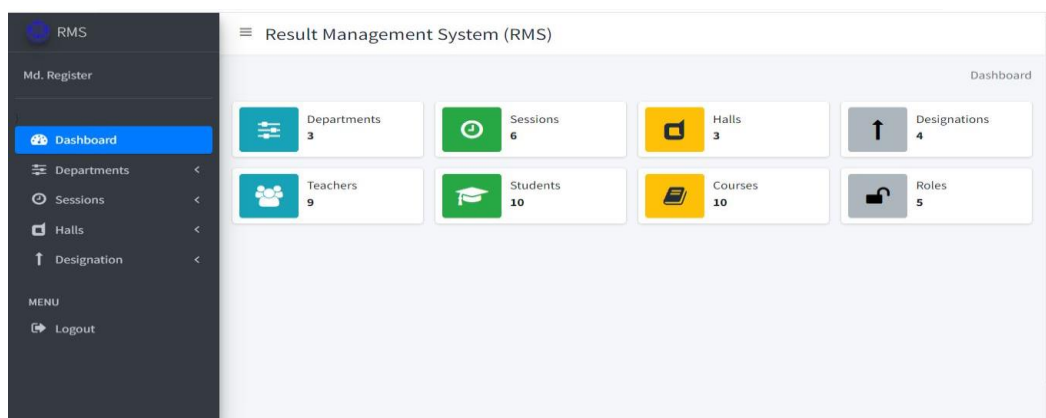


Figure 5.3: Register Dashboard.

At first he can see number of departments, number of sessions, number of halls, number of teachers of the university, number of students of the university. The Register can add, update and delete departments, sessions, halls, Designation of teachers. The related figures are shown below:

5.2.2 Department Head or Chairman Dashboard

After successfully login, the Department Head or Chairman dashboard is shown in figure 5.4. He is mainly the administrator of the project. Firstly the chairman can see number of courses running, number of batches, number of teachers of the department and number of course teachers and number of students.

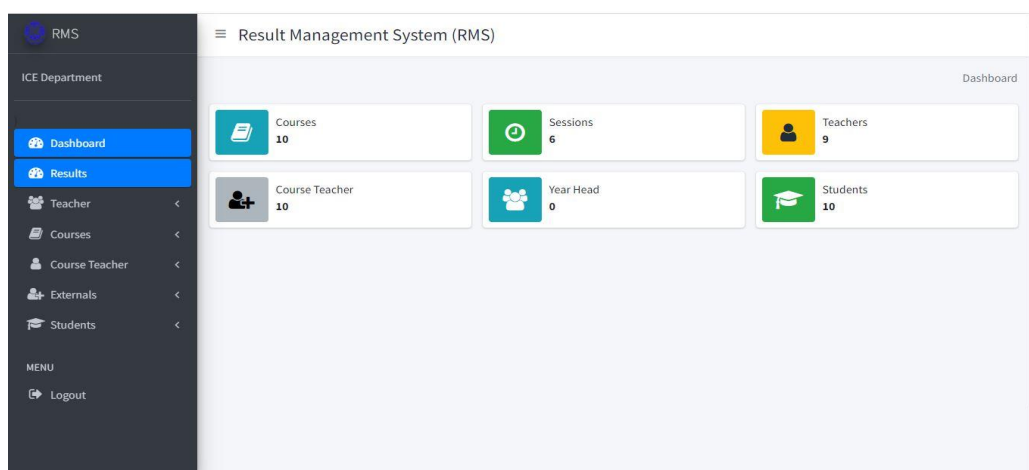
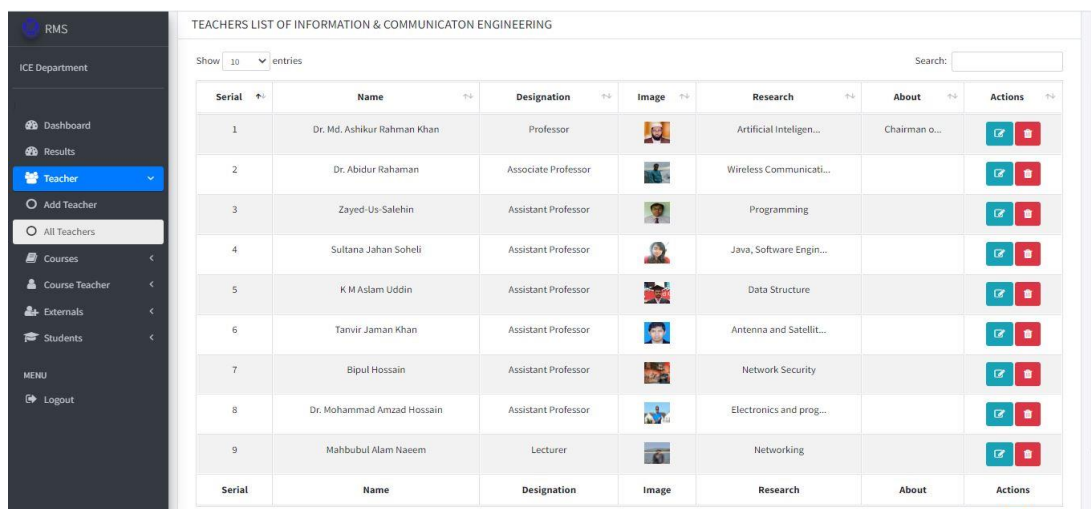


Figure 5.4: Department Head or Chairman Dashboard

The screenshot shows the 'Add Teacher' form within the 'Result Management System (RMS)'. The left sidebar is identical to Figure 5.4, with 'Teacher' selected in the main menu. The form has a blue header 'Add Teacher' and contains the following fields: 'Teacher Name' (text input), 'Email' (text input), 'Password' (text input), 'Teacher Designation' (dropdown menu), 'Teacher Image' (file upload button labeled 'Choose File' with 'No file chosen' text), and 'Research Interest' (text input). An 'Add Teacher' button is located at the bottom right of the form.

Figure 5.5: Add Teacher Form

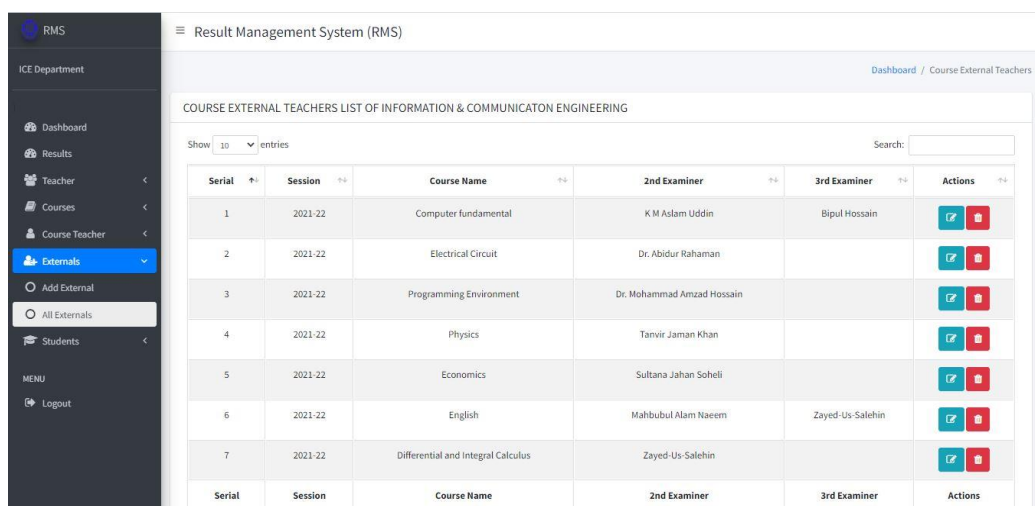
The Chairman can add, update, delete, see teachers of the department, course teachers according to semester wise, 2nd examiner, 3rd examiner and students which is shown in figure 5.5, figure 5.6 and figure 5.7 respectively.



The screenshot shows the 'TEACHERS LIST OF INFORMATION & COMMUNICATON ENGINEERING' page. The left sidebar contains navigation options: Dashboard, Results, Teacher (selected), Add Teacher, All Teachers, Courses, Course Teacher, Externals, Students, and a MENU with Logout. The main content area displays a table of teachers with columns: Serial, Name, Designation, Image, Research, About, and Actions. There are 9 teachers listed.

Serial	Name	Designation	Image	Research	About	Actions
1	Dr. Md. Ashkur Rahman Khan	Professor		Artificial Intelligen...	Chairman o...	
2	Dr. Abidur Rahaman	Associate Professor		Wireless Communicati...		
3	Zayed-Us-Salehin	Assistant Professor		Programming		
4	Sultana Jahan Soheli	Assistant Professor		Java, Software Engin...		
5	K M Aslam Uddin	Assistant Professor		Data Structure		
6	Tanvir Jaman Khan	Assistant Professor		Antenna and Satellit...		
7	Bipul Hossain	Assistant Professor		Network Security		
8	Dr. Mohammad Amzad Hossain	Assistant Professor		Electronics and prog...		
9	Mahbubul Alam Naeem	Lecturer		Networking		

Figure 5.6: All Teachers List of the department



The screenshot shows the 'COURSE EXTERNAL TEACHERS LIST OF INFORMATION & COMMUNICATON ENGINEERING' page. The left sidebar is similar to Figure 5.6, but the 'Externals' option is selected. The main content area displays a table of external teachers with columns: Serial, Session, Course Name, 2nd Examiner, 3rd Examiner, and Actions. There are 7 entries listed.

Serial	Session	Course Name	2nd Examiner	3rd Examiner	Actions
1	2021-22	Computer fundamental	K M Aslam Uddin	Bipul Hossain	
2	2021-22	Electrical Circuit	Dr. Abidur Rahaman		
3	2021-22	Programming Environment	Dr. Mohammad Amzad Hossain		
4	2021-22	Physics	Tanvir Jaman Khan		
5	2021-22	Economics	Sultana Jahan Soheli		
6	2021-22	English	Mahbubul Alam Naeem	Zayed-Us-Salehin	
7	2021-22	Differential and Integral Calculus	Zayed-Us-Salehin		

Figure 5.7: All External Course Teachers list

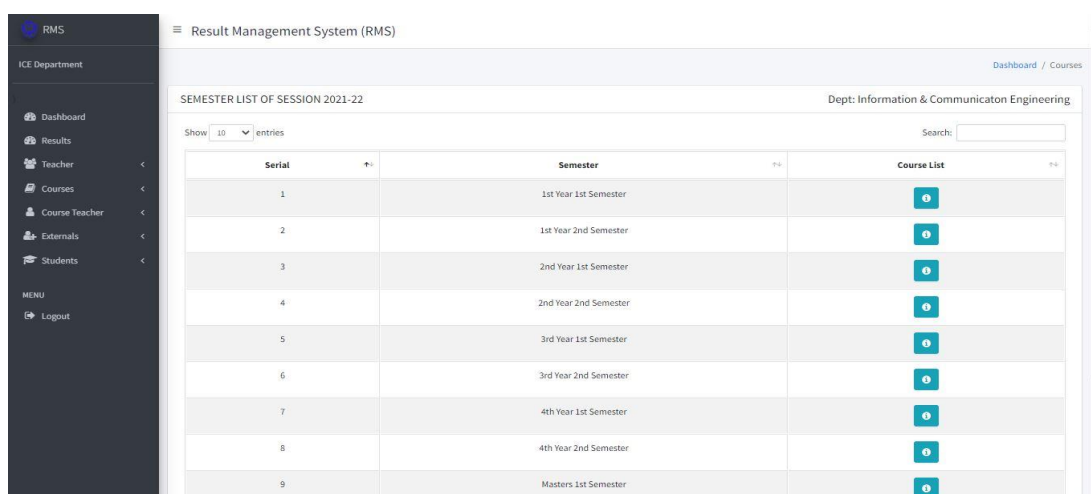
The Chairman see which subject's result is submitted or which is not. He can also see the submitted result which is average calculation of course teacher and 2nd examiner marks which is shown in figure 5.8.



Serial	Course Code	Course Title	Is Lab	In-course Status	Marks
1	ICE-1104	Electrical Circuits Lab	✓	Not Submitted	✗
2	ICE-1108	Engineering Drawing	✓	Not Submitted	✗
3	PHY-1103	Physics	✗	Not Submitted	✗
4	MATH-1111	Differential and Integral Calculus	✗	Submitted	✓
5	ICE-1101	Computer fundamental	✗	Submitted	✓
6	ICE-1103	Electrical Circuit	✗	Not Submitted	✗
7	ICE-1105	Programming Environment	✗	Submitted	✓
8	HUM-1105	Economics	✗	Not Submitted	✗
9	ENG-1109	English	✗	Not Submitted	✗
10	ICE-1102	Computer Fundamental Lab	✓	Not Submitted	✗

Figure 5.8: Department see which course result is submitted or not

He can approve result when publish. Without his approval result can't publish. He can also see results of a specific batch or a student which is shown in figure 5.9. He can download the result sheet of a specific batch.



Serial	Semester	Course List
1	1st Year 1st Semester	0
2	1st Year 2nd Semester	0
3	2nd Year 1st Semester	0
4	2nd Year 2nd Semester	0
5	3rd Year 1st Semester	0
6	3rd Year 2nd Semester	0
7	4th Year 1st Semester	0
8	4th Year 2nd Semester	0
9	Masters 1st Semester	0

Figure 5.9: Chairman see all the semester result

5.2.3 Teachers Dashboard

After a successful login teacher dashboard is displayed which is shown in figure 5.10. In dashboard the teacher see the number of students of the session, number of teachers, and number of courses.

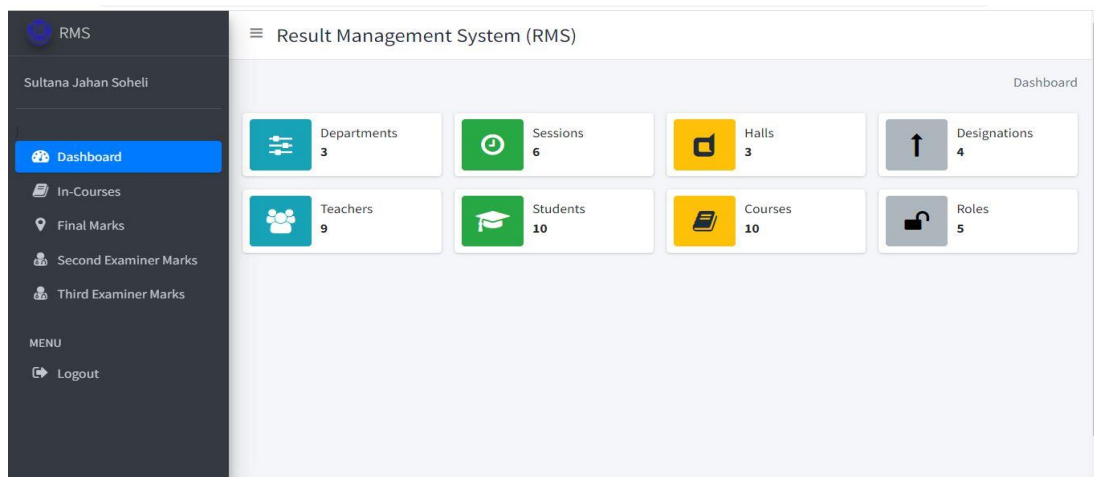


Figure 5.10: Teacher Dashboard

If a teacher is an in-course teacher he will see the panel which is shown in figure 5.11.

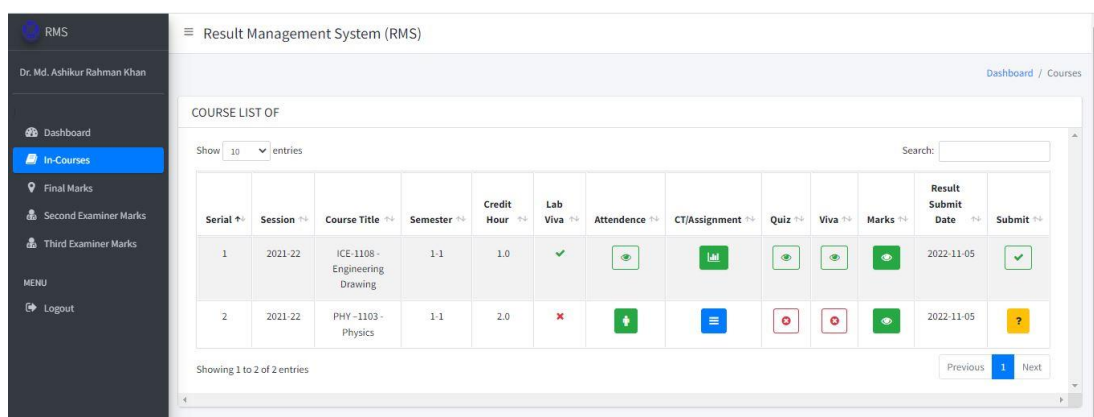


Figure 5.11: In-course Teacher View

As an in-course teacher a teacher can take attendance, update attendance and see date wise attendance which is shown in figure 5.12, figure 5.13 and figure 5.14 respectively.

Add Attendance

Dept : Information & Communicaton Engineering
 Session : 2021-22 | Subject : PHY -1103 - Physics
 Semester : 1st Year 1st Semester | Teacher Name : Dr. Md. Ashikur Rahman Khan
 Date : Fri, 04 November 2022

[View All Attendance](#) [View By Date](#)

Serial	Class Roll	Name	Attendance
1	ASH2011001M	Md. Ismail Hossain	☒ Present ☐ Absent
2	ASH2011002M	Md. Abdul Momin	☐ Present ☒ Absent
3	ASH2011003M	Jalal Uddin	☒ Present ☐ Absent
4	ASH2011004M	Md. Monarul Islam	☐ Present ☒ Absent
5	ASH2011005M	Narayan Chandra Das	☒ Present ☐ Absent
6	ASH2011006M	Rupak Kumar Basu	☐ Present ☒ Absent
7	BKH2011007F	Pushpita Debnath	☒ Present ☐ Absent
8	ASH2011008M	Md. Sazzad Shakil	☒ Present ☐ Absent
9	BKH2011009F	Moutosi Raka	☐ Present ☒ Absent
10	ASH2011010M	Md. Nasir Uddin	☒ Present ☐ Absent
Serial	Class Roll	Name	Attendance

[Add Attendance](#)

Figure 5.12: In-course Teacher taken attendance

Update Attendance

Dept : Information & Communicaton Engineering
 Session : 2021-22 | Subject : PHY -1103 - Physics
 Teacher Name : Dr. Md. Ashikur Rahman Khan
 Date : 2022-11-04

[View All Attendance](#) [View By Date](#)

Serial	Class Roll	Name	Attendance
1	ASH2011001M	Md. Ismail Hossain	☒ Present ☐ Absent
2	ASH2011002M	Md. Abdul Momin	☒ Present ☐ Absent
3	ASH2011003M	Jalal Uddin	☒ Present ☐ Absent
4	ASH2011004M	Md. Monarul Islam	☐ Present ☒ Absent
5	ASH2011005M	Narayan Chandra Das	☒ Present ☐ Absent
6	ASH2011006M	Rupak Kumar Basu	☒ Present ☐ Absent
7	BKH2011007F	Pushpita Debnath	☒ Present ☐ Absent
8	ASH2011008M	Md. Sazzad Shakil	☒ Present ☐ Absent
9	BKH2011009F	Moutosi Raka	☐ Present ☒ Absent
10	ASH2011010M	Md. Nasir Uddin	☒ Present ☐ Absent
Serial	Class Roll	Name	Attendance

[Update Attendance](#)

Figure 5.13: In-course Teacher update attendance View

ATTENDANCES LIST OF PHYSICS - BY : DR. MD. ASHIKUR RAHMAN KHAN Session : 2021-22

[View All Attendance](#)

Show entries Search:

Serial	Attendance Date	Action
1	2022-11-04	☒ Present ☐ Absent
2	2022-11-03	☒ Present ☐ Absent
3	2022-11-02	☒ Present ☐ Absent
4	2022-11-01	☒ Present ☐ Absent
5	2022-10-31	☒ Present ☐ Absent
6	2022-10-28	☒ Present ☐ Absent
7	2022-10-27	☒ Present ☐ Absent
Serial	Attendance Date	Action

Figure 5.14: In-course Teacher see attendance by date wise

An in-course teacher add class test marks, assignment marks, lab exam marks, lab quiz marks, lab viva-voce marks and final term marks (by using an excel file which format is shown in figure 5.20), see the marks and download the mark sheets which are shown in figure 5.15, figure 5.16, figure 5.17, figure 5.18, figure 5.19 and figure 5.21. He can update or delete the marks before final submission.

Dept : Information & Communication Engineering
Session : 2021-22 | Subject : PHY - 1103 - Physics
Semester : 1st Year 1st Semester | Teacher Name :
Date : Sat, 05 November 2022

View CT/Assignment Marks

CT/Assignment No : CT/Assignment 3

Serial	Class Roll	Name	CT/Assignment Marks (25)
1	ASH2011001M	Md. Ismail Hossain	22
2	ASH2011002M	Md. Abdul Momin	21
3	ASH2011003M	Jalal Uddin	20.5
4	ASH2011004M	Md. Monarul Islam	20
5	ASH2011005M	Narayan Chandra Das	21
6	ASH2011006M	Rupak Kumar Basu	22.5
7	BKH2011007F	Pushpita Debnath	19
8	ASH2011008M	Md. Sazzad Shakil	18
9	BKH2011009F	Moutosi Raka	20

Figure 5.15: In-course Teacher Class test mark adding

IN-COURSE MARKS OF PHY - 1103 - PHYSICS

Dept : Information & Communication Engineering
Session : 2021-22 | Subject : PHY - 1103 - Physics
Teacher Name : Dr. Md. Ashikur Rahman Khan

View All Courses

Download PDF

Serial	Class Roll	Name	Attendance (5)	Assignment (25)	Total (30)
1	ASH2011001M	Md. Ismail Hossain	5.00	22.00	27
2	ASH2011002M	Md. Abdul Momin	3.13	22.50	25.63
3	ASH2011003M	Jalal Uddin	4.38	22.25	26.63
4	ASH2011004M	Md. Monarul Islam	3.75	21.50	25.25
5	ASH2011005M	Narayan Chandra Das	5.00	21.00	26
6	ASH2011006M	Rupak Kumar Basu	3.13	21.75	24.88
7	BKH2011007F	Pushpita Debnath	4.38	19.50	23.88
8	ASH2011008M	Md. Sazzad Shakil	3.75	18.50	22.25
9	BKH2011009F	Moutosi Raka	3.75	21.00	24.75
10	ASH2011010M	Md. Nasir Uddin	3.75	19.50	23.25

Figure 5.16: In-course Teacher see assignment marks and attendance marks

He can also download the class test and assignment mark sheet. He can also edit the class test mark and assignment marks. He can only add, update, delete and see final term marks as a 2nd examiner and 3rd examiner.



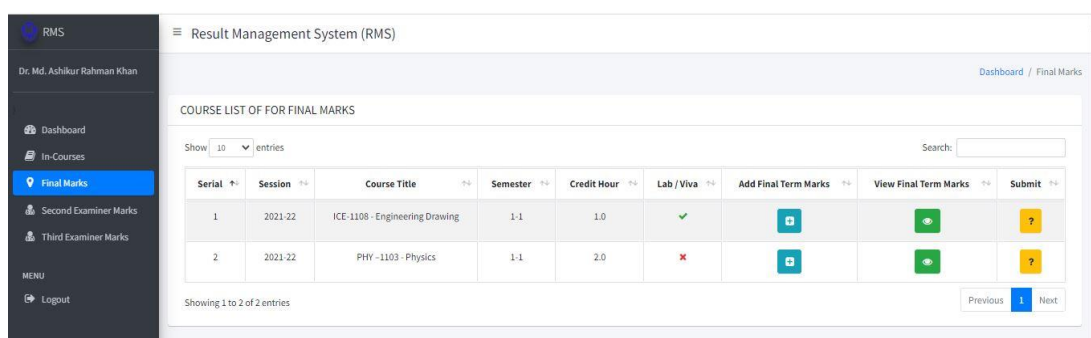
IN-COURSE MARKS OF ICE-1108 - ENGINEERING DRAWING

Dept : Information & Communicaton Engineering
Session : 2021-22 | Subject : ICE-1108 - Engineering Drawing
Teacher Name : Dr. Md. Ashikur Rahman Khan

[View All Courses](#) [Download PDF](#)

Serial	Class Roll	Name	Attendance (10)	Report (20)	Quiz (20)	Viva (20)	Total (70)
1	ASH2011001M	Md. Ismail Hossain	7.14	15.00	18.00	18.00	58.14
2	ASH2011002M	Md. Abdul Momin	8.57	16.00	16.00	18.00	58.57
3	ASH2011003M	Jalal Uddin	7.14	15.00	17.00	17.00	56.14
4	ASH2011004M	Md. Monarul Islam	8.57	14.00	16.00	19.00	57.57
5	ASH2011005M	Narayan Chandra Das	7.14	17.00	14.00	19.00	57.14
6	ASH2011006M	Rupak Kumar Basu	10.00	15.00	17.00	18.00	60
7	BKH2011007F	Pushpita Debnath	8.57	17.00	18.00	17.00	60.57
8	ASH2011008M	Md. Sazzad Shakil	7.14	16.00	15.00	17.00	55.14
9	BKH2011009F	Moutosi Raka	7.14	15.00	16.00	17.00	55.14
10	ASH2011010M	Md. Nasir Uddin	8.57	13.00	17.00	18.00	56.57

Figure 5.17: In-course Teacher see lab marks



Result Management System (RMS)

Dashboard / Final Marks

COURSE LIST OF FOR FINAL MARKS

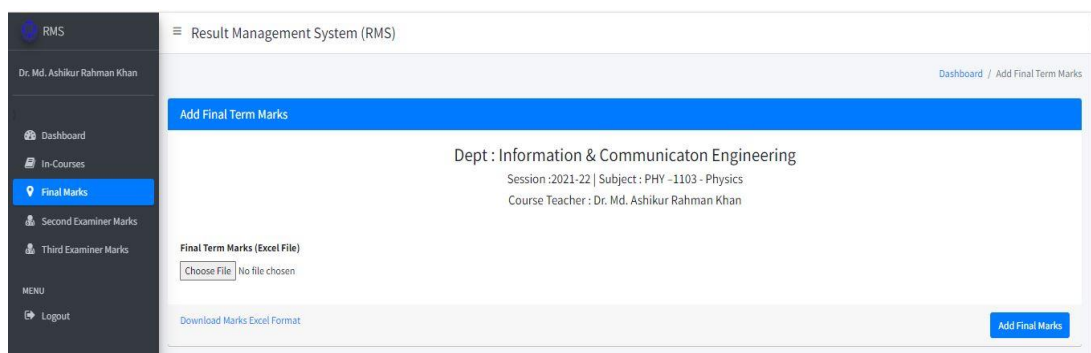
Show 10 entries Search:

Serial	Session	Course Title	Semester	Credit Hour	Lab / Viva	Add Final Term Marks	View Final Term Marks	Submit
1	2021-22	ICE-1108 - Engineering Drawing	1-1	1.0	✓			
2	2021-22	PHY-1103 - Physics	1-1	2.0	✗			

Showing 1 to 2 of 2 entries

Previous 1 Next

Figure 5.18: In-course Teacher final mark submission panel



Result Management System (RMS)

Dashboard / Add Final Term Marks

Add Final Term Marks

Dept : Information & Communicaton Engineering
Session :2021-22 | Subject : PHY -1103 - Physics
Course Teacher : Dr. Md. Ashikur Rahman Khan

Final Term Marks (Excel File)

[Choose File](#) No file chosen

[Download Marks Excel Format](#)

[Add Final Marks](#)

Figure 5.19: In-course Teacher final mark submission through excel file

	A	B	C	D
2	ASH2011001M	57		
3	ASH2011002M	55		
4	ASH2011003M	52		
5	ASH2011004M	49		
6	ASH2011005M	56		
7	ASH2011006M	60		
8	BKH2011007F	59		
9	ASH2011008M	58		
10	BKH2011009F	49		
11	ASH2011010M	60		
12				
13				

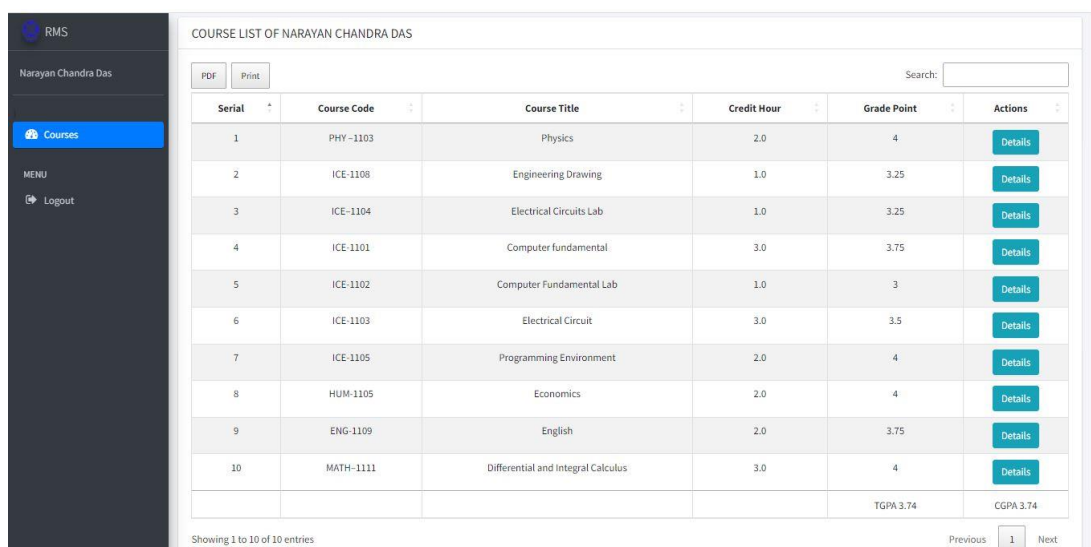
Figure 5.20: In-course Teacher final mark excel file format

Serial	Class Roll	Marks
1	ASH2011001M	57.00
2	ASH2011002M	55.00
3	ASH2011003M	52.00
4	ASH2011004M	49.00
5	ASH2011005M	56.00
6	ASH2011006M	60.00
7	BKH2011007F	59.00
8	ASH2011008M	58.00
9	BKH2011009F	49.00
10	ASH2011010M	60.00

Figure 5.21: In-course Teacher see final mark after submit

5.2.4 Students Dashboard

After a successful login, students see the dashboard which is shown in figure 2.22.

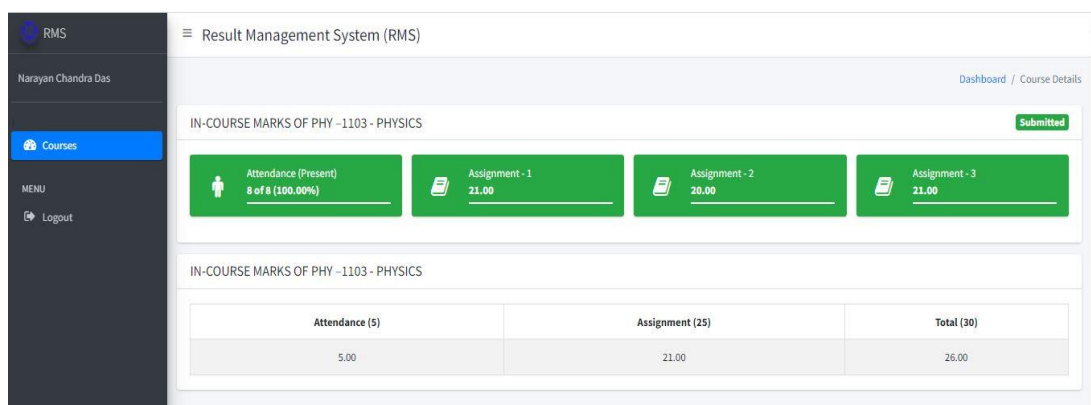


The screenshot shows the 'COURSE LIST OF NARAYAN CHANDRA DAS' in the RMS system. The interface includes a sidebar with 'RMS', 'Narayan Chandra Das', 'Courses', 'MENU', and 'Logout'. The main content area displays a table of 10 courses with columns for Serial, Course Code, Course Title, Credit Hour, Grade Point, and Actions. A search bar and PDF/Print buttons are at the top. The table lists courses like Physics, Engineering Drawing, Electrical Circuits Lab, Computer fundamental, and Differential and Integral Calculus. At the bottom, it shows 'Showing 1 to 10 of 10 entries' and navigation links for 'Previous', '1', and 'Next'.

Serial	Course Code	Course Title	Credit Hour	Grade Point	Actions
1	PHY -1103	Physics	2.0	4	Details
2	ICE-1108	Engineering Drawing	1.0	3.25	Details
3	ICE-1104	Electrical Circuits Lab	1.0	3.25	Details
4	ICE-1101	Computer fundamental	3.0	3.75	Details
5	ICE-1102	Computer Fundamental Lab	1.0	3	Details
6	ICE-1103	Electrical Circuit	3.0	3.5	Details
7	ICE-1105	Programming Environment	2.0	4	Details
8	HUM-1105	Economics	2.0	4	Details
9	ENG-1109	English	2.0	3.75	Details
10	MATH-1111	Differential and Integral Calculus	3.0	4	Details
				TGPA 3.74	CGPA 3.74

Figure 5.22: Students Dashboard

Students can see attendance percentage, class test marks, assignment marks, best two counting average marks etc. They can also see the TGPA and CGPA after the result publication which are shown in figure 5.23. And finally they can download their mark sheet of the particular semester.

The screenshot shows the 'Result Management System (RMS)' interface for 'Narayan Chandra Das'. It displays 'IN-COURSE MARKS OF PHY -1103 - PHYSICS' with a 'Submitted' status. The marks are shown in four green boxes: Attendance (Present) 8 of 8 (100.00%), Assignment - 1 21.00, Assignment - 2 20.00, and Assignment - 3 21.00. Below this, a table summarizes the marks for Attendance (5), Assignment (25), and Total (30).

Attendance (5)	Assignment (25)	Total (30)
5.00	21.00	26.00

Figure 5.23: Students see class test and assignment marks





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ACADEMIC TRANSCRIPT

Department of Information and Communication Engineering																																				
Bachelor of Science (Engg.) Session : 2021-2022	GRADING SCHEME	<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">Range</th> <th style="text-align: left;">Grade Point</th> <th style="text-align: left;">Grade</th> </tr> <tr> <td>80% or Above</td> <td>4.00</td> <td>A+</td> </tr> <tr> <td>75% - 79%</td> <td>3.75</td> <td>A</td> </tr> <tr> <td>70% - 74%</td> <td>3.50</td> <td>A-</td> </tr> <tr> <td>65% - 69%</td> <td>3.25</td> <td>B+</td> </tr> <tr> <td>60% - 64%</td> <td>3.00</td> <td>B</td> </tr> <tr> <td>55% - 59%</td> <td>2.75</td> <td>B-</td> </tr> <tr> <td>50% - 54%</td> <td>2.50</td> <td>C+</td> </tr> <tr> <td>45% - 49%</td> <td>2.25</td> <td>C</td> </tr> <tr> <td>40% - 44%</td> <td>2.00</td> <td>D</td> </tr> <tr> <td><40%</td> <td>0.00</td> <td>F</td> </tr> </table>	Range	Grade Point	Grade	80% or Above	4.00	A+	75% - 79%	3.75	A	70% - 74%	3.50	A-	65% - 69%	3.25	B+	60% - 64%	3.00	B	55% - 59%	2.75	B-	50% - 54%	2.50	C+	45% - 49%	2.25	C	40% - 44%	2.00	D	<40%	0.00	F	Student Name : Narayan Chandra Das Student ID : ASH2011005M
Range	Grade Point	Grade																																		
80% or Above	4.00	A+																																		
75% - 79%	3.75	A																																		
70% - 74%	3.50	A-																																		
65% - 69%	3.25	B+																																		
60% - 64%	3.00	B																																		
55% - 59%	2.75	B-																																		
50% - 54%	2.50	C+																																		
45% - 49%	2.25	C																																		
40% - 44%	2.00	D																																		
<40%	0.00	F																																		

1st Year 1st Term Examination

Examination Details		Grades Obtained	
Course Code	Course Title	Credit Hours	Grade Points
PHY-1103	Physics	2.0	4
ICE-1108	Engineering Drawing Lab	1.0	3.25
ICE-1104	Electrical Circuit Lab	1.0	3.25
ICE-1101	Computer Fundamentals	3.0	3.75
ICE-1102	Computer Fundamentals Lab	1.0	3
ICE-1103	Electrical Circuits	3.0	3.5
ICE-1105	Programming Environment	2.0	4
HUM-1106	Economics	2.0	4
ENG-1109	English	2.0	3.75
MATH-1111	Differential & Integral Calculus	3.0	4

Credits Completed: 20

Cumulative Credits: 20

TGPA: 3.74

CGPA: 3.74

Prepared by _____

Compared by _____

Controller of Examinations _____

Figure 5.24: Students downloaded Mark Sheet

5.3 SYSTEM MAINTAINANCE

Like other software, web applications require maintenance. A software application needs to undergo necessary maintenance in order to operate more reliably and perform security tasks. Upgrading the application is the main goal of maintenance

in order to make it more efficient and productive. As a result, doing maintenance and making improvements are closely intertwined. Three different types of web application maintenance exist [24].

1. **Security support:** The main justification for web application support is security. Programmers are always looking for new techniques to try and hack into a company's website. Our security needs to be very tight. Regular support checks will expose holes so we can address them before anyone else does [24].
2. **Preventive maintenance:** A web application needs to be maintained on a regular basis to check for system errors and determine whether any feature updates are required. This can be done depending on the availability of time, managing risks, finding the faults, other circumstances, and projections [24].
3. **Corrective maintenance:** Corrective maintenance is mostly performed to address commercial repercussions. Depending on how important the faults are and how long it takes to fix them, this may be of the postponed type or the emergency type. These scenarios can be anticipated while creating any custom web application [24].

5.4.1 Essential Steps To Maintenance the Web Application

A proactive approach is required to continuously analyze the application, detect anomalies, potential loopholes, and take steps to fix them for Web application maintenance. Below are the important steps of our application maintenance and management strategy [25].

Fixing bugs: There will undoubtedly be a number of bugs when we start the web application development adventure. It is completely usual to find problems in web applications that could negatively impact the user experience and the app's performance. Therefore, before pushing the code to the production environment, developers should take the necessary actions to repair them. After the program goes live, we must thoroughly resolve any bugs before deploying any additional updates or builds [25].

Security Updates: It is most likely to automatically download security updates if we chose a vendor-based (off-the-shelf) web solution. However, manual updates may be necessary for important security enhancements in custom web application development. It's vital to make sure we have the resources set aside to handle any necessary system updates when working with custom web applications [25].

API Updates: Application programming interfaces (APIs) have made things for web developers relatively simple by saving them from hours of heavy work. We can easily implement complex features while also providing excellent user experiences with the help of third-party APIs. However, a lot of third-party service providers frequently update their APIs. The older APIs might not function at all. To eliminate the brief disturbance in such situations, developers must update our program with the most recent third-party APIs. These API updates typically take 8 to 12 hours of coding, after which they should resume normal operation [25].

Performance Monitoring: Despite our best efforts, there is always a chance that a bug will crop up in a live online application. Similar to this, unannounced updates to third-party APIs may be necessary. Failure to resolve these problems or perform system updates may directly affect the functionality of our website and may result in unwelcome interruptions. Therefore, it is crucial that we give the web application a lot of attention while continuously checking its performance across devices. It is advised to perform routine system inspections, quality checks, and software problem-solving as needed [25].

5.4 SUMMARY

Above result ensures us a good output. We made a smart output for our project. We discussed about web-based attendance and result management system. Above we have shown all the exact outputs. We also describe how to maintain the website.

CHAPTER 6

CONCLUSION

6.1 INTRODUCTION

The current research was based on the computerization and the implementation of an advanced Web-Based Online Student Result Management System for the Noakhali Science and Technology University. The main goal was to improve and automate the management and declaration of student's results using a computerized system. A well-defined, efficient, managed and controlled information system or software based on web technology storing, processing and providing information through the internet. Finally, it saves time and complexity from manual result processing. Attendance mark, class tests best two average mark and final exams best two examiners average marks calculation will be automatically which saves much valuable time of our teachers.

6.2 CONCLUSION

There is no doubt that the web page is the most important component of any firm or organization, large or little, in the modern world. Nowadays, we depend heavily on websites for everything, including advertising, shopping, finding jobs, etc. The needs of users might be satisfied by the correct website. For the users, it is more important that they visit the proper website for the right information. Numerous websites can be found all around the world. The website we created was made to specifically meet the needs of the particular business and its customers. This established system is appropriate for any public institution where the entire processing

system was manually operated, but by implementing these measures, all of the tasks will be simple for both the instructor and organization.

6.3 SCOPE FOR FUTURE DEVELOPMENTS

In near future, the system interface could be improved, with more interactive, attractive and meaningful images. Enhance the current system by computerizing almost all of the services provided by the institution. We can Improved the system by developing several versions based on user's feedback, if a complete solution has not been worked out. The overall system introduces result support facilities to alleviate some of the problems faced by teachers, students or authority and to provide the online result management system of the university.

Some of the possible changes that can be achieved in future:

- i. We can enhance the system with email notifications.
- ii. We can add notice board with it.
- iii. We can also develop Android application too.
- iv. We can add auto class scheduling system
- v. We can add library management system with it.

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