COURSE ASSISTANT FOR EDUCATOR

- Streamling the teaching process

PROJECT SYNOPSIS – 1 [BTCS603]

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE & ENGINERING

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Introduction

Course assistant for educators is a software which will be majorly built using Java and Android-XML. The IDE for Android development is provided by Google and JetBrains - Android Studio. TravisCI has been used for integration, Android API provided by Android Studio IDE through SDK tools has been used. SQLite will used as Database and Firebase has been used for authentication, receiving feedback from users and tracking the application usage. Gradle build tool has been as the build automation software. Material Design Guidelines have been referred for UI creation.

This application is basically designed for the educators or the private tutors who can uses this app for : User registration , Add course , Record Attendance, Add Marks , Add Project Deadlines, Display marks and attendance percentage , Search by student in list of students , Sort in list of students and many more features.

Android Studio provides a unified environment where you can build apps for Android phones, tablets, Android Wear, Android TV, and Android Auto. Structured code modules allow you to divide your project into units of functionality that you can independently debug , test and build.
Android software development is the process by which applications are created for devices running the Android operating system. Google states that "Android apps can be written using Kotlin, Java, and C++ languages" using the Android software kit.
The Android platform allows developers to write managed code using Java to manage and control the Android device. Android applications can be developed by using the Java programming language and the Android SDK. Therefore in this project , Java will be used for android development.

This App is basically for the Educators or the teachers here starting from User Registration ,Users can register using any Email account. Firebase authenticates and

tracks users. User can add assignments , homework and keep the track of the students by recording of the attendance. Add Course , Course can be added along with course name, course code, student count, CR and TA contact details. You can add marks details of the student – record in sem and end sem marks of the student. Student details will show the attendance and the marks of the student . Now coming towards the next feature of this application is the contact option where you can have the access to frequently contacts where user can contact the CR OR TA . Next feature available is to Add Project Deadlines ,Users can set project deadlines. Then user can Display Marks and Attendance Percentage that means user can view marks and attendance percentage. Search by Student Attendance and marks will be displayed student-wise. Feedback can be sent by users. This data is recorded using Firestore provided by firebase. Contact us: This allows the user to contact the management team directly. View deadlines: This allows the user to view all the project deadlines.

SQLite has been used as Database and Firebase has been used for authentication, receiving feedback from users and tracking the application usage.

SQLite has been used as Database because SQLite is an in-process library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine. The code for SQLite is in the public domain and is thus free for use for any purpose, commercial or private. SQLite generally runs faster the more memory you give it.

Firebase has been used for authentication , receiving feedback from users and tracking the application usage because Firebase provides such flexibility with a custom authentication system. By modifying your authentication server, a custom signed tokens will be produced when a user successfully signs in. Your app receives this token and uses it to authenticate with Firebase.

This software is majorly built in Java and Android-XML because the android build system created R.java file which contains your xml ids and other xml declaration . the java file can access the views in the xml by referring to R.id,R.string etc . basically its like a address of the xml view which you can refer from java. In Android, the XML is used to implement UI-related data, and it's a lightweight markup language that doesn't make layout heavy. XML only contains tags, while implementing they need to be just invoked. Java has platform independent feature so it is used for android development. Large java developer base enables to develop a lot of android apps fast so it is based on java.

Problem definition

There are several educators who need to keep the track of the students and keeping the track using the registers , using pen / paper etc is now outdated. Nowadays Schools and colleges have introduced the their own personal software where the course details , student details , assignments etc can be added by the professors , but still there are several schools/ colleges and private educators who take private tution still uses the traditional way of keeping the records of marks and attendance, giving reminders of deadline of assignments and so on.

So , This software will be basically helpful to all these educators that is why the name of the project has been chosen as Course assistant for educators. This software will act as assistant for the educators where the technology can be used for keeping record of marks attendance percentage , giving assignments , contacting the CR ie the class representative.

Following are the features that will be added in this software :

1. **User Registration** -Users can register using any Email account. Firebase authenticates and tracks users.
2. **Add Course** - Course can be added along with course name, course code, student count, CR and TA contact details.
3. **Record Attendance**- Attendance can be recorded. This data is stored in SQLite DB.
4. **Contact CR/TA** - An email with a pre-defined template can be sent via Gmail.
5. **Feedback**- Feedback can be sent by users. This data is recorded using Firestore provided by firebase.

6. **Add Marks**- Add in-semester and end-semester marks
7. **Add Project Deadlines**- Users can set project deadlines
8. **Display Marks and Attendance Percentage** - User can view marks and attendance percentage
9. **Search by Student**- Attendance and marks will be displayed student-wise.
10. **Sort in Student List** -Sorted list of students will be visible
11. **Document Similarity**- Two documents can be tested for plagiarism (using Cosine similarity algorithm).
12. **View Attendance for a Day** - Attendance for a day will be visible

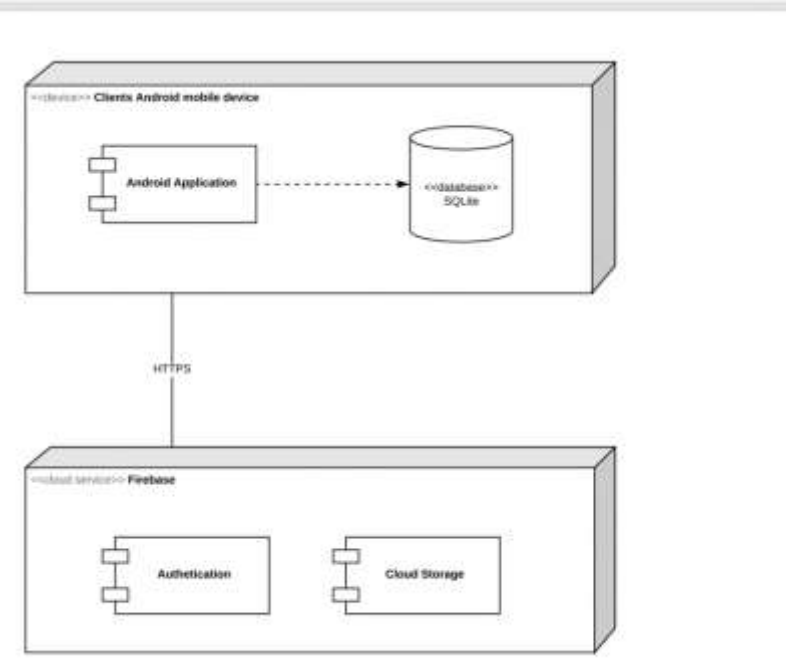
So this project starts with the User registeration . Internet connectivity is a must for registration. An error screen appears otherwise. Screenshots below show what appears in case of new registration and old users.And then one is supposed to add the course.Once, the course is added and on choosing a course, and Attendance can be recorded for a course. CR/TA can be contacted using email completely rendered by the software to save time and effort. Any application can be used to send email.

And feedback of the user can also be recorded.

Therefore , this software will save the time and effort of the educators and hence making it more simplier to keep the records and upload the necessary information. Basically the traditional way can be replaced by the adaptation of this kind of software by the educators .

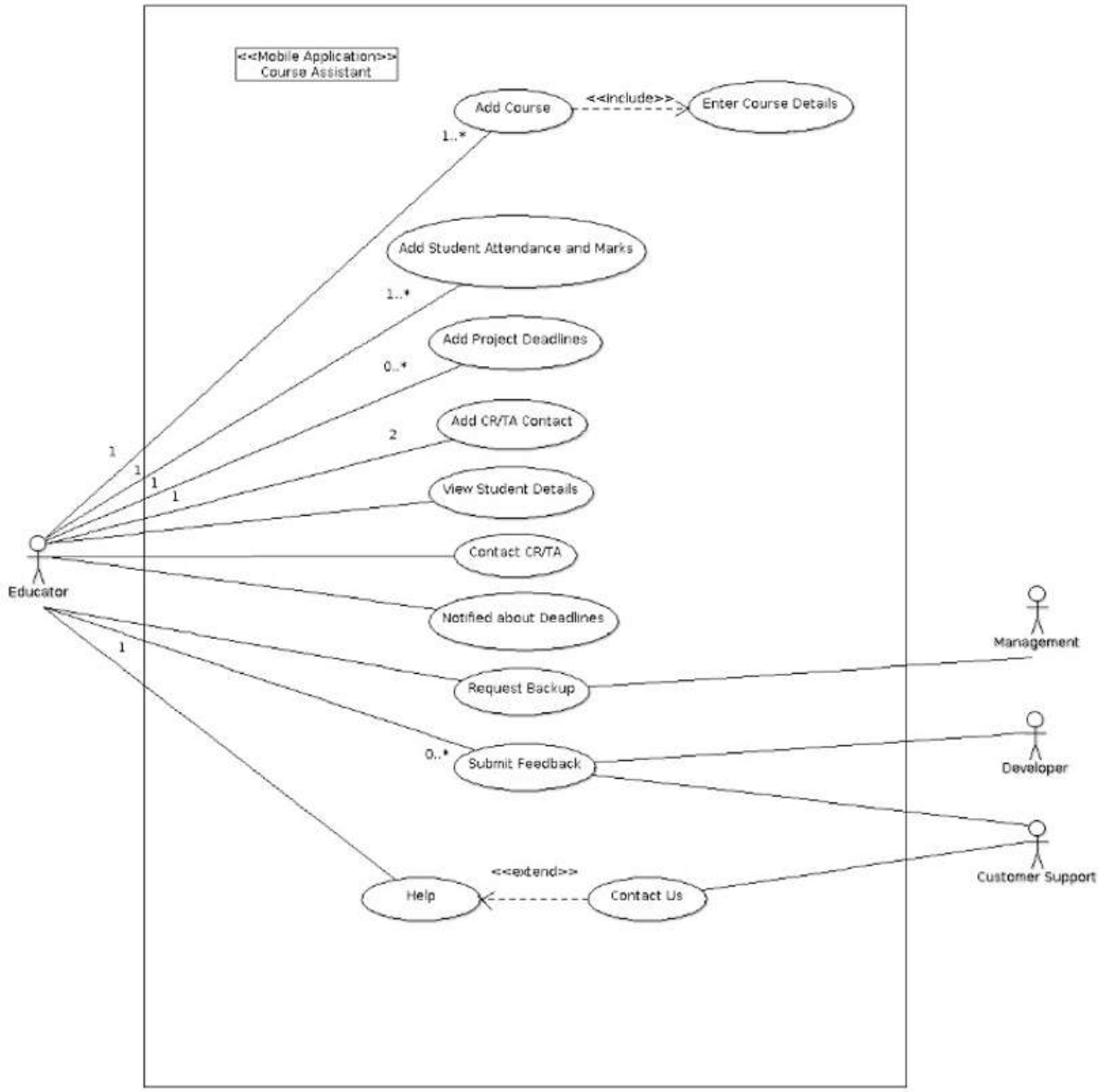
METHODOLOGY

- This software will use the IDE for Android development is provided by Google and JetBrains - Android Studio. Android Studio is the official integrated development environment (IDE) for Android application development. It is based on the IntelliJ IDEA, a Java integrated development environment for software, and incorporates its code editing and developer tools.
- TravisCI has been used for integration, Android API provided by Android Studio IDE through SDK tools has been used. SQLite has been used as Database and Firebase has been used for authentication, receiving feedback from users and tracking the application usage.
- Gradle build tool has been as the build automation software. Lastly, Git has been used as VCS. Material Design Guidelines have been referred for UI creation



Following diagram shows the basic working of this software :

User first need to register through email and then can easily access to the features offered by this software but internet connectivity is must for user registeration.



Software Requirements Specification Document

Purpose :

The main purpose of this project " Course assistant for educators" is to provide them with a software that can assist them with their respective course. This software will act as assistant for the educators where the technology can be used for keeping record of marks attendance percentage , giving assignments contacting the CR that is the class representative , keeping the backup and so on. Hence, this software will save the time and effort of the educators and hence making it more simplier to keep the records and upload the necessary information. Basically the traditional way can be replaced by the adaptation of this kind of software by the educators .

Project Scope :

Project developed will be user friendly , flexible , secure and platform independent which means even if the project is developed on windows but it could be run on Linux, Unix, and Mac we do not need to change it, we can run this code on any platform. All you need is an IDE for Android development is provided by Google and JetBrains - Android Studio. This software will be basically helpful to all these educators that is why the name of the project has been chosen as Course assistant for educators. This software will act as assistant for the educators where the technology can be used for keeping record of marks attendance percentage , giving assignments , contacting the CR that is the class representative and so on.

Environmental Characteristics :

The following information is intended to provide a starting point for setting up your system:

Minimum hardware requirements (windows)

- 4GB RAM minimum (3GB for the Android Studio and 1GB for the Android Emulator), 8GB recommended.
- 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
- 1280 x 800 minimum screen resolution
- x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor.

Minimum Software Requirements

The official Integrated Development Environment (IDE) for developing Android Apps is Android Studio, which Google supports. Java was replaced by kotlin on May 7, 2019, as a preferred language for developing Android Apps. But still, Java is being used for developing Android Apps. Android Studio 3.6.1 has the following features.

- Gradle-based build support.
- UI components can be created by drag and drop features in the layout editor.
- Common Android designs and components can be created by Template-based wizards.
- Built-in support for Google Cloud Platform enabling integration with Firebase Cloud Messaging (Earlier 'Google Cloud Messaging') and Google App Engine.
- Lint tools to catch performance, usefulness, version compatibility, and other problems.

Operating Environment:

This project will be developed on windows operating system , but this doesn't means that this project can't be developed on other operating system. Android studio can be installed easily on MAC , LINUX and even CHROME OS . The only condition is that your system must satisfy the requirements.

For example: for MAC-

- MacOS® 10.14 (Mojave) or higher
- ARM-based chips, or 2nd generation Intel Core or newer with support for Hypervisor Framework
- 8 GB RAM or more
- 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
- 1280 x 800 minimum screen resolution

Functional Requirements :

This project Prerequisite is To learn Android Studio,and You must have the basic knowledge of Java programming language.

The following table shows the name of the features to be implemented in this project along with its description :-

NAME	DESCRIPTION
User Registration	Users can register using any Email account. Firebase authenticates and tracks users.

Add Course	Users can register using any Email account. Firebase authenticates and tracks users.
Record Attendance	Attendance can be recorded. This data is stored in SQLite DB.
Contact CR/TA	An email with a pre-defined template can be sent via Gmail.
Document Similarity	Two documents can be tested for plagiarism (using Cosine similarity algorithm).
Feedback	Feedback can be sent by users. This data is recorded using Firestore provided by Firebase.

Product Perspective :

The product will be developed in the Android Studio due to the following reasons:

Faster Coding And Quick Iteration

Being powered by the IntelliJ IDEA, this IDE provides fast code completion time and instant evaluation of the workflow. There are certain features of Android Studio, such as code push for changes and a great code editor for optimized coding output.

Fast And Feature-Rich Emulator

The Android Studio comes with an Emulator that helps start the entire app faster than the actual device. The emulator, by allowing you to test the app across multiple devices, including phones, tablets, Android Wear, and Android

TV, can simulate several different hardware features like GPS, multiple touch inputs, motion and acceleration sensors, etc.

Firebase Support & Integrated Cloud

Android Studio comes with Firebase Assistant that allows connecting any app with Firebase server besides adding many essential services such as app analytics, authentication, notification messages and several others.

Layout Editor

Android Studio provides a visual drag and drops editor tool for working with XML files. This helps to create an entirely new app layout with ease.

Pre-Built Templates

Android Studio comes loaded with several sample projects and different code templates to guide developers with time-tested design patterns for their new app projects.

Non functional Requirements :

Non functional requirements can be just as important as functional ones.

These include Performance , Safety , Security, Quality and Maintenance of the project.

Design:

Material Design Guidelines have been referred for UI creation. · Material is an adaptable system of guidelines**,** components, and tools that support the best practices of user interface design. Backed by open-source code, Material streamlines

collaboration between designers and developers, and helps teams quickly build beautiful products.

Android provides the following features to help you build material design apps: Material theme and widgets. To take advantage of the material features such as styling for standard UI widgets, and to streamline your app's style definition, apply a material-based theme to your app.

Implementation constraints:

The main constraint is that your system must specify the hardware requirements to download Android studio on your system. This software is fast , easy to use and time saving as well. . The IDE for Android development is provided by Google and JetBrains - Android Studio. TravisCI has been used for integration, Android API provided by Android Studio IDE through SDK tools has been used. SQLite has been used as Database and Firebase has been used for authentication, receiving feedback from users and tracking the application usage. Gradle build tool has been as the build automation software.