DIGI-CLASS

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Abstract: A virtual classroom app, is an online classroom that allows participants to communicate with one another, view presentations or videos, interact with other participants, and engage with resources in work groups. A virtual classroom allows both learners and instructors around the world to participate in live classes to collaborate and interact. MOOC programs like Coursera are a great example of this concept in action.

The rate of technological progress has brought the field of online education a long way since our original article. While the characteristics we discussed remain relevant, more have come to the fore. Even a few years ago, having a mobile-optimized virtual classroom wouldn't have been a requirement. But times have changed, and if your learners can't access your course from their mobile devices, both of you are missing out.

Index Terms – Flutter, Dart, Firebase.

I. INTRODUCTION

DIGI-CLASS is an application that provides many facilities such as assignment submissions, online conferencing, online attendance system, remainder of assignments for students, grade book to view student's grade etc. It will make easier for teachers to carry out learning activities; the intended learning is not only in class, but also outside the classroom because students can learn wherever and whenever by accessing DIGI-CLASS. DIGI-CLASS combines all of the essential tools for assignments, feedback, and communication in one easy-to-use android platform. DIGI-CLASS is to offer a platform of blended learning in schools in order to simplify creating assignments and getting the grade out to the students in a paperless way.

II. RELATED WORK

[1] *M.R.M. Veeramanickam, M. Mohanapriya, Research paper on E-Learning Application Design Features using Cloud Computing & Software Engineering Approach,*
In this paper, application system model needs to be developed in order to measure the application efficiency level of cloud computing-based e-learning application solutions. In the near future, cloud computing will have a larger impact on the educational organization and virtual classroom learning environment. This paper presents concludes importance issues in e-learning application design model. In which it deals with various designs features like social learning model, need of cloud model, importance of web user interface…etc., apart from that we can do research to include expert system like AI Tools, NLP tools and way to integrate internet of things in e-learning model. Etc. So, we can achieve modern smart e-learning application with every advancements feature. Smart E-learning application model research will give way to implement in real-time for various colleges and university to improve their smarter way of teaching & learning standards.

[2] *Chandra Bhushan Kumar, Anjali Potnis, Shefali Gupta, Video Conferencing System for Distance Education,*
In this paper, real time video conferencing system for distance learning using the concept of camera control over the Internet is proposed to provide real environment of actual class at remote distant class. Use of Kinect Sensor is proposed for continuous tracking and automatic adjustment of video capturing device so as to maintain focus on faculty. Use of video splitter and video switcher/Video mixer create an excellent interface between faculty and students of remote class. With this interactive system, the faculty can get the valuable feedback of students and thus creating a feeling of actual class environment. When comparing with conventional video conferencing system the proposed system is more effective with a smaller number of resources used and at the same time, it is more reliable too. Our future work will be including optimized geometric approach for face detection and recognition.

III. METHODOLOGY

1. Analysis

• The system offers UI for Professor and Student, where professors & can access various e-learning features.

• It helps students and professors to maneuver throughout the application flexibly and efficiently.

• We have also provided a system which will allow professor to take submission through this application.

• DIGI-CLASS is to offer a platform of blended learning in schools in order to simplify creating assignments and getting the grade out to the students in a paperless way.

Advantages:

- In this system, the professor can be able to take attendance during online lecture's
- Video conferencing will allow professor to present their screen and recorded the online lecture.
- Students can view their grades, pending assignments, notices, notes etc.

2. Technology used

I. Framework: Flutter

Flutter is Google's UI toolkit for building beautiful, natively compiled applications for mobile, web, and desktop from a single codebase. Flutter is an open-source mobile SDK developer can use to build native-looking Android and iOS applications from the same code base.

The central idea behind Flutter is the use of widgets. It's by combining different widgets that developers can build the entire UI. Each of these widgets defines a structural element (like a button or menu), a stylistic element (a font or color scheme), a layout aspect (like padding), and many others.

Flutter also provides developers with reactive-style views. To avoid performance issues deriving from using a compiled programming language to serve as the JavaScript bridge, Flutter uses Dart. It compiles Dart ahead of time (AOT) into the native code for multiple platforms. That way, Flutter can easily communicate with the platform without needing a JavaScript bridge that involves a context switch between the JavaScript realm and the native realm. As you can imagine, compiling to native code also boosts the app start-up time.

Today, Flutter is the only mobile SDK that offers reactive views without the need for a JavaScript bridge. That's why so many mobile developers have been trying it out in their projects.
Here are some more benefits Flutter brings to mobile software development.

II. Database: Firebase

Fire base is real time database that enables you to store, sync and query app data at global scale. Realtime syncing makes it easy for your users to access their data from any device: web or mobile, and it helps your users collaborate with one another. Firebase is built on Google infrastructure and scales automatically, for even the largest apps. Firebase gives you functionality like analytics, databases, messaging and crash reporting so you can move quickly and focus on your users.

Firebase is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. There's really no limit to the types of apps that can be helped by Firebase products. There are only limits to the platforms it can be used on. iOS and Android are the primary targets for the Firebase SDKs, and there's increasing support for web, Flutter, Unity, and C++. You should also know there's an Admin SDK available for a variety of languages, to be used with any backend components you might require. On top of those SDKs, there's a library called FirebaseUI (Android, iOS, web) that provides a bunch of helpful utilities to make development with Firebase even easier. And there are also projects such as AngularFire that wrap the web SDKs for use with Angular. These are open source. Firebase likes open source.

Firebase Hosting is a secure, global web hosting CDN (Content Delivery Network). It's really good at quickly delivering static content (HTML, CSS, JS, images) using servers that are close to your users. And you can get it set up quickly, with or without your custom domain, along with a provisioned SSL certificate that costs you nothing.

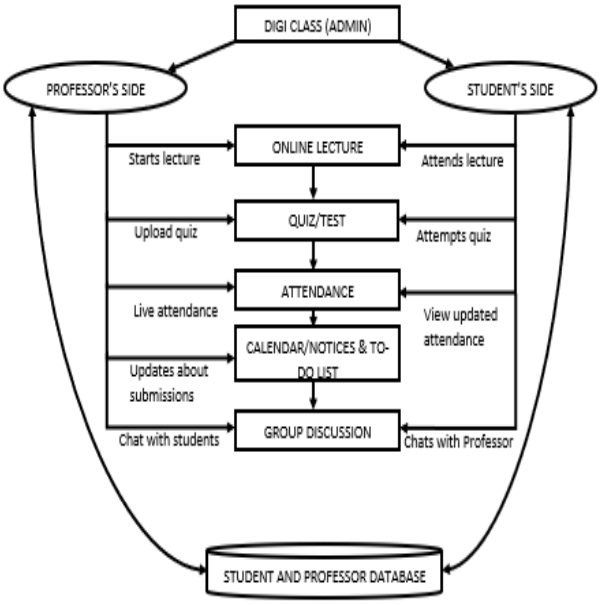
III. Language: Dart

Dart is a client-optimized programming language for apps on multiple platforms i.e., IOS, android and also for desktop apps. Dart programming language is an open-source general-purpose programming language and it is originally developed by Google. Dart is an object-oriented language with C-style syntax which can optionally trans compile into JavaScript. A classic example of dart is Gmail -i.e., when you click on a message in your inbox, browser stays on the same webpage, but JavaScript code hides the inbox and brings the message body on screen.

One of the most interesting features of Flutter is the language it uses: Dart. Like other systems that use reactive views, Flutter refreshes the view tree for every new frame. To accomplish that, it creates many objects that may live for no more than one frame. Dart uses generational garbage collection that has proven to be very efficient for this type of systems.

Moreover, Dart has a "tree shaking" compiler that only includes the code you need in your app. Even if you need just a widget or two, you can use its large library of widgets freely. Finally, Dart comes with a repository of software packages for extending the capabilities of apps. For example, it offers a few packages that help to access Firebase so that developers can build serverless apps. Another package allows accessing a Redux data store or makes it easier to access platform services and hardware like the camera.

3. Design (Block Diagram)



- The app will consist of two side one professor's side login and another student's side login
- As shown in block diagram, professor can start the lecture, upload the quiz, attendance during online lecture; professors can also post notes, notices, assignments etc.
- Whereas students can join the lecture through link provide by professors or by code generated for lecture and also, students can attempt for quizzes and upload assignments.
- A chat room is providing for student-professor discussion.
- And lastly the database for students and professor's which will be built in firebase.

4. Features

• Video Conferencing:

Audio and video conferencing System is a New growing technology and its already introduced in 3g and 4g mobile phones. The innovation in audio and video conferencing equipment has increased the significance of connected and collaborative work space. Video conferencing is the ability to use a live video stream obtained from a PC camera that streams through the network to all of the members. Audio and Video conferencing system is a two-way synchronous communication of sound and vision. Using this project, people in different places can see and hear each other in real time.

In this feature professors can start a secure video lecture in which they can present their screen, also this feature allows screen recording such that the video recorded will be provided later to the students.

• Assignments:

Assignment panel will allow professors to assign assignments to students and thereafter students can post the given assignments as completed work. It also allows to set a due date for assignments.

Submit assignments. Each assignment has a “Submit” field, which is actually a reverse ref to another table I’ve included in the app. Clicking “View” allows the student to view past work they’ve submitted for that assignment. Clicking “New” takes users to a new page where their names are auto filled in (because we’ve required user authentication).

• Discussion (chat room):

Getting students to join in class discussions is difficult enough. It can be even more trying to encourage discussion online – outside of the actual classroom. That’s why e-learning usually lacks interaction, engagement and motivation. But this can be changed with some modifications and with the help of useful tools for online discussion board.

• Quizzes/Test

The system will assimilate the examination by providing it online and listing options as answers. User will be able to select answers in timely fashion. Also, he would be able to see status as we well as summary. After submission, system will check the scope and will present it along with explanation.

It will allow professors set mcq based test which will be having a particular timer. Also, it can contain a message box for theory test.

• Attendance

Attendance monitoring is essential in all lecture or during online lecture for checking the performance of students and it is not an easy task to check each and every student is present or not. Most commonly, attendance is taken manually by calling their register numbers or names and noted in attendance registers issued by the department heads as proof and in some organizations the

students want to sign in these sheets which are stored for future references. This technique is repetitive, complex work and leads to errors as few students regularly sign for their absent students or telling proxy attendance of the absent students. This method additionally makes it more complex to track all the student's attendance and difficult to monitoring the individual student attendance in a big classroom atmosphere.

• Notes

In this panel professor can upload notes for students. The notes can be of any format pdf, ppt, doc etc. and also allows to upload the recorded lectures.

• To-do list

It will provide pending works of students and also list of work completed by student.

• Notices

It will provide pending works of students and also list of work completed by student.

• Grade book

Grade book will contain grades given by professor to student for ASSIGMENTS or for a particular subject. Grade book will be in table format. Number footnotes separately in superscripts.

IV. FUTURE SCOPE

A virtual classroom enables students to access quality teachers anywhere on the planet so long as they both have a reliable internet connection. This can break down most of the common barriers to synchronous learning: cost, distance and timing. In many ways, an online classroom simply mirrors the physical classroom. In a physical classroom, the student needs to be able to see & hear the teacher, see & hear the other students, have a good view of the whiteboard and their own learning materials. In a virtual classroom, a student can see & hear the teacher via the video/audio stream. The online whiteboard allows teachers to explain ideas visually and work through exercises collaboratively.

• Video conferencing ability (so teachers and students can see each other)

• Audio conferencing (so participants can hear each other)

• Real-time text chat

• Interactive online whiteboard (so users can interact on the same online page).

• Library of learning materials (essential for providing more structured lessons)

• Teacher tools and controls (just like in a physical classroom)

V. CONCLUSION

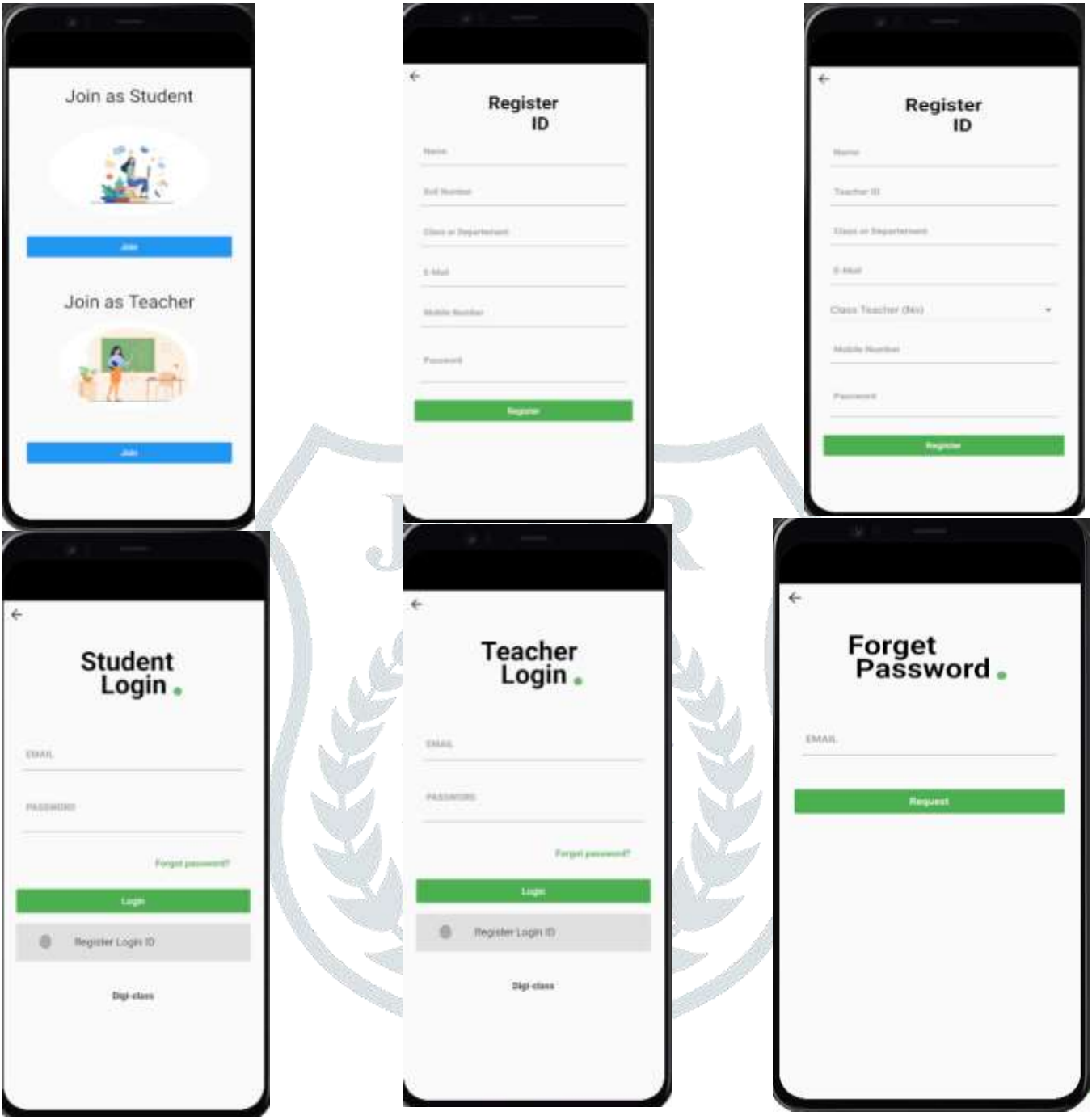
Application will assure the flexibility and ease for users. The system will provide a real time database for different users. It serves a variety of purposes, making presentations powerful tools for convincing and teaching. Digi-Class has tools that can be used as demonstrations, lectures, speeches, reports, and more. It serves a variety of purposes, making presentations powerful tools for convincing and teaching

VI. ACKNOWLEDGMENT

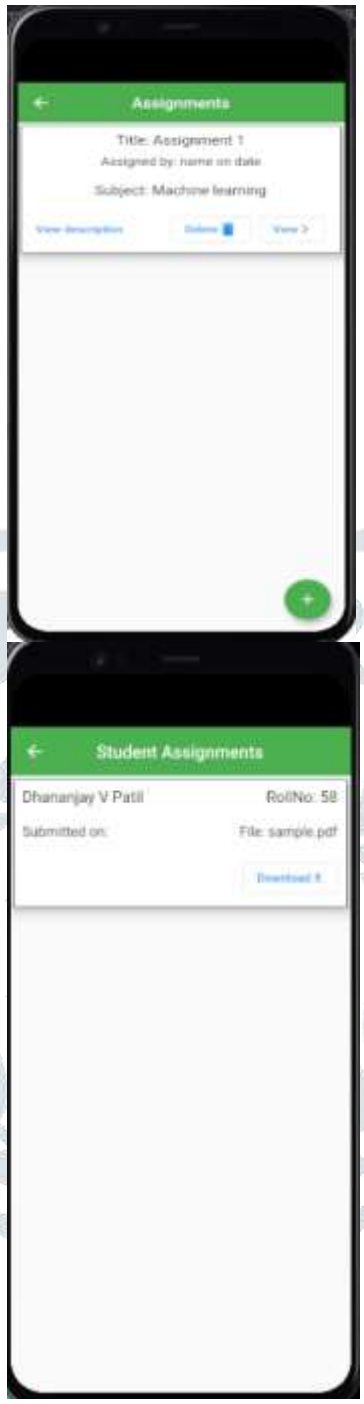
Prof. Ziany Alpholicy X, directed the creation of this project. Her extensive knowledge of Machine Learning and Computer Vision has given us a greater understanding of the application development process.

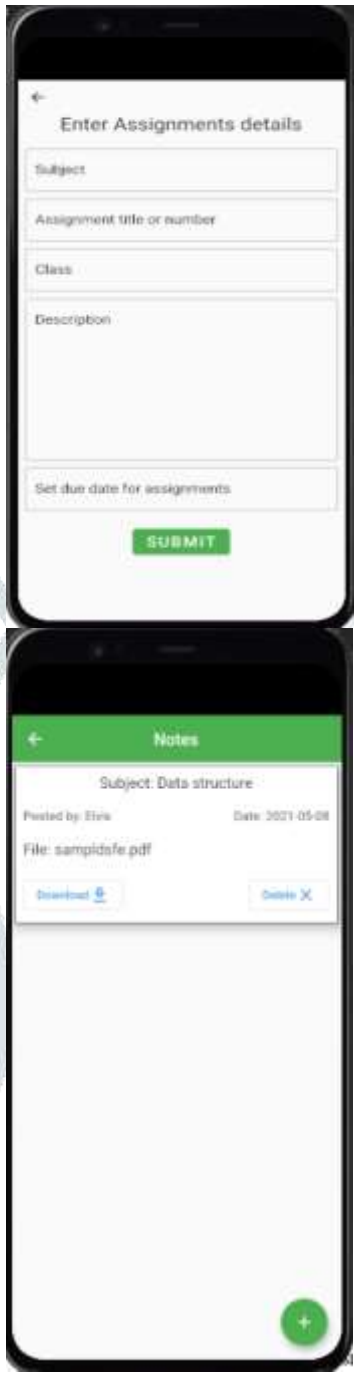
VII. OUTPUT

1. Login, Registration, Forgot password



2. Teacher Side






Student Leave
Dhananjay V Patil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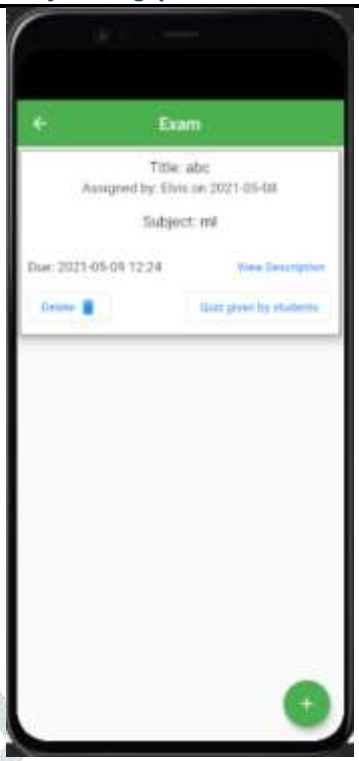
To: 2021-04-20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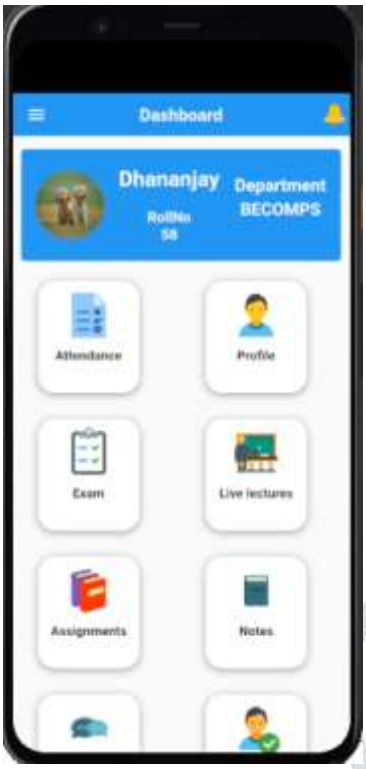
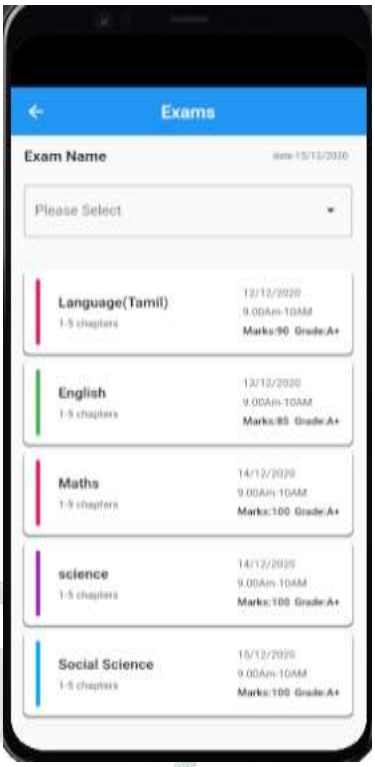
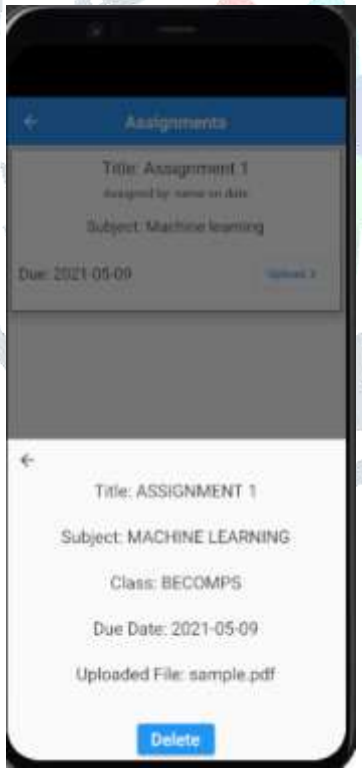
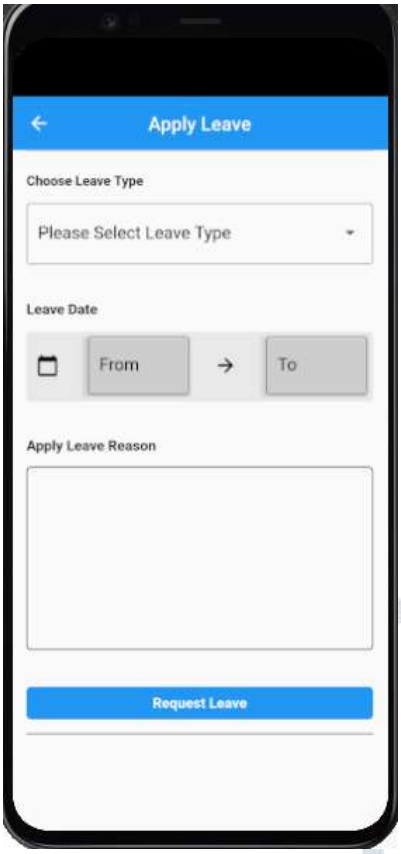
CREATE QUIZ
Quiz Title
Quiz Description
Subject
Class
Due date
Create Quiz

3. Student side









VIII. REFERENCES

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