

SE 201.3 - Systems Analysis and Design

Group Assignment

System Requirement Specification
**Designing the student information system of
CP/H/ Dhammaloka Vidyalaya, Badupola, Ginigathhena**

Submission Date: April 25, 2021

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TABLE OF CONTENTS

1.	Executive summary	03
2.	Business objectives	03
3.	Background	03
4.	Scope	04
5.	User requirements analysis	05
6.	Graphical illustrations to the system	07
6.1.	Use-case Diagrams	
6.2.	Class Diagrams	
6.3.	Data Flow Diagrams	
7.	User Interface design	11
8.	System Architecture Diagram	14
9.	Hardware & software specification	15
10.	Database design	16
11.	Sample Test design	18
12.	Limitations of the system	20
13.	References	21
	Appendix A (User Interfaces of The Project)	22

1. Executive summary

This document gives an overview of what the system would do and how would it be expected to perform during the implementation phase of the SDLC. That is, the document contains hardware and software specification, interface design, graphical illustrations, architecture design and database design, etc. It also describes the functionality of the system that must be fulfilled for all the needs of the stakeholders.

2. Business objectives

Goal:

Providing the required documents to the students without delay and accurately, minimizing the cost and the time on those activities.

Objective 1: To maintain an accurate and clear database of the details relevant to students.

Objective 2: To perform student-related activities more efficiently.

Objective 3: To view students' personal information easily and quickly.

3. Background

The student information system of CP/H/ Dhammaloka Vidyalaya is the proposed system for manage student-related data. The system is proposed to develop a web-based application that contains a central database and a web portal that allows authorized stakeholders (School management staff, Teachers) to retrieve data when required. And the system is capable of generating reports and relevant documents using stored data in the database.

Students' details are added to the system by the specially assigned member from the staff (usually the role is held by data teacher in schools) who is responsible for creating new records, updating, and deleting on approval of top-level management, on the system. The required student data for regular processes and decision making of the school can be retrieved by the principal and members of the school management board and the student data related to the teaching and learning process can be retrieved by teachers that assigned for relevant subjects and classes.

Institute	CP/H/ Dhammaloka Vidyalaya, Badupola, Ginigathhena (Central Province)
School type	2
No of students	150
Staff	21
Tentative date to launch the system	2021.05.01
Resources available	Fully featured computer unit with internet facilities.
Project	Developing an information system for manage all the details relevant to students in order to reduce the time that takes to prepare reports, character certificates, students' confirmation letters, etc. by automating them and to generate analysis reports to ease the school management to take relevant decisions regarding students.

Table 1- Summary

4. Scope

This project aims to establish a high-quality student information management system to solve the problems of the current paper-based system and establish a proper link between the management of the school and the pupils (regarding the biodatas of the pupils). Then school management can take relevant great Analyzed decisions concerning students than a current paper-based system.

5. User requirement analysis

A brief idea of the system's functionality, its quality, and its content (for users) was obtained based on the user requirements gathered during the analysis phase. Accordingly, user requirements have been identified under few categories as mentioned below.

User requirements	
System functionality	<ul style="list-style-type: none"> • The system restricts making changes of consistent data of the students. • The system has functionalities to filter student records. • The system notifies the system admin about incomplete student data if any. • The system auto-updates students' grades annually. • The system allows school management to save student photos for identification purposes. • The system consists of the facility of generating excel documents with the details of the students. • The system has facilities to generate student statistic reports based on the available records. • The system has a feature for retrieving the most important information required in an emergency. • The system has the ability to generate printable documents. • The system allows managing user privileges. • The system restricts unauthorized access.

System quality	<ul style="list-style-type: none"> • The system allows to access the data through any device (Laptop, Desktop, and Smartphone). • The system is accessible to web users and mobile users. • The system views relevant data quickly. • The system contains updated and real-time data. • The system reduces paperwork. • The system shortens the processing time of the students' data. • The system enhances the efficiency of the daily tasks associated with the students' information. • The system lessens the access time of the students' data. • The system reduces the time spent on student-related tasks.
System content	<ul style="list-style-type: none"> • The system minimizes data usage. • The system has a simple UI design.

Table 2- User requirement analysis

6. Graphical illustrations to the system

6.1. Use-case Diagrams

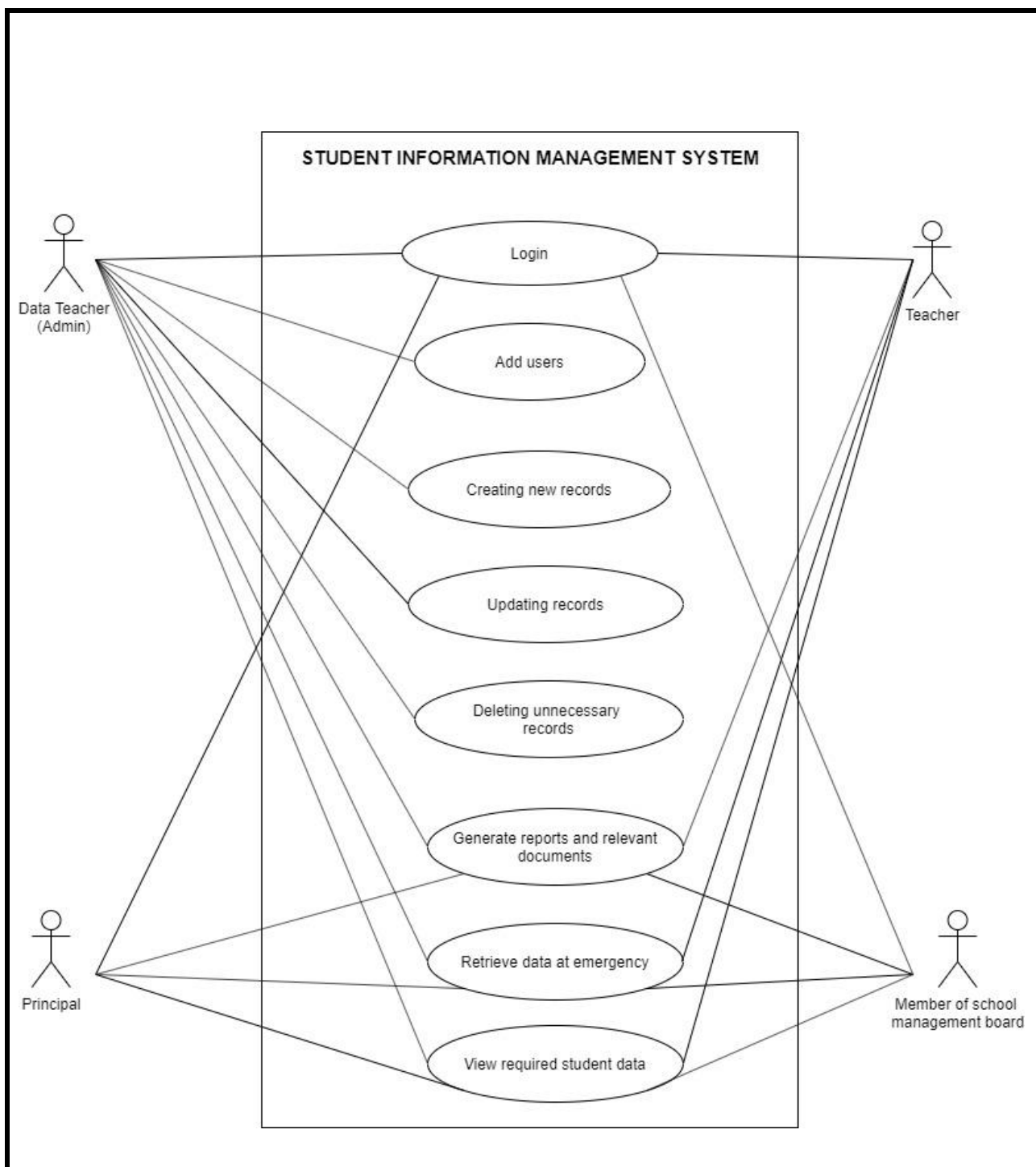


Figure 1 - Use case diagram

6.2. Class Diagrams

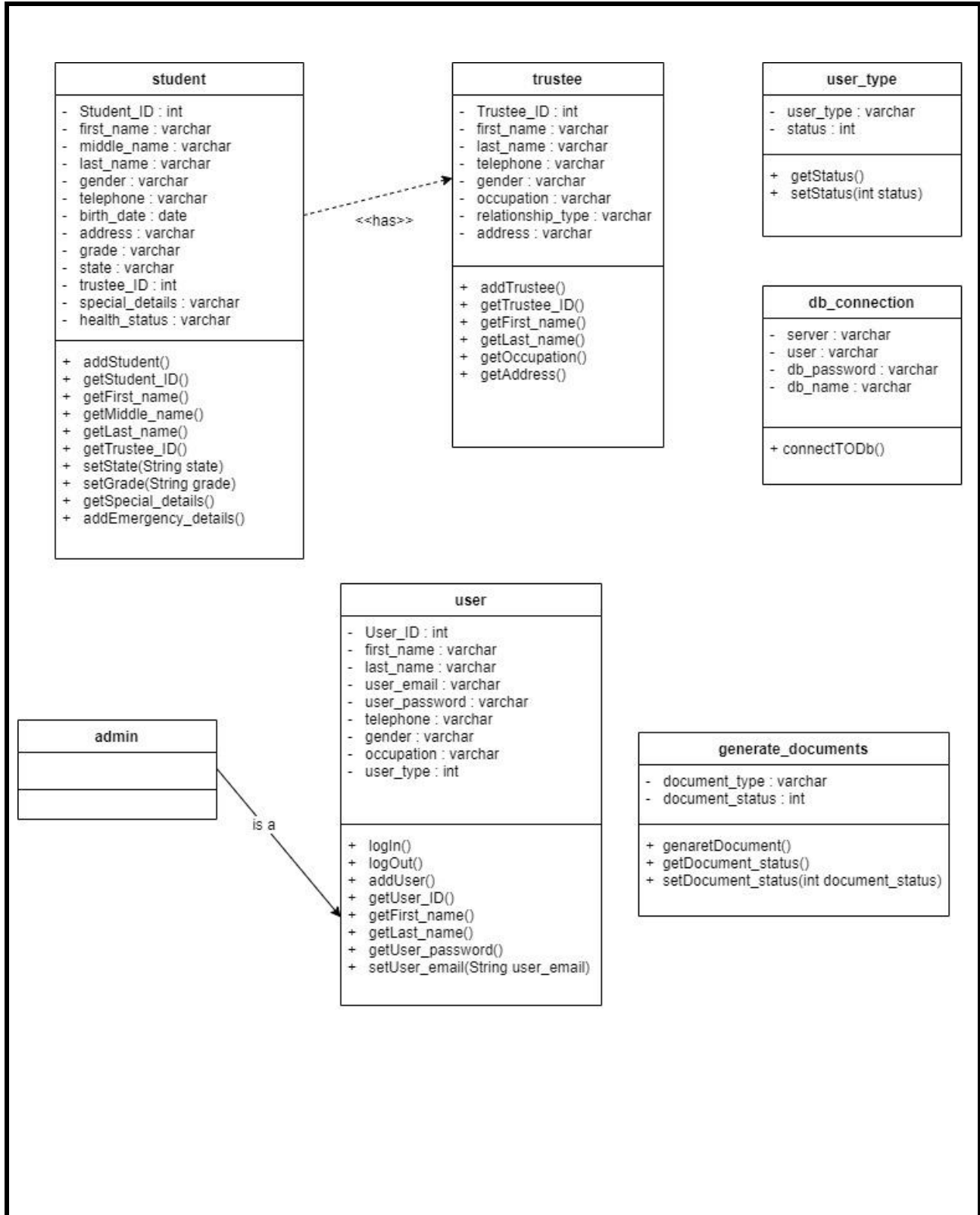


Figure 2- Class diagram

6.3. Data Flow Diagrams

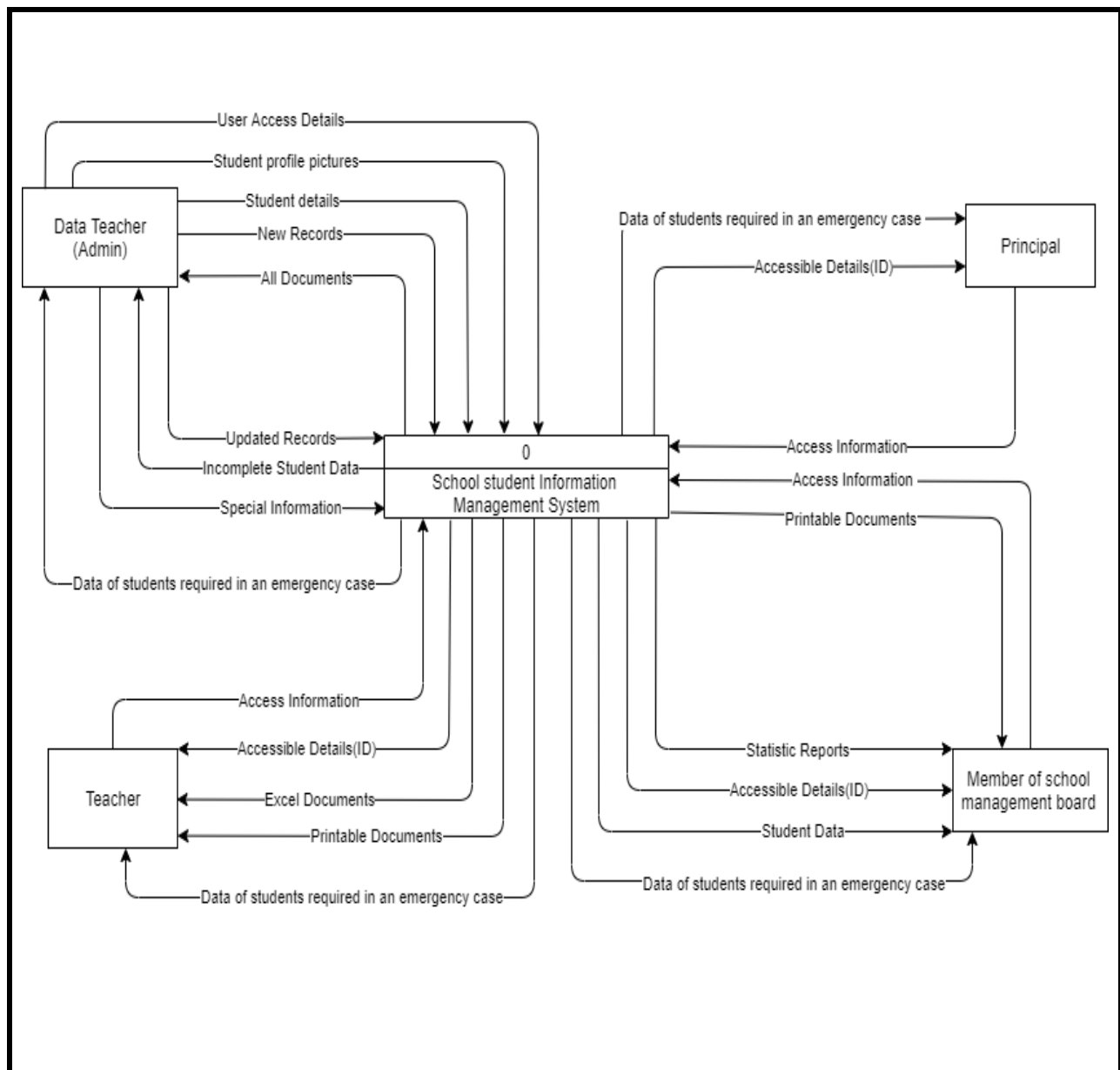


Figure 3- Context diagram (DFD Level 0)

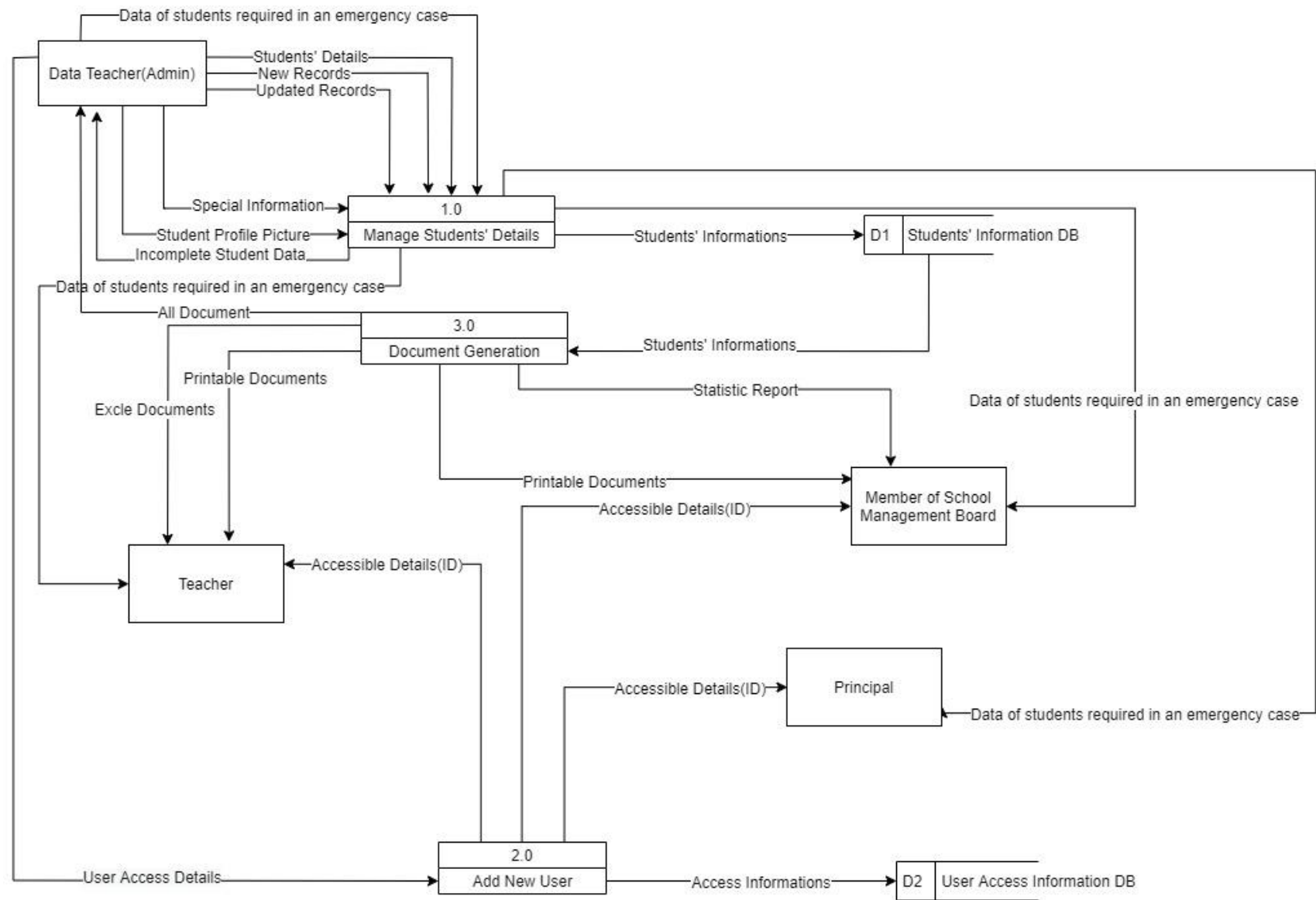


Figure 4- DFD Level

7. Necessary specifications and operations of the user interface that will meet the functional requirements (UI designs)

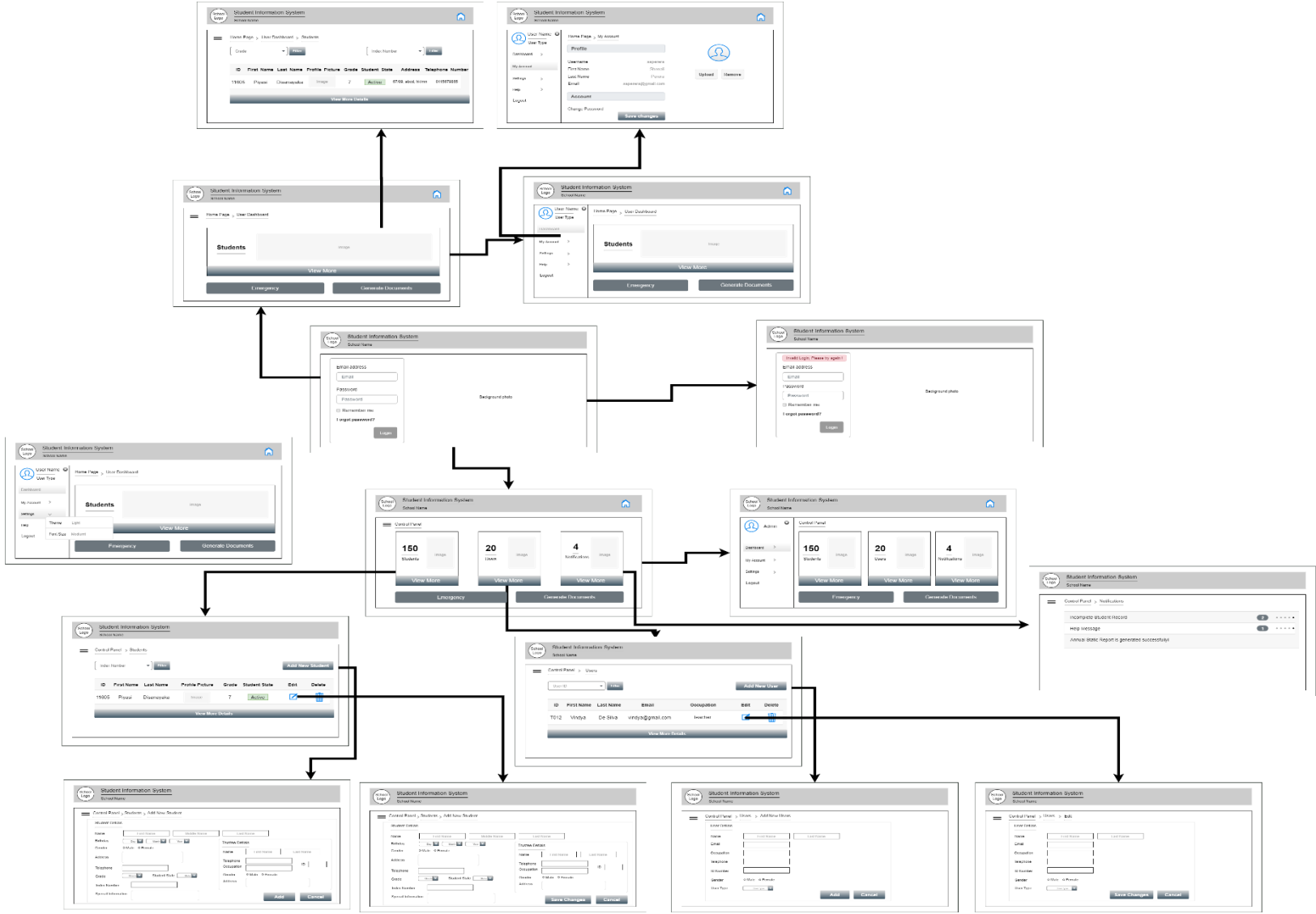
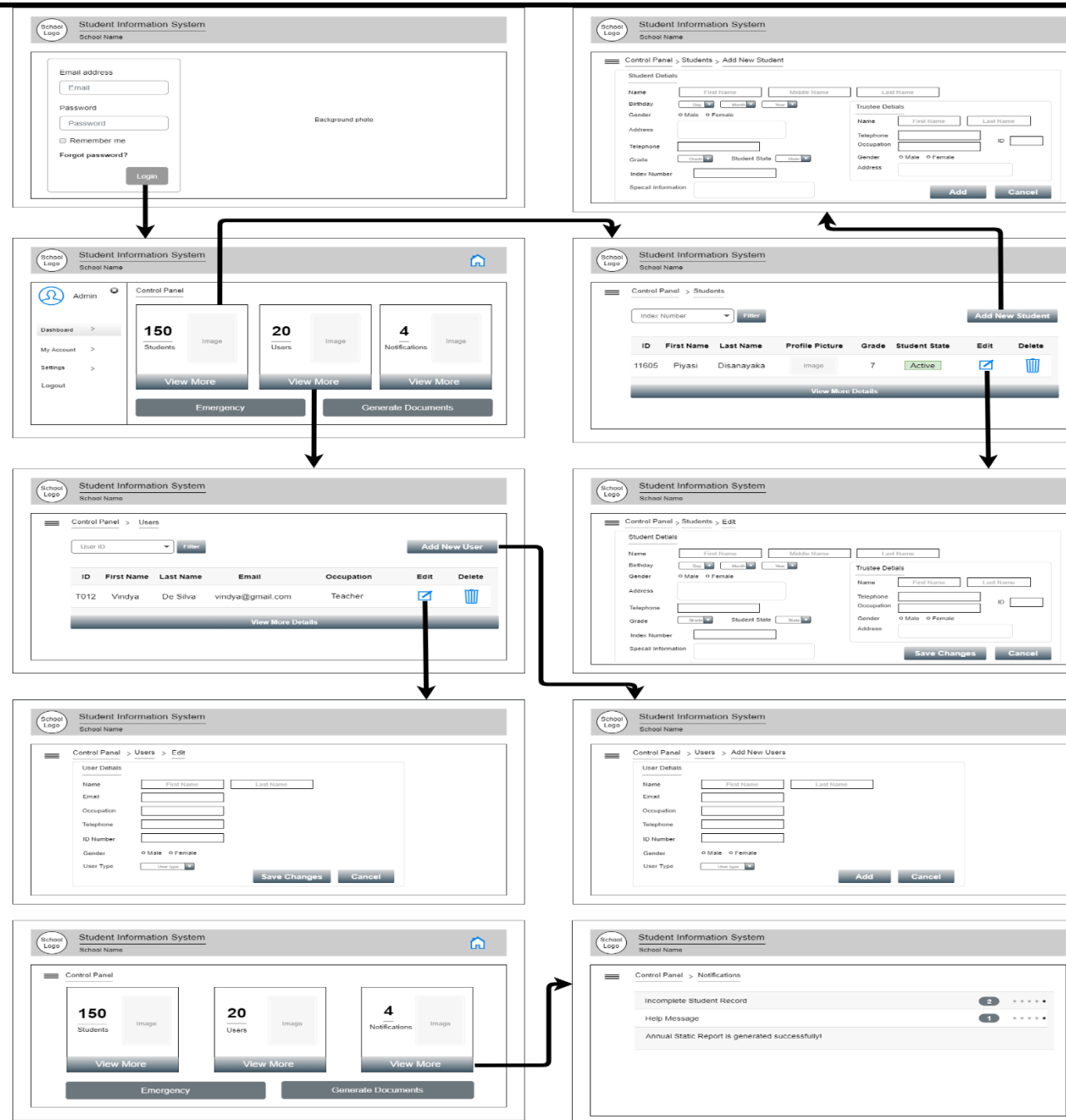
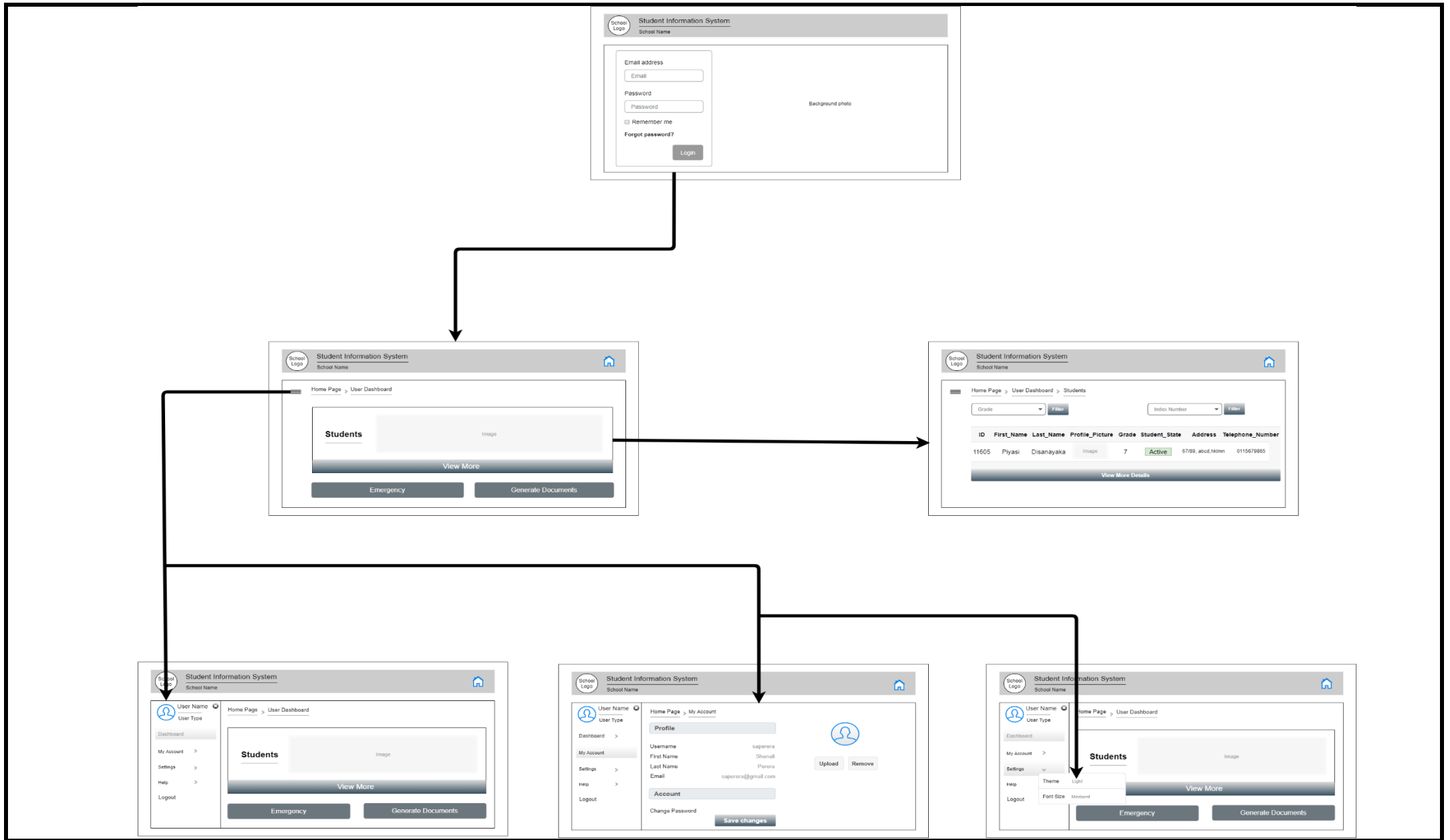


Figure 5- UI Map





8. System Architecture Diagram

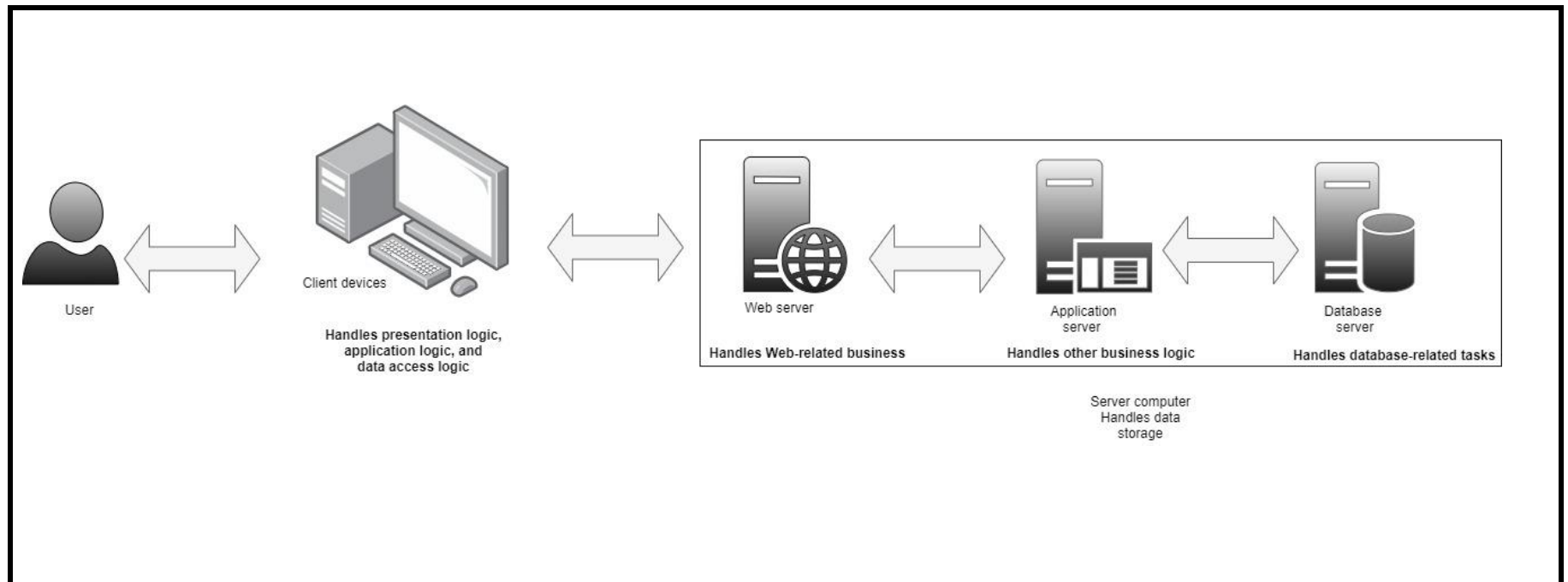


Figure 6- System architecture diagram

9. Hardware & software specification

Operating System	<ul style="list-style-type: none">• Windows• Linux
Software	<ul style="list-style-type: none">• HTML, JavaScript, and CSS – Front end development• PHP – Server-side programming• MySQL – Relational Database System• Microsoft Office package (MS Word, MS Excel)
Hardware	<ul style="list-style-type: none">• Intel or AMD processor with 64-bit support• 4GB of free disk space• PHP enabled server with MySQL DB• 19-inch monitor• Laser printer• Multi-functional printer
Network	<ul style="list-style-type: none">• ADSL internet connection (ISP-SLT) with Wi-Fi facility

Table 3- Hardware and software specification

10. Database design

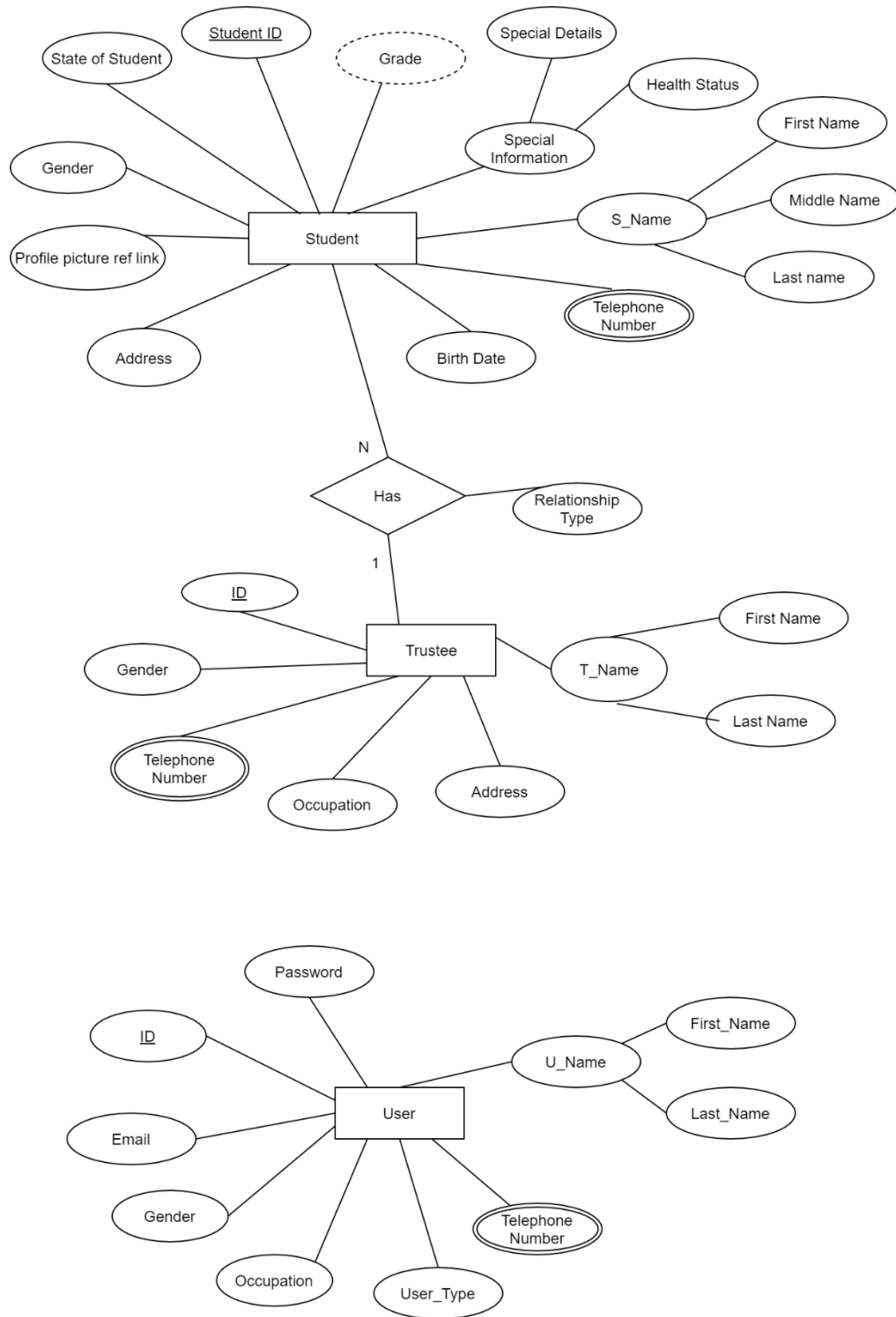


Figure 7- Entity relationship diagram

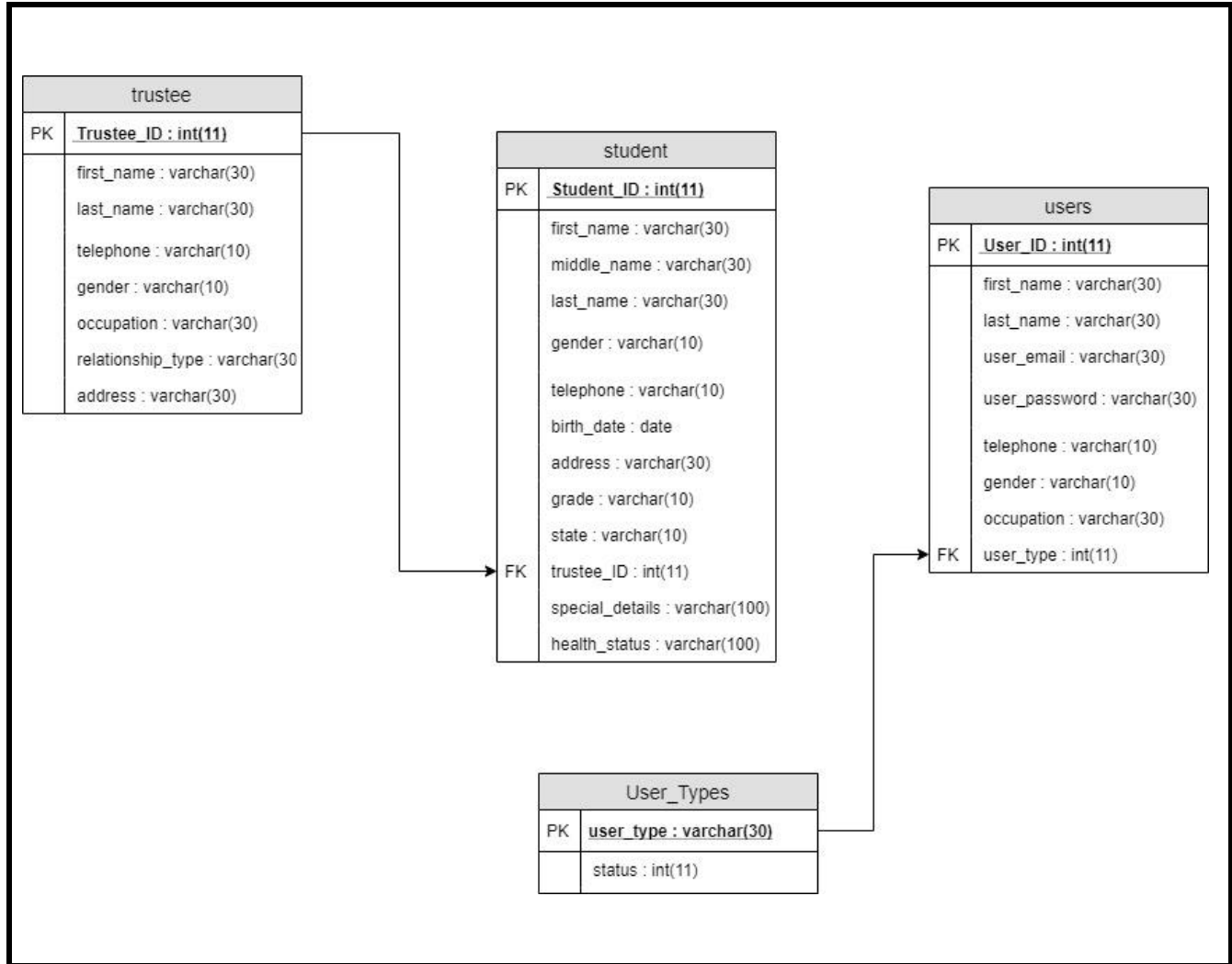


Figure 8- Relational schema

11. Sample Test design

Test Case ID	Test Case Description	Test Steps	Test Data	Expected Result	Actual Result	Status (Successful / Failed)
1	Checking the response when valid email and password are entered.	<ul style="list-style-type: none">• Enter email.• Enter password.• Click Login.	<ul style="list-style-type: none">• Email: user@gmail.com• Password: user123	Login should be successful.	Login was successful.	Successful.
2	Checking the response when invalid email or password are entered.	<ul style="list-style-type: none">• Enter email.• Enter password.• Click Login.	<ul style="list-style-type: none">• Email: test@gmail.com• Password: test123	An error message should appear on the same screen.	An error message appeared on the same screen.	Successful.
3	Inspection when users are logged into the system, whether the correct dashboard will be displayed for each user type.	<ul style="list-style-type: none">• Enter email.• Enter password.• Click Login.	<ul style="list-style-type: none">• Email: user@gmail.com• Password: user123	The correct dashboard should be displayed for each user type.	Displayed correct dashboard. Ex: Admin to admin panel. Users to user dashboard.	Successful.
4	Checking the response when both email and password are empty, and email or password is empty.	<ul style="list-style-type: none">• Click Login.	<ul style="list-style-type: none">• Email: empty• Password: empty	An error message should appear on the same screen.	An error message appeared on the same screen.	Successful.

5	Checking the response when the 'Add New Student' button is clicked (A function of the system administrator).	After the successful Login, <ul style="list-style-type: none"> Click the 'View More' button on the 'Students' feature. Click 'Add New Student'. 	Not applicable.	A form should be appeared on the screen to fill in the student information.	A form appeared on the screen.	Successful.
6	Checking the response when the edit icon in the student information table is clicked (A function of the system administrator).	After the successful Login, <ul style="list-style-type: none"> Click the 'View More' button on the 'Students' feature. Click the edit icon. 	Not applicable.	A form with relevant information to the student should appear on the screen.	A form appeared on the screen.	Successful.
7	Checking the response when the 'Add New User' button is clicked (A function of the system administrator).	After the successful Login, <ul style="list-style-type: none"> Click the 'View More' button on the 'Users' feature. Click 'Add New User'. 	Not applicable.	A form should be appeared on the screen to fill in the user information.	A form appeared on the screen.	Successful.
8	Checking the response when the edit icon in the user information table is clicked (A function of the system administrator).	After the successful Login, <ul style="list-style-type: none"> Click the 'View More' button on the 'Users' feature. Click the edit icon. 	Not applicable.	A form with relevant information to the user should appear on the screen.	A form appeared on the screen.	Successful.

Table 4- Sample test design.

12. Limitations of the system

- Maximum 500 student relevant data can store in the system database.
- The system is limited to a maximum of 50 users, including the admin.
- The system can only be accessed with an internet connection (impossible to accessible offline).
- The system allows generating only Excel documents, printable documents, and statistic reports.
- Only the admin can add users to the system, as there is no way for other users to self-enroll.
- Overall, the minimum recommended resolution of the profile picture is 1080 x 1080 pixels, and the maximum image file size is 30 MB.

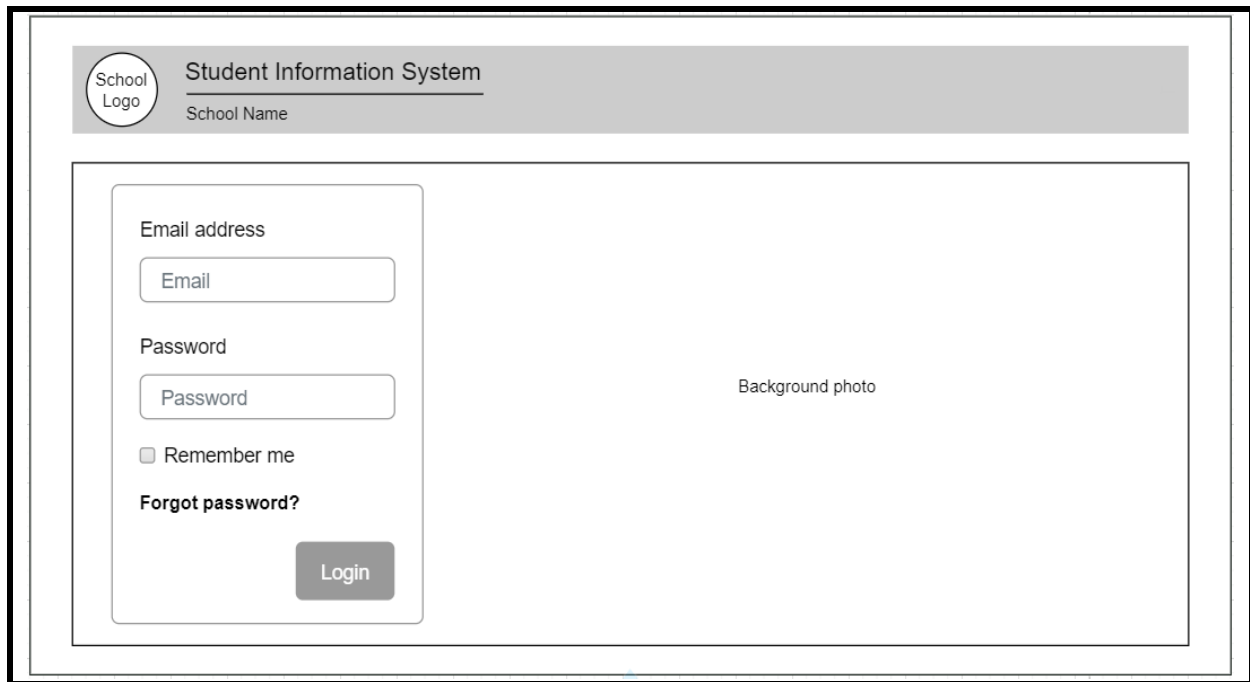
13. References

ALAN DENNIS, BARBARA HALEY WIXOM, & ROBERTA M. ROTH . (n.d.). *System Analysis and Design, Fifth Edition*.

John W. Satzinger, Robert B. Jackson, & Stephen D. Burd. (n.d.). *Systems Analysis and Design In a Changing World, Seventh Edition*.

Appendix A

USER INTERFACES OF THE PROJECT

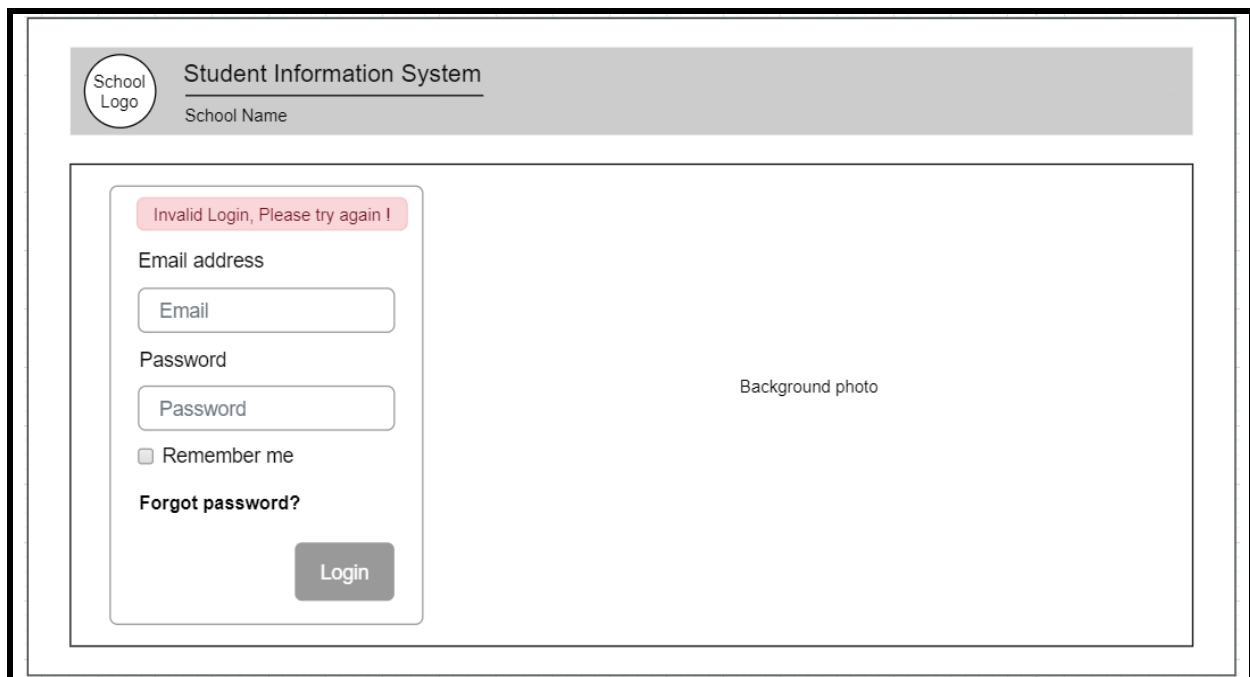


The login page features a header with a 'School Logo' and the text 'Student Information System' and 'School Name'. The main content area contains a login form with the following elements:

- Email address:** A text input field with the placeholder 'Email'.
- Password:** A text input field with the placeholder 'Password'.
- ☐ **Remember me**
- Forgot password?** A link for password recovery.
- Login:** A button to submit the login credentials.

A 'Background photo' is indicated on the right side of the form area.

Figure 9 - Login Page.



This mockup shows the login page after an invalid login attempt. It includes the same header and form elements as Figure 9, but with an additional error message:

- Invalid Login, Please try again !** A red error message displayed above the email input field.

The 'Email address' and 'Password' fields, 'Remember me' checkbox, 'Forgot password?' link, and 'Login' button remain visible.

Figure 10 -This error message will be shown in case of the user entering the wrong email or password.

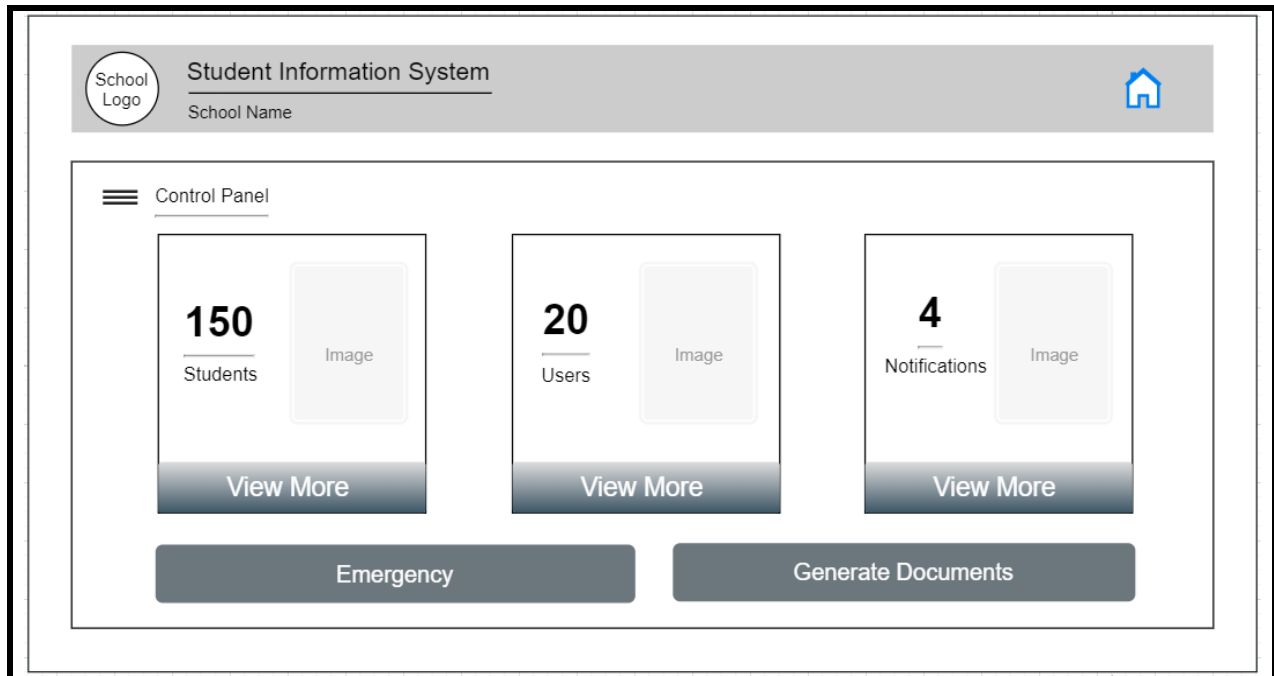


Figure 11- The Admin panel.

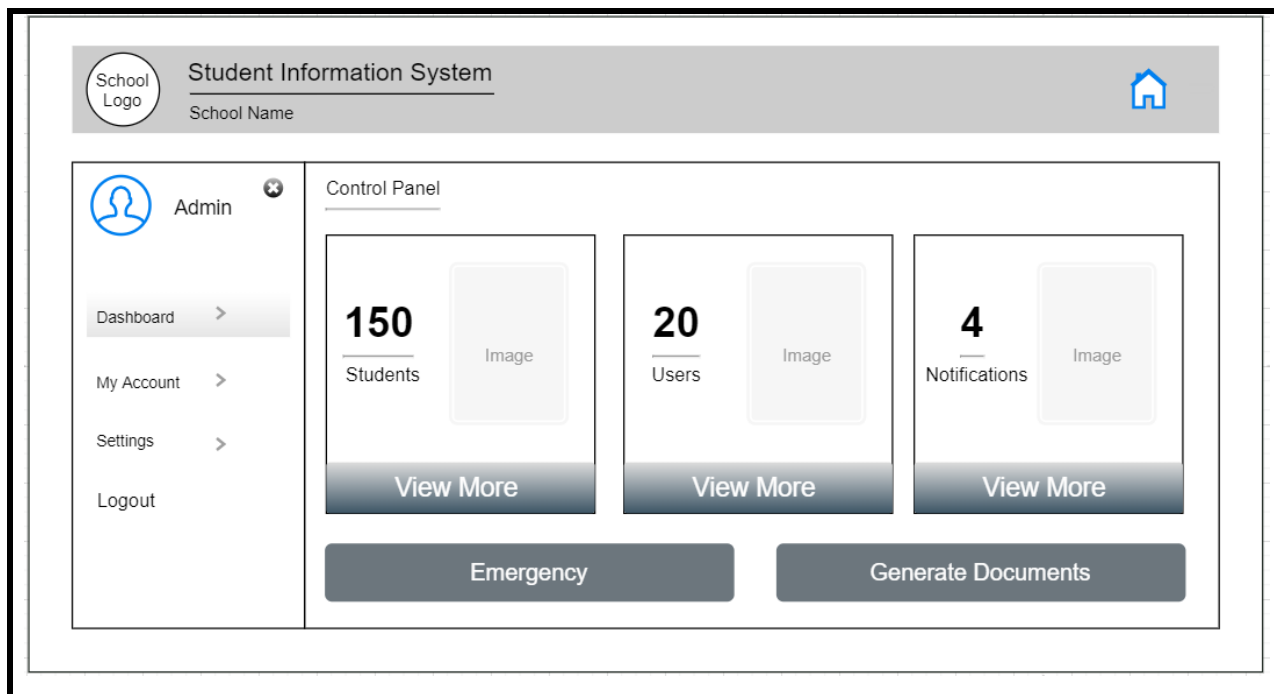


Figure 12 - Navigation menu in admin panel

Student Information System
School Name

Control Panel > Students

Index Number

ID	First Name	Last Name	Profile Picture	Grade	Student State	Edit	Delete
11605	Piyasi	Disanayaka		7	Active		

Figure 13 - Students' personal details section allows admin to view details, to change personal details and relevant settings.

Student Information System
School Name

Control Panel > Students > Add New Student

Student Details

Name: First Name Middle Name Last Name

Birthday: Day Month Year

Gender: ☐ Male ☐ Female

Address:

Telephone:

Grade: Grade Student State: State

Index Number:

Special Information:

Trustee Details

Name: First Name Last Name

Telephone: ID:

Occupation:

Gender: ☐ Male ☐ Female

Address:

Figure 14 - The section of add new student allows admin to add a new student to the system.

Student Information System
School Name

Control Panel > Students > Edit

Student Details

Name: First Name Middle Name Last Name

Birthday: Day Month Year

Gender: ☐ Male ☐ Female

Address:

Telephone:

Grade: Grade Student State: State

Index Number:

Special Information:

Trustee Details

Name: First Name Last Name

Telephone: ID:

Occupation:

Gender: ☐ Male ☐ Female

Address:

Save Changes **Cancel**

Figure 15 - The 'Edit' section allows the admin to change student personal details and relevant settings.

Student Information System
School Name

Control Panel > Users

User ID: **Filter**

Add New User

ID	First Name	Last Name	Email	Occupation	Edit	Delete
T012	Vindya	De Silva	vindya@gmail.com	Teacher		

View More Details

Figure 16 – The 'Users' section allows the admin to view details, to change users' details and relevant settings.

Student Information System
School Name

Control Panel > Users > Add New Users

User Details

Name:

Email:

Occupation:

Telephone:

ID Number:

Gender: ☐ Male ☐ Female

User Type:

Add **Cancel**

Figure 17 - The section of 'Add New Users' allows the admin to add a new user to the system.

Student Information System
School Name

Control Panel > Users > Edit

User Details

Name:

Email:

Occupation:

Telephone:

ID Number:

Gender: ☐ Male ☐ Female

User Type:

Save Changes **Cancel**

Figure 18 - The 'Edit' section allows the admin to change users' details and relevant settings.

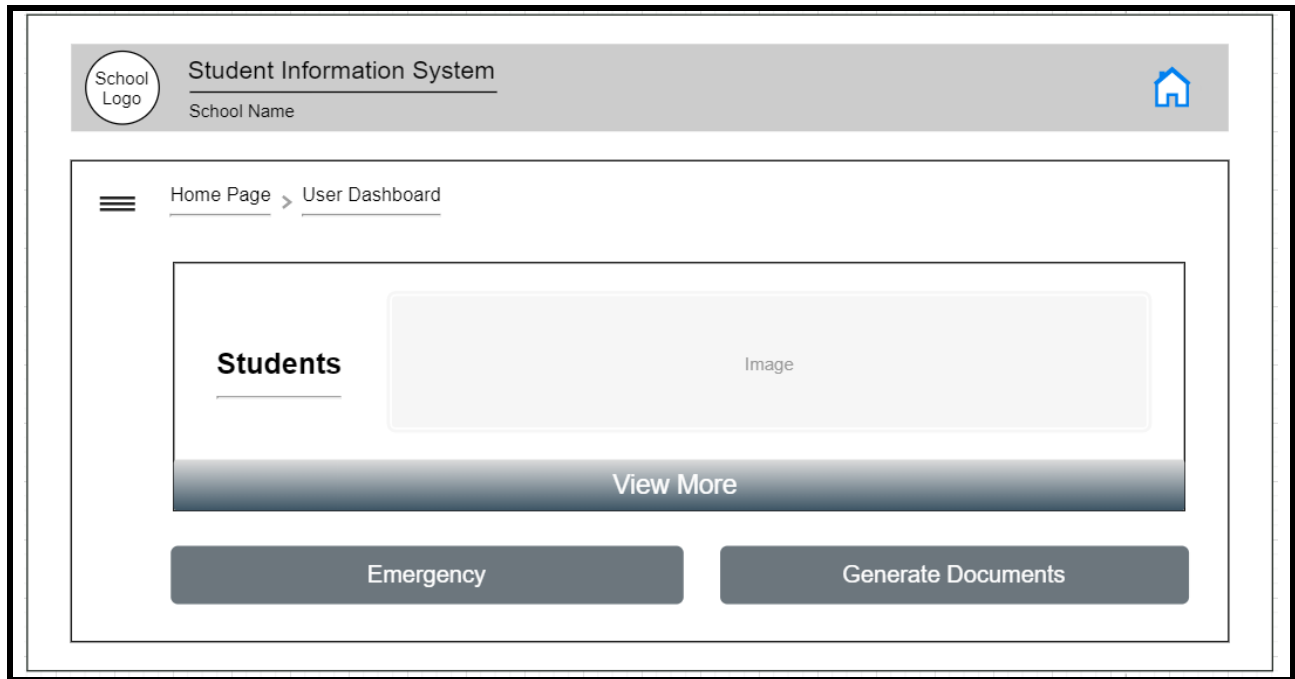


Figure 19 -User Dashboard.

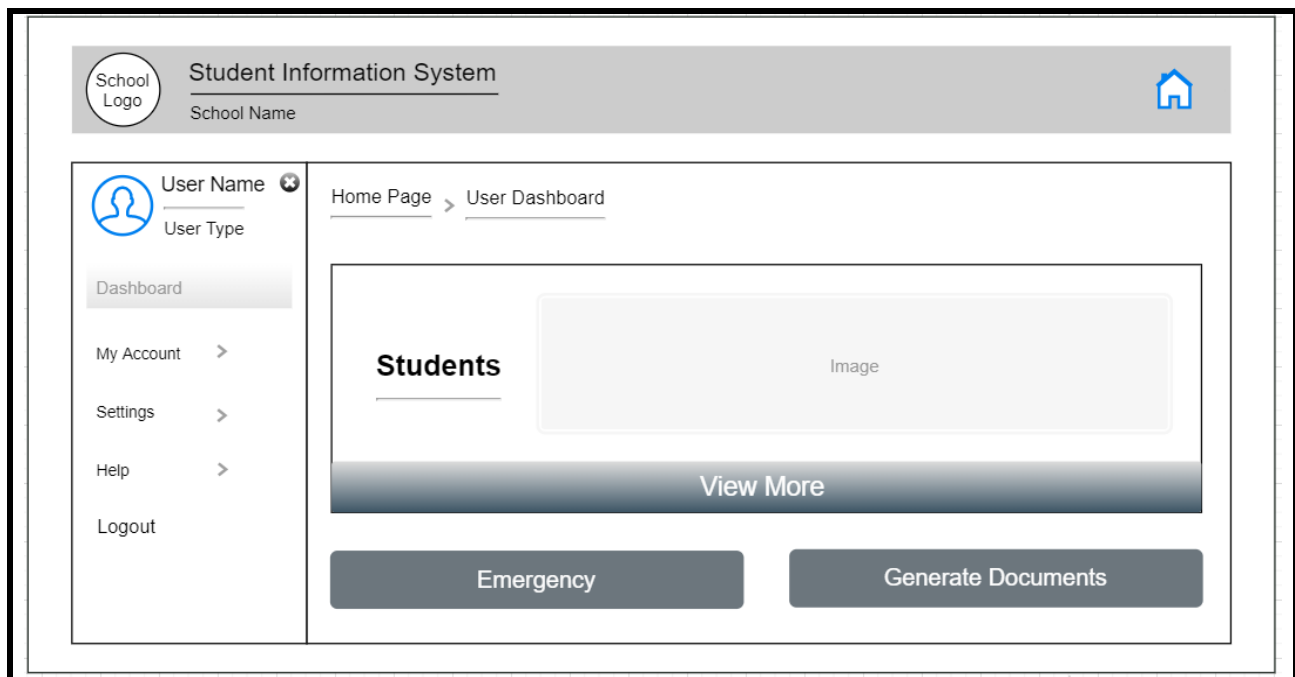


Figure 20 - Navigation menu in user dashboard.

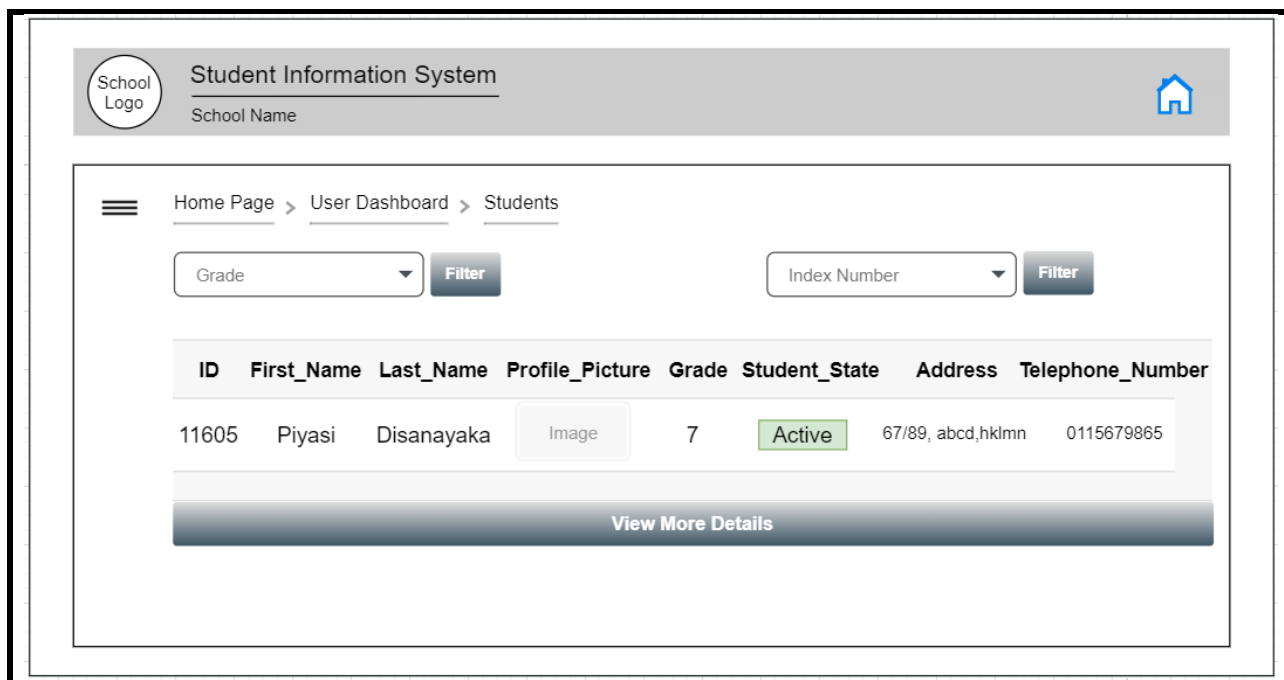


Figure 21 - Students' personal details section allows users to view details.

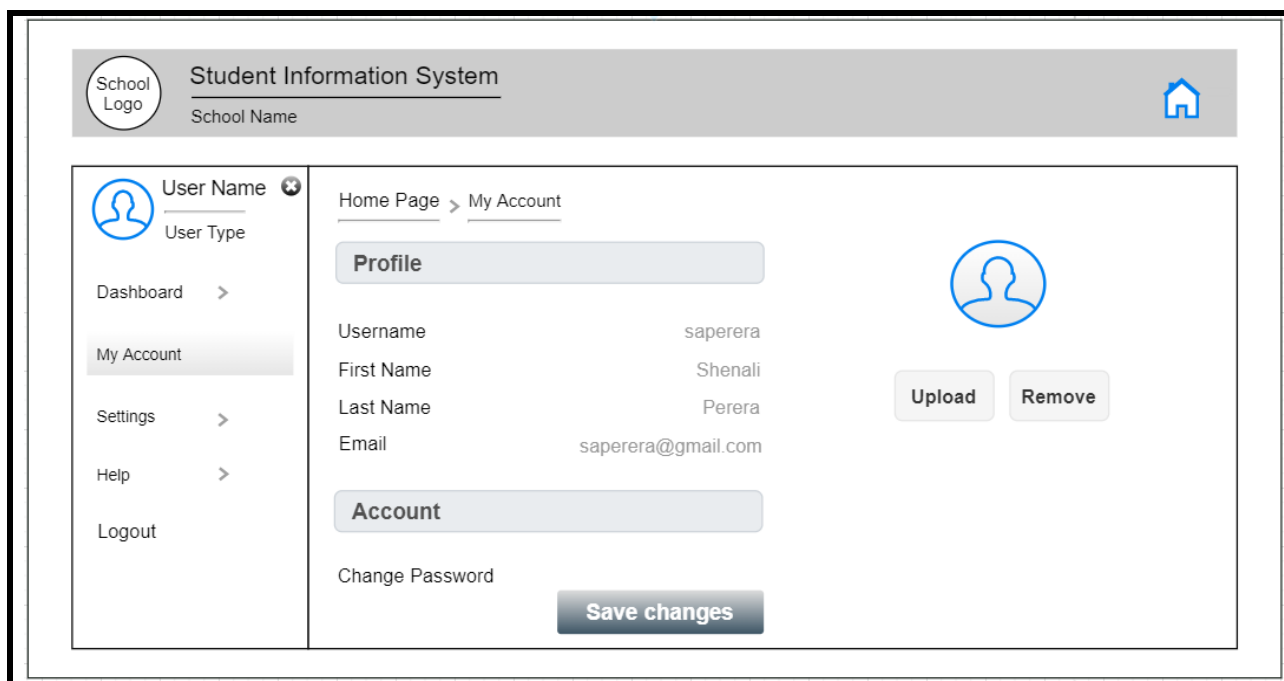


Figure 22 - The My Account section allows the users to change their details and relevant settings.

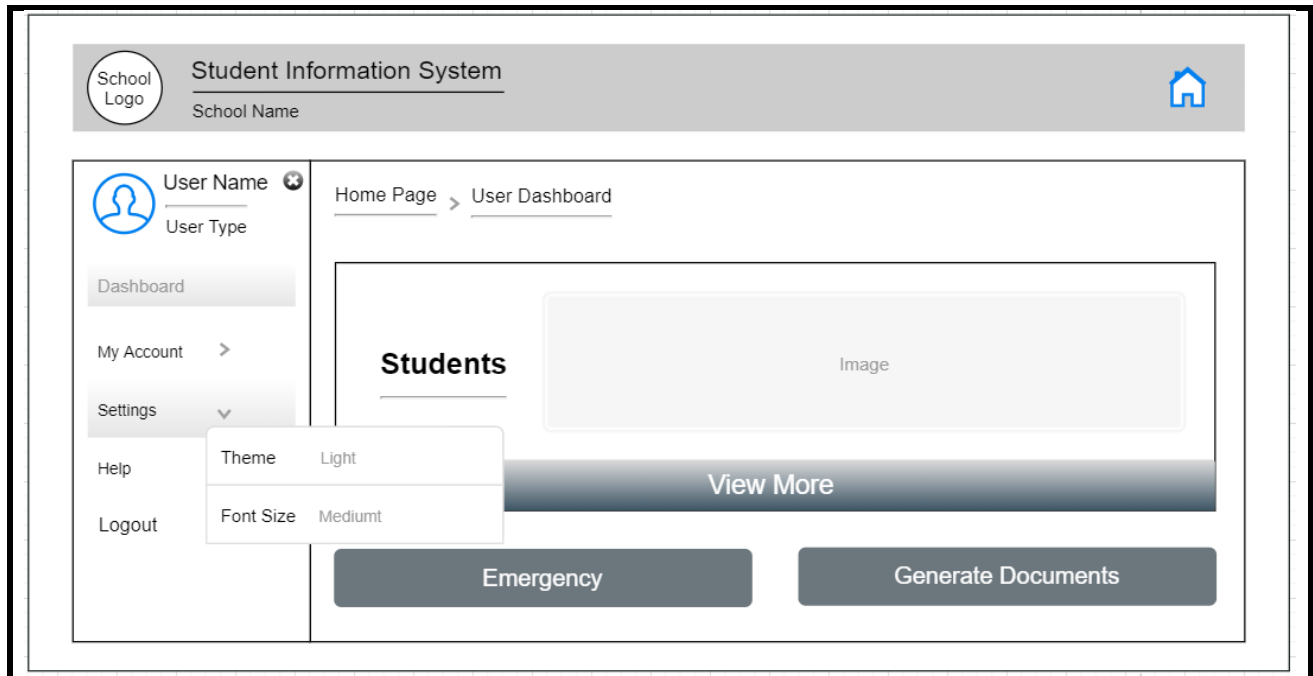


Figure 23 - 'Settings' section that pop-ups in user dashboard that allows change system settings.

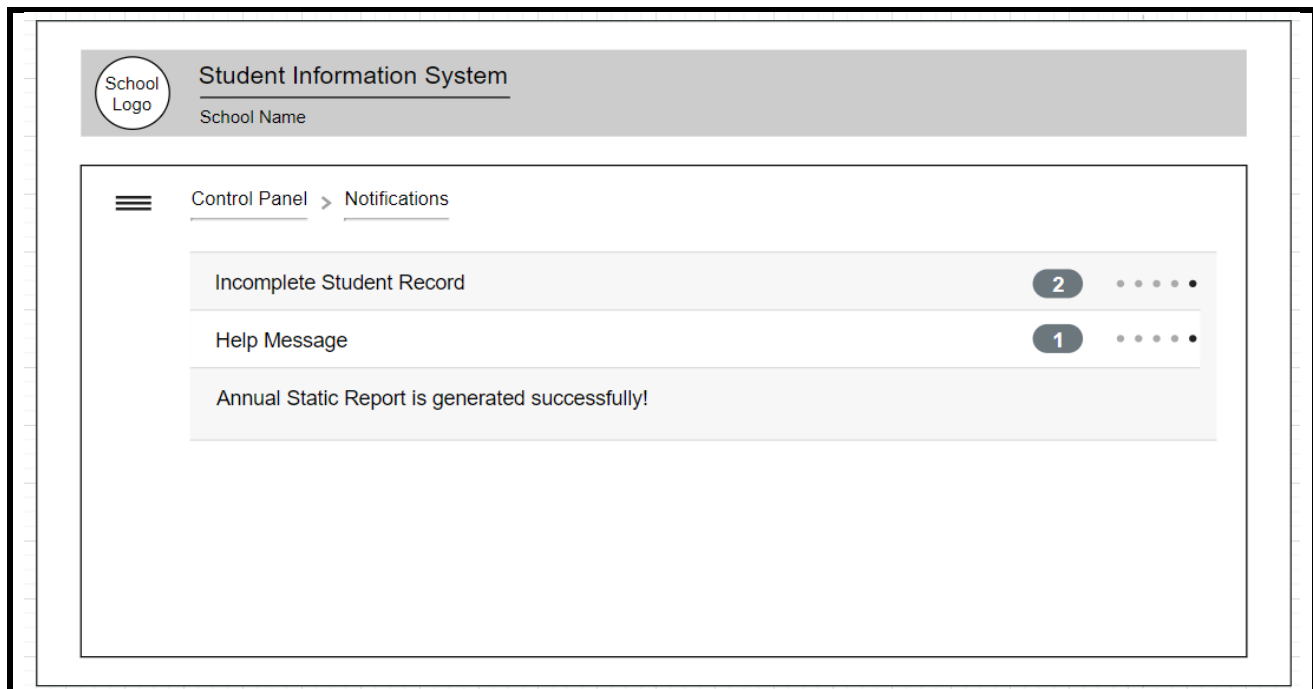


Figure 24 - The 'Notifications' section allows the admin to view the notification of the entire system.