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Computer Graphics 2, Comp 4280

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Project: Step by Step Process + How to Use Android Studio

- My application uses the **Android Studio Tool**

Step by Step Process

Installation Process: Downloading JDK (Java Development Kit) and the Android Studio Tool

A. Download Java Development Kit (jdk)
   - Required to compile code written in Android Studio. Code is written in Java.

B. Create an Environment Variable for JDK.
   - To allow Java commands to work with Android Studio, there needs to be an environment variable for jdk.
     - Search up "Edit the system environment variables"
     - Under "System variables", click on "PATH" then "Edit". Another tab is opened, add in the new jdk file path. File path should look something like this
     - C:\Program Files\Java\jdk-15.0.1\bin
   - OPTIONAL: Some apps that use Java require "JAVA_HOME" to be added to the environment variable as well. Should add just in case.
     - To create the extra environment variable, click "New" then name the variable "JAVA_HOME". For the variable path, it is the same as the one for .jdk, just remove '/bin'
     - C:\Program Files\Java\jdk-15.0.1

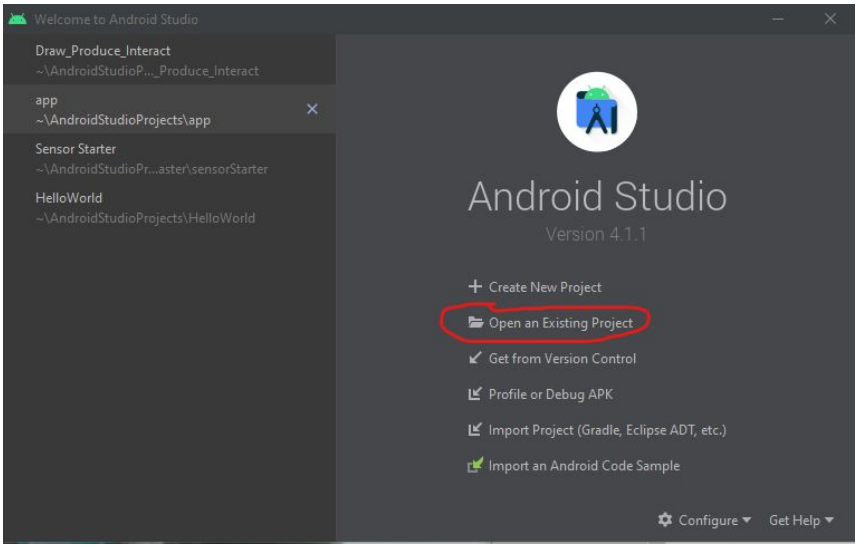
C. Download Android Studio App.
   - Search up "Download Android Studio", find the official website then simply download the application. Follow the usual process of downloading any application.

Launch Instruction: Download Emailed Android Studio Project Open it as Project in Android Studio Project

A. Launch Android Studio
   - After successfully downloading JDK and Android Studio, simply launch the Android Studio Tool by double clicking wherever it is downloaded.

B. Download the whole android studio project file that was sent to you via email (outlook) . It contains all the codes, header files, etc.
   IMPORTANT NOTE: My android studio project was too large to be uploaded on GitHub!
   - Download the zip file sent to obtain the folder with my android project. Should be called “Draw, Produce, Interact”.
   - After downloading Android Studio App, there should be a folder in YOUR C:\user\ called “AndroidStudioProjects”, put the downloaded android studio project folder inside there.

   - On the “Welcome to Android Studio” launch page, select “Open an Existing Project”, then select the android project folder you were asked to download and insert in the “AndroidStudioProjects” folder. (The “AndroidStudioProjects” folder should have been created by default during the Android Studio download process).



- Once Android Studio successfully launches, you are ready for the next step which is to build/compile the code.

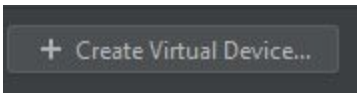
Build/Compile App(Code) in Android Studio

A. Press the “Green Play” button.

- Once a project is successfully imported OR opened, you can compile and run it by clicking on the “Green play” looking button near the top right of Android Studio.
- IMPORTANT: Make sure a virtual API android device is chosen before compiling, or else compiling won’t work.

A1. If no virtual android API device is there to run, here is the solution to add one

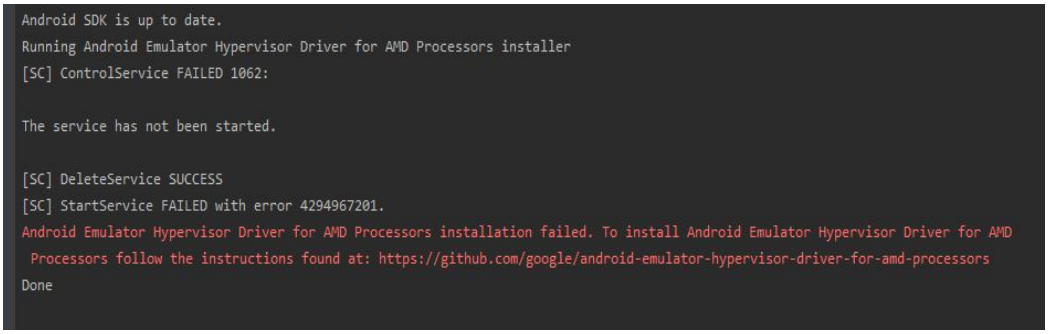
- 1. Click on the box next to the “green play” looking button
- 2. Click on AVD Manager
- 3. Click on “Create Virtual Device” on the bottom left of the “Android Virtual Device Manager” tab.



- 4. Select an android phone of any type you want to run virtually, then press “Next”
- Important Note: The older the phone model, the older the API level.
- 5. Select and download the API Level of the Android device you selected. Notice how the smaller the API level is, the older the Android version gets. Then press “Next”
- 6. Once the android device and api level is downloaded, you should be able to now choose that device to run and compile android apps and projects on.

❖ FIRST POSSIBLE PROBLEM ENCOUNTER: Upon clicking on the “green play button”, you might be asked to download a Hypervisor upon attempting to compile for the first time. Upon agreeing to install Hypervisor, users could encounter the following error.

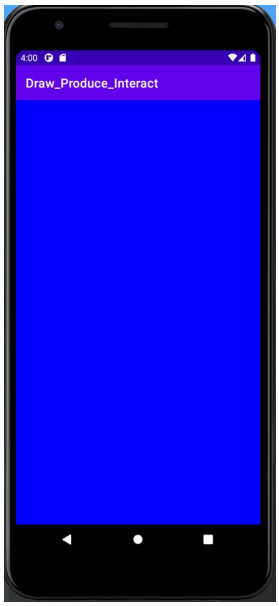
❖



❖ Solution: Enable virtualization in BIOS. Virtualization is disabled by default on all devices which caused the problem. In order to run virtual outputs like an android app this is required. Restart computer then enter BIOS. This process is different for all systems, but for Windows users,

upon entering BIOS, go to CPU advanced settings and “ENABLE” SVM Mode. Once enabled, save and exit and run Android Studio again and the app, it should work now.

B. Wait for the App to execute/compile
   - If the “green play button” works at this point and it is clicked, wait for your virtual android device to show up.
   - Once it shows up, give the virtual android device a couple of seconds or even minutes to turn on and load the program/result.
   - After waiting, the virtual android device should show you the app you made and programmed. You should see something like this.



How to Use Android Studio

- You should only be here once you have successfully downloaded JDK, set it as an environment variable, and downloaded Android Studio Tool App itself.

A. Launch Android Studio and and test to see if the default “Hello World” provided code works
   - Open the Android Studio app
   - Start a new Android Studio project

- Select “Empty Activity” then create the project. Make sure “Java" is the selected language. For the minimum SDK, select an API that can run > 95% of devices (for the time being)
- Wait a couple of minutes for the app to download the last remaining packages and process everything.
- Two files will pop up, “activity_main.xml” and “MainActivity.java”. These are the two important files that will be constantly updated as you produce your app.
- Quick Tutorial on the .xml file: The .xml file in charge of designing the app like adding buttons, background color, etc. to your app/program. Upon entering the file, you will see the default code and layout for outputting hello world as an app on your virtual android device. You can add buttons and other stuff into the app without the need to code by clicking on “Palette” and double clicking what you want. Of course you can code it in yourself if you have the knowledge.
- Quick Tutorial on the .java file: .java file is where most of the main code will be. It is in charge of executing functions you create for your app. Without the .java file, nothing in the app will function or work properly. The program will in fact produce an error and prevent you from compiling without the “MainActivity.java” file.
- Compile the default hello world work by clicking on the green “play button”.
- IMPORTANT: If clicking the “green play button” does not work and produces an error, please refer back to the “Build/Compile app(Code) in Android Studio” section of this file.

- I only discussed how to use Android Studio in the most basic way possible like how to create a new project, explain what the two most important files do, and how to compile/run the default hello world project.

- The official developers behind android studio have a whole website dedicated to understanding the Android Studio Tool and building your first app. If there are any other concerns regarding the Android Studio tool, consider visiting the following link which also helped me understand how to use the Android Studio Tool and produce an app. https://developer.android.com/training/basics/firstapp/creating-project