Make Android Application Using Android Studio

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Abstract—**Android Studio is a software that can make application for Android Smartphone. There are many kinds of application that can be built with Android Studio. Android Studio use Java Programming Language that one of the most popular programming language. With Android Studio, we can implement our creative idea to build interesting application and maybe we can sell our application on PlayStore.**

Keywords—**Android; Android Studio; Java; Intent; Firebase**

I. INTRODUCTION

Nowadays, most people use smartphone in their daily activity. Smartphone be a primary need for most people. People can do many things in smartphone, such as play games, watch films, communicate with other people, and many more activities that help us do anything. By increasing technology from year to year, users of smartphone will increase too. By increasing users of smartphone, anything in our daily activities will be built its application for smartphone to help users do their activities easily.

Based on that explanation, I choose to learn to make application on smartphone. Nowadays, mobile operating system that mostly used are Android, iOS, and Windows Phone. In my country, the most users of smartphone use Android OS. Because of that, I choose to learn make application on Android OS. For this opportunity, I learn to use Android Studio

II. BASIC THEORY
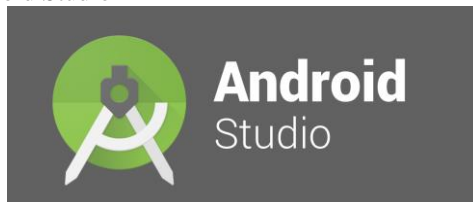
A. Android Studio

Figure 1. Logo Android Studio

Android Studio is the official IDE for Android OS. Android Studio can help us to build high-quality applications for every Android device. Android Studio released on May 16 2013 by Google. Android Studio replaced Eclipse Android Development Tools as Google's primary IDE for native Android application development. Android Studio use Intellij IDEA for developing an application, so Android Studio use Java programming language that will be explained more after this.
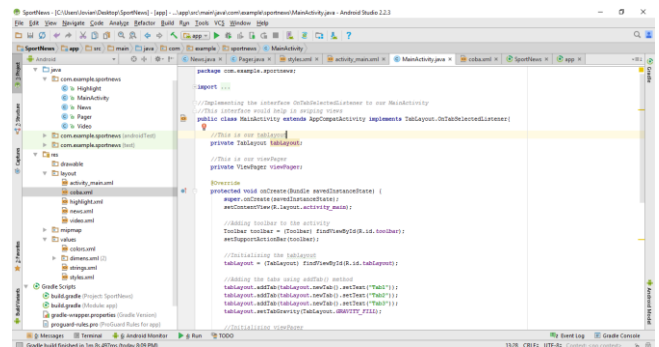

Figure 2. One of View Android Studio

The newest stable version for Android Studio is version 2.3.1. Android Studio has many features, such as many activities template that can be chosen on early project. Beside of that, Android Studio allow users to drag and drop UI component and have preview layout to look the UI result. If users don't like to drag and drop UI component, users can code that UI component with many details UI, such as size, position, and many more. Android Studio can connect with many libraries and API, such as Firebase, Google Location Service, Cloud Messaging Service, and many more. To run and debug applications that users built, users can use Android Virtual Device (Emulator) that available on Android Studio. Users can choose variety Android smartphone to run and debug on Emulator. Users can run and debug on their Android smartphone too. To connect Android smartphone and Android Studio, users must connect Android smartphone to PC/Laptop using USB cable and activate feature developer and USB debugger.

B. Java Programming Language

Figure 3. Logo Java Programming Language

Java is a general-purpose computer programming language that is concurrent, class-based, and object-oriented. Java was initiated on June 1991 by James Gosling, Mike Sheridan, and Patrick Naughton, but Java was released in 1995. As of 2016, Java became one of the most popular programming language. If we compare with C and C++, syntax Java is easier than C or C++ but, Java has fewer low-level facilities than C or C++. Java have feature that can help users to make UI or design component, and its named Java Swing. Beside of that, Java have other features that can generate code to be documentation system, and its named Javadoc. Other features that available in Java are Java Virtual Machine (JVM), Garbage Collection, and Code Security. Many desktop applications use Java because Java is easy to implementation. Many software use Java as their programming language, one of them is Android Studio.

III. CASE STUDY AND PROJECT

As have explained before, Android Studio has many feature. In this part, I will explain some case study that I did.
1. Connect with firebase (database)

This case study make me know how to connect with firebase that become server that I can add, delete, or retrieve data from there. To connect firebase and Android Studio, I must have an account firebase, then, I must create project and input my Android project name to firebase. But it is not the only one way to connect database to Android Studio, you can make your server by yourself, like Heroku. I learn to connect with firebase because firebase have library in Android Studio, so it is easy to use firebase in Android Studio. Beside of that, firebase has many features, not only CRUD database, firebase has authentication feature, notification feature, storage feature, and many more.
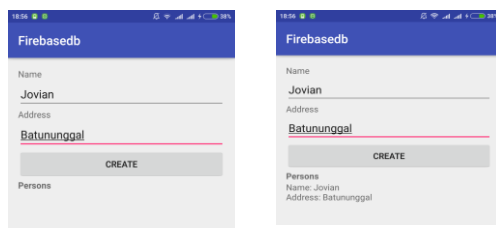

Figure 4. Add and Retrieve Record to Firebase Database (Android View)
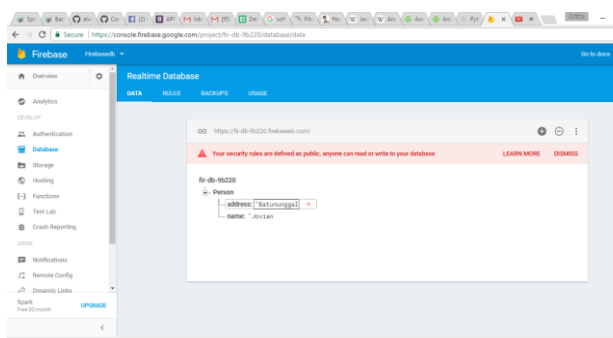

Figure 5. Add Record to Firebase Database (Firebase View)

So, in this case study, if we push button create, data that we input will be change database in firebase. After that, that record will be retrieved from firebase and be displayed on screen.
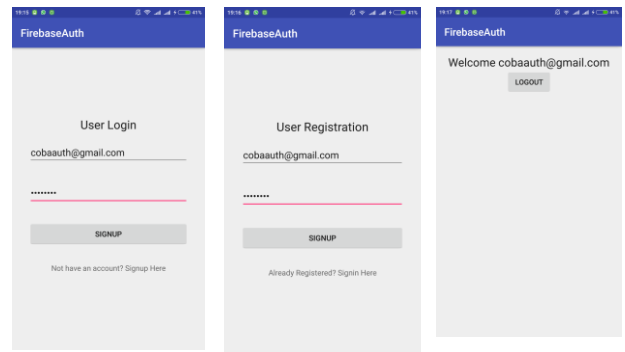

Figure 6. Login, Register, and Logout with Firebase

As I say before, firebase has authentication feature that usually used in early application, like login, logout and register.
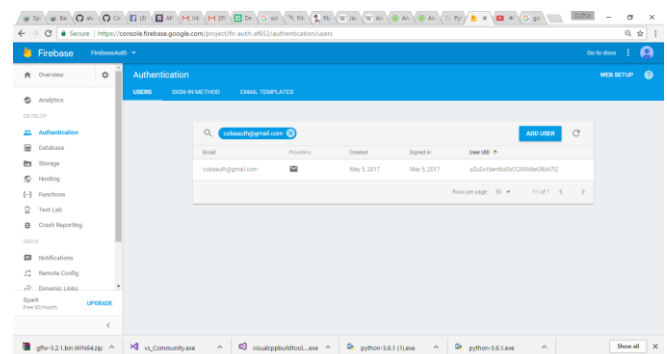

Figure 7. Firebase Authentication

In register menu, if we input email and password, the data will be saved on Firebase. In login menu, email and password that we input will be compared with data in Firebase, if data input fit with a data in Firebase, that login will be successful and open other activity/view.

2. Connect with other application

This case study make me know how to connect application Android with other application, like camera. To connect camera with application, I must use a feature on Android Studio, it's called Intent.
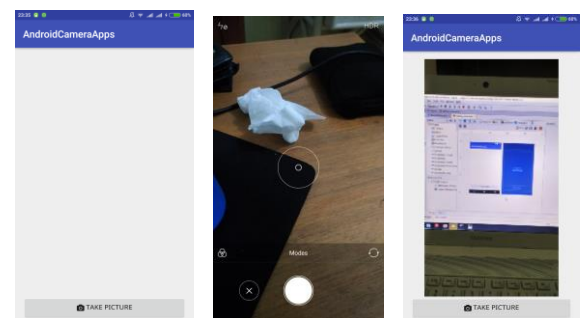

Figure 8. Connect with Camera Aplication

So, in this case study, if we push button 'Take Photo' in the bottom screen, camera will open automatically. We can take photo, and then the photo will be displayed on center of screen.

3. Show notification

This case study make me know how to display notification on Android smartphone. On this part, I use Firebase to send notification to Android.

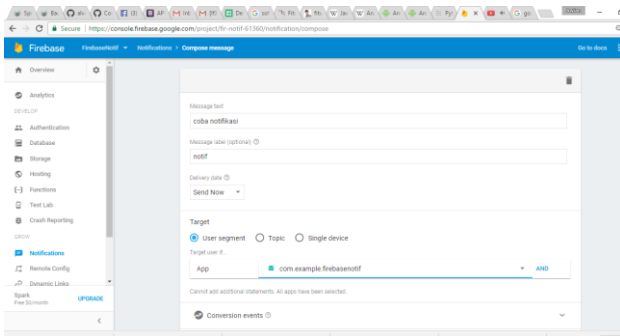Figure 9. Notification on Android

Figure 10. Send Notification from Firebase

4. Retrieve location

This case study make me know how to retrieve location smartphone using GPS. To use GPS, I have to set permission to use GPS and internet on Android smartphone so location can be retrieved to be shown on screen.
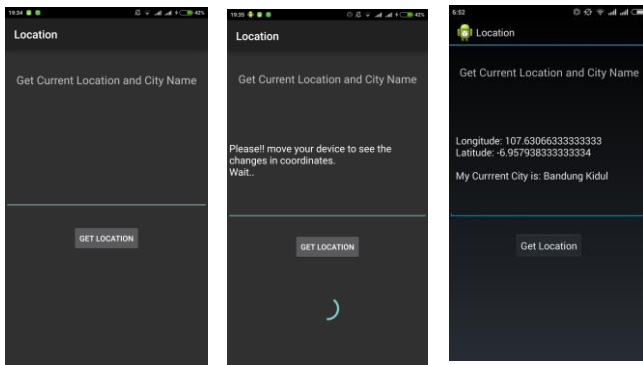

Figure 11. Retrieve Location using GPS on Android Smartphone

So, in this case study, if we push button 'Get Location', system will use GPS and internet connection to retrieve current location of Android smartphone. If location has been retrieved, the result will be shown on screen, such as longitude, latitude, and name of city.

Beside of that, I try to make a project that I have planned before. Idea of this project associated with my hobby, that is sports (especially football). I want to make an application that have many features, such as read sport news, watch streaming sport matches, watch highlight sport matches, and many more. This project is inspired by similar application, that is goal.com.

There are some views about my project. I just made 3 feature, there are news, streaming, and highlight.
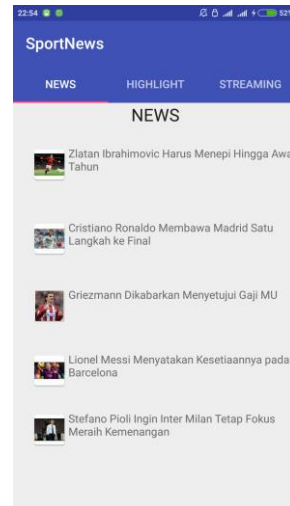

Figure 12. News Feature

In news feature, if we click the title of an article, the article will be opened and users can read the full article.
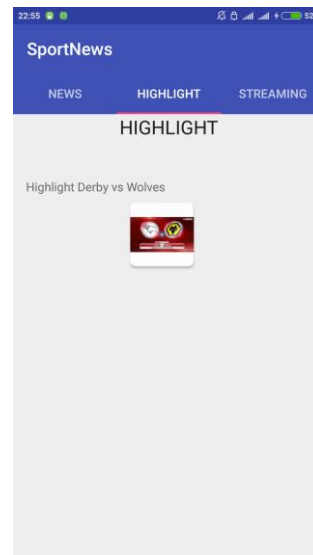

Figure 13. Highlight Feature

In highlight feature, we provide some video highlight updated every week with new video highlight video. If we click the video, video will start, and of course this feature need internet connection
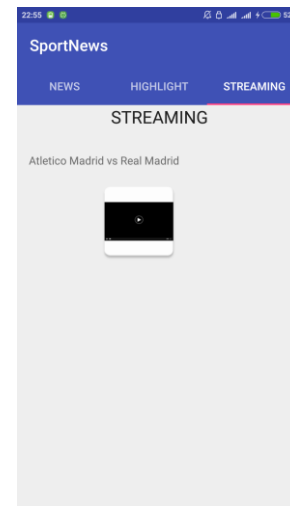

Figure 14. Streaming Feature

Streaming feature similar with highlight feature. In streaming feature, video that showed is live. In highlight feature, video that showed is video that has been edited before to show some interesting event in a match. We can swipe to move to other feature or we can push feature tab that we want.

IV. CONCLUSION

Many kind of applications can be done with Android Studio. Case study and project that I explained before are a small part of many kind applications can be done with Android Studio. We just need an idea to start make an application, next, we can learn how to use Android Studio to make that application by searching tutorial in Google or Youtube, read books about Android Studio, ask friends or anyone who expert in Android Studio. As I did, I learn Android Studio from tutorials in official website Android Studio and other tutorials that easy to get in Google or Youtube. If you interest or want to become expert in Android Studio, you can start with small case study like I did, after that you can explore deeper about Android Studio. I think if you have spirit and desire to know much about Android Studio, you can become expert in Android Studio by yourself (autodidact), and of course you must have basic logic about programming before.

V. ACKNOWLEDGEMENT

VI. REFERENCE

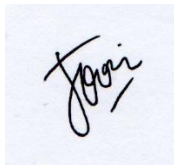[1]   https://developer.android.com (last access May 4th 2017)
[2]   www.simplifiedcoding.net (last access May 4th 2017)
[3]   https://en.wikipedia.org/wiki/Android_Studio (last access May 2nd 2017)
[4]   https://en.wikipedia.org/wiki/Java_(programming_language) (last access May 2nd 2017)

VII. STATEMENT

I hereby declare that this paper is my own work and not a copy, translation, nor plagiarism of somebody else's work.

Bandung, May 5th 2017

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