

EDSAT: Software Application.

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ABSTRACT

EDSAT is designed to help teachers and student communicate and collaborate, manage assignments paperlessly and stay organized. EDSAT is developed in terms of mobile as well as desktop application which provide large scale accessibility which will soon available or open to software community to get user level feedbacks.

EDSAT classroom can work in unidirectional process as it can serve the teachers strategies and styles on one hand and student perception, understanding, and effective participation in different classroom skills on the other hand. The acceptance of EDSAT or any other related software is affected by different factors. This study helps the decision makers of the higher educational institution to have a better understanding of the effectiveness of using EDSAT by their students.

Categories and Subject Descriptors

Software Application Development. Mobile Application, Desktop Application, Maintenance, Distribution and Enhancement.

Keywords

desktop app, mobile app, virtual classroom, teacher, students, charusat, edsat.

OVERVIEW

The distance online or blending learning style of teaching offers many advantages over the traditional classroom teaching style. The most influential advantages lies in accessibility, students scheduling flexibility, and adaptability for working. EDSAT is kind of blending way of learning that that was initiated by us in 2020. It takes into consideration the achievement of specific functions such as simplifying the students-teacher communication, and the ease of distributing and grading by their teachers online within the deadlines. Similarly, teachers can have a complete vision concerning the progress of each student, and they can return work along with necessary comments so that student can revise their assignments.

Accordingly, EDSAT can be effective for both the learners and faculty members due to its features. As for the students, it provides a stream line of communication and workflow for students. Being free of paper is a crucial factor in developing learning strategies. Thus, student can keep their files more organized and need less stored paperless in a single program.

The one of the important features that app provides which really help teacher and student collaboration by creating a common chat room such that only specific student and teacher for the respected batches and subject can share, communicate and provide hand on chatting and discussion. Along with this, the app provides one to one chatting which is really helpful to achieve one to one discussion and enables the privacy mode. Now. We have discussed most of the features of this app. But the one more feature which really helps teacher is to generate a student report based on the work submission and as we said in our previous discussion that grading is also necessary after work submission by generating report teacher can judge the overall interaction of student with this app.

This is the overview of the app this app is provided on the all the platform including desktop as well as mobile.

Desktop platforms - linux, windows and mac os.

Mobile platforms – android, ios.

This app was built by considering all the factors of agile development which handles user as well developer level circumstances. There are many such application which provides this level of features but only thing to notice here is still there is no app which contain all this feature all together. There are many such application which are already in existence like google classroom, edmodo, flock, slack and many more related applications.

In further section we will discuss the mobile development and its feature as well as desktop development and its features too. We will discuss the methodology and different functions that are provided by both desktop as well as mobile application.

Mobile App Development.

METHODOLOGY

Now we will discuss how we are going to implement our above-mentioned idea. So, let's here discuss the work flow of our app. First of all there will be a login done in our app. Then after logging in there will be a home screen available where you can chat with your friends and then there is also a classroom available where you can upload your assignments and have a quick conversation with your friends and faculties. Then there also a option available to create a group of your own choice and add members according to you. Then there will be also a report generation option available where you can generate the report of yourself.

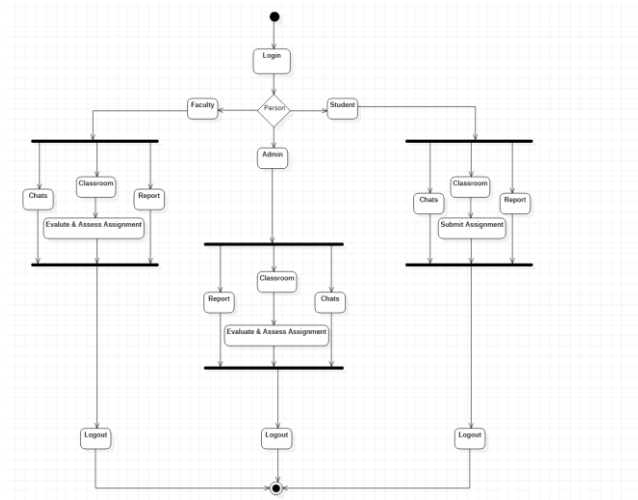


Fig. 1. Work Flow

So now, as you are familiar with the work flow of our application so let's start to discuss all the functionalities in detail.

A. Login

First of all there is always need of a user to do any task. So we are going to create a Google Sign In (SSO Authentication) in our app. Here as you might be knowing that for development of our mobile application we are going to use React Native, so in react native there is the feature available of doing SSO in login. Here after the user has logged in the account we are going to handle our whole database on firebase. Here firebase allows us to use their in-built to be used in our project. Here in firebase there are in-built available like data analytics, crash analysis and so on. Here for user to log in there is not only an requirement to have a gmail id but user must have a university affiliated mail id (in our case it is the mail id given by our university @charusat.edu.in domain).

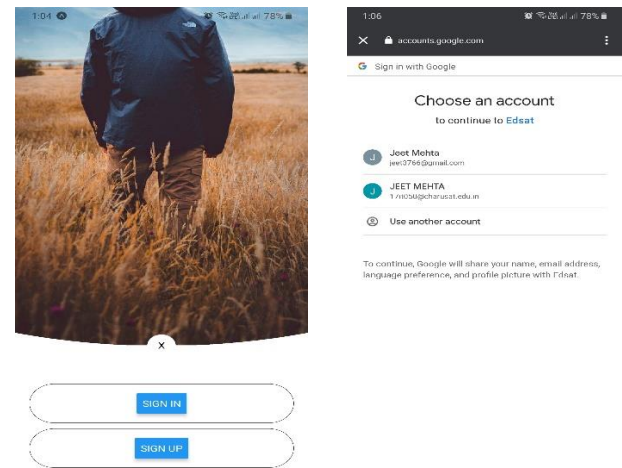


Fig. 2. Login Screen

B. HomeScreen

In this screen the user can interact with other users and have a conversation with each other. Here user can also be able to share documents with each other. Here they can also contact their respective faculty member as they want to have any help from them.



Fig. 3. Home Screen

C. Group Screen

There is also a Groups section where there are classroom created. In that the faculty members can add any assignment and see how many of them have submitted the assignment the work.

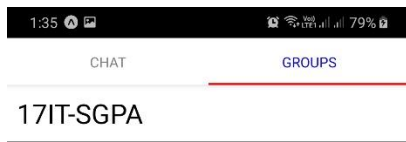


Fig. 4. Group Screen

D. Profile Screen

Here in this screen the current user can see all the details of himself available to the application. Here he can also generate the report of himself to analyze his performance report. Here the user can also logout from the app through this page.

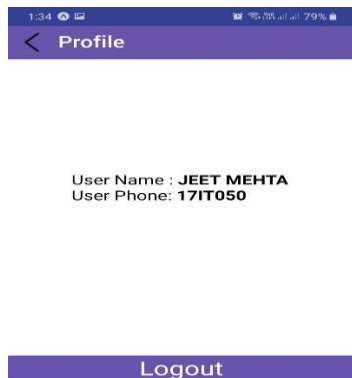


Fig. 5. Profile Screen

E. Group Creation

From this screen the user can create his own group of his choice and the user of his choice. Here the admin of group will be the person who has created the group and he have the rights to remove any person from the group.

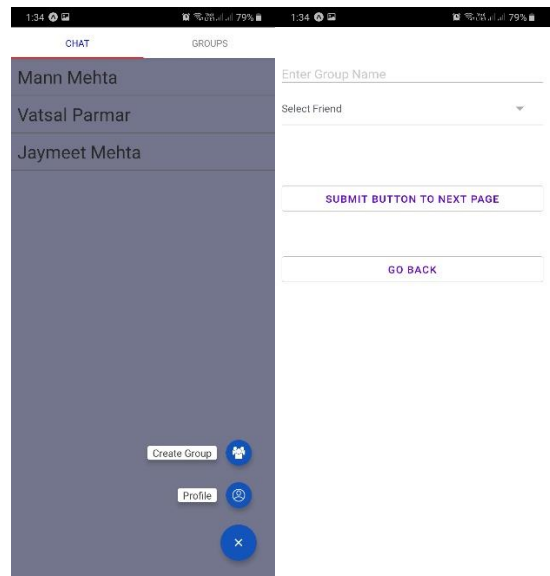


Fig. 6. Group Creation

F. Database

Now comes the heart of this project. Here the database used is firebase realtime database. Here all the data of user from signing in to chatting with his friends to file upload all are stored in this database. Firebase not only helps in creating a well structured database but it also helps us to use some of it's useful in-built features. It also helps us in creating general unique user id on it's own. It also creates a passwordhash and handles good security policy.

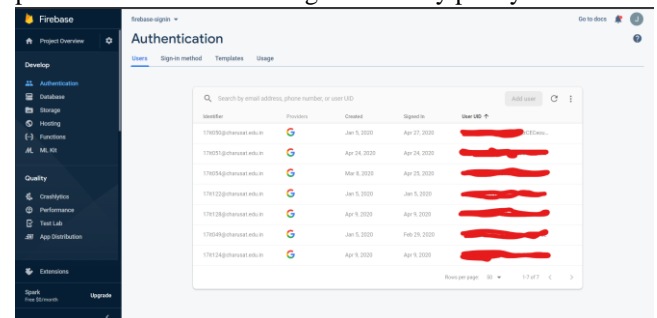


Fig. 7. Database Users

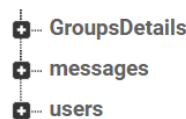


Fig. 8. Database Group & Messages

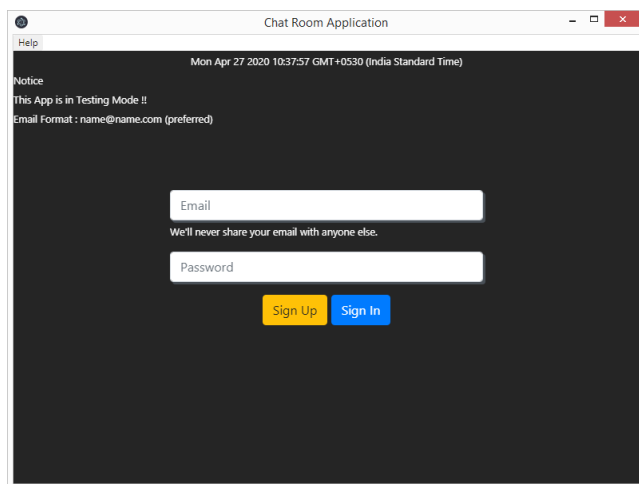
Desktop App Development

COMMON FUNCTIONALITIES

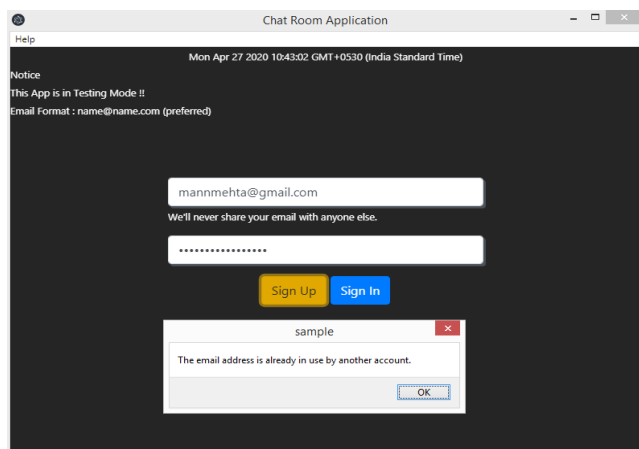
Most of the feature which are there are governed by the mobile application still, some of the functionalities which still required some kind of description which we will discuss later before that in this section we try to cover all such feature which is already included or cover in the mobile application development category.

A. Login

The most important thing either its mobile or desktop application to provide one to one authentication and secure the most of the user identity. The login is somewhat equivalent to mobile application having common database such that user can login from either mobile or desktop but still it benefited with his old works.



Here this is the main screen which provide an interface from where user can sign up or sing in himself.



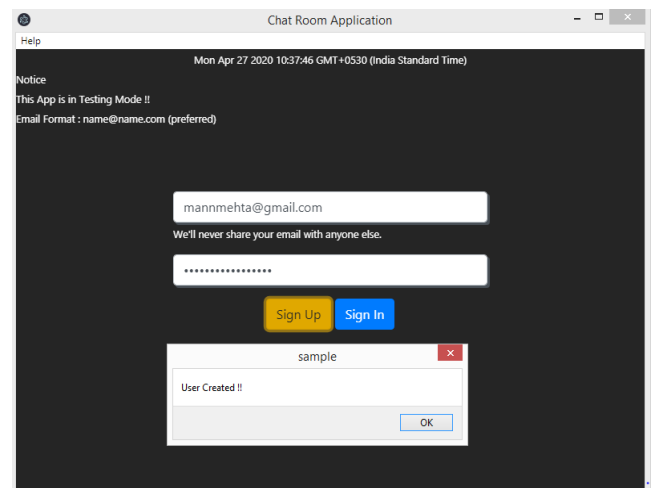
Some boundary test cases which need to be considered when we are dealing with such software's. Unique email ID per user. Such that if user try to sign up if he already signs up then at that time this case needs to be considered.

Hence in case user forget that he already signs up with this app so he gets chance to think and reauthenticate himself again to grant access to previous user identity.

B. Authentication or Registration

Before the login the most important thing to consider is user authentication and registration when he encountered with the app for the first time.

Hence once a new user authenticate himself the positive acknowledged is must to provide a user satisfaction and as we say more user interactive and user-friendly system.

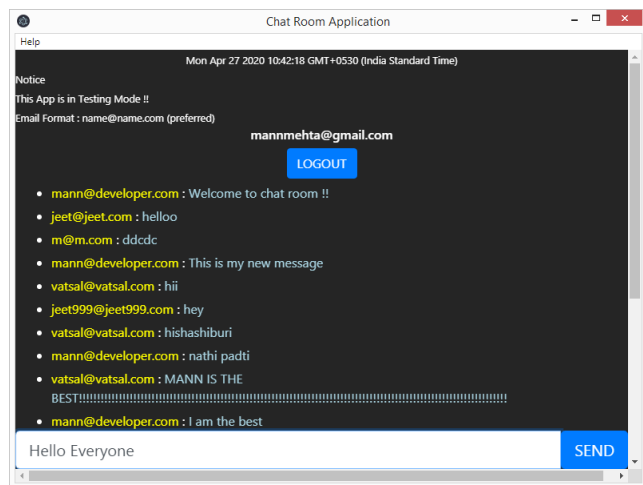


C. After Login /Chat Room

Now, we talk about the after-login part. After successful login user will redirect to the main dashboard where he can see all his work submissions, upcoming work with deadlines, new chat notifications, registered rooms or we can say classes with respect to subjects enrolled batch wise or class wise, list of faculties enrolled, also he can also visualized one to one chatting functionality too. That's the main user-friendly dashboard which provide ease to user to navigate among different screen he wants.

D. Chat Room

Also, all the functionality provided by mobile application is also included here with different GUI such that user can get different experience.



The common chatroom where different students can collaborate and communicate and discuss with their academics related issues.

Now this are the common functionalities which are common in both the mobile and desktop application. There are some features that really enhance the app in future let discuss.

FUTURE SCENARIOS

Besides the above scenarios there are many software tasks that can directly benefits from the data that EDSAT provides. Both the main functionalities can be extended further after analyzing the user experience and feedback.

ACKNOWLEDGEMENT

Special thanks to faculty guide for inspiring conversations leading to the development of EDSAT.

CONCLUSION

By developing this application we came to know how firebase works and what are the functionalities available and at what scale we can use this database. It also helped in developing new skills in react native and also helped in developing one project.

Along with this we have develop this whole desktop application using electron where we integrate firebase database which common with the mobile application. We have learn how to work in agile software development

methodology. Where we divide every task into subtask and achieve what we actually want to achieve.

There are many future that still need to be implemented such that it will go big and better among the software community. There are many such application exist but no application provide all this features in altogether this is thing which app this app more user friendly and unique among all.

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