

Sri Lanka Institute of Information Technology



Proposal Document

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Information Technology Project – IT2080

B.Sc. (Hons) in Information Technology

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Introduction

Client background

Mr. Thilak Jayaweera is the owner of Global Institute, a tuition institute in Kurunegala that has been operating since 2007. It has six classrooms as well as a computer lab. It employs 20 teachers and 5 non-academic staff members. Around 3000 students in grades 6 to 13 are educated at this institution. Students pay their class fees on a monthly basis, while employees are also paid on a monthly basis. Student management, class management, payment management, exam management, teacher management, attendance management, and staff salary management are all handled manually at this time. They are hoping to accomplish all the tasks using a web application due to the present covid epidemic.

Problems

- **Difficulty in managing student attendance** – It's difficult to keep track of student attendance when doing it manually. Mistakes may be occurred.
- **Issues with storing students', teachers' data** — when storing data physically, certain data may be discarded, resulting in wasted time and extra storage space.
- **Difficulty in managing student payments** – It is difficult for the institution to track their fee collections accurately. There is no method to remind students of their payments.
- **Online class delivery** – due to the absence of platforms, sending online class information to students is difficult. When giving class links to students via WhatsApp groups, any students, including those who have not paid, are welcome to attend. It's a big problem for the institute.
- **Difficulty in conducting exams** - due to the chaotic situation in the country, they are unable to physically organize any exams, and students are unable to obtain information about their exams.

- **Difficulty in generating reports** – Institutions are unable to manage information and there are endless delays in taking decisions based on complete analysis. Annual reports, monthly reports are useful indicators for the owner to examine student attendance, payment details, teacher registrations, staff salary information and predict the outcomes. Doing this manually is quite tough, and mistakes are likely to occur.
- **Request Handling** – the owner wants to know how the teachers work in the classroom, what problems there are with the class delivery, and what problems there are with the tests.

Proposed Solutions

To overcome the above problems, we have come up with an Institute Management System. The proposed institute management system is planned to implement as a web application which is connected to a No SQL database.

- We have come up with a solution to get the student attendance and record it in our database. If class is held via online, a teacher could get the students' attendance list from the google form which students filled up during the online session and record it to the system. If class is held via physically, the supervisor could get the attendance list by inserting the student id into the database.
- Students' data will be stored in the database. So, if admin and owner of the system can view details of students by searching their student id easily at any time.
- The system will provide a platform to do the students' class payments through online. It will be easier for during this pandemic situation. And the system will store the details of all the payments done by the students. This will be easier to check who has done the payments or not.

- Due to the current pandemic situation, students can log in to the system and get the class URL (Zoom link / Teams link) for attend to the classes. The class link is published on a virtual class, and it can only access by students who paid for that specific class. So those students can access the class from anywhere.
- To conduct online exams, teachers can simply create an exam with the date, time, duration, and the pdf format of the exam. Student can download the pdf and do it in a paper and take photos of the answers, then upload into the given URL before the exam duration expire.
- The system will store the teachers' details and will create a profile for them. And will store the payments details and salary details of teachers which have been done by the institute. So, it will be easier to generate reports at the end of the month.
- Since all the students' data, teachers' data, students' attendance details, and all the payment details are stored in the system's database administrators can generate reports monthly or annually according to their needs.

Benefits of the System

Any software development is a step forward in terms of technology. It can improve the efficiency of all the tuition institutions while also raising their revenue. Any tuition institution management system for tuition class administration can be extremely beneficial in assisting you in managing your daily operations.

- **User Friendliness** – The students, teachers, admins, and the owner can search for any details easily.
- **Time-Saving** – Having a system that is automated can save much more time than a manual system.

- **Less Redundant** – All the records and transactions will be recorded effectively making the whole system less redundant.
- **Efficiency** – The tuition class will be able to provide a better service for students and teachers because they will be organized thanks to the automated system.
- **Minimizing Human Errors** – When doing some functions manually, there can be mistakes that happened from the users. Those errors and mistakes can be reduced by using this automated system.
- **Security** – By providing access privileges, we can secure the data stored by not letting unauthorized persons access the data. Also, data can be safeguarded from environmental threats.
- **Reduce the Operational Costs of the Institute** – When handling manual records, manpower is required. So, there will be a labor cost and to maintain manual records, extra expenses and extra spaces will be needed. By using a system these expenses can be reduced.
- **Student Satisfaction** – By providing efficient service through the system, it's significantly enhanced the student's convenience and the transparency of the functions in the system.
- **Backups** – Keeping backups from the systems can be done easily.
- **Increase the Institute Performance** – Since time can be saved, errors can be minimized, and the operational cost is reduced and services can be provided efficiently by using a system, it will aid to increase the performance of the tuition class.
- **Generate Reports** – Reports and data available easily hence make management decisions effective.
- **Reliability** – Students and teachers are better able to rely on the services provided by the system.
- **Flexibility** – With an automated system, managing the processes of the tuition class is simple and fast and provides greater flexibility.

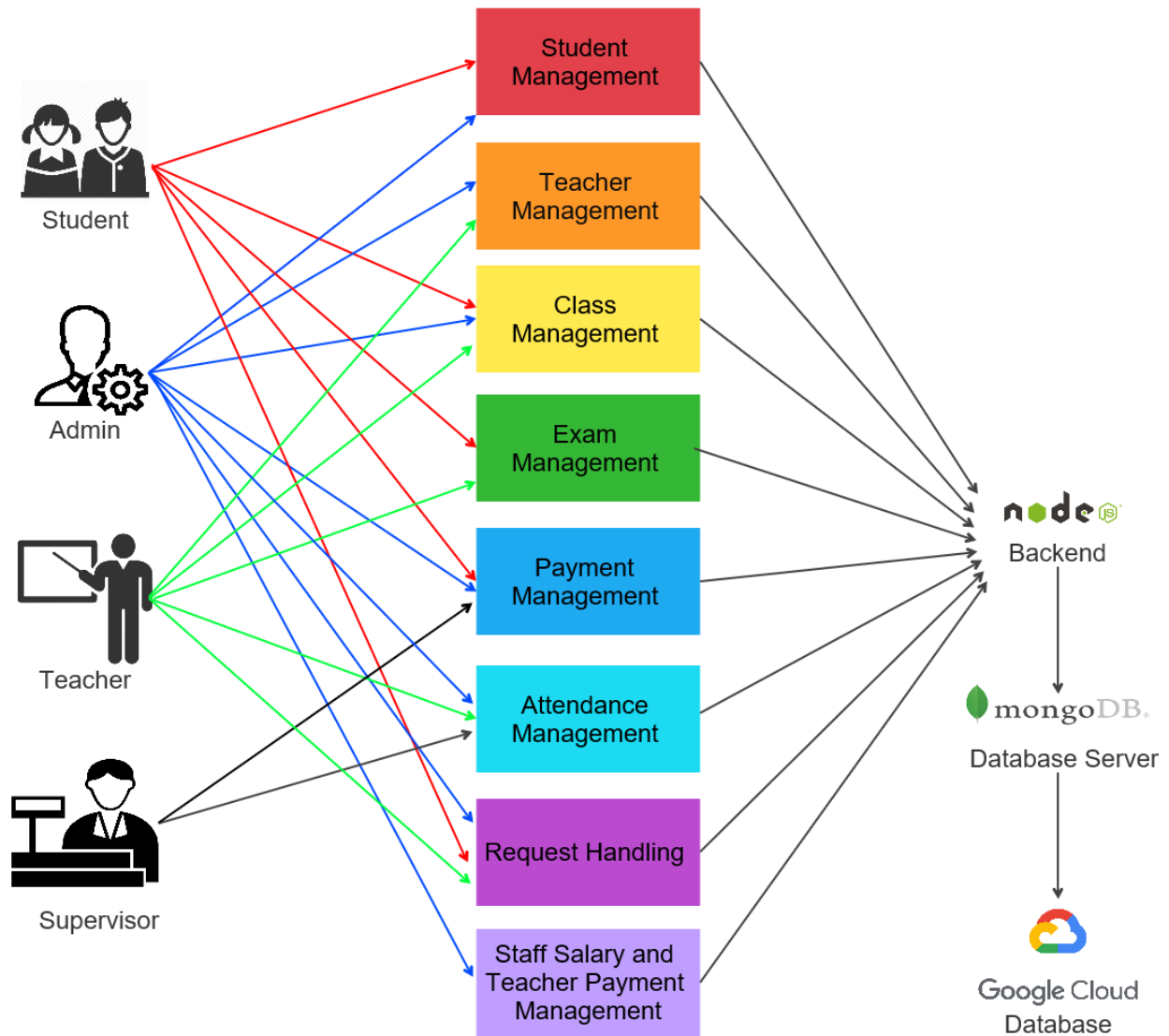
System Overview

This institute is currently using a manual system to manage its works. There are manage student works, payment confirmation, examinations, etc. But after covid 19 pandemics, they could not manage their work using a manual system. Because all the work is doing in online in this situation. As a result, they want to switch to a new web-based application to manage their works.

There are three users are benefited from this system. They are students, teachers, and institute management. In this system, the teacher can share the course materials. Students can do refer to course materials, payment confirmation like these works using this application. On the Institute side administrator can Manage the online class schedule, spot tests, class payment, and all the Institute-related things using this application. This requested system divides eight main functions. There are,

1. Student Management
2. Teacher Management
3. Student Payment Management System
4. Exam Management
5. Staff Salary and Teacher Payment Management System
6. Attendance Management System
7. Class Management
8. Request Handling System

System Overview Diagram



Functions

Exam Management

All exam information is posted on the Student Dashboard. The students can find the exam details and their results after the exam is completed. Only teachers can add exam information including the exam paper from their respective dashboards. After the given time for the examination, student must upload their paper to the relevant link.

Add Exam - Only teachers can add exam information from their respective dashboards. Namely, exam name, class name, exam date, and duration. After adding an exam, the teacher can edit or delete the exams.

Answers submission – Students should submit their answer sheets to the supplied link within the given time frame. After the time limit has expired, the student will be unable to see the link.

Add Results - After the examination, the teacher can publish the results for the respective class. Then, students can see their results on the dashboard.

Exam Portal - Using the StudentID and the password student can login to the exam portal. In here student can see their results for the participated examinations.

Generate a report - The teacher can get a report of results by giving the class id on a given mark range.

Student Management

Admin handles all the students' details and manages the registered students. Only Admin has the access to add a new student into the system. The admin creates unique credentials for each student using their student registration number and also can search for any student in the admin panel using StudentID.

Add Students - When adding a student into the system, Admin must get all the necessary details from the student. He enters the details and adds the student into the system, and he allocates the student into correct classes and teachers. In the admin panel, the admin can see all the registered students' lists for each grade and for each class.

Student Login -Students can log in to the system using provided credentials also can reset the password if in any case using forgot password option.

Student Profile - Students have access to their user profile and can change/update details if the admin has entered incorrectly. Students can change the password from here also, but students can't change the Student Registration number.

Also, the admin can change the students' bio details if need and can change the classes if the student has moved some classes or added some new classes.

Student Validation and Removal - Admin has to validate the student before entering him into the system and has the full authority to remove a student from the system in any case.

Monthly Reports - Admin must generate a monthly report which must include newly registered and existing student count for each class and some other necessary details.

Teacher Management

Admin registers teachers into the system manually. When the admin registers a new teacher, system generates a personal profile with all relevant details of that teacher.

Manage Teachers – Admin has the permission to create a new teacher entry, edit the details of the teachers, update details or remove a teacher from the system. If admin update the details of relevant teacher, teacher profile will be updated. If admin remove a teacher from the system, teacher profile also will be deleted.

Teacher Profile – When admin creates a new teacher's entry, system will create a profile including all the details of that teacher. Teacher logs into the system and teacher can view his / her profile with all their details. Teachers can edit their personal details and update their profile if needed.

Search Teacher – Admin can search teachers using search function.

Generating Reports – Admin can generate reports monthly for newly registered and existing teachers.

Class Management

Students will be able to attend sessions only if the teachers upload class details correctly. Then the admin will approve or reject the class.

Enter class details – Teacher has the access to enter the class details to the add class page. Teacher enter class start time, end time, subject number, subject name, teacher's name, meeting link and lesson components.

Class verification - Admin has the authority to check class details and confirm the class. Then class will be upload to the student profile.

Class rejection – Admin has the authority to prevent the corruption of time management, inappropriate class link which the student cannot access and invalid subject code by rejecting the class. So, the teacher has the accessibility to edit or delete the class.

View class – Students are applicable to attend the classes by choosing the class option in the student profile. The class option will guide student to view class details and download lesson components. The students are able to attend classes by accessing the class link given in the class details.

Generate report – end of the month system will generate report about all classes details

Request handling system

This function use to collect teacher's and student problems and suggestions. When teacher or student has any problem, he/she can contact the institute management over the system. If someone send a problem or suggestion he can edit or delete her/his message within 20 minutes. After the 20 minutes no one can edit or delete the message.

Feedback/Contact – If some visitor wants to know about something in this class or teachers, he/she can send their question using the contact function with an email address. After the send a message admin view the message and send details to their relevant email addresses.

Solve user problems – This function belongs to institute management. Using this function admin can give solutions to the user problems. If admin solve some user problem, it will delete in the problem page and note down in the solved question page. Admin also can delete unwanted messages in the system.

Rating system – End of the month all the student required to rate their relevant teachers. When student login to the student page student has to give a rating. After a student give a rate admin can view each teacher's performance as a summery.

Staff Salary and Teacher Payment Management

Admin inputs EPF payments, car allowances, medical allowances, educational allowances, and paper-making payments data to the Staff Salary payment database. Admin enters permanent staff information into the system. In addition to that, the admin can update/remove each permanent employee's details. Also, the admin can update or delete the payment details in the system. EPF is given to permanent employees, but EPF is not given to non-permanent employees. also, non-permanent Only allowances are given, and no other allowances are given.

Add/edit/delete permanent staff – This function works admin register for Staff information to the system. (Ex: employee name, employee email, employee position, employee mobile number, employee permanent or part-time, employee gender). And Admin can update each employee's details or delete the employee.

Non-permanent Staff Salary- Admin pays the Non-permanent Staff daily or weekly or monthly. Also, the admin can update or delete the payment in the system.
(Ex: Visiting Teachers payment)

Permanent Staff Salary- After staff registered admin can pay the staff monthly. Also, the admin can update or delete the payment in the system.
(Ex: Printing Staffs Salary, Permanent Teachers Salary, Security Staff.)

Permanent Staff salary Advance- If an employee wants to salary advance, then the admin input the advance amount to the system. The system can be reduced the advance amount from the total salary. Admin can update or delete those details.

Generate Report for salary expense- The end of the month system will generate the summary of expenses. (Ex: monthly employee salary payment.)

Student Payment Management

In order to attend sessions, students must pay for the relevant classes he/she attendss

Enter Payment details - Student enter his name, class, month, amount, phone number, email, payment slip/reference number and bank details in payment page.

Payment Verification – Staff member can view the payment details and consequently approve or reject the payments. Once he finishes verifying the payment, he will inform the admin about the status of the payment. The admin will then email it to the student in a way which the student can check their status.

Accessibility of Updating payment – when the admin rejects the student payment, students become aware of it and can edit the payment.

Delete Payment – Admin is a consultant who can delete payment records when required.

Payment reminder - Admin can send pending payment reminders to students through emails in the second week of the month.

Attendance Management

This function manages the attendance of all the students who are registered to the system. Supervisor, Teacher and Admin must register to the system. Supervisor has the fully authority to manage the attendance of students who come to the classes physically. Teacher has the fully authority to manage the online class attendance of students. Admin has full authority to view attendance and generate monthly reports.

Search Student Details – Supervisor search student details by giving class id and the student id before student enter to the class. Then system will display the student id, student name, grade, subject, and payment details. Payment details means if the student has done the monthly class payment, system will show the status 'Paid' or 'Not Paid'.

Attendance Verification – Supervisor verify that the student has done the monthly class payment on time.

Add Attendance – If the student has done the payments supervisor give permission to the student to go to the class. He adds the student attendance to the database.

Delete Attendance – Accidentally supervisor add the student's attendance into the database mistakenly, he/she can delete that attendance.

Add/Edit/Delete Google Form Link – If class held via online, teacher could also add the google form link which students filled up during the online session and class details (Class id, Date, Total Students, Attendance). Also, teacher can update and delete the attendance.

Generate Reports – Admin can search the students' attendance by giving the class id and the date. At the end of the month admin generate reports for monthly attendance of students.

Tools and Technologies

- Frontend = **React js**
- Backend = **Node js**
- Framework = **Express js**
- Database Server = **MongoDB**
- Developing Tool (IDE) = **VS Code**
- Backend testing = **Postman**

Constraints/Limitation

- According to the system, students must register and after the registration, he/she should enter the login to the system.
- After login to the system, if a student wants to access a class first, he/she should pay a relevant monthly payment.
- After a student pays relevant payment admin permits to access the relevant class.
- If teachers want to start a meeting first of all teachers need admin permission.
- After the admin give permission teachers can start classes.

Work distribution among members

Name	Student ID	Function	Sub Functions
Maduwantha K.A.I.	IT20069186	Exam Management	Exam Portal Exam submission Report Generation
H.A. Hasith Deminda	IT20238612	Student Management	Student Profile Admin Dashboard Report Generation
Ahamed M.M.Z.	IT20081416	Teacher Management	Teacher Profile Report Generation
Wijewardena O.K.	IT20070458	Class Management	Class verification Class rejection Generate report
Saparamadu M.D.T.	IT20022488	Request Handling System	Rating system Generate report
Saparamadu M.D.Y.A.	IT20030230	Staff Salary and Teacher Payment Management	Generate report
Poornima M.G.N.D.	IT20071202	Student Payment System	Payment Verification Payment reminder Generate report
Malshika M.D.J.	IT20002824	Attendance Management	Attendance Verification Generate report

Gantt Chart

	July				August				September				October			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TASK Name																
Requirement Gathering																
Meet the Client																
Understand current process																
Requirement analysis																
Planning																
Select suitable technologies																
Assign function to team																
Create project proposal																
System Design																
Interface design																
Database design																
Implementation																
Implemet individual function																
Create connection with DB																
Link connections with pages																
Testing																
Function testing																
Correct issues																
Completion																
Final project document																
Evaluation																