



ĐẠI HỌC BÁCH KHOA HÀ NỘI
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Mobile Programing

Chapter 1.2. Build your first app

Note

- ❖ This slides is based on Google Android code labs slides
- ❖ Original slides:
https://drive.google.com/drive/folders/1eu-LXxiHocSktGYpG04PfE9Xmr_pBY5P

Contents

- Android Studio
- Creating "Hello World" app in Android Studio
- Basic app development workflow with Android Studio
- Running apps on virtual and physical devices

Prerequisites

- Java Programming Language
- Object-oriented programming
- XML - properties / attributes
- Using an IDE for development and debugging



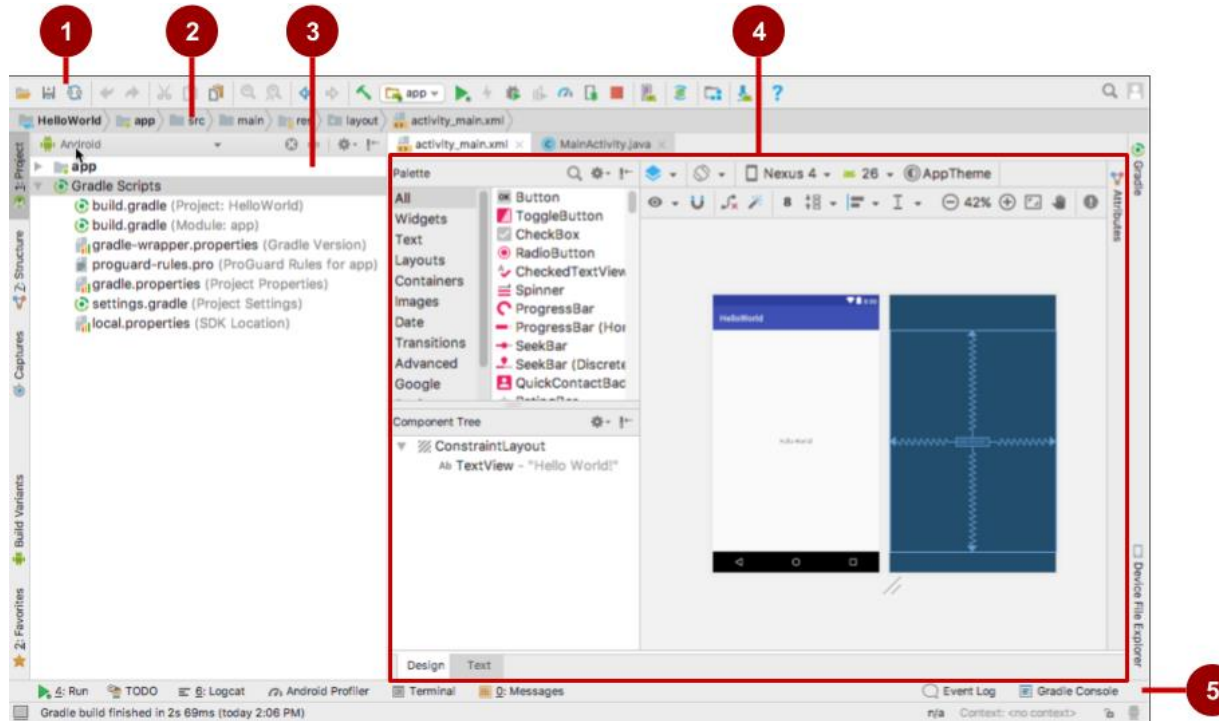
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Android Studio

What is Android Studio?

- Android integrated development environment (IDE)
- Project and Activity templates
- Layout editor
- Testing tools
- Gradle-based build
- Log console and debugger
- Emulators

Android Studio interface



1. Toolbar
2. Navigation bar
3. Project pane
4. Editor
5. Tabs for other panes

Installation Overview

- Mac, Windows, or Linux
- Download and install Android Studio from <https://developer.android.com/studio/>
- See [1.1 P: Android Studio and Hello World](#)

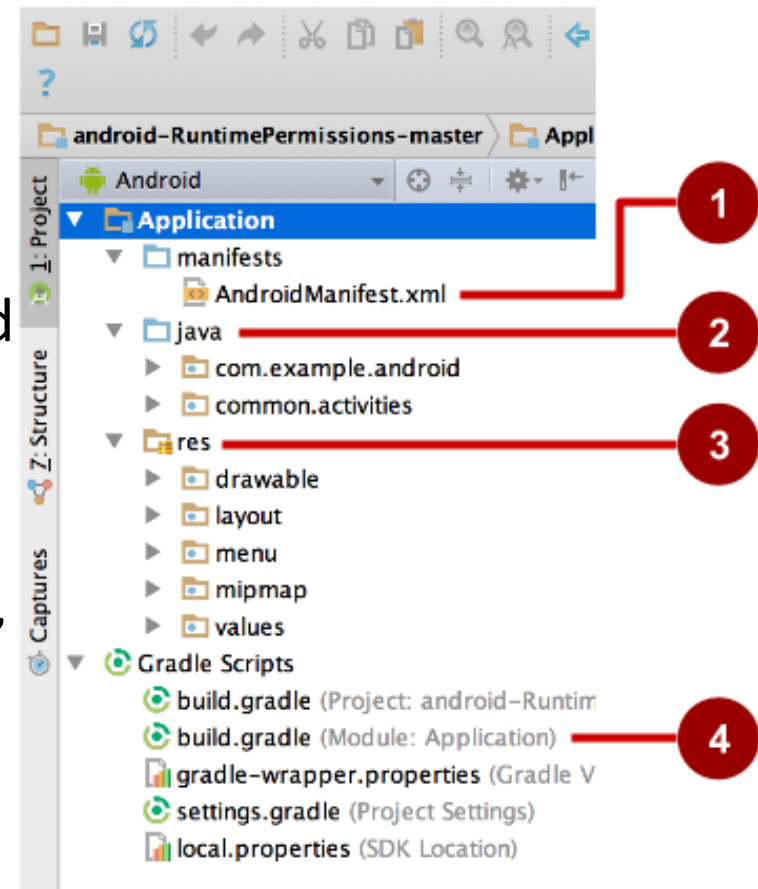


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Creating your first Android app

Project folders

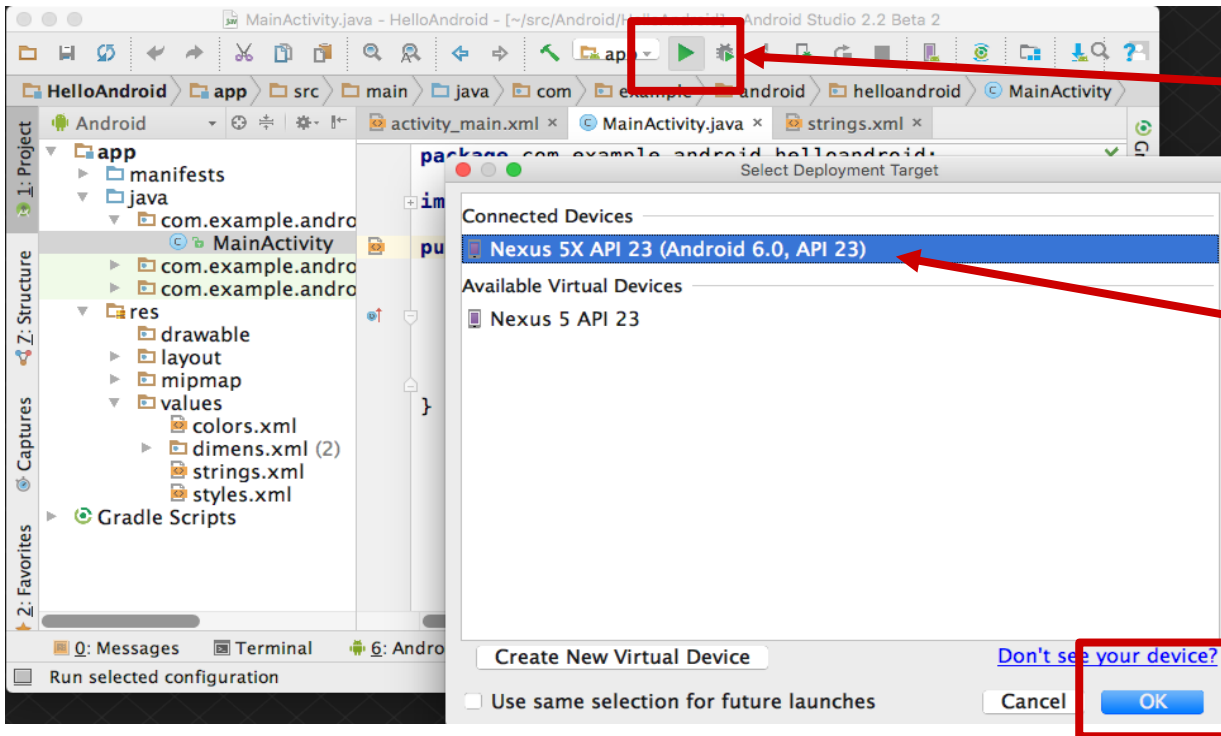
1. **manifests**—Android Manifest file - description of app read by the Android runtime
2. **java**—Java source code packages
3. **res**—Resources (XML) - layout, strings, images, dimensions, colors...
4. **build.gradle**—Gradle build files



Gradle build system

- Modern build subsystem in Android Studio
- Three build.gradle:
 - project
 - module
 - settings
- Typically not necessary to know low-level Gradle details
- Learn more about gradle at <https://gradle.org/>

Run your app



1. Run

2. Select virtual
or physical
device

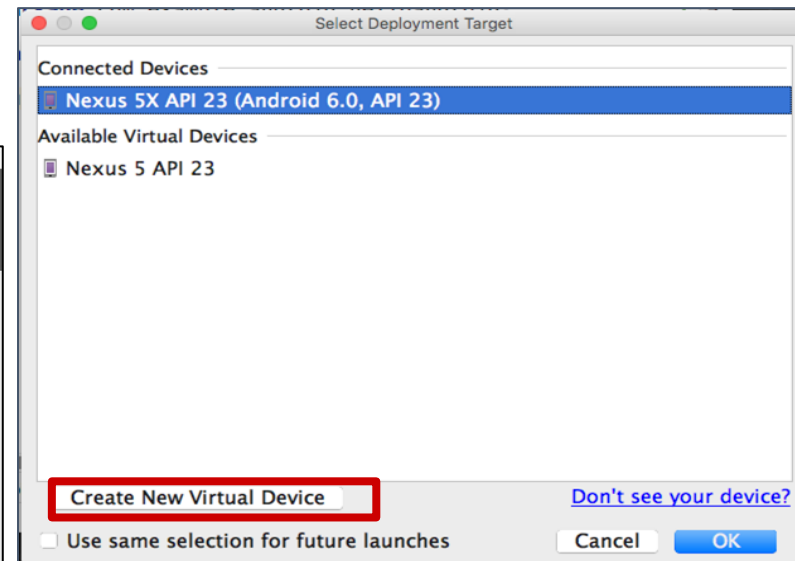
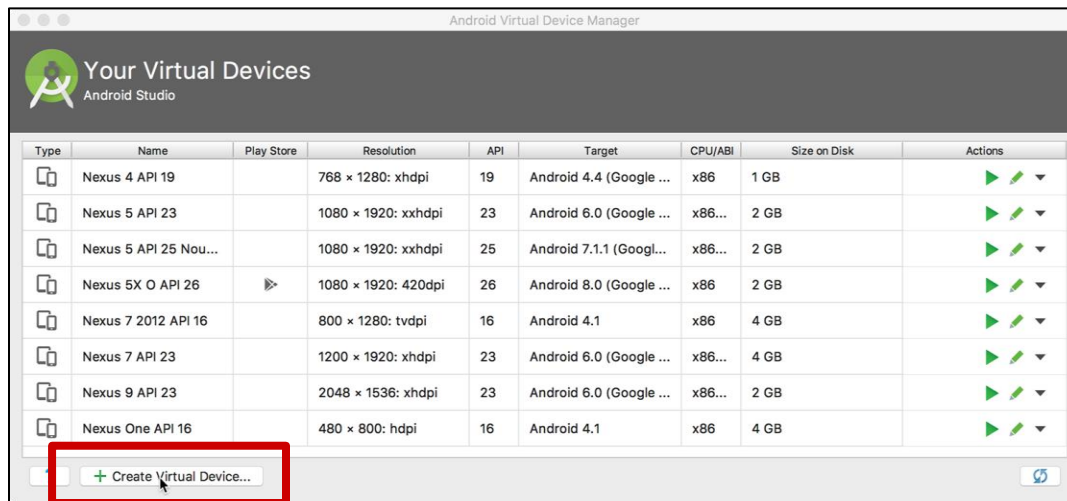
3. OK

Create a virtual device

Use emulators to test app on different versions of Android and form factors.

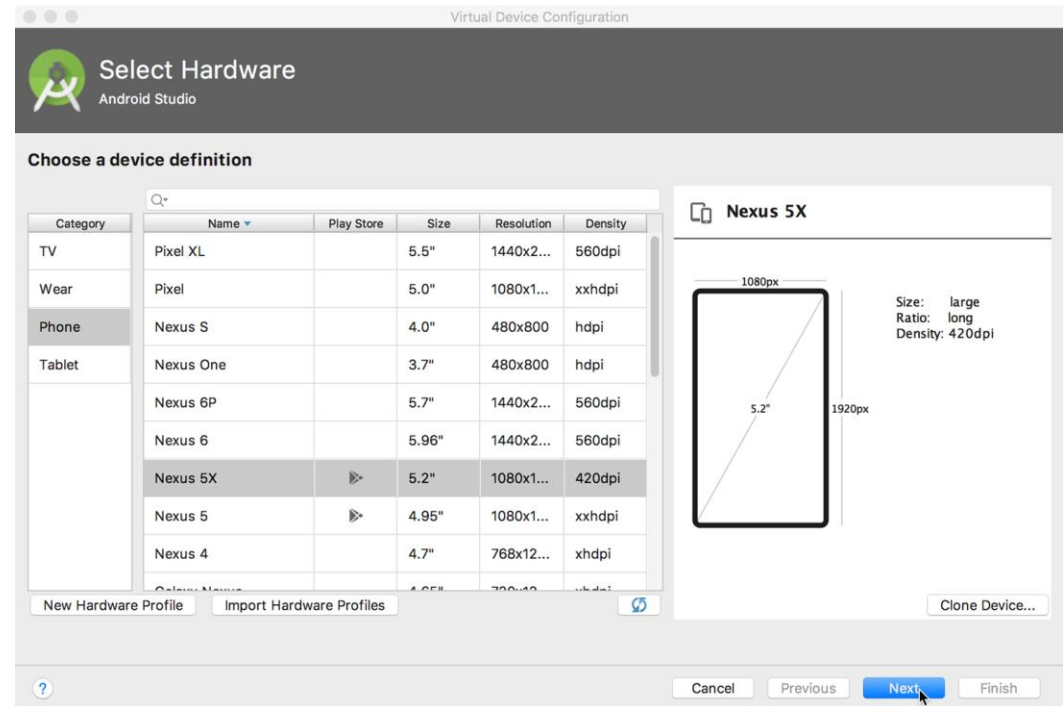
Tools > Android > AVD Manager

or:

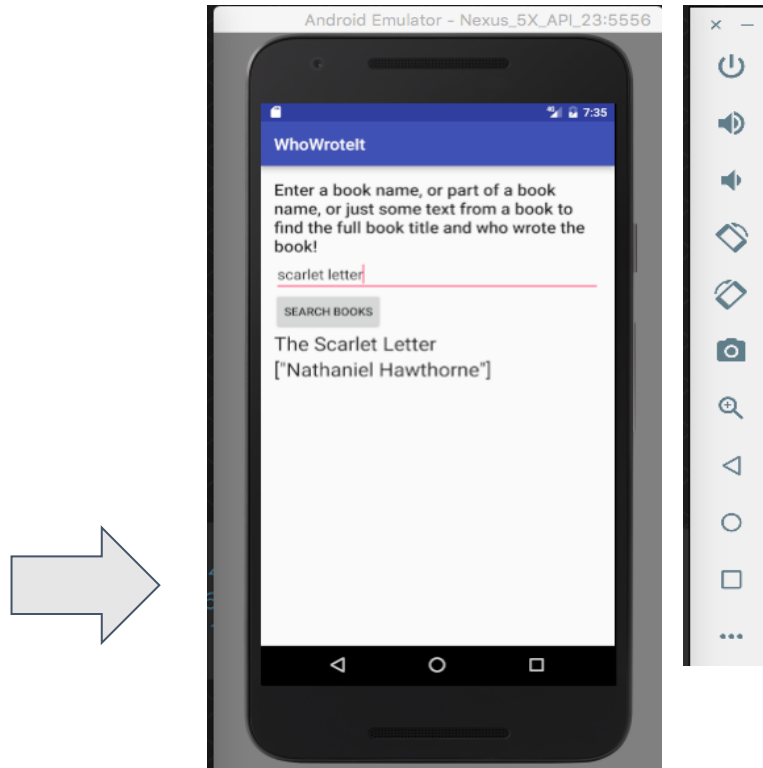


Configure virtual device

1. Choose hardware
2. Select Android version
3. Finalize



Run on a virtual device



Run on a physical device

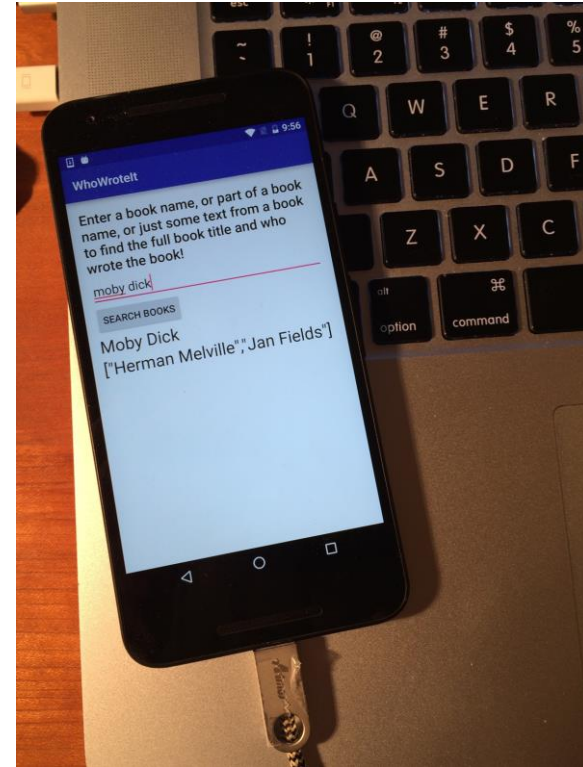
1. Turn on Developer Options:
 - a. **Settings > About phone**
 - b. Tap **Build number** seven times
2. Turn on USB Debugging
 - a. **Settings > Developer Options > USB Debugging**
3. Connect phone to computer with cable

Windows/Linux additional setup:

- [Using Hardware Devices](#)

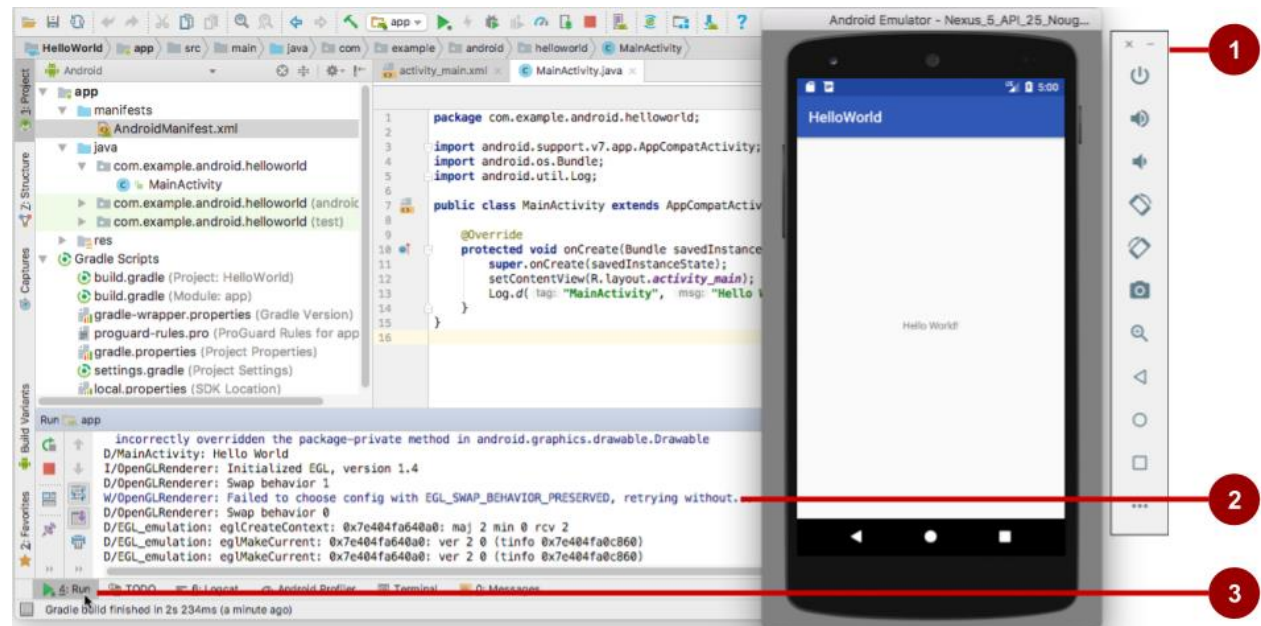
Windows drivers:

- [OEM USB Drivers](#)



Get feedback as your app runs

1. Emulator running the app
2. Run pane
3. Run tab to open or close the Run pane

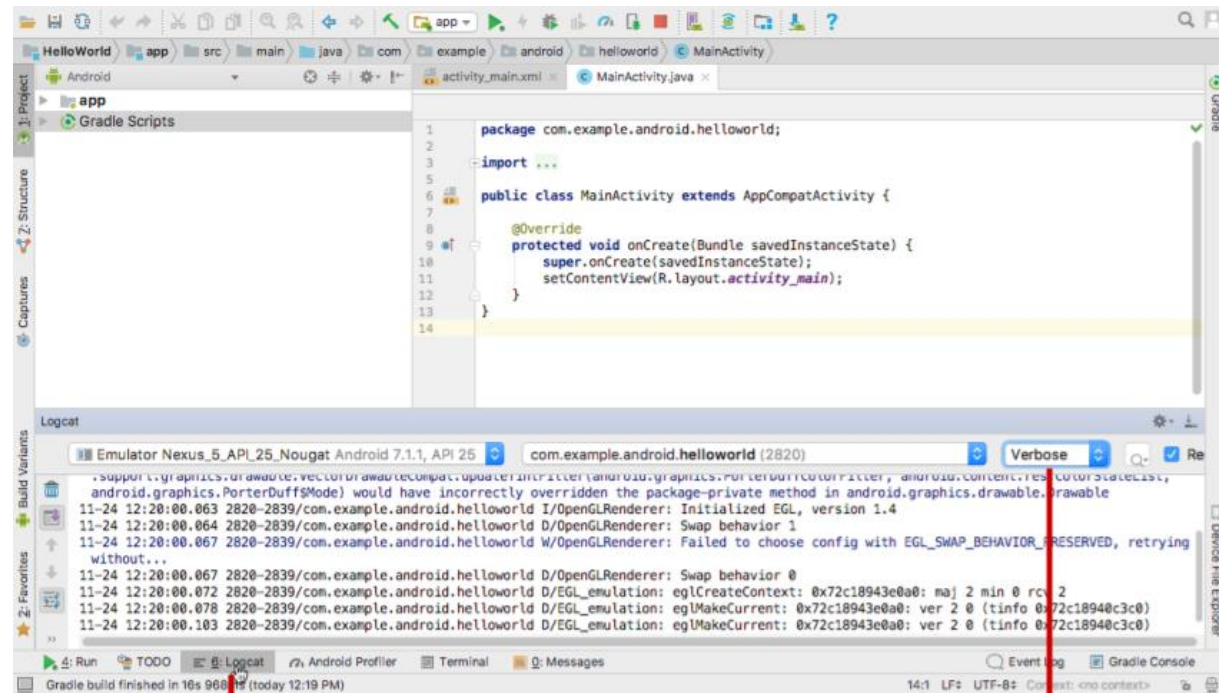


Adding logging to your app

- As the app runs, the **Logcat** pane shows information
- Add logging statements to your app that will show up in the Logcat pane
- Set filters in **Logcat** pane to see what's important to you
- Search using tags

The Logcat pane

1. Logcat tab to show Logcat pane
2. Log level menu



Logging statement

```
import android.util.Log;

// Use class name as tag
private static final String TAG =
    MainActivity.class.getSimpleName();

// Show message in Android Monitor, logcat
pane

// Log.<log-level>(TAG, "Message");
Log.d(TAG, "Creating the URI...");
```

Learn more

- [Meet Android Studio](#)
- Official Android documentation at developer.android.com
- [Create and Manage Virtual Devices](#)
- [Supporting Different Platform Versions](#)
- [Supporting Multiple Screens](#)

Learn even more

- [Gradle Wikipedia page](#)
- [Google Java Programming Language style guide](#)
- Find answers at [Stackoverflow.com](#)

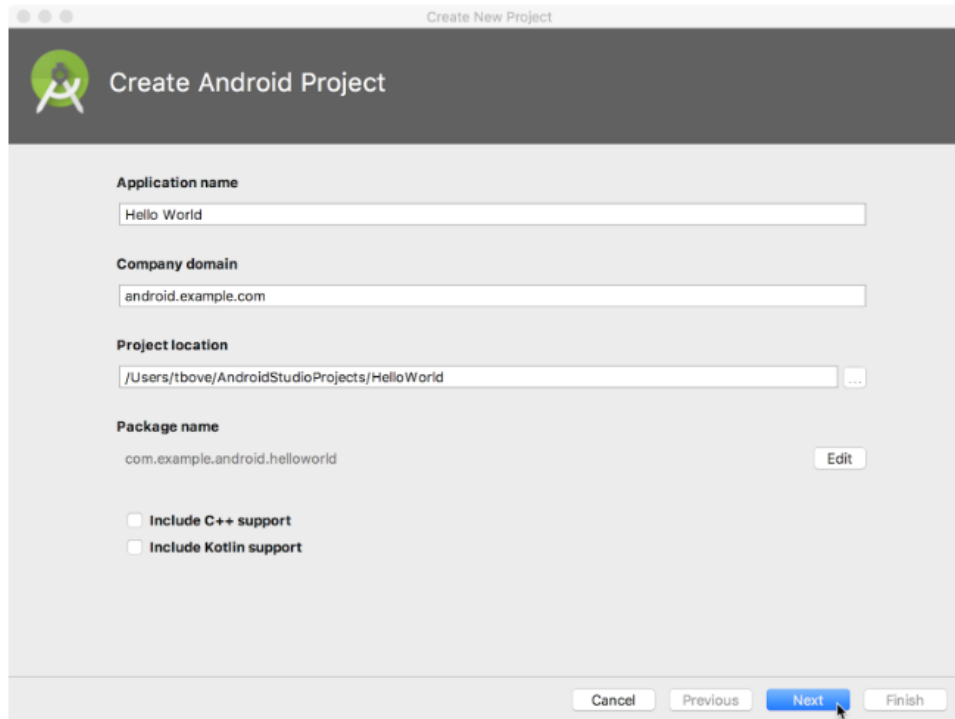
What's Next?

- Concept Chapter: [1.1 Your first Android app](#)
- Practical: [1.1 Android Studio and Hello World](#)

Task 1: Install Android Studio

<https://developer.android.com/studio/install.html>

Task 2: Create the Hello World app



Create New Project

Create Android Project

Application name
Hello World

Company domain
android.example.com


Project location
/Users/tbove/AndroidStudioProjects/HelloWorld

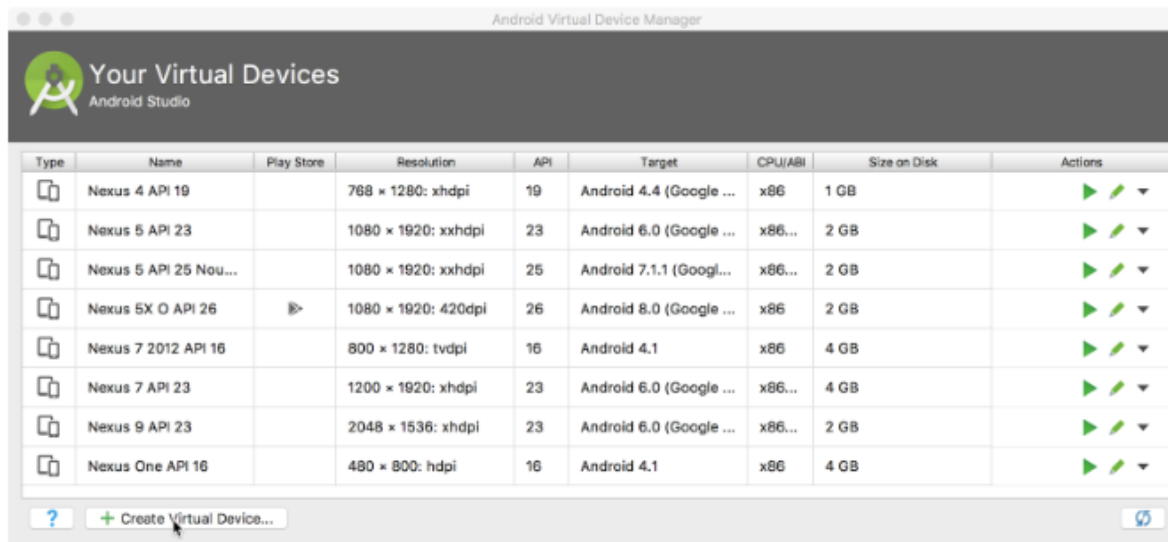
Package name
com.example.android.helloworld Edit

☐ Include C++ support
☐ Include Kotlin support

Cancel Previous Next Finish

Task 3: Use a virtual device

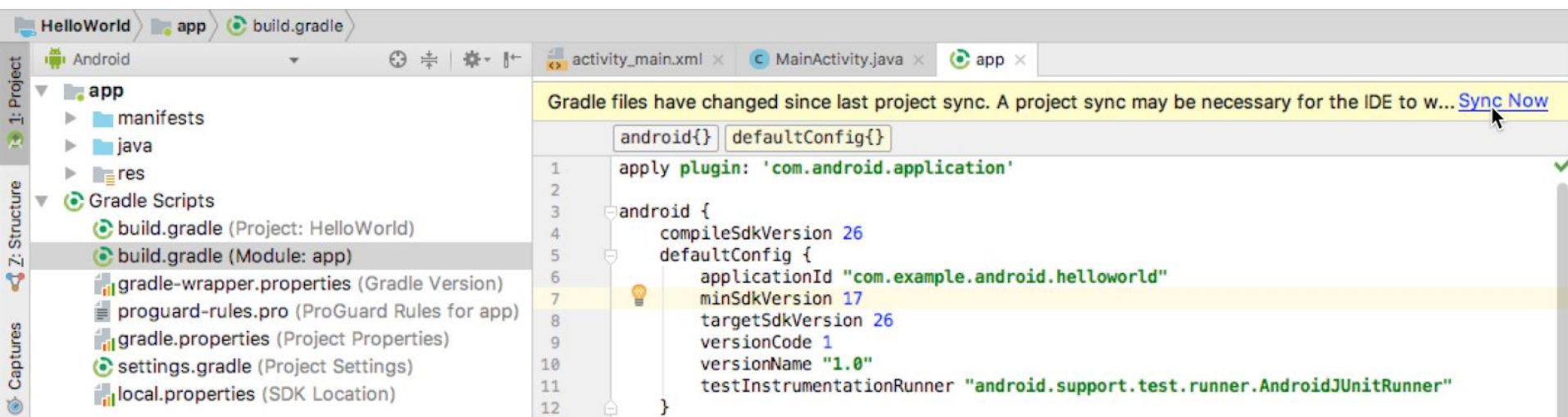
In Android Studio, select **Tools > Android > AVD Manager**, or click the AVD Manager icon  in the toolbar. The **Your Virtual Devices** screen appears. If you've already created virtual devices, the screen shows them (as shown in the figure below); otherwise you see a blank list.



Task 4: Use a physical device

1. On your device, open **Settings**, search for **About phone**, click on **About phone**, and tap **Build number** seven times.
2. Return to the previous screen (**Settings / System**). **Developer options** appears in the list. Tap **Developer options**.
3. Choose **USB Debugging**.

Task 5: Change app's gradle



Task 6: Add log statement

