

Sri Lanka Institute of Information Technology



Project Proposal  
**WD\_B01\_ITP\_G05**  
Institute Management System

2022

**Information Technology Project – IT2080**  
B.Sc. (Hons) in Information Technology

# Introduction

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## **Client Background**

Our client who is Dr. Nilantha Ponnampuruma is the owner of an educational institute named as “Laboratory Palawatta” which is located in Pitigala, Pahala hewassa road, Palawatta. The institute provides tutor services by conducting tuition classes to several students all around the island. It consists of 3 lecture halls, 10 teachers, 5 non-academic staff and altogether 500 student who have been registered.

## **Problem Statement**

There are many problems they face with the existing manual system. For example, retrieving teacher profile details, maintaining student marks, and accurate timing of students attendances records contain inefficiency and inaccuracy of payment details.

Looking at the current system we found problems related to information management. One of the major problems was that retrieving or updating teacher files, student details and payment handling was a tedious task.

- **Difficulty in marking attendance -**

The major issue which was found is marking the students’ attendance. Some institutes still adopt the ordinary method of marking attendance in files, i.e., when a student enters the institute .This old system is not very efficient or accurate. It is difficult to take a students’ attendance report at the end of each month manually.

- **Difficulty in managing profiles -**

Updating the profile files of more than 10 teachers and 500 students who are attending to the Classes is very complex.

- **Difficulty in managing payment details-**

For example, when updating teacher salary payment details it was a very time consuming task. Even the calculation of salary payments and the managing fees which was paid by students was to be recorded manually, which is not an easy job and also managing large number of files that used to be taken in and out of lockers while updating the records each and every time makes the task much more harder

- **Difficulty in managing time tables-**

Another aspect that was stressed somewhat harder was the issue related to the institute time-tables. It also includes the teachers' personal time tables and exam time tables as well. The institute currently follows the regular method of creating time tables manually. Reserving classrooms according to the time table is also a tough task and this is not an easy task either. Since practically there will at least be 1 overlap each time when the time tables are updated. For example, if grade 6 science and math classes are held on the same time it will be a problem to the students who attend to both classes.

- **Difficulty in managing exam notices-**

Teachers are unable to inform immediate updates about exams.

- **Difficulty in managing student marks-**

Apart from handling records on teachers, there was also another problem related to the handling of student marks. When the teacher wants to know the exam marks of a particular student or a class's average of each and every subject is not convenient and efficient.

Having analyzed the current problems they face, it was decided that we go for a computerized Institute Management System, which we have decided to develop.

## **Proposed Solutions**

After complete analysis of their current issues related to information management and other requirements, we have decided to implement a web application which is connected to a No SQL database.

- We have come up with an idea to get the attendance of students with a Google form and save it in the database ,if the class is held via online and we plan to get the attendance though a face authentication if the class held via physically.
- Students and staff members can view their own profiles.
- The students' and staff members' data stored in the data base so at any time their data can be viewed by the admin by searching their id.
- And if any student or staff members newly join to the institute the details should be entered by admin.
- While the classes are held physically the students can pay the fees at the cashier itself. Or else if it's online, the payments can be done through a bank and the payment receipt should be uploaded to the Google form provided.
- The students can view their time tables relevant to them. If there are physical classes, students can see the relevant hall number and if there are online classes students can see the relevant URLs.
- Exam time tables and notices will be published in the exams page.
- Exam marks can be added to the system. Teachers can update the marks of students and see the average mark of the class. And students can view their marks.

## **Benefits of the system**

Benefit	Description
User friendliness	The students, staff members, and admins can easily search view any details.
Efficiency	Institute will be able to provide a fast and efficient service.
Accuracy	Reduce the data redundancy and can provides us the exact information. All records and transactions are reported effectively
Data security	We have defined different user levels and secure the system from unauthorized persons. Because the system ensures that everything is safe and secure over the Internet, important documents can't be stolen and lost.
Reduces Workload	The workload upon the staff members is reduced as the teachers need to be technology driven. This leads them to work and send out the required data to the students and their parents over the system. It reduces the workload from the teachers and saves time.
Helps in avoiding unnecessary paperwork	Fixed ownership of paper files to records when the system is used to perform normal administrative tasks. It leads to the conservation of natural resources and the keeping of a digital record of data. It also does not confuse the records that need to be maintained.
Institute Performance	Because it can save time, errors can occur

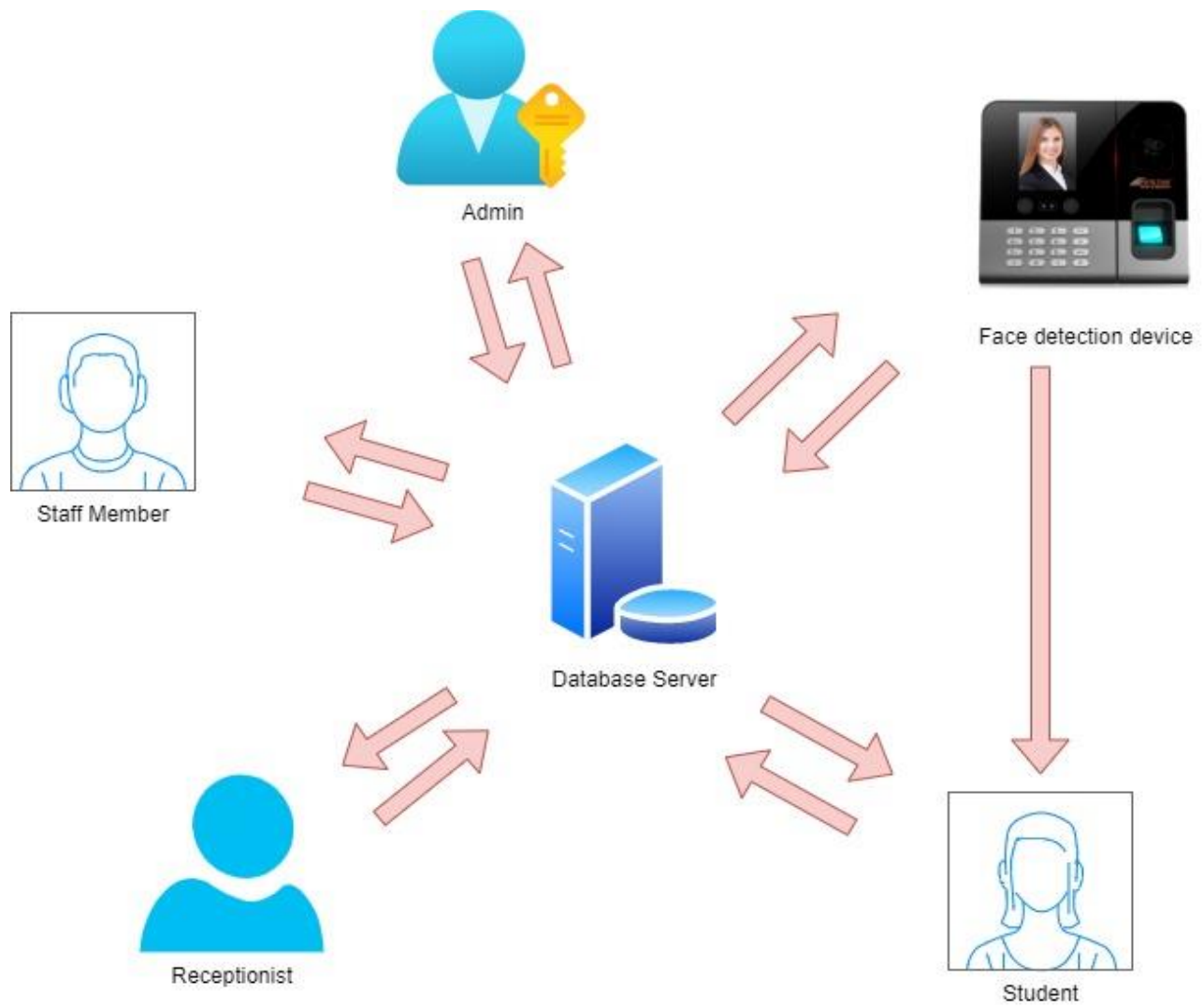
	Minimize, operating costs are reduced and services can be provided efficiently. Using a system helps to increase the performance of the tuition class.
Best collaboration between students and teachers	Even in this pandemic situation teachers and students can be collaboratively work with each other using this application.
Works across platforms	Be it mobile or desktop, the system works well for both and can be accessed on any device.
Generate Reports	Manage records and data as easily as possible Decisions are effective.
Flexibility	With an automated system, the tutorial class manages processes Provides simpler, faster and more flexible
Minimize human errors	When certain tasks are done manually, there may be mistakes made by users. Can reduce those errors and omissions using this automated system.
Reducing the operating expenses of the institution	When manually handling records, manpower is needed. Therefore, there is a labor cost and to maintain manual records, additional costs and extra space will be required. These costs can be covered by using a system should be reduced.

# System overview

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This institute is currently using a manual system to manage all its work. After the covid 19 pandemic, this institute faced some difficulties to manage their work using a manual method. As a result, they have to switch to a new web-based application to manage their work. This system is designed to fit any education institute implementing classes for school children. The system is specially designed to keep a record on the students, academic and non-academic staff and also regarding the payments of the students, time table and many more. This is a centralized system which is much more efficient than what is done manually. Basically four people are profited from this system. They are students, staff members, admin and the receptionist. This system will reduce the manual work of an institute and will allow to systematically organizing all aspects of the institute which can be accessed and retrieved anytime. This institute management system requires following eight main functions,

- 1) Student Management
- 2) Fees Management
- 3) Staff Management
- 4) Feedback Management
- 5) Subject Management
- 6) Exam Management
- 7) Salary Payment Management
- 8) Time table Management





# System Functions

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## 1. Student Management

Admin handles all the students' details. Admin has the access to add a student to the system. And mark the attendance of each student of classes who attends classes physically using a face detection device. If classes are held online attendance will be marked via a Google form.

**Add student-** Admin can get the necessary details from a student and enter the details to the system. And provide a username and password for each and every student.

**Search student-**Admin or a teacher can search a student by entering student id.

**Update student-** Admin have the access to update student details.

**Delete student-** When a student leaves the institute Admin can delete the student details from the main table.

**Verify a student-**When a student log into the web application the system will allow him/her to enter if only the username and password correct.

**Student profile-** Students can view their profiles by entering their credentials (username, password) .If some incorrect details student can change that.

**Generate report-** Admin can generate report of the monthly attendance of students of each class by entering the teacher's id and class id at the end of the month.

## 2. Fees Management

To attend the session, the student must pay for the relevant classes he / she attends

**Enter Payment details** - Classes are held physically and students can pay a fee to the cashier. Or if it is online, payment can be made through a bank and the payment receipt must be uploaded to the Google form provided. Enter the student's name, class, month, amount, and phone number. Email, payment slip / reference number and bank details on the payment page.

**Verification of payments** - After receiving the payment from a student the admin should check whether the student and the amount which has been paid are accurate and true by referring to the details in the database

**Payment update access** - Students when the administrator refuses to pay the student you can find out about it and edit the payments.

**Delete payments** - An admin is an consultant who can delete payment records from main table when needed

**Reminder to pay** - The administrator reminds students the expected payment reminders through the student profile in the second week of the month.

**Generate reports for payment analysis** - At The end of the month system will analyst the payments and generate the summary of payments

**Search Student Payments** - Multiple payments made to multiple subjects/classes with the same student ID can be synced and the system will allow access to search previous payments made when searched using the student ID

### 3. Staff Management

Admin registers academic and Non-academic Staff into the system manually. When the admin registers a new staff member (academic or non-academic) system generates personal profile with their own information.

**Manage staff member**- The admin is allowed to create a new staff member access, update staff members details or remove a staff members from the main table. When the admin updates the details of the staff members, their details will be updated in own profile. If the admin deletes a staff member that staff member will be deleted the system.

**Staff verification**-If staff member need to access the web application staff members should logging to the system. When logging it's check whether it's a valid logging or not.

**Staff profile**- When the admin creates a new staff member access, the system will create a profile for those staff members. When a staff member logs into the system, can view profile along with their details. Staff members also have the ability to change their personal details as needed.

**Search staff member**- The admin has the ability to search for staff member through the search function.

**Generate report**- Admin can generate report about existing academic and non-academic staff members.

### 4. Feedback Management

This function use to manage student feedbacks. Student can give a feedback to the teachers of his/her choice. Also admin handles all the students' feedback.

**Add feedback** - When a adding a student in to the system, student can give a feedback to the relevant teacher. And also can update and delete it whenever needed.

**Update feedback**- Students can be update the feedbacks that they have entered.

**Delete feedbacks**- Students can be delete the feedbacks that they have entered any time. Also the admin can delete if there is any inappropriate feedback.

**Search Feedback**- Student can search teacher's name and they can view the feedbacks of that teacher.

**Validate search feedback**- When a student enters an invalid name it displays an error message.

**Generate report**- Admin can generate report monthly for the students' satisfaction about each class.

## 5. Subject Management

This function is used to manage all subjects and assign relevant teachers to subjects. All the subject related things stored by using the well-organized structure. Admin can add, view, update, or delete the subject details in the system.

**Adding subject** – The admin can add new subjects to the institute and assign teachers to the relevant subjects.

**Updating subject details** – The admin has the facility to update any changes related to the subjects for example, if new teachers were replaced the details should be changed.

**Deleting subject details** – The subjects can be deleted by the admin whenever needed for example, in case of lack of students if the subject has to be stopped the admin can right away delete the subject details and hide the subject.

**Validate a subject**- if enter an invalid id it displays an error message.

**Generate reports** - The system provides a report summarizing the subjects and the relevant teachers for each subjects.

## 6. Exam Management

Exam scheduling mainly assists in being able to schedule in separate times preventing it from being overlapped. Exam notices will be published accordingly.

**Adding exam schedule** – The admin has the capability of scheduling the exam which consists of the time, date, subject, student batch number and the exam hall number.

**Updating the exam schedule** – The admin has the facility to update any details in the existing schedule if needed.

**Deleting the exam schedule** – The admin can delete the exam schedules if need, for example if the exam is cancelled due to a particular reason, before the due date the schedule can be deleted.

**Searching for the relevant exam schedule** – The student can search for the required exam schedule for the relevant class conveniently without having the trouble to scroll down all the way.

**Validate an Exam-** The validation can be done by checking whether two or more exams are held at the same time in a particular class.

**Generate report-** The system provides the advantage of generating the report which summarizes the exams held in each year divided by classes.

## 7. Salary Payment Management –

Admin inputs payments data to the Staff Salary payment database. The admin can create, view, update or delete the payment details in the system.

**Add salary payment-** When a new staff member enrolls to this institute a new payment is created by the admin.

**Update salary payment-** When a staff members' salary is incremented or decremented, admin can update the payment details.

**Delete salary payment-** When a staff member leaves the institute, the payment details of the relevant staff member will be deleted by the admin.

**Search and view salary payments-** The admin can view the payment details of all staff members by entering their staff id and also the staff members can view their payment details.

**Verify a payment-** While paying salaries, if a salary is already paid the system will display a warning

**Generate report-** At the end of the month system will generate the summary of the salary payment details.

## 8. Time table Management

All timetables are posted on the timetable page. The students can view the updated timetables. Students can attend the online classes by using the relevant Webinar links. Admin and teachers can manage the timetable information.

**Schedule a class –** Admin and teacher can add the class information to respective time slots using details such as date, time, hall name, subject, teacher's name and relevant student batch. If it is online, they can add the Webinar links to timetables.

**Verification a class –** Admin can check the class information and confirm the class. Then scheduled class will be added to timetables.

**Cancel a class –** Admin has authority to cancel the classes which are including the incorrect information.(Ex :- inappropriate time slots, invalid Webinar links ). Teacher has accessibility to cancel an existing class.

**Make changes in timetables –** Admin and teacher can update the details in timetables.

**Search a class –** System will allow to search the classes by using the search function. When a teacher search for free time slot they can search for it.

**Generate report** – At the end of the month system will generate report about summary of the classes held during the month.

## Technologies

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- 1) Frontend → React js
- 2) Backend → Node js + Express js
- 3) Database → Mongo DB
- 4) IDE → VS Code
- 5) Backend Testing → Postman

## Constraints/Limitations

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- 1) Students and Staff members should log into the system to access this web application.

# Work breakdown structure

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Registration number	Name	Function	Sub functions
IT20636524	Ariyasena P.P.S.	Student Management	Student profile Attendance Verification Admin dashboard Report generation
IT20643836	Ariyaratnna B.M.N.D.S.	Fee Management	Payment reminder Admin dashboard Report generation
IT20636692	Perera L.A.M.D.	Staff Management	Staff profile Admin dashboard Report generation
IT20654030	Dasanayake K.D.H.S.	Feedback Management	Rating system Admin dashboard Report generation
IT20658472	Weerapperuma D.I.	Subject Management	Subject listing Admin dashboard Report generation
IT20648190	Ahmed M.N.T.	Exam Management -	Exam portal Admin dashboard Report generation
IT20644680	Aathif M.A.M.	Salary Payment Management	Payment verification Admin dashboard Report generation
IT20653118	Wishvajith Y.W.S.H.	Timetable management	Time table modeling Admin dashboard Report generation

# Project Management Plan