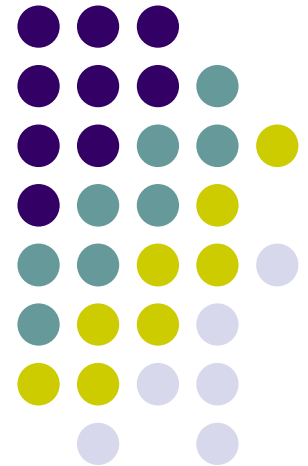
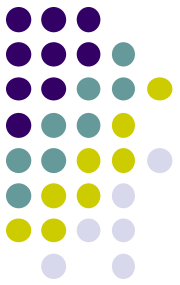


CS 4518 Mobile and Ubiquitous Computing

HW 0 Slides: Introduction to Android

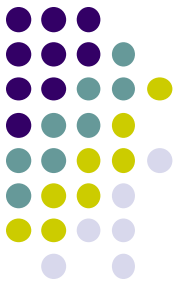
Emmanuel Agu





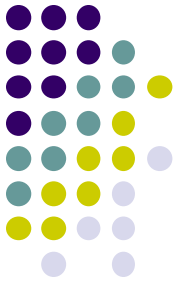
Tutorials 1-5

Overview

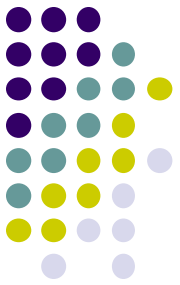


Setting up your Project

- **Tutorials 1 & 2 (Optional):** Installing Java, Android Studio on your own machine
- **Tutorial 3:** Setting up your project
 - How to set up a new Android Project, add new Activity (App screen)
- **Tutorial 4:** Running a Simple App
 - How to select, run app on a virtual device (AVD)
- **Tutorial 5:** Tour of Android Studio Interface
 - Intro to Android Studio menus, toolbars and Drag-and-drop widget palette



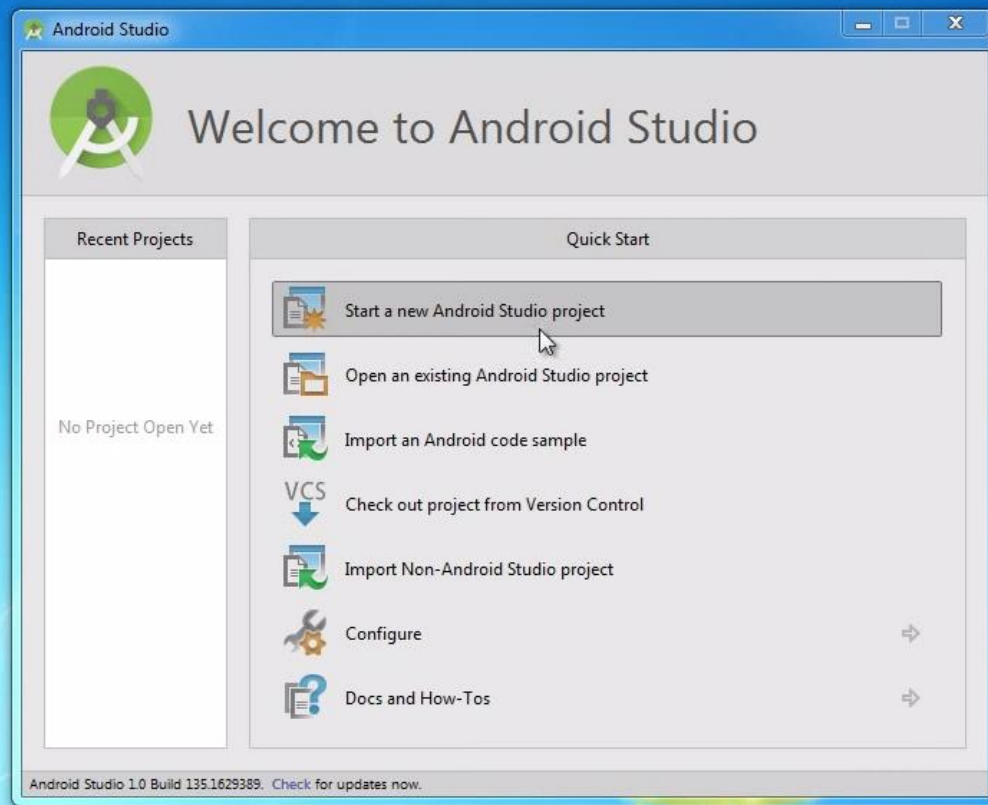
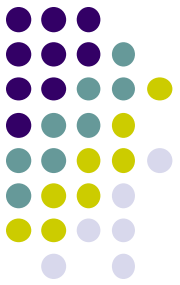
Tutorial 3



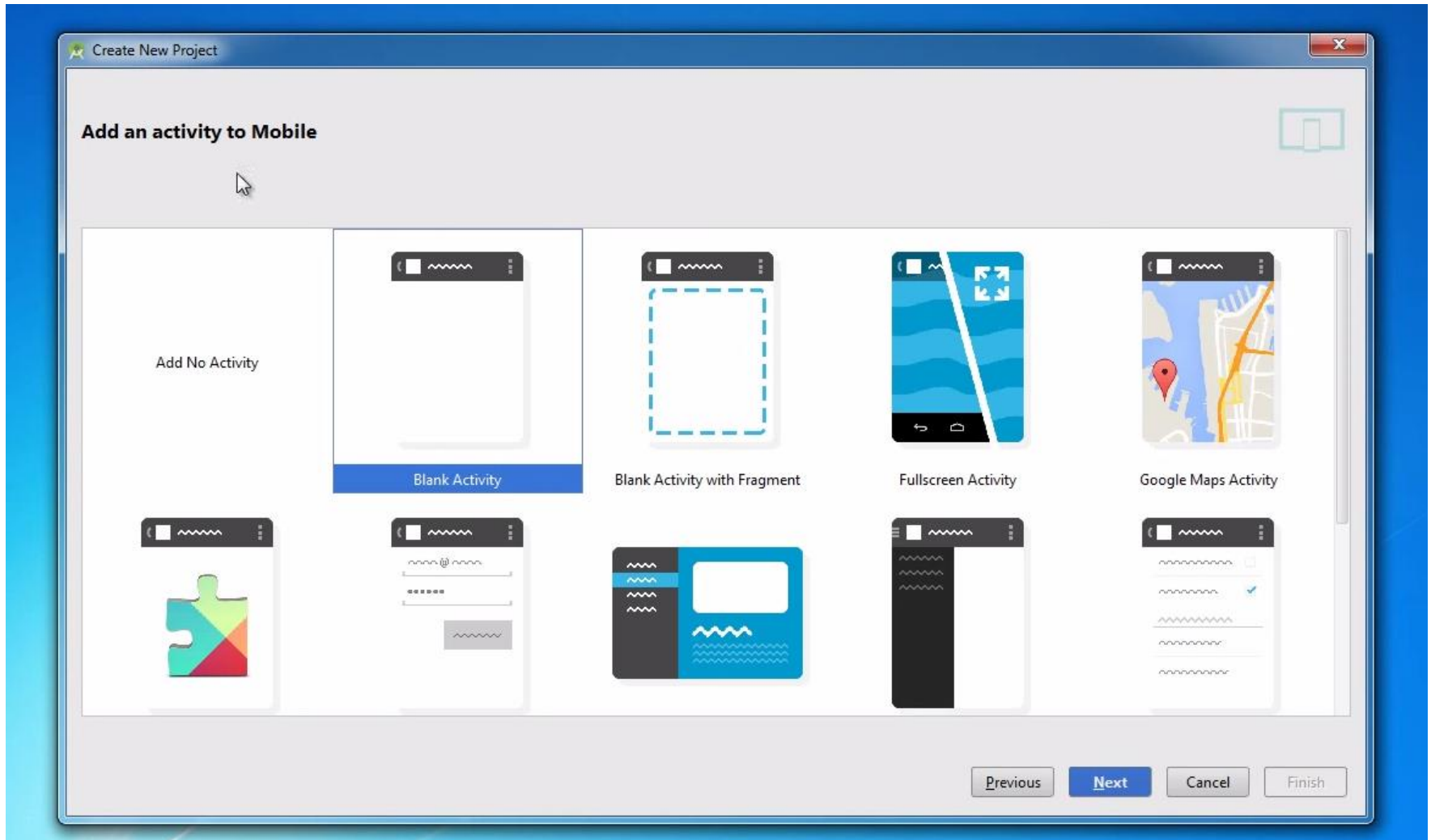
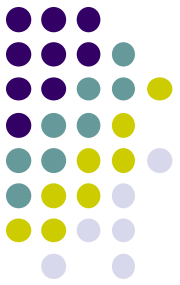
Setting up your Project

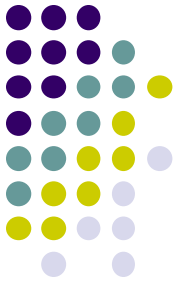
- **Tutorial 3: Android App Development for Beginners - 3**
 - Setting up your project by Bucky Roberts (thenewboston)
 - <https://www.youtube.com/watch?v=r4olez0sfvY>
- Main steps to set up Android Project
 - Start a new Android Project
 - Configure new Android Project (select app name, domain name, etc)
 - Set platform and minimum SDK
 - Add an Activity

Start a new Android Project

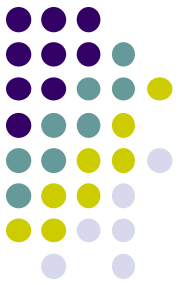


Add an Activity (Blank Activity is Simplest)





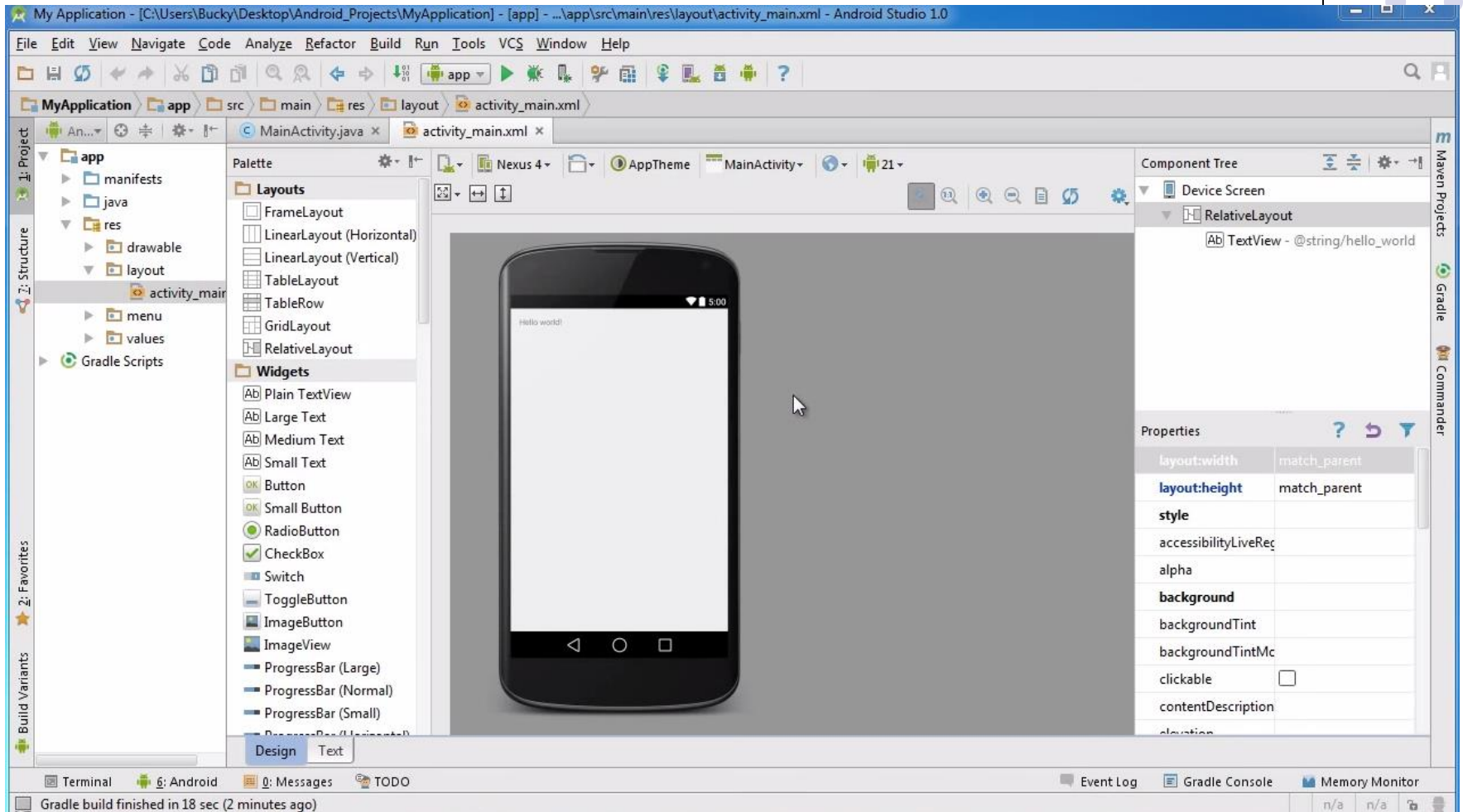
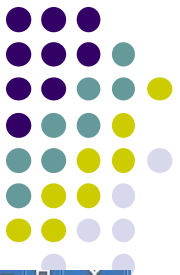
Tutorial 4



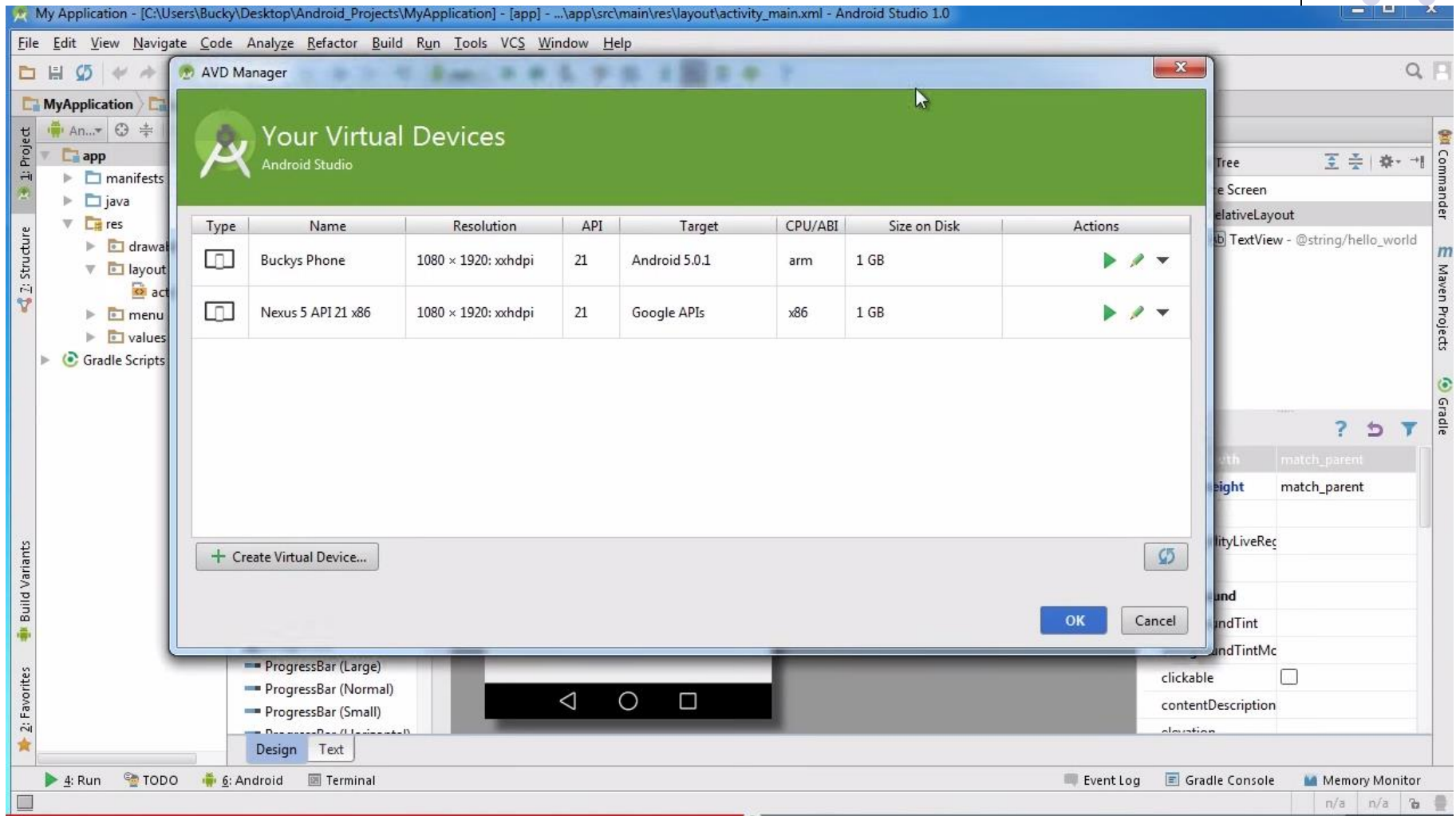
Running a Simple App

- Tutorial 4: Android App Development for Beginners - 4 – Running a Simple App [10:48 mins] by Bucky Roberts
 - <https://www.youtube.com/watch?v=qKRWc3Q8wRw>
- Main steps
 - Run Android Studio
 - Fix any remaining issues
 - Run AVD, select virtual device
 - Run App on selected virtual device

Open Android Studio

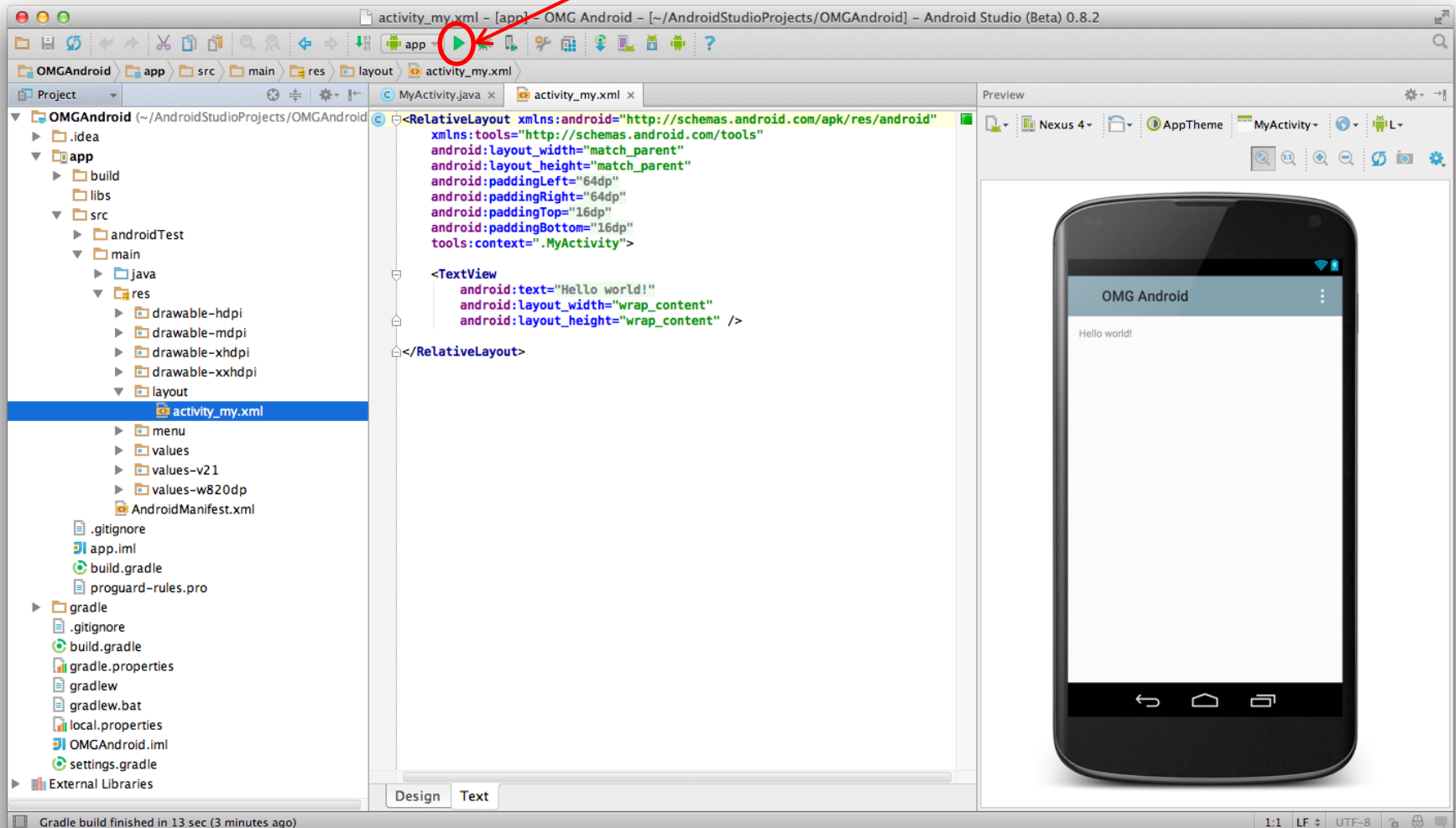


Run AVD Manager

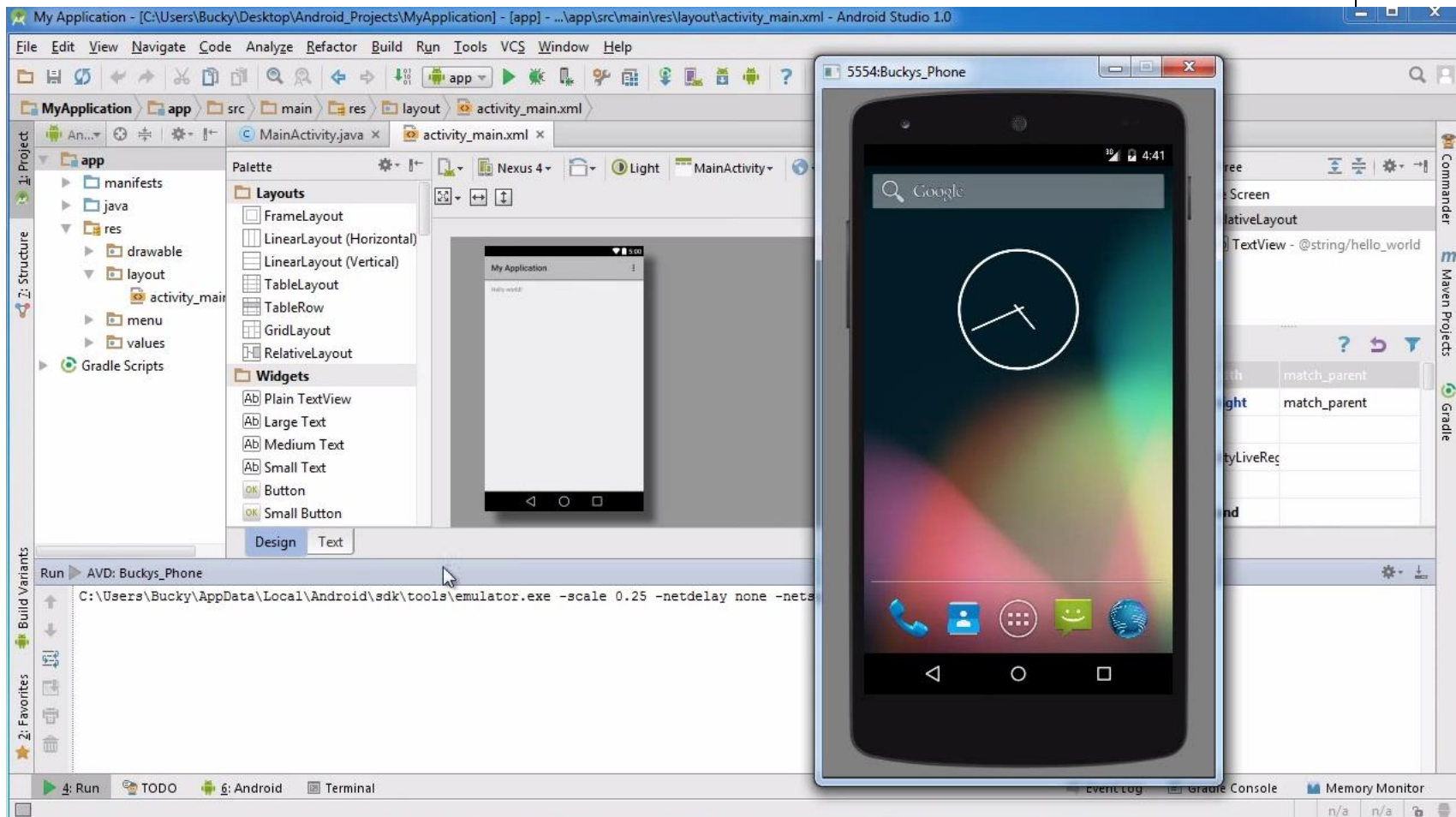
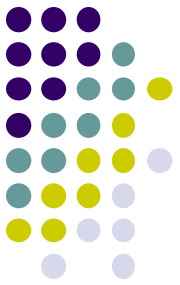


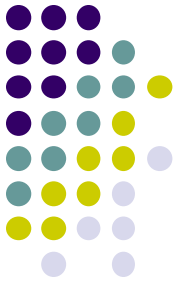
How to Run the App?

Click here to run the app

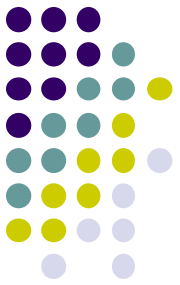


Run App on Virtual Device (Phone)





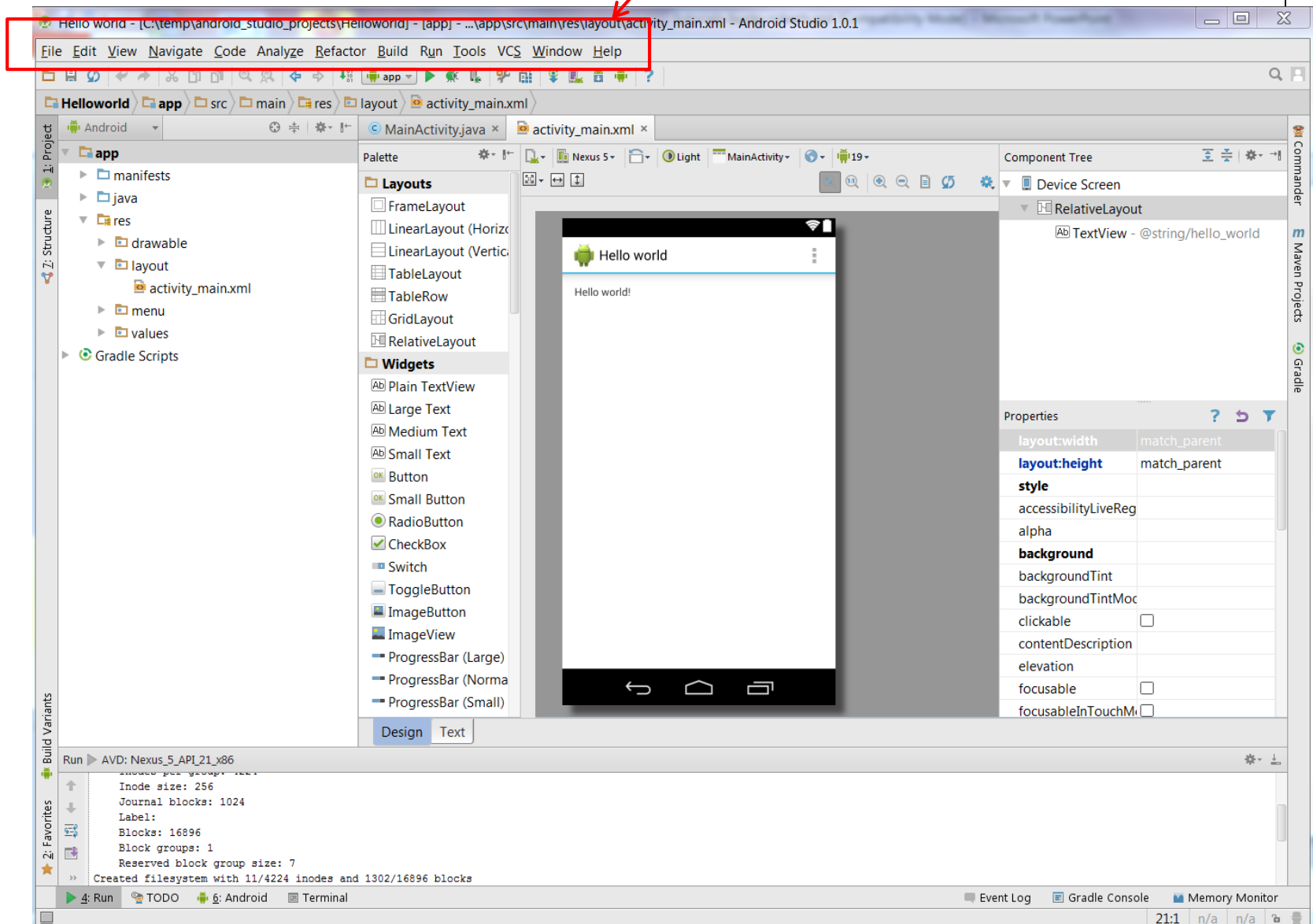
Tutorial 5



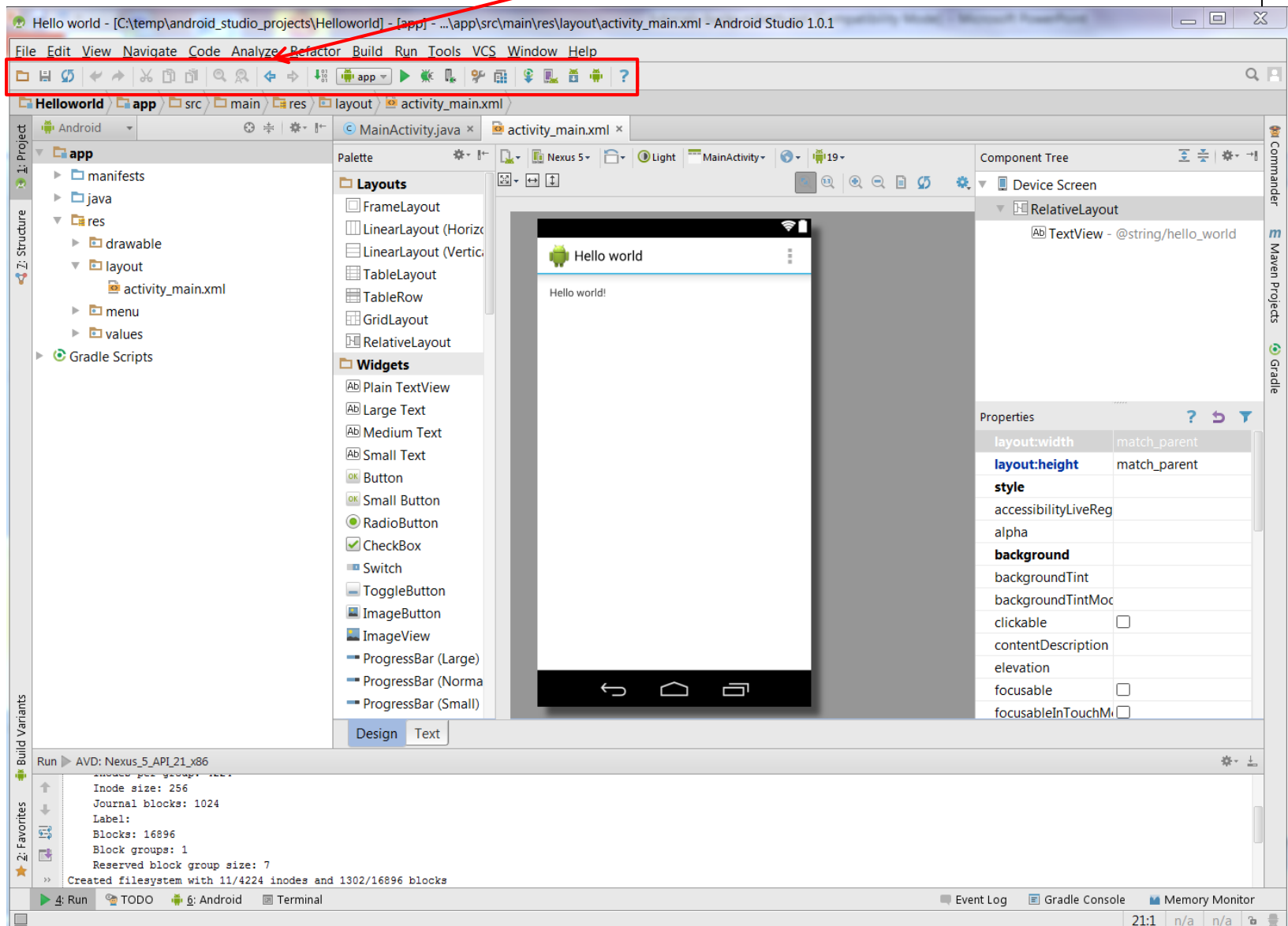
Tour of Android Studio Interface

- Tutorial 5: Tour of Android Studio Interface [6:01 mins]
 - <https://www.youtube.com/watch?v=-pdTqBq2TFQ>
- Quick overview of main sections of Android Studio
 - Windows menu bar
 - Android tool bar
 - Project window
 - Editor Window
 - Palette for Drag-and-Drop Design of Android buttons
- More detailed coverage of specific UI aspects later

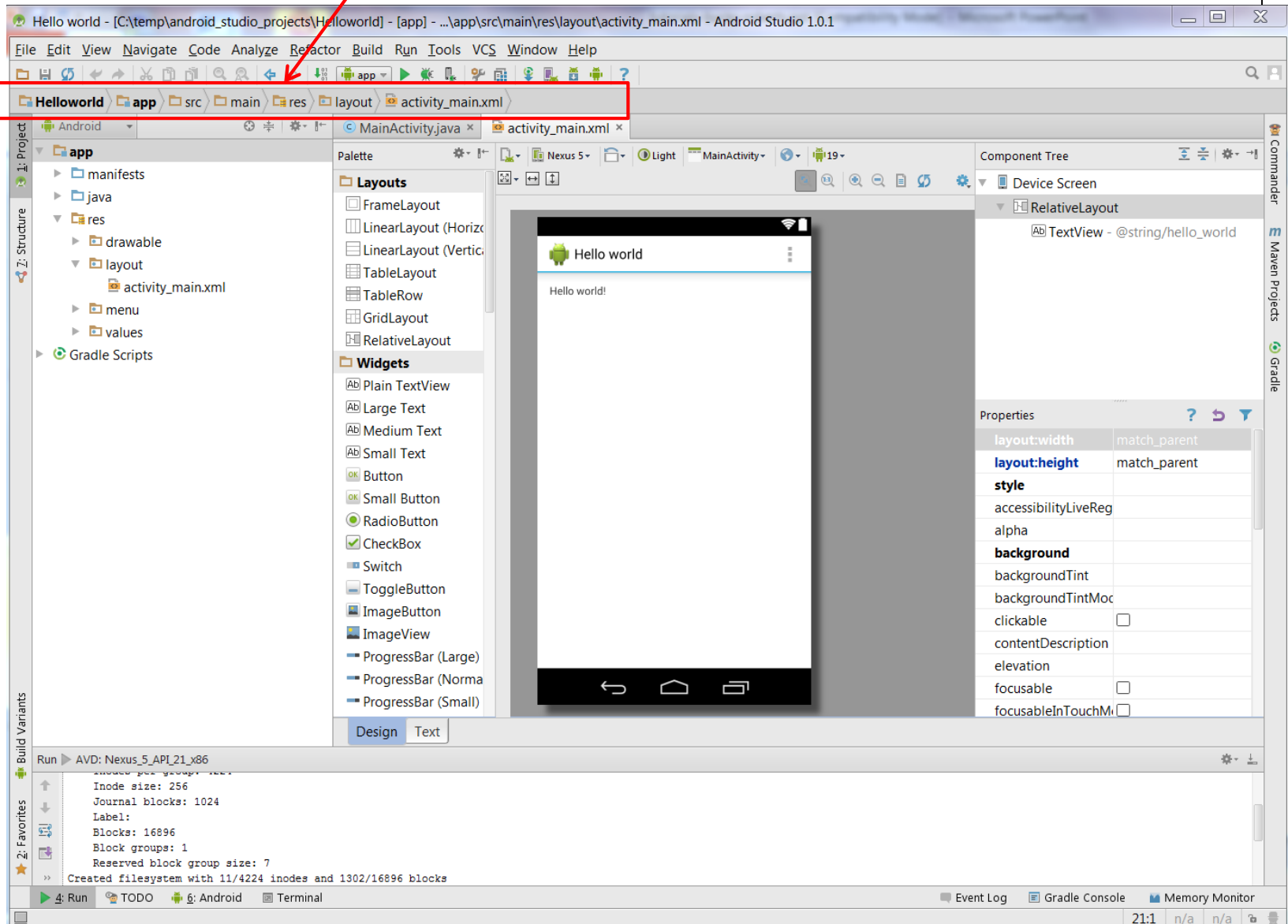
Typical Windows Menu Bar (File, edit, etc)



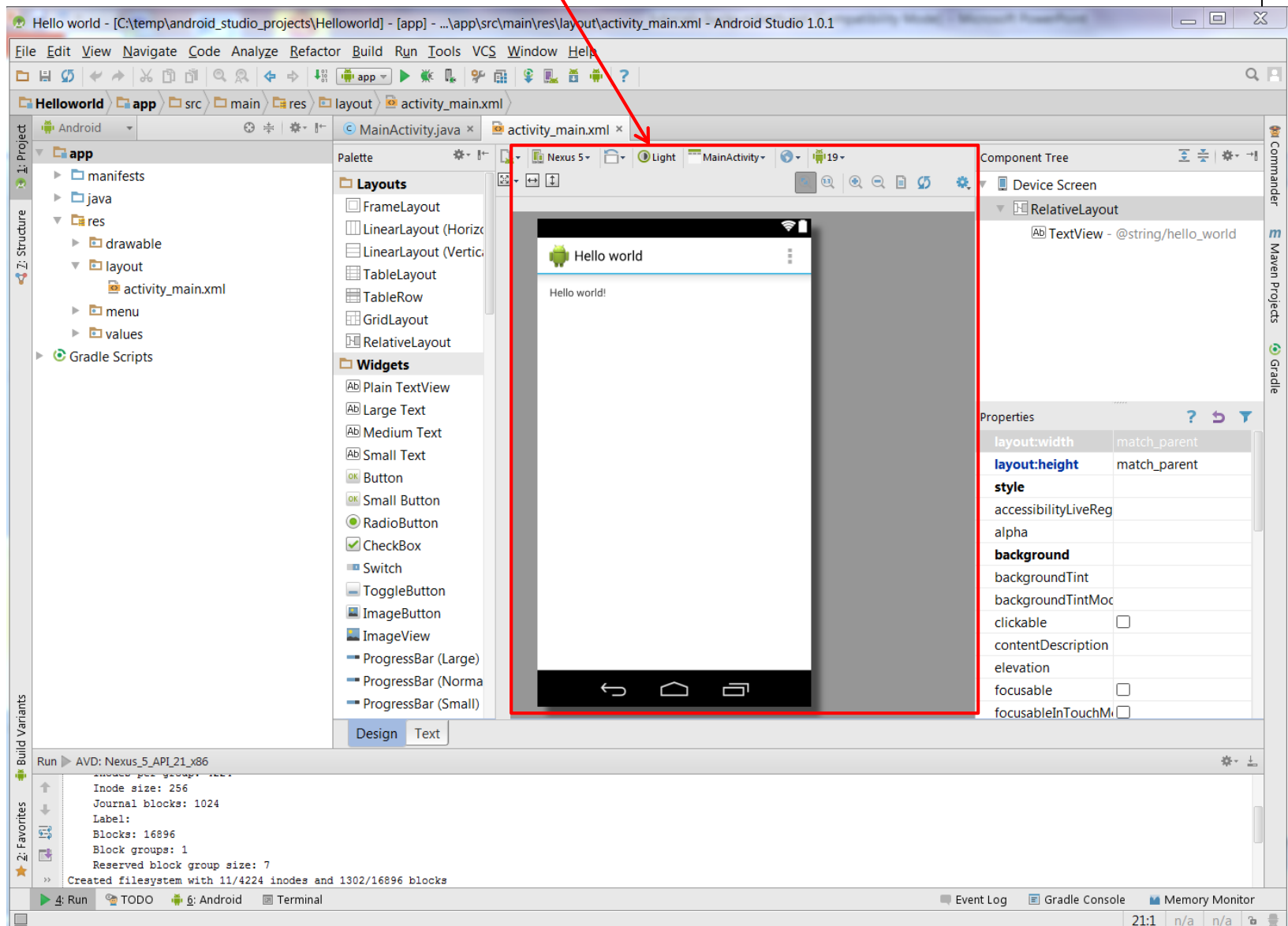
Tool Bar: Shortcuts to Frequently used Android-specific Functions (E.g. One-click access to SDK manager)



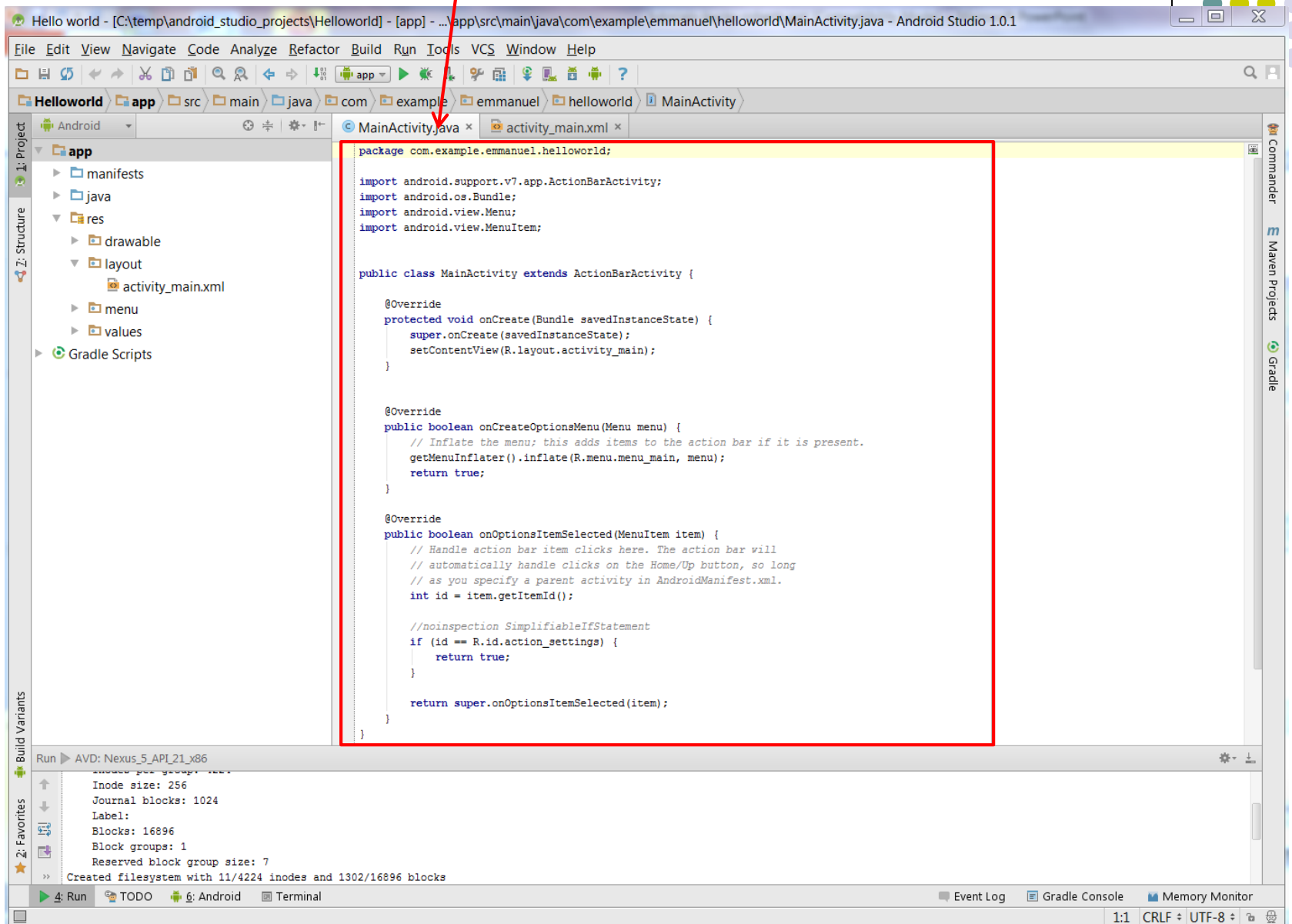
Path to Current File in IDE Window (Clickable)



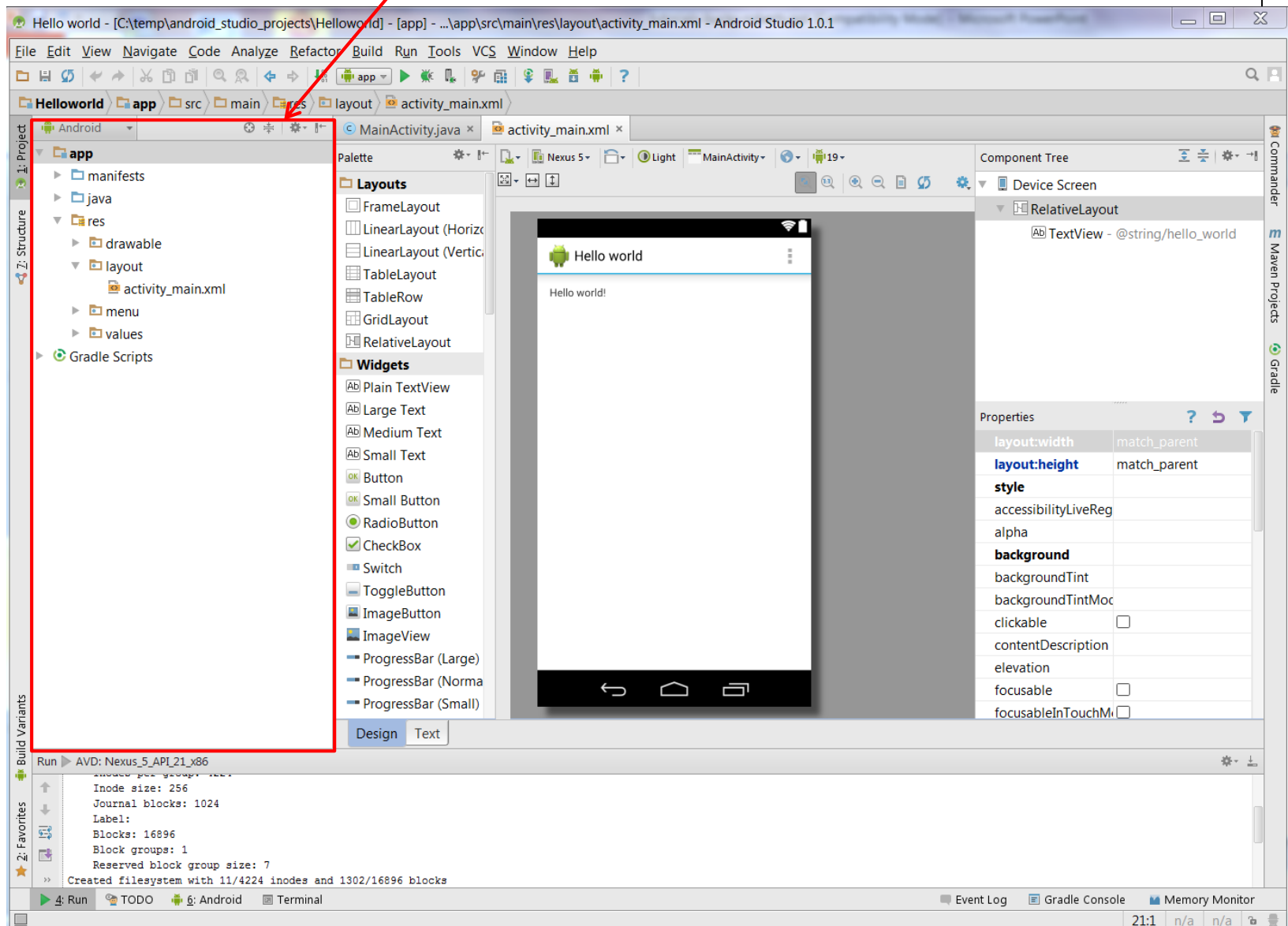
Editor Window (Allows editing of current file we are working on)



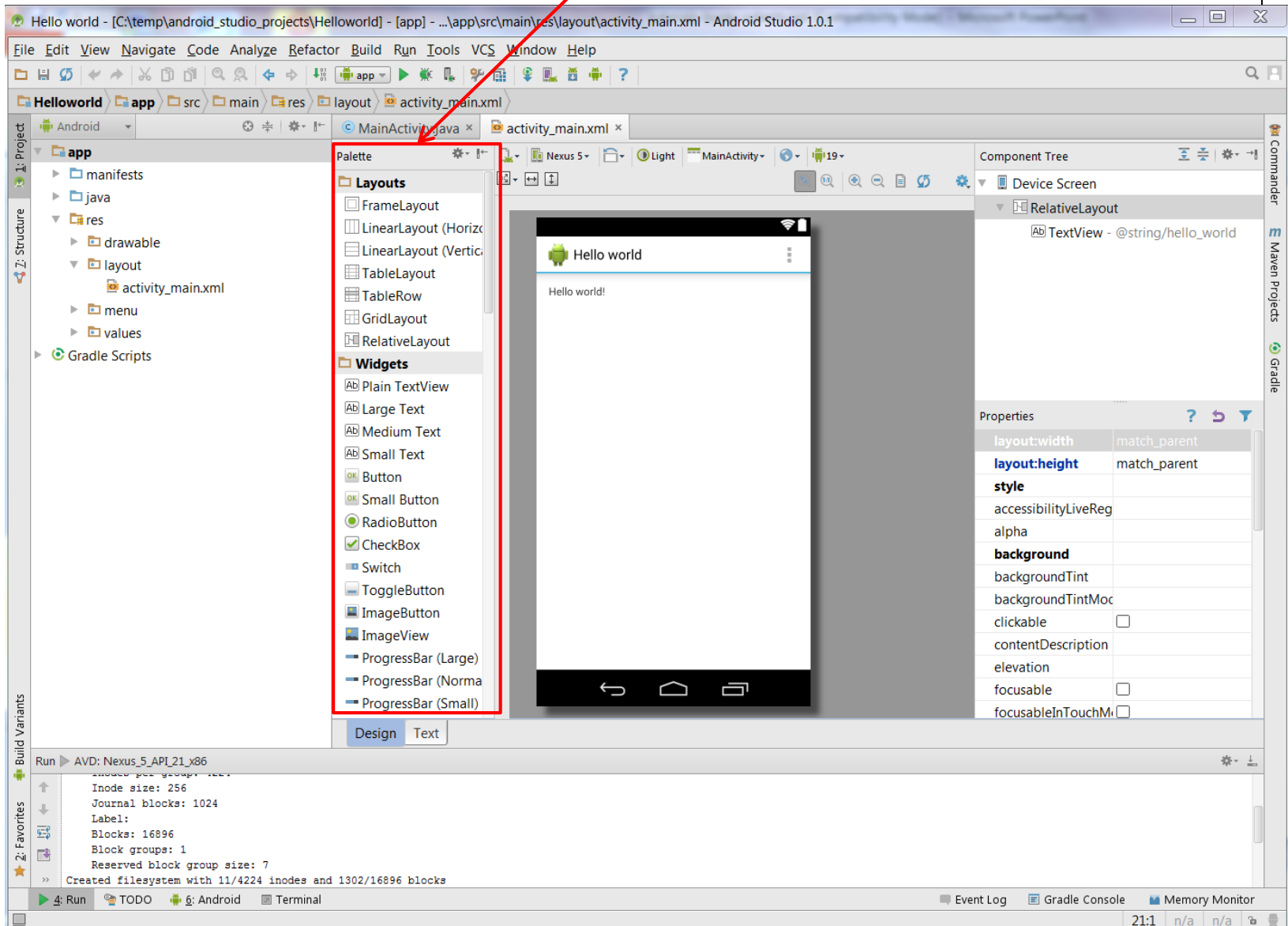
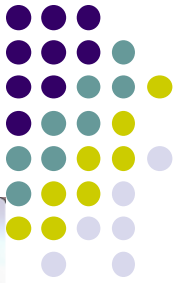
Clicking on Editor Window Tabs switches between project files



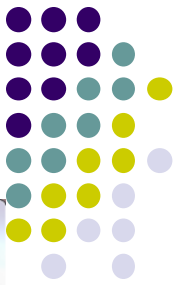
Project Window (Shows project files, packages, etc)



Palette of Drag-and-Drop Elements for Designing Interface (Layout, widgets, etc)



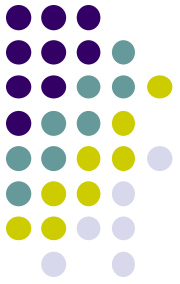
Parameters of Drag-and-Drop Elements for Designing Interface (e.g. colors, dimensions of widgets, etc)



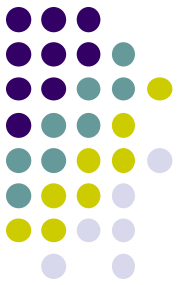
The screenshot shows the Android Studio 1.0.1 IDE with a project named 'Hello world'. The main editor displays the 'activity_main.xml' file in Design mode, showing a simple interface with a 'Hello world!' text view. The Properties panel on the right is highlighted with a red box, showing the following parameters:

Property	Value
layout:width	match_parent
layout:height	match_parent
style	
accessibilityLiveReg	
alpha	
background	
backgroundTint	
backgroundTintMoc	
clickable	☐
contentDescription	
elevation	
focusable	☐
focusableInTouchM	☐

The bottom status bar shows the device configuration: AVD: Nexus_5_API_21_x86. The bottom right corner displays the system clock and battery status: 21:1, n/a, n/a.



Tutorial 8



Basic Overview of an App

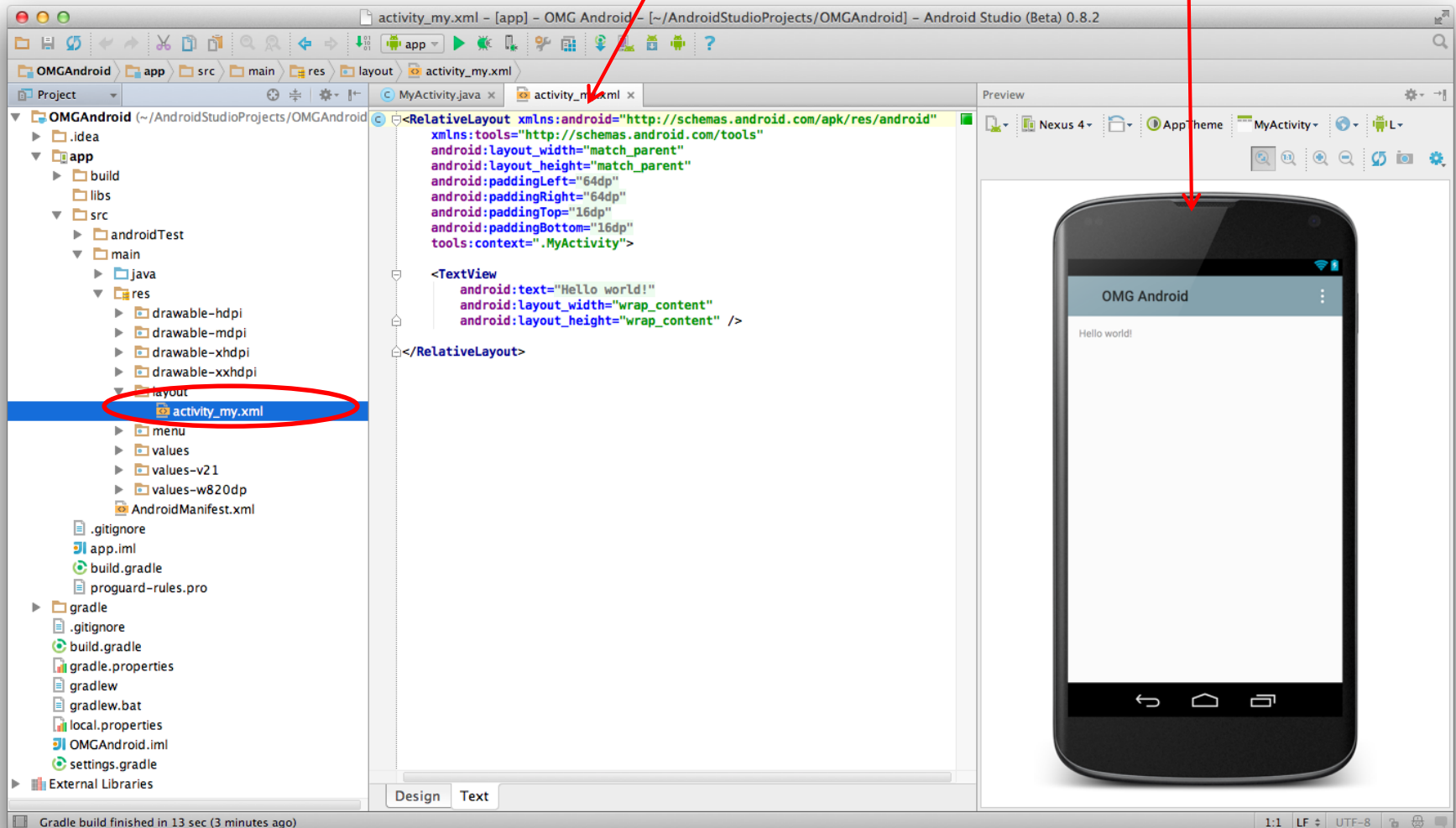
- Tutorial 8: Basic Overview of an App [11:36 mins]
 - <https://www.youtube.com/watch?v=9l1fWAIHPg>
- Main topics
 - Introduces main files of Android App
 - Activity_main.xml
 - MainActivity.java
 - AndroidManifest.xml
 - How to work with these files within Android Studio
 - Editing files using either drag-and-drop interface or XML
 - Flow of basic app

Editing Android

Activity_my.xml
(can edit directly)

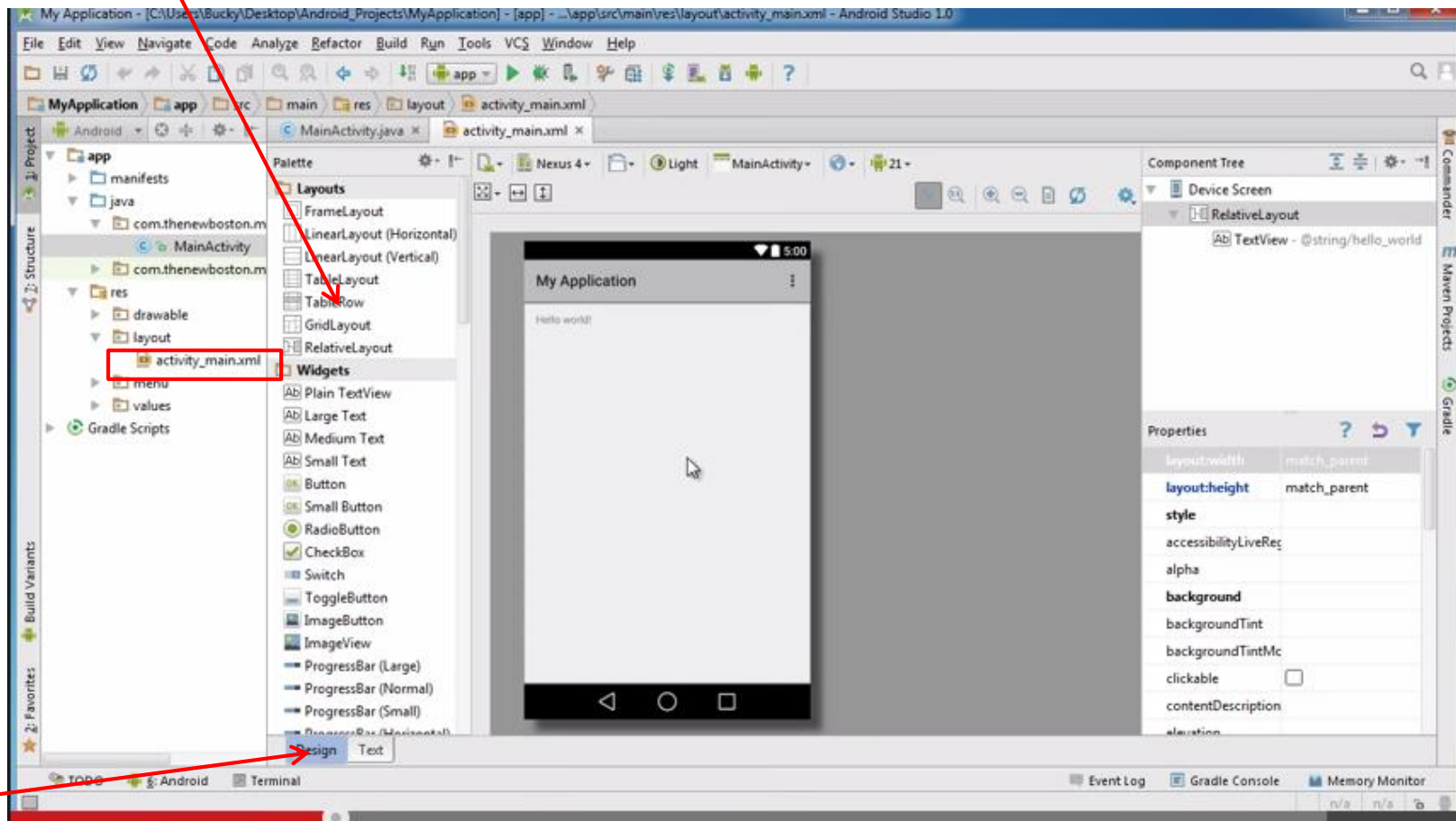
App running on
Emulator (can edit
Text, drag and drop)

- Activity_my.xml is XML file specifying screen layout, widgets
- Can edit XML directly or drag and drop



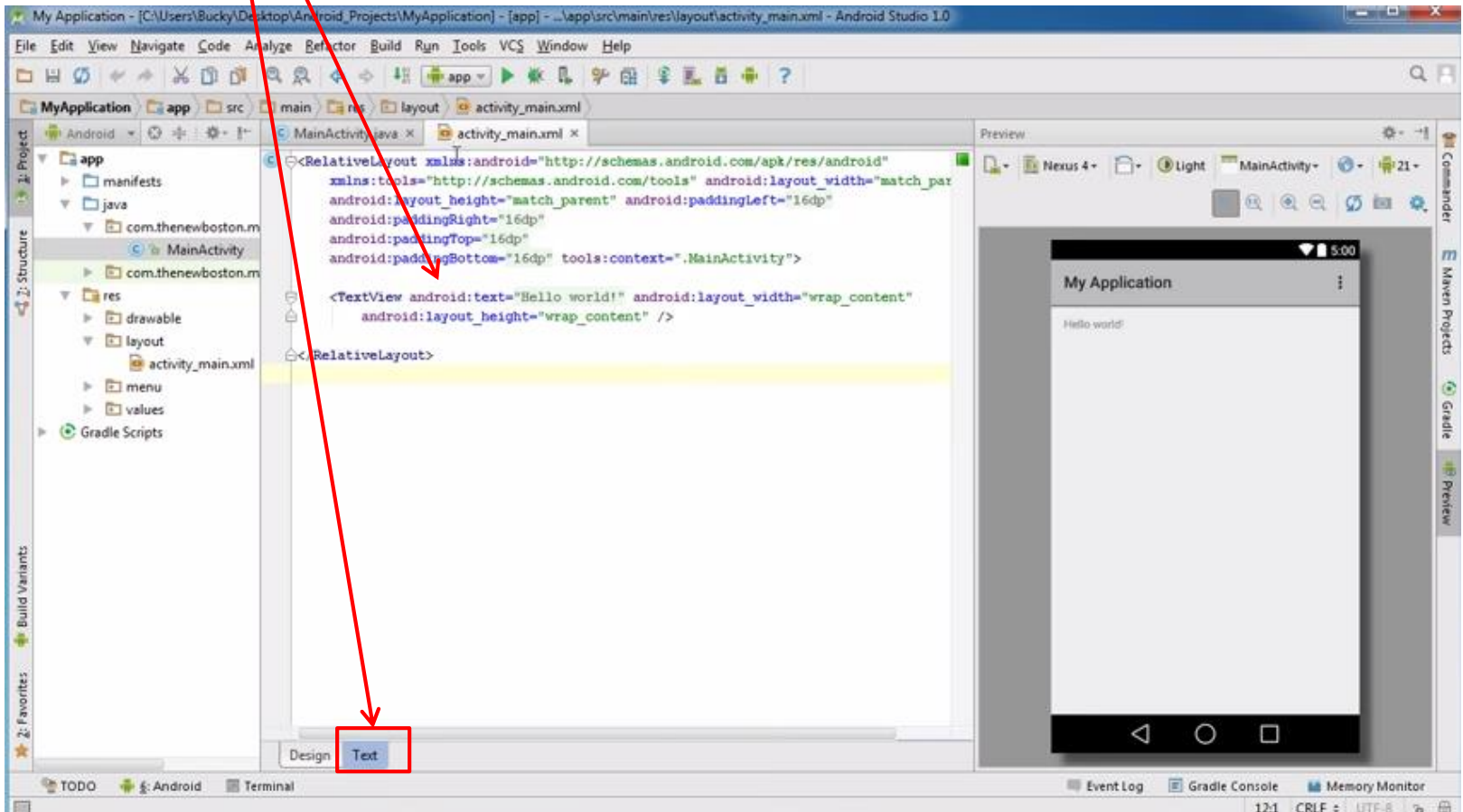
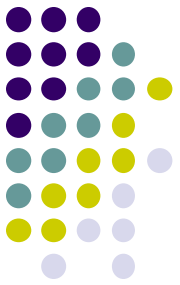
Activity_main.xml

- **Widgets:** elements that can be dragged onto activity (screen)
- **Design View:** Design app screen using Drag-and-drop widgets



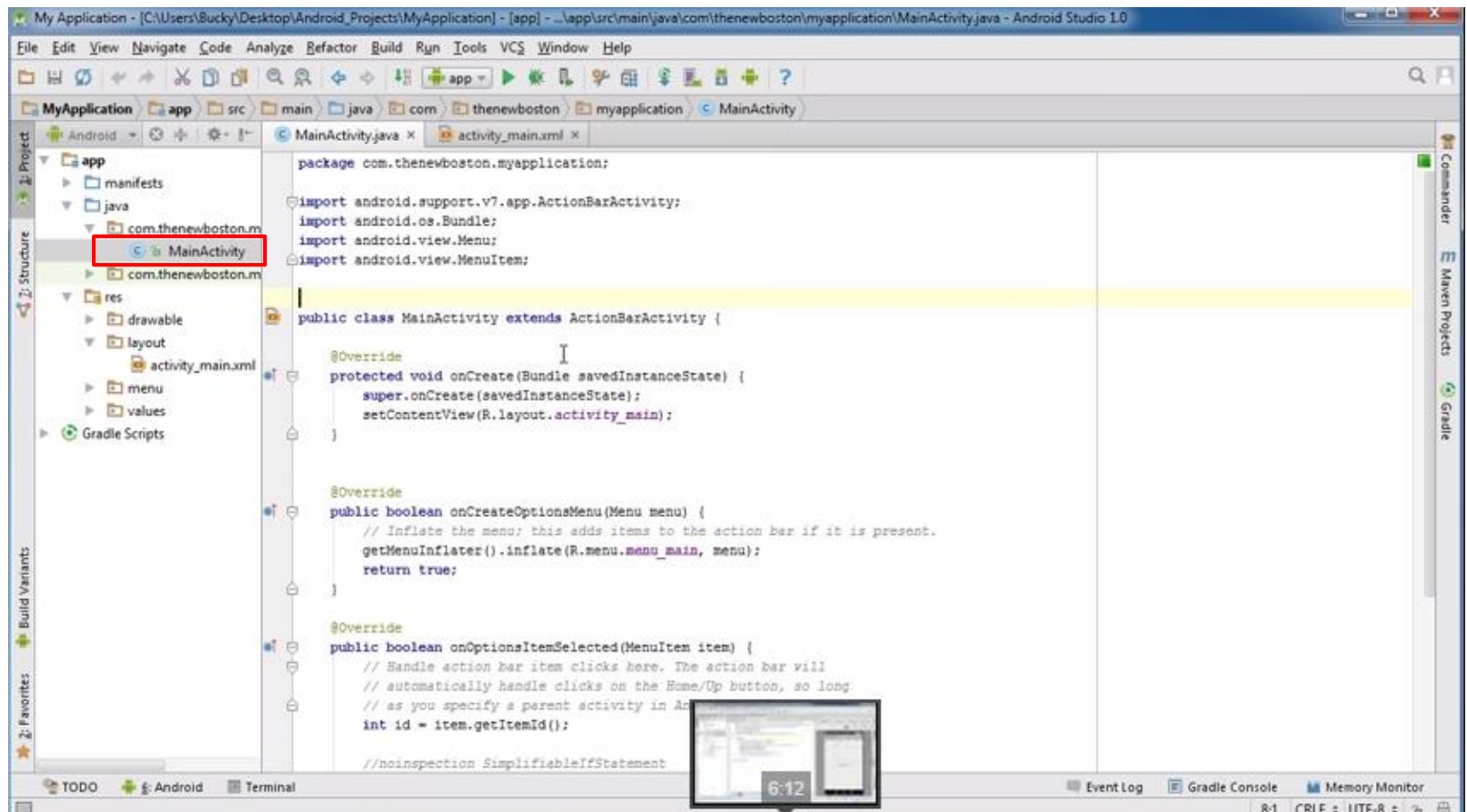
Activity_main.xml: Text View

- **Text view:** Design screen by editing XML file directly
- **Note:** dragging and dropping widgets auto-generates corresponding XML



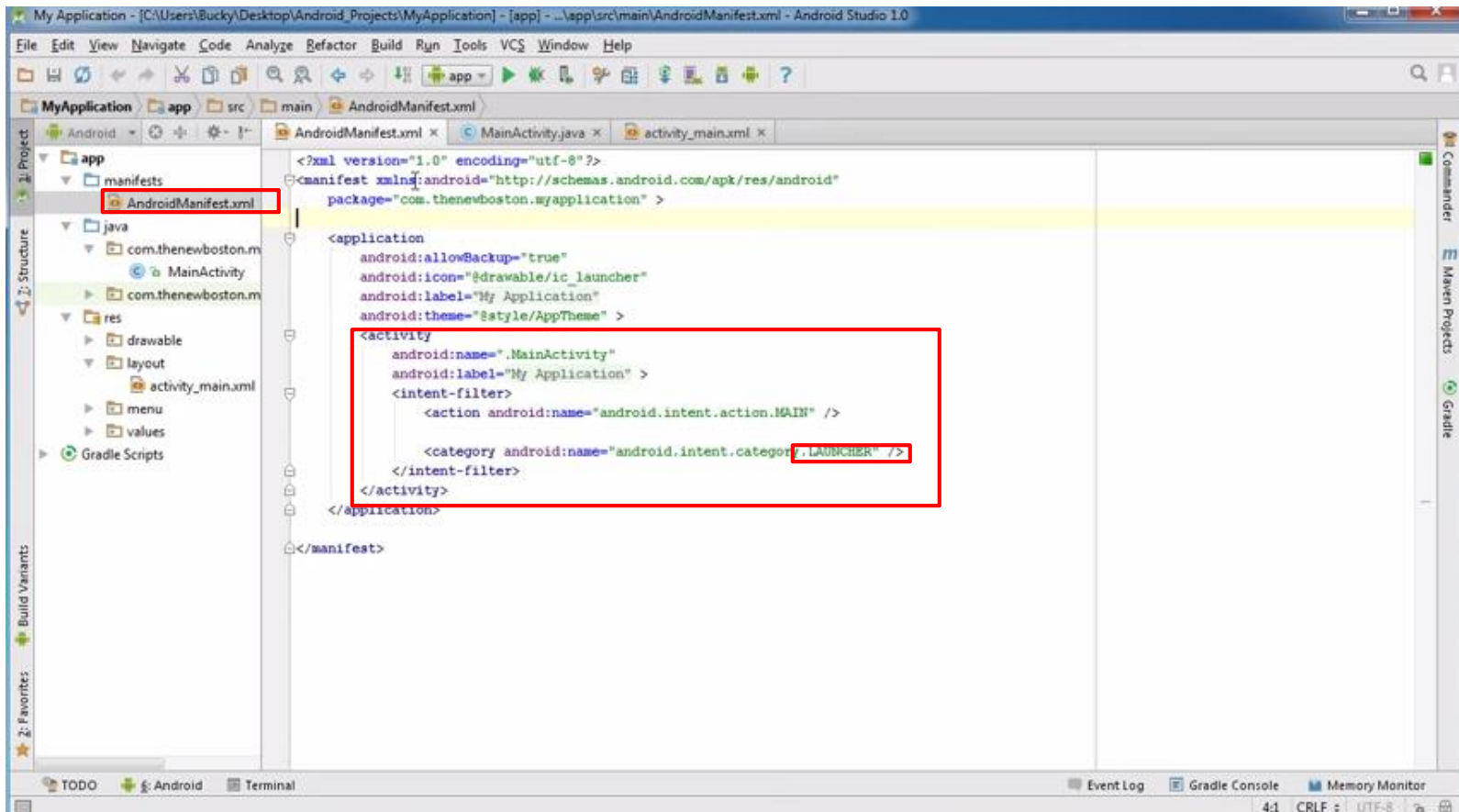
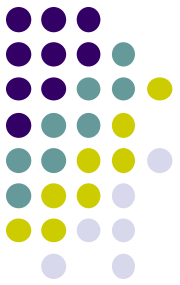
MainActivity.java

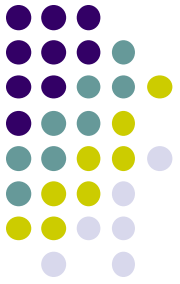
- Java code, defines actions, handles interaction/put taken (intelligence)
 - E.g. What app will do when button/screen clicked



AndroidManifest.xml

- App's starting point (a bit like main() in C)

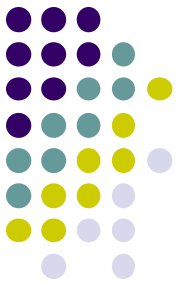




Android UI Tour

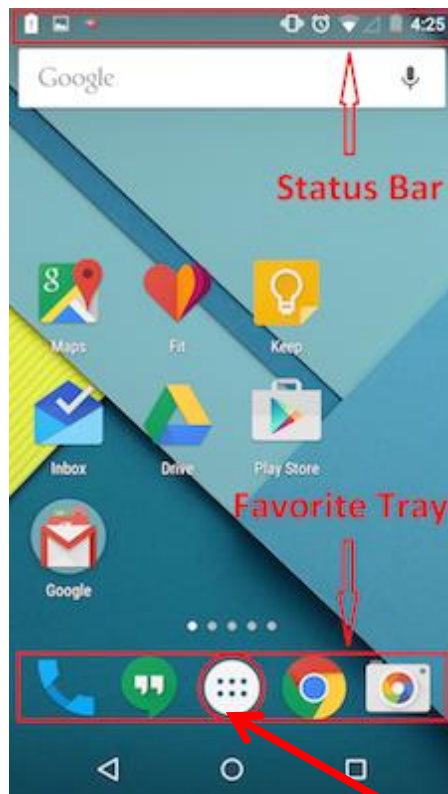
Home Screen

- First screen, includes **favorites** tray (e.g phone, mail, messaging, web, etc)



All Apps Screen

- Accessed by touching **all apps button** in favorites tray
- Can swipe through multiple app screens, customizable



Android 5.0

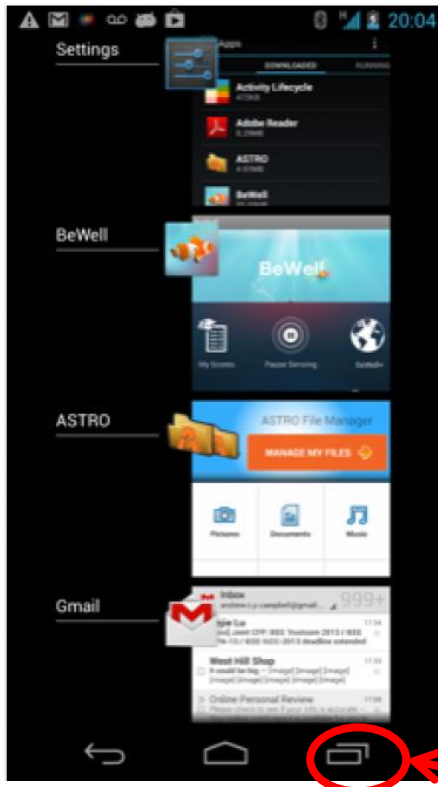
all apps button



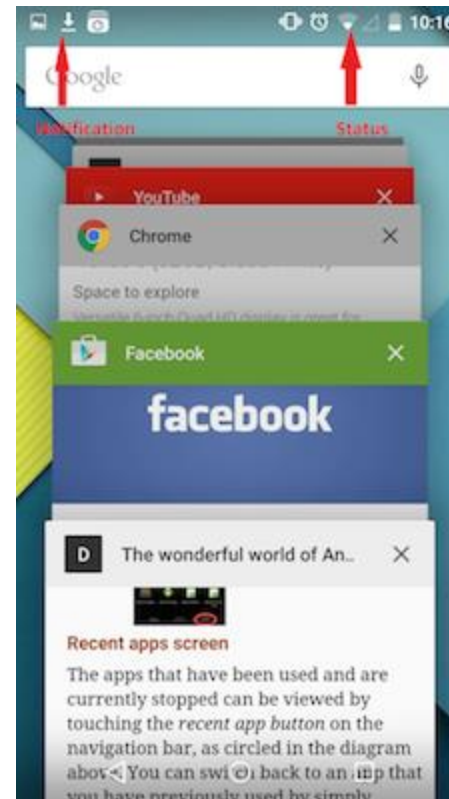
Android 5.0

Recent Apps Screen

- Accessed by touching **recent apps button**
- Shows recently used apps, touch app to switch to it



recent apps button

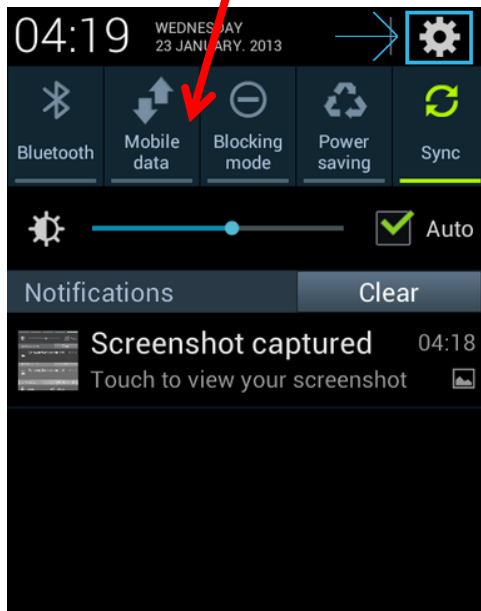


Android 5.0

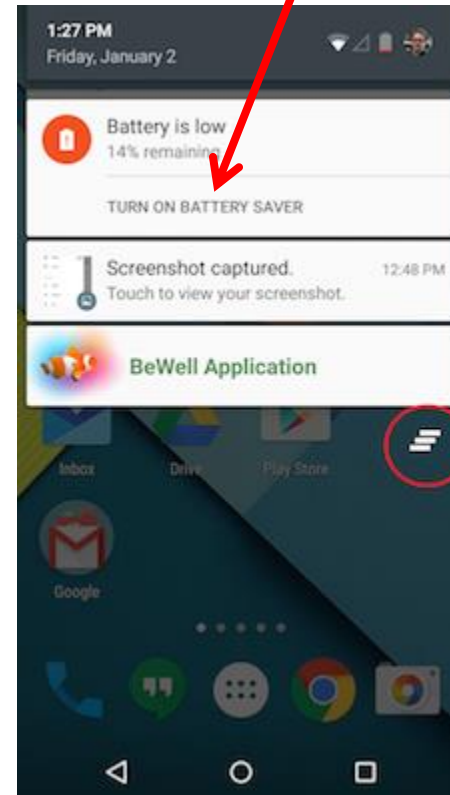
Status Bar and Notification Screen

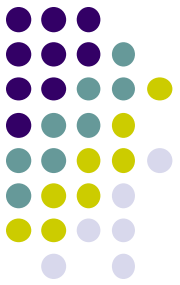
- **Status:** time, battery, cell signal strength, bluetooth enabled, etc
- **Notification:** wifi, mail, bewell, voicemail, usb active, music, etc

Status bar



Notification Screen





References

- Android App Development for Beginners videos by Bucky Roberts (thenewboston)
- Ask A Dev, Android Wear: What Developers Need to Know, <https://www.youtube.com/watch?v=zTS2NZpLyQg>
- Ask A Dev, Mobile Minute: What to (Android) Wear, https://www.youtube.com/watch?v=n5Yjzn3b_aQ
- Busy Coder's guide to Android version 4.4
- CS 65/165 slides, Dartmouth College, Spring 2014
- CS 371M slides, U of Texas Austin, Spring 2014