

Subject: Project Proposal

Project Title : ApnaClassroom - An Online Classroom

Group Members:

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Proposal

Client: ABV-IIITM Gwalior

1. Problem description

As the pandemic situation passes, the need for online classrooms has become very apparent. Along with this the need for proper classroom management has arisen. Use of mails and assorted communication platforms is not an effective way of running classes, and the information gap and lack of transparency between students and faculty must be addressed. Time delays in correspondence also require to be reduced, which can help make online classroom a smoother experience.

2. What the system does

The system provides a secure platform for faculty and students to manage their classrooms. It allows teachers to create virtual classrooms for announcements, quizzes and assignments. Students are able to subscribe to classrooms to remain up-to-date on their class work and performance. Classrooms are paired with their individual video conferencing rooms for convenience of the users.

3. Justification that the proposal is neither too easy, nor too ambitious

This project has a sufficient number of features to implement given the conditions in terms of number of developers and the amount of time. The set of features are varied and robust, each with its own problems, making for a relatively challenging project. Given the small team size and a deadline of around 3 months, we can consider this project to be not too easy.

At the same time, none of the features have extraordinary or unique qualities, and so the product does not require the development of any novel aspects. The project is relatively straightforward and so it also does not require any unnecessary risk management or error handling. Thus the project is not overambitious.

Report

1. Overview of existing systems and technologies

Similar systems to this project that exist are Google Classroom and Microsoft Teams. These products however are usually general purpose and open to all users. This project instead aims to build a closed system for use within the client's student base exclusively.

Many present technologies can be leveraged for this project. The client application can make use of GUI frameworks such as **React JS**. The system's backend can utilise technologies like **Node** as well as a **NoSQL** database like **MongoDB**

2. Project Scope

The project aims to cover all the basic features for a classroom management system. It will deliver a backend system that is capable of handling aforementioned features, as well as a GUI client application to facilitate easy interaction with the system. The product is limited to cater to only users within the client's domain.

The team aims to follow a time-boxed deadline schedule of around 2-4 weeks for every iteration, in compliance with the Agile model.

3. Deliverables

The project aims to produce 2 key deliverables:

- **Backend System:**
 - REST API
 - User Authentication and Authorization
 - Creation and Updation of Virtual Classrooms
 - Creation of Announcement Posts
 - Creation of Graded Assignments
 - Classroom Enrollment
 - Access Reports
- **Client Application (Web App):**
 - Log In/Sign Up Form
 - Classrooms Home View
 - Classroom Feed View
 - Announcement Post Form
 - Results View
 - ToDos View
 - Video Conferencing

4. Feasibility Study

4.1 Financial Feasibility

Given the scale and scope of this project, the costs associated with the project lifecycle are not unfeasibly large. The development and testing of the software incorporates the use of mainly **FOSS (Free and Open Source Software)** technologies and tooling, which do not incur any licensing costs. Much of the financial burden of this project lies with the deployment of software, which is the price of hosting the system on a cloud-based service. If the client has their own server for this purpose, then this hosting cost can be greatly reduced. The only other cost is associated with maintenance of the server and software. Overall, this cost is not considerably high and the development of this product is thus financially feasible.

4.2 Technical Feasibility

This project requires the use of various technologies for both the frontend and backend of the system. At the client side, the website will utilise **Figma** for prototyping as well as **React.js** for the actual development. For the server, we will use **Node.js**, **Express.js**, **REST API** and **MongoDB** for development, as well as **Postman** for API testing.

All of the relevant technologies and tooling are well known and understood by the development team, and can be effectively used during the development life cycle. Thus the technical feasibility of the project is assured.

4.3 Resource and Time Feasibility

This project requires mainly the following resources. Development tools such as **Code Editor** and **Debugging Software** which are freely available along with their relevant technologies; hosting resources such as **Cloud Platform Tools**, **Server Space** and **Database Storage**. Other resources involve human resources and devices for the

programmers to work on. These resources are readily available and reliable, making this project resource feasible.

Assuming the use of Agile methodologies over a course of around 3 months, we can efficiently make time-boxed development schedules to achieve the project goals. Thus it is a time feasible project.

4.4 Risk Feasibility

Some of the risk associated with the project pertains to the handling of storage of large files. This can be avoided by upgrading the database server. The project does not require usage of outdated technologies, nor any that are new or experimental. All softwares used to build this project are well supported and established for their purposes. The system also does not demand the development of any novel or obscure technologies to support it. Other risks that may be considered relate to any modifications and customizations that a customer may request. However the Agile Process Framework allows the team to communicate frequently with the client and resolve issues quickly. Considering all these points, the project is not unfeasibly risky.

4.5 Social / Legal Feasibility

Legal feasibility of this project lies with the ability to license any third-party software, tooling and technologies that the development team may require to produce this system. As such, all of the technologies planned to be used are freely available and open source, reducing the burden of handling licensing costs and its surrounding legal responsibilities.