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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

CS321 – SOFTWARE ENGINEERING LAB

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PROJECT TITLE- FORUM FOR ONLINE LEARNING(FSL)

CATEGORY

Web Application

PURPOSE

The purpose of developing this "Forum for Student learning" is to create a common platform for all students and instructors to hold discussions and ask questions.

Why create a common platform for all students and faculty?

A lot of times students have doubts regarding something very specific to an assignment or course and wouldn't be able to get answers because of reasons like:

1. Constraints of Teacher's office hours
2. Google and other discussion forums were too general for those questions.
3. Working alone in their room, maybe during odd hours.
4. Having too few friends who don't know the answer either.
5. Too shy to ask fellow students or ask out in class.

We also realized that there a lot of hassles faced by the instructors as well in handling queries of students, managing class related announcements, class resources etc. It also became difficult for them to help students because of the constraints presented by office hours and mails.

And so we decided to resolve this issue by creating a single platform that helps both teachers and students where students can post their doubts and can get them answered by their classmates and instructors anytime and anywhere.

Instructors too have scope for greater interaction as they are no more under any constraints of communicating during office hours and by mails. They also are able to answer student's questions once for all students to see thereby saving their time and energy and also are able to manage class related announcements and resources shared easily.

SCOPE

It acts like a single platform for all discussions, queries and notifications related to a course. This will provide an additional advantage to the traditional lecture based and office hours system. It acts like a real-time any-where, any-time type of a platform. This will allow students and faculty to interact from anywhere real time thereby enabling distance learning as well. It also provides a means for collaborative learning for students. It supplements online learning with an additional platform for online discussion. Faculty will find it easier to manage queries, post assignments and reference material. It has a lot of scope for future as the Educational Industry is increasingly moving online, generating commercial benefits as well.

Limitations:

It is not a platform where students can submit assignments. It does not allow video content based material to be posted. Real time collaborative Document editing facilities is also not available. Posts can only support limited file types with support for software like LaTeX also missing.

INTRODUCTION

Existing System:

The present system which we have been using for a lot of our courses is Google Classroom.

Disadvantages-

1. Searching of particular information is critical, there is no such feature.
2. A single thread for all class related announcements and student queries making it very cluttered and confusing to look through.
3. Not user friendly in terms of holding discussions and collaborating.
4. No provision for live chat.
5. There is no such feature to conduct topic wise discussion.

- 6.Students can't filter through their earlier questions and doubts.
- 7.No statistics of participation is provided.
- 8.A single place for both assignments and class related resources making it very difficult for students to search and locate.
- 9.No option to follow any post and receive any updates.

Proposed System:

Our proposed Student Learning System aims to give students and teachers better experience than the existing system in terms of holding discussions and conducting classes.

There are obviously many advantages of this system to the student as well as the teacher.

The system after careful analysis has been identified to be presented with the following modules

Overview –

- * Student Registration : Teachers can register a student for a specific Program.
- * Q&A platform : Provides a forum for discussions and queries anytime and anywhere.
- * Course Handling : Centralized Platform making class related announcements, posting assignments and class related resources.
- * Authentication :Students are authenticated by the system before being permitted into a course.
- * Record Storage :The user information files(students and teachers) should be stored in centralized database which can be maintained by the system.
- * Administration Access: Administration would be able to keep an eye on the records of students and teachers.
- * Statistics : Includes statistics of student participation.
- * Live Chat : A live chat option is provided between students and instructors.
- * Notifications : Students and teachers can get notified if they are following a post.

Advantages for Students:

1.Anytime and Anywhere:

Students can now easily and quickly get answers from their classmates and instructors anytime and anywhere-even at 2AM working alone in their room.

2.Search and Notifications:

Search feature makes it easy to quickly locate relevant posts. Forum facilitates tagging and categorizing posts.

Students can also now get notified if they are following any discussion or if there is an update to their query.

3.Anonymity:

Our platforms allows students to participate anonymously, to encourage participation from the shyest students

4.Encourages Collaborative Learning

This forum now provides an easy way for students to collaborate with instructors and other students.

Students in the course have the opportunity to benefit from the questions posed by other students in the class.

Advantages for Teachers:

1.Ease of Out-of-class communication:

It becomes easier for teachers to handle out-of-class communication.

A lot of instructors receive queries through mails and they can be repetitive in nature. This platform makes it easier to handle all queries as everything is on a single platform and it also becomes easier for teachers to handle doubts as if they answer once it is there for everyone to see.

2.Ease of Course Handling:

Our forum provides a centralized platform for class related announcements, class assignments and resources.

It becomes very easy for faculty to manage what they have announced and posted as everything is on a single platform.

3.Effective Communication:

Another advantage to the teacher is that they have time to respond to

student communications in the forum, which gives the teacher a chance to construct the best possible response to the student. Instructors can receive/send private messages from/to students on more sensitive subject matters. Instructors can also now correct incorrect advice received by students from their peers.

FUNCTIONAL REQUIREMENTS

Functional requirements of our system are explained below.

- Users must have valid User ID and password to login thus creating their individual profiles.
- Administration can register new teachers.
- Faculties can upload assignments, announcements in various formats as in pdf, power point presentation etc.
- Students can edit questions and answers wiki-style.
- Questions and posts needing immediate action are highlighted
- Instructors can respond to questions and endorse a student's answer.
- Instructors can allow students to participate anonymously.
- Highly customizable online polls.
- Statistics that help instructors monitor participation, identify top contributors, and adapt teaching strategies
- Student can send any application to the administration for any query.
- Students can comment on answers or post follow-up inquiries.
- Platform can be accessed by students and instructors 24/7.
- 1Students can search through posts on the platform.
- Platform supports tagging and categorizing of posts.

NON-FUNCTIONAL REQUIREMENTS

- Performance:
Performance requirement by the user side is, web application should be developed as a lightweight web app so that it can work on almost any platform even with slower internet connections. Expected number of simultaneous user should be at least 100. System should be able to deal with 100 users at the same time.

Also database of the system should handle at least a thousand of users at any periods.

- **Availability**

The system is made to be available at all times, meaning the user can access it using a web browser, only restricted by the down time of the server on which the system runs.

- **Security**

Secure access of confidential data (user's details). All users should be authenticated before granting access to the Platform. Teacher registration facility is accessible by administration only. All users should have access according to their respective authorization privileges. Student should be enrolled in a course before accessing its materials, viewing posts and participating on the Q&A platform.

- **Portability**

Portability means running on most number of different platform without an additional effort. To achieve this, web application is developed by using the common technologies and tools which are provided by all common web browsers and operating system such as HTML5, JQuery etc.

- **Usability**

The app is easy to handle and navigates in a most expected way with no delays. A user help guide is also constructed to give the user a complete documented version of what the app is and how can he/she make it useful to the extreme levels

SOFTWARE TOOLS

- I.Database server - MongoDB
- II.Client - Any web browser
- III.Dev Tools - VS code
- IV.Programming Language - JavaScript
- V.Server-Side Scripting - Node.js
- VI.Frontend Library - React.js
- VII.Backend Framework - Express.js

DEPLOYMENT

Operating System Server - Windows, Linux, Unix

HARDWARE SPECIFICATION

- Processor - Intel Core i3 equivalent or above
- RAM - 4GB or above
- Storage –100GB SSD/100GB HDD or more

NETWORK REQUIREMENT

Reccomended-

- Bandwidth greater than 500kbps
- Latency under 100ms