DBMS Mini Project Report On

COLLEGE ERP SYSTEM

Submitted in partial fulfilment of the

MASTER OF COMPUTER APPLICATION
By
Abhishek sarkar
Enrolment Number. AJU/210945

Under the esteemed guidance of

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(HOD)

And

Mrs. Alka kumari

(Internal Guide)

DEPARTMENT OF COMPUTER SCIENCE & IT

ARKA JAIN UNIVERSITY, JHARKHAND

Jamshedpur

2021-2023

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DEPARTMENT OF COMPUTER SCIENCE & IT

CERTIFICATE

This is to certify that the project entitled, " **COLLEGE ERP SYSTEM** ", is bonafied work of **Abhishek sarkar** bearing **Enrolment no- AJU/210945** submitted in partial fulfilment of the requirements for the award of degree of MASTER OF COMPUTER APPLICATION (MCA) from ARKA JAIN University, JHARKHAND.

Internal Guide

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University Seal

Date 23/7/22

ABSTRACT

This report specifies the various processes and techniques used in gathering requirements, designing, implementing and testing for the project on college erp system. The problems regarding the current system in the college was analyzed and noted. This project aims to solve some of those problems and thus, add more value to the current system. The requirements were gathered from all the stakeholders and basedon that we created a requirements models and designed the software based on the based.The project was implemented in the form of a website using django (python).

Using the various resources and tools we gathered along the way, we implemented thecollege erp system using some features that solve the current problems in the system such as a provision to edit the attendance and marks before locking it at the end. The software was also tested using the various testing methods and results were positive.

Thus, the results can be integrated in the current ERP system to improve its working and solve some of the existing problems.

.

ACKNOWLEDGEMENT

It is a genuine pleasure to express my profound gratitude and deep regard to my internal guide**Ms. Alka Kumari** and our HOD **Dr. Arvind Kumar Pandey** for his exemplaryguidance, monitoring and constant encouragement.

Also, who gave me the golden opportunity to do this wonderful project on the topic "**COLLEGE ERP SYSTEM**", which helped me in research and I came to know aboutso many things.

With Regards

Abhishek Sarkar (AJU/210945)

Roll no. 21(MCA)

DECLARATION

We hereby declare that the project entitled, “**COLLEGE ERP SYSTEM”** done at **Arka Jain University**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university.

The project is done in partial fulfillment of the requirements for the award of degree of **MASTER OF COMPUTER APPLICATION** to be submitted as final semester project as part of our curriculum.

Abhishek Sarkar

Signature of the Student

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Chapter 1: Introduction

The objective of College Information Management System is to allow the administrator of any organization the ability to edit and find out the personal details of a student andallows the student to keep up to date his profile. It'll also facilitate keeping all the records of students, such as their id, name, phone number, DOB etc. So all the information about a student will be available in a few seconds. Overall, it'll make Student Information an easier job for the administrator and the student of any organization.The main purpose of this project is to illustrate the requirements of the project College Information Management System and is intended to help any organization to maintain and manage personal data. It is a comprehensive project developed from the ground up to fulfill the needs of college as they guide their students.This integrated information management system connects daily operations in the college environment ranging from Attendance management to communicational meansamong students and teachers. This reduces data error and ensures that information is always up-to-date throughout the university. It provides a single source of data repository for streamlining your processes and for all reporting purposes. It has a simple user interface and is intuitive. This insures that the users spend less time in learning the system and hence, increase their productivity. Efficient security features provide data privacy and hence, increase their productivity.

1.1 Introduction to problem domain

As we know that, a college consists of different departments, such as course departments, fees management, library, event management etc. Nowadays applications and uses of information technologies is increased as compared to before, each of theseindividual departments has its own computer system to do their own functionalities. Byhaving one main system they can interact with each other from their respected system by having valid user id and password.

1.2 Aim of the problem

The objective of College Information Management System is to allow the administrator of any organization the ability to edit and find out the personal details of a student andallows the student to keep up to date his profile. It'll also facilitate keeping all the records of students, such as their id, name, phone number, DOB etc. So all the information about a student will be available

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1.3 Time schedule for completion of the project work

1.2.1 Selecting The Project Title

1.2.2 System Requirement Collection

1.2.3 System Design

1.2.4 Acquiring the required resources

1.2.5 Coding

1.2.6 Testing of the Application

1.2.7 Deployment

Chapter 2: System Requirement Engineering

2.1 Inception:

Inception is a process of establishing a basic understanding of the problem and the nature of the solution. This includes the need for this software, identification of stakeholders and defining multiple viewpoints.

2.2 What is the purpose of this project?

There is currently an ERP system in our university. But, not everyone is happy with thesystem. While it is a step towards automating the college activities, it comes with its own set of problems. This project is designed to implement a college erp system to eradicate some of these problems and add some features of our own that would add value to system.

Why do we need ERP?

Nowadays, in schools and universities, it is very difficult to manage each and everything manually. Supervising and maintaining the whole database of a school or college can be time-consuming and challenging especially if it’s done on a regular basis. So, we need to handle and manage everything smartly. To solve this problem ERP(Enterprise Resource Planning) is used. ERP software makes it easy to track the progress of every department of school and automate different functions. With ERP everything can be seen on a single dashboard. The administrator can manage the college from anywhere. The possibilities of maintaining the whole database of a college with ERP software are endless.

Some of the prominent roles of ERP are:

- Manages the office and automates different functions.
- Helps in long-term management and planning of all departments of university.
- Eliminates the need for having multiple management software for each department.
- Daily activities like attendance can be digitalized and automated.
- Leave module for teachers can be automated**.**

2. Identification of stakeholders:

Enterprise Resource planning implementation is a difficult and complex decision where it involves people issues more than technological issues. Identification of stakeholders is a key step during the process of ERP implementation, because if done improperly, it will lead to failure of the implementation project.

Teachers

Teachers are the key stakeholders of the college erp. Because they are the one who manage, edit, update the contents of the database of students such as attendance, internal marks, CGPA etc...

It also helps them to assign their class to other teachers when they are on leave. This makes it easier to identify who among them are free to take the class at that time. So this software help them reduce their overhead and make their tasks easier and simple.

Students

Students are end users of ERP software. The attendance, internals marks uploaded by the teachers are viewed by students. It helps them track their attendance status. It also helps them to communicate with teachers and their classmates. So students make up another set of stakeholders of this software.

Administrator

College administrator is responsible for maintaining the database of the university. They will have the privilege to modify the database i.e., to add/remove students/teachers/staff, update information regard- ing each of these. It is their responsibility to maintain the database of students who pass out from the college and who freshly get admission to the university. So the Administrator play a major role in the ERP.

2.1.4 Viewpoints

Teachers viewpoint

For a teacher, this software must be easy to use. It should be easy to find different modules like attendance, leave module, internals marks, result etc...Teachers are the one who update the contents of the database, so it should be update save modify It.

Students viewpoint

A student can only view the information about himself, other than that everything will be hidden from them. They will not have the option to edit anything. So the graphical user interface must be good. They expect it to be functional.

Administrator’s viewpoint

Administrator will have the privilege to view all the information about the university. They will have the option to track goals like, Average marks of all the students in a subject, Average attendance of all the students of a class etc...

Elicitation

When we started the project, we decided to collect the information from a couple of stakeholders like teachers, administrators, students and parents. They stated their role in the ERP system, their problems, likes and dislikes, problems they are facing with the software and how it is implemented

Teachers

We had an opportunity to meet our college Computer Science Department Prof. Mrs. Alka Singh and Prof. Mr. Arvind pandey They gave us an idea about how our college erp was working and explained about their role in the ERP. We asked the following questions

Can you explain the attendance entry process in detail?

Generally, just like the students, even teachers have their own user ID and password for the login purpose. There will be a column reserved for attendance purpose in a hierarchical manner. First there will be two columns class and subjects. Under the class column there will be a list of all the classes allotted to the faculty. On the other column there is subjects which is further divided into theoretical subjects which are of 4 credits and integrated subjects which are of 5 credits for the college batch students. Since there are autonomous batch students who are yet to complete their degree there are separate columns reserved for them since their pattern is different from the college syllabus. They will be having theoretical subjects of 4 credits each and they will also be having separate lab sessions of 1.5 credits each. Since the credits of autonomous subjects vary from those of the subjects of the college subjects there must be changes in terms of attendance and the credits allocated for each subject. Then there will be a column for the type of class. In this there will be further two types. Regular classes and alternate classes. Regular classes are those which the faculty handles for the allocated class as specified in the time-table. Alternate classes are those which the faculty handles in the absence of another faculty. When the faculty is on leave, it must be informed in the

ERP such that the message goes to the professors and at the same time another teacher who is free. If the faculty wants to take extra classes due to the incompletion of the courAses, then they should inform the students in the forum about the extra class and they can handle it

Generally, for the teachers there are basically 4 types of leave.

1. Earned leave
2. Restricted leave.
3. Casual leave.

4. Sick leave.

What are some problem that you face with the current ERP system?

The problem with the ERP software is if the faculty applies for leave and wants to allocate the class to any other faculty, then the request goes to all the faculties of all the departments. This should not happen because other department faculty cannot handle the class for any other department i.e. if the faculty of Computer Science department applies for the leave and if the request is sent, it must be sent to the faculties of the Computer Science department only and not for any other department like Civil ,Mechanical, E&E, and so on.

When the faculty is inserting the attendance into the system, there must be a separate space for the faculty to fill what topics they have covered in the class. It will be time consuming for the faculty to enter the topic every time. So, for this purpose the software must be designed in such a way that it inserts the topic automatically. Firstly, all the topics and the duration for the faculty in which the faculty must cover must be mentioned. And then the faculty must investigate it and cover the syllabus according to the plan. This can also keep a track of the lecturer what they are teaching. If the doubts are raised by the students, then that would lead to shortage of time to cover the syllabus. So, for this purpose the faculty can have the freedom to extend the duration to cover those topics by handling extra classes when the students are free. For taking the extra class, the faculty must block in the time table and it must be visible to all the faculties of that class so that there would be no collision in handling the extra class. Once if the faculty enters the attendance and if they press lock option, then there won’t be any option to change the attendance of the students. Lastly, the teachers would like it if they could enter the attendance in the class itself. This would minimize the paper work and they could update the details at any place and at any time.

What do you expect from the module the lets you enter the marks of the students?

There will be another section to enter the CIE of all the students. The internals will be for 20 marks and when the faculty enters it into the ERP, it must automatically convert it into 10 marks. Generally, there will be 5 events. There will be 3 internals, followed by two events such as quiz, project. If the student scores below 50% of the allocated marks in the subject, then there must be a warning message sent to the student to score more marks in the upcoming internals.

At the end of all the events if the student could not mark the 50 mark, then there will be a make-up test conducted by the faculty so that the student would be having another chance to come up to the mark of 50%. This make-up test marks must be altered with the minimum marks of the CIE scored. And the final CIE marks should be displayed and be stated that the student is eligible or not eligible to take up the Semester End Examination. If the student is not able to take up the CIE due to personal reasons or if he is representing the college in any form of the activity, then it must be brought into the notice of the lecturer and the leave can be availed. If the student is ill, then the medical certificate must be attested, and a letter must be sent to the HOD to take up re-test. After the faculty enters the CIE there must be an option to save the CIE marks. When the CIE marks are saved then the students will not be able to see the marks in their marks. They can view their CIE only when the marks are locked by the faculty. If the faculty locks the CIE, then there would not be any chance to change the CIE. The CIE must be locked after confirming the marks with the students only.

2.2.2 Student

We met several of our classmates and asked them some questions on behalf of the students in the university.

As a student, what are some problems you are facing with the current ERP system?

The ERP status was not updated regularly, and they could not track their attendance status as the app would crash. The GUI that is used in the interface is not up to the mark. It is difficult to keep the track of the attendance and the CIE. It would be easy if the attendance would be shown in a calendar like format so that it would be convenient and can also keep a track of the status of the attendance. There should also be forums where the teacher and the students are active. This will help the students in many ways such as studies, assignments, projects and so on. There should be interaction with the student-student and student-teacher so that the students can clear their doubts with any teacher as well as any student at any point of time. The forum will also help the students in conveying the information to all the students at a faster rate. For the students who were in supplementary batch, they could not attend the first few weeks of class as they had exams. But, in the ERP they were marked as absent which made their attendance drastically low. When the students are into college activities such as LCC sessions, IEEE sessions, representing our college in sports or any other activities then students are marked absent. There must be another way to handle these problems so that there will be justice for the students for their hard work

2.2.3 Administrator

We met the college administrator and asked the following question

What are your requirements from the ERP system as an admin?

As an administrator, they deal with large amount of data and functions. The system must be modular with a simple interface. The admin performs many functions on the database. These include searching for a record, add, update and delete a record. Thus, their interface needs to be quick and searching for records in the huge database must be optimized.

Elaboration

For the College erp project, there are many classes of end users. These include the college staff, students and admin. As mentioned in the elicitation section, we talked with several stakeholders of different classes and collected their requirements. The requirements of the different classes were diverse. Some of them were in unison and some were in conflict. Thus, elaboration and later negotiation is required.

College staff

College staff are key stakeholders and use the ERP system the most. Thus, it is essential to cater to their needs first. Among the staff there are several different roles. For each role, The ERP system will have a different view based on the requirements of that group. Among the staff the requirements of the various groups are described below.

Teaching staff

Teaching staff make up most of the staff. A teacher expects the ERP system to be easy to use, reliable and reduce the work load. Each teacher belongs to department and are assigned to a class of students with a course. So, the teacher should only be able to view and manipulate the data of the students that they are assigned to.

The teachers' involvement In the ERP System, is to enter the attendance, the internal marks, the semester end examination marks. They will also have other features which include availing leave and managing a lecture plan for each course.

For Attendance management, the teachers expect a compact and functional interface. An interface where teachers use minimal effort to manage the attendance status of the students. The features expected for the attendance are to ability to enter the attendance to the entire class at once, edit the attendance of each individual student. Also, in the event of leave, they should be given an option of assigning the class to another teacher, who takes a course for the same class.

In the event of entering internal marks and semester end examination marks, the teacher enters the marks for each individual student. This is initial a draft and can be edited. The students review the marks and verify. If there are any mistakes, the student notifies the teacher and the mistakes are corrected. After certain amount of time, when all the marks are confirmed, the marks are ‘locked’. i.e., After locking, the marks cannot to changed.

Head of Department (HOD)

The head of department is a part of the teaching staff but has special privileges. They manage the operations of each department. The HOD could still conduct courses for students. So, they will have all the features given to a teacher. Also, as the HOD, they will have access to the records of every teacher, courses, students who belong to the same department.

Technical staff

The technical staff provide technical support to the teaching staff. This includes technical support in laboratories such as maintaining the functioning of computers in labs, maintaining the equipment in their respective departments. Unlike the teaching staff, they do not conduct classes. Their role in the ERP system is to provide support to other staff through communication. Also, they have the feature to avail for leave just like the teachers.

Students

Students are another class of end user. In the ERP system, students can view information regarding their attendance status, internals marks, Semester end examination marks, notifications from the college administration etc. A student expects the ERP system to be aesthetic and functional. A student should only be able to view information about himself.

Students generally want to nice graphical interface that provides a lot of information. In the case of attendance, they would like to see additional information other than just the number of classes attended. They would like to see day-wise attendance so that they can keep better record of their daily classes. Students also requested for a detailed view of attendance of each subject in a calendar form.

Lastly, another feature that students would like to see is the addition of communication and feedback capabilities in the ERP. Students find it tough to communicate with other students with common interests as there is no common communication medium in the university. A forum type infrastructure is required in the system.

Administrator

An admin holds all the privileges of the ERP system. The admin has access to all the databases in the system. These include student database, teacher database, courses database and several others. Their job is to maintain the systems and addressing the problems faced by the other users.

The admin needs adequate resources and the right tools. The admin expects a simple interface where they can easily access the required information.

2.4 Negotiation

College erp system is vast with a lot of desired features and functionality. Each stakeholder gives their list of requirements. As a project with four group members, we do not have the resources and tools to implement all the requirements. Thus, it is essential to find a balance among the various stakeholders where they can be satisfied with the outcome of the project. This is achieved through negotiation among the various classes of stakeholders.

It is in our interest to develop a Webapp that is functional, reliable, consistent and easy to use. We collected the requirements from the different stakeholders that include, the teaching staff, technical staff, students and the administration. We reviewed the list of requirements and made a list of feasible and non-feasible requirements. We meet the stakeholders again and explain why some requirements were not feasible. For example, the leave module for the teachers can not to implemented as that feature has a lot functionality that is beyond the scope of this project.

We also found that some requirements from different stakeholders were conflicting. For example, the students had requested for a option to appeal wrong marking of attendance or marks by the teacher. But, the teachers were against this feature as that would increase the burden on the teachers and there was also a possibility of false usage of this feature by the students. Considering both perspectives, we decided to agree with the teachers as this feature would displease teachers. The students were given the reason for not including their requirement and an agreement was reached.

The students wanted a social media type feature implemented on the ERP where the students from the college can communicate with each other and have a feed of the events in the university. While the feature would have been nice to see, it was beyond the scope of this project. We stated that such a advanced version of the requirements was not possible. But, a implementation of the feature on a smaller scope with lesser functionality was possible. Therefore, we negotiated the features until both parties were satisfied.

Specification

Introduction

Purpose

The purpose of this project is to develop a College Management System that helps the teachers and students in easier management of College activities such as attendance, marks.

Intended Audience and Reading Suggestions

This project is intended for staff and students of Arka Jain University. This document has been made under the guidance of college professors. This document has been organized into Overall description followed by the features and then the functional and non-functional requirements. The document my be read to desire of the reader.

Project Scope

The project is designed to help the teachers and students manage their college activities. It consists of relational databases of students, departments, faculty, courses of the entire university. Using these databases, various functions that include Attendance management, marks management and leave management are provided. Within attendance management, a teacher can enter the attendance status of each student for each course with their respective dates. Similar to attendance, Internal and Semester end marks can also be entered for each student.

Overall Description

Product Perspective

This project is modeled based on the current ERP system in the university. Students and teachers face several problems while using the system. Therefore, we wanted to build a system that has lesser number of features than the current system but, has more functionality.

Product Features

- Each teacher will be able to enter attendance and marks for their respective students.
- Each student will be able to view the attendance status for their respective courses.
- The teachers will be able to apply for various types of leave directly through the system.

- The students will be able to Communicate and provide feedback to their teachers.
- The students will have access to a forum page where they are communicate will each other.
- The administrator will be able to view and update information such as departments, classes, teachers, students, courses.

User Classes and Characteristics

There are several types of end users for the college erp system. They are broadly divided as Students, Staff and the Administrator. Each of these classes have their own set of features.

The student should have the following features:

- View the Attendance status of the courses to which they are enrolled.
- View the Marks of the courses to which they are enrolled.
- View the notification from the college administrator.
- Communicate or give feedback to their respective teachers.
- Communicate with other students of the same university.

The staff should have the following features:

- Access to the information of all students that attend their courses.
- Add and edit the Attendance status of those students.
- Add and edit the exam marks of those students.
- Avail the different types of leave.
- Swap classes with other teachers who teach for the same class.

The administrator should have the following features:

- Add and update students, teachers and courses.
- Assign teachers and students to courses

Operating Environment

The operating environment for College erp system are listed below:

- Operating System: Windows 10

- Database: MySQL database
- Front end: HTML/CSS/Bootstrap
- Back end: Django

System features

Expected requirement: Student and staff information

Description and priority Information regarding students, teachers and courses are stored in the database. Every user can view only certain information based on their user class. For example, a teacher can view student and course information that they are handling. This feature is of high priority as the information must be viewed by only the authorized users.

Functional requirements

- Each user shall be able to view information in the database based on their user class.
- The administrator shall be able to view all the information in the database.

Normal requirement: Attendance and marks entry

Description and priority Attendance and marks entry is the main feature of the College erp system. Hence, the priority is high. Teachers update the attendance and marks of the students who are part of her class. Students can view their respective Attendance and marks of the courses they have taken.

Functional requirements

- Teachers shall be able to view, update and edit the attendance and marks of the students, part of their class.
- Teacher shall be able to take extra classes, switch classes with other teachers.

Exciting requirement: Communication among students and teachers

Description and priority Students and teacher will be able to communicate with each other directly using the ERP system. Students may give their queries and feedback to a teacher and they may respond accordingly. The priority of this feature is low as cost of implementation could be very high. A simple version of this feature is to be implemented.

Functional requirements

- Students shall be able to communicate with their teachers by sends personal messages.

- Students shall be able to communicate with other students through a forum section.

External Interface Requirements

User Interfaces

The User interface is made using Bootstrap. Firstly, there will be a simple login page separate for students and teachers. Each student and teacher will have a unique interface. There will be a fixed sidebar with links to all the modules. The teachers will be able to view their respective students and update their attendance and marks using an effortless interface.

Hardware Interfaces

Since neither the mobile application nor the web portal have any designated hardware, it does not have any direct hardware interfaces. Any browser can be used to access the webapp.

Software Interfaces

The following is a list of software used in making of the project.

- Operating System: We have chosen Windows operating system for its best support and user- friendliness.
- Django: We have chosen to use Django for the back-end of the website as Django is a simple python framework and is suitable for beginners.
- Database: We are using SQLite database, which comes as default with Django.

Communications Interfaces

This project is to be deployed an online website. All the users can connect to the database server from anywhere and have access to their information.

2.5.5 Non-functional requirements

Safety requirements

If there is extensive damage to a wide portion of the database due to catastrophic failure, such as a disk crash, the recovery method restores a past copy of the database that was backed up to archival storage (typically tape) and reconstructs a more current state by reapplying or redoing the operations of committed transactions from the backed-up log, up to the time of failure.

Security requirements

The database contains sensitive information of all the students and staff. Therefore, optimal security measures must be taken to ensure data is safe from unauthorized users.

Software Quality Attributes

Availability: The users must always be able to view their information so that they can keep track regularly.

Correctness: The information about attendance and marks must be correct to not feed wrong information to the users.

portability: The users access the ERP from various platforms such as desktops and mobile phones. The webapp must be portable to all platforms and the user experience must be optimal.

2.6 Validation

Requirements validation examines the specification to ensure that all software requirements have been stated unambiguously, so that inconsistencies, omissions, and errors have been detected and corrected.

This checklist is a list of questions that helps us to validate our requirements. They are as follows

- Are requirements stated clearly? Can they be misinterpreted?

A: There will be a chance of misinterpreting the requirements specified by the stakeholders. but we have collected requirements from many sources and those requirements are understood correctly.

- Is the source (e.g., a person, a regulation, a document) of the requirement identified? Has the final statement of the requirement been examined by or against the original source?

A: Yes all the sources of the requirements are correctly identified. And all the requirements are verified.

- Does the requirement violate any system domain constraints?

A: Those requirements violating the system domain constraints were omitted during the negotiation of requirements. So no requirements are violating the system domain constraint.

- Is the requirement testable?

A: All the requirements collected are unambiguous, clear and precise. This makes the requirements testable.

- Is the requirement traceable to any system model that has been created?

A: Yes the requirement is traceable i.e., the ability to describe and follow the life of a requirement in both a forwards and backwards direction (i.e., from its origins, through its development and specification, to its subsequent deployment and use, and through periods of ongoing refinement and iteration in any of these phases)

Requirements Management

Requirements management can be defined as a process of eliciting, documenting, organizing, and controlling changes to the requirements. Generally, the process of requirements management begins as soon as the requirements document is available, but 'planning' for managing the changing requirements should start during the requirements elicitation process.

The essential activities performed in requirements management are listed below.

1. Recognizing the need for change in the requirements
2. Establishing a relationship amongst stakeholders and involving them in the requirements engineering process
3. Identifying and tracking requirements attributes.

Requirements management enables the development team to identify, control, and track requirements and changes that occur as the software development process progresses. Other advantages associated with the requirements management are listed below.

- **Better control of complex projects:** This provides the development team with a clear understanding of what, when, and why the software is to be delivered. The resources are allocated according to user-driven priorities and relative implementation effort.
- **Improved software quality:** This ensures that the software performs according to the requirements to enhance software quality. This can be achieved when the developers and testers have a precise understanding of what to develop and test.

- **Reduced project costs and delays:** This minimizes errors early in the development cycle as it is expensive to ’fix’ errors at the later stages of the development cycle. As a result, the project costs also reduce.
- **Improved team communication:** This facilitates early involvement of users to ensure that their needs are achieved.

Requirements change management

Requirements change management is used when there is a request or proposal for a change in the requirements. The advantage of this process is that the changes to the proposals are managed consistently and in a controlled manner. Note that many activities of requirements management are like software configuration management activities.

An efficient requirement change management process undergoes a number of stages for changes to the requirements. These stages are listed below.

1. **Problem analysis and change specification:** The entire process begins with identification of problems to the requirements. The problem or proposal is analyzed to verify whether the change is valid. The outcome of the analysis is provided to the ’change requester’ and a more specific requirements change proposal is then made.
2. **Change analysis and costing:** The effect of a change requested on the requirement is assessed according to traceability information. The cost for this can be estimated on the basis of modification made to the design and implementation. After the analysis is over, a decision is made whether changes are to be made.

Chapter 3

System Design

Various Design concepts and processes were applied to this project. Following concepts like separation of concerns, the software is divided into individual modules that are functionally independent and incorporates information hiding. The software is divided into 3 modules which are students, teachers and administrators. We shall look at each module in detail.

Student

Each student belongs to a class identified by semester and section. Each class belongs to a department and are assigned a set of courses. Therefore, these courses are common to all students of that class. The students are given a unique username and password to login. Each of them will have a different view. These views are described below.

Student information

Each student can view only their own personal information. This includes their personal details like name, phone no, address etc. Also, they can view the courses they are enrolled in and the attendance, marks of each of those.

Attendance information

Attendance for each course will be displayed. This includes the number of attended classes and the attendance percentage. If the attendance percentage if below a specified threshold, say 75%, It will be marked in red otherwise it be in green. There will also be a day wise attendance view for each course which shows the date and status. This will be presented in a calender format.

Marks information

There will be 5 events and 1 semester end examination for each course. The marks for each of these will be provided in the ERP system.

Notifications and events

This section is common to all students. Notification are messages from the admin such as declaration of holidays, test time-table etc. The events and their details are specified here.

Teacher

Each teacher belongs to a department and are assigned to classes with a course. Teachers will also have a username and password to login. The different views for teachers are described below.

- **Information**

The teachers will have access to information regarding the courses and classes they are assigned to. Details of the courses include the credits, the syllabus plan. Details of the class include the department, semester, section and the list of students in each class. The teacher will also have access to information of students who belong to the same class as as the teacher.

- **Attendance**

The teacher has the ability to add and also edit the attendance of each student. For entering the attendance, they will be given the list of students in each class and they can enter the attendance of the whole class on a day to day basis. There will be two radio buttons next to each student name, one for present and the other for absent. There will also be an option for extra classes. Teachers can edit the attendance of each student either for each student individually or for the whole class.

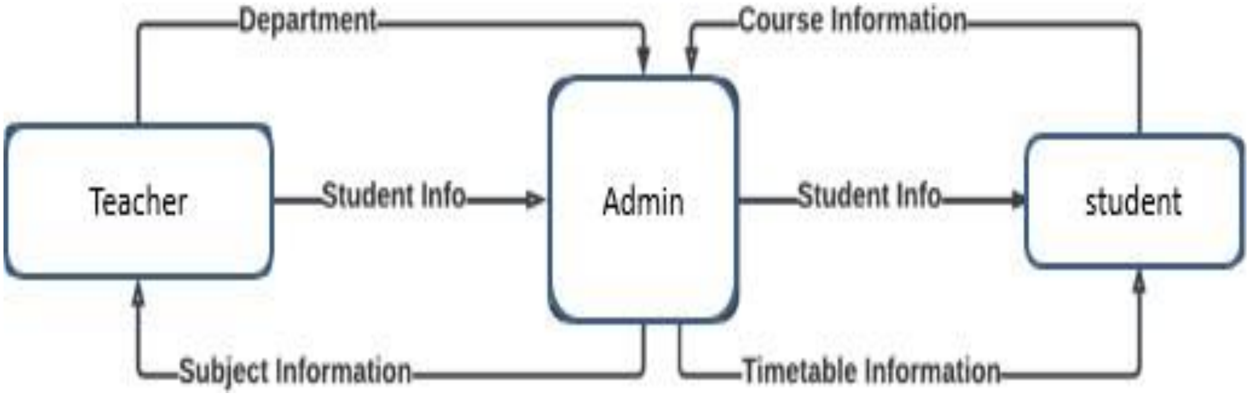
- **Marks**

The teacher can enter the marks for the 5 events and 1 SEE for each course they are assigned. They also have the ability to edit the marks in case of any changes. Reports such as the report card including all the marks and CGPA of a student can be generated.

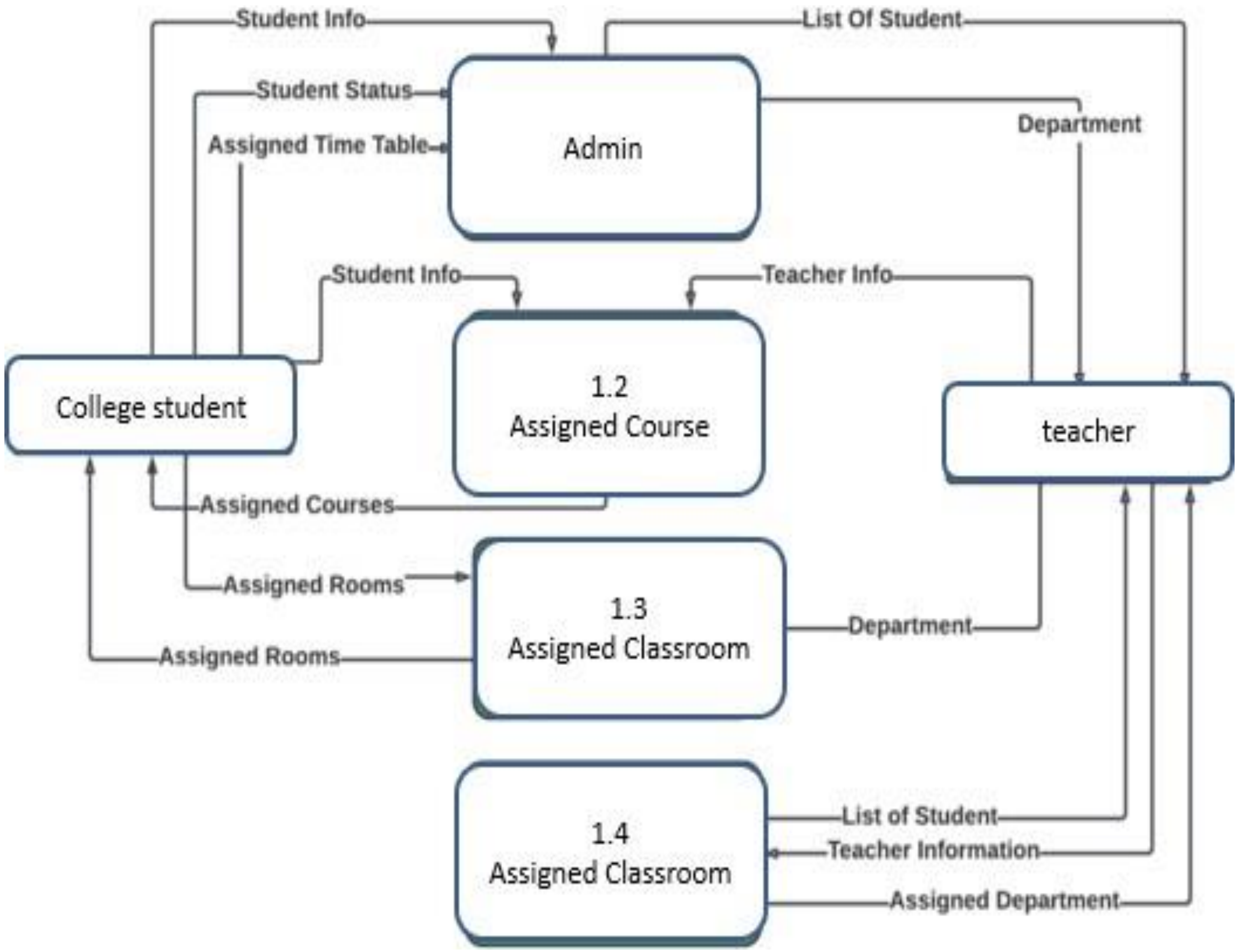
3.3 Administrator

The administrator will have access to all the information in the different tables in the database. They will access to all the tables in a list form. They will be able to add a entry in any table and also edit them. The design of the view for the admin will provide a modular interface so that querying the tables will be optimized. They will be provided with search and filter features so that they can access data efficiently.

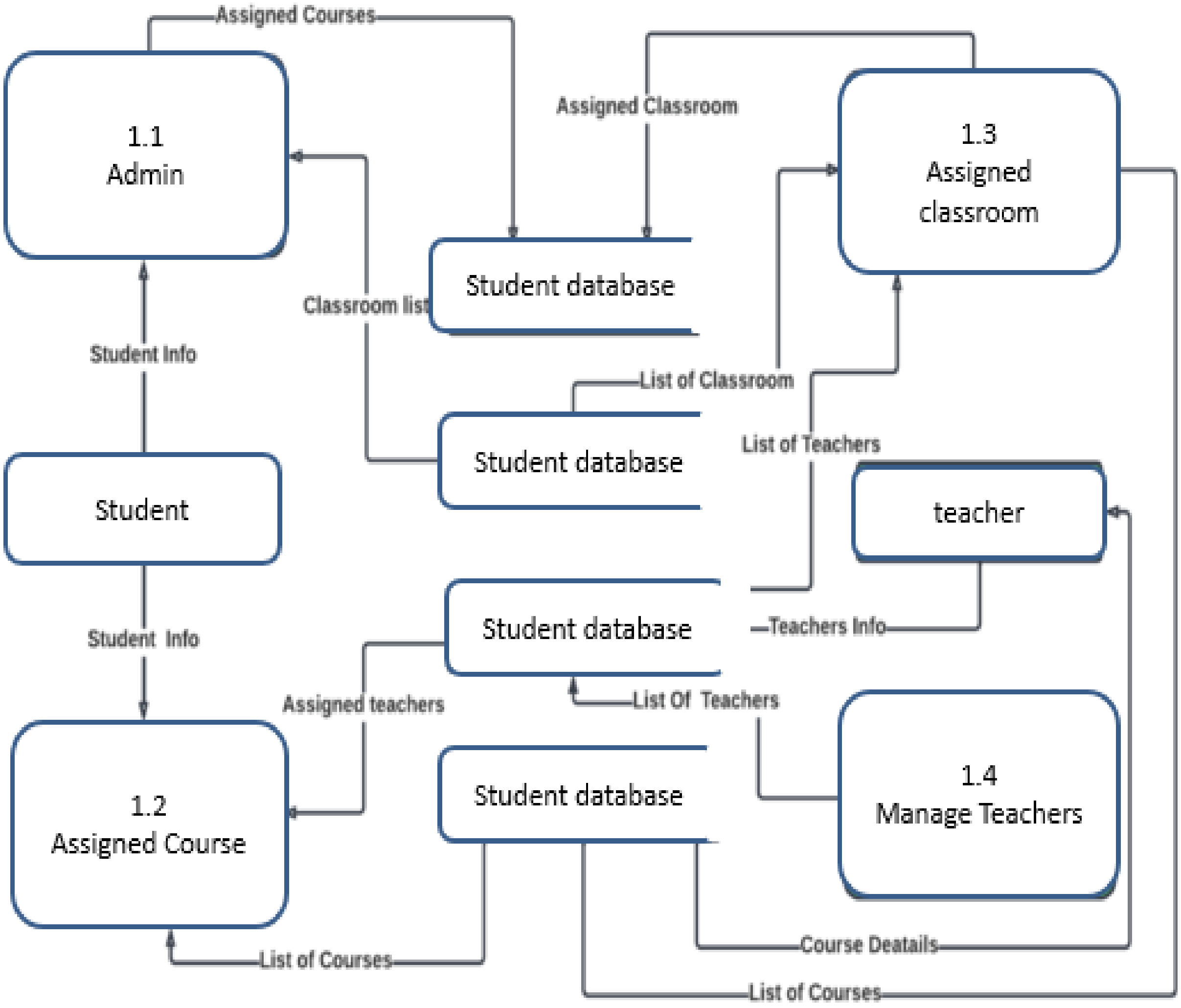
CONTEXT LEVEL DFD



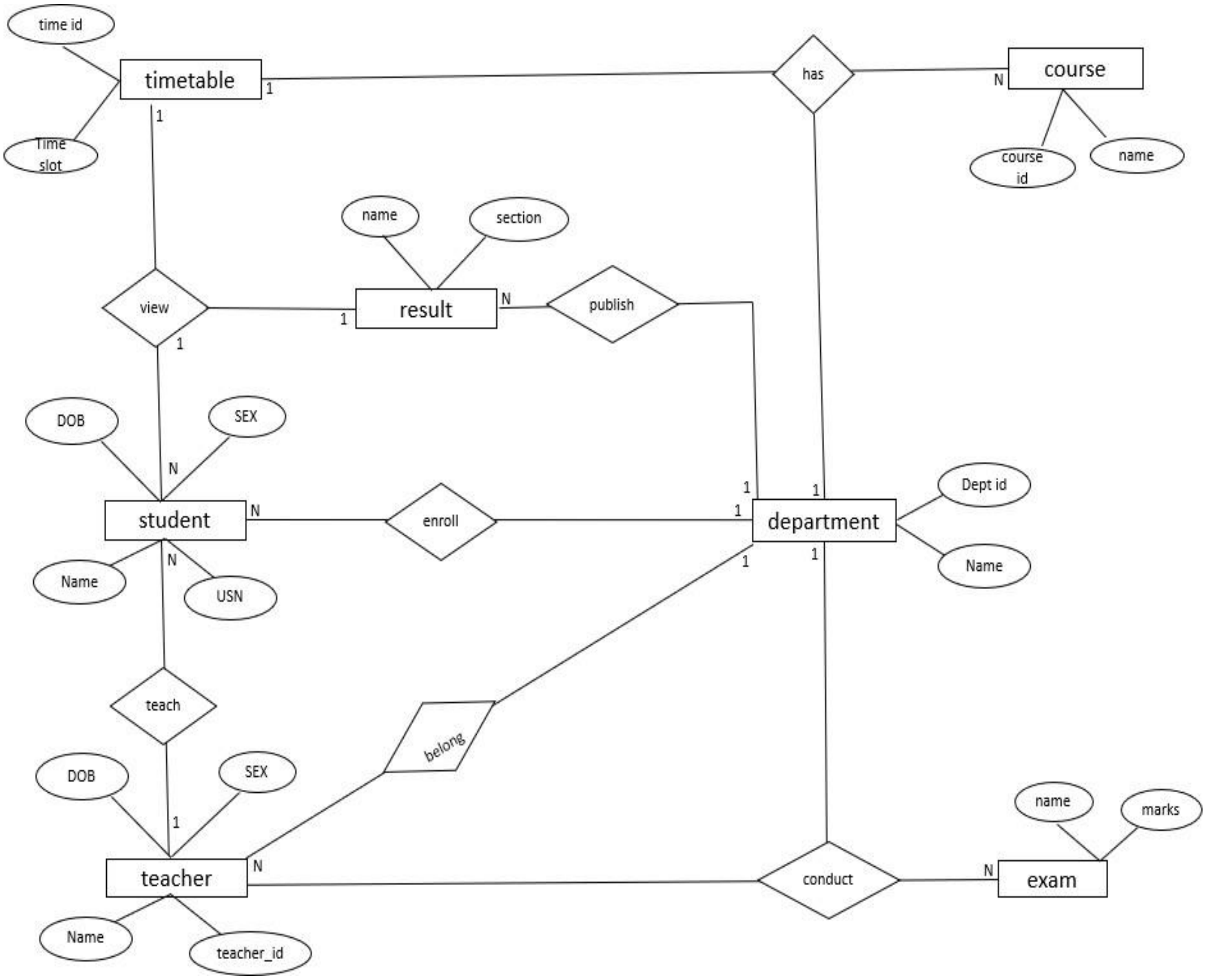
LEVEL 1 DFD


Student Info
List Of Student
Student Status
Assigned Time Table
Admin
Department
Student Info
Teacher Info
College student
1.2
Assigned Course
teacher
Assigned Courses
Assigned Rooms
1.3
Assigned Classroom
Department
Assigned Rooms
1.4
Assigned Classroom
List of Student
Teacher Information
Assigned Department

LEVEL 2 DFD (3.0)



E-R DIAGRAM


time id
timetable
Time slot
has
course
course id
name
name
section
view
result
publish
DOB
SEX
student
Name
USN
enroll
department
Dept id
Name
teach
belong
DOB
SEX
teacher
Name
teacher_id
conduct
name
marks
exam
1
1
N
1
1
N
1
N
1
1
1
N
N
1
1
1
N
N

NORMALISATION

Column name	**Data type**
Att_id	Int(11)
Course_id	Int(11)
Student_id	Int(11)
Status	Varchar(100)
Name	Varchar(100)
Shortname	Varchar(100)
course_id	Int(11)
Depart_id	Int(11)
Name	Varchar(100)
Mark_id	Int(11)
Name	Varchar(100)
Marks	float
Studentcourse_id	Int(11)
USN	Varchar(100)
Name	Varchar(100)
Sex	Varchar(100)
Used_id	Int(11)
DOB	Varchar(100)
Teacher_id	Int(11)
Name	Varchar(100)
Sex	Varchar(100)
DOB	Varchar(100)
User_id	Int(11)
Password	Varchar(100)
Last_login	Varchar(100)
Is_superuser	Varchar(100)
Username	Varchar(100)
Last_name	Varchar(100)
Email	Varchar(100)
First_name	Varchar(100)

1NF

Attendance table

Column name	Data type
Att_id	Int(11)
Course_id	Int(11)
Student_id	Int(11)
Status	Varchar(100)

course table

Column name	Data type
Name	Varchar(100)
Shortname	Varchar(100)
Depart_id	Int(11)
course_id	Int(11)

department table

Column name	Data type
Depart_id	Int(11)
Name	Varchar(100)

Student table

Column name	Data type
USN	Varchar(100)
Name	Varchar(100)
Sex	Varchar(100)
Used_id	Int(11)
DOB	Varchar(100)

marks table

Column name	Data type
Mark_id	Int(11)
Name	Varchar(100)
Marks	float
Studentcourse_id	Int(11)

teacher table

Column name	**Data type**
Teacher_id	Int(11)
Name	Varchar(100)
Sex	Varchar(100)
DOB	Varchar(100)
Depart_id	Int(11)
User_id	Int(11)

User table

Column name	**Data type**
User_id	Int(11)
Password	Varchar(100)
Last_login	Varchar(100)
Is_superuser	Varchar(100)
Username	Varchar(100)
Last_name	Varchar(100)
Email	Varchar(100)
First_name	Varchar(100)

2 NF

Attendance table

Column name	Data type
Att_id	Int(11)
Course_id	Int(11)
Student_id	Int(11)
Status	Varchar(100)

course table

Column name	Data type
Name	Varchar(100)
Shortname	Varchar(100)
course_id	Int(11)

department table

Column name	Data type
Depart_id	Int(11)
Name	Varchar(100)

marks table

Column name	Data type
Mark_id	Int(11)
Name	Varchar(100)
Marks	float
Studentcourse_id	Int(11)

data table

Column name	Data type
Name	Int(11)
Course_id	Int(11)
Depart_id	Int(11)

Student table

Column name	Data type
USN	Varchar(100)
Name	Varchar(100)
Sex	Varchar(100)
Used_id	Int(11)
DOB	Varchar(100)

teacher table

Column name	Data type
Teacher_id	Int(11)
Name	Varchar(100)
Sex	Varchar(100)
DOB	Varchar(100)
User_id	Int(11)

User table

Column name	Data type
User_id	Int(11)
Password	Varchar(100)
Last_login	Varchar(100)
Is_superuser	Varchar(100)
Username	Varchar(100)
Last_name	Varchar(100)
Email	Varchar(100)
First_name	Varchar(100)

Architectural design

The ERP software requires the architectural design to represent the design of the software. Here we define a collection of hardware and software components and their interfaces to establish the framework for the development of this software.

There exists number of components of the system which are integrated to form a system. The set of connectors will help in coordination, communication, and cooperation between the components. The ERP software is built for computer-based system. It exhibits the data centric style of architecture.

Architectural style

In the college erp software, the database stores the data of all the students and faculties and the stored data is updated, added, deleted or modified. So it exhibits the data centric architectural style.

In this architecture different components communicate with the shared data repository. The components access a shared data structure and are relatively independent.

Central data

Also known as data store or data repository, which is responsible for providing permanent data storage. It represents the current state. It stores the information of students, attendance of students and faculties of each day, salary of all the faculties etc...

Data accessors

Data accessors one of the components, they are also called as clients. A data accessor operates on the central data store, perform computations, and might put back the results. Which includes students, faculties and administrator. Students requests to access the data from the repository and gets the request serviced. Faculty members modify the data in the repository. Administrator can add or delete the clients.

interface

Interface is the connecting component between data repository and clients' client interact with the data through the web server.

The operation of one client does not depend on the others. They are independent of each other. This data-centered architecture will promote integrability. This means that the existing components can be changed and new client components can be added to the architecture without the permission or concern of other clients.

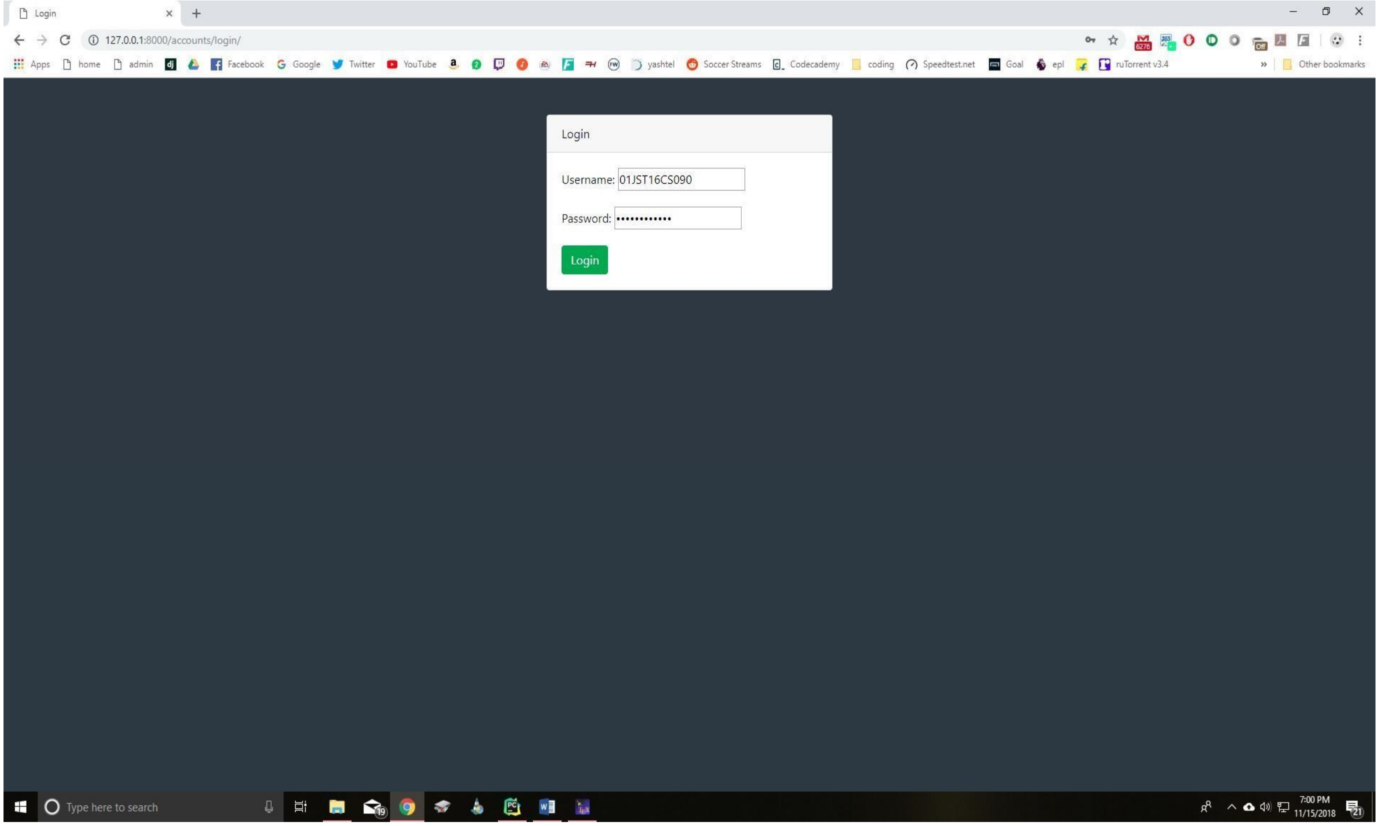
CHAPTER 4
SYSTEM IMPLEMENTATION

The college erp system has three main user classes. These include the students, teachers and administrator. This section will explain in detail all the features and the working of those for each user class.

Student

Login

Each student in the college is assigned a unique username and password by the administrator. The username is the same as their USN and so is the password. They may change it later according to their wish.



Login

Username: 01JST16CS090

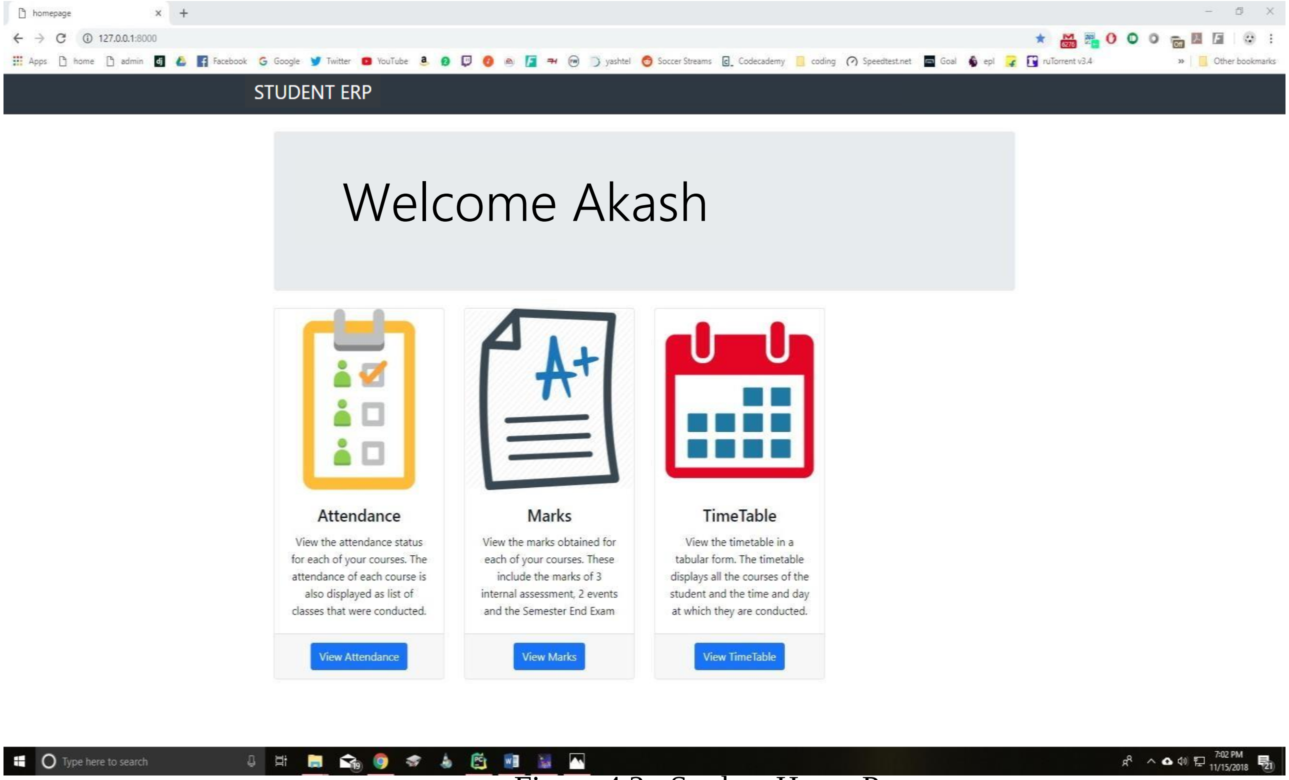
Password: ••••••••••••

Figure 4.1: Student Login Page

4.1.2 Homepage

After successful login, the student is presented a homepage with their main sections, attendance, marks and timetable. In the attendance section the student can view their attendance status which includes the total classes, attended classes and the attendance percentage for each of their courses.

In the marks section, the student can view the marks for each of their courses out of 20 for 3 internal assessments, 2 events. Also, the semester end examination for 100 marks. Lastly, the timetable provides the classes assigned to that student and day and time of each in a tabular form.



Welcome Akash

Attendance

View the attendance status for each of your courses. The attendance of each course is also displayed as list of classes that were conducted.

Marks

View the marks obtained for each of your courses. These include the marks of 3 internal assessment, 2 events and the Semester End Exam

TimeTable

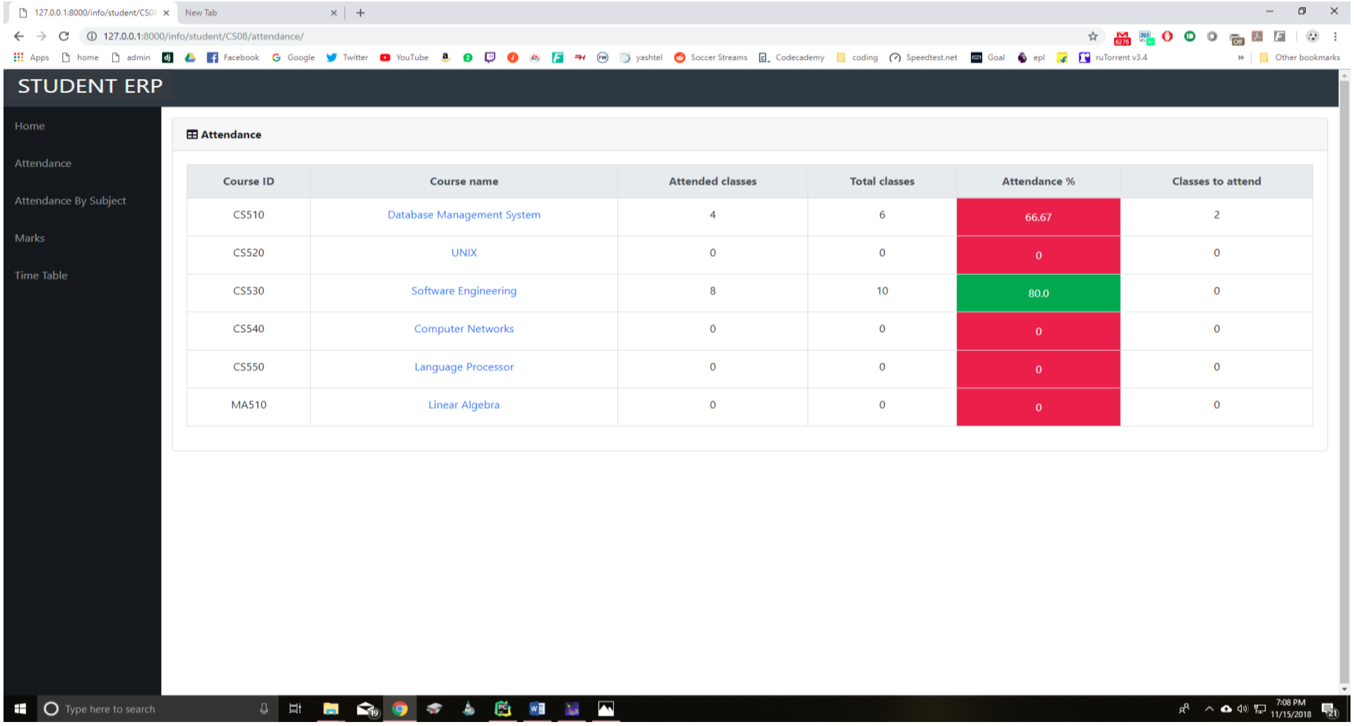
View the timetable in a tabular form. The timetable displays all the courses of the student and the time and day at which they are conducted.

Figure 4.2: Student Home Page

4.1.3 Attendance On the attendance page, there is a list of courses that is dependent on each student. For each course, the course id and name are display along with the attended classes, total classes and the attendance percentage for that particular course. If the attendance percentage is below 75 for any course, it is displayed in red denoting shortage of attendance, otherwise it is green. If there is any shortage, it specifies the number of classes to attend to make up for it. If you click on each course, it takes you to the attendance detail page.

Attendance Detail

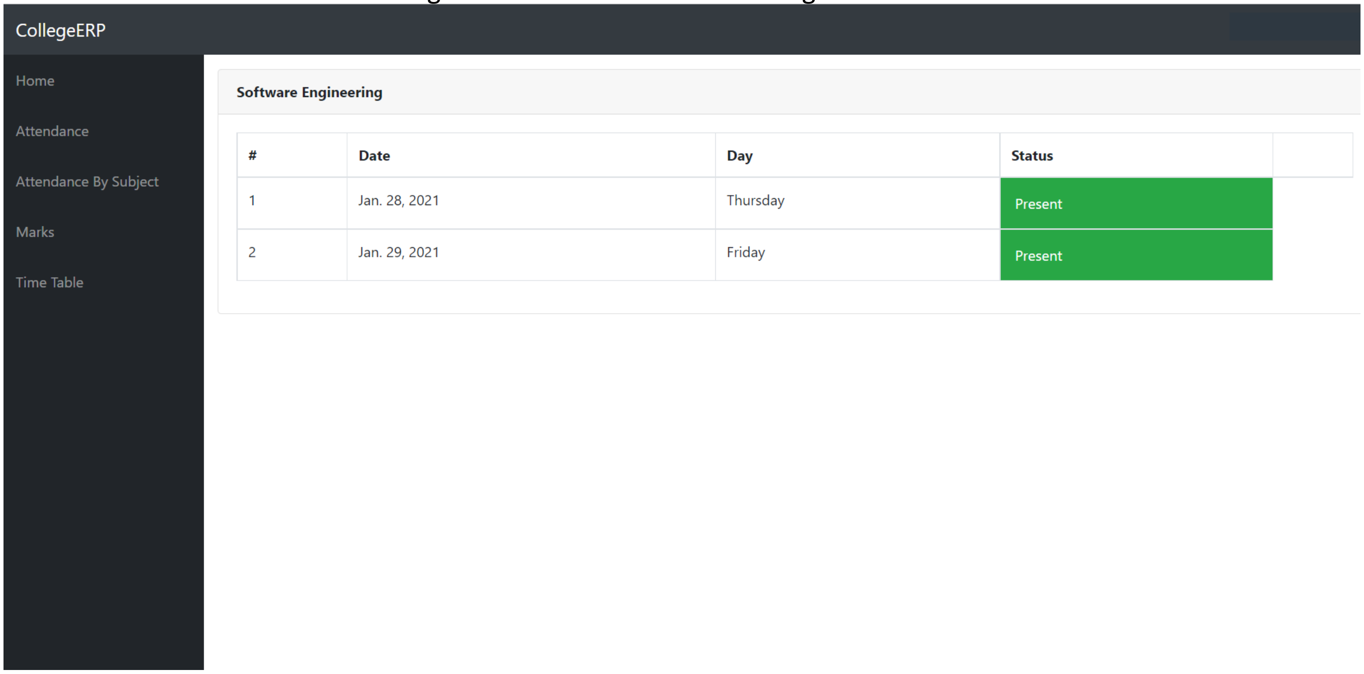
This page displays more details for the attendance in each course. For each the course, there is a list of classes conducted and each is marked with the date, day and whether the student was present or absent on that particular date.



⊞ Attendance

Course ID	Course name	Attended classes	Total classes	Attendance %	Classes to attend
CS510	Database Management System	4	6	66.67	2
CS520	UNIX	0	0	0	0
CS530	Software Engineering	8	10	80.0	0
CS540	Computer Networks	0	0	0	0
CS550	Language Processor	0	0	0	0
MA510	Linear Algebra	0	0	0	0

Figure 4.3: Student AttendancePage



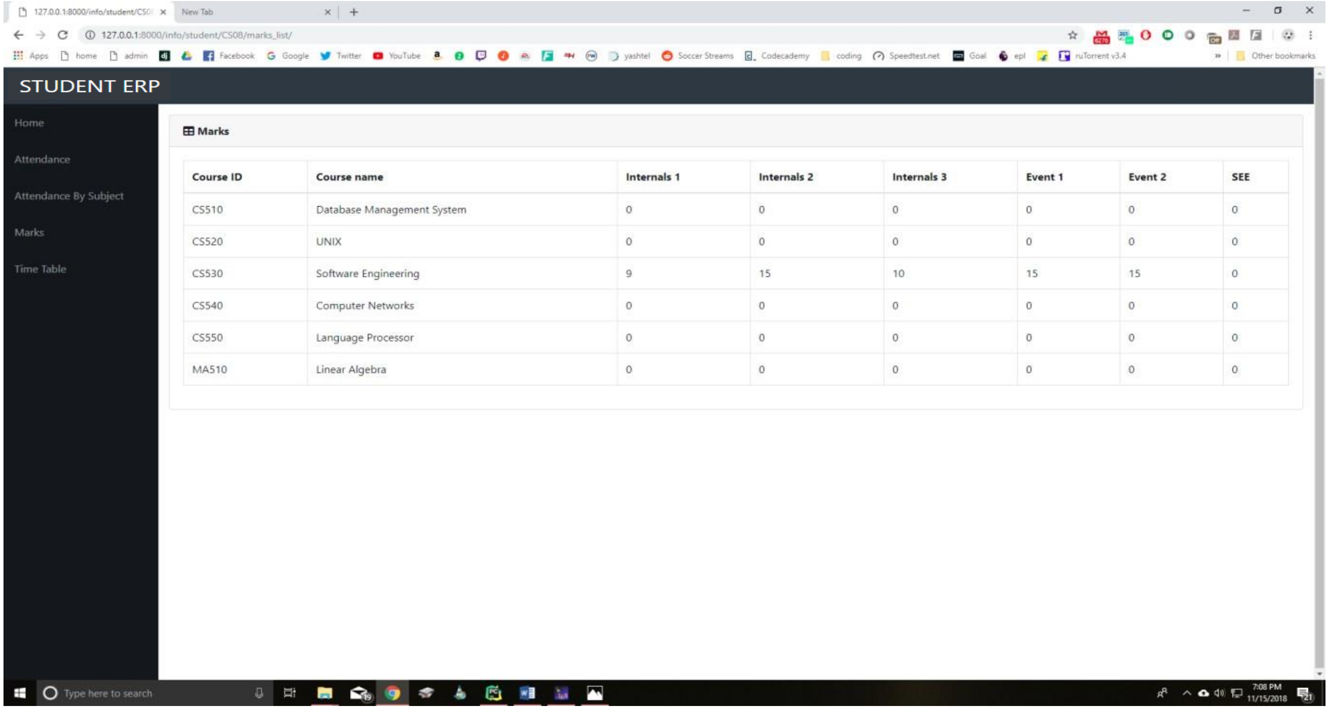
Software Engineering

#	Date	Day	Status
1	Jan. 28, 2021	Thursday	Present
2	Jan. 29, 2021	Friday	Present

4.1.4 Marks

The Marks page is a table with an entry for each of their courses. The course id and name are specified along the marks obtained in each of the tests and exams. The tests include 3 internal assessments with marks obtained out of a total of 20, 2 events such as project, assignment, quiz etc., with marks out of 20. Lastly, one semester end exam with marks out of 100.

Figure 4.5: Student Marks Page

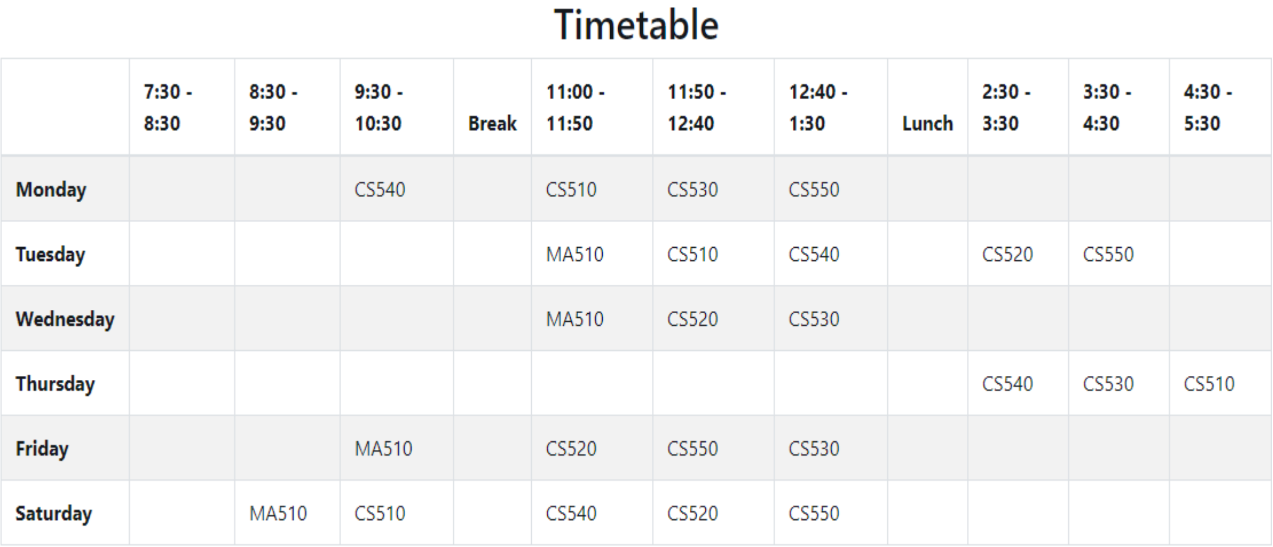


Marks

Course ID	Course name	Internals 1	Internals 2	Internals 3	Event 1	Event 2	SEE
CS510	Database Management System	0	0	0	0	0	0
CS520	UNIX	0	0	0	0	0	0
CS530	Software Engineering	9	15	10	15	15	0
CS540	Computer Networks	0	0	0	0	0	0
CS550	Language Processor	0	0	0	0	0	0
MA510	Linear Algebra	0	0	0	0	0	0

4.1.5 Timetable

This page is a table which lists the day and timings of each of the classes assigned to the student. The row headers are the days of the week and the column headers are the time slots. So, for each day, it specifies the classes in the time slots. The timetable is generated automatically from the assign table, which is a table containing the information of all the teachers assigned to a class with a course and the timings the classes.



Timetable

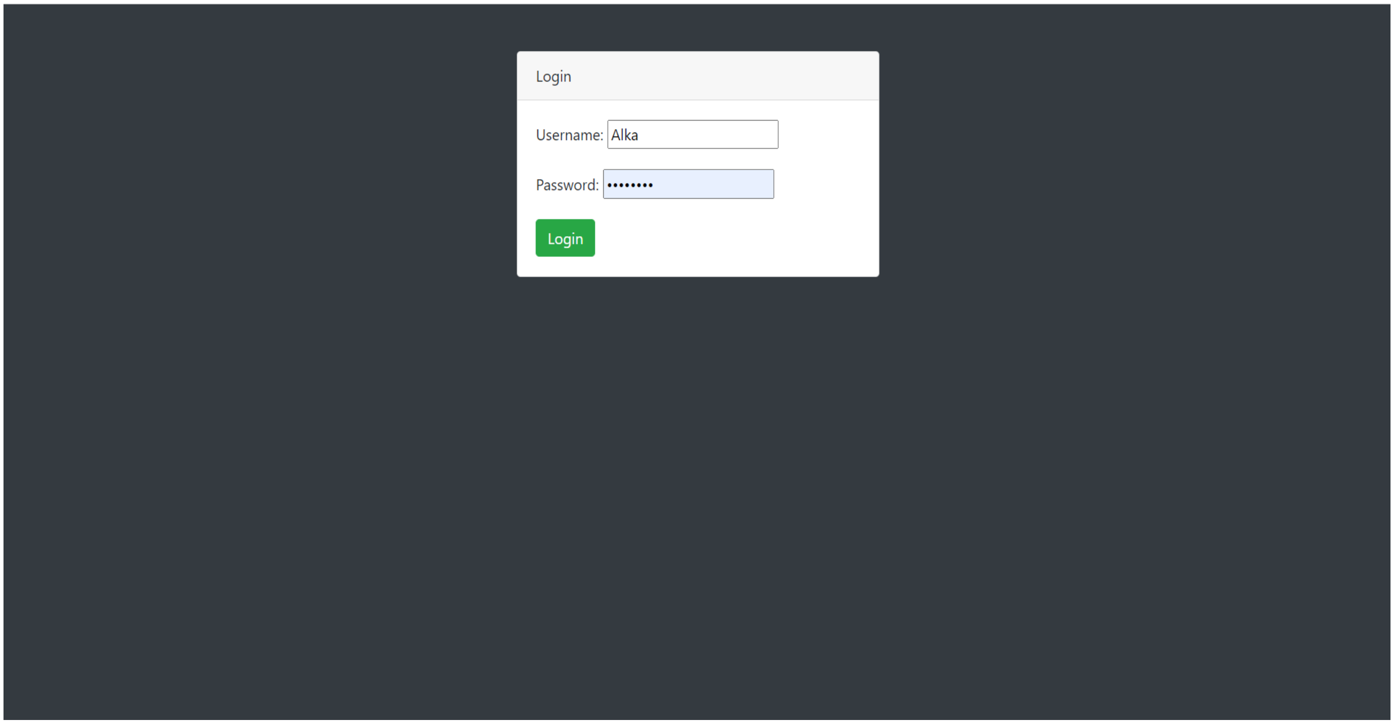
	7:30 - 8:30	8:30 - 9:30	9:30 - 10:30	Break	11:00 - 11:50	11:50 - 12:40	12:40 - 1:30	Lunch	2:30 - 3:30	3:30 - 4:30	4:30 - 5:30
Monday			CS540		CS510	CS530	CS550				
Tuesday					MA510	CS510	CS540		CS520	CS550	
Wednesday					MA510	CS520	CS530				
Thursday									CS540	CS530	CS510
Friday			MA510		CS520	CS550	CS530				
Saturday		MA510	CS510		CS540	CS520	CS550				

Figure 4.6: Student Timetable

Teacher

Login

Each teacher in the college is assigned a unique username and password by the administrator. The username is their teacher ID and the same for password. The teacher may change the password later.



Username: Alka

Password: ••••••••

Figure 4.7: Teacher Login

1. Homepage

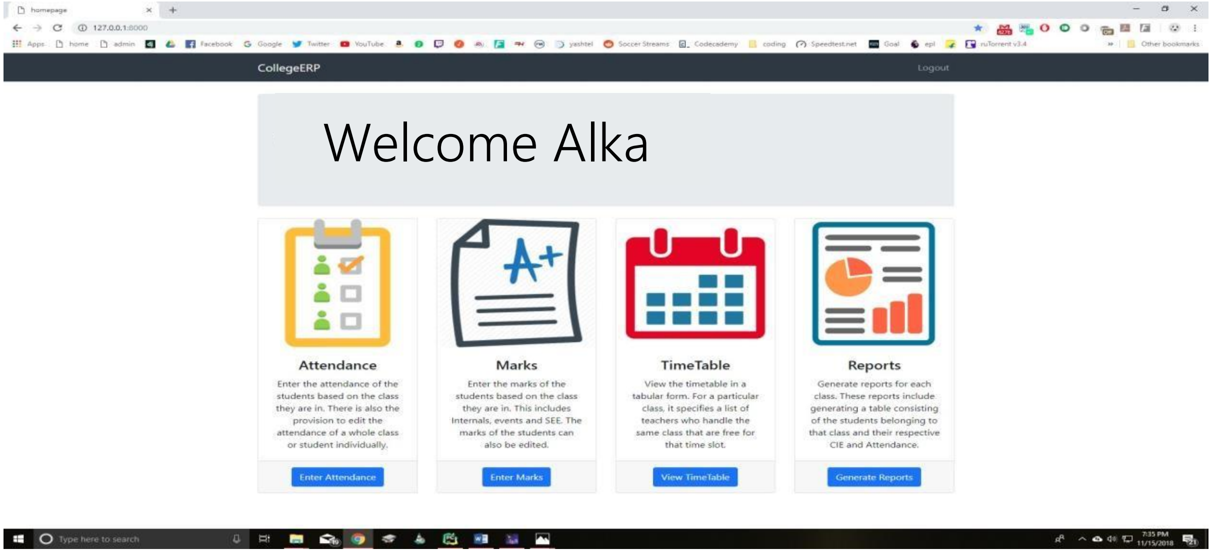
After successful login, the student is presented a homepage with their main sections, attendance, marks, timetable and reports. In the attendance section, the teacher can enter the attendance of their respective students for the days on which classes were conducted. There is a provision to enter extra classes and view/edit the attendance of each individual student. In the marks section, the teacher may enter the marks for 3 internals, 2 events and 1 SEE for each student. They can also edit each of the entered marks. The timetable provides the classes assigned to the teacher with the day and timings in a tabular form. Lastly, the teacher can generate reports for each of their assigned class.

1. Attendance

There is a list of all the class assigned to teacher. So, for each class there are 3 actions available. They are,

Enter Attendance

On this page, the classes scheduled or conducted is listed in the form of a list. Initially, all the scheduled classes will be listed from the start of the semester to the current date. Thus, if there is class scheduled for today, it will automatically appear on top of the list. If the attendance of any day is not marked it will be red, otherwise green if marked. Classes can also be cancelled which will make that date as yellow. While entering the attendance, the list of students in that class is listed and there are two options next



Welcome Alka

Attendance

Enter the attendance of the students based on the class they are in. There is also the provision to edit the attendance of a whole class or student individually.

Enter Attendance

Marks

Enter the marks of the students based on the class they are in. This includes Internals, events and SEE. The marks of the students can also be edited.

Enter Marks

TimeTable

View the timetable in a tabular form. For a particular class, it specifies a list of teachers who handle the same class that are free for that time slot.

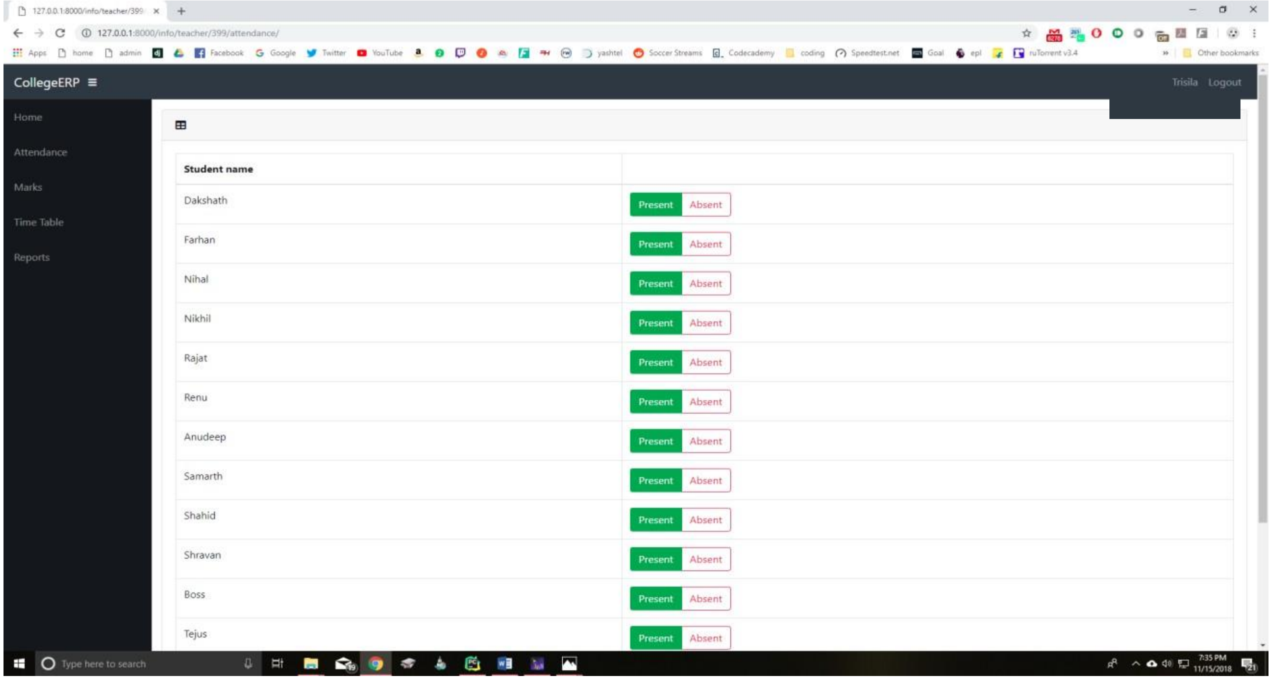
View TimeTable

Reports

Generate reports for each class. These reports include generating a table consisting of the students belonging to that class and their respective CIE and Attendance.

Generate Reports

to each. These options are in the form of a radio button for present and absent. All the buttons are initially marked as present and the teacher just needs to change for the absent students.

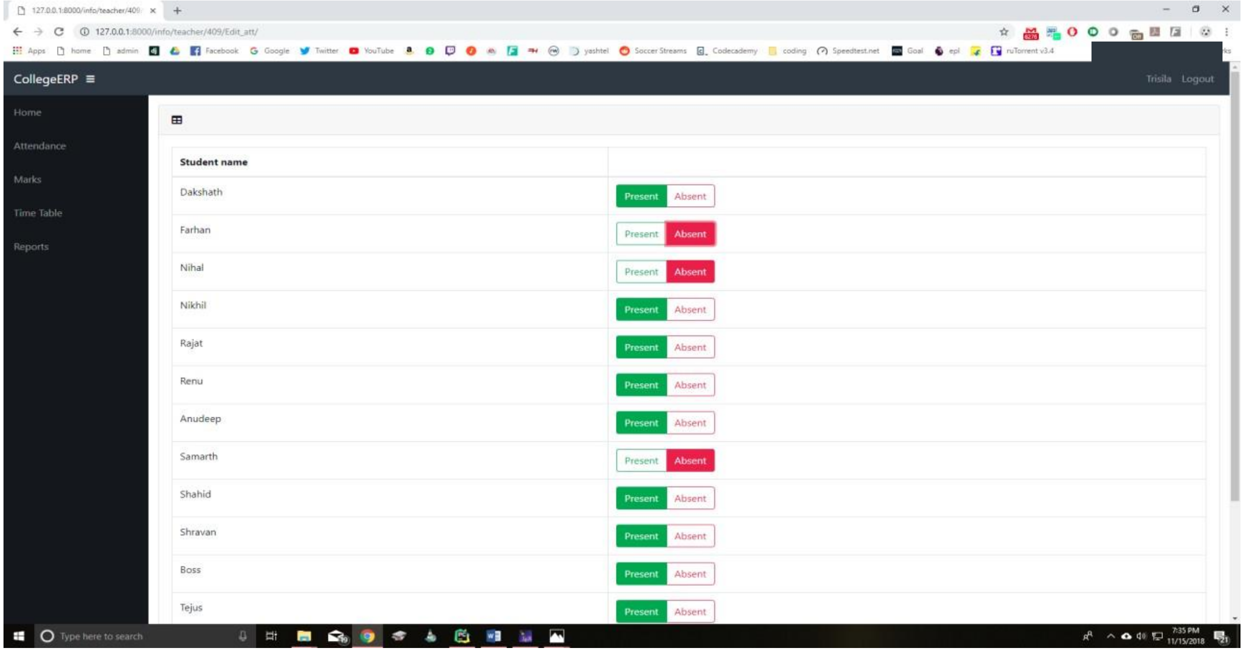


Student name	
Dakshath	[✓ Present] Absent
Farhan	[✓ Present] Absent
Nihal	[✓ Present] Absent
Nikhil	[✓ Present] Absent
Rajat	[✓ Present] Absent
Renu	[✓ Present] Absent
Anudeep	[✓ Present] Absent
Samarth	[✓ Present] Absent
Shahid	[✓ Present] Absent
Shravan	[✓ Present] Absent
Boss	[✓ Present] Absent
Tejus	[✓ Present] Absent

Figure 4.9: Entering attendance

Edit Attendance

After entering attendance, the teacher can also edit it. It is similar to screen for entering attendance, only the entered attendance is saved and display. The teacher can change the appropriate attendance and save it.



Student name	
Dakshath	[✓ Present] Absent
Farhan	Present [✓ Absent]
Nihal	Present [✓ Absent]
Nikhil	[✓ Present] Absent
Rajat	[✓ Present] Absent
Renu	[✓ Present] Absent
Anudeep	[✓ Present] Absent
Samarth	Present [✓ Absent]
Shahid	[✓ Present] Absent
Shravan	[✓ Present] Absent
Boss	[✓ Present] Absent
Tejus	[✓ Present] Absent

Extra Class

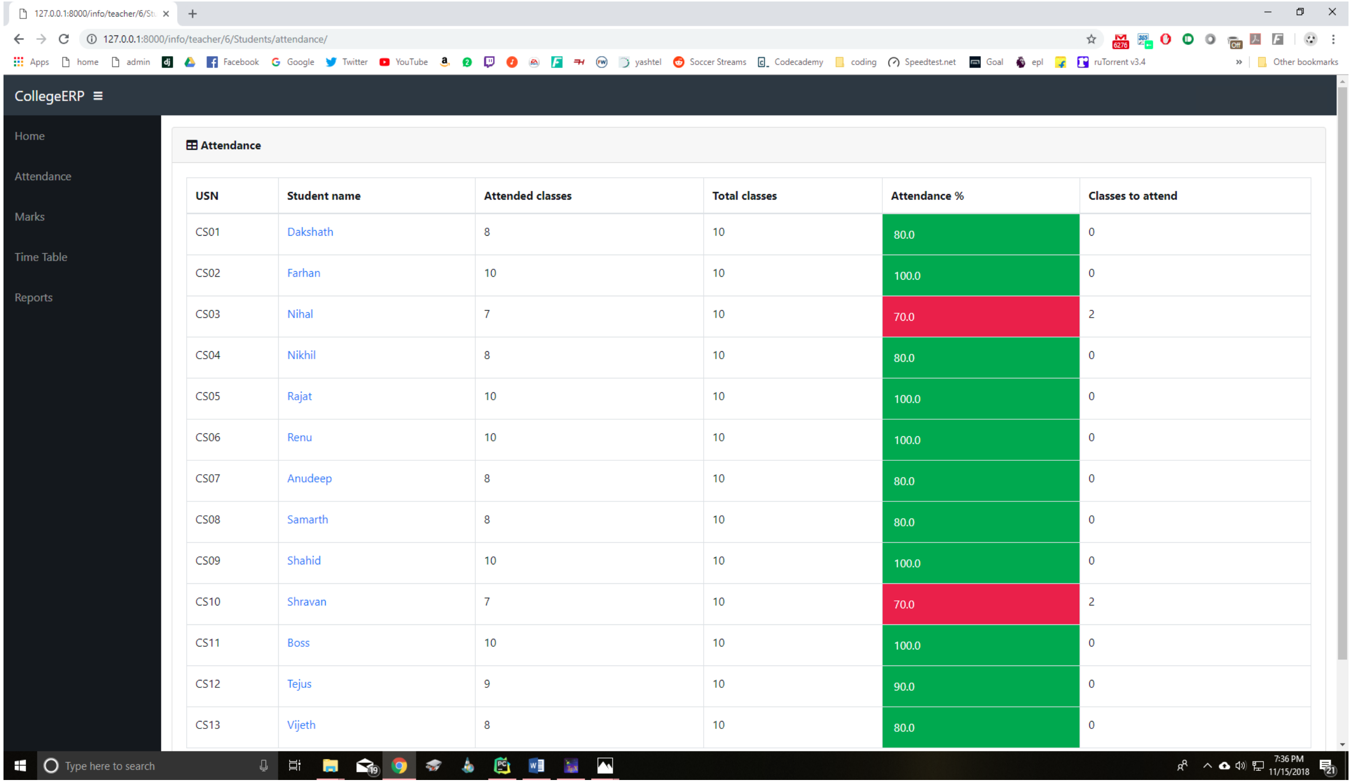
If a teacher has taken a class other than at the scheduled timings, they may enter the attendance for that as well. While entering the extra class, the teacher just needs to specify the date it was conducted and enter the attendance of each of the students. After submitting extra class, it will appear in the list of conducted classes and thus, it can be edited.

Student Attendance

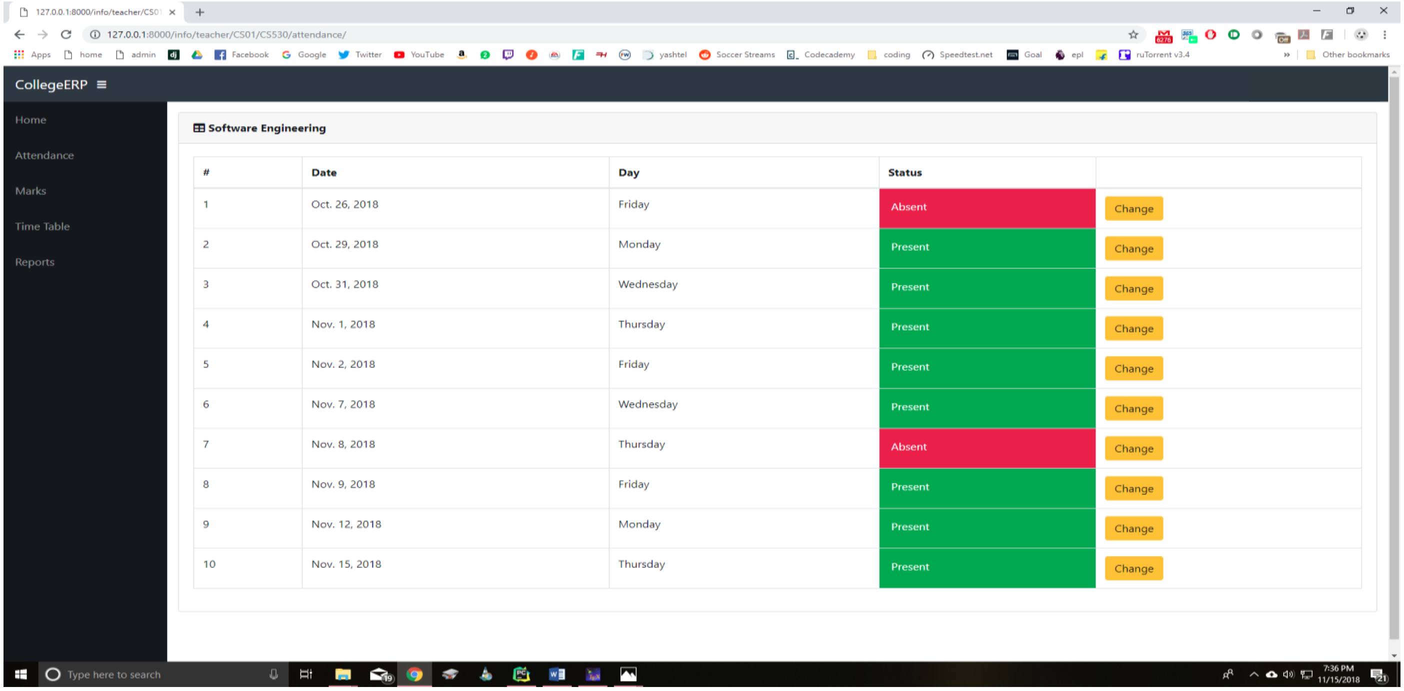
For each assigned class, the teacher can view the attendance status of the list of students. The number of attended classes, total number of classes conducted and the attendance percentage is displayed. If the attendance percentage of any of the students is below 75, it will be displayed in red. Thus, the teacher may easily find the list of students not eligible to take a test.

Student Attendance Details

The teacher can view the attendance detail of all their assigned students individually. That is, for all the conducted classes, it will display whether that student was present or



USN	Student name	Attended classes	Total classes	Attendance %	Classes to attend
CS01	Dakshath	8	10	80.0	0
CS02	Farhan	10	10	100.0	0
CS03	Nihal	7	10	70.0	2
CS04	Nikhil	8	10	80.0	0
CS05	Rajat	10	10	100.0	0
CS06	Renu	10	10	100.0	0
CS07	Anudeep	8	10	80.0	0
CS08	Samarth	8	10	80.0	0
CS09	Shahid	10	10	100.0	0
CS10	Shravan	7	10	70.0	2
CS11	Boss	10	10	100.0	0
CS12	Tejus	9	10	90.0	0
CS13	Vijeth	8	10	80.0	0



Software Engineering

#	Date	Day	Status	
1	Oct. 26, 2018	Friday	Absent	Change
2	Oct. 29, 2018	Monday	Present	Change
3	Oct. 31, 2018	Wednesday	Present	Change
4	Nov. 1, 2018	Thursday	Present	Change
5	Nov. 2, 2018	Friday	Present	Change
6	Nov. 7, 2018	Wednesday	Present	Change
7	Nov. 8, 2018	Thursday	Absent	Change
8	Nov. 9, 2018	Friday	Present	Change
9	Nov. 12, 2018	Monday	Present	Change
10	Nov. 15, 2018	Thursday	Present	Change

absent. The teacher can also edit the attendance of each student individually by changing the attendance status for each conducted class.

4.2.4 Marks

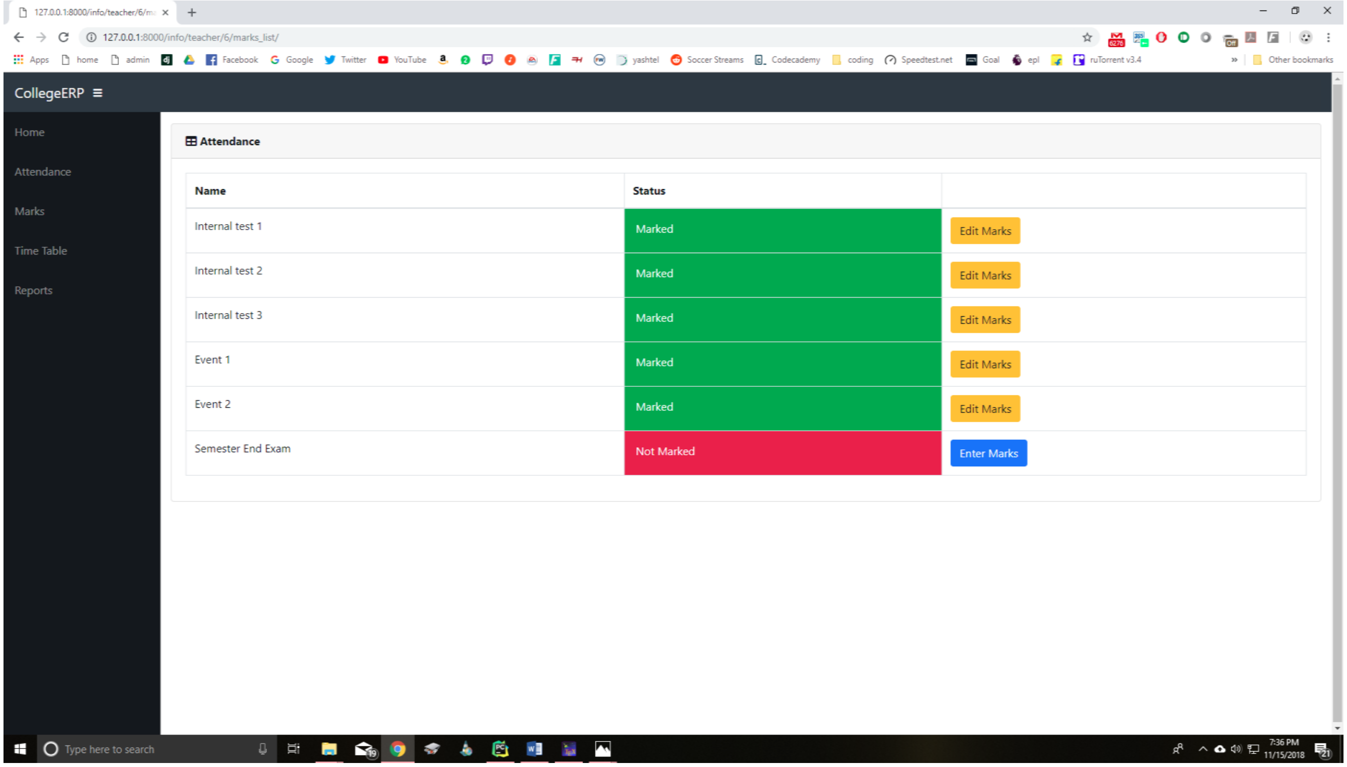
On this page, the list of classes assigned to the teacher are displayed along with two actions for each class. These actions are,

Enter Marks

On this page, the teacher can enter the marks for 3 internal assessments, 2 events and one semester end exam. Initially all of them are marked red to denote that the marks have not been entered yet. Oncethe marks for a test is entered, it turns green. While entering the marks for a particular test, the list of students in that class is listed and marks can be entered for all of them and submitted. Once, themarks are submitted, the students can view their respective marks. Incase if there is a need to change the marks of any student, it is possible to edit the marks.

Edit Marks

Marks for a test can be edited. While editing, the list of students in that class is displayed along with already entered marks. The marks to be updated can be changed and submitted. The students can view this change immediately.



Name	Status	
Internal test 1	Marked	Edit Marks
Internal test 2	Marked	Edit Marks
Internal test 3	Marked	Edit Marks
Event 1	Marked	Edit Marks
Event 2	Marked	Edit Marks
Semester End Exam	Not Marked	Enter Marks

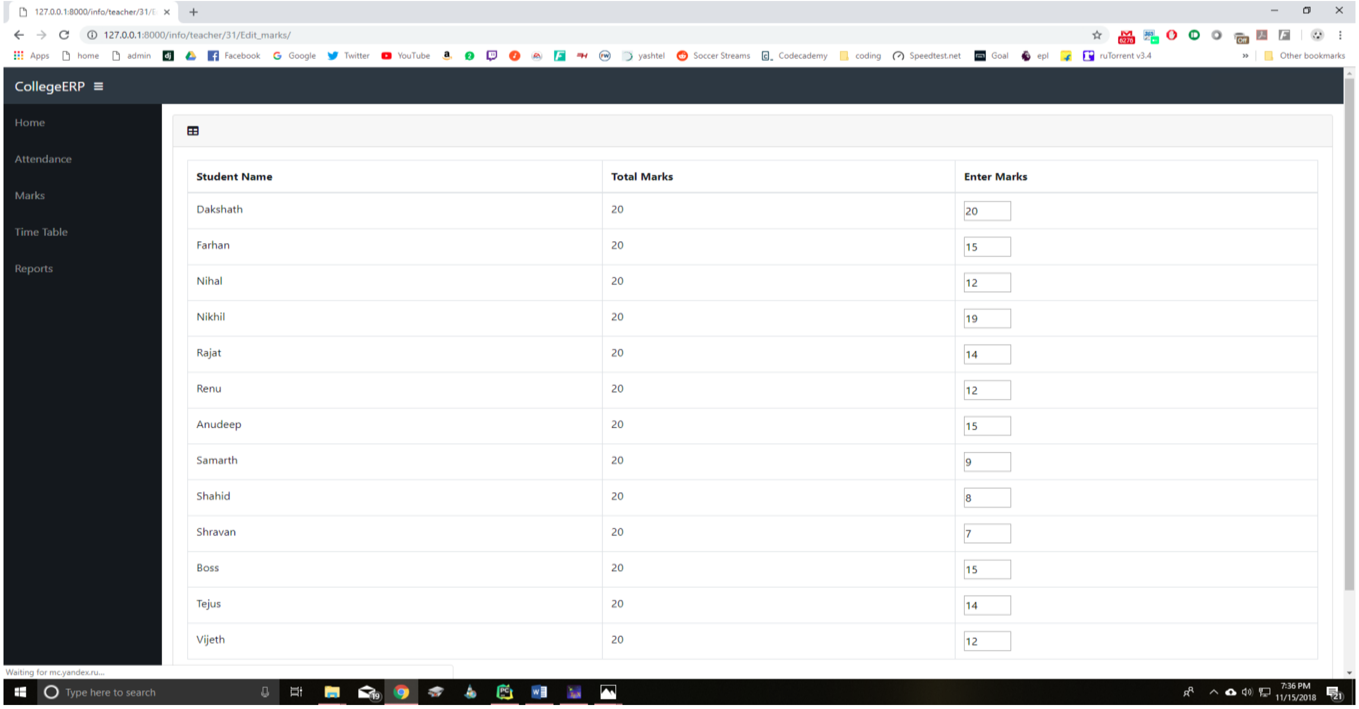
Figure 4.13: Entering marks

Student Marks

For each assigned class, the teacher has access to the list of students and the marks they obtained in all the tests. This is displayed in a tabular form.

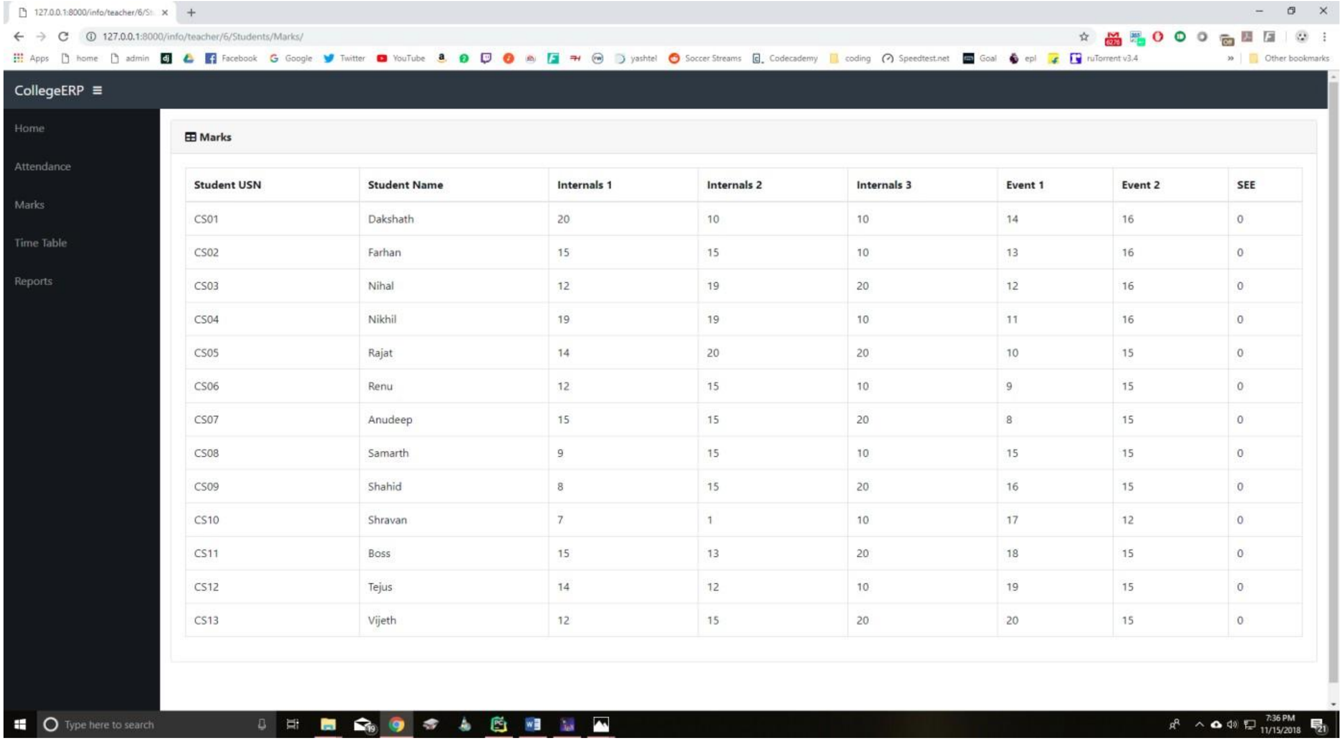
4.2.5 Timetable

This page is a table which lists the day and timings of each of the classes assigned to the teacher. Therow headers are the days of the week and the column headers are the time slots. So, for each day, it specifies the classes in the time slots. The timetable is generated automatically from the assign table, which is a table containing the information of all the teachers assigned to a class with a course and the timings the classes.



Student Name	Total Marks	Enter Marks
Dakshath	20	20
Farhan	20	15
Nihal	20	12
Nikhil	20	19
Rajat	20	14
Renu	20	12
Anudeep	20	15
Samarth	20	9
Shahid	20	8
Shravan	20	7
Boss	20	15
Tejus	20	14
Vijeth	20	12

Figure 4.14: Editing marks



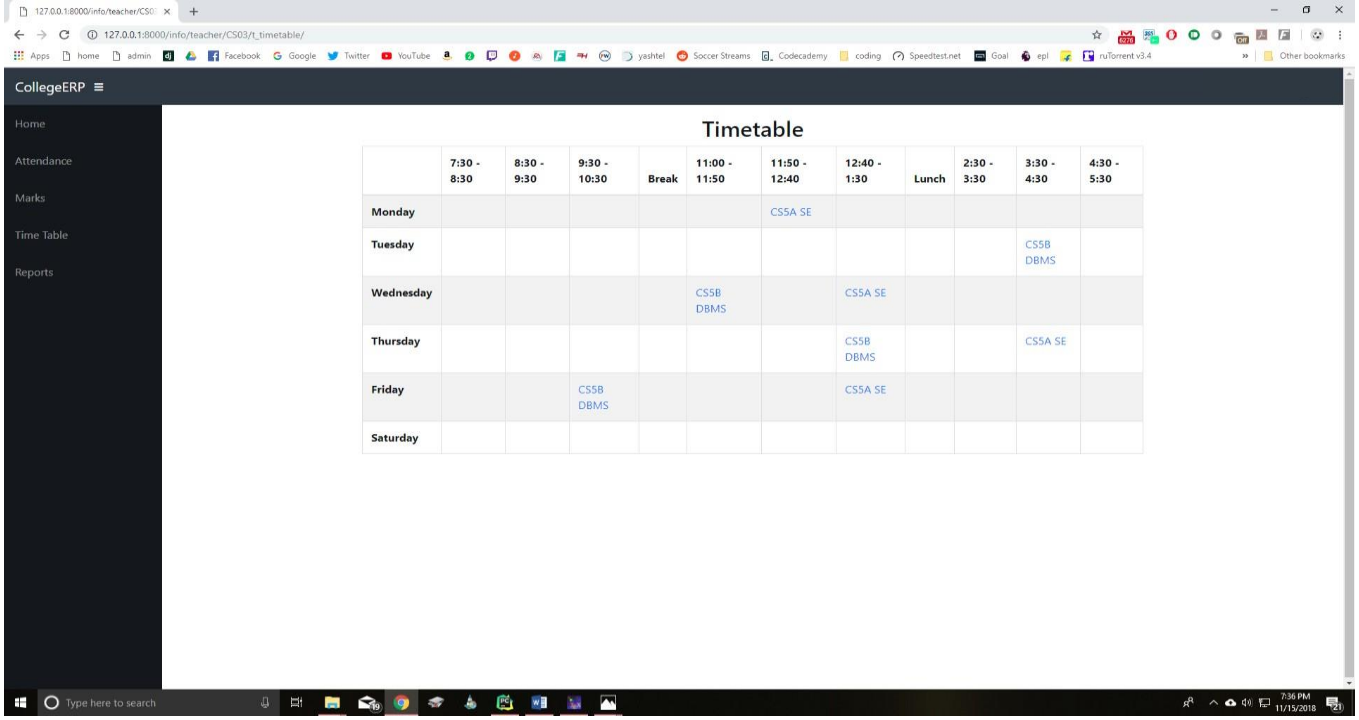
Marks

Student USN	Student Name	Internals 1	Internals 2	Internals 3	Event 1	Event 2	SEE
CS01	Dakshath	20	10	10	14	16	0
CS02	Farhan	15	15	10	13	16	0
CS03	Nihal	12	19	20	12	16	0
CS04	Nikhil	19	19	10	11	16	0
CS05	Rajat	14	20	20	10	15	0
CS06	Renu	12	15	10	9	15	0
CS07	Anudeep	15	15	20	8	15	0
CS08	Samarth	9	15	10	15	15	0
CS09	Shahid	8	15	20	16	15	0
CS10	Shravan	7	1	10	17	12	0
CS11	Boss	15	13	20	18	15	0
CS12	Tejus	14	12	10	19	15	0
CS13	Vijeth	12	15	20	20	15	0

Figure 4.15: Marks of all the students in a class

Free teachers

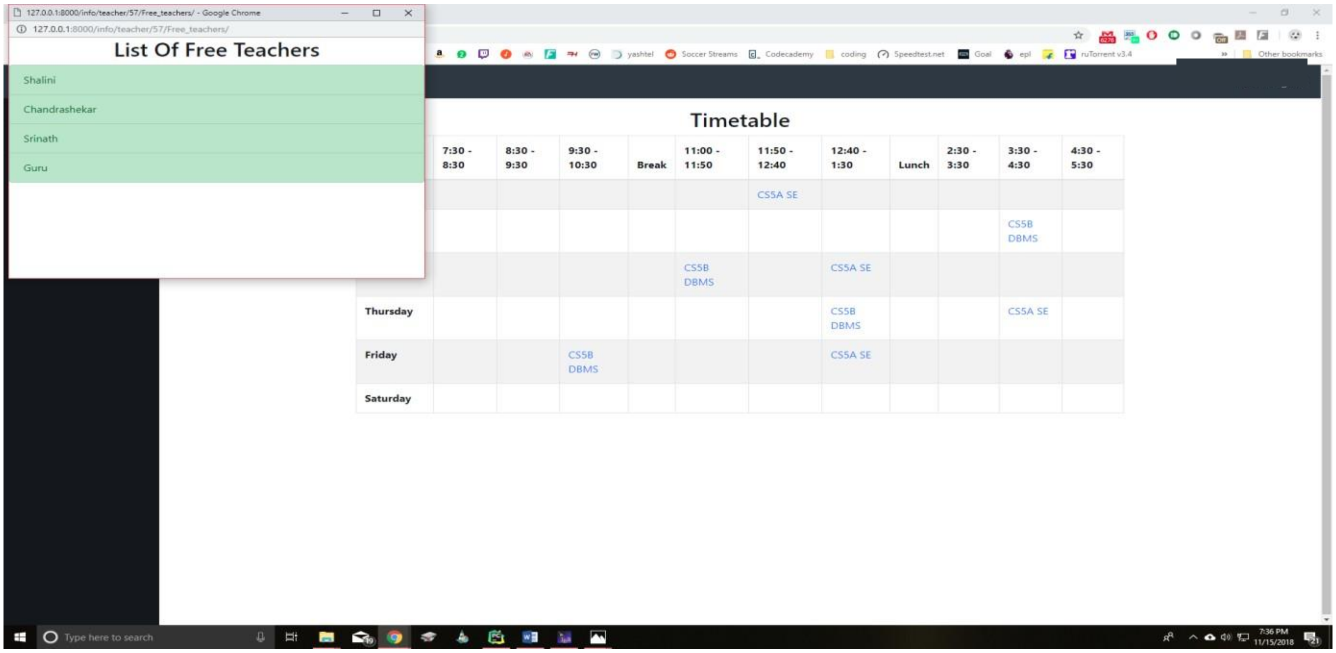
For each entry in the table, the list of free teachers can be generated. Free teachers are the teachers who assigned to the class and are free for that time slot on that day. This is very useful for the teachers particularly when they are on leave as it helps them find a suitable replacement are that class



Timetable

	7:30 - 8:30	8:30 - 9:30	9:30 - 10:30	Break	11:00 - 11:50	11:50 - 12:40	12:40 - 1:30	Lunch	2:30 - 3:30	3:30 - 4:30	4:30 - 5:30
Monday						CS5A SE					
Tuesday										CS5B DBMS	
Wednesday					CS5B DBMS		CS5A SE				
Thursday							CS5B DBMS			CS5A SE	
Friday			CS5B DBMS				CS5A SE				
Saturday											

Figure 4.16: Teacher Timetable


127.0.0.1:8000/info/teacher/57/Free_teachers/ - Google Chrome
127.0.0.1:8000/info/teacher/57/Free_teachers/

List Of Free Teachers

- Shalini
- Chandrashekar
- Srinath
- Guru

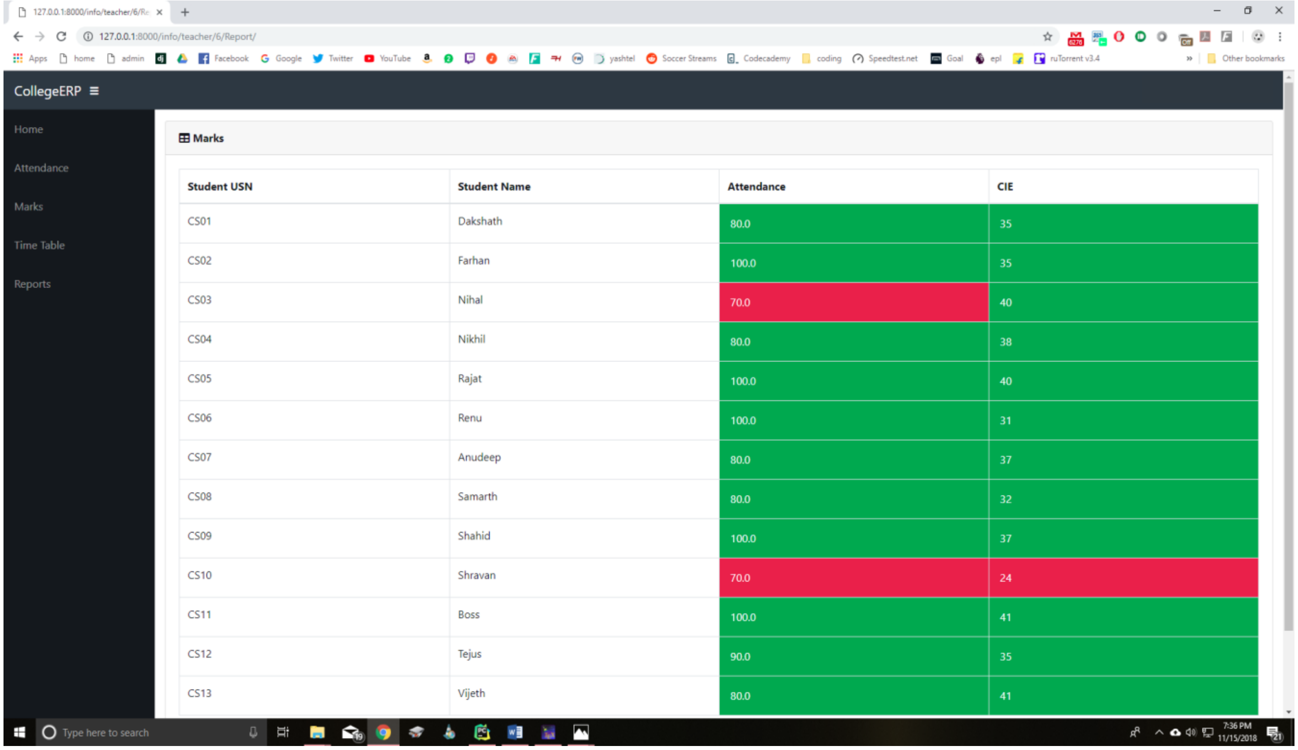
Timetable

	7:30 - 8:30	8:30 - 9:30	9:30 - 10:30	Break	11:00 - 11:50	11:50 - 12:40	12:40 - 1:30	Lunch	2:30 - 3:30	3:30 - 4:30	4:30 - 5:30
						CS5A SE					
										CS5B DBMS	
					CS5B DBMS		CS5A SE				
Thursday							CS5B DBMS			CS5A SE	
Friday			CS5B DBMS				CS5A SE				
Saturday											

Reports

The last page for the teachers is used to generate reports for each class. The report specifies the list of students in that class and their respective CIE and attendance percentage. CIE is the average of the marks obtained from the tests, 3 internals and 2 events. The CIE is out of 50 and the students with CIE below 25 are marked in red and are not eligible to write the semester end exam. Also, the attendance percentage is displayed with students below 75% marked in red.

Figure 4.18: CIE and attendance for a class of students

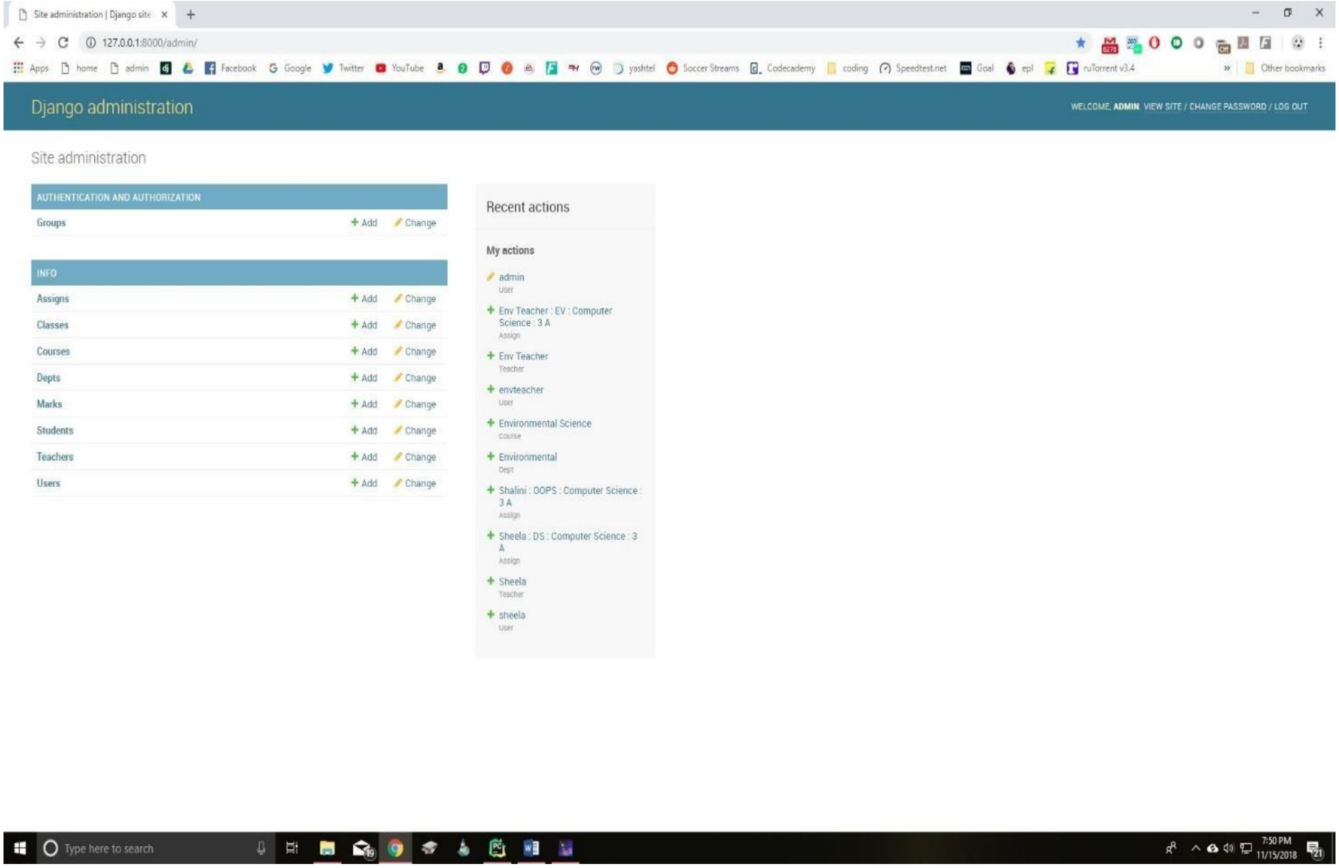


Student USN	Student Name	Attendance	CIE
CS01	Dakshath	80.0	35
CS02	Farhan	100.0	35
CS03	Nihal	70.0	40
CS04	Nikhil	80.0	38
CS05	Rajat	100.0	40
CS06	Renu	100.0	31
CS07	Anudeep	80.0	37
CS08	Samarth	80.0	32
CS09	Shahid	100.0	37
CS10	Shravan	70.0	24
CS11	Boss	100.0	41
CS12	Tejus	90.0	35
CS13	Vijeth	80.0	41

Administrator

The administrator is responsible for adding and maintaining all the departments, students, teachers, classes and courses. All this data is stored in the database in their respective tables. The admin is also responsible for adding and maintaining the list of teachers assigned to class with a course and the timings. This information is stored in the Assign table. The admin also has access to the marks and attendance of each student and can modify them.

There are several features in place to ensure that querying the database is quick and efficient for the administrator. As the database has the potential to become huge, there is a search feature for every table including student, teacher etc. The search has get a specific record based on name or id. Also, it can filter the record based on department, class etc.



Django administration

Site administration

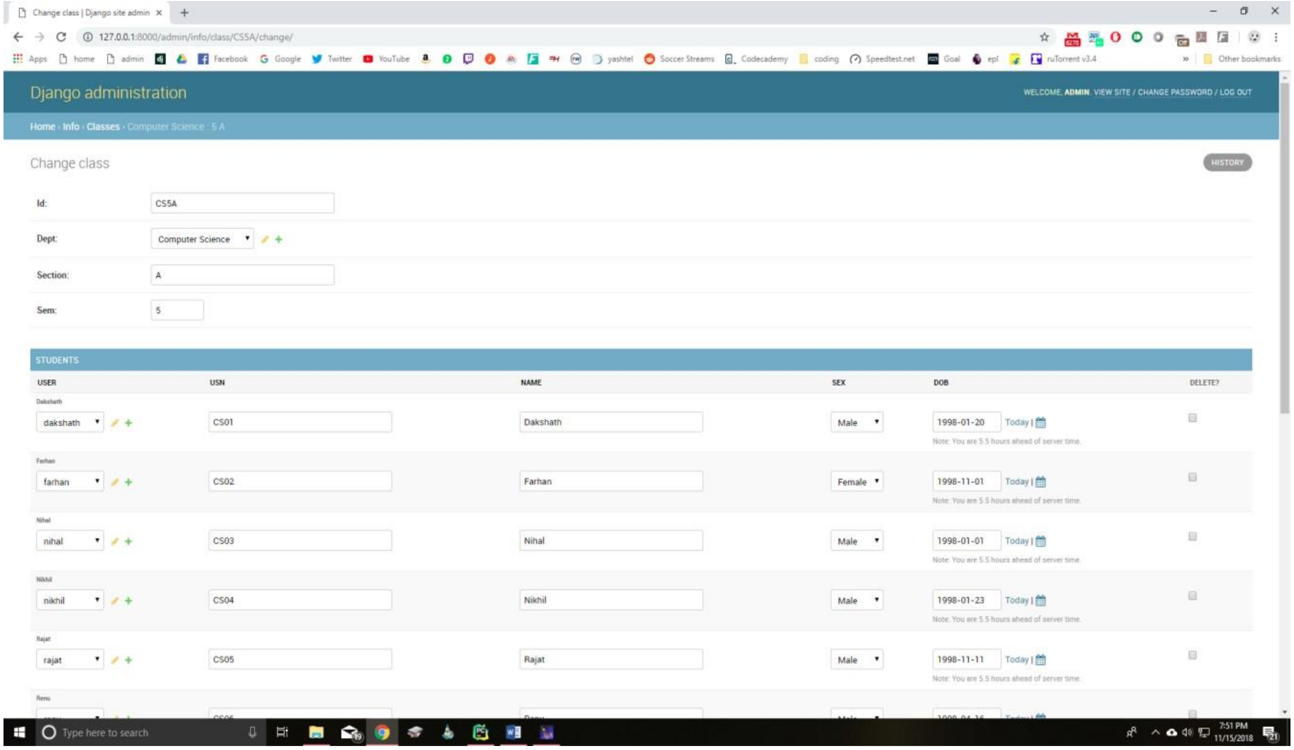
AUTHENTICATION AND AUTHORIZATION		
Groups	+ Add	Change

INFO		
Assigns	+ Add	Change
Classes	+ Add	Change
Courses	+ Add	Change
Depts	+ Add	Change
Marks	+ Add	Change
Students	+ Add	Change
Teachers	+ Add	Change
Users	+ Add	Change

Recent actions

My actions

- admin
  User
- + Env Teacher : EV : Computer Science : 3 A
  Assign
- + Env Teacher
  Teacher
- + envteacher
  User
- + Environmental Science
  Course
- + Environmental
  Dept
- + Shalini : OOPS : Computer Science : 3 A
  Assign
- + Sheela : DS : Computer Science : 3 A
  Assign
- + Sheela
  Teacher
- + sheela
  User



Django administration

Home › Info › Classes › Computer Science : 5 A

Change class

Id: CS5A

Dept: Computer Science

Section: A

Sem: 5

STUDENTS

USER	USN	NAME	SEX	DOB	DELETE?
Dakshath dakshath	CS01	Dakshath	Male	1998-01-20 Today | Note: You are 5.5 hours ahead of server time.	□
Farhan farhan	CS02	Farhan	Female	1998-11-01 Today | Note: You are 5.5 hours ahead of server time.	□
Nihal nihal	CS03	Nihal	Male	1998-01-01 Today | Note: You are 5.5 hours ahead of server time.	□
Nikhil nikhil	CS04	Nikhil	Male	1998-01-23 Today | Note: You are 5.5 hours ahead of server time.	□
Rajat rajat	CS05	Rajat	Male	1998-11-11 Today | Note: You are 5.5 hours ahead of server time.	□
Renu					

Figure 4.20: Admin students table page

Chapter 5

System Testing and results analysis

The completion of a system will be achieved only after it has been thoroughly tested. Though this gives a feel the project is completed, there cannot be any project without going through this stage. Hence in this stage it is decided whether the project can undergo the real time environment execution withoutany break downs, therefore a package can be rejected even at this stage.

Testing methods

Software testing methods are traditionally divided into black box testing and white box testing. These two approaches are used to describe the point of view that a test engineer takes when designing test cases.

White Box Testing

White box testing, by contrast to black box testing, is when the tester has access to the internal data structures and algorithms (and the code that implement these).White box testing methods can also be used to evaluate the completeness of a test suite that was created with black box testing methods. This allows the software team to examine parts of a system that are rarely tested and ensures that the most important function points have been tested.

This project is implemented using python with the Django framework. The code consists of models and views which can be tested. Models define the tables stored in SQL and the relationship between the different tables using foreign keys. A view function, or "view" for short, is simply a Python function that takes a web request and returns a web response. This response can be the HTML contents of a Web page, or a redirect, or a 404 error, or an XML document, or an image, etc.

Python also provides a file called test.py where we can write unit tests for the models and views.This is very useful as it automates the testing and we no longer have to manually test every page after there were any changes. The python code is pasted below and each test is explained using comments in the code.

```
from django.test import  TestCase
from info.models import Dept, Class, Course, User, Student, Teacher,
Assign, Attendancefrom django.urls import reverse
from django.test.client import
Clientclass InfoTest(TestCase):
# function used to create test users
def create_user(self, username=’testuser’,
password=’project123’): self.client = Client()
return User.objects.create(username=username, password=password)
# test to check whether an object in the user table is
created without errorsdef test_user_creation(self):
us  =  self.create_user()
ut =  self.create_user(username=’teacher’)
s = Student(user=us, USN=’CS01’,
name=’test’) s.save()
t = Teacher(user=ut, id=’CS01’,
name=’test’) t.save()
self.assertTrue(isinstance(us, User))
self.assertEqual(us.is_student, hasattr(us,
’student’)) self.assertEqual(ut.is_teacher,
hasattr(ut, ’teacher’))
# function used to create test users
def  create_dept(self, id=’CS’, name=’CS’):
return Dept.objects.create(id=id, name=name)
# test to check whether an object in the user table is
created without errorsdef test_dept_creation(self):
d = self.create_dept()
```

```
self.assertTrue(isinstance(d,
Dept)) self.assertEqual(d.__str
(), d.name)

# function used to create test class
def create_class(self, id=’CS5A’, sem=5, section=’A’):
dept = self.create_dept()
return Class.objects.create(id=id, dept=dept, sem=sem,
section=section)

# test to check whether an object in the class table is
created without errorsdef test_class_creation(self):
c = self.create_class()
self.assertTrue(isinstance(c,
Class))
self.assertEqual(c._str_(), "%s : %d %s" % (c.dept.name, c.sem,
c.section))

# function used to create test course
def create_course(self, id=’CS510’, name=’Data
Struct’, shortname=’DS’): dept =
self.create_dept(id=’CS2’)
return Course.objects.create(id=id, dept=dept, name=name,
shortname=shortname)

# test to check whether an object in the course table is
created without errorsdef test_course_creation(self):
```

```
c = self.create_course()
self.assertTrue(isinstance(c,
Course)) self.assertEqual(c._str
(), c.name)

# function used to create test student
def create_student(self, usn='CS01',
name='samarth'): cl = self.create_class()
u = self.create_user()
return Student.objects.create(user=u, class_id=cl, USN=usn,
name=name)


# test to check whether an object in the student table is
created without errorsdef test_student_creation(self):
s = self.create_student()
self.assertTrue(isinstance(s,
Student)) self.assertEqual(s._str
(), s.name)
# function used to create test teacher
def create_teacher(self, id='CS01', name='teacher'):
dept = self.create_dept(id='CS3')
return Teacher.objects.create(id=id, name=name, dept=dept)
# test to check whether an object in the teacher table is
created without errorsdef test_teacher_creation(self):
s = self.create_teacher()
self.assertTrue(isinstance(s,
Teacher)) self.assertEqual(s. _str
(), s.name)
# function used to create test
assigndef create_assign(self):
cl =
self.create_class()c=
self.create_course()t
=
self.create_teacher()
return Assign.objects.create(class_id=cl, course=cr, teacher=t)
# test to check whether an object in the assign table is
created without errorsdef test_assign_creation(self):
a = self.create_assign()
self.assertTrue(isinstance(a,Assi))

# views

# setup a test user so that login is
possibledef setUp(self):
self.client = Client()
self.user = User.objects.create_user('test_user', 'test@test.com',
'test_password')

# test to ensure admin doesn't have access to student
ot teacher pagedef test_index_admin(self):
self.client.login(username='test_user',
password='test_password') response =
self.client.get(reverse(’index’))
self.assertContains(response, "you have been logged
out") self.assertEqual(response.status_code, 200)

# test to ensure student can access only the
student pagedef test_index_student(self):
self.client.login(username=’test_user’, password=’test_password’)
s = Student.objects.create(user=User.objects.first(), USN=’test’,
name=’test_name’) response = self.client.get(reverse(’index’))
self.assertContains(response,
s.name)
self.assertEqual(response.status_co
de, 200)

test to ensure teacher can access only the
teacher page def test_index_teacher(self):
self.client.login(username=’test_user’, password=’test_password’)
s = Teacher.objects.create(user=User.objects.first(), id=’test’,
name=’test_name’) response = self.client.get(reverse(’index’))
self.assertContains(response,
s.name)
self.assertEqual(response.status_co
de, 200)

# test for response "student has no courses" in
the website# when student hasn’t been assigned
any course
```

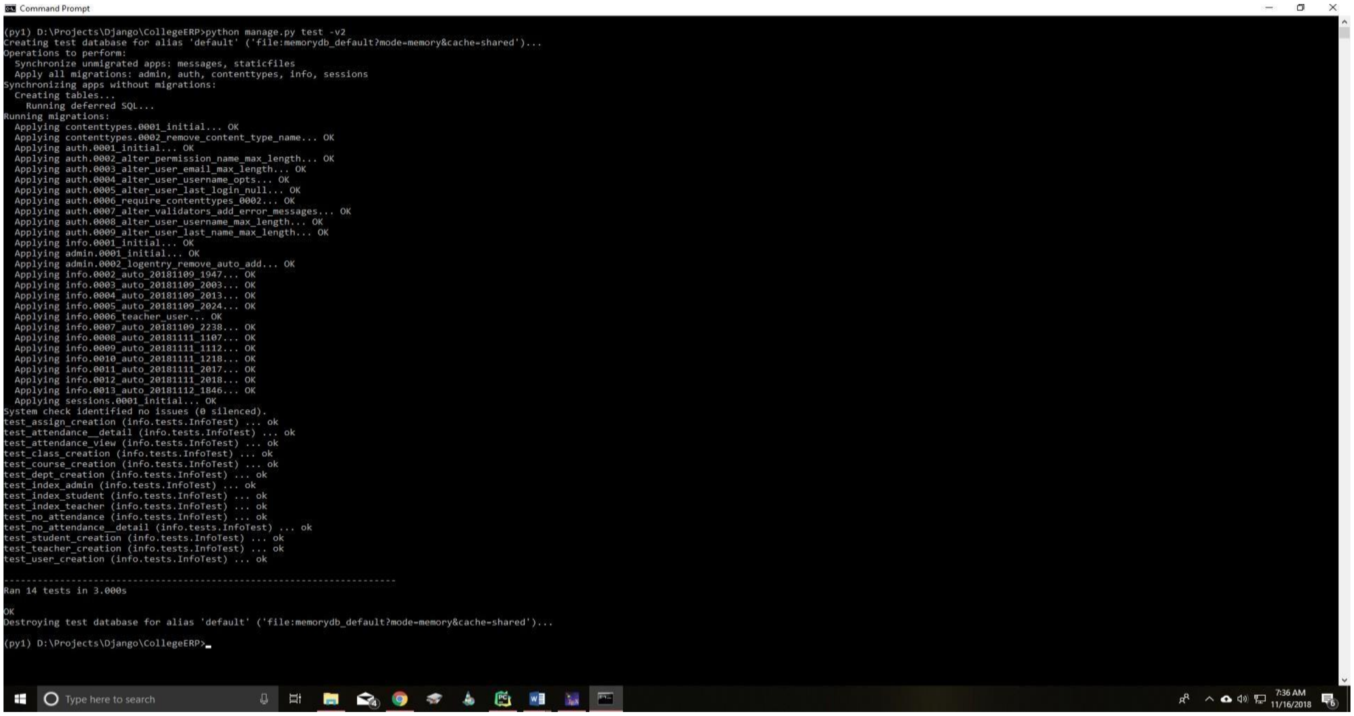
```
def   test_no_attendance(self):
s = self.create_student()
self.client.login(username=’test_user’,
password=’test_password’)             response             =
self.client.get(reverse(’attendance’,     args=(s.USN,)))
self.assertContains(response, "student has no courses")
self.assertEqual(response.status_code, 200)

# test which assigns student a course and tests whether the
attendance for the# same is displayed on the webste
def   test_attendance_view(self):
s =  self.create_student()
self.client.login(username=’test_user’, password=’test_password’)
Assign.objects.create(class_id=s.class_id,
course=self.create_course(),    teacher=self.create_teacher())
response = self.client.get(reverse(’attendance’,
args=(s.USN,)))
self.assertEqual(response.status_code, 200)
self.assertQuerysetEqual(response.context[’att_list’]
, [’<AttendanceTotal:  AttendanceTotal  object
(1)>’])

# test for response "student has no attendance" on the
attendance detail page#  when  teacher hasn’t  marked any
attendance  for  that  course  yet.
def  test_no_attendance_detail(self):
s =
self.create_student()
cr =
self.create_course()
self.client.login(username=’test_user’, password=’test_password’)
resp = self.client.get(reverse(’attendance_detail’, args=(s.USN,
cr.id))) self.assertEqual(resp.status_code, 200)
self.assertContains(resp,   "student   has   no   attendance")

# test which marks one attendance for the student and course
and tests whether# it is displayed properly in  the
attendance  detail  page.
def  test_attendance_detail(self):
s =
self.create_student()
cr =
self.create_course()
Attendance.objects.create(student=s, course=cr)
self.client.login(username=’test_user’,
password=’test_password’)
resp = self.client.get(reverse(’attendance_detail’, args=(s.USN,
cr.id))) self.assertEqual(resp.status_code, 200)
self.assertQuerysetEqual(resp.context[’att_list’],
    [’<Attendance: ’ + s.name + ’ : ’ + cr.shortname + ’>’])
```

Result of Testing



```
(py1) D:\Projects\Django\CollegeERP>python manage.py test -v2
Creating test database for alias 'default' ('file:memorydb_default?mode=memory&cache=shared')...
Operations to perform:
  Synchronize unmigrated apps: messages, staticfiles
  Apply all migrations: admin, auth, contenttypes, info, sessions
Synchronizing apps without migrations:
  Creating tables...
    Running deferred SQL...
Running migrations:
  Applying contenttypes.0001_initial... OK
  Applying contenttypes.0002_remove_content_type_name... OK
  Applying auth.0001_initial... OK
  Applying auth.0002_alter_permission_name_max_length... OK
  Applying auth.0003_alter_user_email_max_length... OK
  Applying auth.0004_alter_user_username_opts... OK
  Applying auth.0005_alter_user_last_login_null... OK
  Applying auth.0006_require_contenttypes_0002... OK
  Applying auth.0007_alter_validators_add_error_messages... OK
  Applying auth.0008_alter_user_username_max_length... OK
  Applying auth.0009_alter_user_last_name_max_length... OK
  Applying info.0001_initial... OK
  Applying admin.0001_initial... OK
  Applying admin.0002_logentry_remove_auto_add... OK
  Applying info.0002_auto_20181109_1947... OK
  Applying info.0003_auto_20181109_2003... OK
  Applying info.0004_auto_20181109_2013... OK
  Applying info.0005_auto_20181109_2024... OK
  Applying info.0006_teacher_user... OK
  Applying info.0007_auto_20181109_2238... OK
  Applying info.0008_auto_20181111_1107... OK
  Applying info.0009_auto_20181111_1112... OK
  Applying info.0010_auto_20181111_1218... OK
  Applying info.0011_auto_20181111_2017... OK
  Applying info.0012_auto_20181111_2018... OK
  Applying info.0013_auto_20181112_1846... OK
  Applying sessions.0001_initial... OK
System check identified no issues (0 silenced).
test_assign_creation (info.tests.InfoTest) ... ok
test_attendance__detail (info.tests.InfoTest) ... ok
test_attendance_view (info.tests.InfoTest) ... ok
test_class_creation (info.tests.InfoTest) ... ok
test_course_creation (info.tests.InfoTest) ... ok
test_dept_creation (info.tests.InfoTest) ... ok
test_index_admin (info.tests.InfoTest) ... ok
test_index_student (info.tests.InfoTest) ... ok
test_index_teacher (info.tests.InfoTest) ... ok
test_no_attendance (info.tests.InfoTest) ... ok
test_no_attendance__detail (info.tests.InfoTest) ... ok
test_student_creation (info.tests.InfoTest) ... ok
test_teacher_creation (info.tests.InfoTest) ... ok
test_user_creation (info.tests.InfoTest) ... ok

----------------------------------------------------------------------
Ran 14 tests in 3.000s

OK
Destroying test database for alias 'default' ('file:memorydb_default?mode=memory&cache=shared')...

(py1) D:\Projects\Django\CollegeERP>_
```

Figure 5.1: Testing results

Black Box Testing

Black box testing treats the software as a ”black box,” without any knowledge of internal implementation. Black box testing methods include: equivalence partitioning, boundary value analysis, all-pairs testing, fuzz testing, model-based testing, traceability matrix, exploratory testing and specification-based testing.

We performed black box testing on the teacher page to make sure every page was working as desired.We took into consideration various test cases and noted down the results. Below we have recorded various test cases and their respective results

Test Case: 1

Request the attendance page for a teacher with no assigned classes.

The web page loaded with message ”Teacher has no classes assigned”.

Test Case: 2

Request the attendance page for a teacher with 1 assigned class.

The web page displayed the assigned class and options to enter attendance and view the students

Test Case: 3

Request to enter the attendance for an assigned class with one test student

The web page displays the student with his/her details and an options to mark present or absent.On marking absent, it can be viewed by the student.

Test Case: 4

Request to edit the attendance for an assigned class with one test student

The student is listed with his/her details and is initially marked as absent from the previous test. On marking present, the attendance for that student and can be viewed by the student.

Test Case: 5

Request to enter the marks for an assigned class with one student

Initially, a list of tests is displays such as internals 1, SEE etc. On selecting one of internals 1, the teacher can enter the marks for the student out of 20. On submitting, the status for that test turns green denoting that it has been successfully entered.

Test Case: 6

Request to edit the marks for an assigned class with one student

For each class, there is a list of tests such as internals 1, SEE etc. As the marks for internals 1 wasalready entered in the previous test, it is marked green and there is an option to edit. When editing, the marks already stored is displayed and appropriate changes can be made and saved.

Test Case: 7

Request to view the student information for an assigned class with no students

The requested page is display with no content and a message stating ”This class has no students assigned”

Test Case: 8

Request to view the student information for an assigned class with 1 student

The web page is the form of a table with entries for student name, USN and their attendance per- centage, marks in each test including 3 internals, 2 events and 1 SEE. IF the attendance status is below 75%, it is marked in red.

Results of testing

After applying various testing methods such as black box testing, white box testing and acceptance testing, We can conclude that the testing for the software is completed. To summarize the testing phase, white box testing is done using the inbuilt feature of Django to apply unit tests to all the components in the software. After any changes to the software, we can run the tests on the software automatically and thus we can find and eliminate any bugs or errors in the system easily instead of performing rigorous manual testing after every change.

In black box testing, we testing all the components and system as a whole. Several test cases were considered and extensive tests were conducted. The results of these tests were positive and any errors were fixed during the testing phase.

For acceptance testing, we gave a demonstration of the software to our teacher, who is a key stake- holder. After several tests and questions, she was content with results of the tests and software.

Source code

Add_student.html

```
<!DOCTYPE html>
<html lang="en">


  <head>


    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
    <meta name="description" content="">
    <meta name="author" content="">


    <title>homepage</title>
      {% load static %}


    <!-- Bootstrap core CSS -->
      <link href="{% static '/info/homepage/vendor/bootstrap/css/bootstrap.min.css' %}" rel="stylesheet">


    <!-- Custom styles for this template -->
      <link href="{% static '/info/homepage/css/heroic-features.css' %}" rel="stylesheet">
          <link href="{% static '/info/bootstrap/vendor/fontawesome-free/css/all.min.css' %}" rel="stylesheet" type="text/css">
  </head>
  <body>
    <!-- Navigation -->
    <nav class="navbar navbar-expand-lg navbar-dark bg-dark fixed-top">
      <div class="container">
        <a class="navbar-brand" href="{% url 'index' %}">CollegeERP</a>
        <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarResponsive" aria-controls="navbarResponsive" aria-expanded="false" aria-label="Toggle navigation">
          <span class="navbar-toggler-icon"></span>
        </button>
        <div class="collapse navbar-collapse" id="navbarResponsive">
          <ul class="navbar-nav ml-auto">
            <li class="nav-item">
                <a class="nav-link" href="#" data-toggle="modal" data-target="#logoutModal">Logout</a>
            </li>
          </ul>
        </div>
      </div>
    </nav>

    <!-- Page Content -->
    <div class="container">

      <!-- Jumbotron Header -->
      <header class="jumbotron my-4">
        <h1 class="display-3 text-capitalize">Welcome {{ request.user }}</h1>
      </header>
      <!-- Page Features -->
      <div class="row text-center justify-content-center">
        <div class="row justify-content-center">
            <div class="">
              <span class="anchor" id="formUserEdit"></span>
              <hr class="my-5">
              <div class="card card-outline-secondary" style="min-width: 600px;">
                <div class="card-header">
                  <h3 class="mb-0">Student Information</h3>
                </div>
                <div class="card-body">
                  <form class="form" role="form" method="POST" action="{% url 'add_student' %}">
                        {% csrf_token %}
                        <div class="form-group row">
                            <label class="col-lg-3 col-form-label form-control-label">Class ID</label>
                            <div class="col-lg-9">
                            <select class="form-control" name="class" required>
                                    {% for class in all_classes %}
                                        <option value="{{ class.id }}">
                                            {{ class }}
                                        </option>
                                    {% endfor %}
                            </select>
                            </div>
                        </div>
                        <div class="form-group row">
                        <label class="col-lg-3 col-form-label form-control-label">USN</label>
                        <div class="col-lg-9">
                            <input class="form-control" name="usn" type="text" placeholder="AB0A00" required>
                        </div>
                        </div>
                        <div class="form-group row">
                        <label class="col-lg-3 col-form-label form-control-label">Full Name</label>
                        <div class="col-lg-9">
                            <input class="form-control" type="text" name="full_name" placeholder="Anil Kumar" required>
                        </div>
                        </div>
                        <div class="form-group row">
                            <label class="col-lg-3 col-form-label form-control-label">Sex</label>
                            <div class="col-lg-9">
                            <select class="form-control" name="sex" required>
                              <option value="Male">
                                    Male
                              </option>
```

```
         <option value="Female">
           Female
         </option>
       </select>
       </div>
     </div>
     <div class="form-group row">
     <label class="col-lg-3 col-form-label form-control-label">Date of Birth</label>
       <div class="col-lg-9">
         <input class="form-control" name="dob" type="date" required>
       </div>
     </div>



   <div class="form-group row justify-content-left">
     <div class="ml-auto mr-3">
       <a class="btn btn-danger" href="{% url 'index' %}"> Cancel </a>
       <input class="btn btn-secondary ml-auto" type="reset" value="Reset">
       <input class="btn btn-primary ml-auto" type="submit" value="Submit">
     </div>
   </div>
  </form>
 </div>
</div>
```

```
            </div>
          </div>


      </div>
      <!-- /.row -->


    </div>
    <!-- /.container -->
    <!-- Logout Modal-->
    <div class="modal fade" id="logoutModal" tabindex="-1" role="dialog" aria-labelledby="exampleModalLabel" aria-hidden="true">
      <div class="modal-dialog" role="document">
        <div class="modal-content">
          <div class="modal-header">
            <h5 class="modal-title" id="exampleModalLabel">Ready to Leave?</h5>
            <button class="close" type="button" data-dismiss="modal" aria-label="Close">
              <span aria-hidden="true">×</span>
            </button>
          </div>
          <div class="modal-body">Select "Logout" below if you are ready to end your current session.</div>
          <div class="modal-footer">
            <button class="btn btn-secondary" type="button" data-dismiss="modal">Cancel</button>
            <a class="btn btn-primary" href="/accounts/logout">Logout</a>

              </div>
        </div>
      </div>
    </div>


    <!-- Bootstrap core JavaScript -->
      <script src="{% static '/info/homepage/vendor/jquery/jquery.min.js' %}"></script>
    <script src="{% static '/info/homepage/vendor/bootstrap/js/bootstrap.bundle.min.js' %}"></script>


  </body>
</html>
```

Add_teacher.html

```
<!DOCTYPE html>
<html lang="en">


  <head>


    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
    <meta name="description" content="">
    <meta name="author" content="">


    <title>homepage</title>
      {% load static %}
    <!-- Bootstrap core CSS -->
      <link href="{% static '/info/homepage/vendor/bootstrap/css/bootstrap.min.css'
%}" rel="stylesheet">



    <!-- Custom styles for this template -->
      <link href="{% static '/info/homepage/css/heroic-features.css' %}"
rel="stylesheet">
          <link href="{% static '/info/bootstrap/vendor/fontawesome-free/css/all.min.css'
%}" rel="stylesheet" type="text/css">




  </head>

  <body>

    <!-- Navigation -->
    <nav class="navbar navbar-expand-lg navbar-dark bg-dark fixed-top">
      <div class="container">
        <a class="navbar-brand" href="{% url 'index' %}">CollegeERP</a>
        <button class="navbar-toggler" type="button" data-toggle="collapse" data-
target="#navbarResponsive" aria-controls="navbarResponsive" aria-
expanded="false" aria-label="Toggle navigation">
          <span class="navbar-toggler-icon"></span>
        </button>
        <div class="collapse navbar-collapse" id="navbarResponsive">
```

```
     <ul class="navbar-nav ml-auto">
      <li class="nav-item">
        <a class="nav-link" href="#" data-toggle="modal" data-target="#logoutModal">Logout</a>
      </li>
     </ul>
    </div>
   </div>
  </nav>

  <!-- Page Content -->
  <div class="container">

   <!-- Jumbotron Header -->
   <header class="jumbotron my-4">
    <h1 class="display-3 text-capitalize">Welcome {{ request.user }}</h1>
   </header>

   <!-- Page Features -->
   <div class="row text-center justify-content-center">
    <div class="row justify-content-center">
      <div class="">
       <span class="anchor" id="formUserEdit"></span>
       <hr class="my-5">
       <div class="card card-outline-secondary" style="min-width: 600px;">
        <div class="card-header">
```

```
         <h3 class="mb-0">Faculty Information</h3>
        </div>
        <div class="card-body">
         <form class="form" role="form" method="POST" action="{% url 'add_teacher' %}">
            {% csrf_token %}
            <div class="form-group row">
            <label class="col-lg-3 col-form-label form-control-label">ID</label>
            <div class="col-lg-9">
              <input class="form-control" name="id" type="text" placeholder="CS04" required>
            </div>
            </div>
            <div class="form-group row">
            <label class="col-lg-3 col-form-label form-control-label">Full Name</label>
            <div class="col-lg-9">
              <input class="form-control" type="text" name="full_name" placeholder="Anil Kumar" required>
            </div>
            </div>
            <div class="form-group row">
              <label class="col-lg-3 col-form-label form-control-label">Department</label>
              <div class="col-lg-9">
              <select class="form-control" name="dept" required>
                  {% for dept in all_dept %}
```

```
                <option value="{{ dept.id }}">
                    {{ dept }}
                </option>
            {% endfor %}
    </select>
    </div>
</div>
<div class="form-group row">
    <label class="col-lg-3 col-form-label form-control-label">Sex</label>
    <div class="col-lg-9">
    <select class="form-control" name="sex" required>
        <option value="Male">
            Male
        </option>
        <option value="Female">
            Female
        </option>
    </select>
    </div>
</div>
<div class="form-group row">
<label class="col-lg-3 col-form-label form-control-label">Date of Birth</label>
    <div class="col-lg-9">
        <input class="form-control" name="dob" type="date" required>
```

```
              </div>
            </div>



          <div class="form-group row justify-content-left">
            <div class="ml-auto mr-3">
              <a class="btn btn-danger" href="{% url 'index' %}"> Cancel </a>
              <input class="btn btn-secondary ml-auto" type="reset" value="Reset">
              <input class="btn btn-primary ml-auto" type="submit" value="Submit">
            </div>
          </div>
         </form>
        </div>
       </div>
      </div>
     </div>


   </div>
   <!-- /.row -->


  </div>
  <!-- /.container -->
  <!-- Logout Modal-->
  <div class="modal fade" id="logoutModal" tabindex="-1" role="dialog" aria-labelledby="exampleModalLabel" aria-hidden="true">
```

```
      <div class="modal-dialog" role="document">
        <div class="modal-content">
          <div class="modal-header">
            <h5 class="modal-title" id="exampleModalLabel">Ready to Leave?</h5>
            <button class="close" type="button" data-dismiss="modal" aria-label="Close">
              <span aria-hidden="true">×</span>
            </button>
          </div>
          <div class="modal-body">Select "Logout" below if you are ready to end your current session.</div>
          <div class="modal-footer">
            <button class="btn btn-secondary" type="button" data-dismiss="modal">Cancel</button>
            <a class="btn btn-primary" href="/accounts/logout">Logout</a>
          </div>
        </div>
      </div>
    </div>
    <!-- Bootstrap core JavaScript -->
      <script src="{% static '/info/homepage/vendor/jquery/jquery.min.js' %}"></script>
    <script src="{% static '/info/homepage/vendor/bootstrap/js/bootstrap.bundle.min.js' %}"></script>
  </body>
</html>
```

Admin.html

```
<!DOCTYPE html>
<html lang="en">

  <head>

    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
    <meta name="description" content="">
    <meta name="author" content="">

    <title>homepage</title>
      {% load static %}

    <!-- Bootstrap core CSS -->
      <link href="{% static '/info/homepage/vendor/bootstrap/css/bootstrap.min.css' %}" rel="stylesheet">



    <!-- Custom styles for this template -->
      <link href="{% static '/info/homepage/css/heroic-features.css' %}" rel="stylesheet">

  </head>

  <body>
```

```
<!-- Navigation -->
<nav class="navbar navbar-expand-lg navbar-dark bg-dark fixed-top">
  <div class="container">
    <a class="navbar-brand" href="{% url 'index' %}">CollegeERP</a>
    <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarResponsive" aria-controls="navbarResponsive" aria-expanded="false" aria-label="Toggle navigation">
      <span class="navbar-toggler-icon"></span>
    </button>
    <div class="collapse navbar-collapse" id="navbarResponsive">
      <ul class="navbar-nav ml-auto">
        <li class="nav-item">
            <a class="nav-link" href="#" data-toggle="modal" data-target="#logoutModal">Logout</a>
        </li>
      </ul>
    </div>
  </div>
</nav>

<!-- Page Content -->
<div class="container">

  <!-- Jumbotron Header -->
  <header class="jumbotron my-4">
    <h1 class="display-3 text-capitalize">Welcome {{ request.user }}</h1>
  </header>
```

```
<!-- Page Features -->
<div class="row text-center justify-content-center">

  <div class="col-lg-3 col-md-6 mb-4">
    <div class="card">
          <a class="px-2 py-3" href="{% url 'add_teacher' %}">
              <img class="card-img-top" src="{% static 'info/images/teacher.png' %}"
alt="">
          </a>
          <div class="card-body">
              <h4 class="card-title">Add Teacher</h4>
              <p class="card-text">Enter the details of new faculty to add a new
teacher to database. Make sure to correctly input values.</p>
          </div>
    </div>
  </div>

  <div class="col-lg-3 col-md-6 mb-4">
    <div class="card">
      <a class="px-2 py-3" href="{% url 'add_student' %}">
          <img class="card-img-top" src="{% static 'info/images/student.png' %}"
alt="">
      </a>
      <div class="card-body">
          <h4 class="card-title">Add Student</h4>
          <p class="card-text">Enter the details of a student to enroll a new student.
          Fill the details carefully as they are important for academics.</p>
      </div>
     </div>
    </div>
   </div>
   <!-- /.row -->

  </div>
  <!-- /.container -->
  <!-- Logout Modal-->
  <div class="modal fade" id="logoutModal" tabindex="-1" role="dialog" aria-labelledby="exampleModalLabel" aria-hidden="true">
   <div class="modal-dialog" role="document">
    <div class="modal-content">
     <div class="modal-header">
      <h5 class="modal-title" id="exampleModalLabel">Ready to Leave?</h5>
      <button class="close" type="button" data-dismiss="modal" aria-label="Close">
       <span aria-hidden="true">×</span>
      </button>
     </div>
     <div class="modal-body">Select "Logout" below if you are ready to end your current session.</div>
     <div class="modal-footer">
      <button class="btn btn-secondary" type="button" data-dismiss="modal">Cancel</button>
      <a class="btn btn-primary" href="/accounts/logout">Logout</a>
     </div>
    </div>
   </div>
  </div>

  <!-- Bootstrap core JavaScript -->
   <script src="{% static '/info/homepage/vendor/jquery/jquery.min.js'
%}"></script>
  <script src="{% static '/info/homepage/vendor/bootstrap/js/bootstrap.bundle.min.js'
%}"></script>
 </body>
</html>
```

Att_details.html

```
{% extends 'info/base.html' %}

  {% block content %}
    <div class="card mb-3">
      <div class="card-header">
       <i class="fas fa-table"></i>
      <strong>{{ cr.name }}</strong></div>
      <div class="card-body">
       <div class="table-responsive">
        <table class="table table-bordered" id="dataTable" width="100%"
cellspacing="0">
         <thead>
  <tr>
      <th>#</th>
      <th>Date</th>
      <th>Day</th>
      <th>Status</th>
      <th></th>
  </tr>
</thead>
<tbody>
      {% for a in att_list %}
      <tr class="row100 body">
          <td>{{ forloop.counter }}</td>
          <td>{{ a.date }}</td>
          <td>{{ a.date|date:"l" }}</td>
          {% if a.status %}
          <td class="p-3 mb-2 bg-success text-white">Present <span class="glyphicon glyphicon-thumbs-up"></span></td>
          {% else %}
          <td class="p-3 mb-2 bg-danger text-white">Absent <span class="glyphicon glyphicon-thumbs-down"></span</td>
          {% endif %}
      </tr>
  {% empty %}
          <p>student has no attendance</p>
  {% endfor %}
```

```
                  </tbody>
                </table>
              </div>
            </div>
          </div>
    {% endblock %}
```

Base.html

```
<!DOCTYPE html>
<html lang="en">

  <head>

    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
    <meta name="description" content="">
    <meta name="author" content="">

    <title>{% block title %}{% endblock %}</title>
      {% load static %}

    <!-- Bootstrap core CSS-->
    <link href="{% static '/info/bootstrap/vendor/bootstrap/css/bootstrap.min.css' %}" rel="stylesheet">
    <!-- Custom fonts for this template-->
    <link href="{% static '/info/bootstrap/vendor/fontawesome-free/css/all.min.css'
%}" rel="stylesheet" type="text/css">

    <!-- Page level plugin CSS-->
    <link href="{% static '/info/bootstrap/vendor/datatables/dataTables.bootstrap4.css'
%}" rel="stylesheet">

    <!-- Custom styles for this template-->
    <link href="{% static '/info/bootstrap/css/sb-admin.css' %}" rel="stylesheet">

    <!-- Latest compiled and minified CSS -->



      {% block css %}
      {% endblock %}

  </head>

  <body id="page-top">

    <nav class="navbar navbar-expand navbar-dark bg-dark static-top">

      <a class="navbar-brand mr-1" href="{% url 'index' %}">CollegeERP</a>

      <button class="btn btn-link btn-sm text-white order-1 order-sm-0"
id="sidebarToggle" href="#">
```

```
        <i class="fas fa-bars"></i>
      </button>

      <!-- Navbar -->
        <div class="collapse navbar-collapse" id="navbarResponsive">
          <ul class="navbar-nav ml-auto">
            <li class="nav-item">
                {% if request.user.is_student %}
                    <a class="nav-link text-capitalize">{{ request.user.student.name }}</a>
                {% elif request.user.is_teacher %}
                    <a class="nav-link text-capitalize">{{ request.user.teacher.name }}</a>
                {% endif %}
            </li>
            <li class="nav-item">
                <a class="nav-link" href="#" data-toggle="modal" data-target="#logoutModal">Logout</a>
            </li>
          </ul>
        </div>

    </nav>

    <div id="wrapper">

      <!-- Sidebar -->
      <ul class="sidebar navbar-nav">
```

```
            <li class="nav-item">
              <a class="nav-link" href="{% url 'index' %}">
                <span>Home</span>
              </a>
            </li>
        {% if request.user.is_student %}
            <li class="nav-item">
              <a class="nav-link" href="{% url 'attendance' request.user.student.USN
%}">
                <span>Attendance</span>
              </a>
            </li>
            <li class="nav-item">
              <a class="nav-link" href="{% url 'attendance' request.user.student.USN
%}">
                <span>Attendance By Subject</span>
              </a>
            </li>
            <li class="nav-item">
              <a class="nav-link" href="{% url 'marks_list' request.user.student.USN
%}">
                <span>Marks</span>
              </a>
            </li>
              <li class="nav-item">
              <a class="nav-link" href="{% url 'timetable' request.user.student.class_id_id
%}">
```

```
      <span>Time Table</span>
    </a>
  </li>

{% elif request.user.is_teacher %}
  <li class="nav-item">
    <a class="nav-link" href="{% url 't_clas' request.user.teacher.id 1 %}">
      <span>Attendance</span>
    </a>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="{% url 't_clas' request.user.teacher.id 2 %}">
      <span>Marks</span>
    </a>
  </li>
    <li class="nav-item">
    <a class="nav-link" href="{% url 't_timetable' request.user.teacher.id %}">
      <span>Time Table</span>
    </a>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="{% url 't_clas' request.user.teacher.id 3 %}">
      <span>Reports</span>
    </a>
  </li>
{% endif %}
```

```
      </ul>

      <div id="content-wrapper">

        <div class="container-fluid">

          <!-- Breadcrumbs-->
{#           <ol class="breadcrumb">#}
{#             <li class="breadcrumb-item">#}
{#               <a href="index.html">Dashboard</a>#}
{#             </li>#}
{#             <li class="breadcrumb-item active">Blank Page</li>#}
{#           </ol>#}

          <!-- Page Content -->
            {% block content %}
            {% endblock %}

        </div>
        <!-- /.container-fluid -->

        <!-- Sticky Footer -->
{#         <footer class="sticky-footer">#}
{#           <div class="container my-auto">#}
{#             <div class="copyright text-center my-auto">#}
{#               <span>Copyright © Your Website 2018</span>#}
{#      </div>#}
{#     </div>#}
{#    </footer>#}

   </div>
   <!-- /.content-wrapper -->

  </div>
  <!-- /#wrapper -->

  <!-- Scroll to Top Button-->
  <a class="scroll-to-top rounded" href="#page-top">
   <i class="fas fa-angle-up"></i>
  </a>

  <!-- Logout Modal-->
  <div class="modal fade" id="logoutModal" tabindex="-1" role="dialog" aria-labelledby="exampleModalLabel" aria-hidden="true">
   <div class="modal-dialog" role="document">
    <div class="modal-content">
     <div class="modal-header">
      <h5 class="modal-title" id="exampleModalLabel">Ready to Leave?</h5>
      <button class="close" type="button" data-dismiss="modal" aria-label="Close">
       <span aria-hidden="true">×</span>
      </button>
```

```
          </div>
          <div class="modal-body">Select "Logout" below if you are ready to end your current session.</div>
          <div class="modal-footer">
            <button class="btn btn-secondary" type="button" data-dismiss="modal">Cancel</button>
            <a class="btn btn-primary" href="/accounts/logout">Logout</a>
          </div>
        </div>
      </div>
    </div>



    <!-- Bootstrap core JavaScript-->
    <script src="{% static '/info/bootstrap/vendor/jquery/jquery.min.js' %}"></script>
    <script src="{% static '/info/bootstrap/vendor/bootstrap/js/bootstrap.bundle.min.js' %}"></script>

    <!-- Core plugin JavaScript-->
    <script src="{% static '/info/bootstrap/vendor/jquery-easing/jquery.easing.min.js' %}"></script>

    <!-- Custom scripts for all pages-->
    <script src="{% static '/info/bootstrap/js/sb-admin.min.js' %}"></script>

   {% block scripts %}
    {% endblock %}
```

```
  </body>

</html>
```

Edit_marks.html

```
{% extends 'info/base.html' %}
{% block content %}

<form action="{% url 'marks_confirm' mc.id %}" method="post">
            {% csrf_token %}
    <div class="card mb-3">
        <div class="card-header">
          <i class="fas fa-table"></i>
         <b></b></div>
        <div class="card-body">
          <div class="table-responsive">
            <table class="table table-bordered" id="dataTable" width="100%"
cellspacing="0">
              <thead>
                <tr>
                    <th>Student Name</th>
                    <th>Total Marks</th>
                    <th>Enter Marks</th>
                </tr>
              </thead>
```

```
                <tbody>
                  {% for m in m_list %}
                  <tr>
                  <td>{{m.studentcourse.student.name}}</td>
                  <td>{{ m.total_marks }}</td>
                  <td>
                    <input type="number" name="{{ m.studentcourse.student.USN }}"
min="0" max="{{ m.total_marks }}" value="{{ m.marks1 }}">
                  </td>
                  </tr>
                {% endfor %}
                </tbody>
              </table>
            </div>
          </div>
        </div>

    <input class="btn btn-success" type="submit" value="Submit">
</form>
{% endblock %}
```

Chapter 6:
Conclusion

By using Existing System accessing information from files is a difficult task and there is no quick and easy way to keep the records of students and staff. Lack of automation is also there in the Existing System. The aim of Our System is to reduce the workload and to save significant staff time.

Tittle of the project as College erp System is the system that deals with the issues related to a particular institution. It is the very useful to the student as well as the faculties to easy access to finding the details. The college erp provides appropriate information to users based on their profiles and rolein the system. This project is designed keeping in view the day to day problems faced by a college system.

The fundamental problem in maintaining and managing the work by the administrator is hence over- come. Prior to this it was a bit difficult for maintaining the time table and also keeping track of the daily schedule. But by developing this web-based application the administrator can enjoy the task, doing it ease and also by saving the valuable time. The amount of time consumption is reduced and also the manual calculations are omitted, the reports can be obtained regularly and also whenever on demandby the user. The effective utilization of the work, by proper sharing it and by providing the accurate results. The storage facility will ease the job of the operator. Thus the system developed will be helpful to the administrator by easing his/her task.

This System provide the automate admissions no manual processing is required. This is a paperlesswork. It can be monitored and controlled remotely. It reduces the man power required. It provides accurate information always.. All years together gathered information can be saved and can be accessed at any time. The data which is stored in the repository helps in taking intelligent decisions by the management providing the accurate results. The storage facility will ease the job of the operator. Thus the system developed will be helpful to the administrator by easing his/her task providing the accurate results. The storage facility will ease the job of the operator.

This project is successfully implemented with all the features and modules of the college management system as per requirements.

References

1. Fundamentals of Database Systems, 9th Edition, Pearson Education, 2021.
2. Ian Sommerville: Software Engineering, 10th edition, Person Education Ltd, 2022.
3. Roger S Pressman: Software Engineering- A Practitioners approach,8th edition, McGraw-Hill Publication, 2022.
4. https://en.wikipedia.org/wiki/Requirements-engineering
5. https://web.cs.dal.ca/ hawkey/3130/srs-template-ieee.doc
6. http://www.ntu.edu.sg/home/cfcavallaro/Reports/Report%20writing.htmTop
7. https://en.wikipedia.org/wiki/Class diagram
8. https://www.djangoproject.com/
9. https://getbootstrap.com/
10. https://www.tutorialspoint.com/
11. https://creately.com/
12. https://www.overleaf.com/project