STUDENT INFORMATION & MANAGEMENT SYSTEM

Bachelor of Technology

A Project Synopsis

BY

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COMPUTER SCIENCE AND ENGINEERING

TECHNO ENGINEERING COLLEGE BANIPUR

DEGREE DIVISION

BANIPUR, 24 PGS (N) - 743263 November,2022

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submitted in partial fulfillment of the requirements

for the award of the degree

of

Bachelor of Technology

In

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BY
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FEBRUARY, 2022

DECLARATION

We hereby declare that the project entitled "STUDENT INFORMATION & MANAGEMENT SYSTEM" submitted for the Bachelor of Technology (CSE) degree is my original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Place: Banipur, 24 pgs.(N)

Date: 07/02/2022

Signature of the students:

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Signature of mentor:

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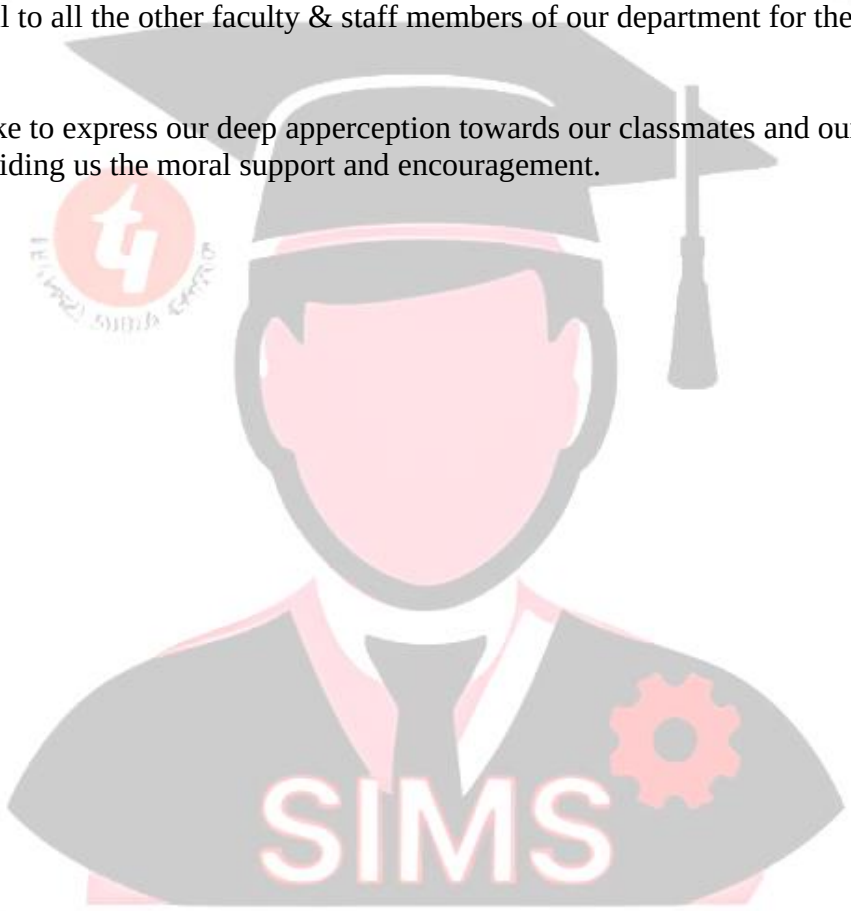
Lastly, we would like to express our deep apperception towards our classmates and our indebtedness to our parents for providing us the moral support and encouragement.



CONTENT

1. **INTRODUCTION** 1 – 6
   - i. Problem Definition
   - ii. Objectives
   - iii. Project Category
   - iv. Why Mobile Application and website for Student Information System
   - v. Hardware Specifications
   - vi. Software Specifications

2. **SYSTEM ANALYSIS AND DESIGN** 7 – 12
   - i. Requirement Specifications
   - ii. Flowcharts – DFDs and ERD

3. **METHODOLOGY** 13

4. **SCREENSHOTS OF BETA VERSION** 14 – 18

5. **FUTURE SCOPE** 19

6. **CONCLUSION** 19

7. **REFERENCES** 20

INTRODUCTION

Problem Definition

In this era of technological development, having a mobile application to help a student cope up with all his college progress, courses, notices & updates and use the same application for maintaining and keeping track of all necessary and relevant student information by the institution can be of great ease. It helps, accuracy and zero data redundancy.

Students require a great deal of information from colleges such as admission notices, timetables, events details, assessments etc. Currently, this information is provided to students through college website. The information present on website is generic, pertaining to large group of students and other stakeholders. For instance, the notices displayed on websites are not only specific to students, but, notices for teachers, staff members and general public are also provided through the website.
Moreover, the attendance and assessment records displayed on websites are consolidated lists containing information of all the students of a particular course/class. Timetables are also provided for all courses. This approach lacks personal touch.
Students have to extract their own information from website by navigating through various links or applying many filters/ search criteria. Many students face difficulty in doing so, which results in delivering incomplete or inaccurate information and thus lead to student dissatisfaction. Students are the key stakeholders for any educational institution. In today's competitive environment those educational institutions flourish which develop significant relationship with their students.
An information system which can provide individualized services to students by use of latest technology can increase popularity of institution [1].

Nowadays, students expect to satisfy their information needs immediately. Rather than "going to get" needed information, undergraduate students are accustomed to instant information access [3]. In recent years, mobile devices have become very popular among student community [2]. Using mobile technology, the information can travel to the student in a fast, personalized, accurate and convenient way. The dependency of students on mobiles has resulted in availability of different kinds of mobile apps that provide information which is custom tailored to student's needs. Major International universities provide their apps to students for catering to their information requirements [4]. The apps have a student-centric focus which improves the student's satisfaction with college services [8]. In this paper, we propose architecture for development of such mobile apps by reusing the existing infrastructure of Institution. As a proof of concept of our proposed design we hereby present an android based app- SIMS (STUDENT INFORMATION & MANAGEMENT SYSTEM) developed for the students of Techno Engineering College Banipur [5]. SIMS empowers student by providing them with relevant personalized information anywhere anytime.
It also provides analysis to the students related to their attendance and assessment.

OBJECTIVES

Students require lot of information from colleges such as admission notices, timetables, events details etc. Currently information is distributed to students in two ways. In traditional approach, notices are displayed on physical notice boards of college which students check on regular basis. It leads to over-crowded notice board areas. Students cannot receive the information if they are not physically present in college. Moreover, it wastes lot of paper and time.[6].

Second approach is to provide information on college websites. Students may access website from anywhere. It does away with crowded notice boards and promotes paperless information dissemination. But, the major challenge in obtaining information from website is that it provides collective information pertaining to large groups of students. The onus of filtering the personalized information and performing calculations to do analysis is on the students. For instance, when the monthly attendance of students is uploaded on the website, several issues may arise in identifying individualized information. To find their attendance, students have to look for all the lists submitted by different teachers. Students then search their own attendance from these lists and perform mathematical calculations to obtain their consolidated attendance. This task is performed for all the papers for different subjects. This is a tedious job and is error prone too [7].

PROJECT CATEGORY

This application is basically a client server-based application system that means though having users' interaction and input-output conversation, yet it will be operated from any machine, which are attached with the server. Basically, it will maintain a server-based communication and exchange ideas and also, they can receive services from every corner of the organization. Any type of response can generate on the real time basis, i.e., instantly the user can get their answers against various queries.

There are various features in which a project can be categorized. The proposed project has been divided into three main categories, which can be described as:

Front – end: -

The front-end tool of this proposed project is Visual Basic.net. Visual Studio is a complete suite of tools for building desktop applications. In addition to building high-performing desktop applications, we can use Visual Studio's powerful component-based development tools and other technologies to simplify team-based design, development, and deployment of Enterprise solutions.

Back – end: -

The back end of the project is supported by SQL Server.

SQL Server -SQL Query Analyzer is a graphical tool that allows us to:

- Create queries and other SQL scripts and execute them against SQL Server databases.
- Quickly create commonly used database objects from predefined scripts.
- Quickly copy existing database objects.
- Quickly insert, update, or delete rows in a table. (Open Table window)

Why Mobile Application and website for Student Information System

- **Why Mobile Application?**

- In traditional approach, Students cannot receive the information if they are not physically present in college. Moreover, it wastes lot of paper.
- The major challenge in obtaining information from website is that, it provides collective information to large groups of students.
- Students will have access to courses instantaneously from anywhere.
- Institution can publish notices, give updates or make announcements at any time and students can have access to the data instantaneously from anywhere.
- Using the application for taking attendance and keeping track of student progress will help get rid of human made errors.
- Managing library information and Accounts will be a piece of cake.

- **Why Website?**

- In professional fields all prefer website over applications, and they use Laptop/ Desktop instead of mobile phones.
- Would be easy to manage account section or library section rather than using applications, as they need to deal-with the large amount of student's data.
- For long working sessions Website is more comfortable than applications, especially for aged persons.
- For huge amount of data-entry works Desktop/ laptop keyboards are more comfortable and optimized to type with more accuracy and in an efficient manner.
- Admins can manage students' data by adding, updating, deleting them and students will have no access on that admin part.
- Publishing results , Fees structure, Study materials, information , holiday announcements , placement talks with a push notification option to the application will be very easy.

SYSTEM REQUIREMENTS

Hardware Specifications for developing the application.

- Operating System: Windows 10/11
- RAM: 16 GB and higher
- Memory: 40 GB – Free Space in the Installation Drive
- Processor: Core i5 11th Gen CPU (2.5 GHz or Higher)
- Graphics: GTX 1650 4 GB

Software Specifications for developing the application:

- Java Development Kit 11 (JDK 11) must be installed in the system.
- Android SDK – Android Studio and SDK tools.
-

Hardware Specifications to run the application:

- Operating System: Android OS API level 19 (Version 4.4 KitKat and above)
- RAM: 1 GB and higher
- Processor: Any MediaTek / Qualcomm chipset.

Hardware Specifications for developing the Website.

- Operating System: Windows 10/11
- RAM: 4 GB and higher
- Memory: 6 GB – Free Space in the Installation Drive
- Processor: Core i3 10th Gen CPU (2.0 GHz or Higher)

Software Specifications for developing the Website:

- SQL (Xampp server)
- VS CODE

Hardware Specifications to run the Website:

- Operating System: Windows 10/11 or lower.
- RAM: 1 GB and higher
- Processor: Core i3 10th Gen CPU (2.0 GHz or Higher) or lower.
- Browser: Chrome, Firefox, Internet Explorer, Edge, Opera, Brave, Chromium, Vivaldi, DuckDuckgo.

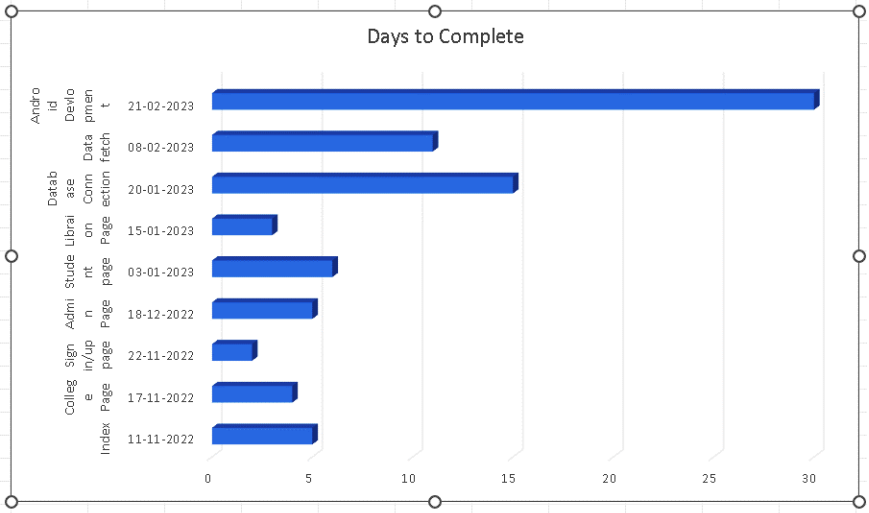
PLANNING & SCHEDULING

Gantt Chart: -

Depending on the working priorities, the entire project can be subdivided into the nine modules, those are: -

1.Index.
2.College Page.
3.Sign in/up page.
4.Admin Page.
5.Student Page.
6.Libraion Page.
7.Database Connection.
8.Data fetch from web.
9.Android Development.

Task	Start Date	Days to Complete
Index	11-11-2022	5
College Page	17-11-2022	4
Sign in/up page	22-11-2022	2
Admin Page	18-12-2022	5
Student page	03-01-2023	6
Libraion Page	15-01-2023	3
Database Connection	20-01-2023	15
Data fetch	08-02-2023	11
Android Devlopment	21-02-2023	30



The above mentioned data is just a reference, where we mentioned in how much time the whole process could be done, but in real development process it took more than usual for us due to some error facing and solving them.

SYSTEM ANALYSIS AND DESIGN

Requirement Specifications

Android provides a rich application framework that allows you to build innovative apps and games for mobile devices in a Java language environment. The documents listed in the left navigation provide details about how to build apps using Android's various APIs [4].

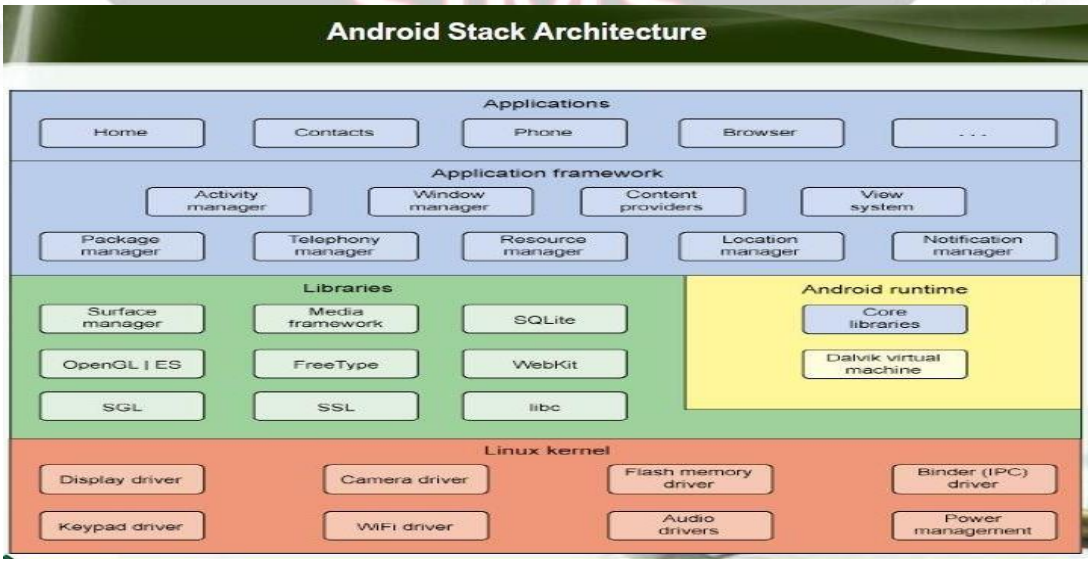
If you're new to Android development, it's important that you understand the following fundamental concepts about the Android app framework:

- **Apps provide multiple entry points**

Android apps are built as a combination of distinct components that can be invoked individually. For instance, an individual *activity* provides a single screen for a user interface, and a *service* independently performs work in the background.
From one component you can start another component using an '*intent'*. You can even start a component in a different app, such as an activity in a maps app to show an address. This model provides multiple entry points for a single app and allows any app to behave as a user's "default" for an action that other apps may invoke [2].

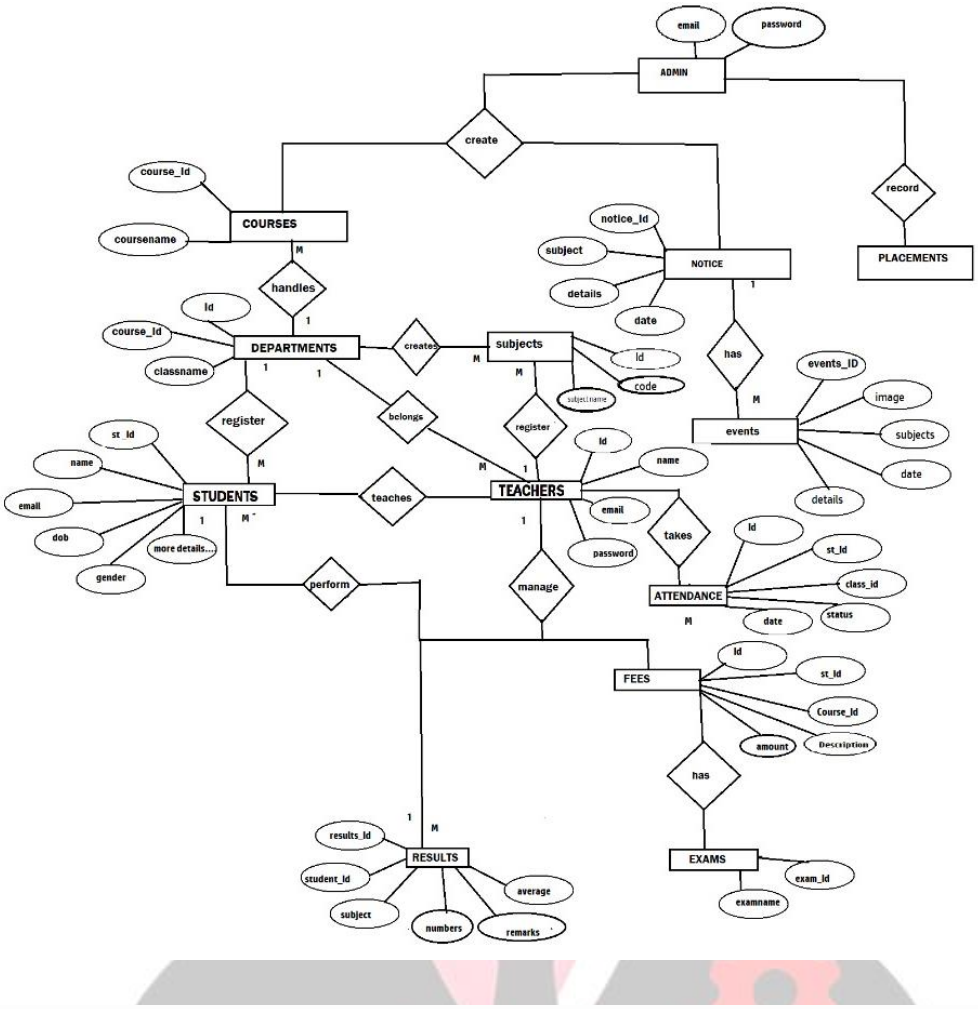
- **Apps adapt to different devices**

Android provides an adaptive app framework that allows you to provide unique resources for different device configurations. For example, you can create different XML layout files for different screen sizes and the system determines which layout to apply based on the current device's screen size [3].
You can query the availability of device features at runtime if any app features require specific hardware such as a camera. If necessary, you can also declare features your app requires so app markets such as Google Play Store do not allow installation on devices that do not support that feature [5].

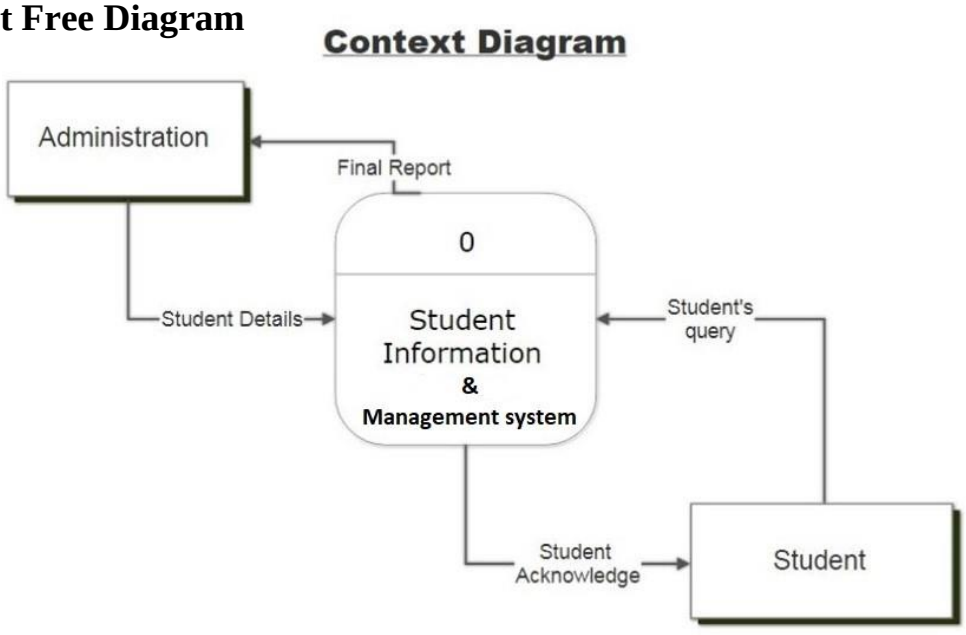


Flowcharts – DFDs and ERD

Entity Relationship Diagram

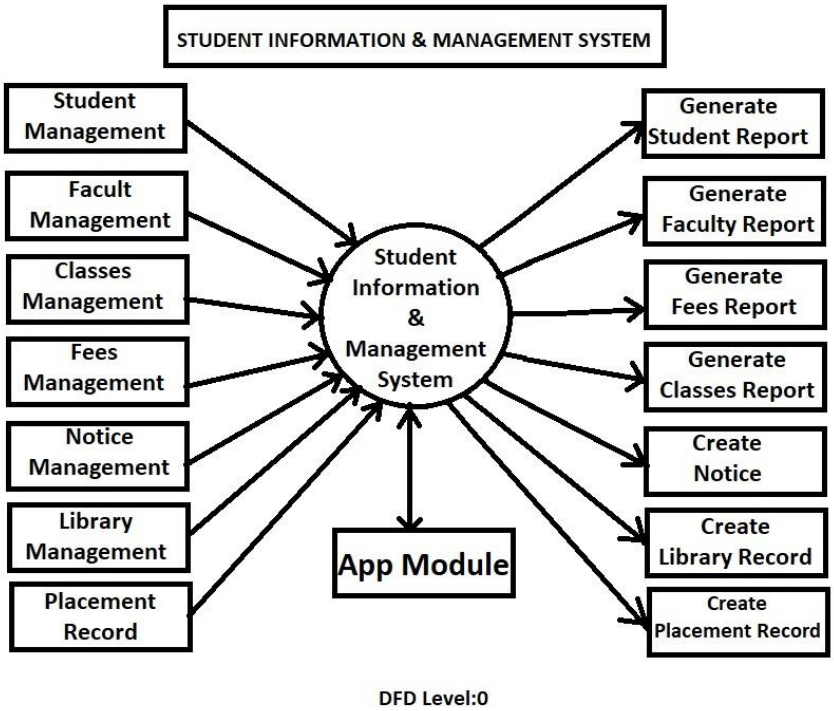


Context Free Diagram



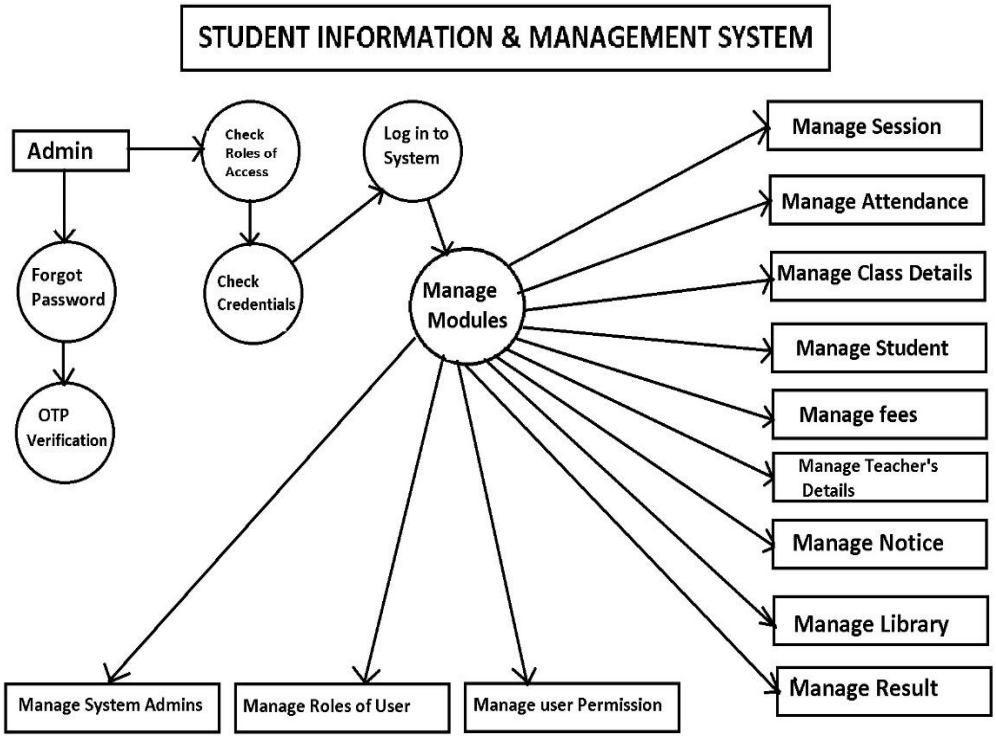
Data Flow Diagram

Level 0



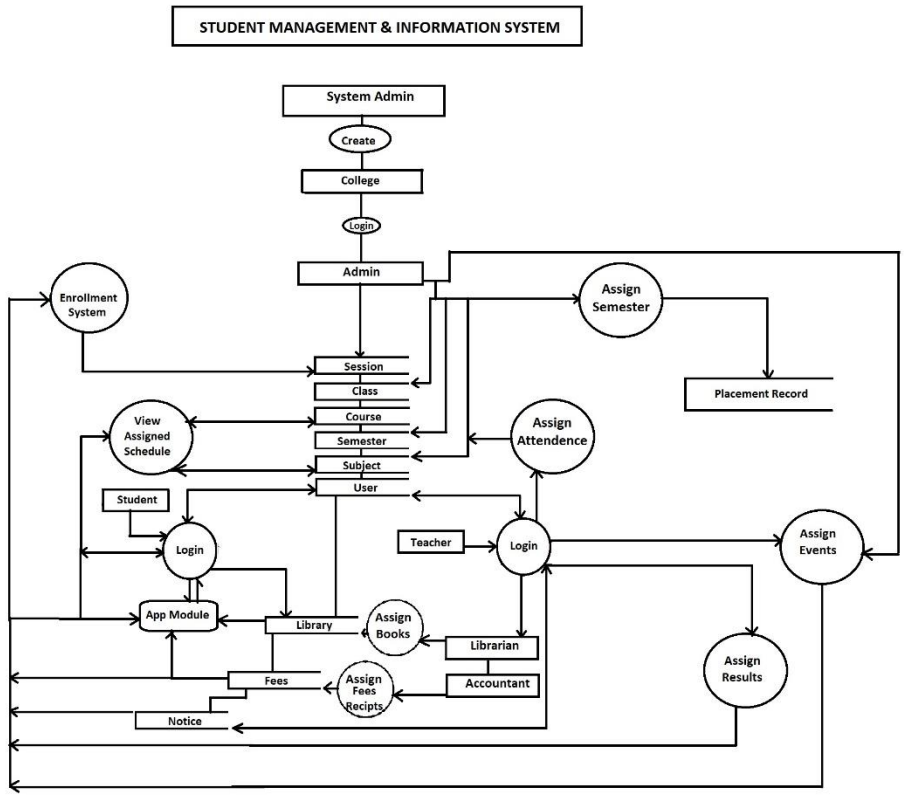
DFD Level:0

Level 1



DFD Level : 1

Level 2



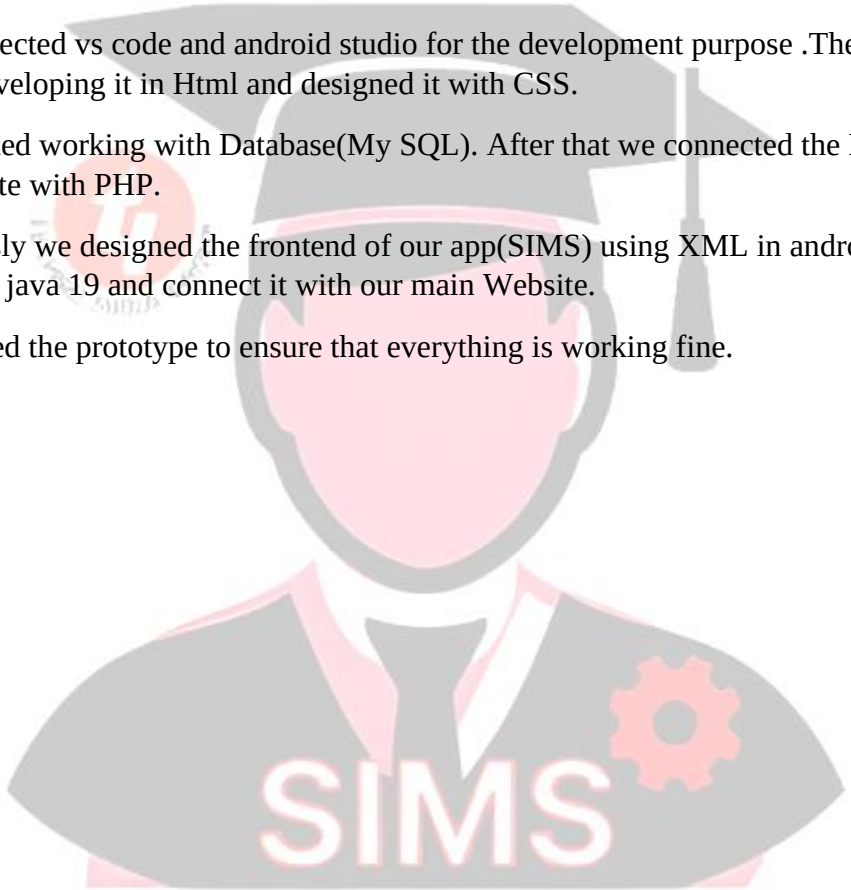
DFD Level 2

METHODOLOGY

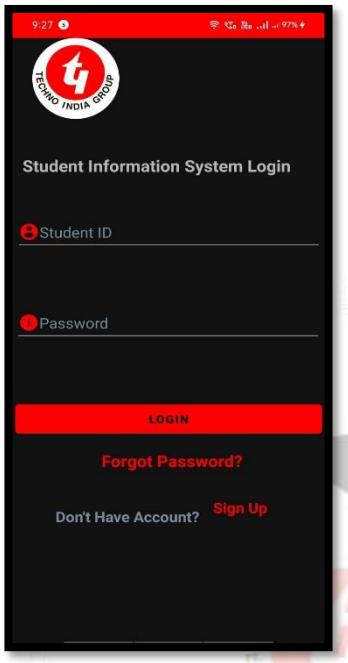
A student information management system is designed to record ,analyze ,help and manage information in a institution. It takes students personal data and verifies it during the process of admission in the institution .The institutes conduct attendance regularly in institution and data is stored in a system. Further, student performance reports ,academic reports ,fees report ,library record ,notice and other information is updated in the system later on. Without a student management information system ,school would become disorganized , staff would lack clarity into scheduling.

To design a methodology for SIMS ,can follow these steps :

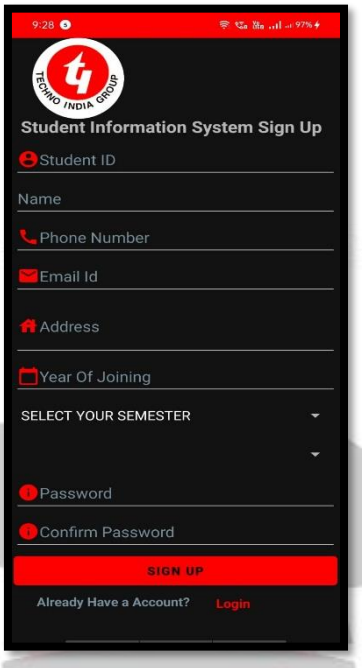
1. At first identify the requirements of institution.
2. Choose all management system that meets our requirements.
3. Firstly we selected vs code and android studio for the development purpose .Then we started our project by developing it in Html and designed it with CSS.
4. Then we started working with Database(My SQL). After that we connected the Database with our project website with PHP.
5. Simultaneously we designed the frontend of our app(SIMS) using XML in android studio and backend with java 19 and connect it with our main Website.
6. Then we tested the prototype to ensure that everything is working fine.



INTERFACE (Android)

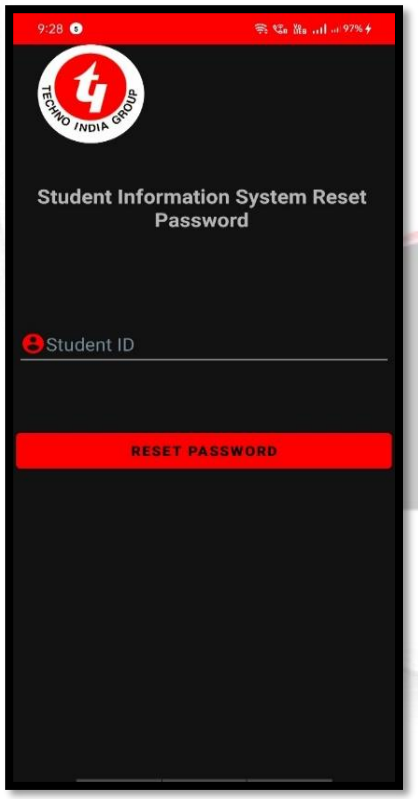


Login Screen

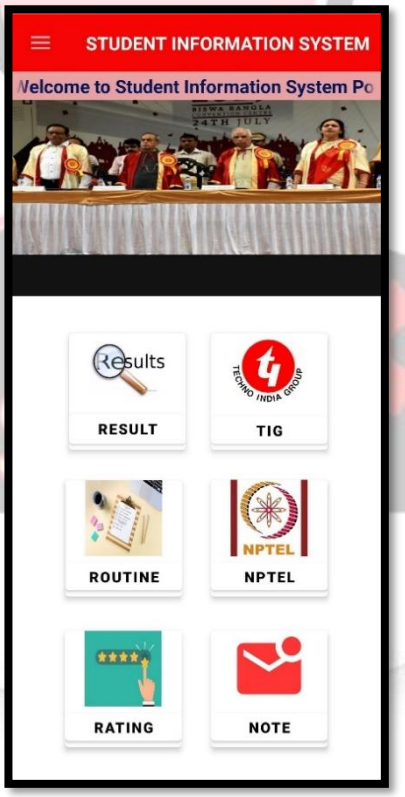


Sign Up Screen

Splash Screen

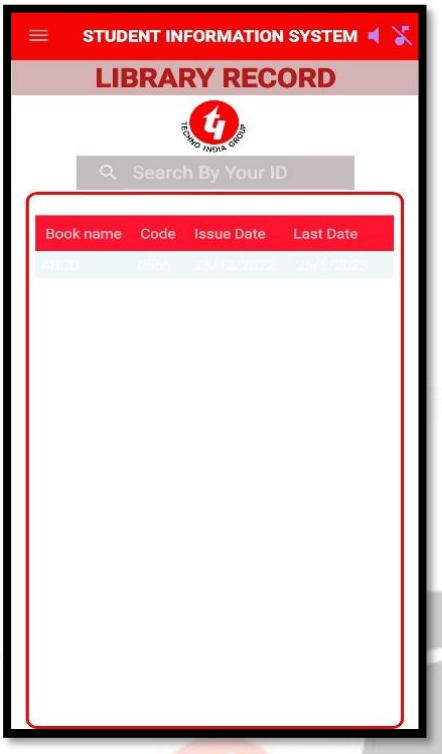


Forget Password Screen



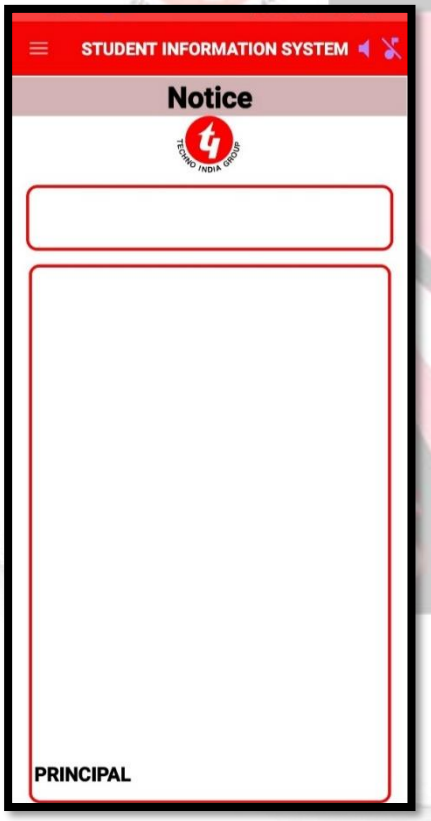
DASHBOARD

PROFILE

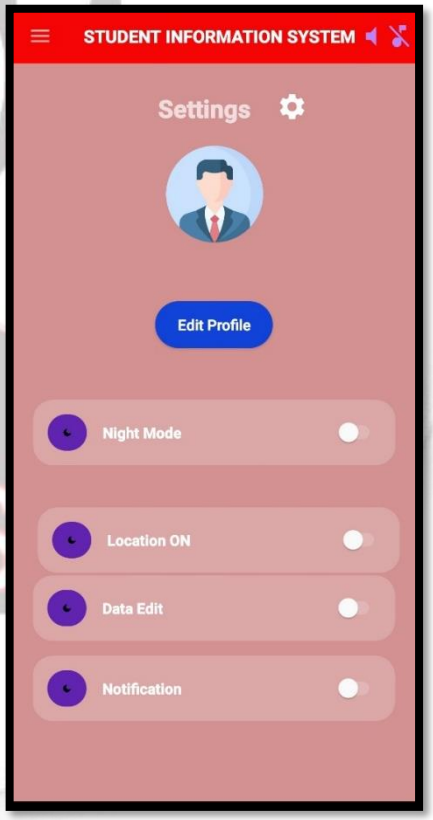


LIBRARY

CONTACT US

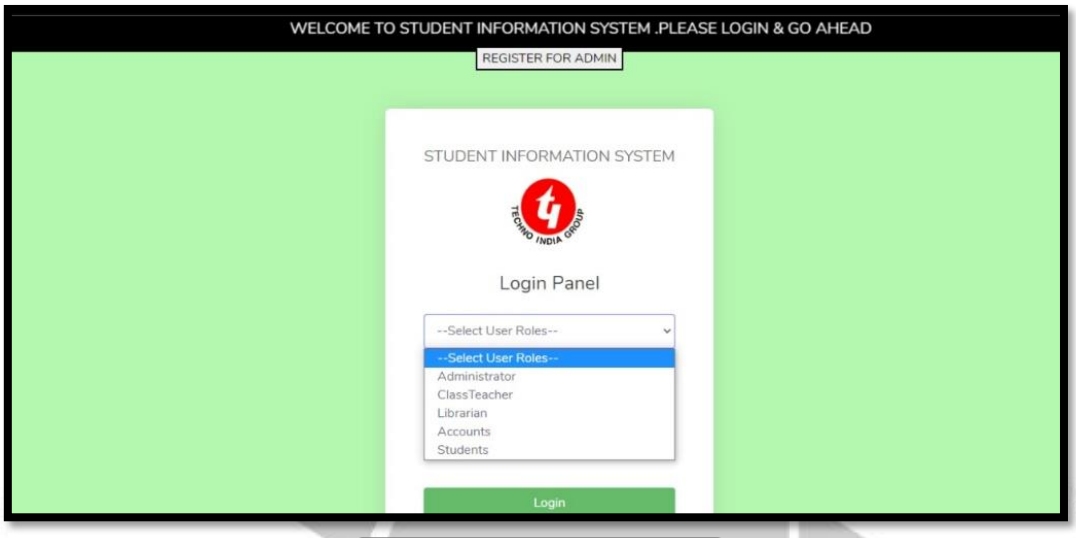


NOTICE

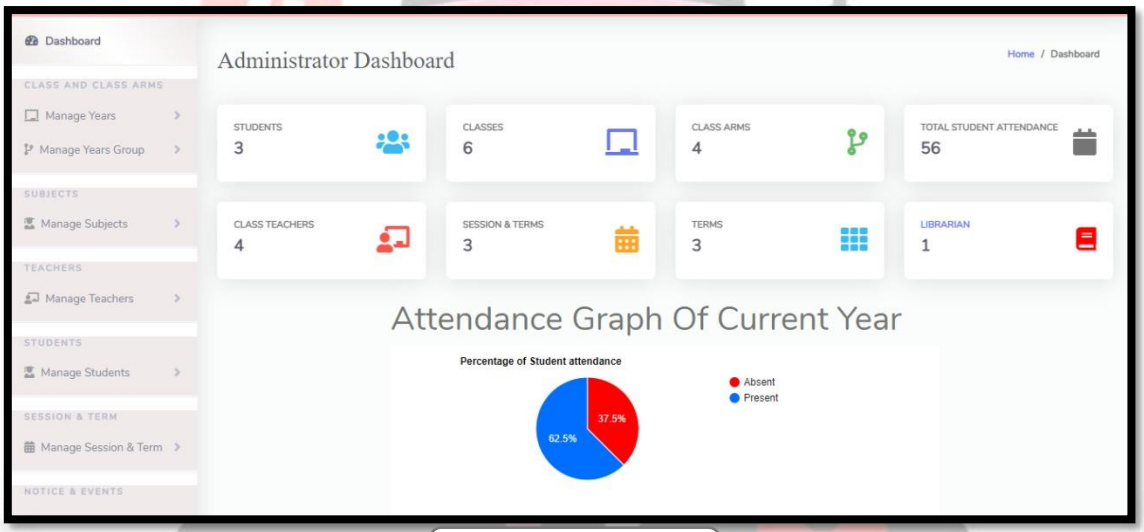


SETTING

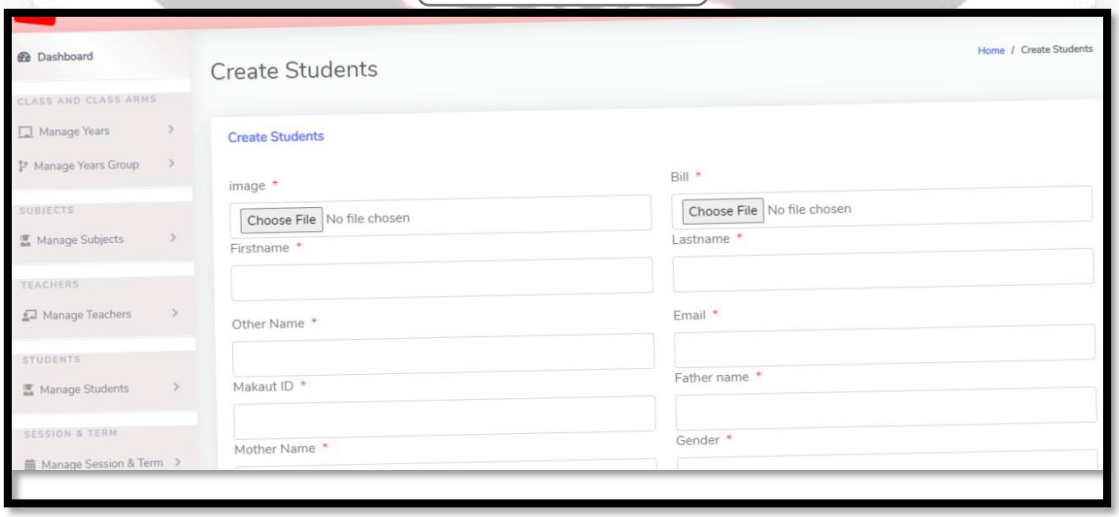
INTERFACE (Website)



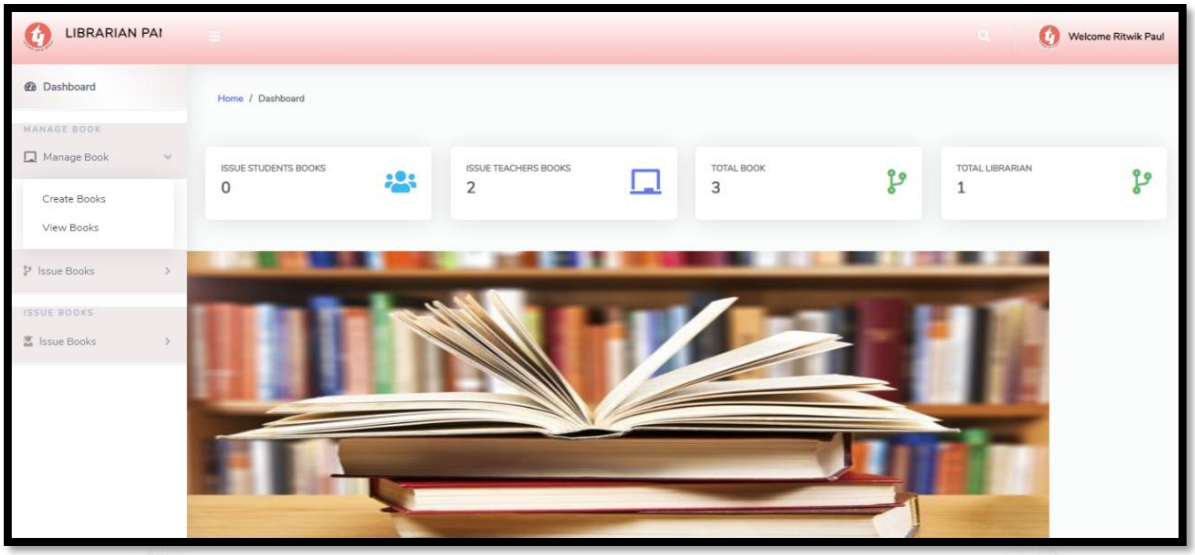
LOG IN PAGE



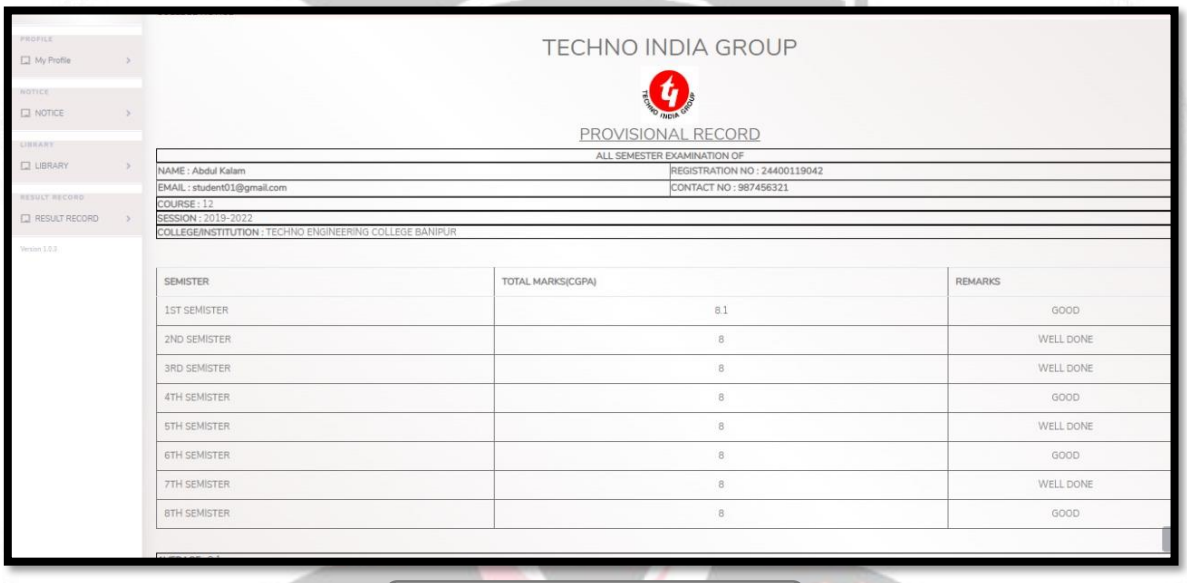
ADMIN PAGE



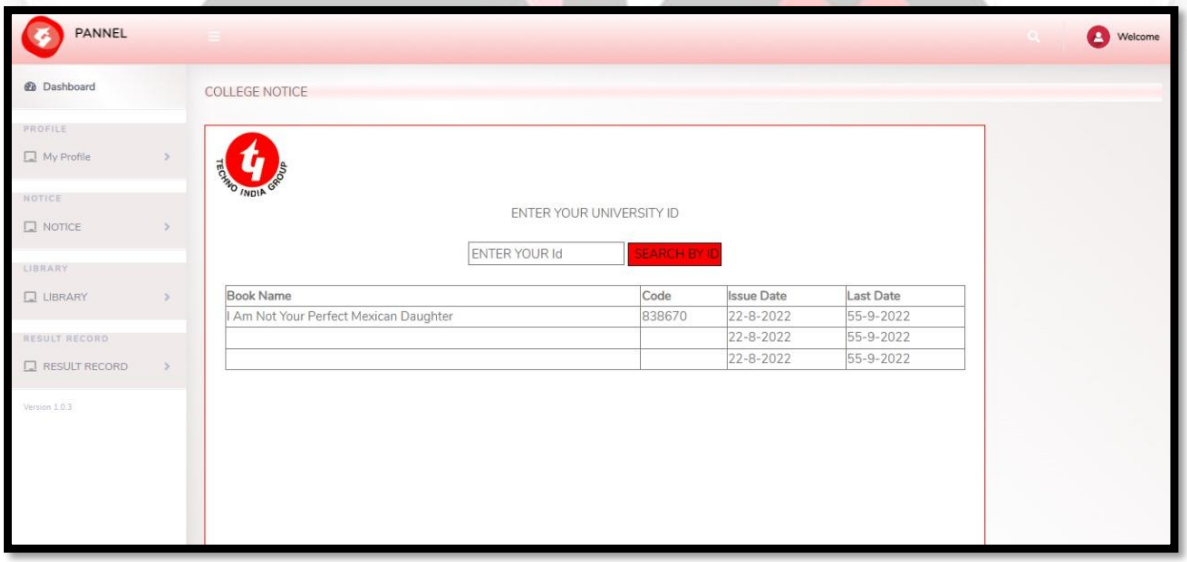
STUDENTS ENROLL



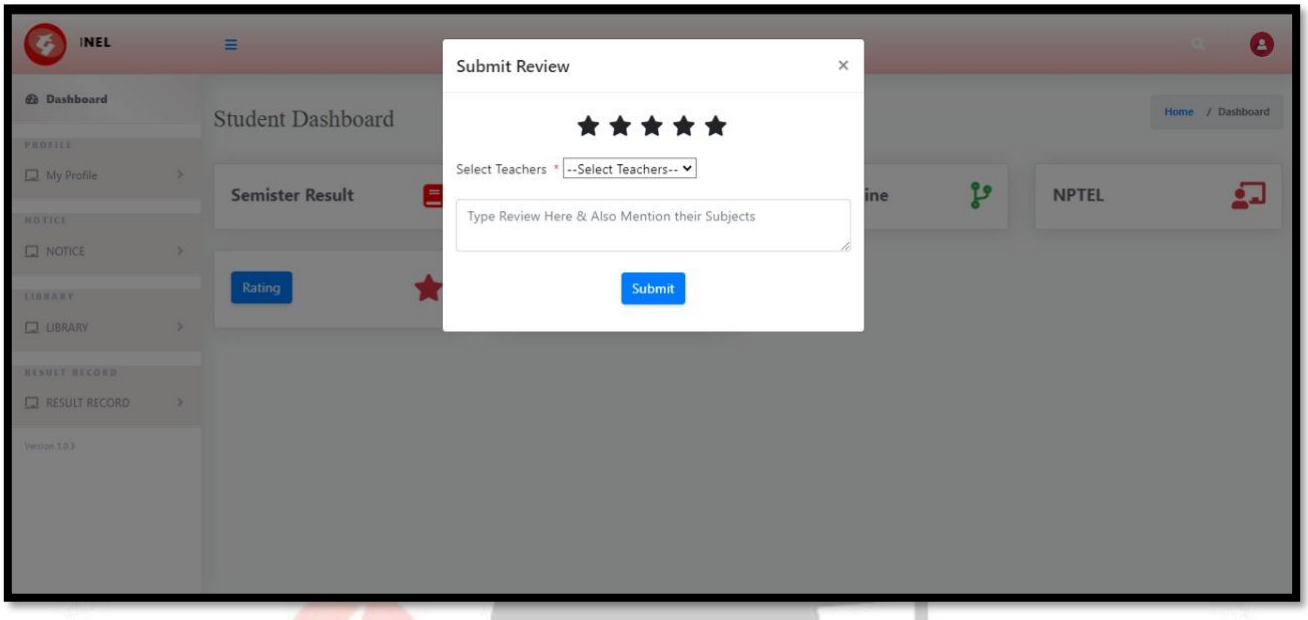
LIBRARIAN PAGE



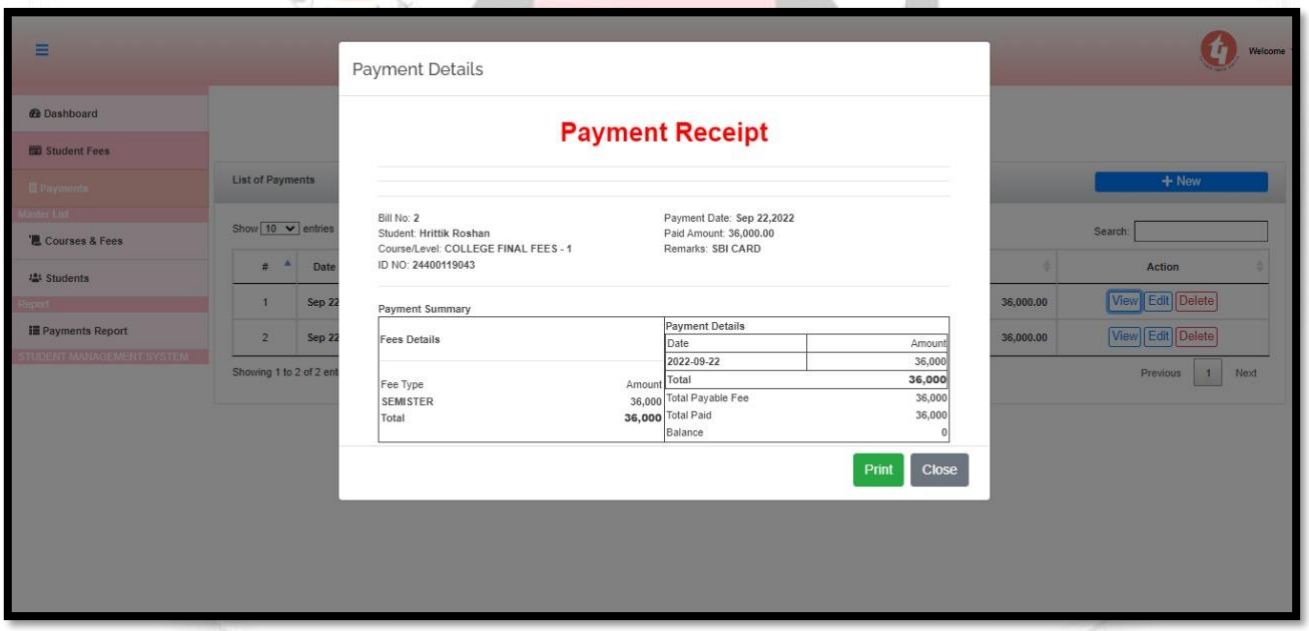
RESULTS GENERATE



LIBRARY RECORD



STUDENT RATING PAGE



PAYMENT RECEIPT

OFFICIAL LOGO OF SIMS USED BOTH IN APPLICATION AND WEBSITE

FUTURE SCOPE

The extensible Service Oriented Architecture of Student Information System Mobile Apps makes it possible for any department of the college to provide personalized information to the students by creating a new a module in the app. To do so, a web service need to be built to fetch the information from database and presentation layer logic need to be written to call that web service and present results on UI. Hence, Student Information system apps can be integrated with Library information systems, M-learning platforms and Location based features such as locating nearest computer center, locating nearest restaurant etc.

These apps can also include Fee Payment feature which shows their fee payment schedule. Students are able to pay fee and receive confirmations using the app including the reminder alerts. Students who have loans or get grants/scholarships can track their detailed financial details using the app.

Large universities provide transport options for students to commute within and outside the campus. Information related to availability of such transport options can be linked and provided through the app. Moreover, Sports Updates Feature can be added to deliver scores of college teams to the students in real time. Similarly, Drama/other clubs can send personalized updates to students who sign up with them etc. An access can also be provided to admins so they can keep track of the performance and progress of their teachers and students. May be later we plan to introduce a new feature, implementation of a system that informs about the ongoing activities in the college might be possible. Website can be made more optimized later by using some latest techs like spring APIs, Node JS, Svelte, React and others. And last but not the least we are planning to implement IOS based application.

CONCLUSION

Today's student community and their expectations with regards to instant and personalized availability of information on their mobile devices is pushing more and more educational institutes to have a mobile/app presence. As the educational institutes embark on this journey, they will need to decide whether to build a completely new technical architecture to support the app-based delivery of information, or, to re-use their existing infrastructure (database, web-servers) using SOA (service-oriented architecture) to enable the same. We propose an architecture that reuses existing infrastructure using SOA for app-based delivery of information to the students. The architecture is stable, resilient and scalable to incorporate the diverse needs of students and various College departments under Techno India University. Also, the Website is exact same to the actual official website and is working very fine. We are sure this idea will reduce the human hassle by 90% and reduce paper usages by at least 95.3% according to our calculation and research.

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