Beginner Level for Android Development using Kotlin

Instructor: Ferry Yuwono
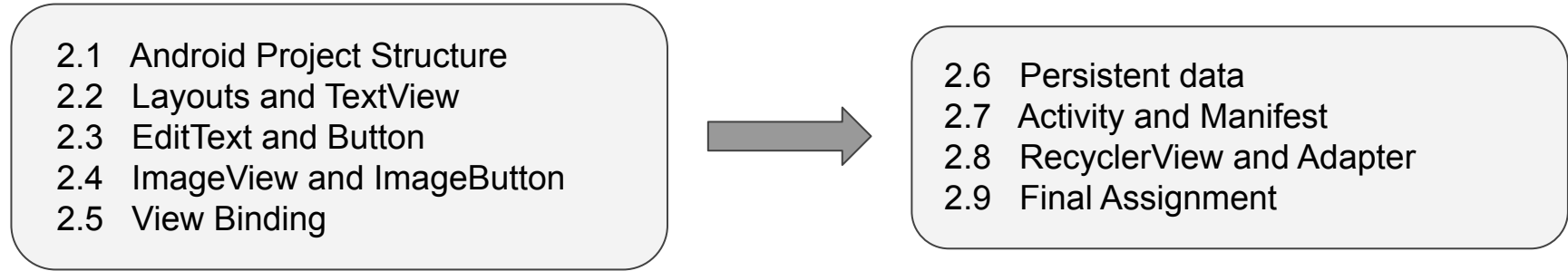
Module 2:
Develop Your First Android Application

Course Outline
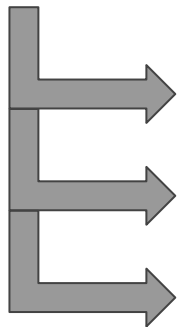
Module 2: Develop Your First Android Application

2.1   Android Project Structure
2.2   Layouts and TextView
2.3   EditText and Button
2.4   ImageView and ImageButton
2.5   View Binding

2.6   Persistent data
2.7   Activity and Manifest
2.8   RecyclerView and Adapter
2.9   Final Assignment

Course Outline

Repository

https://github.com/ferryyuwono/android-beginner

Demo Code

Exercise Code

Solution Code

📁	2.01.01-Demo-ProjectStructure
📁	2.02.01-Demo-LayoutsTextView
📁	2.02.02-Exercise-LayoutsTextView
📁	2.02.03-Solution-LayoutsTextView
📁	2.03.01-Demo-EditTextButton
📁	2.03.02-Exercise-EditTextButton
📁	2.03.03-Solution-EditTextButton
📁	2.04.01-Demo-ImageViewImageButton
📁	2.04.02-Exercise-ImageViewImageBut...
📁	2.04.03-Solution-ImageViewImageBut...
📁	2.05.01-Demo-ViewBinding
📁	2.06.01-Demo-PersistentData
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📁	2.07.01-Demo-ActivityManifest
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📁	2.08.01-Demo-RecyclerViewAdapter
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📁	2.09.01-Exercise-FinalAssignment
📁	2.09.02-Solution-FinalAssignment

2.1 Android Project Structure

https://github.com/ferryyuwono/android-beginner/tree/main/2.01.01-Demo-ProjectStructure
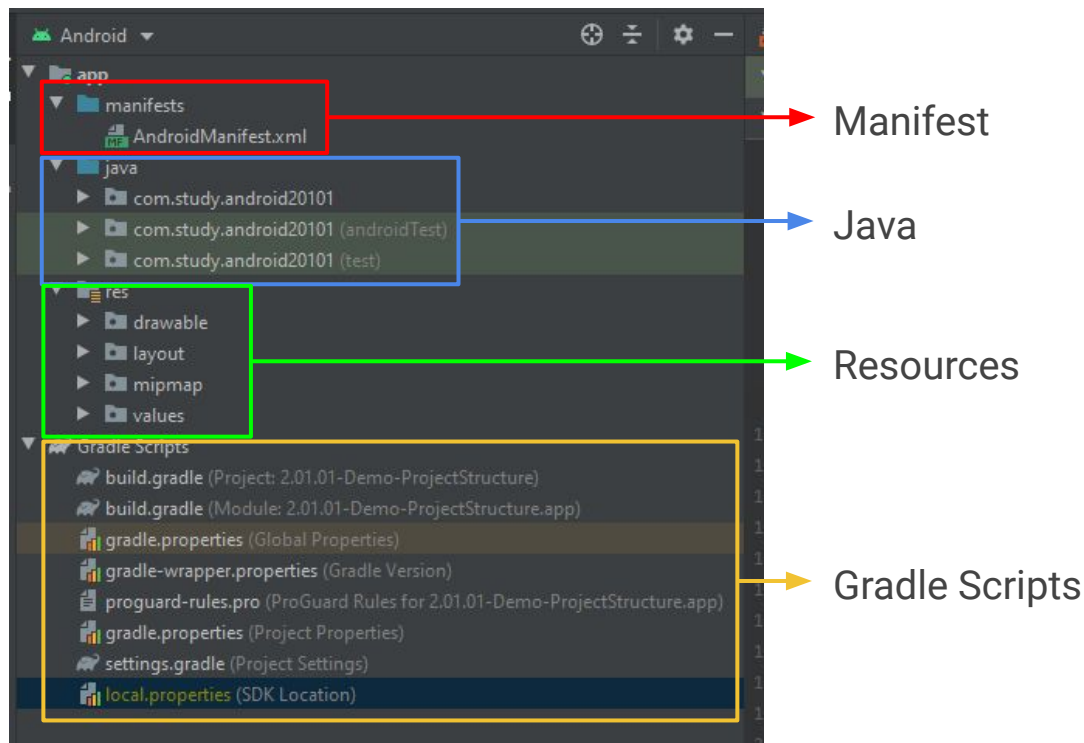
Java


```kotlin
data class PersonData(val firstName: String, val lastName: String, val age: Int)
```

```kotlin
class Main2Activity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main2)

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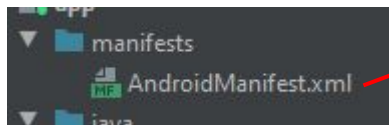
```kotlin
class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

    }
}
```

```kotlin
class ExampleUnitTest {
    @Test
    fun addition_isCorrect() {
        assertEquals( expected: 4,  actual: 2 + 2)

    }
}
```

```kotlin
@RunWith(AndroidJUnit4::class)
class ExampleInstrumentedTest {
    @Test
    fun useAppContext() {
        // Context of the app under test.
        val appContext = InstrumentationRegistry.getInstrumentation().targetContext
        assertEquals( expected: "com.study.android20101", appContext.packageName)

    }
}
```

AndroidManifest

app
- ▼ 📁 manifests
  - 📄 AndroidManifest.xml
- ▼ 📁 java

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.study.android20101">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.20101DemoProjectStructure">

        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>

        <activity android:name=".ui.Main2Activity" />
    </application>

</manifest>
```
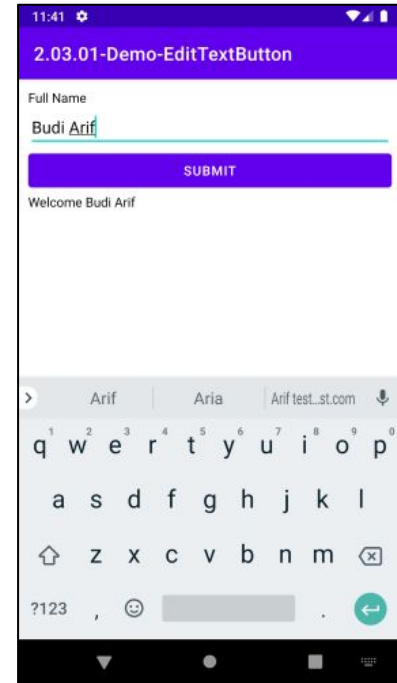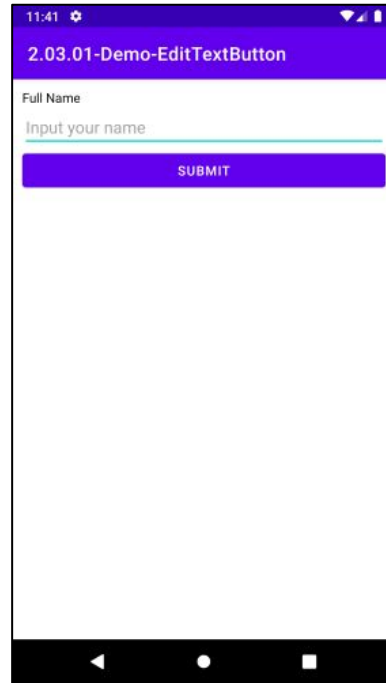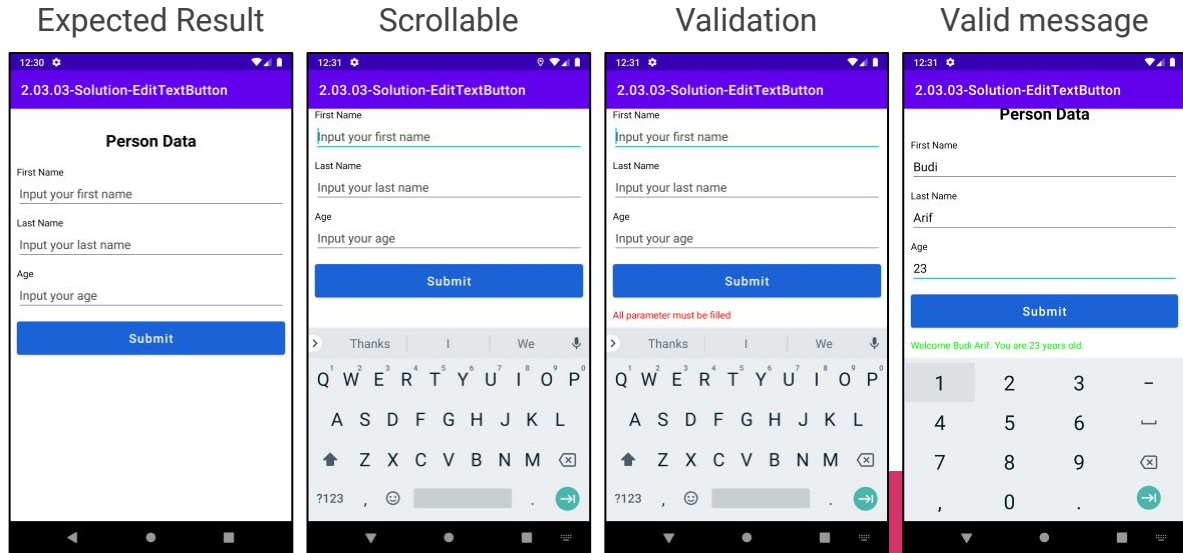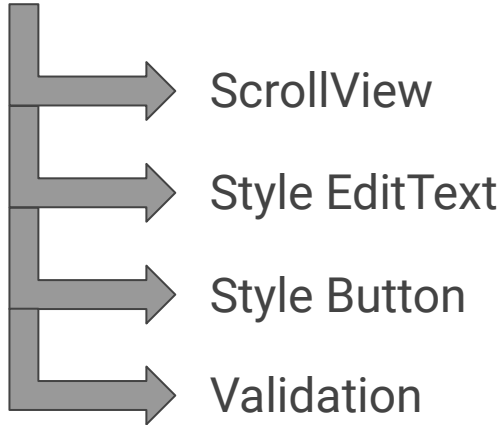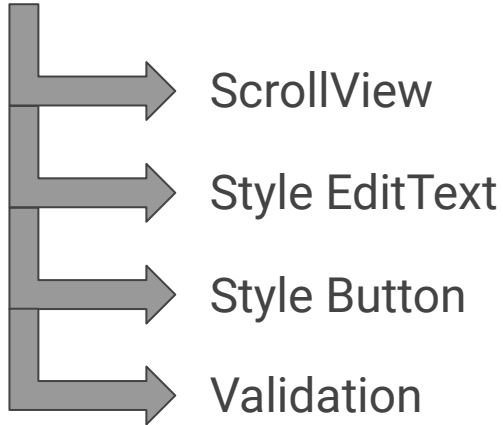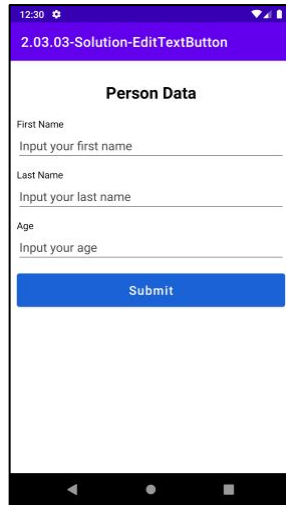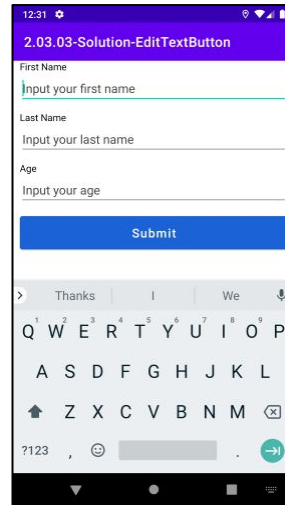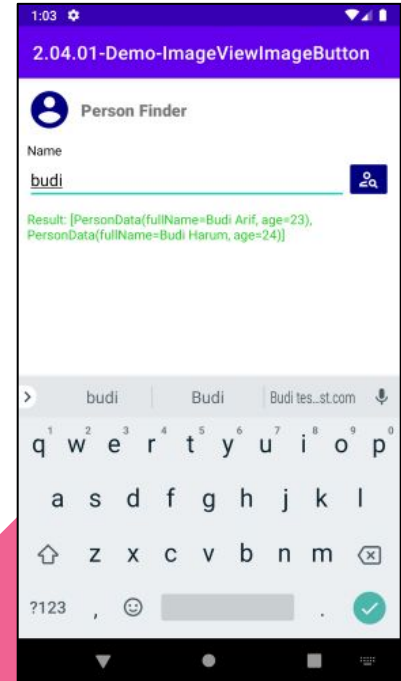
Application

Activity Main

Launcher

Activity Main 2

Resources
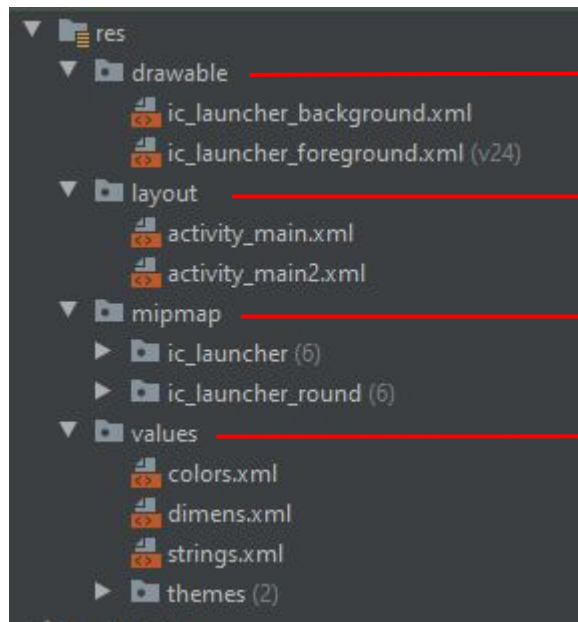
```
▼ ■ res
  ▼ ■ drawable ────────────────────▶   Drawable (image, vector, shape, selector, etc)
      ■ ic_launcher_background.xml
      ■ ic_launcher_foreground.xml (v24)
  ▼ ■ layout ──────────────────────▶   Layout (activity, layout, etc)
      ■ activity_main.xml
      ■ activity_main2.xml
  ▼ ■ mipmap ──────────────────────▶   Mipmap (launcher icon)
    ▶ ■ ic_launcher (6)
    ▶ ■ ic_launcher_round (6)
  ▼ ■ values ──────────────────────▶   Values (colors, dimensions, strings, themes, styles, etc)
      ■ colors.xml
      ■ dimens.xml
      ■ strings.xml
    ▶ ■ themes (2)
```

Gradle Scripts
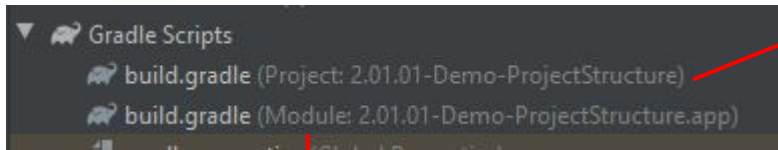
Project settings
(kotlin version, depencesies, repository, etc)

Module settings (app)
(plugins, app version, sdk, dependencies, etc)

2.2.1 [Demo] Layouts and TextView

https://github.com/ferryyuwono/android-beginner/tree/main/2.02.01-Demo-LayoutsTextView

File: activity_main.xml

ConstraintLayout

LinearLayout

RelativeLayout
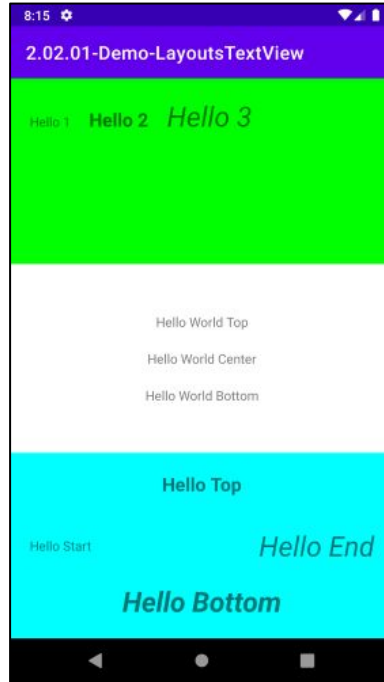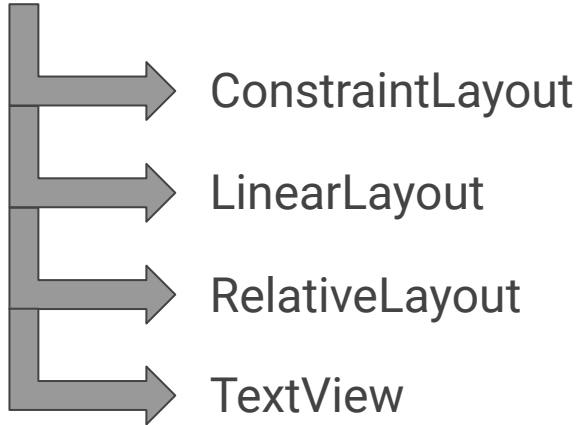
TextView

2.2.2 [Exercise] Layouts and TextView

https://github.com/ferryyuwono/android-beginner/tree/main/2.02.02-Exercise-LayoutsTextView

File: activity_main.xml, strings.xml, colors.xml

Extract resource to strings

Extract resource to colors

Style Layout and Textview

LinearLayout weight
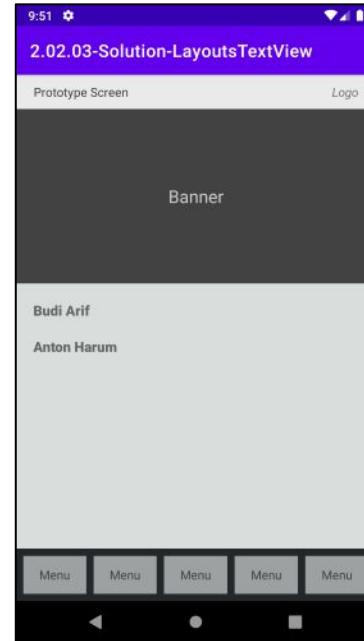
Expected Result

2.2.3 [Solution] Layouts and TextView

https://github.com/ferryyuwono/android-beginner/tree/main/2.02.03-Solution-LayoutsTextView

File: activity_main.xml, strings.xml, colors.xml

Extract resource to strings

Extract resource to colors

Style Layout and Textview

LinearLayout weight

Expected Result
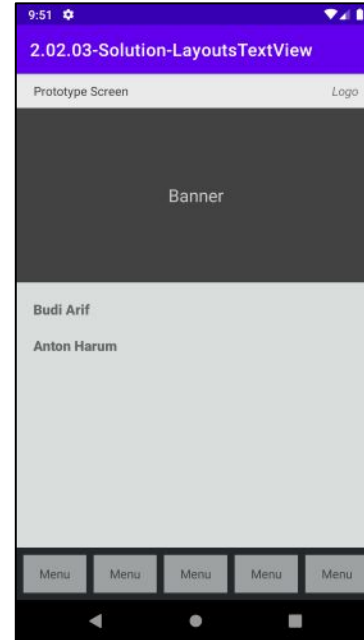
2.3.1 [Demo] EditText and Button

https://github.com/ferryyuwono/android-beginner/tree/main/2.03.01-Demo-EditTextButton

File: activity_main.xml, MainActivity.kt
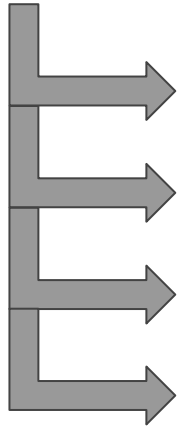
EditText

Button

OnClick Event Handler

Tools Attribute

2.3.2 [Exercise] EditText and Button

https://github.com/ferryyuwono/android-beginner/tree/main/2.03.02-Exercise-EditTextButton

File: activity_main.xml, MainActivity.kt

ScrollView

Style EditText

Style Button

Validation

Expected Result	Scrollable	Validation	Valid message

2.3.3 [Solution] EditText and Button

https://github.com/ferryyuwono/android-beginner/tree/main/2.03.03-Solution-EditTextButton

File: activity_main.xml, MainActivity.kt

ScrollView

Style EditText

Style Button

Validation

Expected Result

Scrollable

Validation
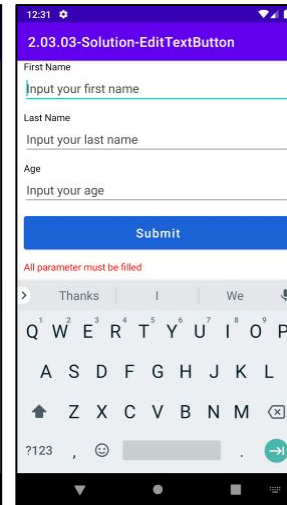
Valid message
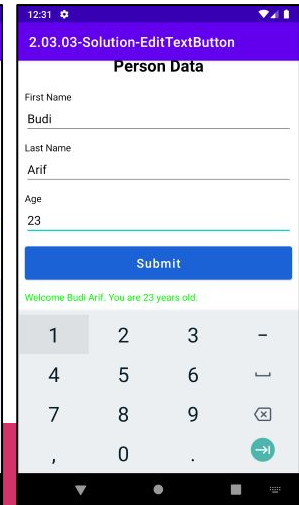
2.4.1 [Demo] Image and ImageButton

https://github.com/ferryyuwono/android-beginner/tree/main/2.04.01-Demo-ImageViewImageButton

File: activity_main.xml, MainActivity.kt, selector_button_search.xml

Drawable

ImageView

ImageButton
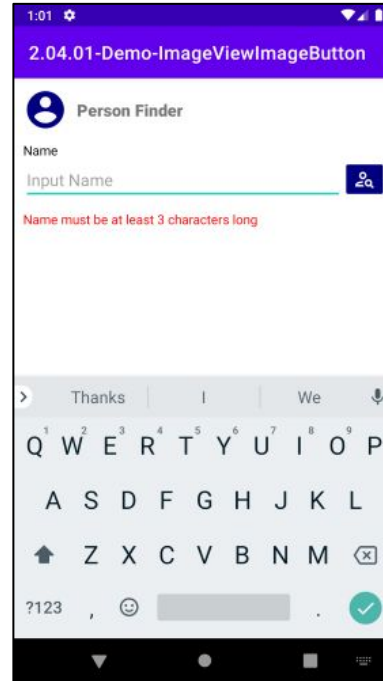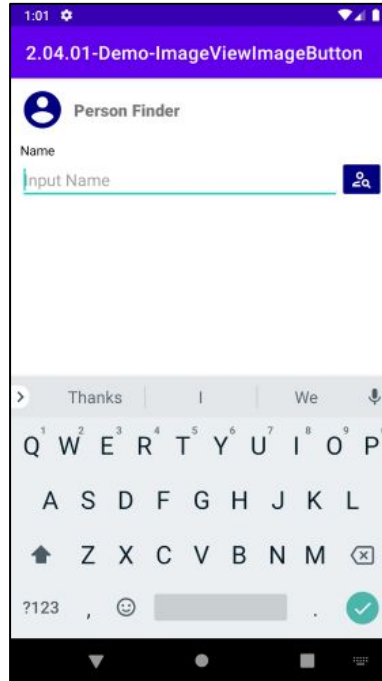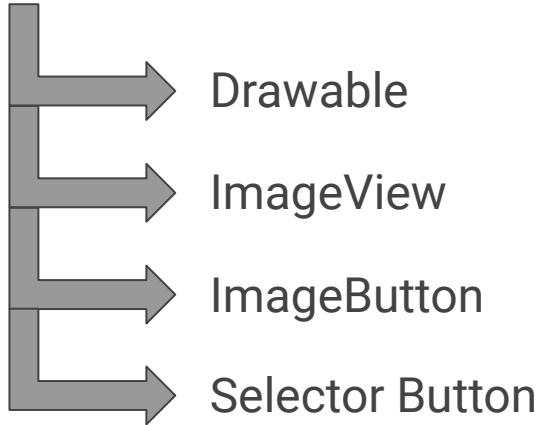
Selector Button

2.4.2 [Exercise] ImageView and ImageButton

https://github.com/ferryyuwono/android-beginner/tree/main/2.04.02-Exercise-ImageViewImageButton

File: activity_main.xml, MainActivity.kt, shape_person_background.xml, selector_checkbox_favorite.xml
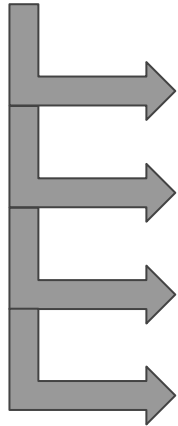
Shape

CheckBox

Selector CheckBox

Visibility
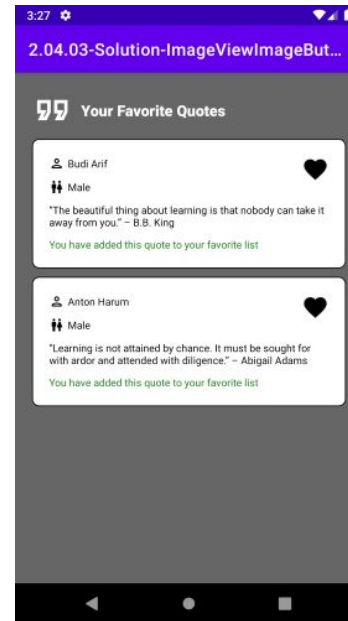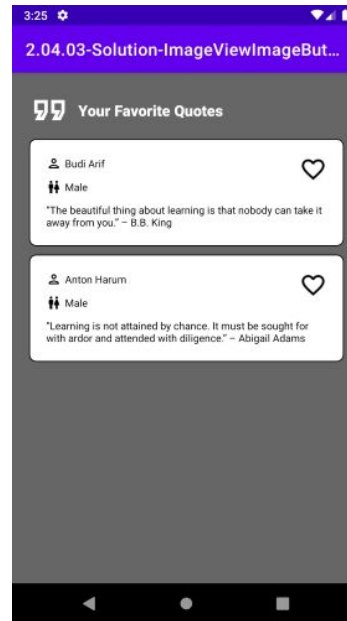
Expected Result

2.4.3 [Solution] ImageView and ImageButton

https://github.com/ferryyuwono/android-beginner/tree/main/2.04.03-Solution-ImageViewImageButton

File: activity_main.xml, MainActivity.kt, shape_person_background.xml, selector_checkbox_favorite.xml

Shape

CheckBox

Selector CheckBox

Visibility
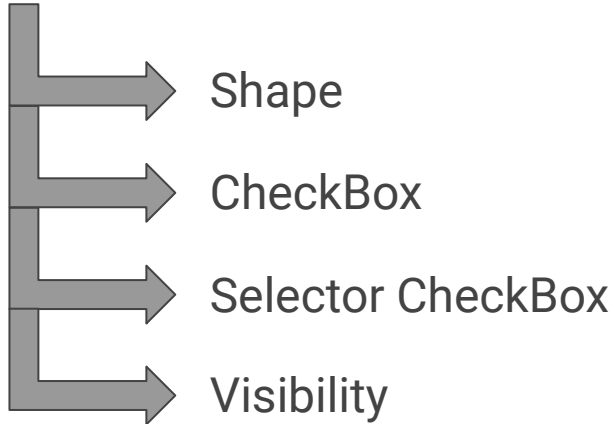
Expected Result

2.5.1 [Demo] View Binding
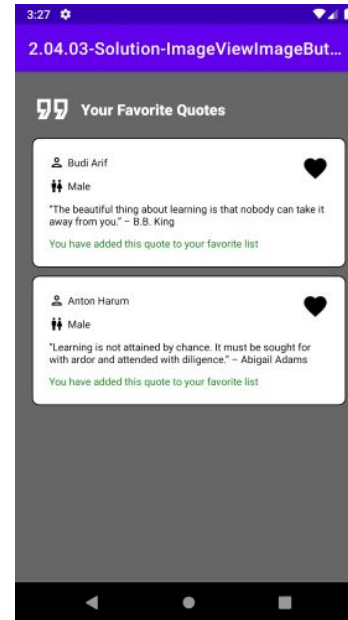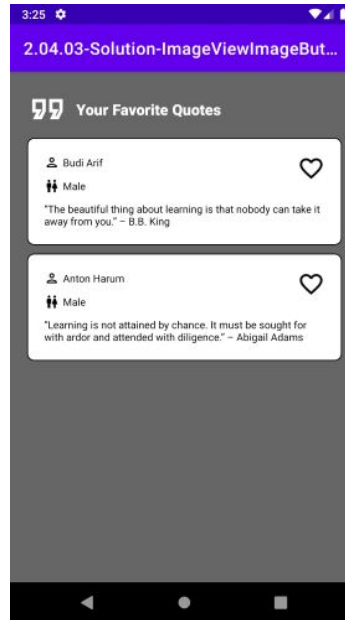
https://github.com/ferryyuwono/android-beginner/tree/main/2.05.01-Demo-ViewBinding

File: build.gradle, activity_main.xml, MainActivity.kt
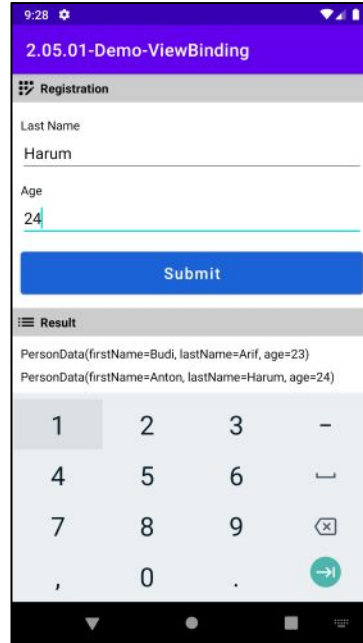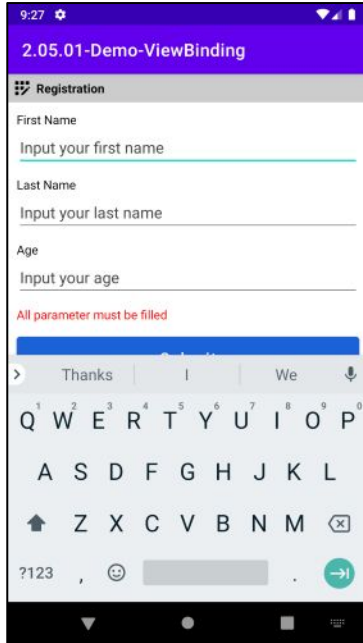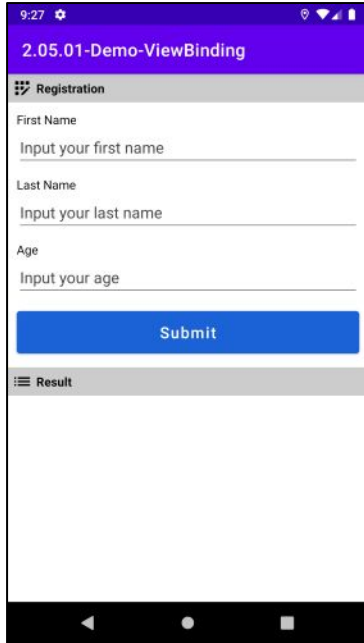
2.5.1 [Demo] View Binding
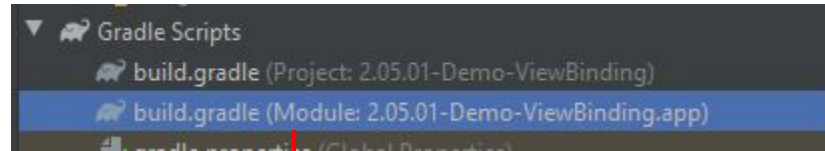
2.5.1 [Demo] View Binding
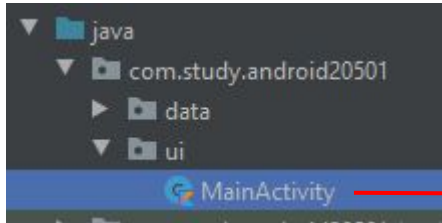

```kotlin
private lateinit var binding: ActivityMainBinding

override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    binding = ActivityMainBinding.inflate(layoutInflater)
    setContentView(binding.root)
}
```

```kotlin
//No need to use findViewById
//val firstName = findViewById<EditText>(R.id.editTextFirstName).text
//val lastName = findViewById<EditText>(R.id.editTextLastName).text
//val age = findViewById<EditText>(R.id.editTextAge).text
val firstName = binding.editTextFirstName.text
val lastName = binding.editTextLastName.text
val age = binding.editTextAge.text
```

2.6.1 [Demo] Persistent Data

https://github.com/ferryyuwono/android-beginner/tree/main/2.06.01-Demo-PersistentData

File: activity_main.xml, MainActivity.kt
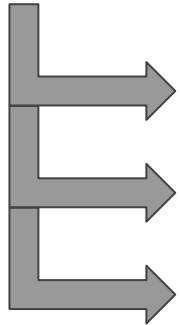
Shared Preferences

Get Persistent Data

Save Persistent Data

First Run

Save Major

Second Run

2.6.2 [Exercise] Persistent Data

https://github.com/ferryyuwono/android-beginner/tree/main/2.06.02-Exercise-PersistentData

File: build.gradle, activity_main.xml, MainActivity.kt

EditText Password

Module
Dependencies

Gson

First Run

Validation

Add data & Second Run

2.6.3 [Solution] Persistent Data

https://github.com/ferryyuwono/android-beginner/tree/main/2.06.03-Solution-PersistentData

File: build.gradle, activity_main.xml, MainActivity.kt

EditText Password

Module
Dependencies

Gson

First Run

Validation

Add data & Second Run

2.7.1 [Demo] Activity and Manifest

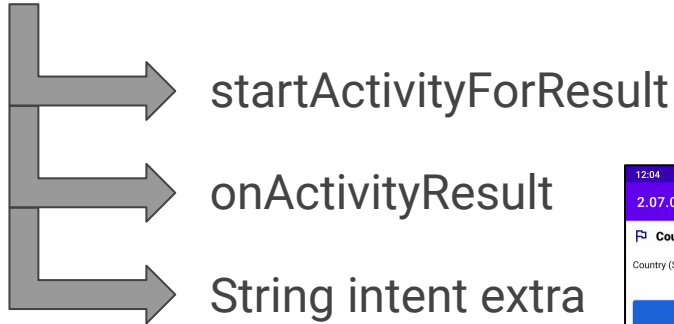https://github.com/ferryyuwono/android-beginner/tree/main/2.07.01-Demo-ActivityManifest

File: activity_main.xml, MainActivity.kt, activity_status.xml, StatusActivity.kt, AndroidManifest.xml

Multiple activity

Activity in Manifest

Intent extra
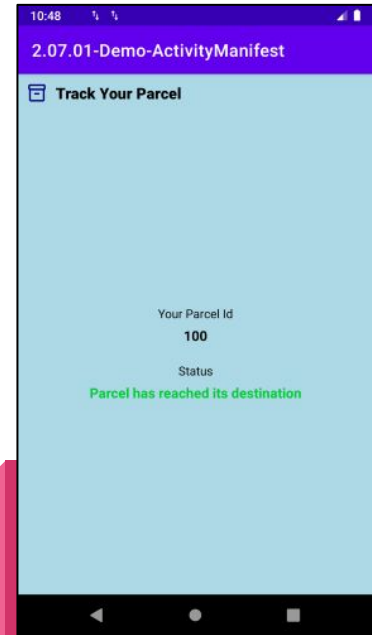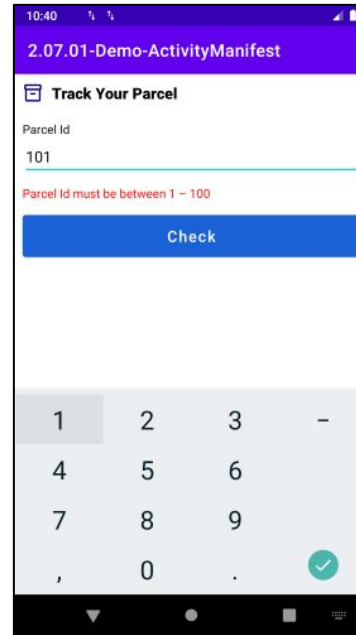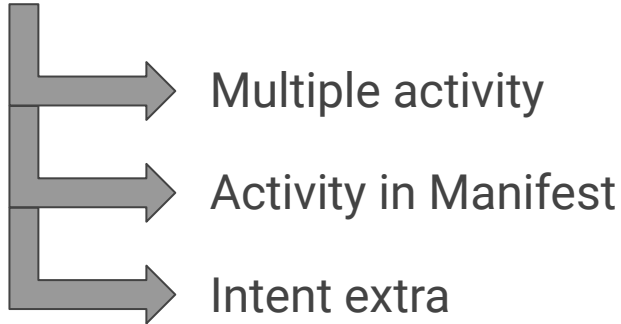
2.7.2 [Exercise] Activity and Manifest

https://github.com/ferryyuwono/android-beginner/tree/main/2.07.02-Exercise-ActivityManifest

File: activity_main.xml, MainActivity.kt, activity_country.xml, CountryActivity.kt, AndroidManifest.xml

startActivityForResult

onActivityResult

String intent extra
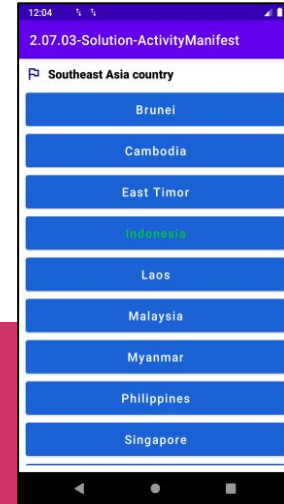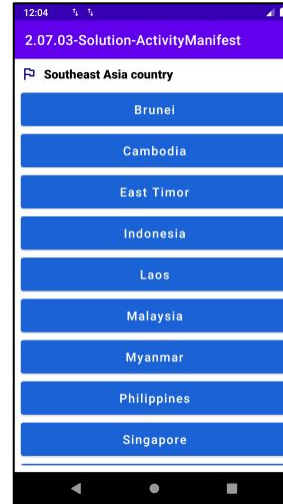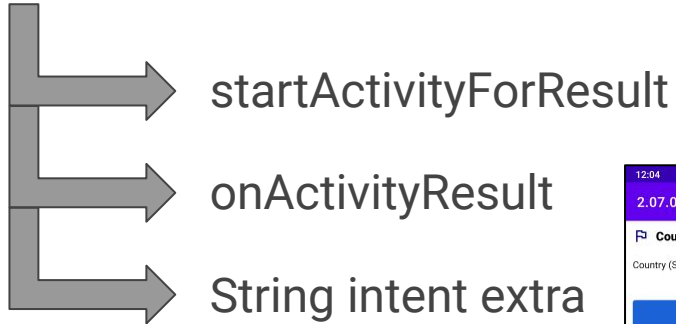
2.7.3 [Solution] Activity and Manifest

https://github.com/ferryyuwono/android-beginner/tree/main/2.07.03-Solution-ActivityManifest

File: activity_main.xml, MainActivity.kt, activity_country.xml, CountryActivity.kt, AndroidManifest.xml

startActivityForResult

onActivityResult

String intent extra

2.8.1 [Demo] RecyclerView and Adapter

https://github.com/ferryyuwono/android-beginner/tree/main/2.08.01-Demo-RecyclerViewAdapter
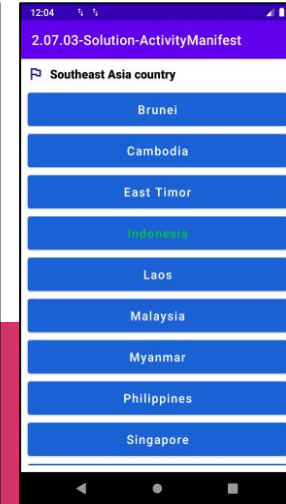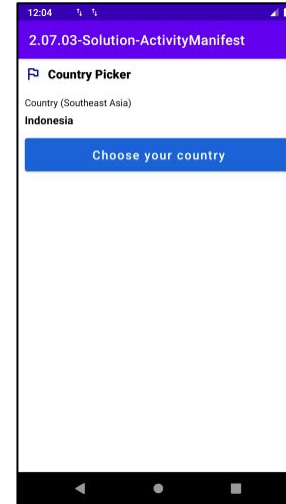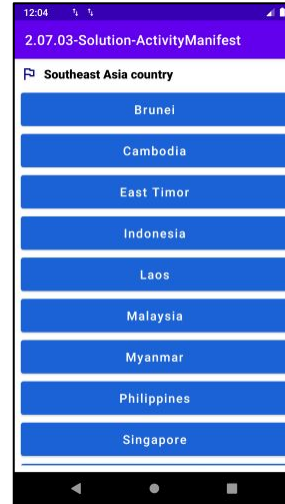
File: build.gradle, themes.xml, activity_main.xml, MainActivity.kt, item_video.xml, VideoAdapter.kt, VideoViewHolder.kt
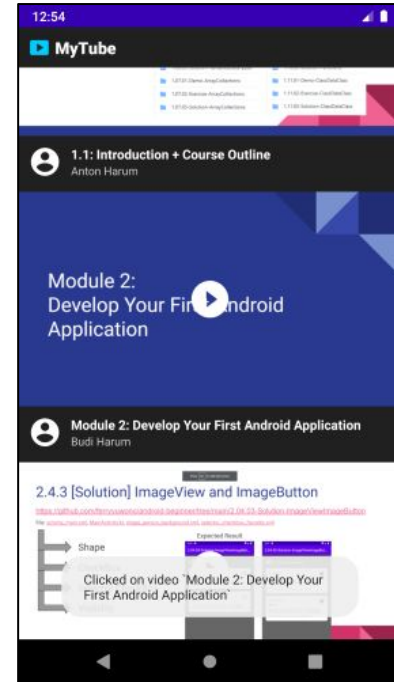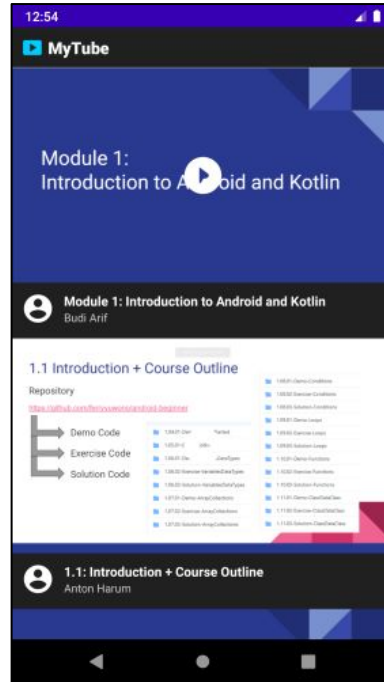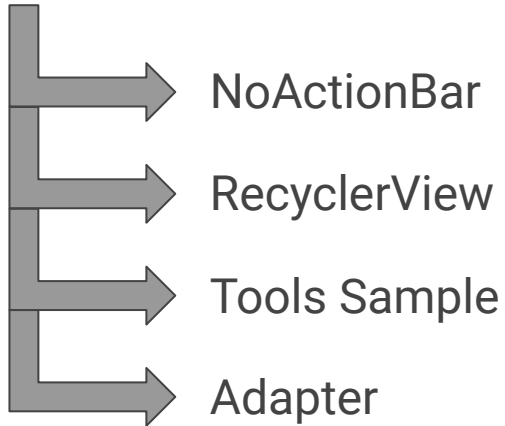
NoActionBar

RecyclerView

Tools Sample

Adapter

2.8.2 [Exercise] RecyclerView and Adapter

https://github.com/ferryyuwono/android-beginner/tree/main/2.08.02-Exercise-RecyclerViewAdapter

File: build.gradle, activity_main.xml, MainActivity.kt, item_twit.xml, TwitAdapter.kt, TwitViewHolder.kt
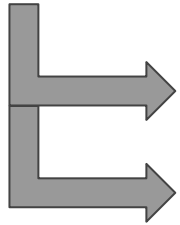
Add Data Adapter

Alert Dialog

2.8.3 [Solution] RecyclerView and Adapter

https://github.com/ferryyuwono/android-beginner/tree/main/2.08.03-Solution-RecyclerViewAdapter
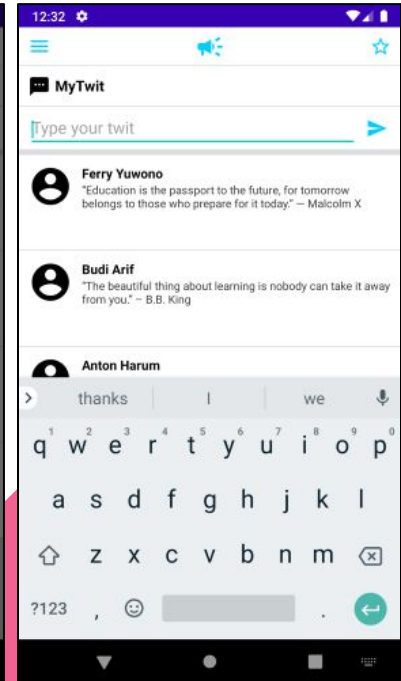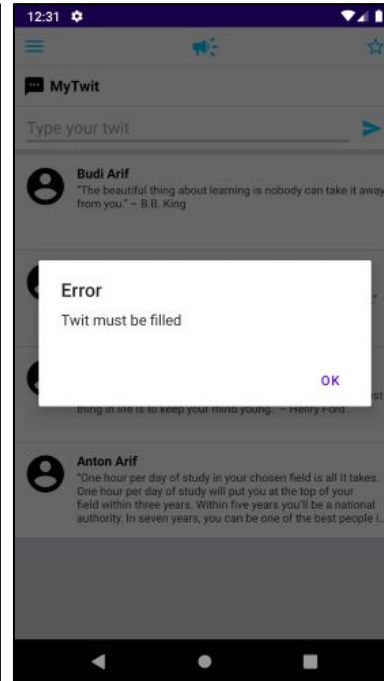
File: build.gradle, activity_main.xml, MainActivity.kt, item_twit.xml, TwitAdapter.kt, TwitViewHolder.kt
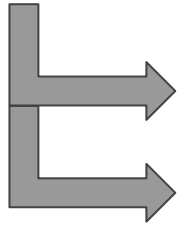
Add Data Adapter

Alert Dialog

2.8.1 [Exercise] Final Assignment
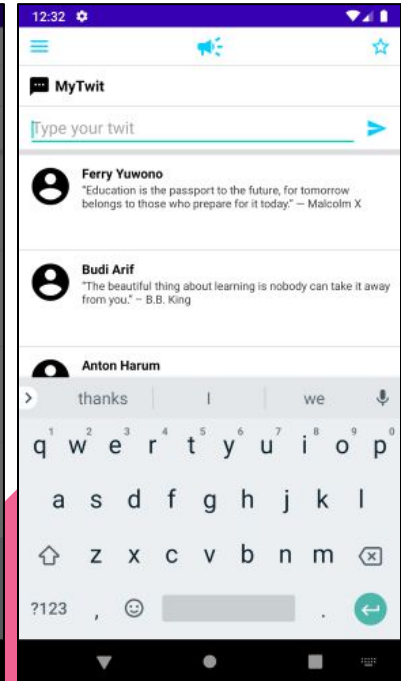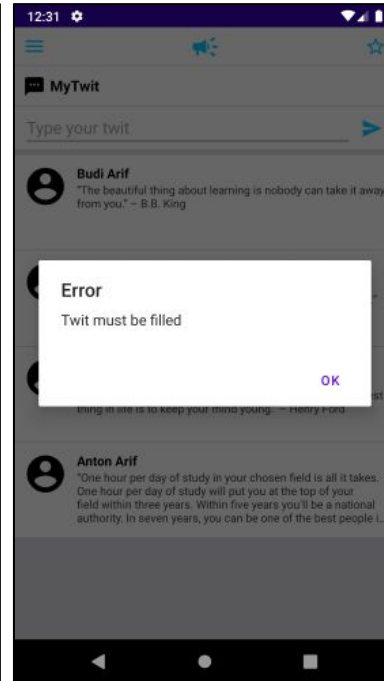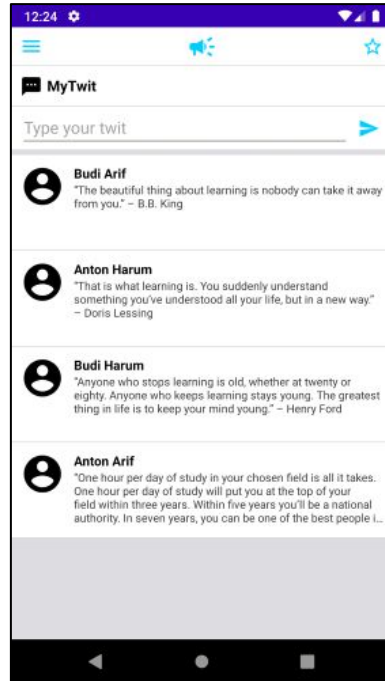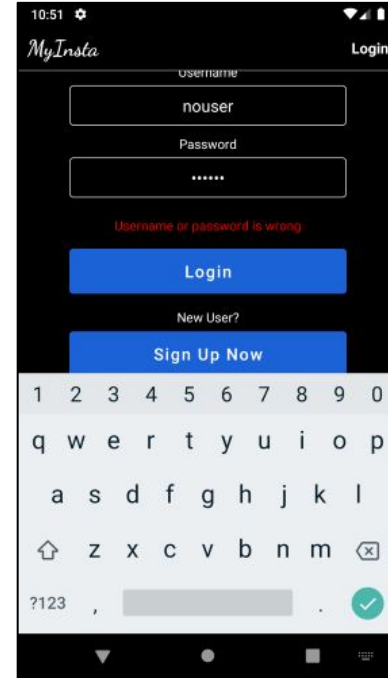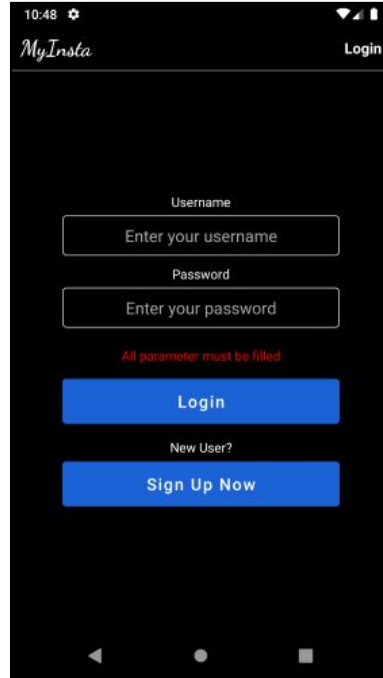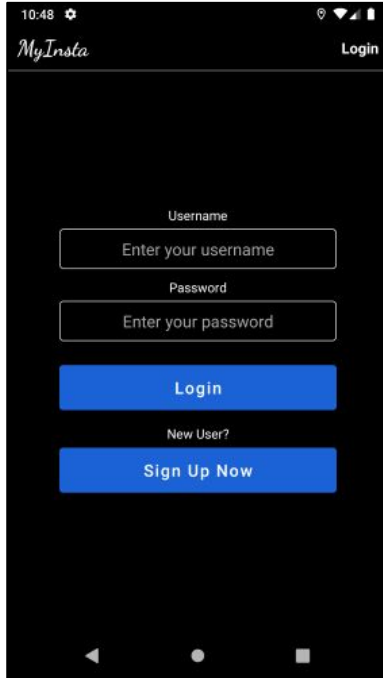
https://github.com/ferryyuwono/android-beginner/tree/main/2.09.01-Exercise-FinalAssignment

2.8.1 [Exercise] Final Assignment

2.8.2 [Solution] Final Assignment

https://github.com/ferryyuwono/android-beginner/tree/main/2.09.02-Solution-FinalAssignment
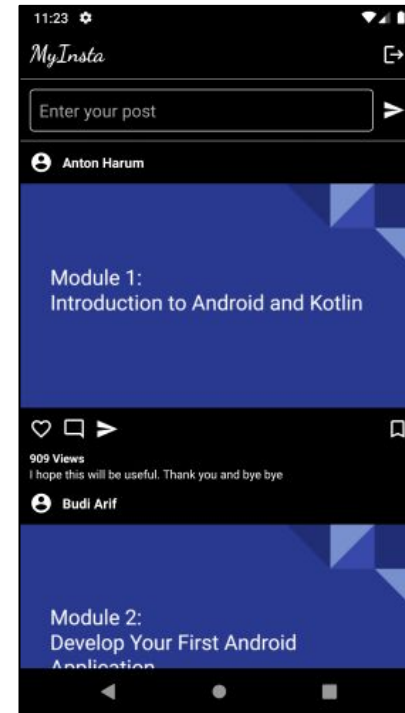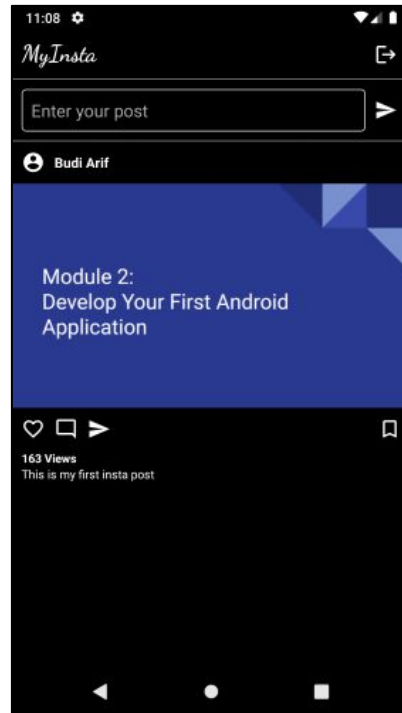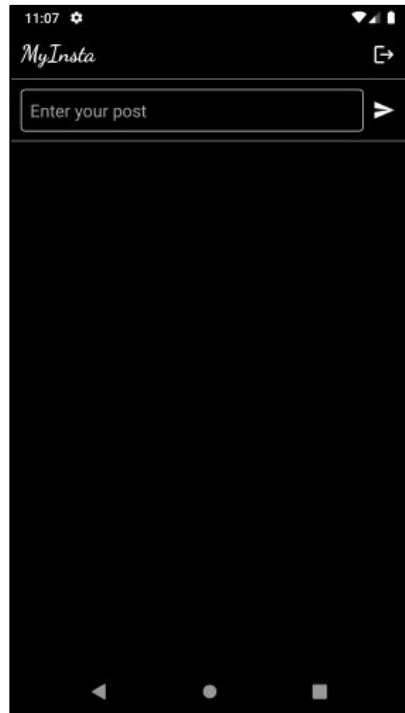
End of Module 2:
Good Job and Keep Learning!