Making Piano Simulator for Android using Android Studio

Hafizh Dary Faridhan Hudoyo - 13514072

Informatics/Computer Science Program
School of Electrical Engineering and Informatics
Institut Teknologi Bandung, Jl. Ganesha 10 Bandung 40132, Indonesia
13514072@std.stei.itb.ac.id

Abstract—**As a computational device, Android device can be used for any activities, including music production. This paper explains how to make a simple piano simulator for Android using Android Studio.**

Keywords—Android; piano; device; simulator; studio

I. INTRODUCTION

We know that piano was invented a long time ago. It began in 1709 in the shop of a harpsichord maker named Bartolomeo di Francesco Cristofori (1655-1731). He had made many stringed and keyboard instruments before he finally invented a piano. He combined those two instruments to make a well-known piano like nowadays.

Technology is growing really fast. In 1950s, software that was used for playing piano sound had been produced. It led to the development of modern music software to be used as music composer or music simulator. Since Android device is a computational device (because it has CPU), this thing should be able to be used as music simulator. In these days, Android is currently using CPU that has same clock speed as CPU used in a personal computer.

In this paper, you will read how to make a simple piano simulator for Android using Android Studio, an IDE software that is used for Android application development. This software is using Java and XML as its main programming languages. The XML is usually used for handling the interface of an application, and Java is usually used for handling everything the application needs in the back.

II. FUNDAMENTAL THEORY

A. MediaPlayer

MediaPlayer is an API (Application Program Interface) for Android to play audio or video from media files stored in application's resources (raw resorces), from standalone files in the system, of from a data stream arriving over a network connection. This API is used to play the piano MIDI files.

B. Intent

An intent is an abstract description of an operation to be performed. In this case, intent is used to import piano MIDI files from file system.

C. Activity

An activity is a single, focused thing that the user can interact with. In this activity, developer can put buttons, text fields, or anything that is supported to use. An activity appears with interface to interact with the user.

III. STEPS TO DO TO MAKE PIANO SIMULATOR

Before doing this steps, make sure that you have Android Studio installed on your personal computer. After it is installed, you can open it, make a project, creat an activity, and do these following steps.

A. Make a Simple Interface

In this software, you can design your own interface with drag-and-drop method or making code on your own. Firstly, you have to make Linear or Relative Layout. After that, you can add buttons in it using drag-and-drop or code writing. If you use code writing, this following code helps you to make a button.

```
<Button
    android:text="C"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/buttonC" />
```

Fig. 1: Button Example

You can add buttons as many as you want to make the same amount as piano keys. In this code, android:id is the most important, because it will be used in Java code for the functionality.

B. Make the Java Code

In default, in the Java code will be written the onCreate function. This function is used to create initial function in the application. Before writing the code, make sure that you import android.content.Intent and android.media.MediaPlayer. In this case, the author use the Intent as a file picker.

```
Intent intent = new
Intent(Intent.ACTION_GET_CONTENT);
intent.setType("audio/midi");
intent.putExtra(Intent.EXTRA_ALLOW_MULT
IPLE, true);
startActivityForResult(intent, 1);
```

Fig. 2: Intent for file picking

Above onCreate, you may initialize MediaPlayers as many as you want, as long as your device can handle it. After that, you can link the button you have created to the MediaPlayer to play the MIDI files. These steps are overall the easiest steps to make a simple piano simulator.

IV. CONCLUSION

It is easy to make a piano simulator using Android Studio. Steps mentioned above may be not complete because these steps are the simplest way to make piano simulator. To improve the interface, you may learn how to make an artistic interface design to make piano layout.

REFERENCES

[1]   http://pianonet.com/all-about-pianos/history-of-the-piano/
[2]   https://developer.android.com/reference/android/app/Activity.html

Bandung, May 5, 2017

Hafizh Dary Faridhan Hudoyo
13514072