

VIVEKANAND EDUCATION SOCIETY'S INSTITUTE OF TECHNOLOGY

Department of Computer Technology

Project report on **Student Information Management System**



In partial fulfillment of the Fourth Year (Semester-VIII), Bachelor of Engineering(B.E.) Degree in Computer Technology at the University of Mumbai
Academic Year 2017-18

Project Mentor

Mrs.Yugchhaya Galphat

Submitted by

Vivek Mulchandani(D17A)

Dipin Budhrani(D17A)

Karan Ruprel(D17C)

Jewel Murpani(D17C)

(2017-18)

**VIVEKANAND EDUCATION SOCIETY'S INSTITUTE
OF TECHNOLOGY**

Department of Computer Engineering



Project Report on
(Student Information Management System)
Certificate Of Approval

This is to certify that *Vivek Mulchandani, Dipin Budhrani, Karan Ruprel, Jewel Murpani* of Fourth Year Computer Engineering studying under the University of Mumbai have satisfactorily completed the project on “***Student Information Management System***” as a part of their coursework of PROJECT for Semester-VIII under the guidance of their mentor *Prof. Yugchhaya Galphat* in the year 2017-2018.

Date :

Head of the Department
(Dr. (Mrs.) Nupur Giri)

Project Mentor
Mrs. Yugchhaya Galphat

**VIVEKANAND EDUCATION SOCIETY'S INSTITUTE
OF TECHNOLOGY**

Department of Computer Engineering



Certificate of Approval

This is to certify that **Vivek Mulchandani, Dipin Budhrani, Karan Ruprel, Jewel Murpani** of Fourth Year Computer Engineering studying under the University of Mumbai has satisfactorily presented the project on “*Student Information Management System(SIMS)*” as a part of the coursework of PROJECT-II for Semester-VIII under the guidance of **Prof. Yugchhaya Galphat** in the year 2017-2018.

Date: _____

Internal Examiner

External Examiner

Project Mentor

Head of the Department

Principal

ACKNOWLEDGEMENT

We are thankful to our college Vivekanand Education Society's Institute of Technology for considering our project and extending help at all stages needed during our work of collecting information regarding the project.

It gives us immense pleasure to express our deep and sincere gratitude to Assistant Professor **Mrs.Yugchhaya Galphat** (Project Mentor) for her kind help and valuable advice during the development of project synopsis and for her guidance and suggestions.

We are deeply indebted to Head of the Computer Department **Dr.(Mrs.)Nupur Giri Ma'am** and our Principal **Dr. (Mrs.) J.M. Nair Ma'am**, for giving us this valuable opportunity to do this project.

We express our hearty thanks to them for their assistance without which it would have been difficult in finishing this project synopsis and project review successfully.

We convey our deep sense of gratitude to all teaching and non-teaching staff for their constant encouragement, support and selfless help throughout the project work. It is great pleasure to acknowledge the help and suggestion, which we received from the Department of Computer Engineering. We wish to express our profound thanks to all those who helped us in gathering information about the project. Our families too have provided moral support and encouragement at several times.

COURSE OUTCOMES FOR B.E PROJECT

Learners will be to:-

Course Outcome	Description of the Course Outcome
CO 1	Able to apply the relevant engineering concepts, knowledge and skills towards the project.
CO2	Able to identify, formulate and interpret the various relevant research papers and to determine the problem.
CO 3	Able to apply the engineering concepts towards designing solution for the problem.
CO 4	Able to interpret the data and datasets to be utilized.
CO 5	Able to create, select and apply appropriate technologies, techniques, resources and tools for the project.
CO 6	Able to apply ethical, professional policies and principles towards societal, environmental, safety and cultural benefit.
CO 7	Able to function effectively as an individual, and as a member of a team, allocating roles with clear lines of responsibility and accountability.
CO 8	Able to write effective reports, design documents and make effective presentations.
CO 9	Able to apply engineering and management principles to the project as a team member.
CO 10	Able to apply the project domain knowledge to sharpen one's competency.
CO 11	Able to develop professional, presentational, balanced and structured approach towards project development.
CO 12	Able to adopt skills, languages, environment and platforms for creating innovative solutions for the project.

Abstract

The mission of the Student Information Management system is to create an integrated information technology environment for students, HOD, faculty, staff and administration. Our goal is to focus on services and integration for end users.

It is a web based self service environment for students, prospective students, and employees; an administrative transaction processing environment for yearly admissions; an informative environment for all levels of faculty and staff to do reporting, data extraction and information analysis.

It is mainly useful for educational establishments to manage student data which also facilitates all individual associated information for easier navigation on daily basis. It provides capabilities for entering student test and other assessment scores, building student schedules, tracking student attendance and managing many other student-related data needs in a college.

Our easy-to-use, integrated college administration application would be used to reduce time spent on administrative tasks, as to concentrate on other skillful practical activities other than bookworming. It can accept, process and generate reports at any given point of time accurately.

Content

Sr No.		Topic	Page No.
1		Introduction	
	1.1	Introduction	9
	1.2	Motivation	9
	1.3	Problem Definition	10
	1.4	Relevance of the project	10
	1.5	Methodology Employed	11
2		Literature Survey	13
3		Requirement Gathering	
	3.1	Functional Requirement	16
	3.2	Non-Functional Requirement	17
	3.3	Constraints	17
	3.4	Hardware and Software Requirement	17
	3.5	System Block Diagram	18
4		Proposed System Design	
	4.1	System Architecture	19
	4.2	Security & System Flowchart	20
	4.3	Data Flow Diagram	21
	4.4	Use Case Diagram	24
	4.5	Project Scheduling & Tracking using Gantt Chart	26

5		Implementation Details	
	5.1	Functionality of the System	28
	5.2	Evaluation of developed System	29
6		Testing	
	6.1	Test Cases	31
	6.2	Validation Testing (UI)	32
7		Result Analysis	
	7.1	Simulation Model	34
	7.2	Screenshots (UI)	35
	7.3	Graphical Outputs	38
	7.4	Reports Generated	40
8		Conclusion	
	8.1	Limitation	42
	8.2	Conclusion	42
	8.3	Future Scope	42
9		References	43

Chapter 1: Introduction

1.1 : Introduction

The design and implementation of a comprehensive student information system and user interface is to replace the current paper records . College Staff are able to directly access all aspects of a student's academic progress through a secure, online interface embedded in the college's website. The system utilizes user authentication, displaying only information necessary for an individual's duties. Additionally, each sub-system has authentication allowing authorized users to create or update information in that subsystem. All data is thoroughly reviewed and validated on the server before actual record alteration occurs. In addition to a staff user interface, the system plans for student user interface, allowing users to access information and submit requests online thus reducing processing time. All data is stored securely on SQL servers managed by the college administrator and ensures highest possible level of security. The system features a complex logging system to track all users access and ensure conformity to data access guidelines and is expected to increase the efficiency of the college's record management thereby decreasing the work hours needed to access and deliver student records to users.

1.2 : Motivation

In educational institutes, students experience problems that are quite common like disorganization/feeling overwhelmed, eating right and staying healthy, failing to manage money, failing to network, homesickness, poor grades/not studying due to lack of resources, losing valuable items on campus, poor sleep habits, skipping classes, etc.

Our aim is to reduce each of the student problems digitally and manage each student's timeline in an organized and simplified way as to which they can have stress free & pleasant few years of their life as a student of your university. While, we are focusing on student information, there is a need to facilitate all other modules which are associated with student life such as faculty information, infrastructure details, admission procedure, placement cell etc; as to remove confusion at all points about whom to meet, where to go and what to do and all this to be accomplished in a specified deadline.

Additional aim is to save the environment as global warming issues are enhancing day by day so we can digitally replace most of the things which are currently done using papers. Saving papers would lead to less sales of them and lot of ink would be saved eg. Hp printer black ink costs higher than a pint of blood, thus disrupting the business of cutting trees and the harm being done to the environment and reducing the expenditure. Reduction of deforestation would stop creating

holes in ozone layer as trees convert carbon dioxide into oxygen for free of charge. Eventually improving the environment we live in by taking a small step towards better future.

1.3 : Problem Definition

Many mechanisms and systems have been proposed for student management system that are based on outdated code base and had a furious mix of presentation, business sense and data accessibility i.e. new features which a student requires such as their daily attendance and how much lectures they need to attend by calculating percentage based on number of lectures they have attended/number of lectures are supposed to happen to cover up the their attendance for proper education are missing.

Currently, the college relies on paper records for this initiative. While paper records are a traditional way of managing student data there are several drawbacks to this method. First, to convey information to the students it should be displayed on the notice board and the student has to visit the notice board and faculty cabin to check that information. It takes a very long time for conveyance, verification and rectification of that information. Paper records are difficult to manage and track. The physical exertion required to retrieve, alter, and re-file the paper records are all non-value added activities. The main issue is all the solutions to these problems are distributed and doesn't have a standalone single vendor.

Disadvantages of Existing System:

- ❖ Doesn't manage student timeline for their timely work allocated to them.
- ❖ Notifications service is not available for ge

1.4 : Relevance of the Project

To solve the above issues to ease student life and it's associated people, we propose SIMS, a digital student assistant system helping them in any possible way it can. More specifically, not only the students even the members associated with them are also associated to work on system and benefit from it. It enables self service for students to perform basic administrative functions and tasks in a 'one-stop' service. It supports the retention and recruitment of students and encourages strong and positive relation with college, faculty and other constituencies.

It enables ongoing, flexible reconfiguration of the application to adjust according to changing business needs of the college and student life cycle. This can be used to modify the application based on user specific needs.

A well designed system that can handle thousands of concurrent users and process requests simultaneously in stable condition. As users are in high amount & lot of computation needs to be done, the data which takes longer time to load on web pages such as images, would be

manipulated i.e. The quality of picture to human eye must look similar but the image would be in compressed form having less data size.

Advantages of Proposed System:

- ❖ It keeps permanent record of who was present or absent on a particular day, until it is not needed anymore.
- ❖ The records can be updated and corrected at any time by authorized users and if a teacher or class representative forgets to fill in the daily info, system will send an alert message.
- ❖ Lost something on campus? not to worry, you can check out lost and found section to check whether your item has been found.
- ❖ Getting less scores in exams? Suggested learning material would be provided and notations would be cleared as how to write in exam.

1.5 : Methodology employed for development

To implement the system, first we need to conduct research as to how this system would be achievable. Therefore, research process enables us to arrive at a dependable solution through systematic collection, analysis and interpretation of data.

First of all, to perform any analysis of data, we need to collect the data which begins from the admission process. The front-end of the web-based system designed using HTML, CSS, Javascript would define the college with its premises and features which can be viewed by students or their parents who would like to be enroll themselves or their wards respectively. The students considering to be part of this institute can register for enrollment by filling up the admission form which will be reviewed by admission coordinators and the interested students will be called on campus to verify their legal documents and marksheet. Once verified, the system will segregate the students based on their percentages and previous educational history to meet the criteria of securing admission. The valid students would be then provided with their email-ids & passwords where they can fill in all their personal, educational & extra details.

Server Side Validation:

In the server-side validation, information is being sent to the server and validated using one of server-side languages. If the validation fails, the response is then sent back to the client, page that contains the web form is refreshed and a feedback is shown. This method is secure because it will work even if JavaScript is turned off in the browser and it can't be easily bypassed by malicious users. On the other hand, users will have to fill in the information without getting a response until they submit the form.

Client Side Validation:

Server-side validation is enough to have a successful and secure form validation. For better user experience, however, you might consider using client-side validation. This type of validation is done on the client using script languages such as JavaScript. By using script languages user's input can be validated as they type. This means a more responsive, visually rich validation.

With client-side validation, form never gets submitted if validation fails. Validation is being handled in JavaScript methods that you create (or within frameworks/plugins) and users get immediate feedback if validation fails.

Main drawback of client-side validation is that it relies on JavaScript. If users turn JavaScript off, they can easily bypass the validation. This is why validation should always be implemented on both the client and server. By combining server-side and client-side methods we can get the best of the two: fast response, more secure validation and better user experience.

Chapter 2 : Literature Survey

1. Toward a Student Information System for Sebha University, Libya

This paper basically focuses on providing a simple interface for the easy collation and maintenance of all manner of student information. The creation and management of accurate, up-to-date information regarding students' academic careers is critical students and for the faculties and administration of Sebha University in Libya and for any other educational institution. A student information system deals with all kinds of data from enrollment to graduation, including program of study, attendance record, payment of fees and examination results to name but a few. All these data need to be made available through a secure, online interface embedded in a university's website.

2. A Study of Student Information Management Software

This paper focuses on providing information to support the operation, management and decision-making functions of enterprises or organizations. In the face of huge amount of information, it is required to possess the student information management system to improve the efficiency of student management. Through this system, the standardized management, scientific statistics and fast query of student information can be realized, and thus the workload of management can be reduced. In this paper, a typical student information management system will be established to realize the systematization, standardization and automation of student information relationship.

3. Web Based Student Information System

This paper focuses on simple interface for maintenance of student information. It can be used by educational institutes or colleges to maintain the records of students easily. The creation and management of accurate, up-to-date information regarding a student's academic career is critically important in the university as well as colleges. Student information system deals with all kind of student details, academic related reports, college details, course details, curriculum, batch details, placement details and other resource related details too. It tracks all the details of a student from the day one to the end of the course which can be used for all reporting purpose, tracking of attendance, progress in the course, completed semesters, years, coming semester year curriculum details, exam details, project or any other assignment details, final exam result and all these will be available through a secure, online interface embedded in the college's website. It will also have faculty details, batch execution details, students' details in all aspects, the various academic notifications to the staff and students updated by the college administration. It also facilitate us explore all the activities happening in the

college, Different reports and Queries can be generated based on vast options related to students, batch, course, faculty, exams, semesters, certification and even for the entire college.

4. Secure Database Encryption in Web Applications

Database securing has become crucial in all application areas, this paper provides emphasis on TSFS encryption technique i.e. Transposition-Substitution-Folding-Shifting to secure database from attacks and unauthorized access. It is a symmetric encryption technique which improves query execution time by encrypting the sensitive data only. It includes data set of traditional alphanumeric characters and numeric keys. In this technique, three 16 character keys are used which are splitted into 12 sub-keys. TSFS exceeded DES and AES algorithms in terms of query execution time and database added size.

3 types of attackers: Intruder, Insider & Administrator which damage the database by misuse of information, most of the attacks are done by known employees of an organization as they have legal access to database.

Implementing TSFS includes encryption of alphabetic characters A to Z, a to z and all numbers and make sure that the key which is used to process must be invertible and have inverse operation to cancel its effect.

5. Student Specific Information System

A system for sharing student-specific information comprises of a server, a client, in communication with the server, and a student-specific application. The application comprises a school portal, user portal, activity portal and a system portal for remotely sharing student-specific data with the server, to facilitate communication between a user and selected school.

6. System and method for communicating student information among student, parents guardians and educators

A system and method is provided for communicating student information among students, guardians, parents, administrators and educators with interface areas for each of them, the system configured to perform the method of maintaining assignments for students; grading responses to assignments provided by students; analyzing grades for each student; and notifying one of educators, a student and at least one of the student's parents and guardians if the student's grade triggers an event. If an event is triggered, such low grades, high grades, truancy or other student issues, then conferences can be scheduled or other activities.

7. Web service api for student information and course management systems

Automated data exchange between a student information system and a course management system using an application programming interface that is directly exposed to the student information system as a web-service is disclosed. Submission of a new user record, enrollment of a user in a course, or changing user or course information between the student information system and the course management system. Automated enrollment features allow administrators to: establish rules for locking and unlocking course section enrollment, waitlist students for an existing course section until a predetermined waitlist threshold is satisfied, and provision a new course section upon fulfillment of a course section or waitlist threshold. The system generates content for new course sections from an existing course, a master course, or from a course previously taught by an instructor assigned to the new course section.

Chapter 3 : Requirement Gathering

Requirement gathering is an essential part of any project and project management. Understanding fully what a project will deliver is critical to its success. Requirements gathering sounds like common sense, but surprisingly, it's an area that is given far too little attention.

3.1 : Functional Requirements

1.Registration:

- A website-based system for registering student, faculty and college authorities.
- Secure Login, the login will happen over HTTPS to reduce the risk of user's credentials being captured via a MiTM attack.

2.Access Control:

- The administrator will be given more powers(enable/disable/update) than other users.
- When logged in to the system, different user interfaces and permissions will be assigned based on the login type.

3.Verification:

- The faculty or system admin would be able to verify the integrity of the shared data having edit, removal options for individual student.

4.Record Maintenance:

- Student (Result, Attendance, Internship and Project details)
- Faculty (Journal Paper Publications, Conferences Attended)
- Others (Infrastructure details, Digital library, Assignments, Timetables)

5.Report generation - Results, Attendance, etc.

6.Virtual Notice Board on Navigation bar for displaying upcoming events.

7.Notification for deadlines and management of schedule for each student.

8.Lost and Found broadcast messages to identify their valuable items and retrieve it.

3.2 : Non-Functional Requirements

1. Maintainability

- The system will be easy to maintain by administrators.
- The system's database backup will be taken every month.

2. Security

- System will use secured database
- Normal users can just read information but they cannot edit or modify anything except their personal and some other information.
- System will have different types of users and every user has access constraints

3. Error handling

- This system shall handle expected and unexpected errors in ways that prevent loss in information and long downtime period.

4. Ease of Access

- The system should have a good user interface.

3.3 : Constraints

- Every user must be a little bit tech friendly as to understand the symbols for adding, removing and incorporating tasks for themselves in the system.
- The whole system is denoted using English language, so basic understanding of english will do to operate the system with ease.

3.4 : Hardware and software requirements

3.4.1 : Hardware Requirements

- Processor: Intel or any other, at least dual core.
- RAM: 512MB or more.
- Hard Disk Size: 5GB or more.

3.4.2 : Software Requirements

- Operating System - Windows/Linux
- Specific Software - Any Browser
- Database - SQL Server 2008 R2 or Later / PHP myAdmin
- Tool - XAMPP

3.4.3 : Technology used

- HTML
- CSS
- PHP
- Django and MySQL
- Bootstrap
- jQuery

3.5 : System Block Diagram

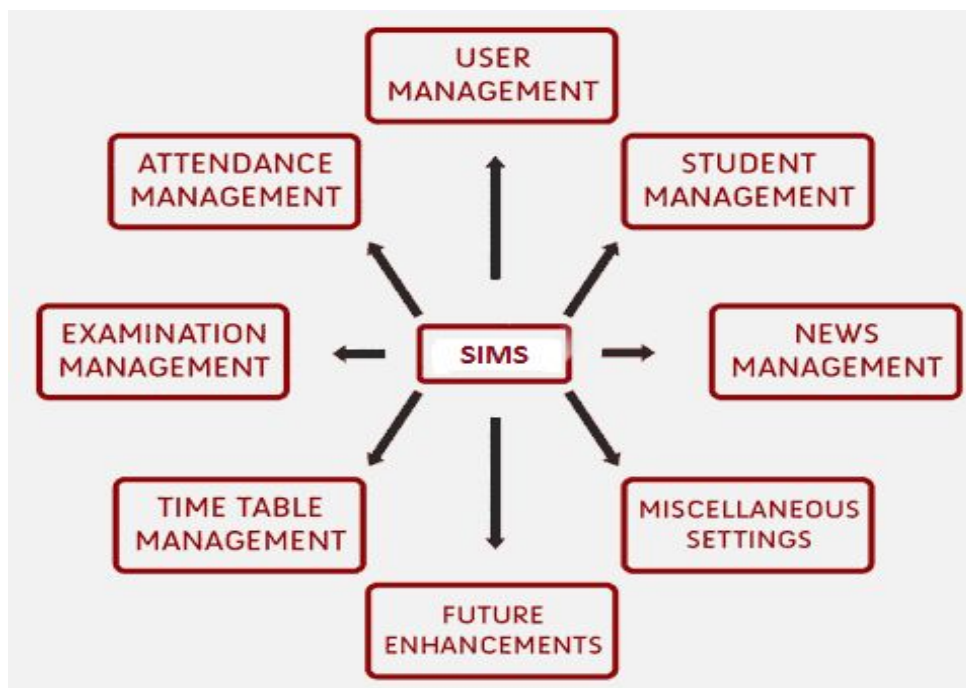


Fig.1 System block diagram

Chapter 4: Proposed System Design

4.1 : System Architecture

Computing applications consist of three different and distinct types of functionalities:

Presentation Services: These manifest themselves in the form of information display and user data input facilities. Generally the front-end for user interaction. For example logging in requires interaction in the form of collecting username and password information using a HTML-form.

Functional logic: Every application includes some data processing and this may also involve database interactivity. For example user authentication requires the logic unit to read username-password combinations from a database and compare until a good comparison (hopefully) is arrived at.

Data Management: Data, its storage, insertion and retrieval, its management and alteration is central to computing applications. For example a database management system (DBMS) is required for the management of usernames and associated passwords, their owners, etc.

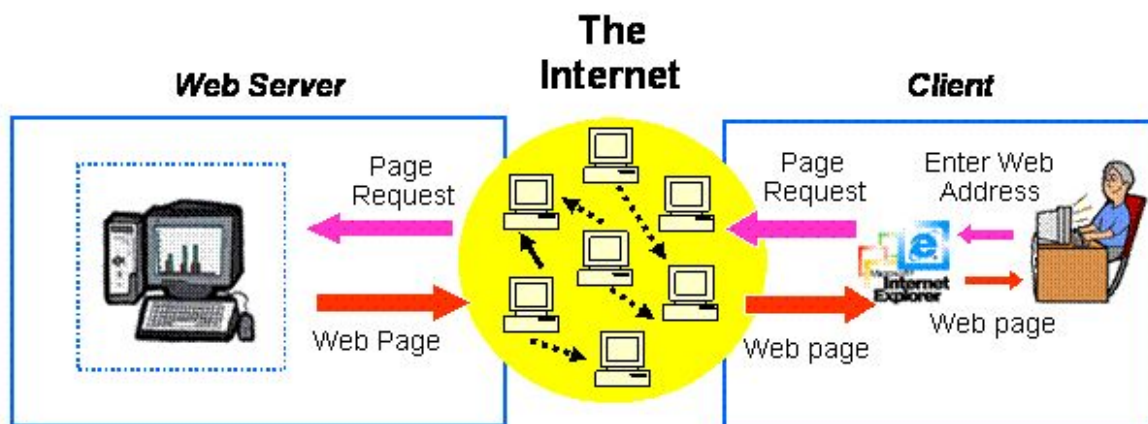


Fig.2 System Architecture

Typically, when you are browsing the Internet, you will be using Web Browser software such as Internet Explorer or Google Chrome. The computer which is running a browser is called a client, whilst the machine which is providing Web pages is called a server.

When you dial up to an Internet Service Provider (ISP), your computer is forming a network connection to a Web Server. In this situation, your computer is in effect a client, which is linked to an ISP Web Server. The web server, as the name suggests, serves your browser with Web pages (e.g. HTML, ASPX, JSP pages etc).

4.2 : System & Security Flowchart

The design of the student information management system includes the design of the home page [3] which provides the way for all the students, staff and other user to access the SIMS. Every user of the SIMS has a unique username and password. The home page mainly contains a login form through which a new user can register, or an existing user can login to the system by entering the username and password.

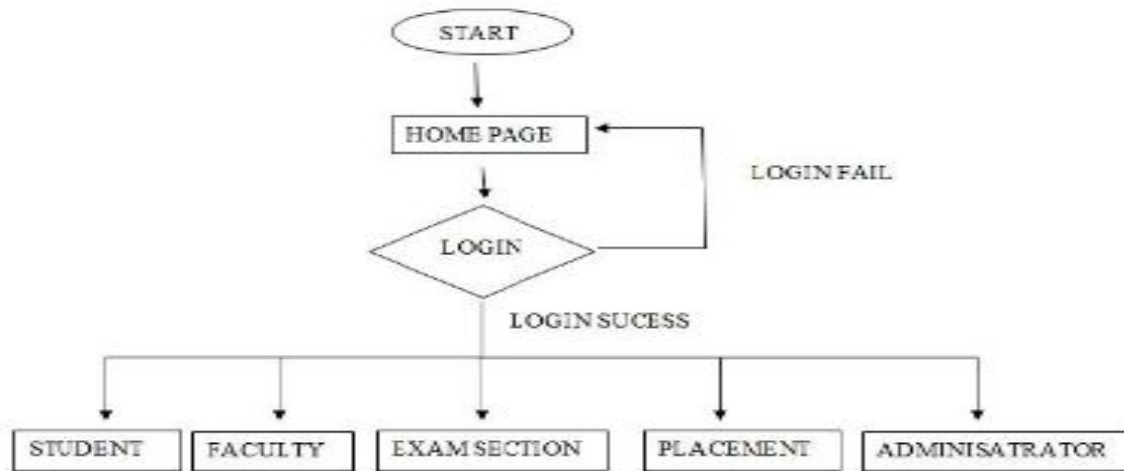


Fig.3 System Flowchart

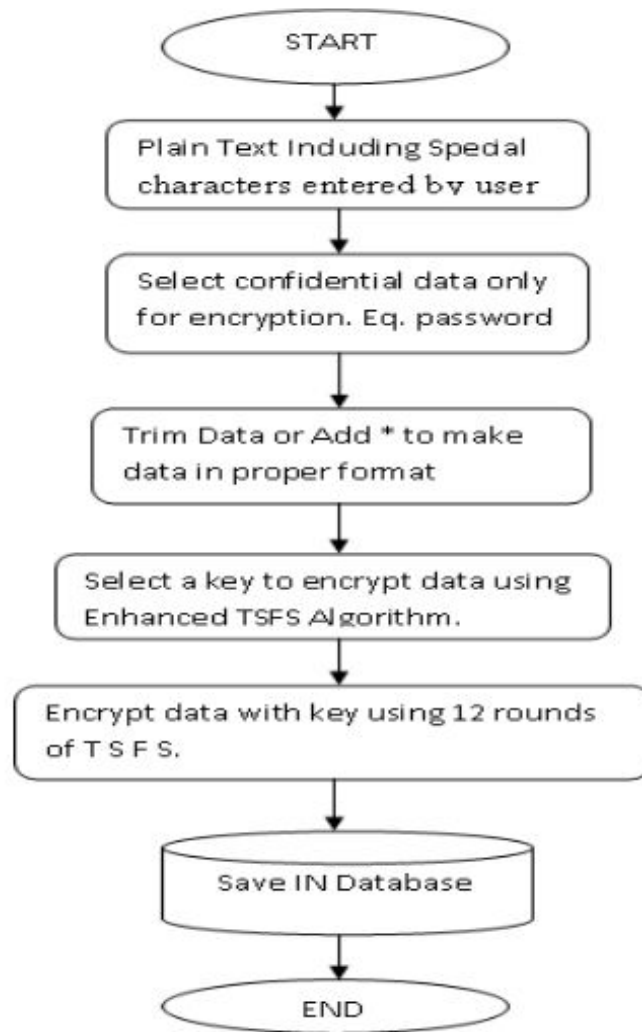


Fig.4 database encryption flowchart

The TSFS algorithm [4] is implemented whenever dealing with sensitive data such as passwords, address, marks, etc. It processes the data with 3 keys which are splitted into 12 sub keys, the given keys are stored into 4 X 4 matrix, so length of key must be 16 digits and if user provides less than 16 keys then padding is done to store into the matrix. After that we'll shift the rows for key expansion to perform 4 operations on them.

4.3 : Data Flow Diagram

A Data Flow diagram (DFD) is a graphical representation of the —flow || of data through an information system, modelling its process aspects. Often they are a preliminary step used to create an overview of the system which can later be elaborated. DFD's can also be used for the visualization of data processing (structured design).

4.3.1 : DFD Level 0

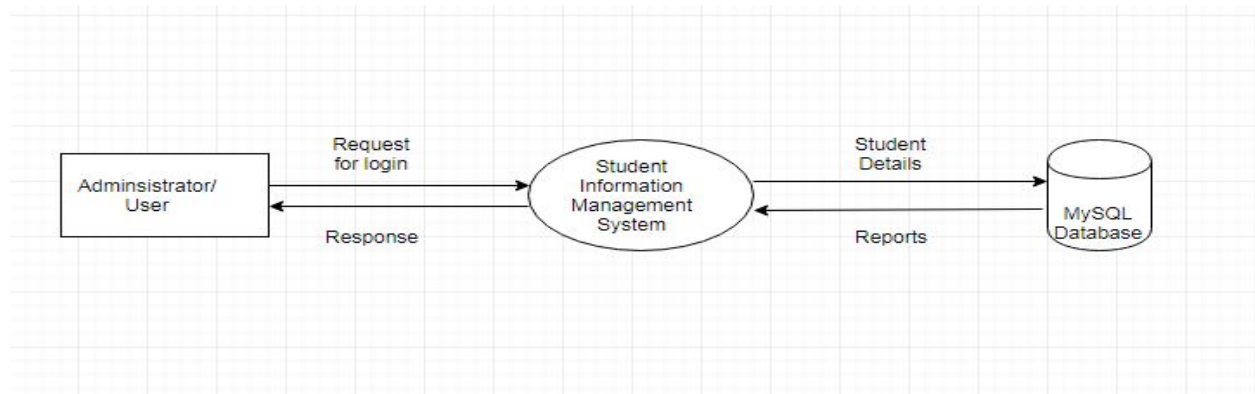


Fig.5 DFD level 0

The above DFD level 0 diagram illustrates the rudimentary flow of system where an individual user would provide their credentials for logging in. NOTE: User should be already registered by administrator. Database would check the validity of the credentials and allow them access if those come true.

4.3.2 : DFD Level 1

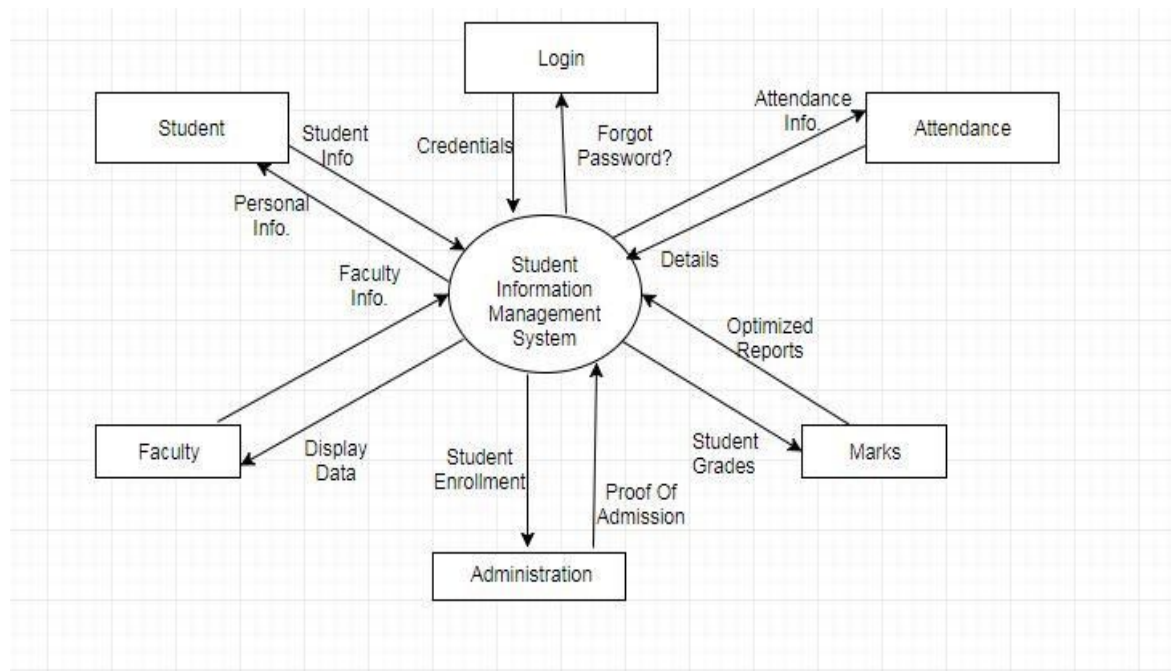


Fig.6 DFD level 1

DFD level 1 (fig.4.3.2) illustrates various modules available for storing and accessing each individual's different data. The login module indifferent than level 0 specifies "forget password?" feature in which the user would get their password on their respective email-id to successively login. The student module interprets their ability to develop their personal profile which can be used by college authorities as and when required. The faculty module also allows them to facilitate their information to display their experiences, skills and achievements. The administration module makes use admission forms, documents uploads and payment gateway for enrollment of students. The marks/results module stores student's scores which can be only seen by students & optimized by faculty members to generate different kinds of reports as and when required; ex. higher to lower marks subject-wise, CGPA-based. The attendance module records A/P on daily basis for each student and generates % and number of lectures for students to attend for maintaining 75% criteria.

4.3.3 : DFD Level 2

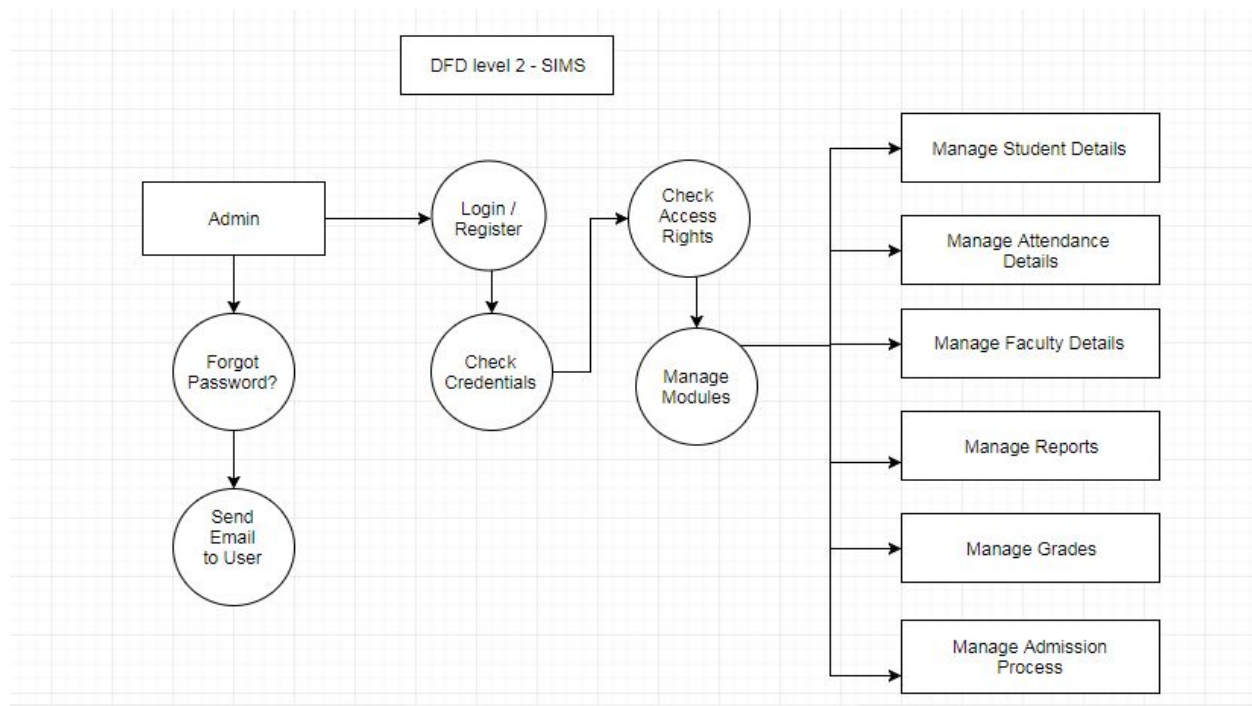
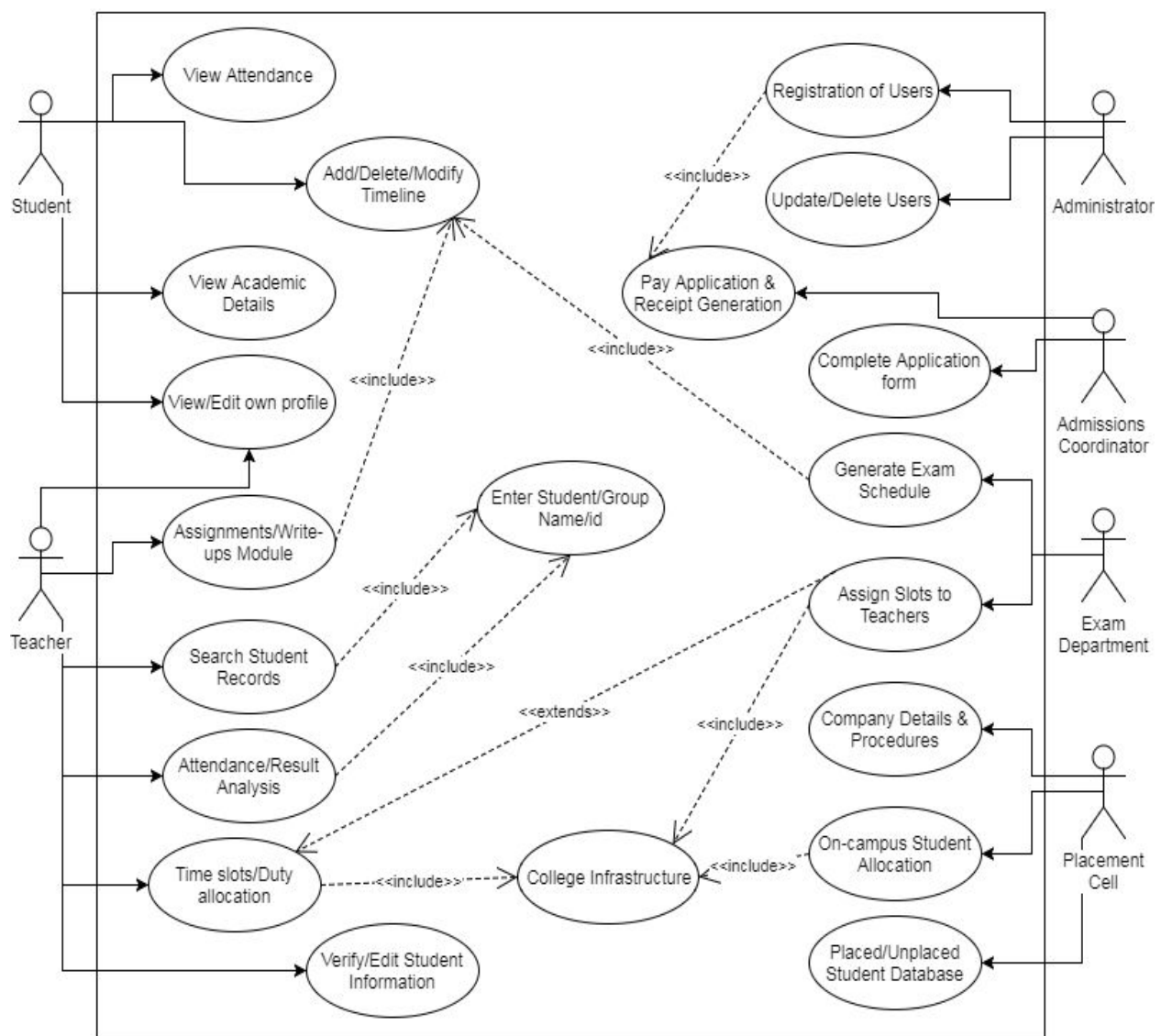


Fig.7 DFD level 2

The above diagram specifies detailed flow of login module by admin, where "forgot password?" feature kicks in for all, specified credentials of himself which were compared with values stored in database and finally logged in. After logging in, access rights are checked based on user type, as it is administrator login, it can manage each and every feature and module on the system

4.4 : Use Case - Student Management Information System

Use Case - Student Information Management System



24

Description:

A Student can access the information of the college, course details, subject details, faculty details, training and placement cell information and exam section information. The course details include information regarding branch he is studying, the academic curriculum of the college, year wise subject offered by the branch, the subject details include the syllabus of the subjects, information regarding the staff handling the subjects, the subjects he presently registered for the semester he is presently studying, attendance and internal marks of the subjects, he can also ask any queries to the staff regarding the subjects.

The placement details include the information about the companies , the eligibility criteria for attending recruitment of the companies, the process of recruitment, the date and time of the recruitment. The placement cell updates the students information who got selected for a company. The exam section details include the internals and external time tables, the room allocation for the exams, it also contains the semester end results.

The staff can update the information regarding the student's attendance, internal marks of the students and any information regarding the subjects they handle. They can also view the student details for better understanding the student performance and improving the efficiency of the student. The staff also gets the updates from the college regarding any events occur in the college. They can also get the notifications from the placement cell and exam section.

The examination section is responsible for updating internal and external examination time table. They are also responsible for the checking and approving the internal marks details updated by the staff. They provide time slots to faculty members for supervision duty in examinations and based on number of teachers, unbiased faculty allocation schedule is generated by them.

4.5 : Project Scheduling & Tracking using Gantt Chart

Project Scheduling helps to establish a roadmap for project managers together with estimation methods and risk analysis. Project scheduling and Tracking begins with the identification of process models, identification of software tasks and activities, estimation of effort and work and ends with creation of network of tasks and making sure it gets done on time. This network is adapted on encountering of changes and risks.

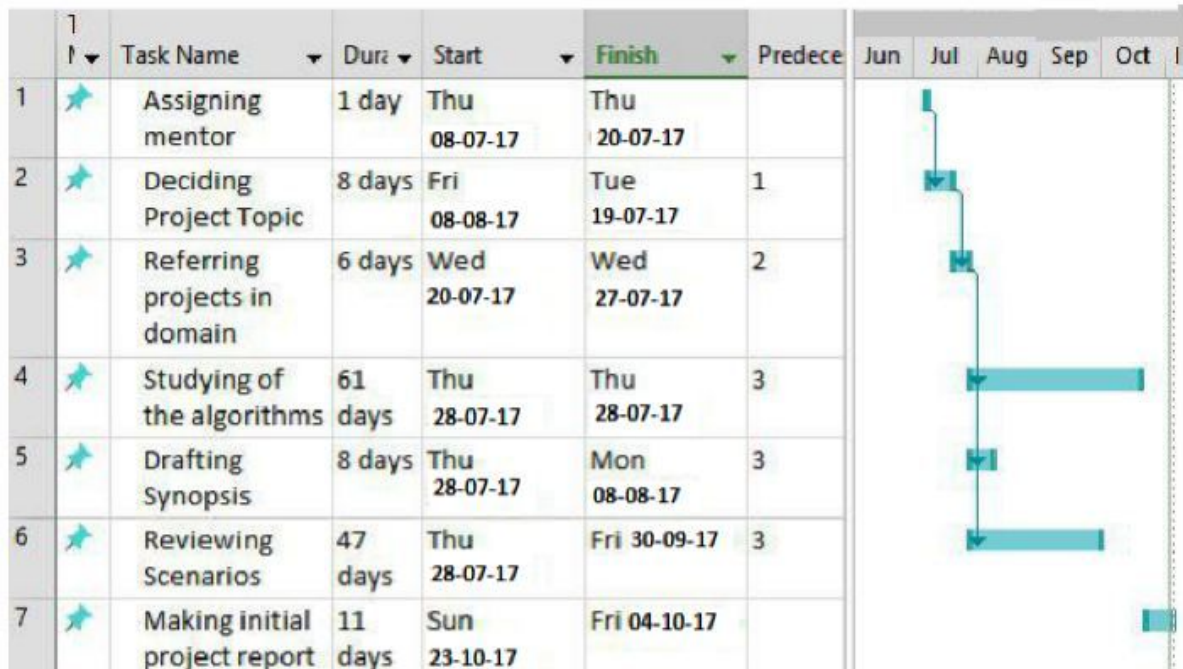


Fig.9 Gantt chart (Documentation)

Task Name	Duration	Start	Finish
<i>i</i> ▼			
Home page	3d	02/01/18	02/05/18
Login page	2d	02/06/18	02/07/18
Student Registration	2d	02/10/18	02/12/18
Staff Registration	2d	02/13/18	02/14/18
Subject Module	3d	02/16/18	02/20/18
Unit Test Marks	3d	02/22/18	02/26/18
Pointer CGPI	2d	02/27/18	02/28/18
Attendance Module	4d	03/05/18	03/08/18
Companies	2d	03/09/18	03/12/18
Extra Curricular	2d	03/13/18	03/14/18
Student Profile	3d	03/15/18	03/19/18
Email Notification	3d	03/20/18	03/22/18
Graphical Display	2d	03/24/18	03/26/18
Integration	3d	03/27/18	03/29/18
Testing	1d	03/30/18	03/30/18



Fig.10 Gantt Chart (Implementation)

Chapter 5: Implementation Details

5.1 Functionality of System

1. A Web application to assist students and college authorities to gain information when required.
2. This application is designed to work on browsers.
3. The data is fetched from the server & can be displayed on any operating system.
4. This integrated and combined data is fetched by the users via login page.
5. This data is helpful for students to acknowledge their attendance, marks, their placement status along with their extra curricular work and achievements.
6. It is also useful for college faculties to keep track of student's performance.
7. An individual's data can also be displayed in graphical manner in order to analyze the details. in a glance.

Functionality 1:

- Description: Student Attendance
- Input: Daily Attendance
- Processing: Gathers the available information to determine whether a student is in defaulters or not by analyzing and comparing the percentage calculated with respect to defaulters percentage i.e. 75%
- Output: Displays the student attendance along with timestamps on day to day basis, also includes red or green color which resembles whether student is in danger zone or not and you can always email the defaulter details whenever required, mostly its done at the end of each month.

Functionality 2:

- Description: Student Marks
- Input: Unit test marks and each semester's CGPA (Cumulative Grade Point Average)
- Processing: Storage, sorting and averaging of results with respect to name and numerical value.
- Output: Display of individual student's marks in their profile in numeric and graphic format and as well as display of every student's marks for faculty.

Functionality 3:

- Description: Registration of new users
- Input: Individual details
- Processing: Administrator has the power to include new students, faculties, subjects and companies for placement purposes. It requires filling up of forms which when submitted goes to the database to create new tuples along with access right permissions.
- Output: New user would be able to login, given their credentials and allow them to edit or see only their part with the system.

5.2 Evaluation of developed system

1. The module is able to receive and provide data properly.
2. The module is able to calculate on point.
3. The student, faculty and administrator can login with ease.
4. When any information gets updated, it automatically reflects onto other modules.
5. The module is able to update attendance.
6. The module is able to generate the defaulters of students correctly.
7. If someone inserts the wrong credentials, then it shows the error message.
8. If someone insert the wrong details, it can always be edited to correct information.
9. It stores lots of data and as the system is centralized, we can save money with regard to paper storage while remotely accessing the application from the internet.
10. Since it is an web application, the application is user friendly and easy to use.
11. The Application size is moderate.
12. System will produce result in less time.
13. System is portable.
14. Cost of system is comparatively Less.
15. It provides pictorial format for student details.
16. It gives the notification to user if the attendance is low with respect to email.

Chapter 6 : Testing

System testing of software or hardware is testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements. System testing falls within the scope of black box testing, and as such, should require no knowledge of the inner design of the code or logic. The testing is important and is the final phase. All the process that has been done is just a trail or by assumption. All the required hardware and software is prepared for the testing so that errors or some modifications may be required for further proceeding. The software, which has been developed, has to be tested to prove its validity. Testing is considered to be the least creative phase of the whole cycle of system design, yet it is one of the most important from the efficiency point of view. In the real sense it the phase, which helps to bring out the other phases. Testing is done to make sure that the product does exactly what is supposed to do. Testing is the final verification and validation activity within the organization itself. In the testing stage, try to achieve the following goals; to affirm the quality of the product, to find and eliminate any residual errors from previous stages, to validate the software as a solution to the original problem, to demonstrate the presence of all specified functionality in the product, to estimate the operational reliability of the system. During testing the major activities are concentrated on the examination and modification of the source code. Testing is vital to the success of the system. System testing makes a logical assumption that if all parts of the system are correct. The preparation of testing should start as soon as the design of the system starts. To carry out the testing in an efficient manner certain amount of strategic planning has to be done. Any testing strategy must incorporate testing planning, test case design, test execution and the resultant collection and evaluation.

6.1 Test Cases

Test Case No.	Test Case	Input	Expected Output	Actual Output	Status
1.	Log-in credentials	Valid Email, password	Email and password entered are valid	Email and password entered are valid	Pass
		Invalid Email or password	Error message	Error message	Pass
2.	Registration (phone number)	Numeric data	Successfully taken	Successfully taken	Pass
		Alpha numeric	Doesn't accept	Doesn't accept	Pass
3.	Registering new Staff	Correct input for all fields.	Successfully Registered	Success	Pass
		Any field missed or empty	Error message field value required	Error message	Pass
4.	Registering Student	Correct input for all fields. G.R No. must be unique.	Successfully Registered	Success	Pass
		If missing field values or GR not unique.	Displays Error	Fail	Fail

6.2 Validation Testing (User Interface)

The screenshot shows the SIMS Login page. At the top, there is a navigation bar with links: SIMS, Home, Placements, Announcements, and About. Below the navigation bar, a red error message box states: "These credentials do not match our records." The login form is titled "Login" and contains the following fields and elements:

- E-Mail Address:** A text input field containing the email address "jmulchandani97@gmail.com".
- Password:** A text input field.
- Remember Me:** A checkbox labeled "Remember Me".
- Login:** A blue button labeled "Login".
- Forgot Your Password?:** A link labeled "Forgot Your Password?".

Below the login form, there is a red error message box stating: "These credentials do not match our records."

Fig.11 login validation

The screenshot shows the SIMS Admin Register Student page. At the top, there is a navigation bar with links: SIMS Admin, Dashboard, Staffs, Students, Subjects, Results, Unit Marks, Attendance, Companies, Extra Curricular, and a user profile dropdown for "admin". Below the navigation bar, there are two red error message boxes:

- The first error message box states: "The password confirmation does not match."
- The second error message box states: "The parent email field is required."

The register form is titled "Register Student" and contains the following fields and elements:

- Student and Parent Details:** A section header for the form.
- GR No.:** A text input field containing the value "1000006".
- First Name:** A text input field containing the value "Rohit".
- Middle Name:** A text input field containing the value "M".
- Last Name:** A text input field containing the value "Jaisinghani".
- Email Address:** A text input field containing the value "rohitj@gmail.com".

Fig.12 missing fields validation

SIMS AdminDashboardStaffsStudentsSubjectsResultsUnit MarksAttendanceCompaniesExtra Curricularadmin

The gr no has already been taken.

Register Student

Student and Parent Details

GR No.

100001

The gr no has already been taken.

First Name

Rohit

Middle Name

M

Last Name

Jaisinghani

Email Address

rohitj@gmail.com

Fig.13 Same Gr No. not acceptable

Chapter 7 : Result Analysis

7.1 Simulation Model

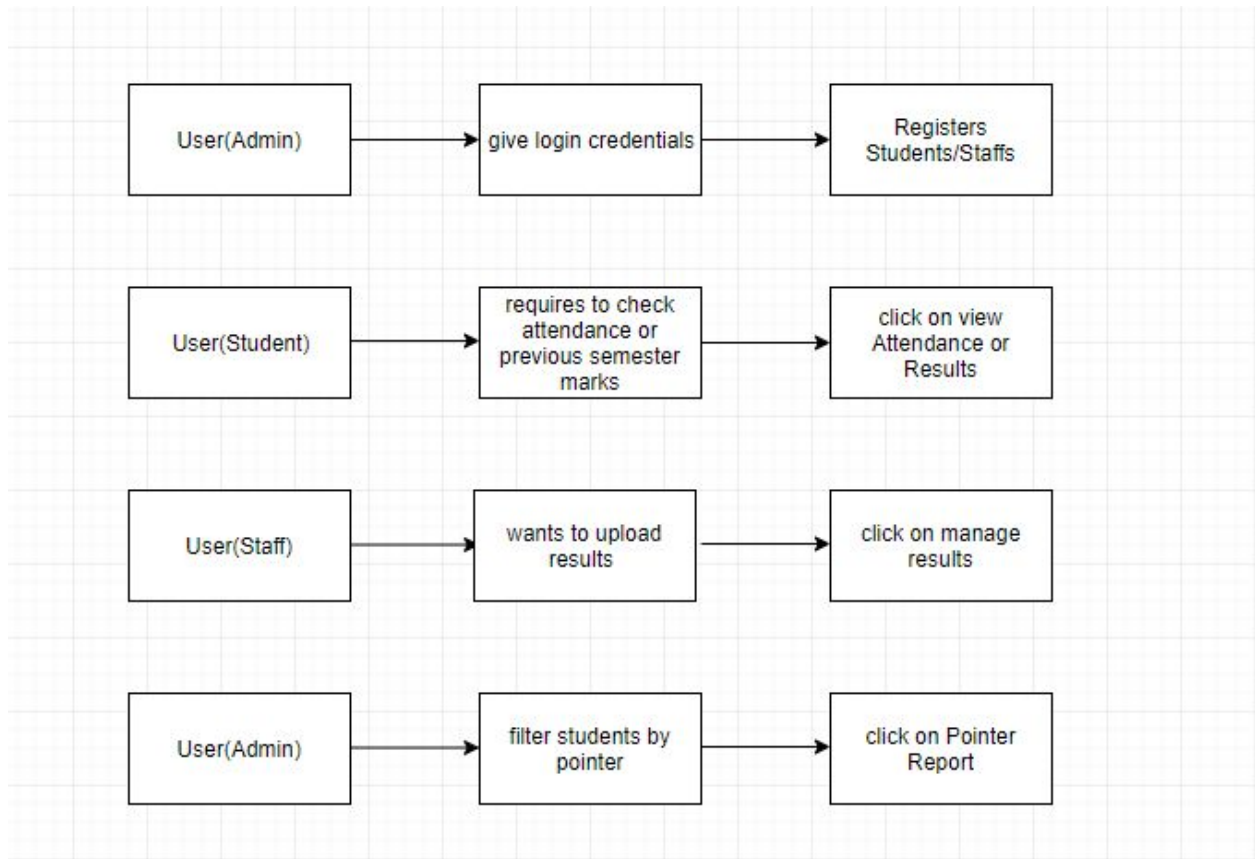


Fig 7.1- Simulation Model

- The simulation model shows what all functions system offers.
- User at every step based on the user-type/roles(Admin, Staff, Student) can view for whatever functionality they wants.

7.2 Screenshots of User Interface(UI)

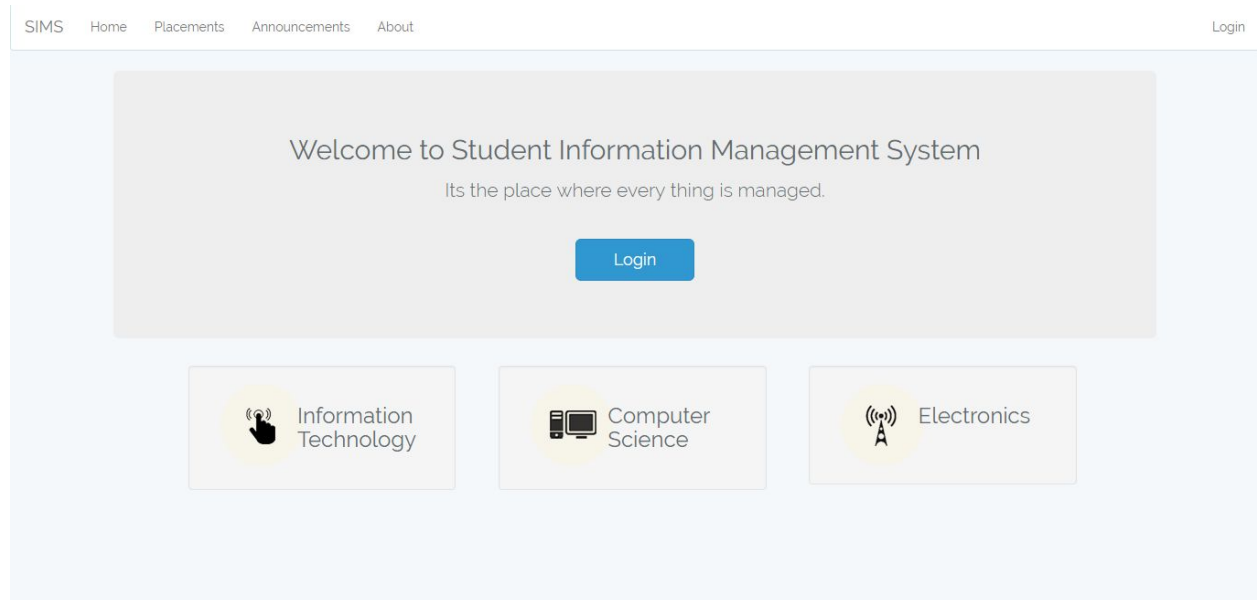


Fig.14 Home page

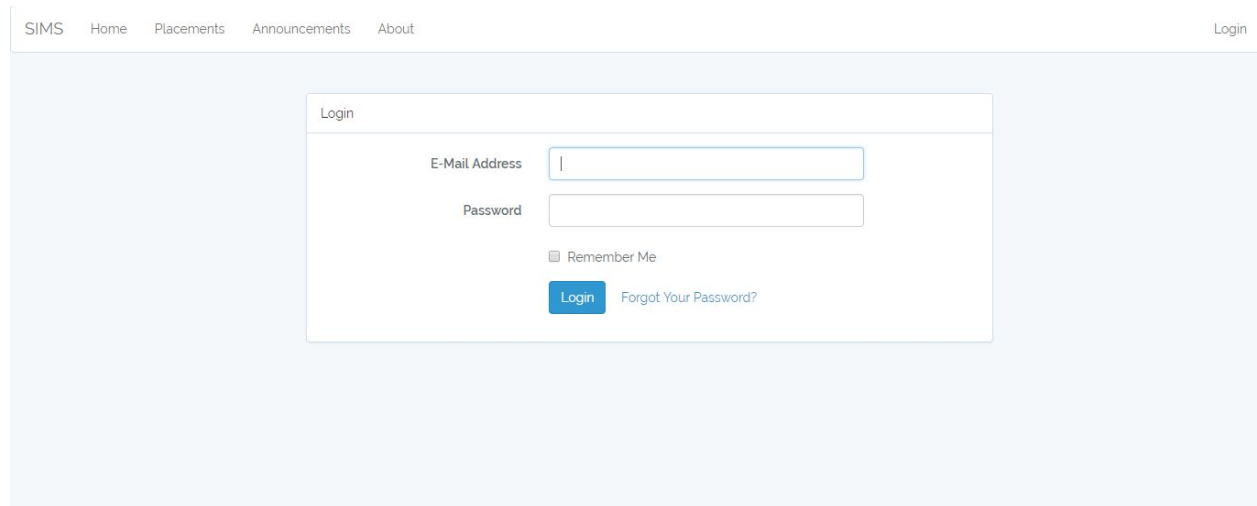


Fig.15 Login page

SIMS Students
Dashboard
Profile
Vivek M

Go Back

100001
Vivek P M
vmulchandani97@gmail.com
7021544445

Class

BE-D17-1

Date of Birth

1997-02-02

Address

UNR-1, Khemani, Ulhasnagar - 421004.

Gender

Male

Father Name

P M

Mother Name

N P M

Attendance

Graphical Representation

ML	HMI	PDS	DWM	CC
66.67 %	66.67 %	0 %	33.33 %	80 %

Fig.16 Student Profile

SIMS Admin
Dashboard
Staffs
Students
Subjects
Results
Unit Marks
Attendance
Companies
Extra Curricular
Greesha Bhatia

Mark Attendance for Lecture

Semester
Course
Section
Apply

Mark Attendance for Practical

Semester
Course
Section
Batch
Apply

Generate Defaulters

Attendance
showing students

GR No	Student Name	Class	Average Attendance
100001	M Vivek P N	BE-D17-1	55 %
100002	B Dipin M N	BE-D17-1	55 %
100003	M Jewel A M	BE-D17-2	66.67 %
100004	Sahita Jayesh S S	BE-D17-2	0 %

Fig.17 Student Attendance Details

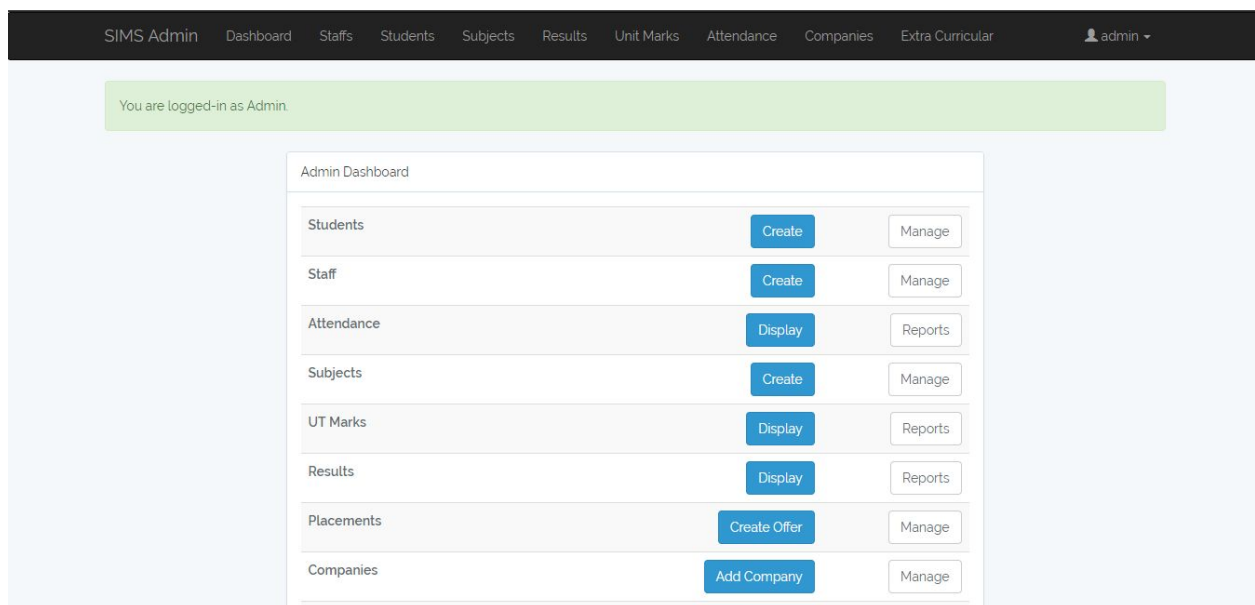


Fig.18 Admin Functionalities

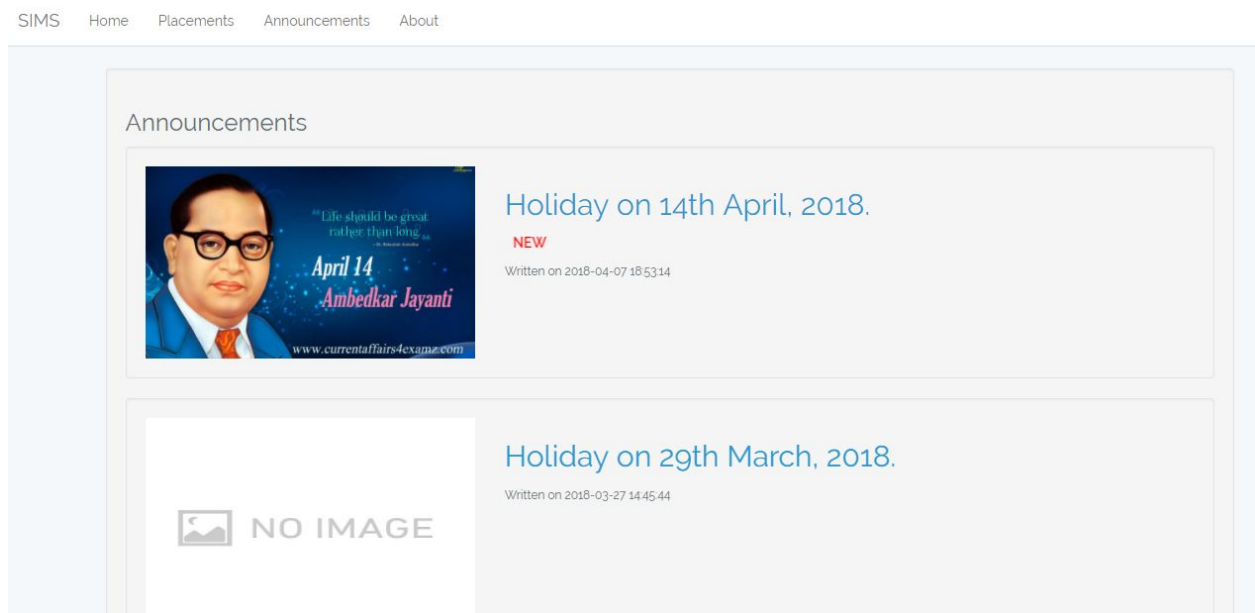


Fig.19 Announcements Page

7.3 Graphical Outputs

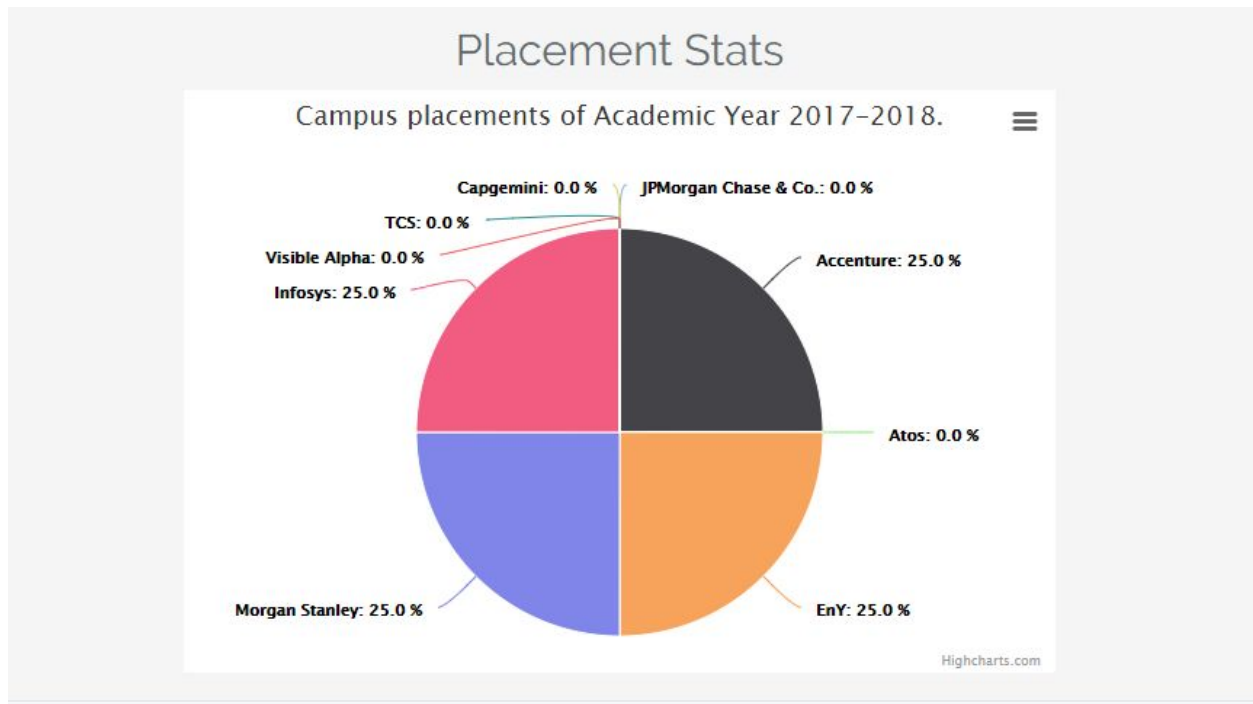


Fig.20 Placement Details Pie Chart

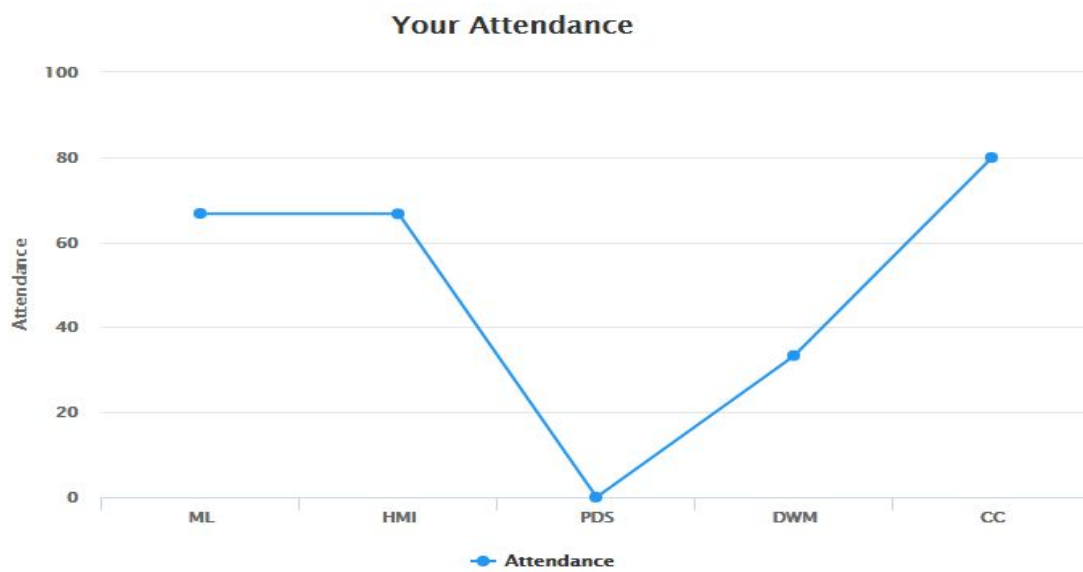


Fig.21 Attendance Chart

Unit Test Marks

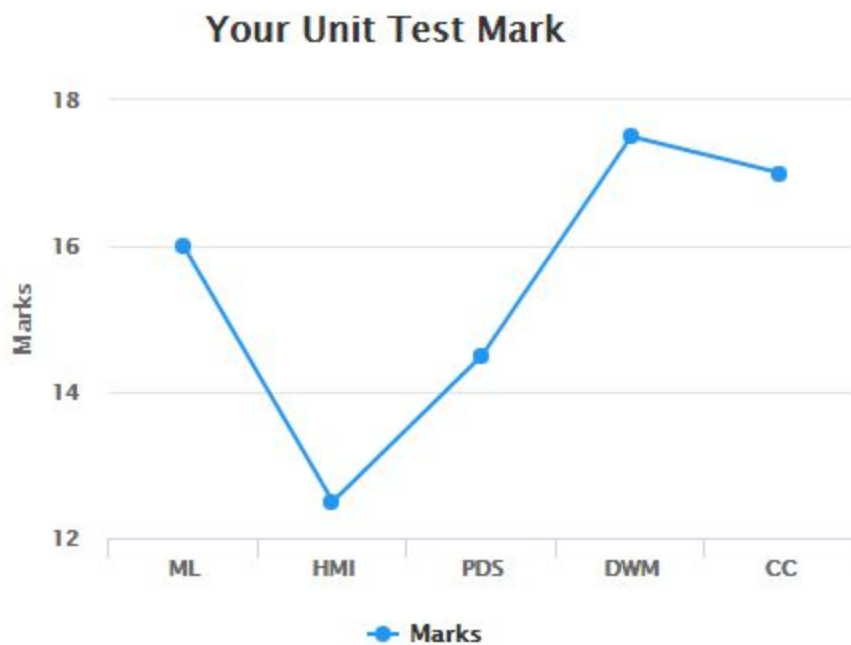


Fig.22 Unit Test Marks

Your Result

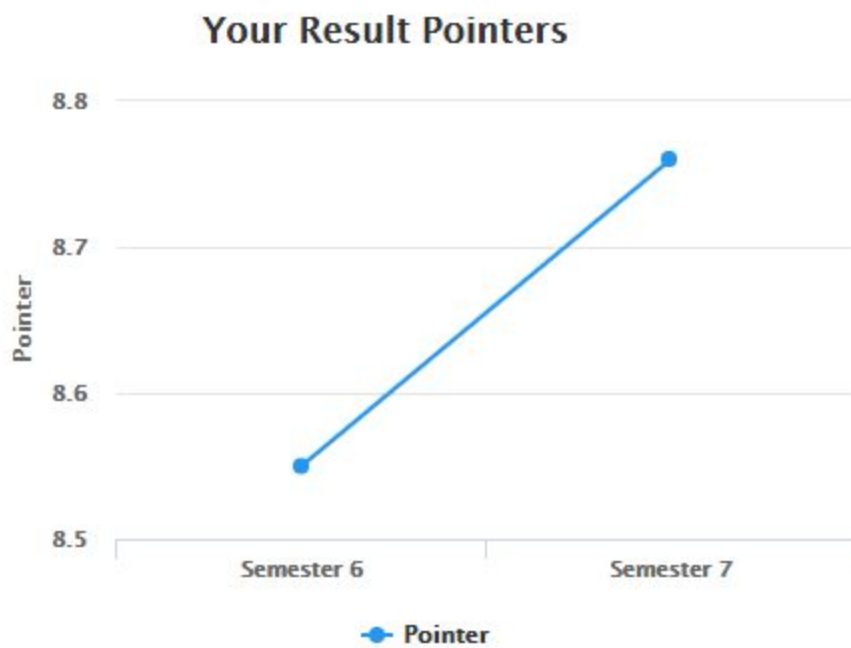


Fig.23 CGPI Chart

7.4 Reports Generated

SIMS Admin Dashboard Staffs Students Subjects Results Unit Marks Attendance Companies Extra Curricular Greesha Bhatia

Report Generation

Months: This Month Subjects: ML Class Section: 1 Apply

Attendance

showing students

GR No.	Name	07-04-2018	07-04-2018	07-04-2018	07-04-2018	07-04-2018	07-04-2018
100001	M Vivek P N	P	P	A	P	A	P
100002	B Dipin M N	A	P	P	P	P	A

Fig.24 Attendance Report

Results

showing results

GR No	Student Name	Semester 6	Semester 7
100001	M Vivek P N	8.55 (A)	8.76 (A)
100002	B Dipin M N	8.25 (A)	7.4 (B)
100003	M Jewel A M	7.82 (B)	7.45 (B)
100004	Sahita Jayesh S S	9 (O)	9.2 (O)
1000005	Panjwani Manish M M	8 (A)	8 (A)
1000006	Jadhav Viraj V S	8.5 (A)	8.9 (A)
1000007	Jaisinghani Rohit M B	8.8 (A)	8 (A)
1000008	Lalwani Nilesh K A	9 (O)	9.2 (O)
1000009	Chawda Karan K S	8.6 (A)	8.2 (A)
1000010	Rawat Ashish H D	8.8 (A)	8.92 (A)

Fig.25 Results Report

Result

showing students

Gr No.	Name	Remark	Semester
1000011	Babbar Partik B G	F	6
1000011	Babbar Partik B G	F	7

Fig.26 Failed Students Report

SIMS Admin Dashboard Staffs Students Subjects Results Unit Marks Attendance Companies Extra Curricular

Filter Results

Filter By: Greater than(>=) Pointer: 7.25 Semester: CGPI [Apply](#)

Results

showing results of Semester CGPI

GR No.	Student Name	Pointer
100001	M Vivek P N	7.29 (CGPI)
100002	B Dipin M N	7.45 (CGPI)
100003	M Jewel A M	7.73 (CGPI)

Fig.27 Average CGPI Report

Chapter 8: Conclusion

8.1 Limitation

- The user must have an active internet connection to access the system.
- User should have basic english language knowledge.

8.2 Conclusion

This system assists in automating the existing manual system. This is a paperless work. It can be monitored and controlled remotely. It reduces the manpower required. It provides accurate information always. Malpractice can be reduced. 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. So it is better to have a Web Based Information Management system. All the faculty and management can get the required information without delay.

8.3 Future Scope

- We have created a web-application. It can be converted to a Mobile Based Application (Android).
- The Defaulter notification presently sent through mail, but in future the same would be possible via SMS service.

Chapter 9 : References

- [1] Almahdi Alshareef, Ahmed Alkilany "Toward a Student Information System for Sebha University, Libya",Fifth international conference on Innovative Computing Technology (INTECH 2015)-p 34-39
- [2] Prabhu T Kannan, Srividya K Bansal,"Unimate: A Student Information System",2013 International Conference on Advances in Computing, Communications and Informatics (ICACCI)-p-1251-1256
- [3] S.R.Bharamagoudar, Geeta R.B, S.G.Totad, "Web service api for student information and course management systems"International Journal of Advanced Research in Computer and Communication EngineeringVol. June 2013
- [4] Hanan A. Al-Souly, Abeer S. Al-Sheddi, Heba A. Kurdi "Enhanced TSFS Algorithm for Secure Database Encryption" Science and Information Conference 2013. -p328-335
- [5] D.Manivannan, R.Sujarani "Light Weight and Secure Database Encryption using TSFS Algorithm" Computing Communication and Networking Technologies (ICCCNT-2010)
- [6] Li Qian, Jun Hu, Shuying Liu "SQL Injection Attack and Prevention Technology" International Conference on Estimation, Detection and Information Fusion(ICEDIF 2015) -p-303-307
- [7] Sajjad Rafique, Mamoon Humayun "Web Application Security Vulnerabilities Detection Approaches" SNDP 2015 -p-201-207
- [8] Student specific Information System(US 20060127870 A1)
- [9] System and method for communicating student information among student, parents guardians and educators(US20080085502A1)
- [10] Web service api for student information and course management systems(US20120237917)
link.springer.com/chapter/10.1007/978-94-007-2169-2_14