Ensure Data-Driven Decisions in the Digital Age:

How Comprehensive Reports Can Help Acknowledge a Student's Performance

'Student Sphere'

A Mini-Project Report Submitted For

Partial Fulfilment of the Requirements of the Degree of Bachelor of Engineering In

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

(Semester IV)

By

Vatsal Shah – 10090

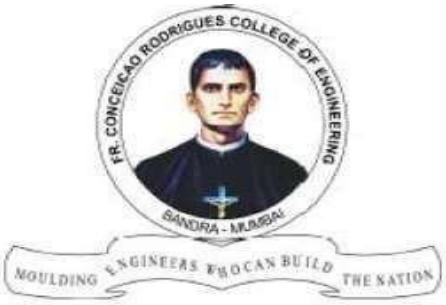
Mitesh Sawant – 10089

Samarth Shetty – 10094

Darshil Sonawane – 10098

Under the guidance of

Prof Garima Tripathi



Fr. Conceicao Rodrigues College of Engineering

Bandra (W), Mumbai 400050

University of Mumbai

Dec 2023

CERTIFICATE

This is to certify that the mini project entitled “Ensure Data-Driven Decisions in the Digital Age: How Comprehensive Reports Can Help Acknowledge a Student’s Performance – Student Sphere” is a bonafide work of “Vatsal Shah –10090, Mitesh Sawant –10089, Samarth Shetty – 10094, Darshil Sonawane – 10098” submitted to the University of Mumbai in partial fulfilment of the requirement for the degree of Bachelor of Engineering in Artificial Intelligence and Data Science (Semester – IV)

Prof.

Garima Tripathi

(guide)

Dr. Jagruti Save

Head Of Department

Dr. S.S. Rathod

Principal

Approval Sheet

Mini Project Report Approval for S.E. (Semester – IV)

This mini-project report entitled **"**Ensure Data-Driven Decisions in the Digital Age: How Comprehensive Reports Can Help Acknowledge a Student's Performance – Student Sphere**"** submitted by "Vatsal Shah –10090, Mitesh Sawant –10089, Samarth Shetty – 10094, Darshil Sonawane – 10098" is approved for the degree of Bachelor of Engineering in Artificial Intelligence and Data Science (Semester – IV)

Examiner:- 1) _____

2)_____

Date:

Place:

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source/ in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Date: Signature

Vatsal Shah – 10090

Mitesh Sawant – 10089

Samarth Shetty – 10094

Darshil Sonawane – 10098

ABSTRACT

The “Ensure Data-Driven Decisions in the Digital Age: How Comprehensive Reports Can Help Acknowledge a Student’s Performance – Student Sphere” project emphasizes the importance of a student profile fed by a database to ensure informed decisions and monitor the activities of the students as keeping up with the grades, attendance and achievements of each student is extremely important for all professors and faculty members.

Acknowledgements

We have great pleasure in presenting the report on “STUDENT SPHERE” I take this opportunity to express my sincere thanks towards the guide, Prof. Garima Tripathi, Fr. C.R.C.E, Bandra (W), Mumbai, for providing the technical guidelines and suggestions regarding the line of this work. We enjoyed discussing the work progress with him/her during our visits to the department.

We thank Dr. Jagruti Save, Head of Artificial Intelligence and Data Science department, Principal, and the management of C.R.C.E., Mumbai for encouragement and providing necessary infrastructure for pursuing the project.

We also thank all non-teaching staff for their valuable support in completing our project.

Date:

Signature:

Vatsal Shah (10090)

Mitesh Sawant (10089)

Samarth Shetty (10094)

Darshil Sonawane (10098)

TABLE OF CONTENTS

1. INTRODUCTION

1.1 System Introduction

This report delves into the fundamental aspects, benefits, challenges, and future prospects of implementing a Student Database System within an educational institution. By examining the critical components of such a system, its advantages, the challenges faced during implementation, and the future trends shaping its evolution, this report aims to provide a comprehensive understanding of the significance of modern Student Database Systems in fostering enhanced education management and student engagement.

By addressing the multifaceted aspects of a Student Database System, we aim to equip educational professionals, administrators, and students with valuable insights into the transformative power of technology in education administration.

Student Database System plays a pivotal role in streamlining administrative processes, enhancing data security, and improving the overall management of educational institutions

1.2Objectives

Record Keeping: Maintaining paper records can be cumbersome and prone to errors. A Student Database System streamlines record-keeping processes, making it easier to add, update, and retrieve information, leading to improved accuracy and efficiency.

Attendance Tracking: Implement a system to record and monitor student attendance for each class session.

Grades Monitoring: Record and compute student grades for assignments, exams, and overall academic performance.

Informed Decisions: Equips decision-makers with valuable insights for strategic planning, curriculum development, and resource allocation.

Data accuracy: Minimises data entry errors and ensures accurate and up-to-date student information, leading to reliable reporting and decision-making.

Academic Planning: Educational institutions can use the system to manage students' academic progress, including grading, course registration, and tracking of completed courses. This facilitates academic planning for the students.

1.3Scope

The scope of this system to facilitate efficient management of student data and simplify the process of generating comprehensive reports based on various aspects of a student's academic performance and behaviour.

Following points are to be included in each student's profile:

- Attendance
- Research papers of students
- Mini and major projects
- Competitions
- Patents
- Participation and awards in events
- Participation in sports
- Internships
- Council members
- Workshops and online courses
- Sem results

1.4 APPLICATIONS AND SOCIAL RELEVANCE OF THE PROJECT

Key Applications of a Student Database System

Student Records Management:

An SDS helps schools maintain comprehensive student records, including personal information, academic history, attendance, disciplinary records, and more.

Relevance: Accurate records management ensures data integrity and supports administrative functions, enabling institutions to operate efficiently.

Enrollment and Registration:

The SDS facilitates the enrollment and course registration process by storing student information and allowing easy retrieval for course scheduling.

Relevance: By streamlining these processes, the system reduces administrative burdens and facilitates a smoother experience for students and staff.

Attendance and Grade Tracking:

Educators can record attendance and grades directly into the database, providing a central source of truth for academic performance.

Relevance: This feature promotes transparency and accountability in education, allowing parents and students to track progress and address issues early.

Communication and Collaboration:

An SDS can integrate communication tools, enabling teachers to send messages to students and parents and fostering collaboration.

Relevance: Enhanced communication improves engagement among stakeholders, fostering a supportive educational community.

Transcripts and Reports Generation:

The SDS can generate official transcripts, report cards, and other academic reports efficiently.

Relevance: Quick access to transcripts and reports is crucial for students applying to colleges or jobs, ensuring that they can take the next steps in their education or career without delay.

2.LITERATURE REVIEW

Sr. No.	Title of Paper	Journal/Conference Title	Publication Year	Overview
1	Important Factors Affecting Student Information System Quality and Satisfaction	EURASIA Journal of Mathematics, Science and Technology Education	2017	This paper aims to understand the impact of System Quality, Information Quality and Information Presentation on Student Information System satisfaction. It will help SIS developers to design a system in light of users' needs.
2	Unimate: A Student Information System	IEEE	2013	The goal of this project is to develop a prototype for a low-cost web-based application that provides features of both learning management systems and student information systems.

Table 3.1

Sr. No.	Title of Paper	Journal/Conference Title	Publication Year	Overview
3	Student Information Management System	International Journal for Research in Applied Science & Engineering Technology	2020	Aim is to create a website which stores the data of the students at a single place. The faculty members and administrators can add, delete and update information of the students accordingly. Students login is handled by a user login module whereas faculty and administrators can login as admin to handle students details.
4	Design and Implement a Novel Student Information Management System	International Journal of Computer Science and Mobile Computing	2018	Adopting this new database student information management system helps to accomplish the tasks at high speed and accuracy, also helps the management of the college in speed of decision-making, which helps raise the level of performance of the college in general.

PROPOSED SYSTEM

3.1 DRAWBACKS OF EXISTING SYSTEM

User Experience and Accessibility:

Many SDS are designed with complex user interfaces, making them challenging to use for students, parents, and educators.

Gap:

A poor user experience can reduce engagement and adoption, particularly for those with limited technical skills or accessibility needs.

Data Privacy and Security:

Despite advancements in security, some SDS lack robust data protection measures, exposing sensitive student information to risks of unauthorized access or breaches.

Gap:

Inadequate security protocols can lead to data breaches, affecting students' privacy and violating regulations like GDPR or FERPA.

Customization and Flexibility:

Existing SDS may offer limited customization options, forcing schools to adapt their processes to fit the software instead of the other way around.

Gap:

This lack of flexibility can hinder the unique needs of diverse educational institutions, reducing the system's effectiveness.

3.2 PROPOSED STATEMENT

In educational institutions, managing student information efficiently is paramount. The existing manual methods of record-keeping are time-consuming, error-prone, and lack the flexibility to handle the growing volume of data.
As educational institutions continue to expand and diversify, the need for a robust, scalable, and secure Student Database System becomes increasingly essential.
The ability to make informed decisions regarding a student's achievements, behaviour and overall performance.

In today's educational landscape, managing student information efficiently is crucial for educational institutions. Hence, the development of a comprehensive Student Database Management System (DBMS) is imperative. This project aims to design and implement a system tailored for universities or educational institutions to streamline the storage, retrieval, update, and deletion of student records.

The proposed system will encompass several key features. Firstly, it will facilitate the management of student information, including essential details such as name, roll number, contact information, and address. New students can register into the system, existing records can be updated with any changes, and redundant records can be deleted as needed.

Secondly, the system will include functionality for course enrollment. Students should be able to browse available courses, enroll in them, and view their enrolled courses. Additionally, they should have the option to drop courses if necessary. Course details such as code, name, description, credits, and schedule will also be stored in the system.

Furthermore, the system will manage grades for each student enrolled in courses. It will calculate GPA and CGPA based on the grades obtained, and provide a mechanism for instructors to submit grades. This feature is essential for monitoring student performance and academic progress.

Efficient search and retrieval functionalities will be implemented to enable quick access to student records based on criteria such as name, roll number, or enrolled courses. This will facilitate easy access to information for faculty and administrative staff.

To ensure security and integrity, the system will incorporate user authentication and authorization mechanisms. A secure login system will be implemented for administrators, faculty, and students, with appropriate access controls to restrict unauthorized access to sensitive information.

4.1 BLOCK DIAGRAM

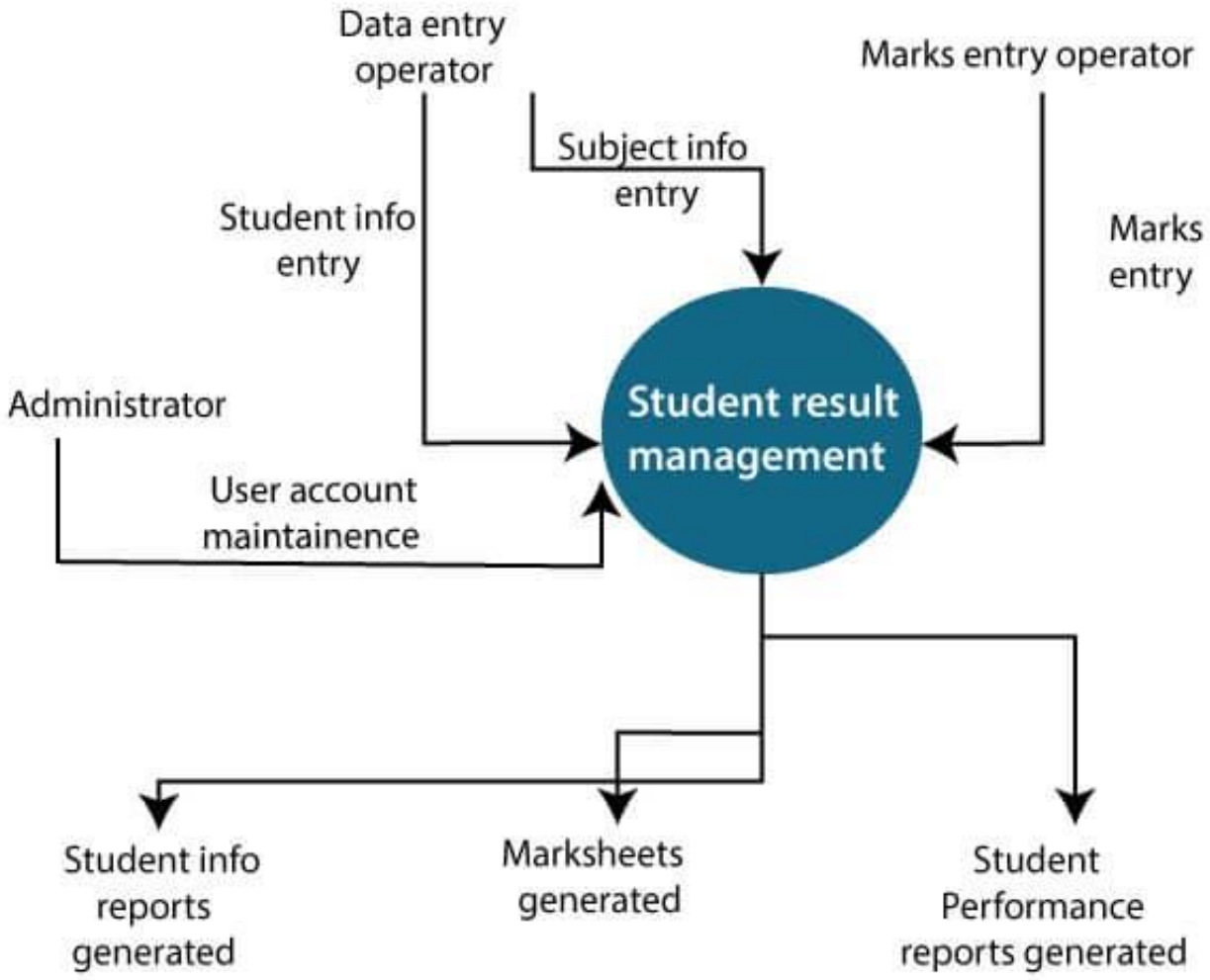


Fig. 4.1 – Block Diagram

The above block diagram gives a brief idea of the working of the website.

The admin can maintain and feed in the data of students and keep their profiles updated.

4.2 MODULE DESCRIPTION

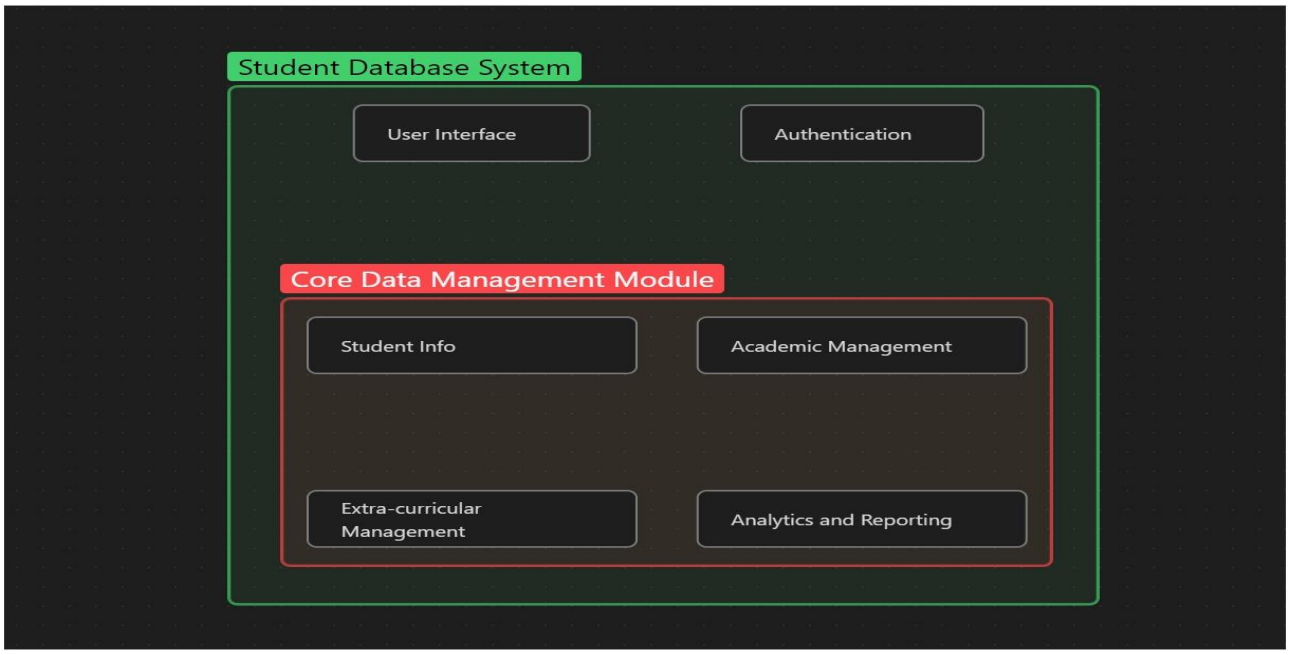


FIG 4.2

User Interface (UI) Module:

This module provides the front-end interface for all users, including students, teachers, parents, and administrators. It offers a user-friendly, intuitive design, accessible to a wide range of users. It includes dashboards, menus, and navigation for different functionalities.

Authentication Module:

This module handles user authentication and authorization, ensuring that only authorized users have access to specific data and features. It enforces role-based access control.

Student Info Submodule:

Stores and manages core student information such as personal details, emergency contacts, and enrollment history.

Academic Management Submodule:

Tracks academic activities including course enrollment, grades, assessments, and academic progress.

Extra-Curricular Activities Submodule:

Records students' participation in clubs, sports, events, and other non-academic activities, along with related achievements.

Analytics and Reporting Submodule:

Provides tools for generating custom reports and conducting data analysis to support data-driven decisions and regulatory compliance.

4.2.1 DATABASE(S)

Tables:

- cgpa: Contains student CGPA (Cumulative Grade Point Average) for each semester
  - Fields:
    - roll_no (Primary Key): Student's roll number.
    - sem1 to sem8: CGPA for each semester.

- council: Contains information about student participation in councils
  - Fields:
    - roll_no: Student's roll number.
    - council_name: Name of the council.
    - position: Position held by the student in the council.

- internship: Details about student internships.
  - Fields:
    - roll_no: Student's roll number.
    - company_name: Company where the student interned.
    - role: Role of the student during the internship.

- internship_certificate: Contains internship certificate information.
  - Fields:
    - roll_no: Student's roll number.
    - internship_pdf: File name of the internship certificate.

- patent: Information on student patents.
  - Fields:
    - roll_no: Student's roll number.
    - description: Description of the patent.

- personal_details: Contains personal details of students.
    - Fields:
        - roll_no (Primary Key): Student's roll number.
        - name: Student's name.
        - email: Email address.
        - github: GitHub profile link.
        - linkedin: LinkedIn profile link.
        - contact: Contact number.
        - address: Home address.

- profile_pic: Contains profile picture information.
    - Fields:
        - roll_no: Student's roll number.
        - pic: File name of the profile picture.\

- project: Contains information about student projects.
    - Fields:
        - roll_no: Student's roll number.
        - description: Description of the project.

- sports: Details of student sports achievements.
    - Fields:
        - rollno: Student's roll number.
        - achievement: Description of the sports achievement.

- sports_certificates: Contains sports certificate information.
        - Fields:
        - roll_no: Student's roll number.
        - sports_pdf: File name of the sports certificate.

- students: Contains student credentials.
  - Fields:
    - roll_no (Primary Key): Student's roll number.
    - password: Student's password.

- teachers: Contains information about teachers.
  - Fields:
    - id (Primary Key): Teacher's ID.
    - name: Teacher's name.
    - password: Teacher's password.
    - admin: Indicates if the teacher is an administrator (1 for admin, 0 otherwise).

- tech_certificate: Contains technology-related certificates.
  - Fields:
    - roll_no: Student's roll number.
    - tech_pdf: File name of the technology certificate.

- tech_comp: Information about student technology competitions.
  - Fields:
    - roll_no: Student's roll number.
    - description: Description of the technology competition.

4.2.2 DATABASE DESIGN

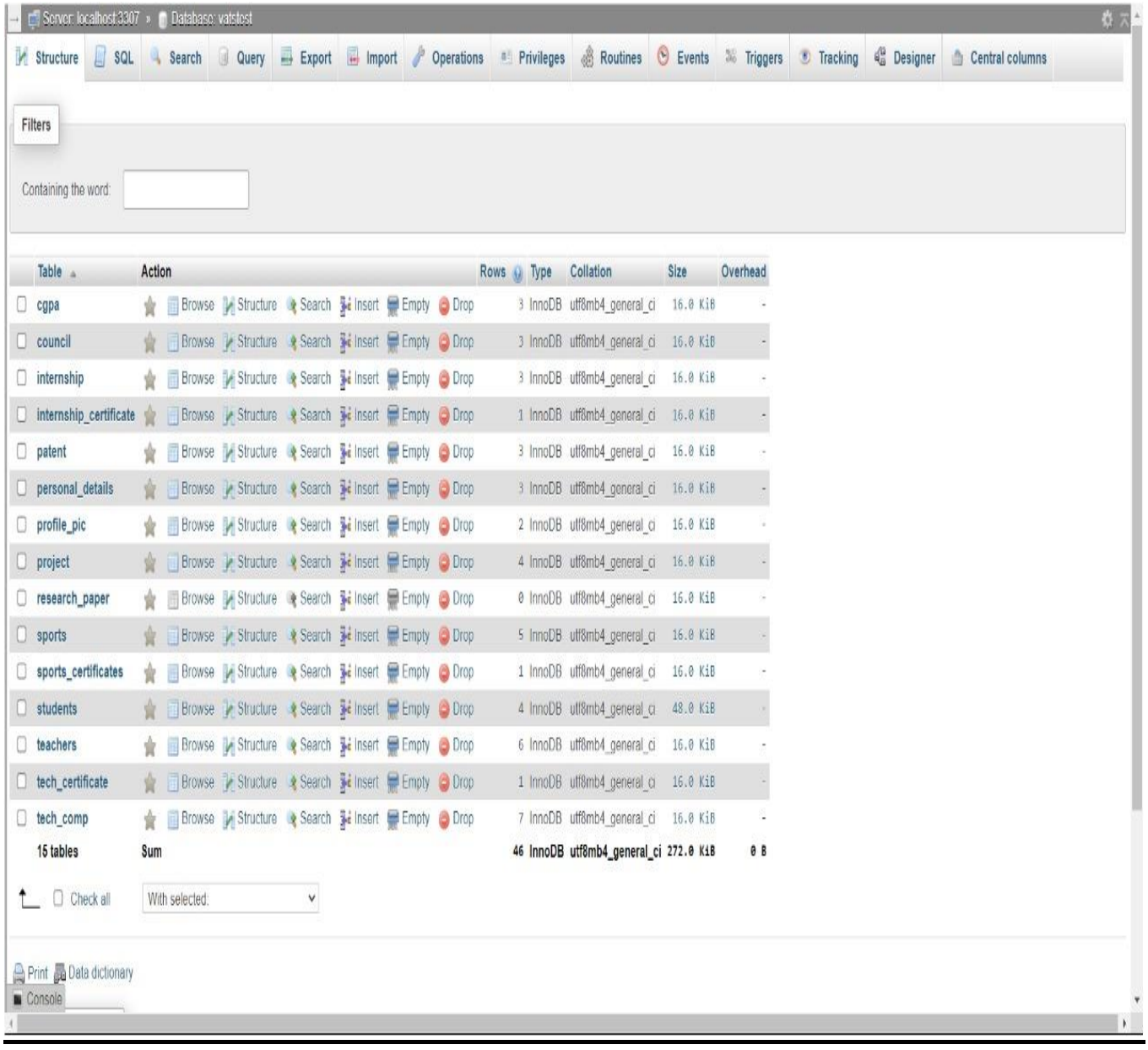


FIG 4.2.2.1

4.2.3 UI DESIGN

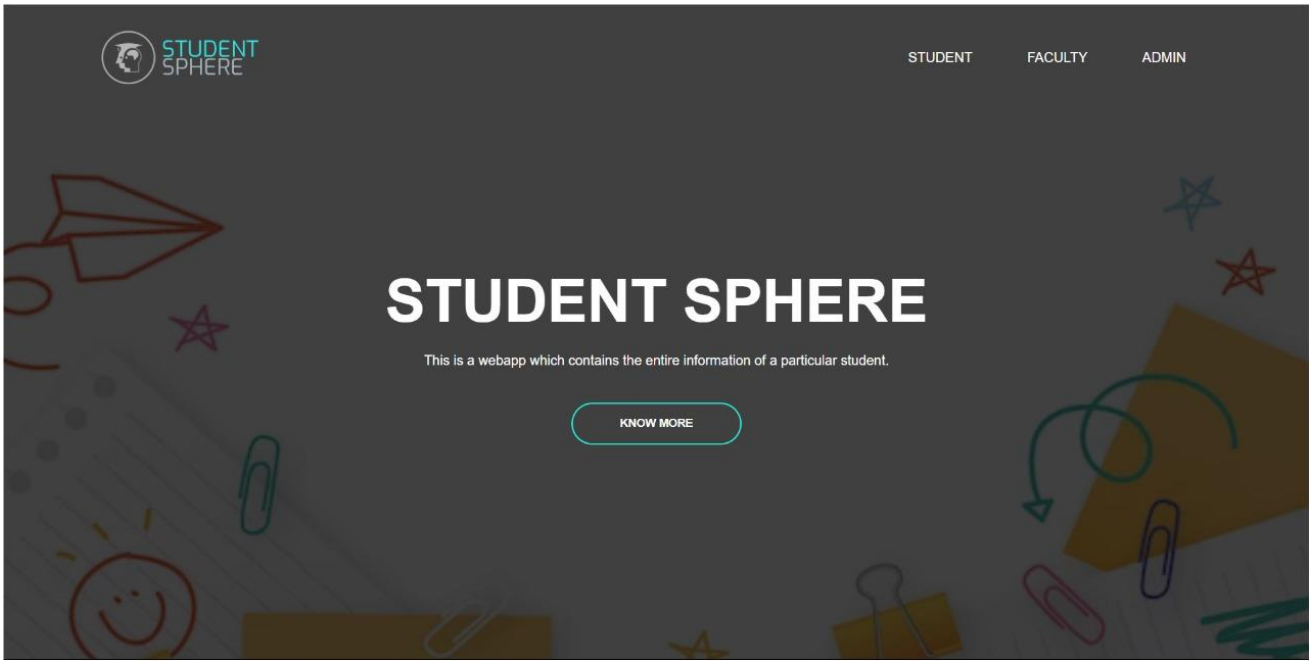


FIG 4.2.3.1 HOME PAGE LOGIN

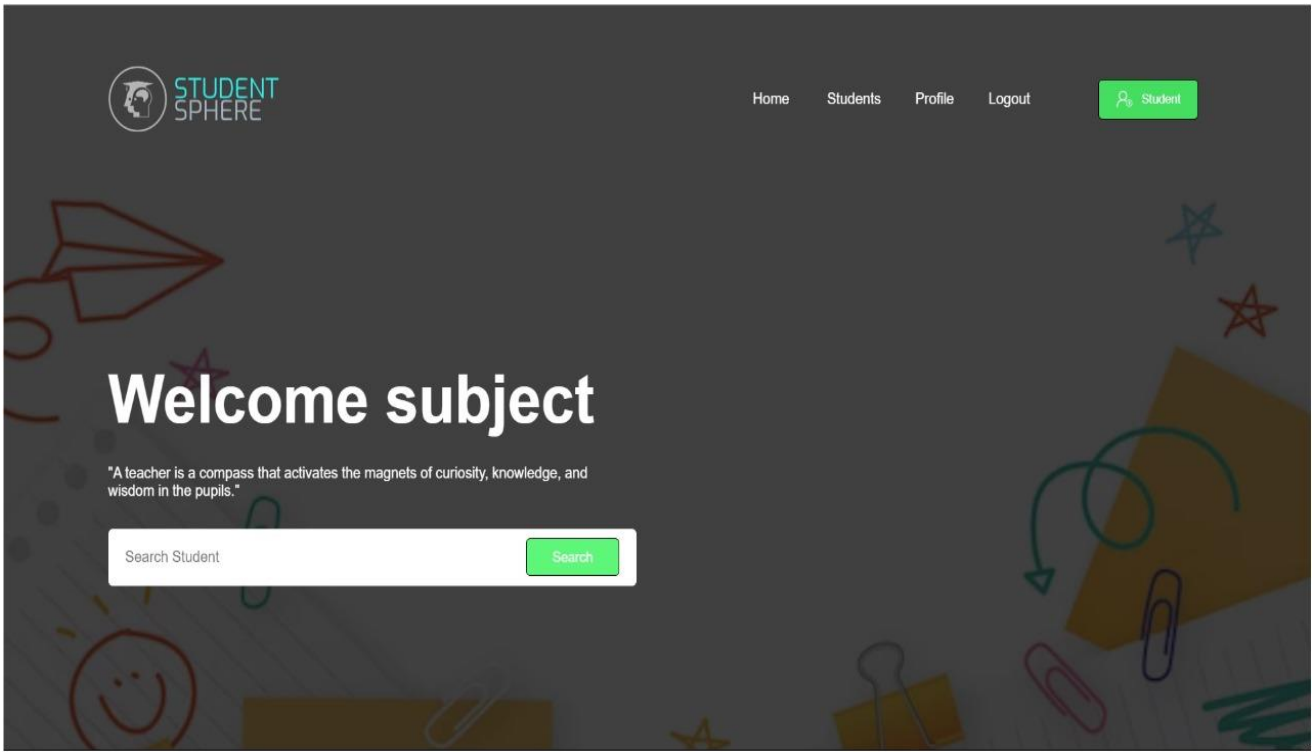


FIG 4.2.3.2 FACULTY HOME PAGE

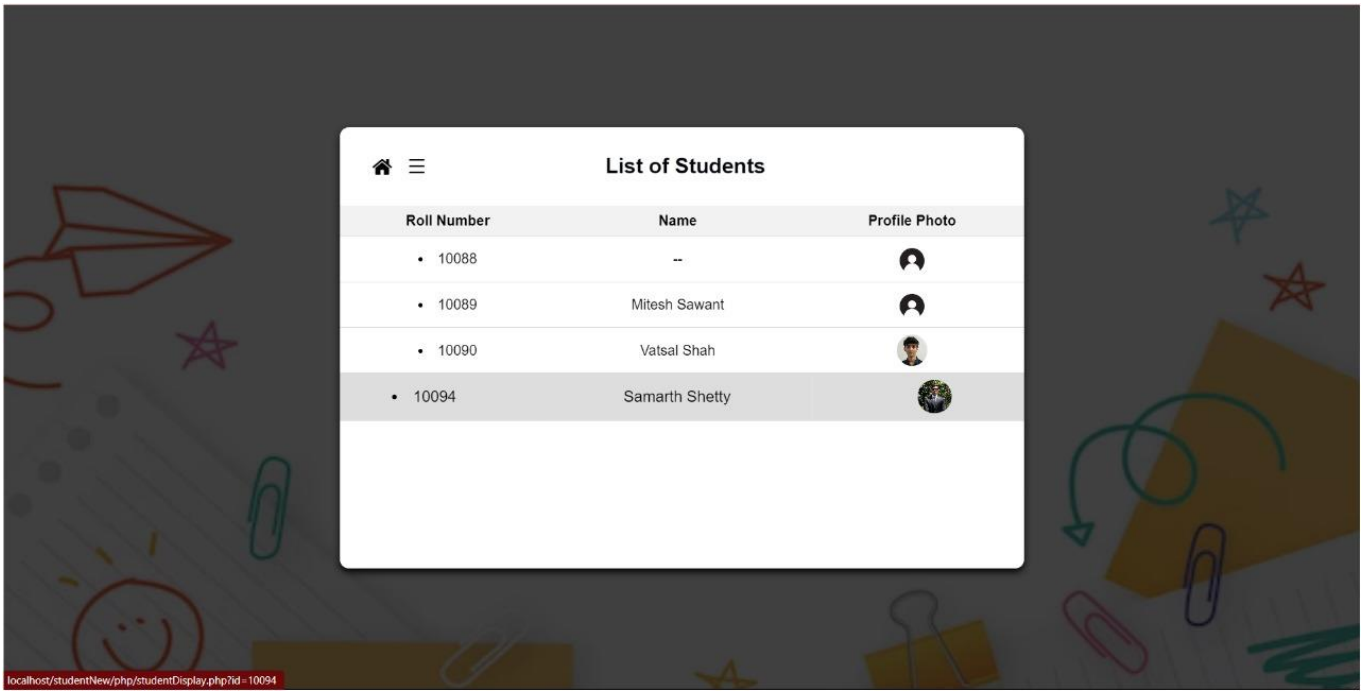


FIG 4.2.3.3 LIST OF STUDENTS

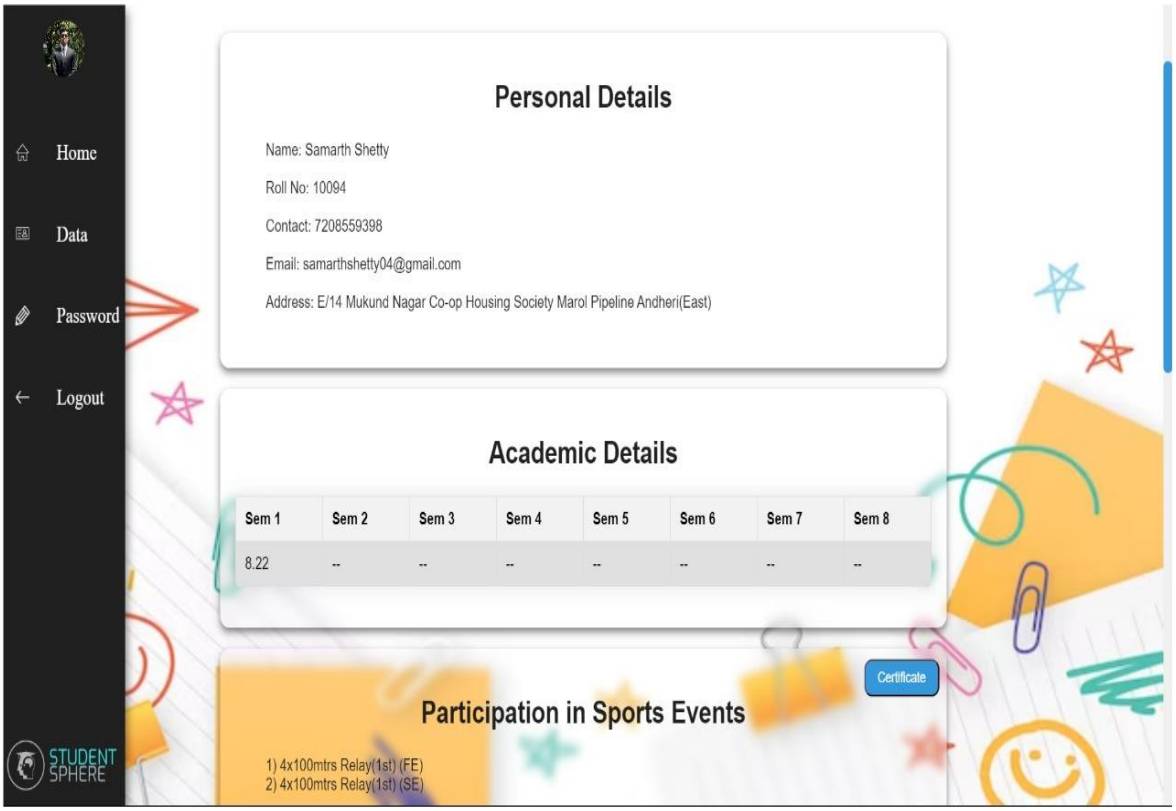


FIG 4.2.3.4 STUDENT HOME

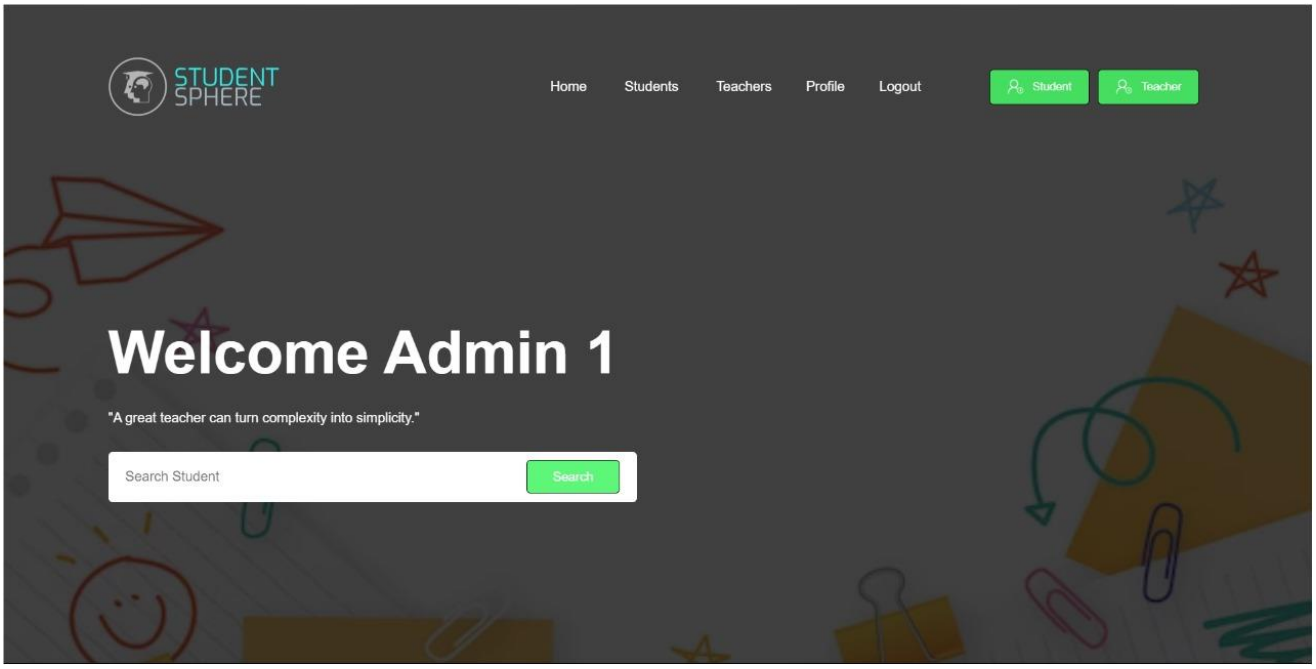


FIG 4.2.3.5 ADMIN HOME

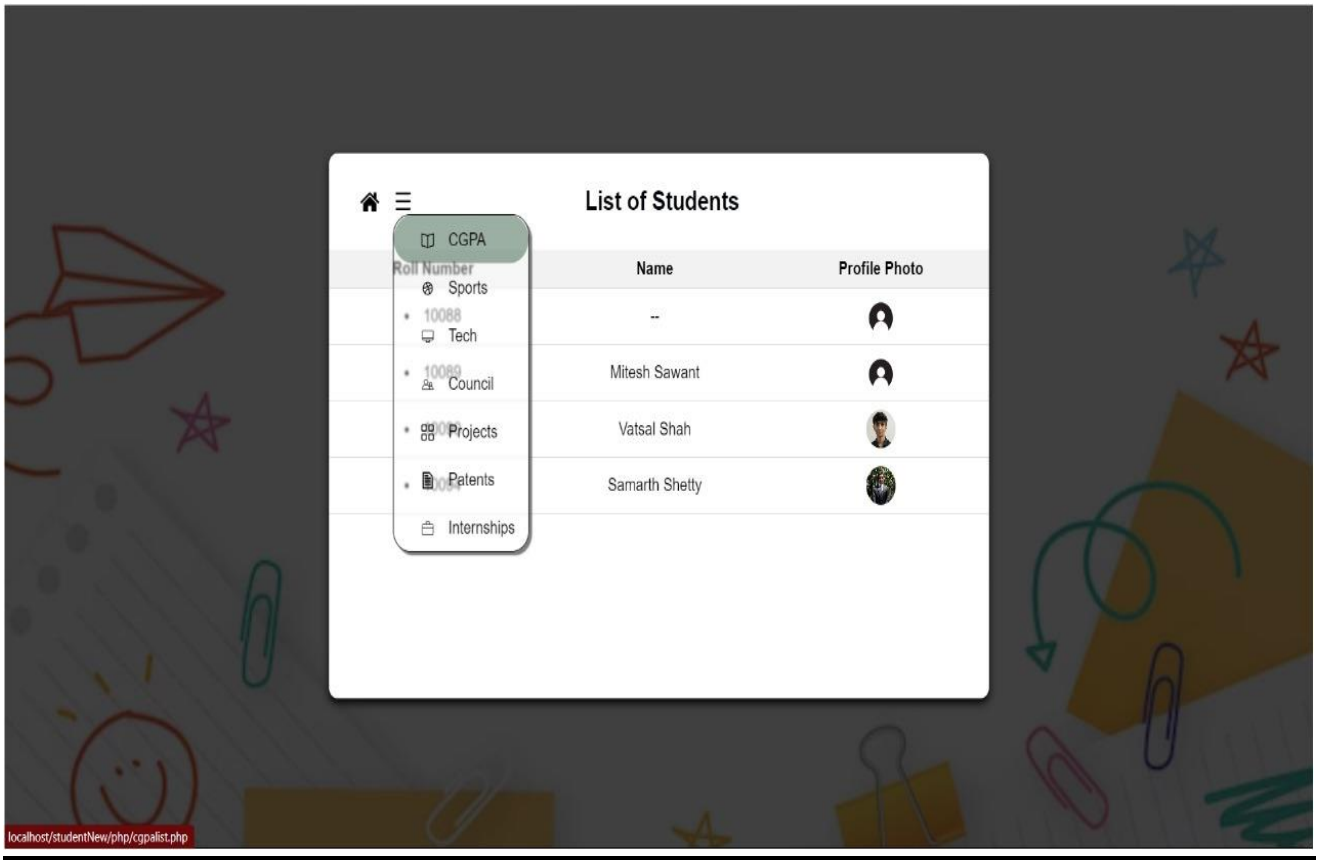


FIG 4.2.3.6 STUDENT LIST MENU

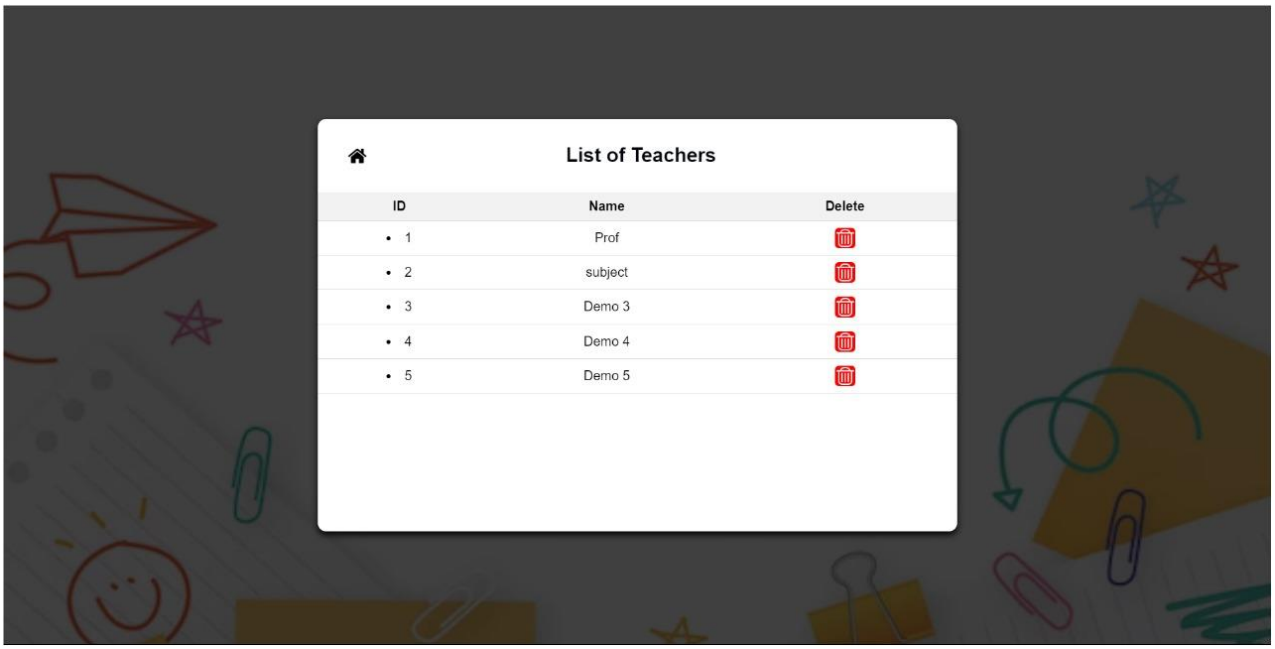


FIG 4.2.3.7 LIST OF TEACHERS

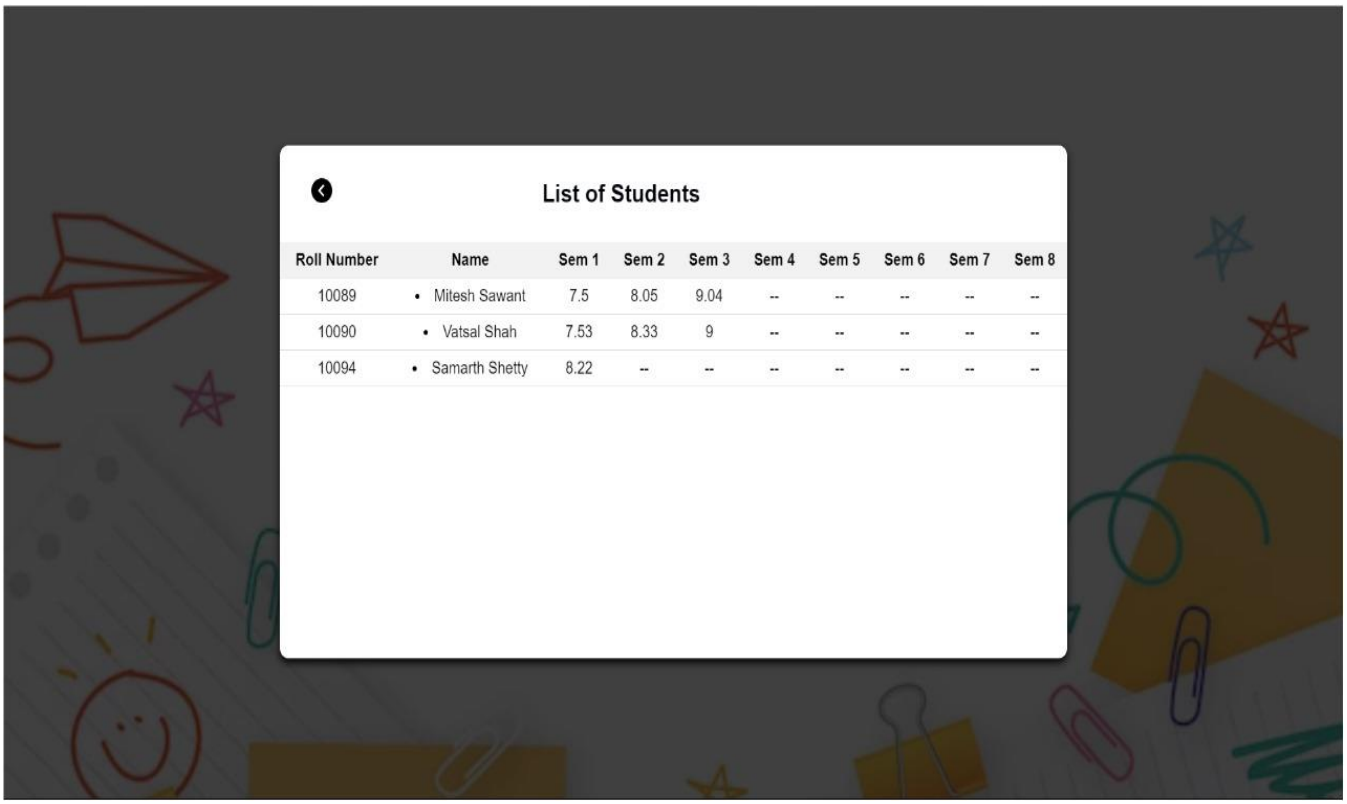


FIG 4.2.3.8 STUDENT LIST OF SELECTED FIELD

4.2.4 SOFTWARE AND HARDWARE USED

HTML (HyperText Markup Language):

The standard markup language for creating and structuring content on the web, providing the foundation for the website's layout and structure.

CSS (Cascading Style Sheets):

Enables the styling and design of web pages, allowing for visual customization and consistent presentation across the site.

JavaScript (JS):

Adds interactivity and dynamic behavior to web pages, facilitating responsive user interfaces and enhanced user experiences.

PHP (Hypertext Preprocessor):

A server-side scripting language used for dynamic content generation, backend logic, and database interaction in web applications.

XAMPP SQL Database (MySQL):

A widely-used open-source database system, providing robust data storage, management, and retrieval capabilities for web applications, with built-in support for PHP.

5. IMPLEMENTATION

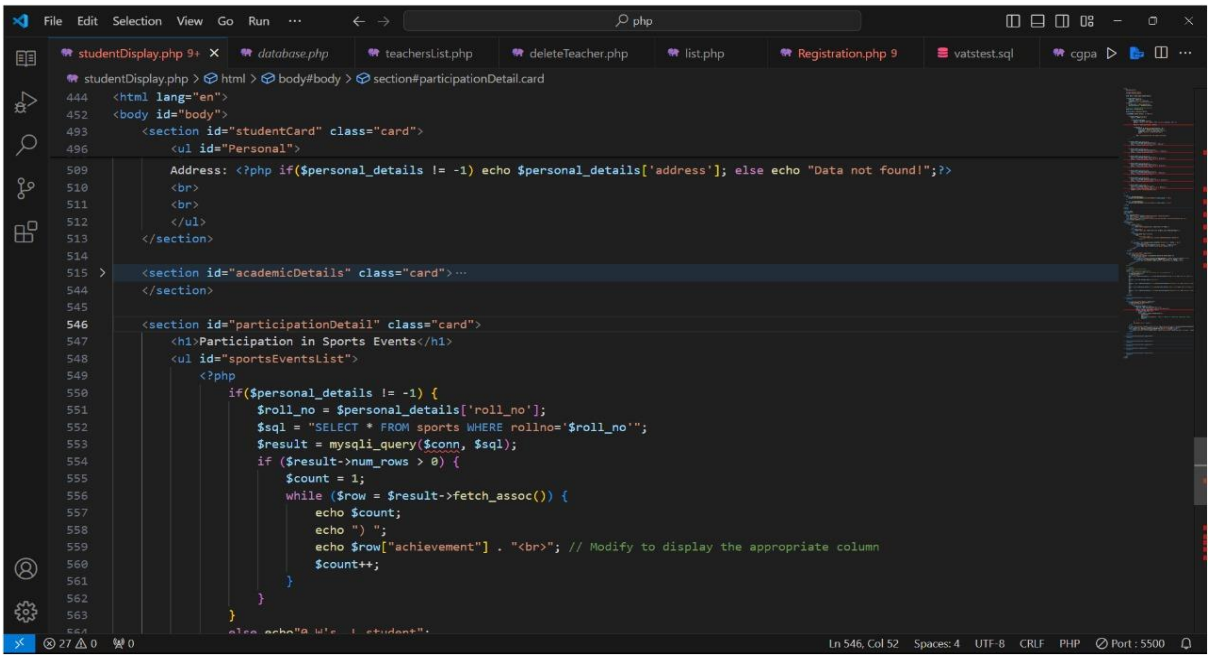


FIG 5.1 STUDENT INFO DISPLAY

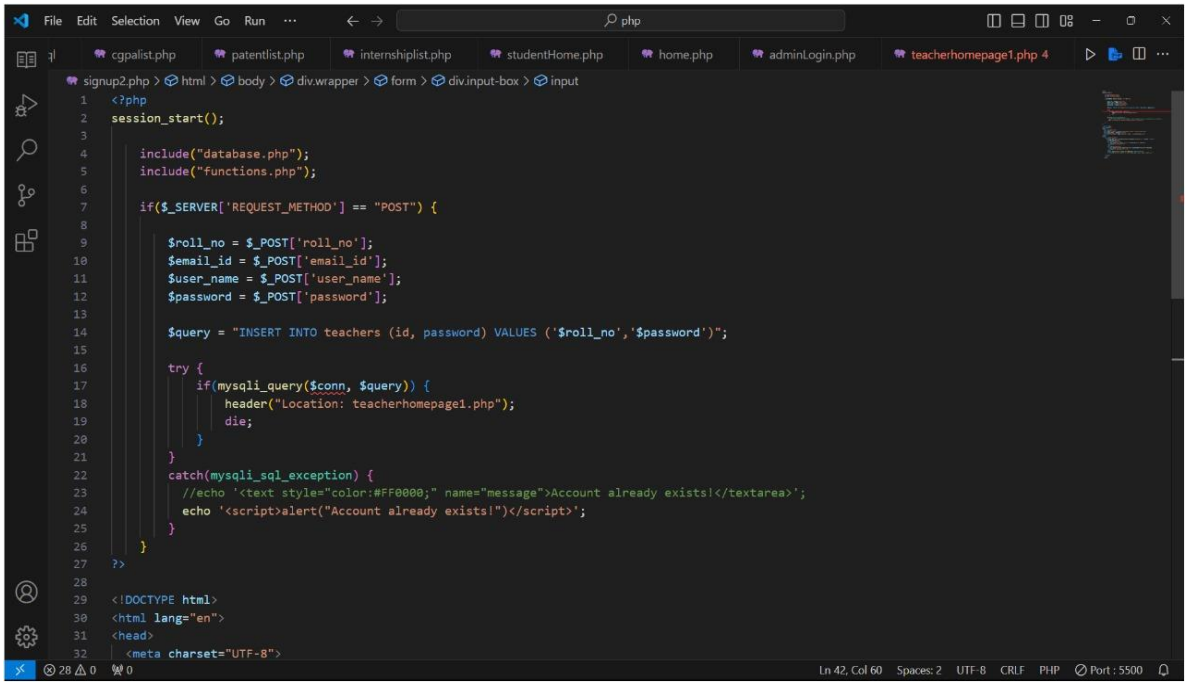


FIG 5.2 CREATE TEACHER ACCOUNT

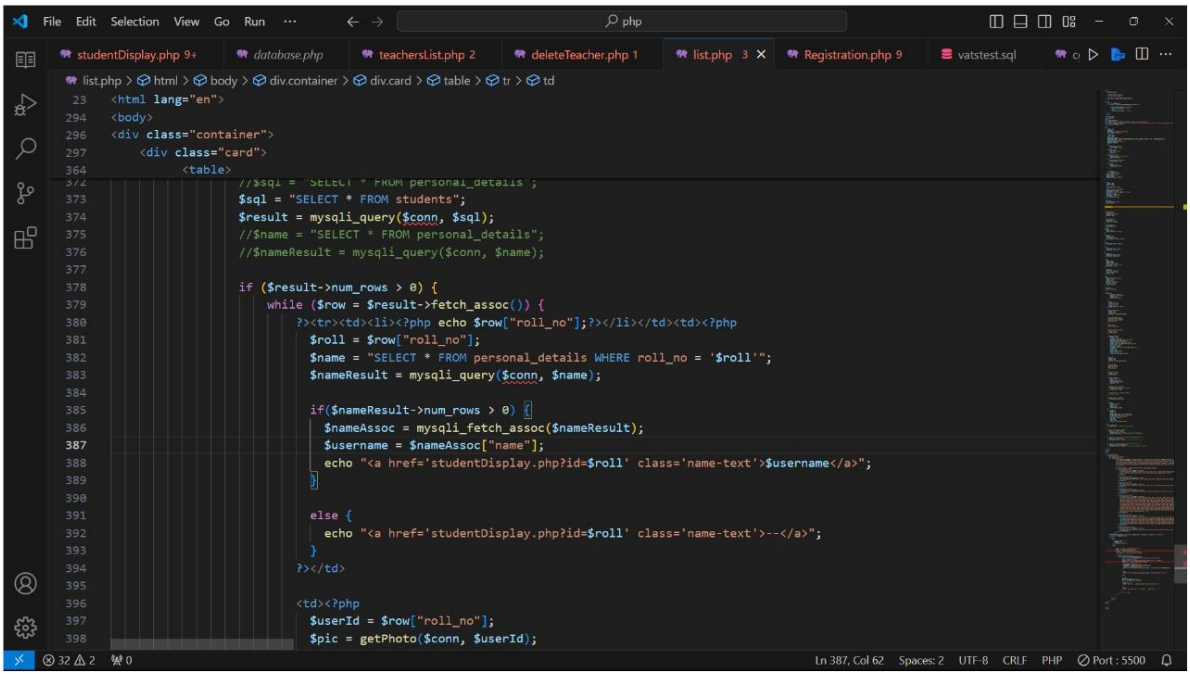


FIG 5.3 LIST OF ALL STUDENTS

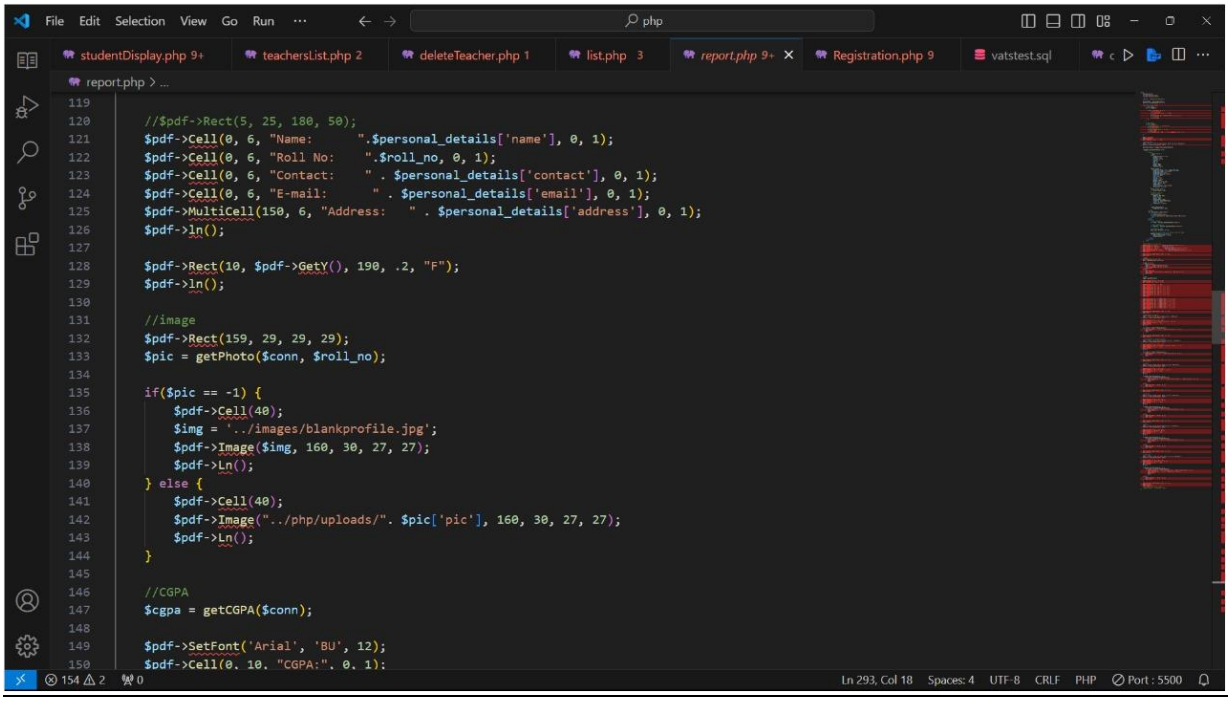


FIG 5.4 GENERATE REPORT USING FPDF

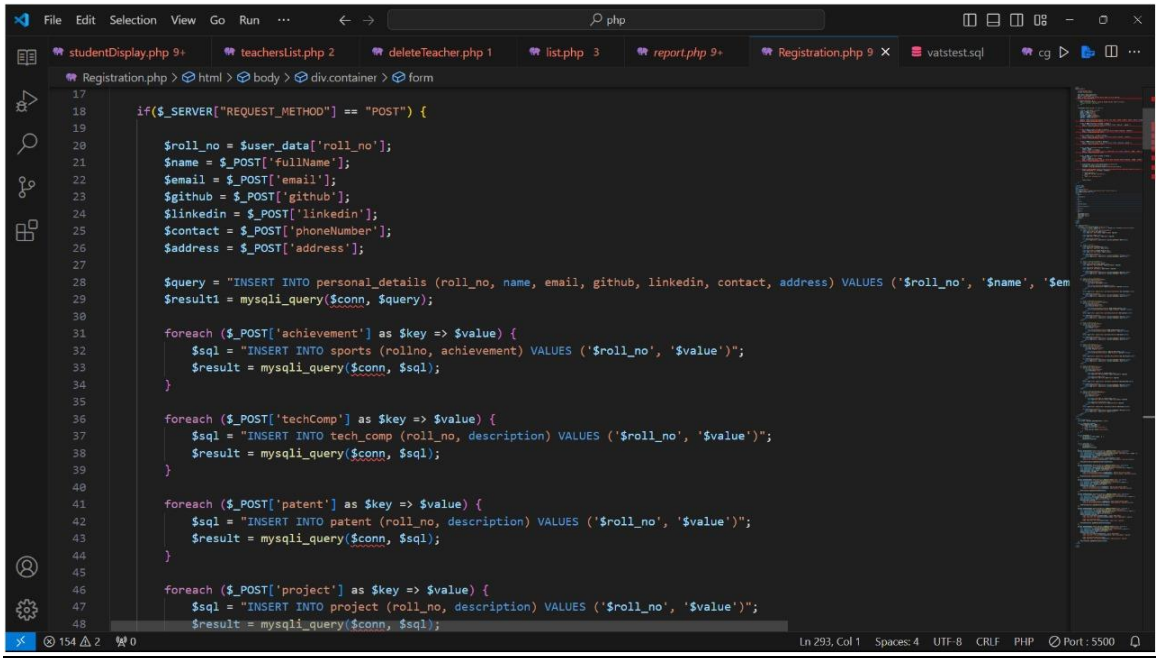


FIG 5.5 FILL STUDENT DATA

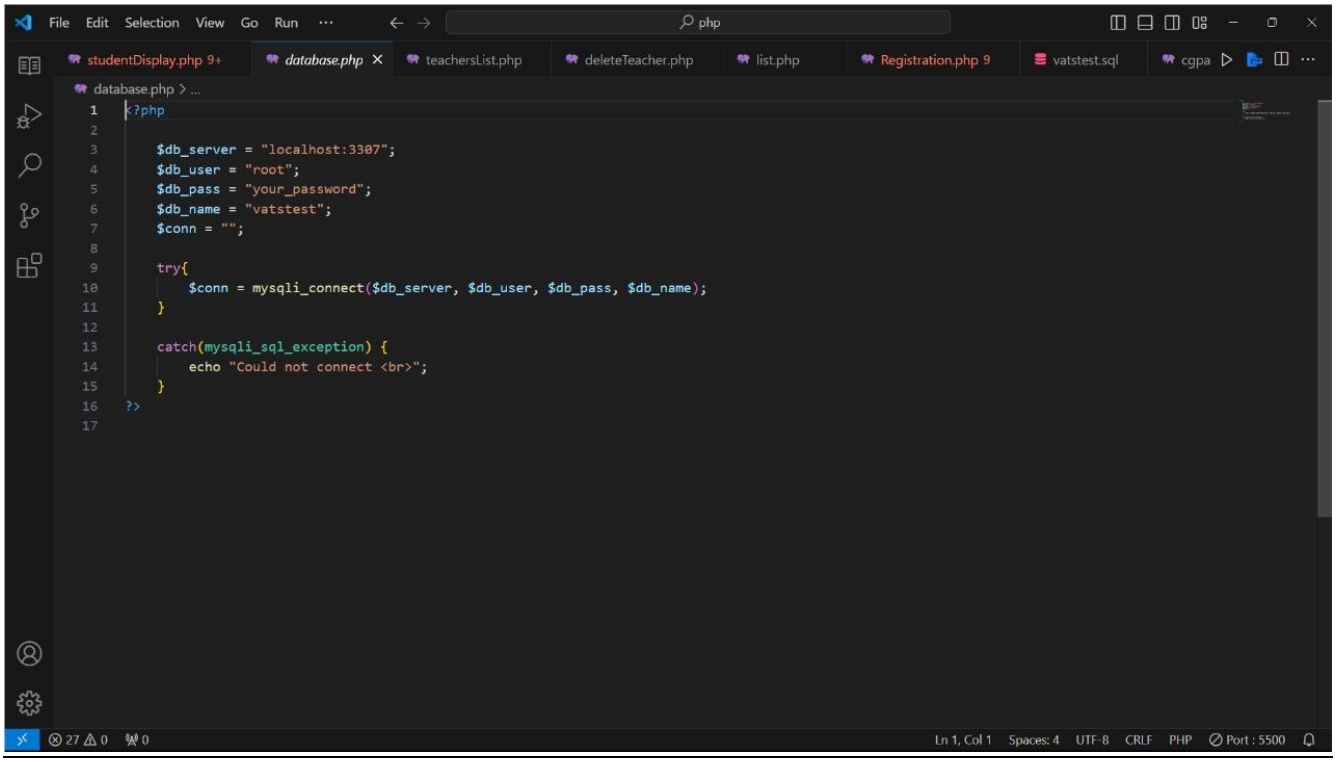


FIG 5.6 DATABASE CONNECTIVITY

CONCLUSION AND FUTURE SCOPE

7.1 CONCLUSION

-Student Database System is a cornerstone of modern educational management, fostering efficiency, accuracy, and accountability.

-It promotes the successful operation of educational institutions and ultimately contributes to the academic success and well-being of students.

-It empowers educators and administrators with the necessary tools to make informed decisions and ensure the smooth functioning of the institution.

-It helps keep track of the contributions of students towards the department which they are part of.

7.2 FUTURE SCOPE

User-Centric Design: Continuously improve the user interface and user experience based on feedback from teachers, students, and administrators, making the system more intuitive and user-friendly.

Scale the Project: The system will eventually be expanded to include more branches and classes of the college.

Allow access to a parent or guardian to keep track of the progress, attendance and achievements.

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 Engineering Vol. 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".

[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] System and method for communicating student information among students, parents, guardians and educators.(US 20060127870 A1).

[8] Web service api for student information and course management systems(US20080085502A1).

[9] Student specific Information System.(US20120237917A1).

[10] TANG Yu-fang, ZHANG Yong-sheng,"Design and implementation of college student information management system based on web services". Natural Science Foundation of Shandong Province(Y2008G22), 978-1-4244-3930-0/09 2009 IEEE.