

## Gradle- the basics

Gradle is a build system, like make, it can be very complex. Fortunately Android Studio (AS) handles most of the gradle tasks for you with some exceptions. For instance changing what APIs your device targets, or if you add new components that require adding their gradle dependencies. These often come up when importing someone else's project that uses different SDKs (like when you import my projects), or when upgrading projects. This is a short guide on dealing with those situations.

### Open Project

#### build.gradle (for the application)

first lib or application (see first line in gradle file)

- lib means your building a library
- app means your building an application

apply **plugin: 'com.android.library'** or **apply plugin: 'com.android.application'**

#### Check your compileSdkVersion

in general use the latest you have installed, check SDK manager occasionally to see if there are updates

is the version installed? (red squiggles if not) If not AS will ask you if you want to install it, careful! They are >1GB. or change to one that you have (see SDK Manager)

#### defaultconfig

project packageName

which versions you support min to target and all in between

#### buildtypes (not really relevant in this class)

used to support different project flavors for instance a freemium versus paid

proguard is security and obfuscation

#### dependencies

libraries you need (if possible build with jetpack, AndroidX support which makes all the V4 or V7 appcompatlibrary issues go away. Refactor → Migrate to AndroidX (bit glitchy) or when creating project on the Configure your project screen, select 'Use AndroidX Artifacts')

(see AndroidX Overview

<https://developer.android.com/jetpack/androidx>

and Migrating to AndroidX

see <https://developer.android.com/jetpack/androidx/migrate>

)

#### gradle.properties

Make sure the following lines are NOT commented out if using AndroidX

**android.useAndroidX=true**

*# Automatically convert third-party libraries to use AndroidX*

**android.enableJetifier=true**

**settings.gradle** – what's in this project (project(s), libraries )

Once this is all set make sure you use the appropriate packages in your java files and in your XML files (it will not compile if you do not)

#### Want to add library as a dependency to an application?

- Create library (see <https://developer.android.com/studio/projects/android-library.html>)
- Add to project if you wish (see settings.gradle above)
- Add library as a build dependency, in the `com.android.application` gradle file add a dependency in the dependencies section, like so

```
dependencies {  
    implementation fileTree(dir: 'libs', include: ['*.jar'])  
    implementation 'com.android.support:appcompat-v7:25.1.0'  
    implementation project(":bitmap_utilities")  
}
```