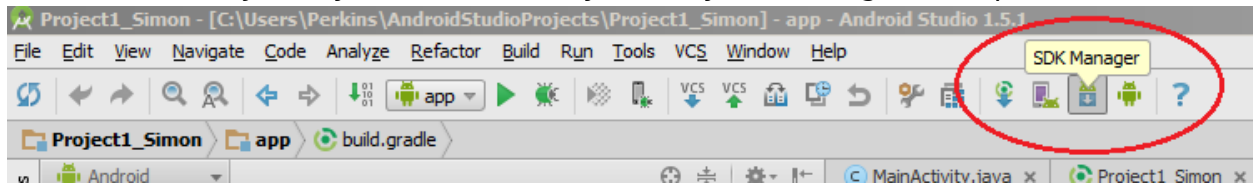


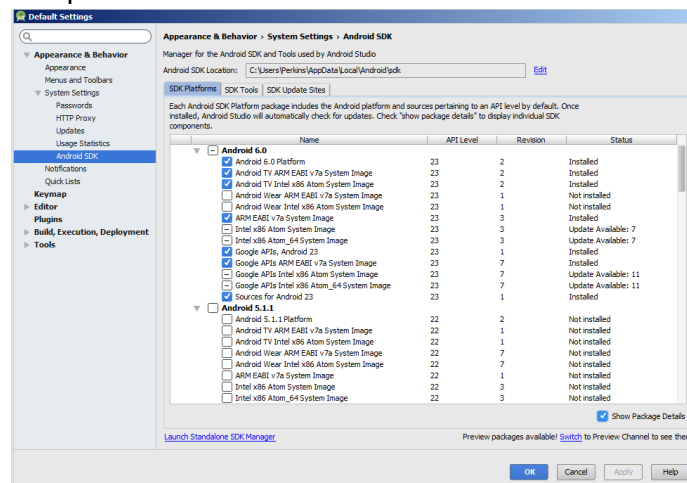
## Install and Configure Development Environment

Install latest Android Studio and SDK <http://developer.android.com/sdk/index.html>  
(Based on IntelliJ so if you use that or Pycharm you are in good shape)



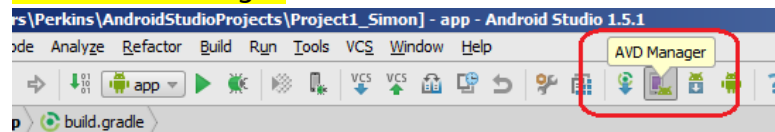
### Go to SDK manager

- Note the number of versions of Android, 1 for every major release and each device is running one of these versions
- tools and extras, at least your phone version. You target particular versions of Android for your apps, make it as wide as possible to make it appeal to as many users using as many different versions as possible. But keep in mind that each new release added new features, if you make it backwardly compatible to far ( 1 for instance) then you cannot use apis that were introduced in 3. Here I am using 6



go to SDK tools and show off build tools and the critical Google USB Driver needed for Nexus devices (Windows only)

### Go to AvdManager



AVD manager - manage virtual devices to test your app on can have as many as you want different sizes and APIs. Used to be slow, very fast now.

Can debug on Emulator or physical device. Emulator is faster but is simulated and may be missing hardware (camera, gps, accelerometer etc..) AS has a process called ADB.exe (Android Debug Bridge) which communicates with devices.

### Connect Physical device

Enable developer mode on device (Nexus –Toggle on "USB Debugging" in the "Developer Options" area of Settings.). If you do not see "Developer Options", go into "About device" in Settings and tap on the "Build number" entry seven times, which will unlock "Developer Options".

configure and use driver if necessary (Windows device manager)

Enable Debugging

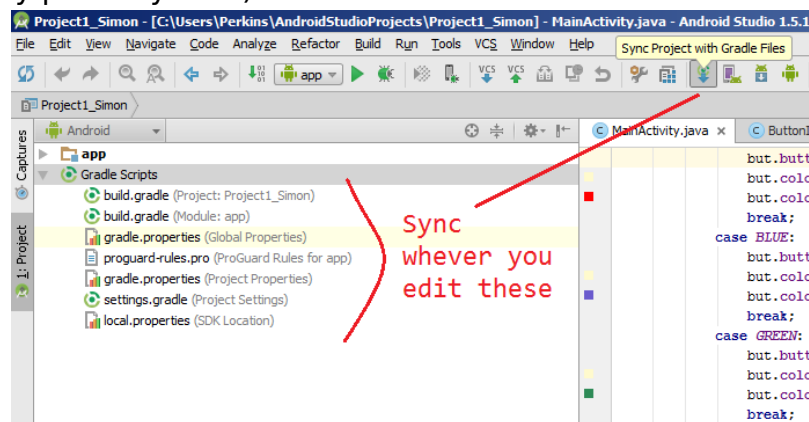
Demo on Nexus 7

Go to Debug Options

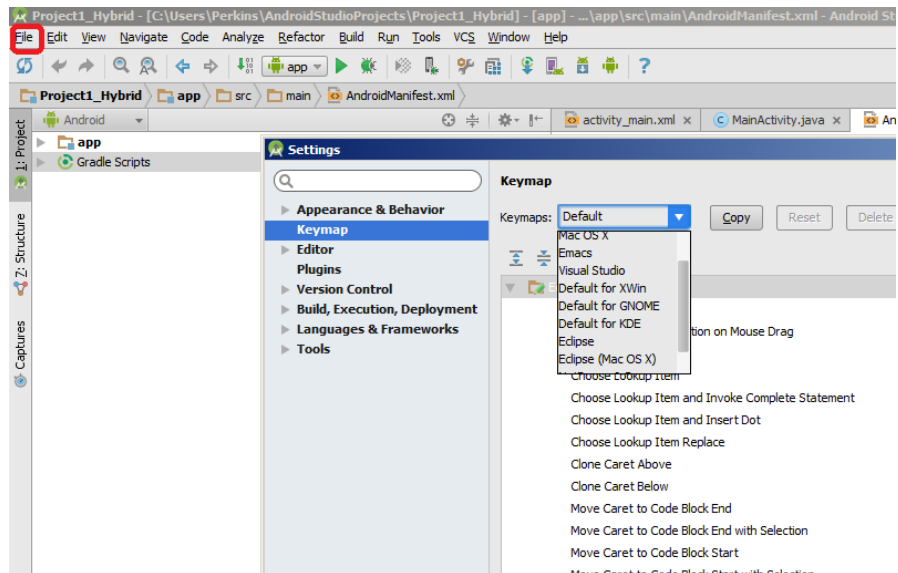
Stay Awake (otherwise you have to constantly unlock your app when debugging)

Usb Debugging

Whenever you change a system file resync your gradle files. It will rebuild your project (possibly painfully slow)

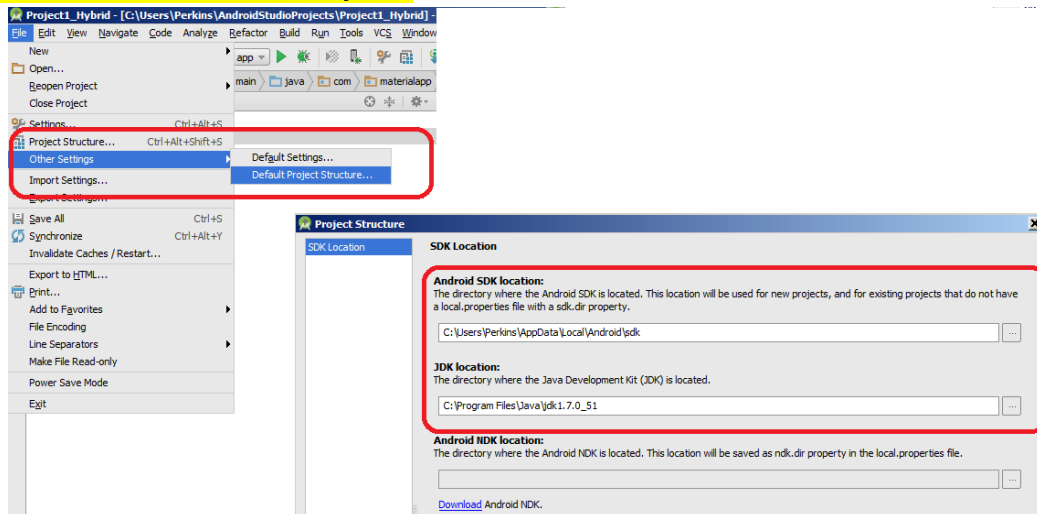


Keyboard shortcuts (productivity boost) can use defaults or configure how you like

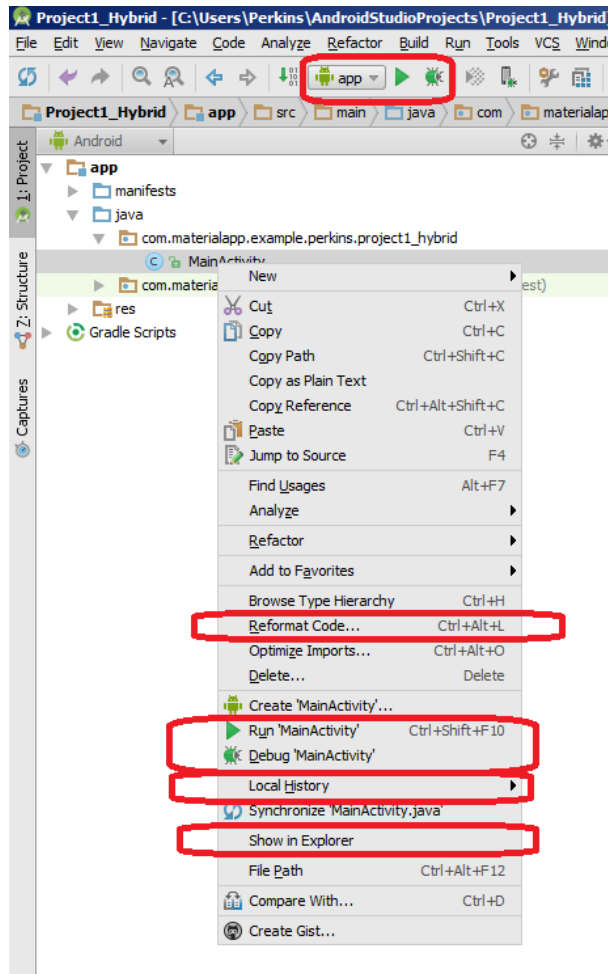


I like AS defaults, here are the ones I use a lot they are in a word file on scholar (Hotkeys I use). Here they are in a note I keep floating nearby

And where is the AS SDK and JDK?



Useful File Stuff



### Manifest and Resources (much more later)

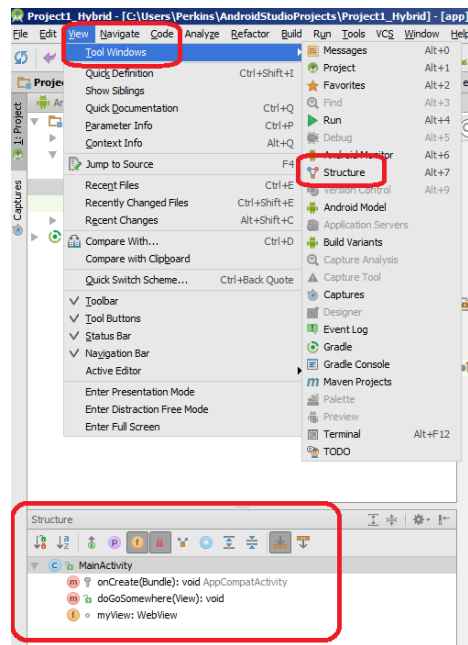
**Manifest** defines your app, what **permissions** it needs (read by google play and used to ask you “do you want to allow this app to...” and what **UI and components** it will use

### Res folder

Holds xml layout files (describe UI)

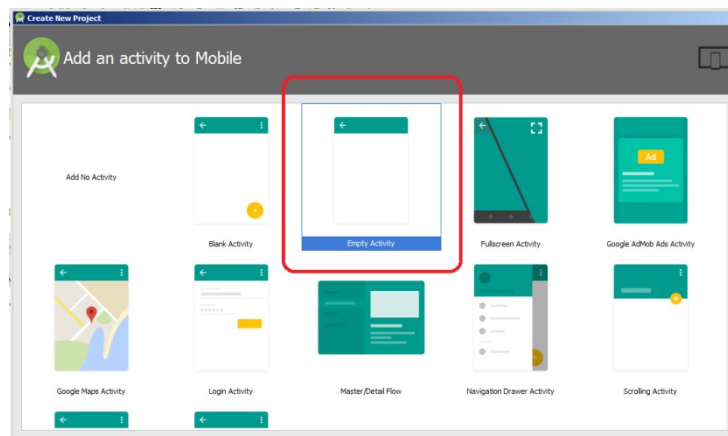
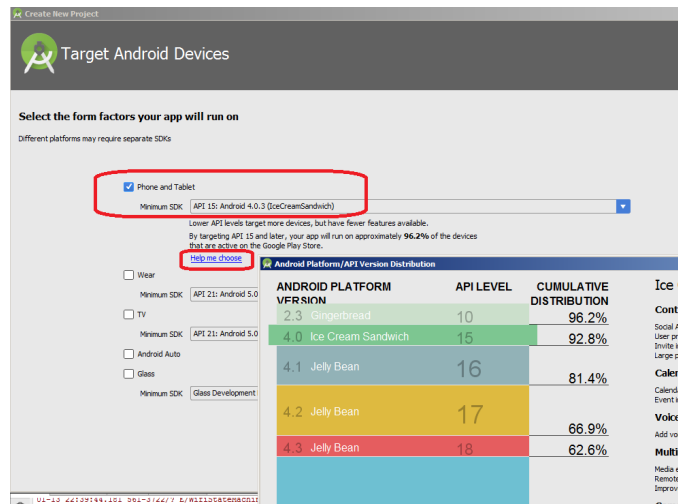
Strings you will use, colors, drawables

Use Structures view to see object hierarchy



## Development

New Project  
Package  
Minimum sdk



## Show

Build, Run

Debug

Show

Breakpoints

Watches

Log

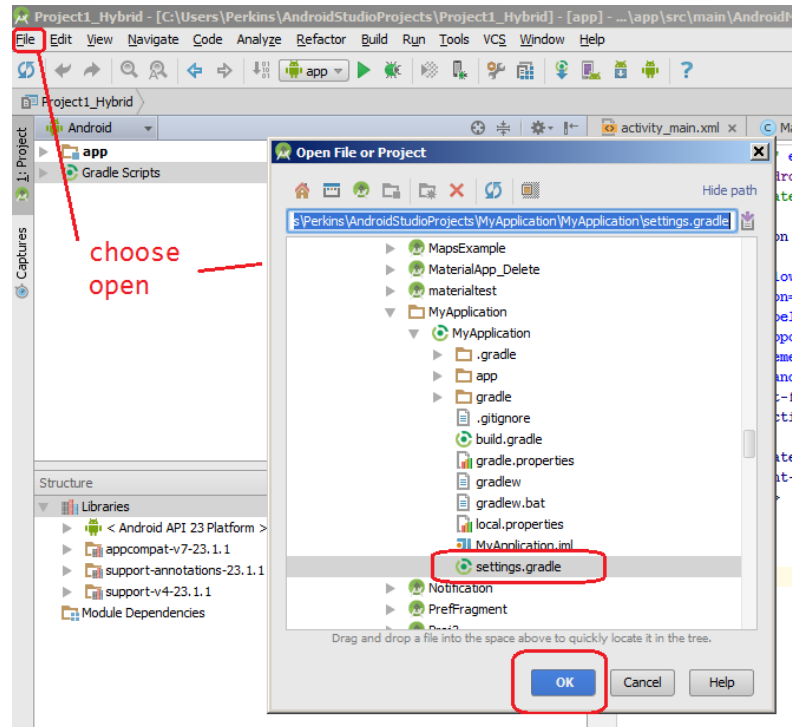
Show ctrl-j to make tag and log statement

show uninstall, reinstall, test

clean

close project

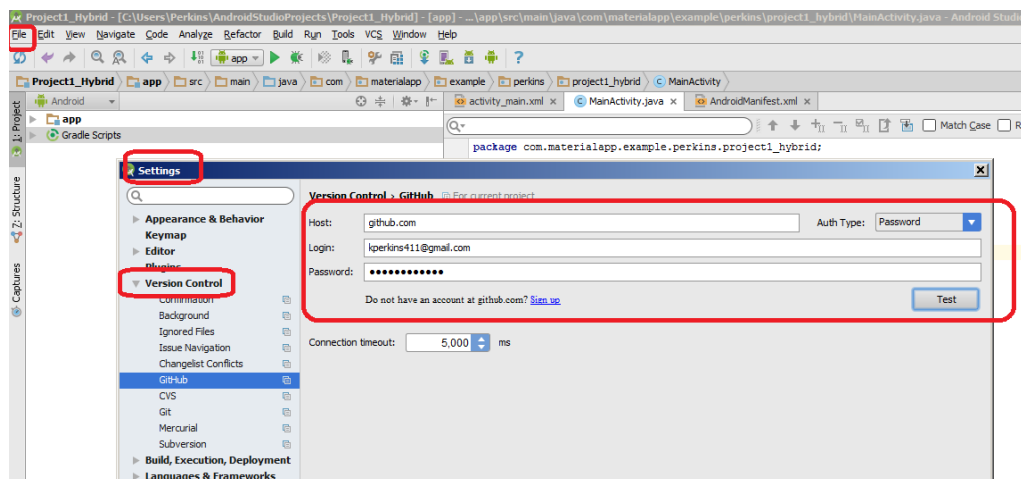
Find (show in folder)  
Zip it  
Delete orig project  
Unzip  
Import project (via settings.gradle)



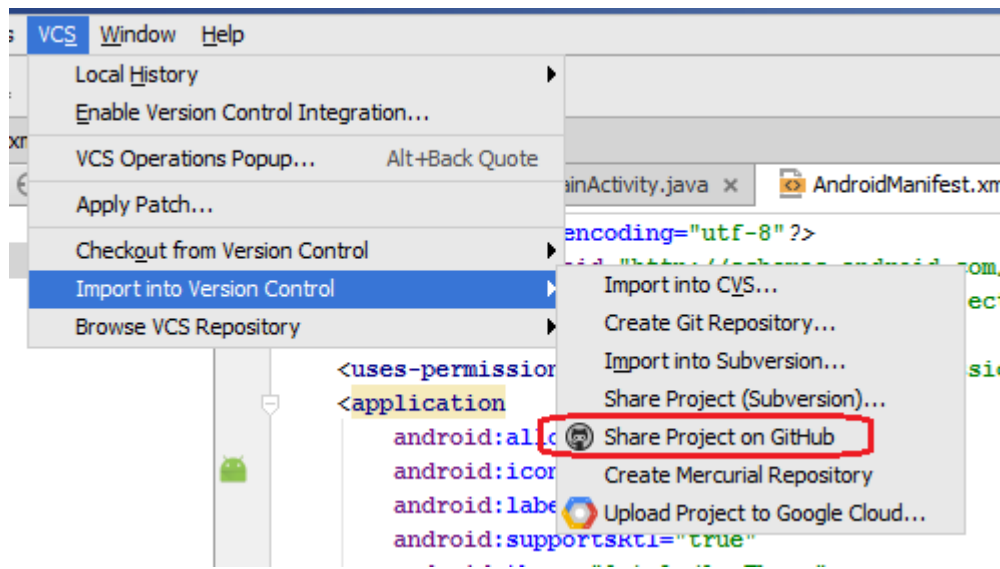
Ready to go

Source Control- I use git and GitHub

First set it up

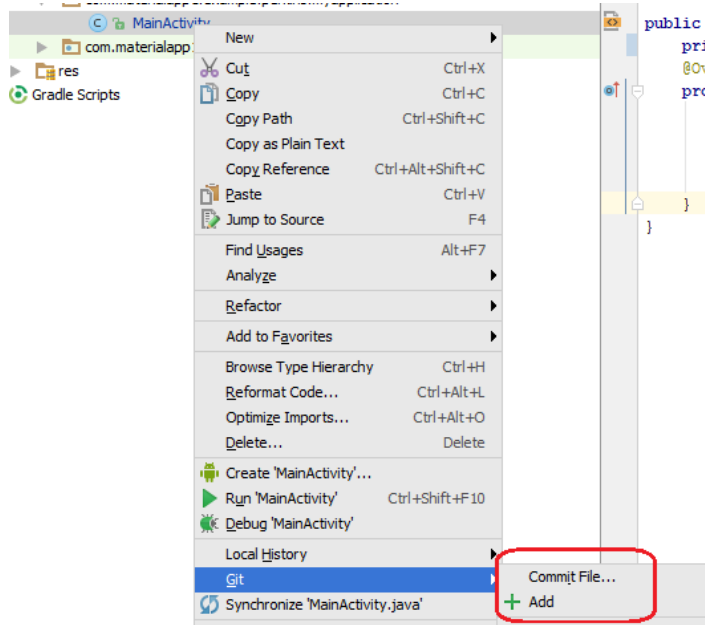


Share on Github



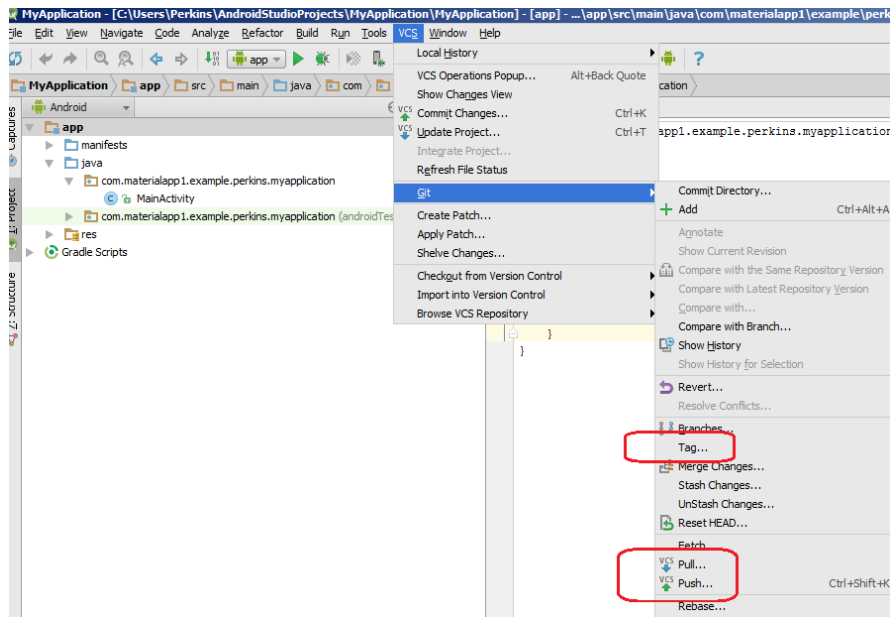
Will push it on up to github if your account is setup

Now change a file and it turns blue in the Project Window, so commit it locally.



To push up, or tag





### Tips:

If everything goes wonky kill AS (should kill adb.exe) and restart. If adb.exe remains running kill it and then restart AS.

If you cannot connect to device over usb cable suspect the cable! Try another, better yet try one that you have verified with another device