REPORT
Codelab 2: Your first interactive UI, The layout editor
Subject: Desarrollo de Aplicaciones Moviles Nativas
Group : 7CV1
Student : Julio Cesar Hernández Reyes
Teacher : Velez Saldaña Ulises

1. Introduction

In this practical i´ll learn how to create my first interactive app that enables user interaction.I'm going to create an app using the Empty Activity template. Also i'll learn how to use the layout editor to design a layout, and how to edit the layout in XML.
https://developer.android.com/codelabs/android-training-layout-editor-part-0

https://developer.android.com/codelabs/android-training-layout-editor-part-0
What i'll learn:

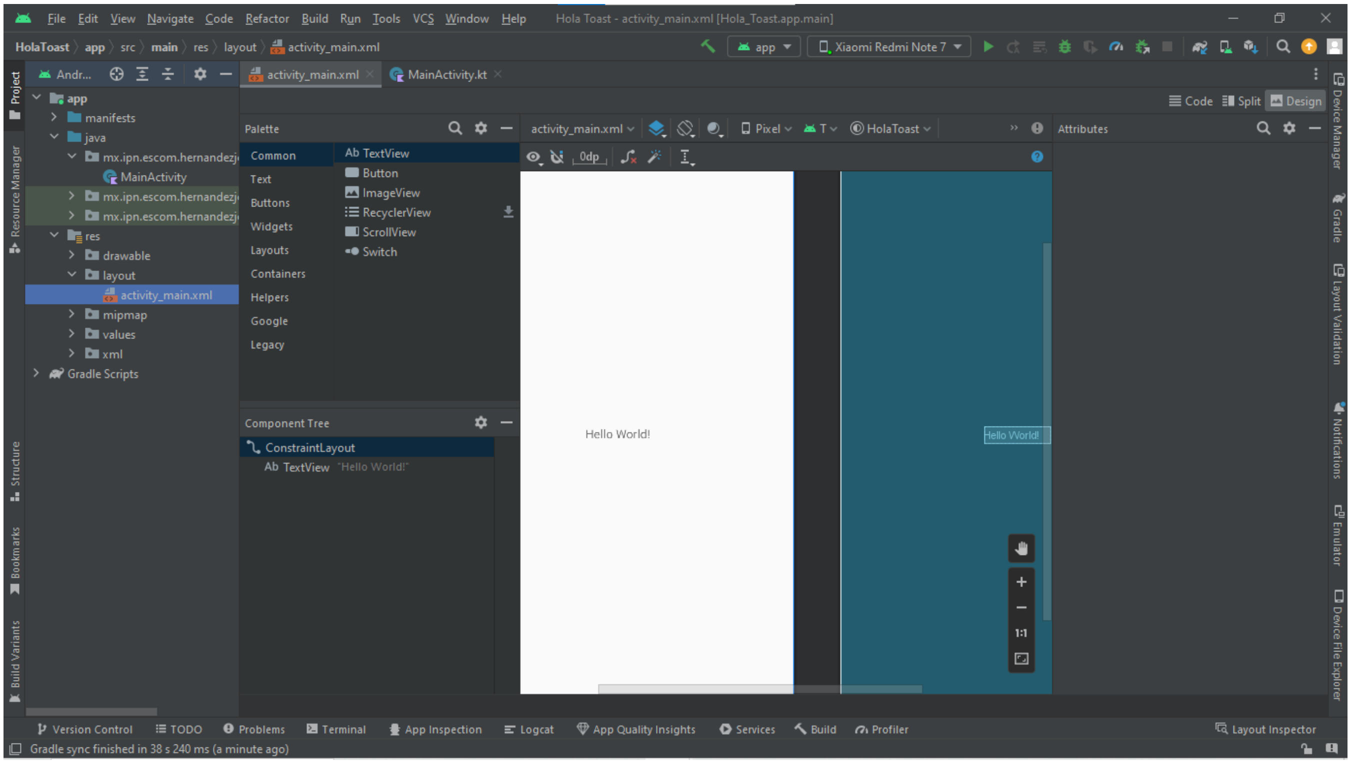
- How to create an app with interactive behavior.
- How to use the layout editor to design a layout.
- How to edit the layout in XML.
- A lot of new terminology.

2. Development

2.1. Part A

2.1.1. Task 1: Create and explore a new project

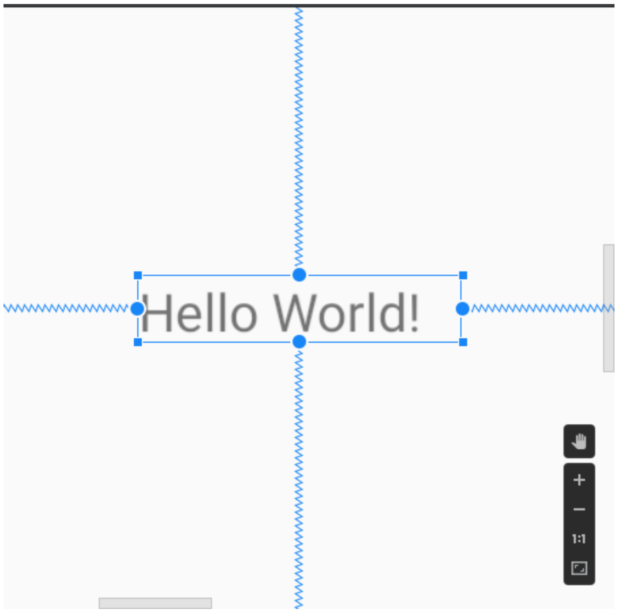
In this Task i created a new project, and then i explored the layout editor, witch is usualy used for quickly building an app's layout of user interface (UI) elements.

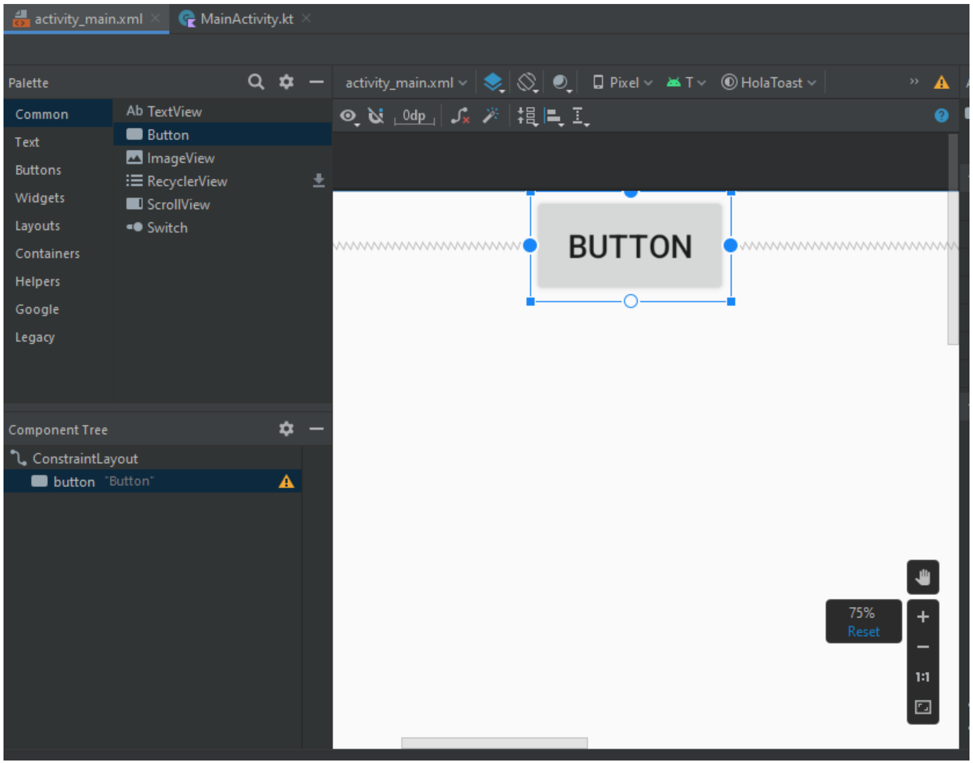


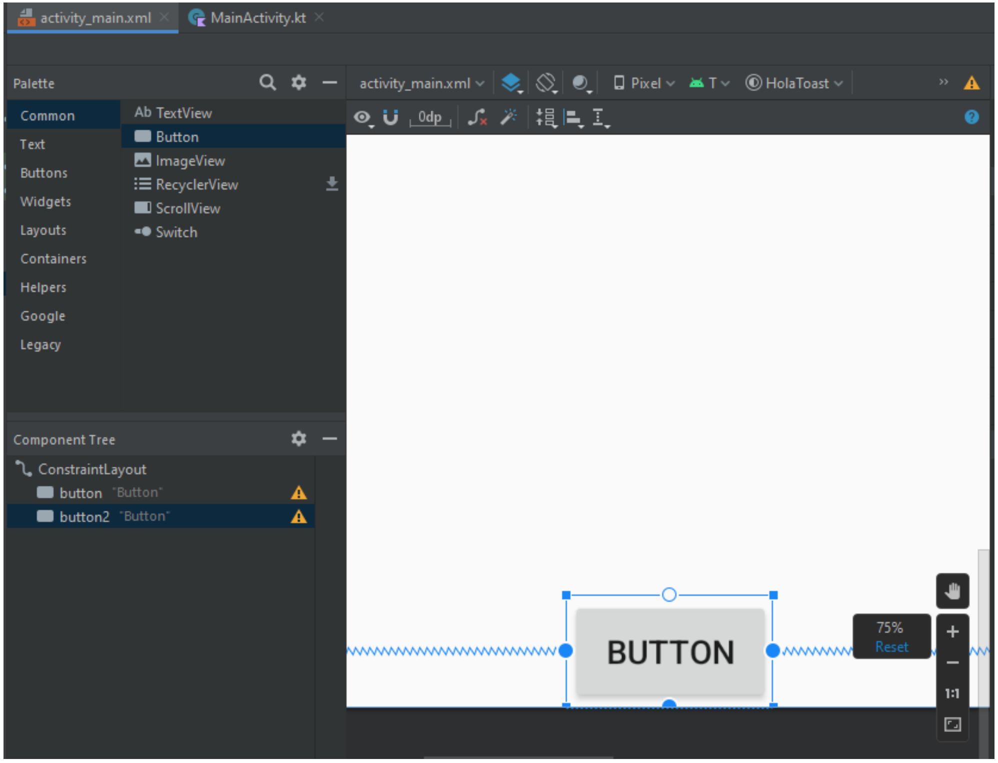
Gradle sync finished in 38 s 240 ms (a minute ago)

2.1.2. Task 2: Add View elements in the layout editor

In this task i created the UI layout for the HelloToast app in the layout editor using the ConstraintLayout features.

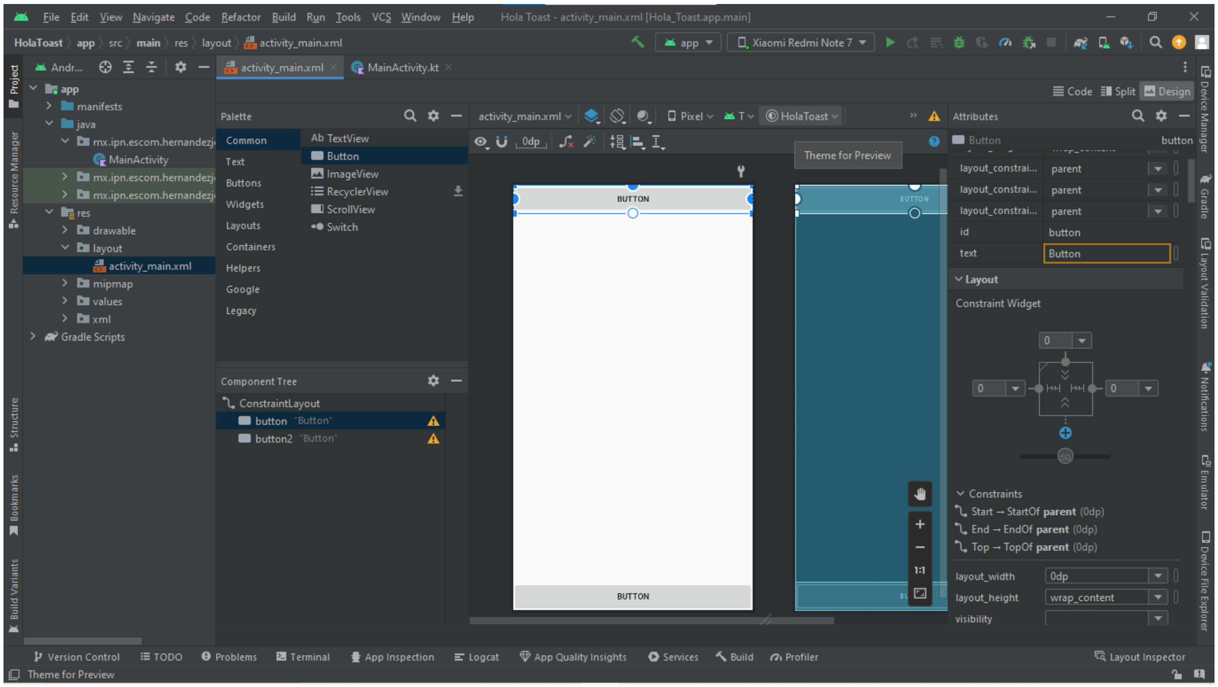



activity_main.xml
MainActivity.kt
Palette
Common
Text
Buttons
Widgets
Layouts
Containers
Helpers
Google
Legacy
Ab TextView
Button
ImageView
RecyclerView
ScrollView
Switch
activity_main.xml
Pixel
T
HolaToast
0dp
BUTTON
Component Tree
ConstraintLayout
button "Button"
75%
Reset
1:1


activity_main.xml
MainActivity.kt
Palette
Common
Text
Buttons
Widgets
Layouts
Containers
Helpers
Google
Legacy
Ab TextView
Button
ImageView
RecyclerView
ScrollView
Switch
activity_main.xml
Pixel
T
HolaToast
0dp
BUTTON
Component Tree
ConstraintLayout
button "Button"
button2 "Button"
75%
Reset
1:1

2.1.3. Task 3: Change UI elements attributes

In this task i entered new values and changed values for important Button attributes, which are applicable to most View types.



Component Tree

- ConstraintLayout
  - button "Button"
  - button2 "Button"

layout_constrai...	parent
layout_constrai...	parent
layout_constrai...	parent
id	button
text	Button

Layout

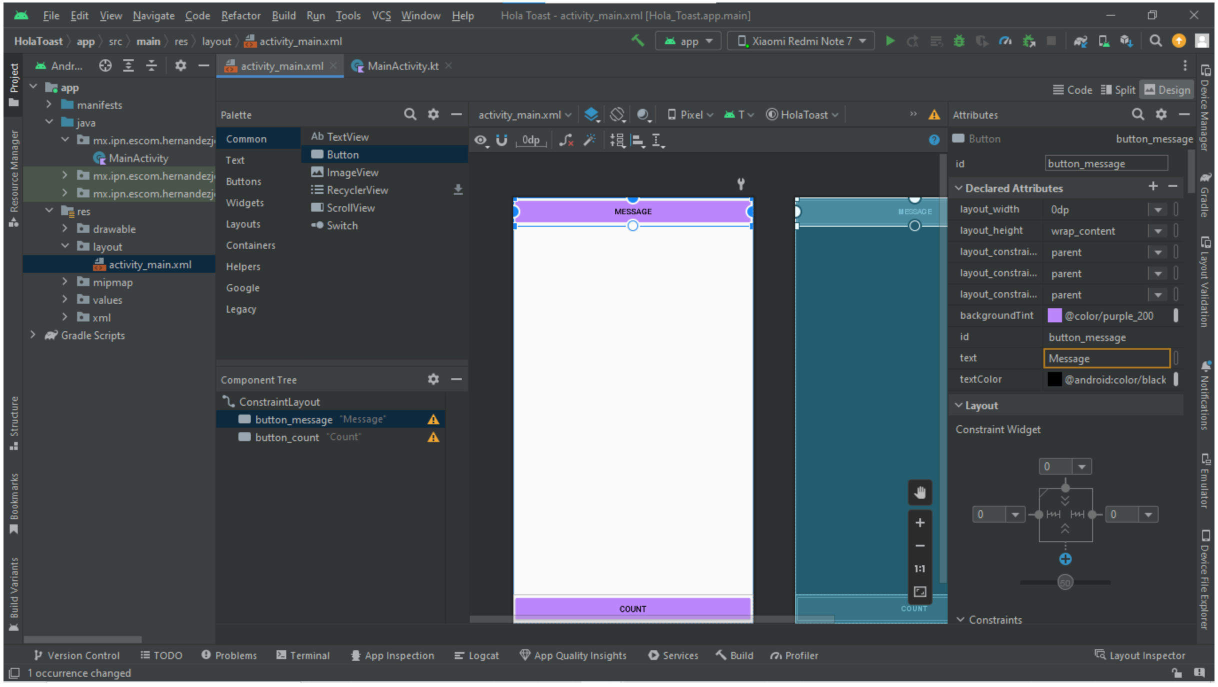
Constraint Widget

Constraints

- Start → StartOf parent (0dp)
- End → EndOf parent (0dp)
- Top → TopOf parent (0dp)

layout_width	0dp
layout_height	wrap_content
visibility	

Theme for Preview



File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Hola Toast - activity_main.xml [Hola_Toast.app.main]
activity_main.xml
MainActivity.kt
Palette
MESSAGE
COUNT
Code Split Design
Attributes

Component Tree

- ConstraintLayout
  - button_message "Message"
  - button_count "Count"

Button button_message

id	button_message

Declared Attributes

layout_width	0dp
layout_height	wrap_content
layout_constrai...	parent
layout_constrai...	parent
layout_constrai...	parent
backgroundTint	@color/purple_200
id	button_message
text	Message
textColor	@android:color/black

Layout

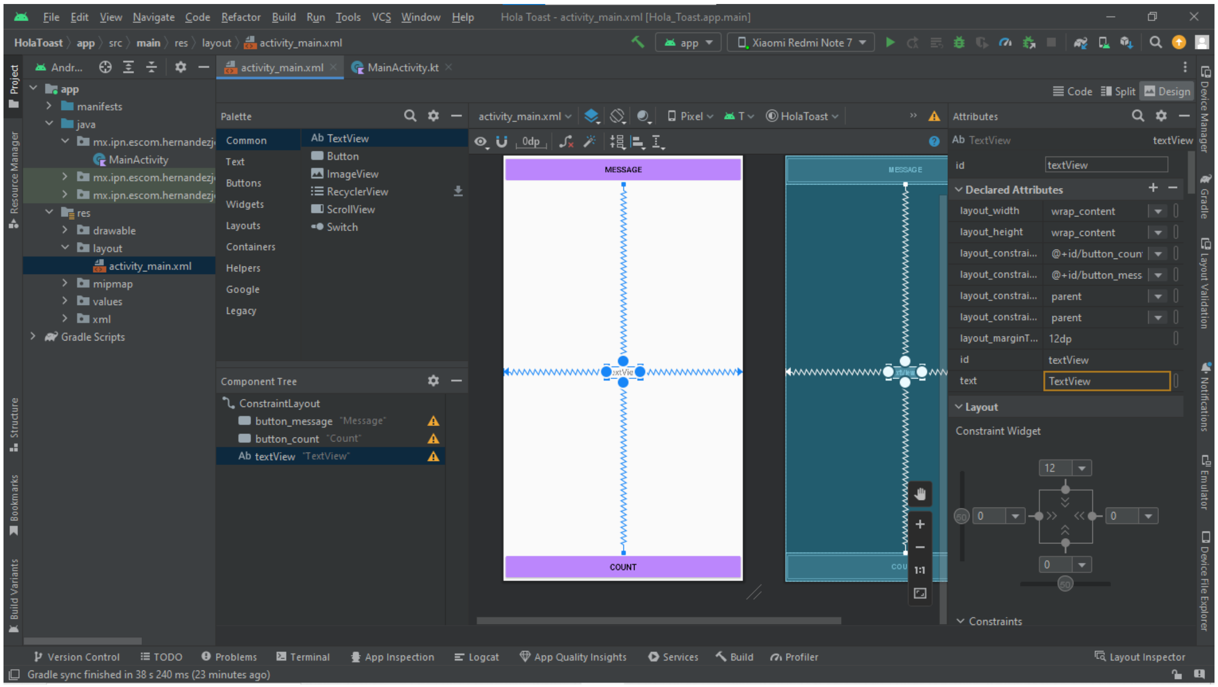
Constraint Widget

Constraints

1 occurrence changed

2.1.4. Task 4: Add a TextEdit and set its attributes

In this task i added a TextView in the middle of the layout, and constrained it horizontally to the margins and vertically to the two Button elements. Then i changed the attributes for the TextView in the Attributes pane.



Component Tree:

- ConstraintLayout
  - button_message "Message"
  - button_count "Count"
  - Ab textView "TextView"

Attributes — Ab TextView — textView

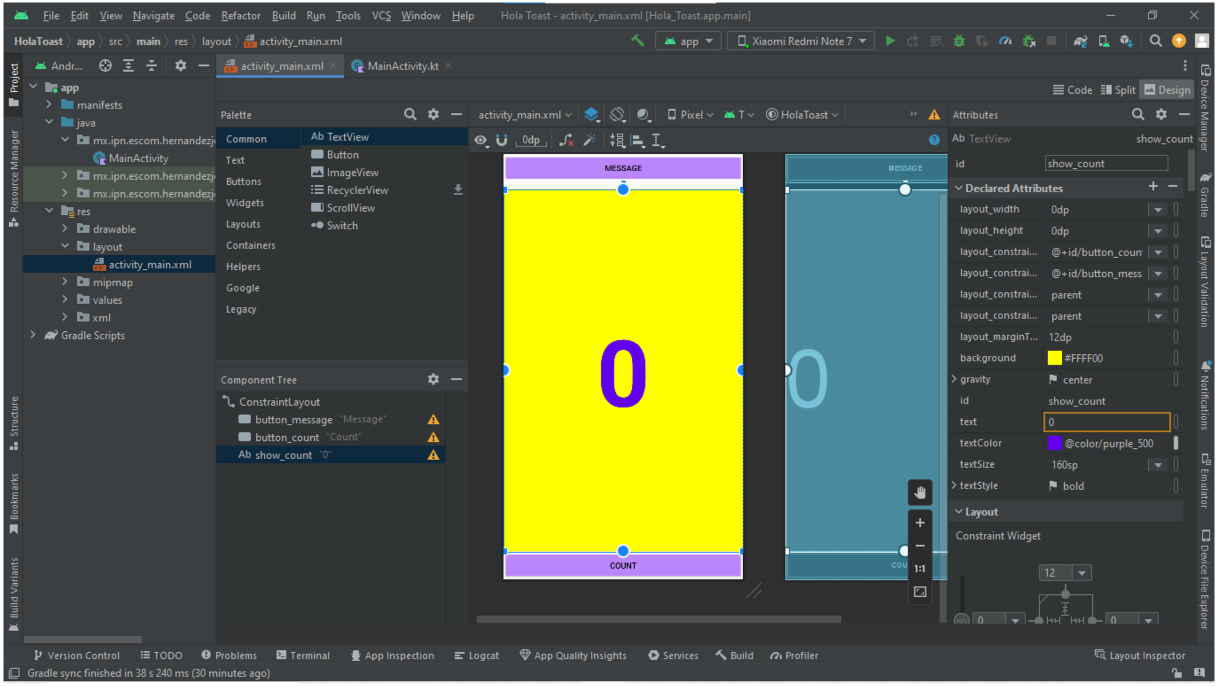
id: textView

Declared Attributes

layout_width	wrap_content
layout_height	wrap_content
layout_constrai...	@+id/button_coun
layout_constrai...	@+id/button_mess
layout_constrai...	parent
layout_constrai...	parent
layout_marginT...	12dp
id	textView
text	TextView

Gradle sync finished in 38 s 240 ms (23 minutes ago)

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Hola Toast - activity_main.xml [Hola_Toast.app.main]
HolaToast › app › src › main › res › layout › activity_main.xml
activity_main.xml
MainActivity.kt
Palette
Common
Text
Buttons
Widgets
Layouts
Containers
Helpers
Google
Legacy
Ab TextView
Button
ImageView
RecyclerView
ScrollView
Switch
MESSAGE
COUNT
Layout
Constraint Widget
Constraints
Code Split Design
Version Control TODO Problems Terminal App Inspection Logcat App Quality Insights Services Build Profiler Layout Inspector



Component Tree:

- ConstraintLayout
  - button_message "Message"
  - button_count "Count"
  - Ab show_count "0"

Attributes — Ab TextView — show_count

id: show_count

Declared Attributes

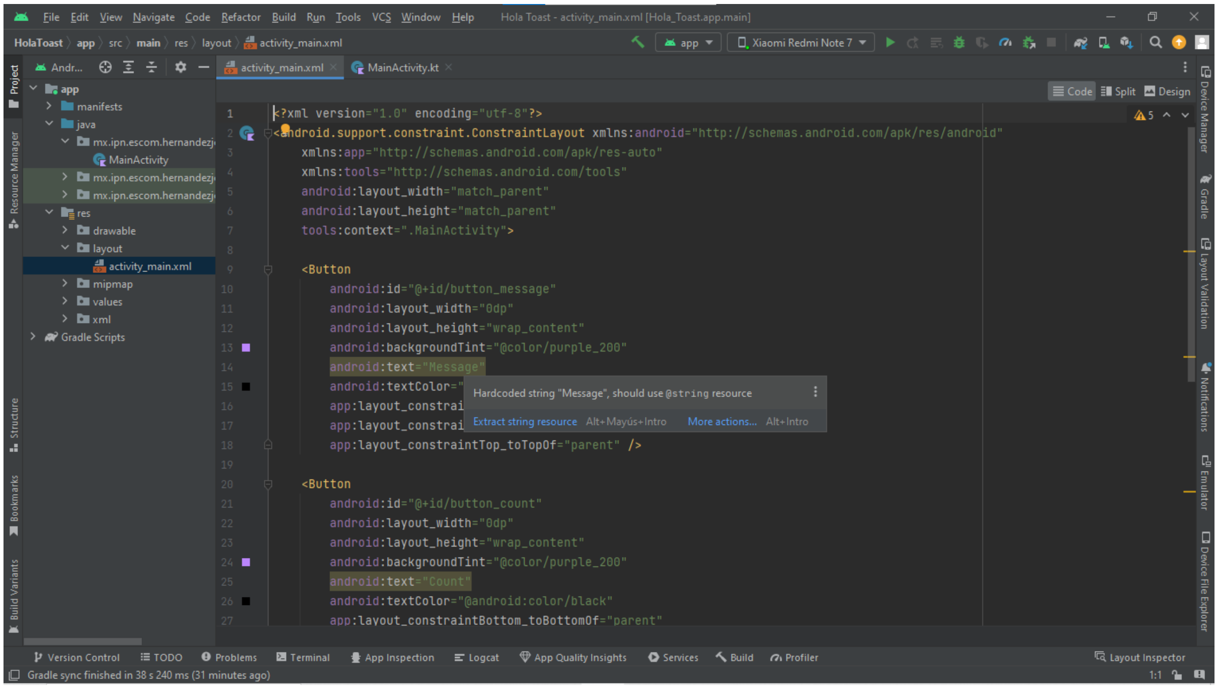
layout_width	0dp
layout_height	0dp
layout_constrai...	@+id/button_coun
layout_constrai...	@+id/button_mess
layout_constrai...	parent
layout_constrai...	parent
layout_marginT...	12dp
background	#FFFF00
gravity	center
id	show_count
text	0
textColor	@color/purple_500
textSize	160sp
textStyle	bold

Gradle sync finished in 38 s 240 ms (30 minutes ago)

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Hola Toast - activity_main.xml [Hola_Toast.app.main]
HolaToast › app › src › main › res › layout › activity_main.xml
MESSAGE
0
COUNT
Layout
Constraint Widget
Version Control TODO Problems Terminal App Inspection Logcat App Quality Insights Services Build Profiler Layout Inspector

2.1.5. Task 5: Edit the layout in XML

In this task i fixed the warnings that appeared for the hardcoded strings, converting them in resources.

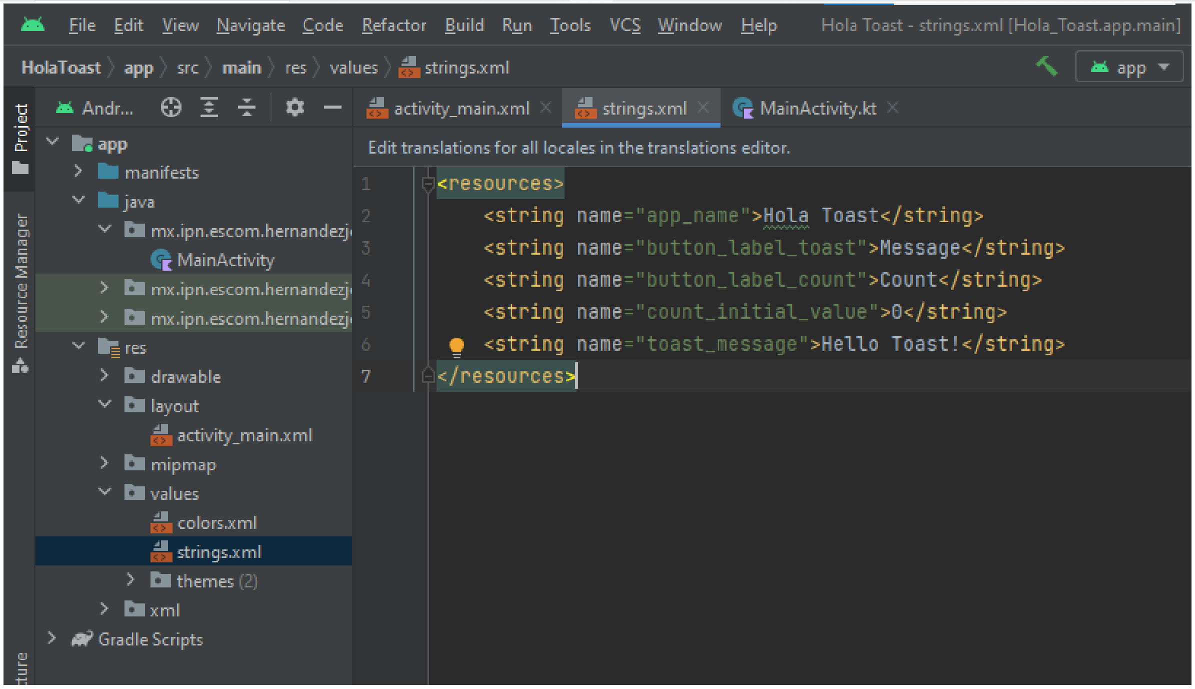

Hola Toast - activity_main.xml [Hola_Toast.app.main]
HolaToast 〉 app 〉 src 〉 main 〉 res 〉 layout 〉 activity_main.xml
app
Xiaomi Redmi Note 7
activity_main.xml
MainActivity.kt
Code
Split
Design

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/button_message"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:backgroundTint="@color/purple_200"
        android:text="Message"
        android:textColor="
        app:layout_constrai
        app:layout_constrai
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button_count"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:backgroundTint="@color/purple_200"
        android:text="Count"
        android:textColor="@android:color/black"
        app:layout_constraintBottom_toBottomOf="parent"
```

Hardcoded string "Message", should use @string resource

Extract string resource Alt+Mayús+Intro More actions... Alt+Intro

Gradle sync finished in 38 s 240 ms (31 minutes ago)

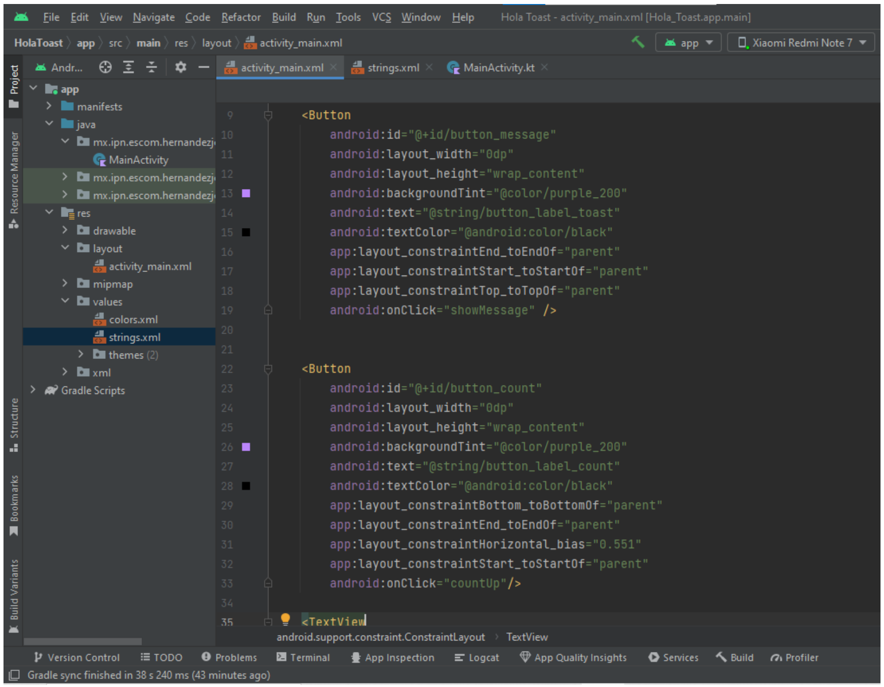


Edit translations for all locales in the translations editor.

```
<resources>
    <string name="app_name">Hola Toast</string>
    <string name="button_label_toast">Message</string>
    <string name="button_label_count">Count</string>
    <string name="count_initial_value">0</string>
    <string name="toast_message">Hello Toast!</string>
</resources>
```

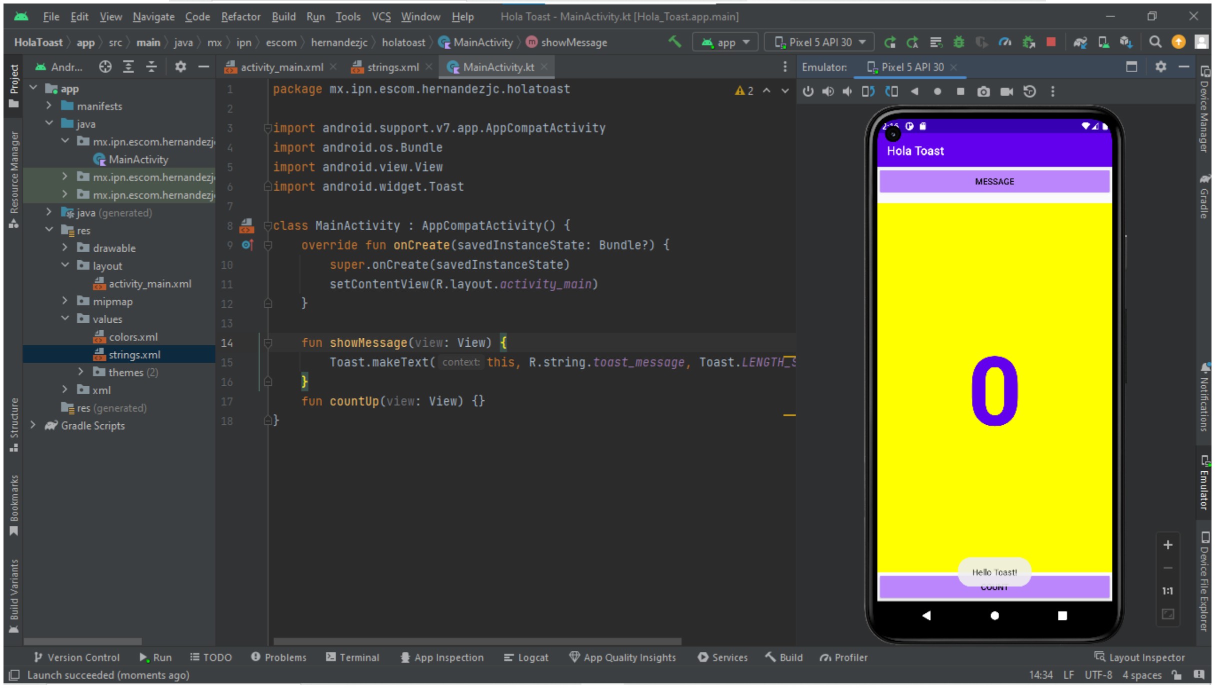
2.1.6. Task 6: Add onClick handlers for the buttons

In this task, i added a method for each Button in MainActivity that executes when the user taps the Button.



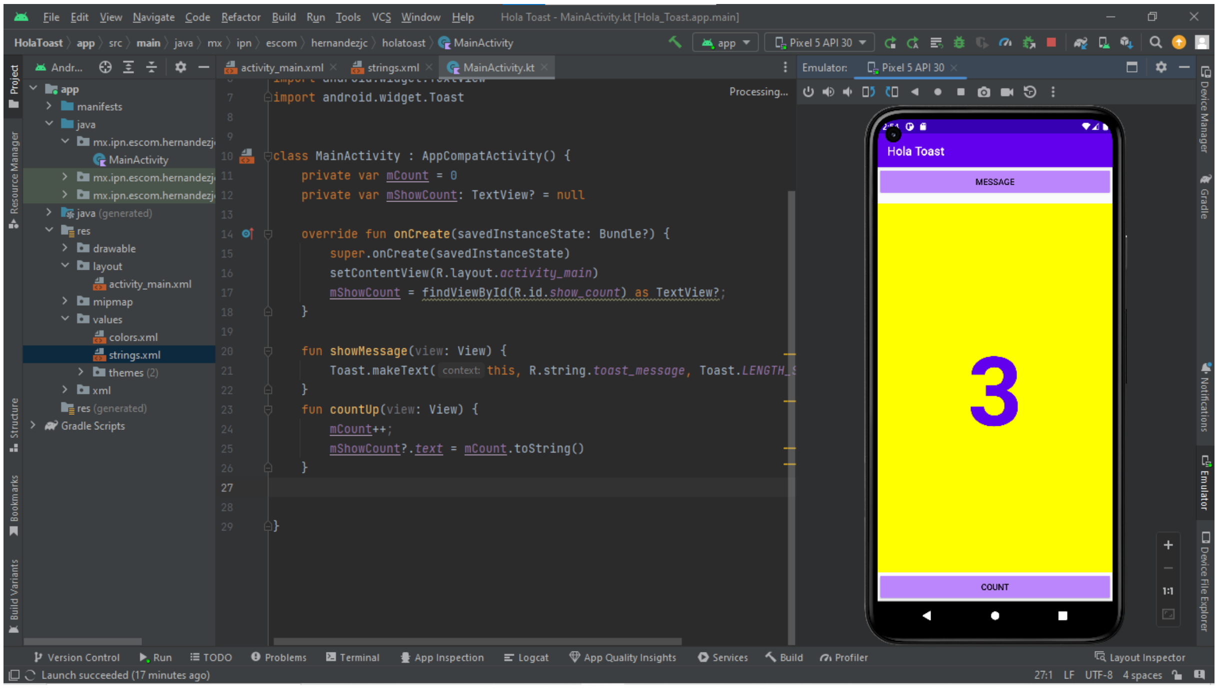
```xml
<Button
    android:id="@+id/button_message"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:backgroundTint="@color/purple_200"
    android:text="@string/button_label_toast"
    android:textColor="@android:color/black"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    android:onClick="showMessage" />


<Button
    android:id="@+id/button_count"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:backgroundTint="@color/purple_200"
    android:text="@string/button_label_count"
    android:textColor="@android:color/black"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.551"
    app:layout_constraintStart_toStartOf="parent"
    android:onClick="countUp"/>

<TextView
```

Gradle sync finished in 38 s 240 ms (43 minutes ago)



```kotlin
package mx.ipn.escom.hernandezjc.holatoast

import android.support.v7.app.AppCompatActivity
import android.os.Bundle
import android.view.View
import android.widget.Toast

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }

    fun showMessage(view: View) {
        Toast.makeText( context: this, R.string.toast_message, Toast.LENGTH_S
    }
    fun countUp(view: View) {}
}
```

Launch succeeded (moments ago)

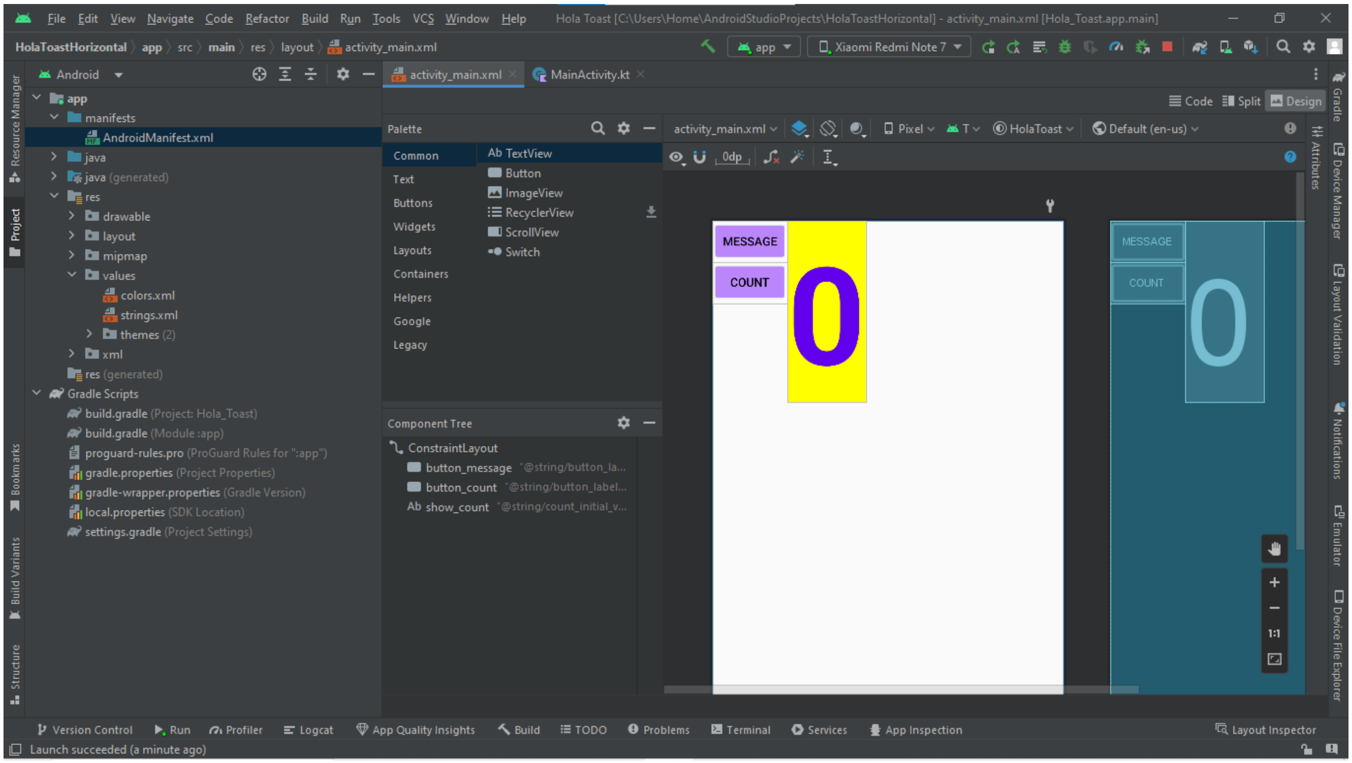


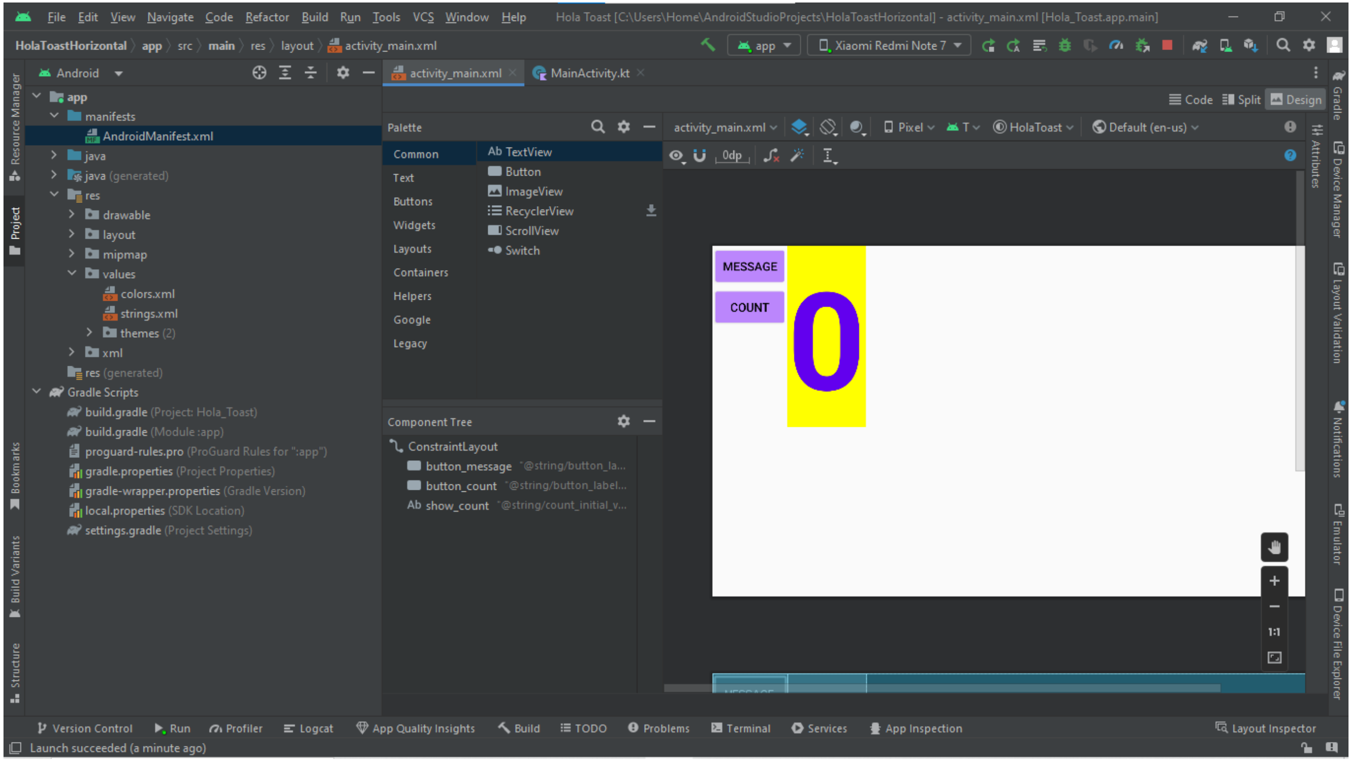
```kotlin
import android.widget.TextView
import android.widget.Toast


class MainActivity : AppCompatActivity() {
    private var mCount = 0
    private var mShowCount: TextView? = null

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
        mShowCount = findViewById(R.id.show_count) as TextView?;
    }

    fun showMessage(view: View) {
        Toast.makeText( this, R.string.toast_message, Toast.LENGTH_S
    }
    fun countUp(view: View) {
        mCount++;
        mShowCount?.text = mCount.toString()
    }



}
```

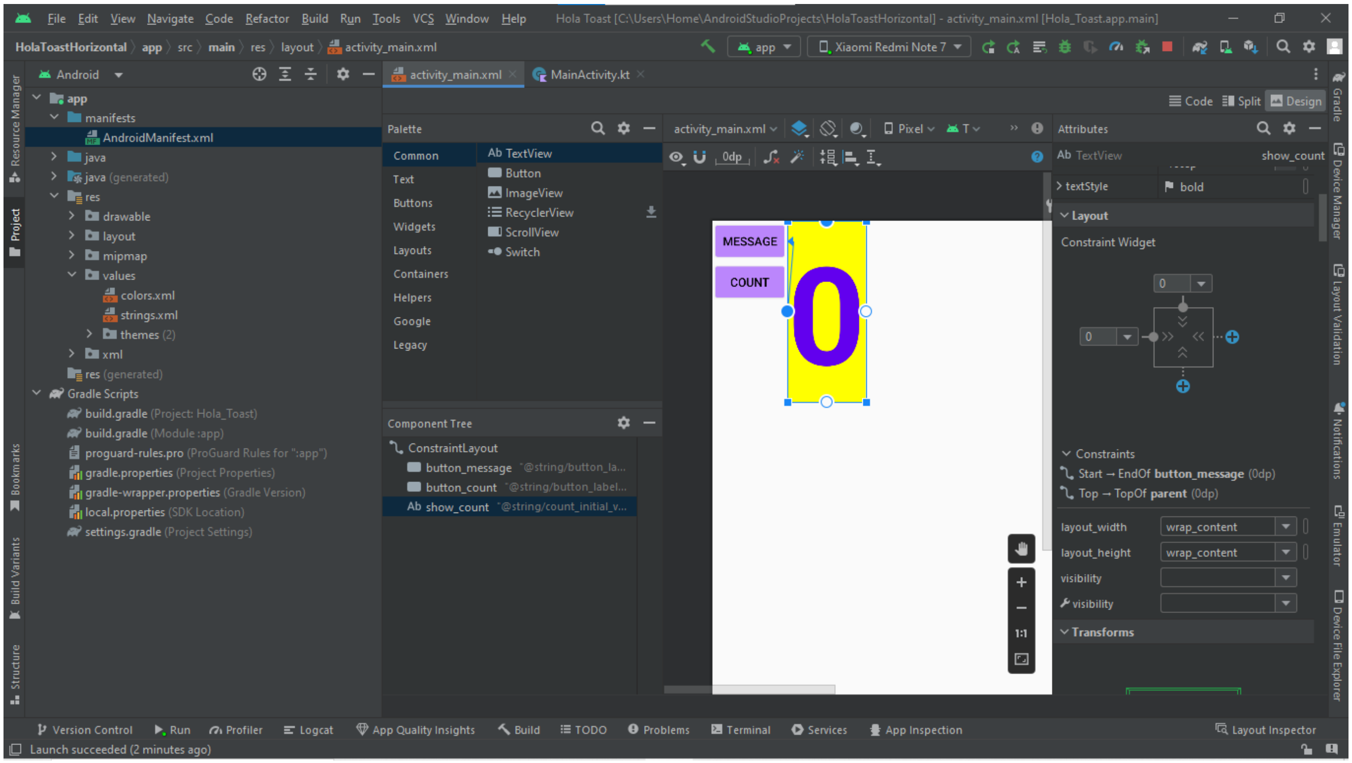
2.1.7. Coding Challenge

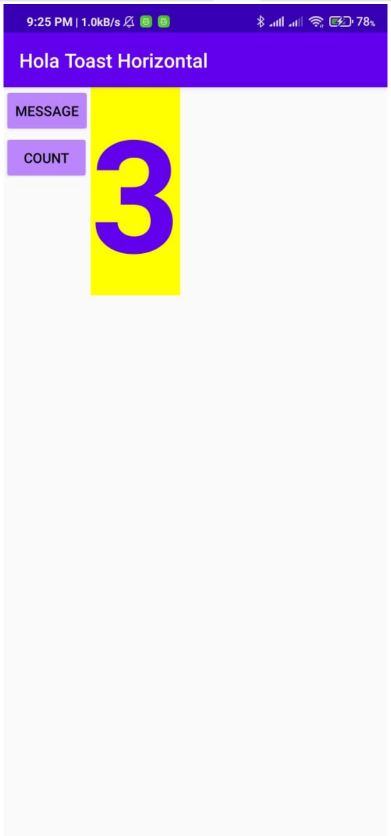
Challenge: Change the layout so that it looks good in both horizontal and vertical orientations:

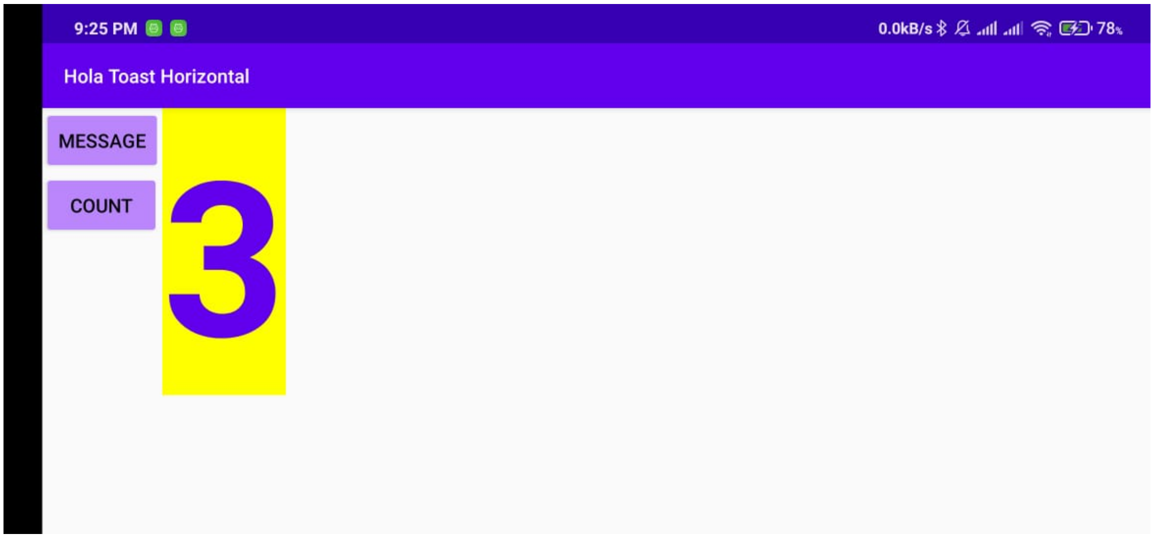
1. On your computer, make a copy of the HelloToast project folder and rename it to HelloToast-Challenge.
2. Open HelloToastChallenge in Android Studio and refactor it. (See Appendix: Utilities for instructions on copying and refactoring a project.)
3. Change the layout so that the Toast Button and Count Button appear on the left side, as shown in the figure below. The TextView appears next to them, but only wide enough to show its contents. (Hint: Use wrap_content.)
4. Run the app in both horizontal and vertical orientations.


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Hola Toast [C:\Users\Home\AndroidStudioProjects\HolaToastHorizontal] - activity_main.xml [Hola_Toast.app.main]
HolaToastHorizontal › app › src › main › res › layout › activity_main.xml
app
Xiaomi Redmi Note 7
Android
activity_main.xml
MainActivity.kt
Code Split Design
app
manifests
AndroidManifest.xml
java
java (generated)
res
drawable
layout
mipmap
values
colors.xml
strings.xml
themes (2)
xml
res (generated)
Gradle Scripts
build.gradle (Project: Hola_Toast)
build.gradle (Module :app)
proguard-rules.pro (ProGuard Rules for ":app")
gradle.properties (Project Properties)
gradle-wrapper.properties (Gradle Version)
local.properties (SDK Location)
settings.gradle (Project Settings)
Palette
Common
Text
Buttons
Widgets
Layouts
Containers
Helpers
Google
Legacy
Ab TextView
Button
ImageView
RecyclerView
ScrollView
Switch
activity_main.xml
Pixel
HolaToast
Default (en-us)
0dp
MESSAGE
COUNT
0
MESSAGE
COUNT
0
Component Tree
ConstraintLayout
button_message "@string/button_la...
button_count "@string/button_label...
Ab show_count "@string/count_initial_v...
1:1
Version Control
Run
Profiler
Logcat
App Quality Insights
Build
TODO
Problems
Terminal
Services
App Inspection
Layout Inspector
Launch succeeded (a minute ago)
Resource Manager
Project
Bookmarks
Build Variants
Structure
Gradle
Attributes
Device Manager
Layout Validation
Notifications
Emulator
Device File Explorer


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Hola Toast [C:\Users\Home\AndroidStudioProjects\HolaToastHorizontal] - activity_main.xml [Hola_Toast.app.main]
HolaToastHorizontal › app › src › main › res › layout › activity_main.xml
app
Xiaomi Redmi Note 7
Android
activity_main.xml
MainActivity.kt
Code Split Design
app
manifests
AndroidManifest.xml
java
java (generated)
res
drawable
layout
mipmap
values
colors.xml
strings.xml
themes (2)
xml
res (generated)
Gradle Scripts
build.gradle (Project: Hola_Toast)
build.gradle (Module :app)
proguard-rules.pro (ProGuard Rules for ":app")
gradle.properties (Project Properties)
gradle-wrapper.properties (Gradle Version)
local.properties (SDK Location)
settings.gradle (Project Settings)
Palette
Common
Text
Buttons
Widgets
Layouts
Containers
Helpers
Google
Legacy
Ab TextView
Button
ImageView
RecyclerView
ScrollView
Switch
activity_main.xml
Pixel
HolaToast
Default (en-us)
0dp
MESSAGE
COUNT
0
Component Tree
ConstraintLayout
button_message "@string/button_la...
button_count "@string/button_label...
Ab show_count "@string/count_initial_v...
1:1
Version Control
Run
Profiler
Logcat
App Quality Insights
Build
TODO
Problems
Terminal
Services
App Inspection
Layout Inspector
Launch succeeded (a minute ago)
Resource Manager
Project
Bookmarks
Build Variants
Structure
Gradle
Attributes
Device Manager
Layout Validation
Notifications
Emulator
Device File Explorer


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Hola Toast [C:\Users\Home\AndroidStudioProjects\HolaToastHorizontal] - activity_main.xml [Hola_Toast.app.main]
HolaToastHorizontal › app › src › main › res › layout › activity_main.xml
app
Xiaomi Redmi Note 7
Android
activity_main.xml
MainActivity.kt
Code Split Design
app
manifests
AndroidManifest.xml
java
java (generated)
res
drawable
layout
mipmap
values
colors.xml
strings.xml
themes (2)
xml
res (generated)
Gradle Scripts
build.gradle (Project: Hola_Toast)
build.gradle (Module :app)
proguard-rules.pro (ProGuard Rules for ":app")
gradle.properties (Project Properties)
gradle-wrapper.properties (Gradle Version)
local.properties (SDK Location)
settings.gradle (Project Settings)
Palette
Common
Text
Buttons
Widgets
Layouts
Containers
Helpers
Google
Legacy
Ab TextView
Button
ImageView
RecyclerView
ScrollView
Switch
Component Tree
ConstraintLayout
button_message "@string/button_la...
button_count "@string/button_label...
Ab show_count "@string/count_initial_v...
activity_main.xml
Pixel
0dp
MESSAGE
COUNT
0
1:1
Attributes
Ab TextView
show_count
textStyle
bold
Layout
Constraint Widget
0
0
Constraints
Start → EndOf button_message (0dp)
Top → TopOf parent (0dp)
layout_width wrap_content
layout_height wrap_content
visibility
visibility
Transforms
Resource Manager
Project
Bookmarks
Build Variants
Structure
Gradle
Device Manager
Layout Validation
Notifications
Emulator
Device File Explorer
Version Control
Run
Profiler
Logcat
App Quality Insights
Build
TODO
Problems
Terminal
Services
App Inspection
Layout Inspector
Launch succeeded (2 minutes ago)

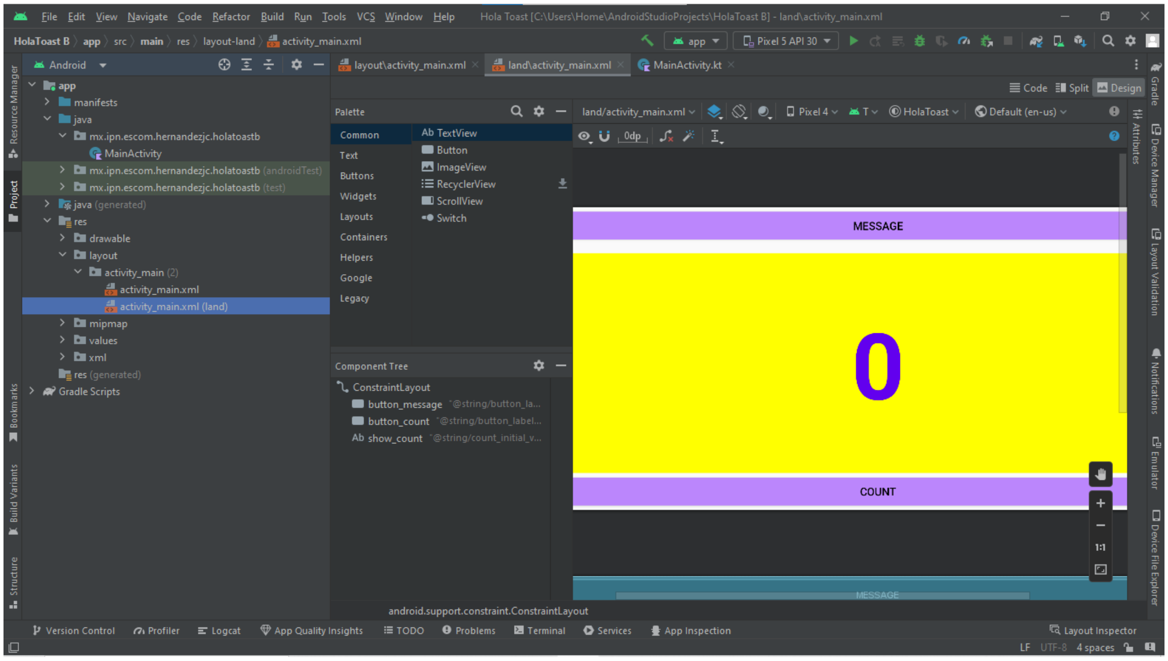

9:25 PM | 1.0kB/s
78%
Hola Toast Horizontal
MESSAGE
COUNT
3

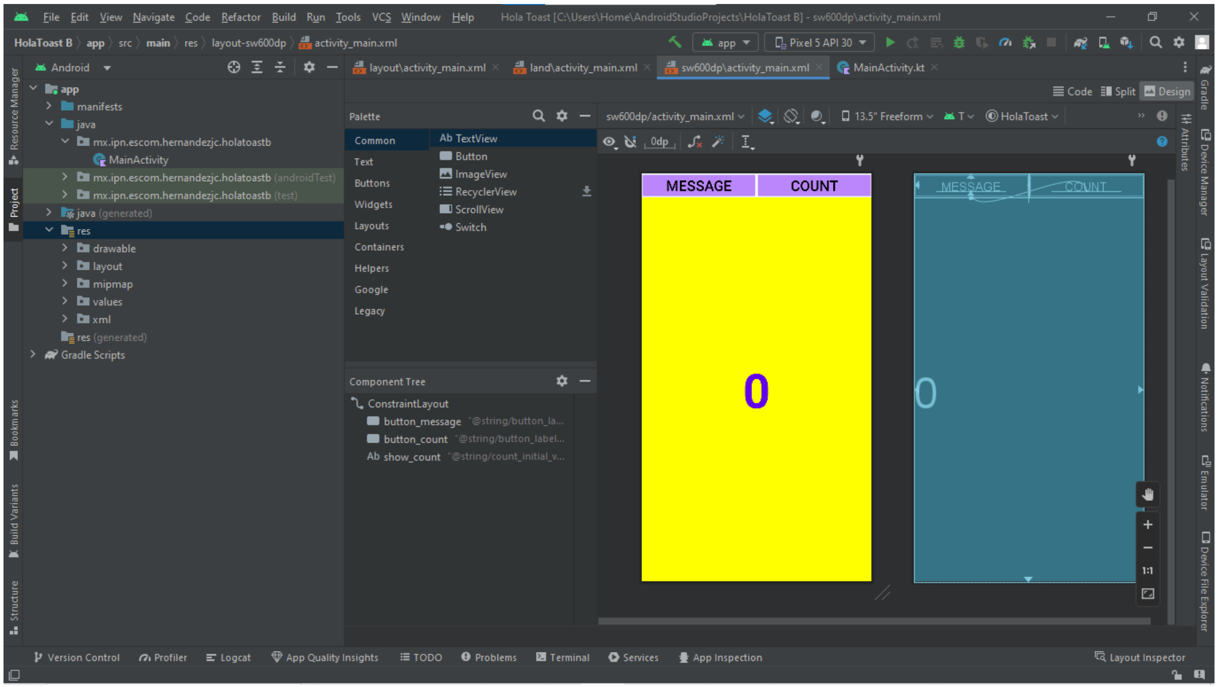


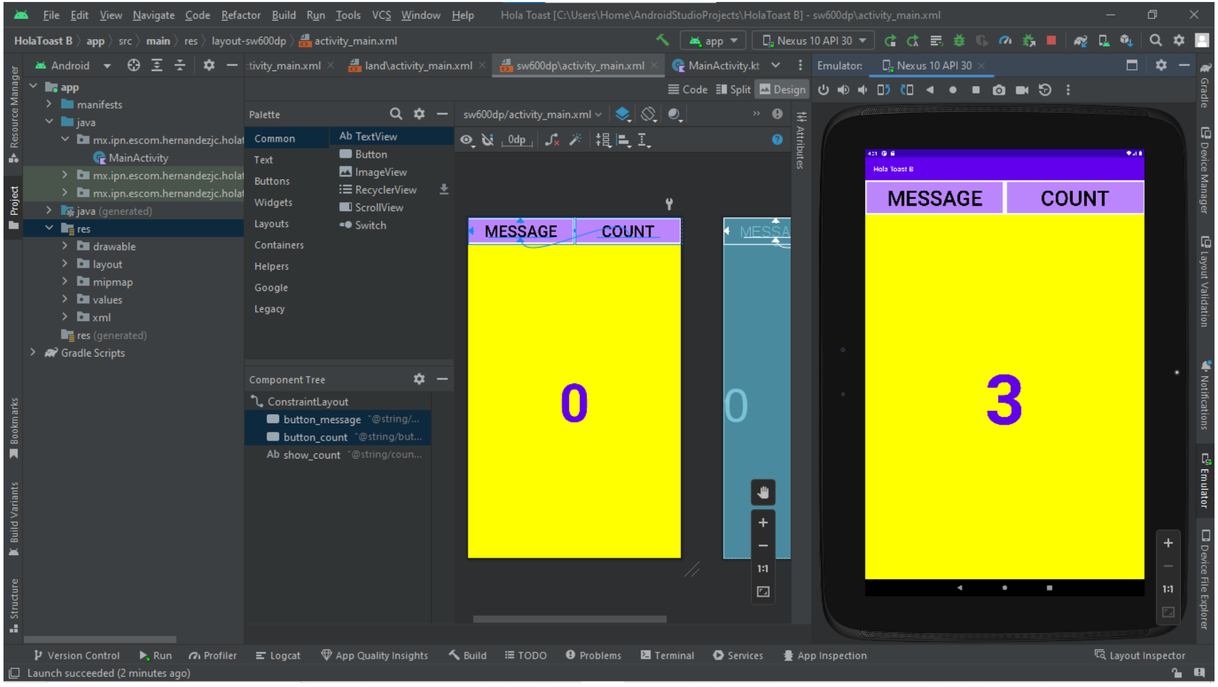
2.2. Part B

2.2.1. Task 1:Create layout variants

In this task i learned an easier way to create variants of my layout for horizontal (also known as landscape) and vertical (also known as portrait) orientations for phones, and for larger displays such as tablets.




File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Hola Toast [C:\Users\Home\AndroidStudioProjects\HolaToast B] - sw600dp\activity_main.xml
HolaToast B › app › src › main › res › layout-sw600dp › activity_main.xml
app
Pixel 5 API 30
layout\activity_main.xml
land\activity_main.xml
sw600dp\activity_main.xml
MainActivity.kt
Android
app
manifests
java
mx.ipn.escom.hernandezjc.holatoastb
MainActivity
mx.ipn.escom.hernandezjc.holatoastb (androidTest)
mx.ipn.escom.hernandezjc.holatoastb (test)
java (generated)
res
drawable
layout
mipmap
values
xml
res (generated)
Gradle Scripts
Palette
Common
Text
Buttons
Widgets
Layouts
Containers
Helpers
Google
Legacy
Ab TextView
Button
ImageView
RecyclerView
ScrollView
Switch
Component Tree
ConstraintLayout
button_message "@string/button_la...
button_count "@string/button_label...
Ab show_count "@string/count_initial_v...
Code Split Design
sw600dp/activity_main.xml
13.5" Freeform
HolaToast
0dp
MESSAGE
COUNT
0
MESSAGE
COUNT
0
1:1
Version Control
Profiler
Logcat
App Quality Insights
TODO
Problems
Terminal
Services
App Inspection
Layout Inspector


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Hola Toast [C:\Users\Home\AndroidStudioProjects\HolaToast B] - sw600dp\activity_main.xml
HolaToast B › app › src › main › res › layout-sw600dp › activity_main.xml
app
Nexus 10 API 30
tivity_main.xml
land\activity_main.xml
sw600dp\activity_main.xml
MainActivity.kt
Emulator:
Nexus 10 API 30
Android
app
manifests
java
mx.ipn.escom.hernandezjc.holat
MainActivity
mx.ipn.escom.hernandezjc.holat
mx.ipn.escom.hernandezjc.holat
java (generated)
res
drawable
layout
mipmap
values
xml
res (generated)
Gradle Scripts
Palette
Common
Text
Buttons
Widgets
Layouts
Containers
Helpers
Google
Legacy
Ab TextView
Button
ImageView
RecyclerView
ScrollView
Switch
Component Tree
ConstraintLayout
button_message "@string/...
button_count "@string/but...
Ab show_count "@string/coun...
Code Split Design
sw600dp/activity_main.xml
0dp
MESSAGE
COUNT
0
MESSA
0
Hola Toast B
MESSAGE
COUNT
3
1:1
Version Control
Run
Profiler
Logcat
App Quality Insights
Build
TODO
Problems
Terminal
Services
App Inspection
Layout Inspector
Launch succeeded (2 minutes ago)

2.2.2. Task 2:Change the layout to LinearLayout

2.2.3. Task 3:Change the layout to RelativeLayout

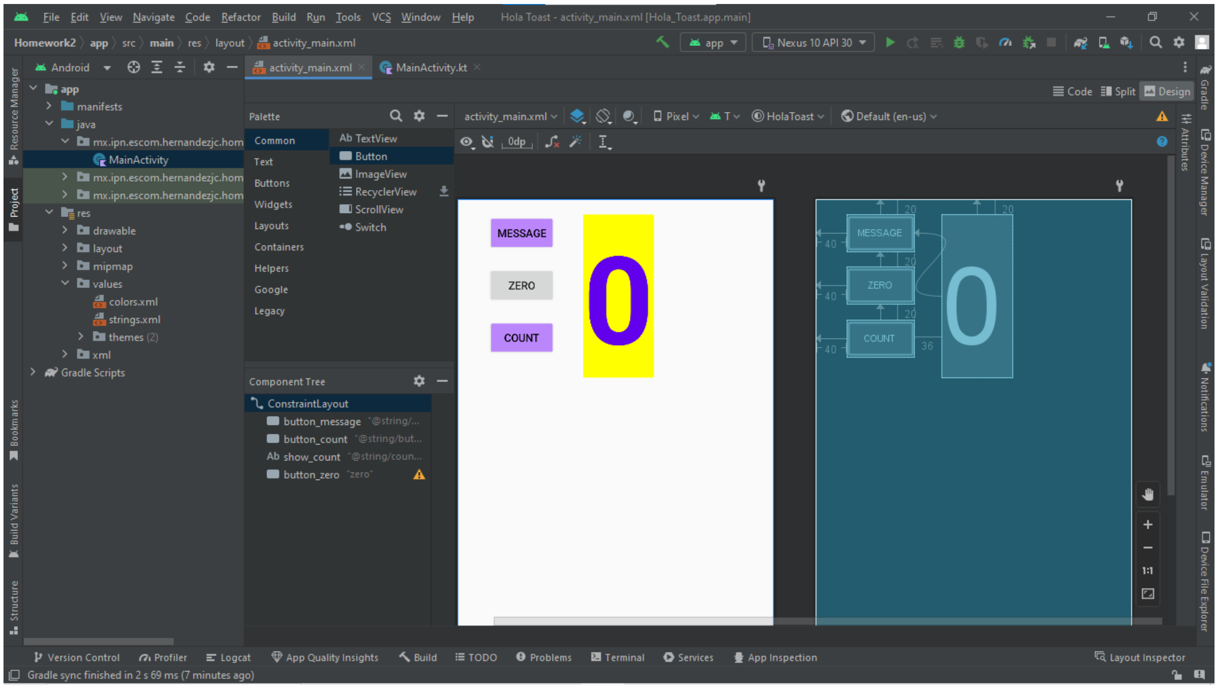
2.2.4. Coding Challenge

Challenge: To accommodate horizontal (landscape) orientation for a tablet, you can center the Button elements in activity_main.xml (xlarge) so that they appear as shown in the figure below.

Hint: Select the elements, click the align button in the toolbar, and choose Center Horizontally.

2.3. Homework

Change an app



Question 1
Which two layout constraint attributes on the Zero Button position it vertically equal distance between the other two Button elements? (Pick 2 answers.)
R:
->app:layout_constraintBottom_toTopOf="@+id/button_count"
->app:layout_constraintTop_toBottomOf="@+id/button_toast"

Question 2
Which layout constraint attribute on the Zero Button positions it horizontally in alignment with the other two Button elements?
R:
->app:layout_constraintLeft_toLeftOf="parent"

Question 3
What is the correct signature for a method used with the android:onClick XML attribute?
R:
->public void callMethod(View view)

Question 4
The click handler for the Count Button starts with the following method signature:
public void countUp(View view)
Which of the following techniques is more efficient to use within this handler to change the Button element's background color? Choose one:
R:
->Use the view parameter that is passed to the click handler with setBackgroundColor(): view.setBackgroundColor