TracIT- Android based edu-tech app made using Flutter

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ABSTRACT

COVID-19 put a halt on daily activities and routines. It is no surprise that one of the most pandemic-affected sectors includes education. Studying online and also maintaining records became a tedious task for students and teachers and managing this gave no time to think about the post pandemic situation.

Even before the Lockdown, another problem that was faced by students, visitors to a campus was least knowledge about it. Be it the shortest way to reach an office or know where a particular professor is. A college prospectus or brochure will be a time consuming option for a guest to know about the campus. What if a map came to life? Or you get a personal ussure to let you know everything about the campus and maintain records right in your pocket?

TracIT is an android based application that does the same. It is made using flutter and Dart plugin and Firebase as the database. It provides a platform to keep track of all the academic records for students and provides a chat bot that answers all the questions about the campus. Chat bot is deployed using the platform : Kommunicate. A basic version of the app is made around one department of the college, further upgrades may cover a lot more.

KEYWORDS: Flutter,Dart Plugin, Chat Bot, Firebase, Kommunicate

I. INTRODUCTION

Education is one of those sectors that got affected by the pandemic. Everything went online and students faced problems to adapt to virtual learning. Even before the lockdown, during exams or MSTs a lot of students faced problems finding a room in the middle of all the hustle.

Storage, information, academics, records etc…. Everything was at a different platform and to get all of it together was a real struggle.

Post the pandemic, to avoid contact with a person and to reach an office or find a teacher

would be difficult for a guest as well. So our application is a one stop solution for all these issues. It provides all the information about the course, campus and all a person needs to know. The chatbot acts as a personal ussure.

II. EXISTING SYSTEMS

When we tried to find out for an existing system that gives all the functions we provide, we failed to find any. Although there were apps that were created by students at different institutes providing a platform to store academic information and give notifications to the user. Apps like google classroom also helps but they do not help a user to know more about a campus and answer queries. College websites may give out information but a) They are not interactive, b) They are not handy and c) People prefer apps more these days.

III. PROPOSED SYSTEM

The proposal is to create a mobile application that provides various facilities to the user. Which can be seen in the following diagram-
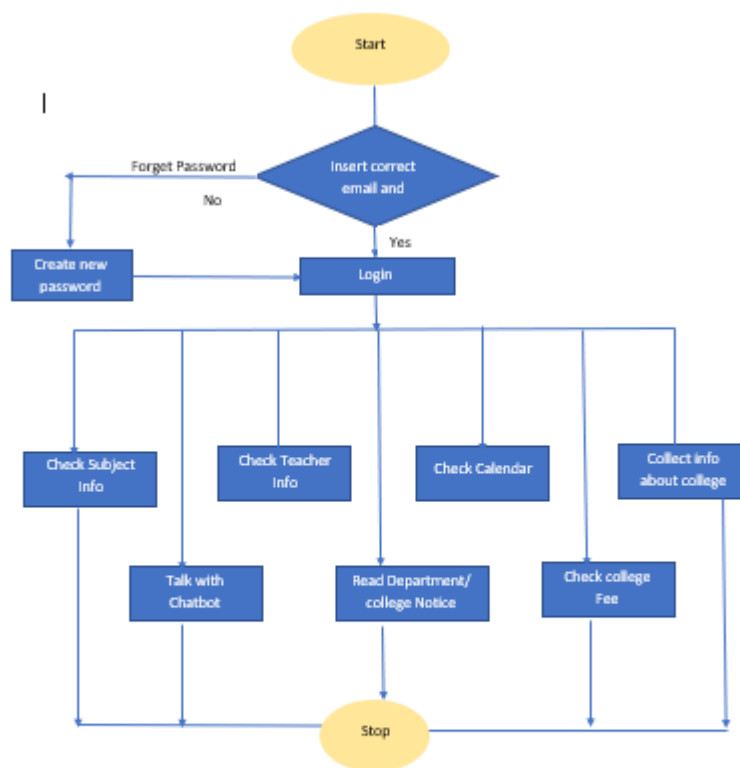

Fig-1: Activity Diagram

IV. METHODS AND TECHNIQUES

a) Android Studio-

Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA. On top of IntelliJ's powerful code editor and developer tools, Android Studio offers a number features that enhance productivity when building Android apps.

b) Flutter-

Flutter is an open-source UI/UX software development kit or application framework which is developed by Google Inc. It is used to develop hybrid applications for Android, iOS, and Web. The same code can be run on different OS making it very useful for programmers who want to deploy applications on various platforms. Flutter is built on C, C++, and Dart, which is an object-oriented language.

The Flutter was announced at the Dart developer summit, in 2015. After that multiple announcements were made until Dec 4, 2018 when Google finally released the first stable version of Flutter named Flutter 1.0. From that time multiple applications have been built and deployed in flutter. Currently the most stable version is v1.17.1 which is released on May 14,2020.

The components of Flutter are Dart, Flutter Engine, Foundation Library, Design Specific Widgets and Material Design Structure (MDC).

c) Dart plugin-

Flutter apps are written in the Dart language and use many of the language's advanced features. While writing and debugging an app, Flutter uses Just-In-Time compilation, allowing for "hot reload", with which modifications to source files can be injected into a running application without recompiling the application. Most of the time changes to source code can be reflected immediately in the running app without requiring a restart or any loss of state. This feature as implemented in Flutter has received general applause.

d) Flutter engine-

Flutter runs on an engine that is developed in C, C++ language, and the engine's codes are compiled with Android NDK. Flutter is built with C, C++, Dart, and Skia a 2D graphics rendering library, Dart and Skia are two core technologies of the flutter engine.

e) Foundation library-

Foundation library is a library that consists of the basic functions and the classes of flutter that are used to construct the application.

For example – The communication between the API and the Engine.

f) Widgets-

When we talk about flutter application or flutter, the first and most important thing that comes in mind is the widgets. Flutter widgets are an immutable or unchangeable description of part of the user interface. Widgets can further be inflated into elements, and these elements manage the underlying render tree.

The configuration we provide for the UI is held by widgets. Widgets are a very important part of any flutter application. We can say that, everything within an application made by flutter is a widget in a flutter, whether it's just the layout of the screen or text or buttons everything is a widget.

There exist so many types of widgets in a flutter, these widgets cannot be seen or touched. Like for example a test is a widget, but the text style of the text is also a widget, which defines various things like colour, width, font style, etc. There exist many in-built widgets in flutter like text, padding, animation, lists, centre, slide, etc. But apart from built-in widgets, we can create our widgets as per our need. In flutter, the widgets are divided into two categories:

1. Stateful widgets
2. Stateless widgets

Stateful widgets are mutable, whereas stateless widgets are immutable.

g) Firebase-

Firebase is a product by google to build, improve, and develop your application", and It provides a number of services that developers would have to develop by themselves, This includes fields such as analytics, authentication, push messaging, handling databases, configuration, file storage, and much more. These services are hosted in the cloud, and are scalable.

h) Kommunicate-

Kommunicate is a human + bot hybrid customer support software. It is a one-stop solution for all your support problems.You can manage customer conversations, website chat, support agents, team conversations, and customer delight aspects at the same place. By deploying a
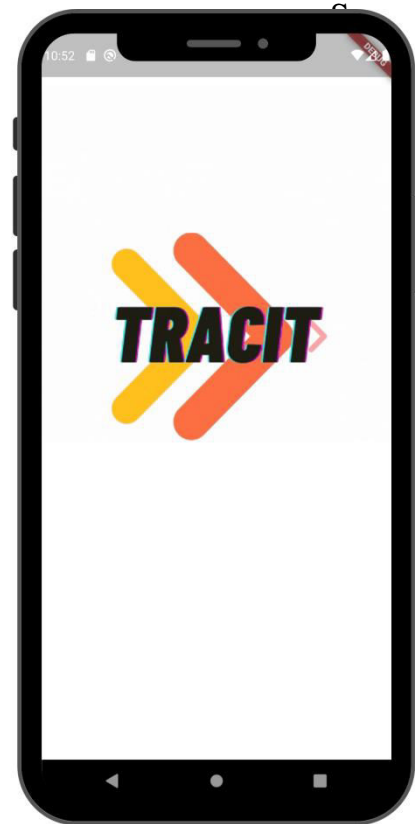
bot in an android app users gets a personalised experience.
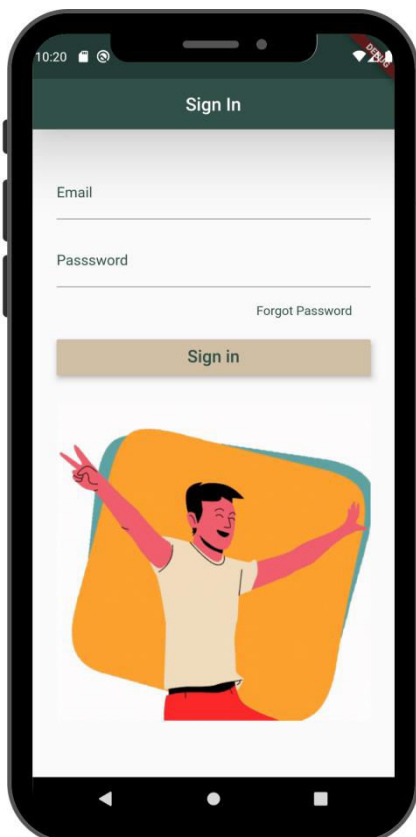
V. IMPORTANT MODULES AND RESULT

1.

plash Screen-

It is the first screen that shows up on the app, it displays the name "TracIt", the very first interaction of the app with the user.
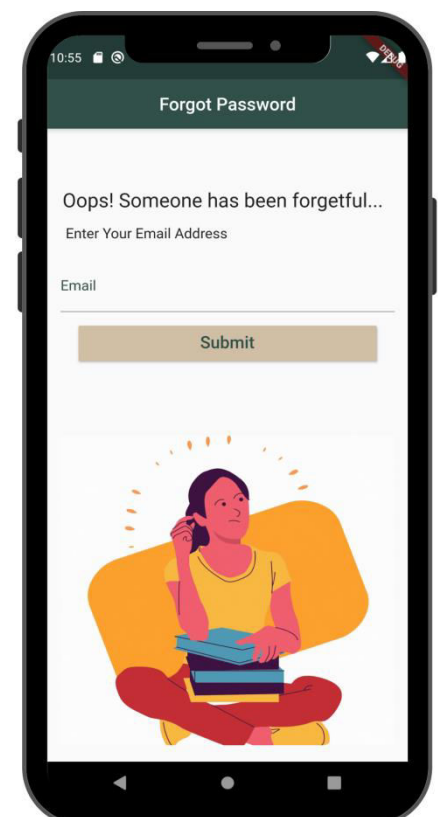
2.Login screen-
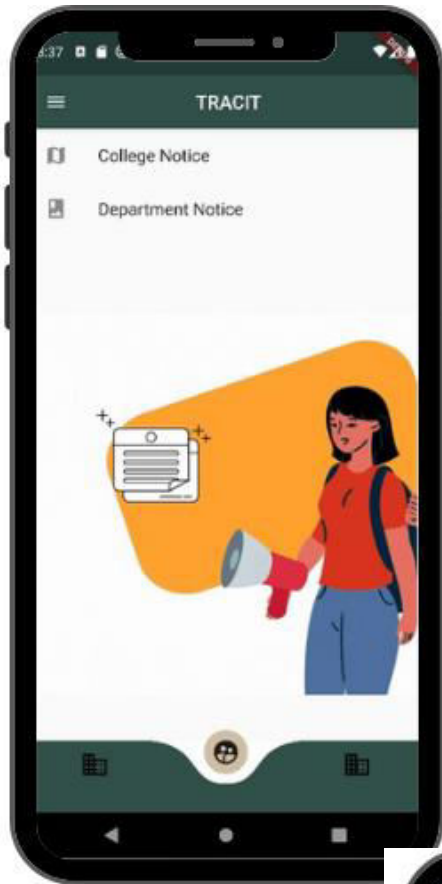
This is the screen where the user enters his/her/x

Email id and password to log into the app, the details are already created for each user in the database by administrator.
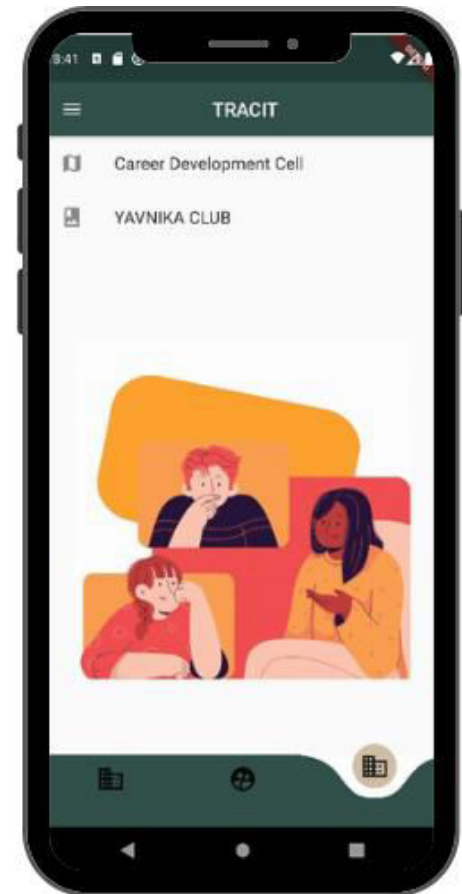
3. Forget password-

If the user forgets the password, they can submit their email and get a link to reset the password.
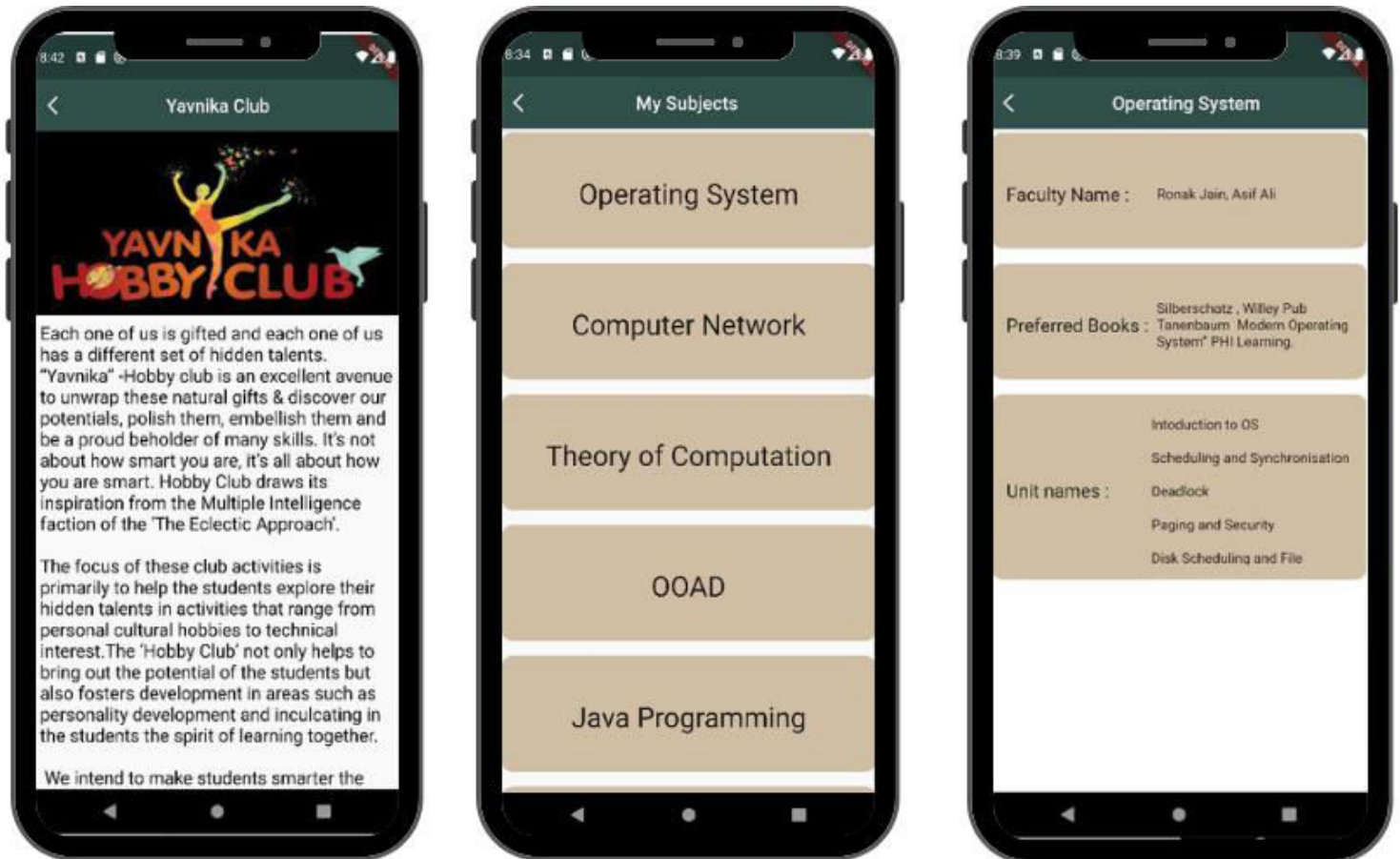
4. Home screen-

The home screen provides a curved navigation bar with three screens that the user can toggle from, they provide other options.

VI. FUTURE SCOPE

Post the pandemic it will be really difficult for institutes to bring back everything on track and there is no surety of how much time is the online education going to stay up. In these situations there is a really good scope for apps that help with academics. And our app also helps to give information about the institute. It will surely work after the pandemic as well.

VII. CONCLUSION

Our project is a flutter application named "TracIT" which is a one stop solution to online education problems. The user can check out syllabus, courses, teacher details, college clubs etc on just a tap.

They can also talk with the Chat bot to know about the campus, find their way out to an office, a lab, a classroom etc.

At the moment we have restricted the information to one department of the college, i.e Department of IT but we look forward to adding more infor, covering the whole college and training the Bot for the same.

We wish to add live notification feature as well and add feature to let the student mark calendar, add notes etc.

VIII. REFERENCES

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