Introduction to Android (II)

Topics

Introduction to android Studio

Android application Structure

Android Layouts
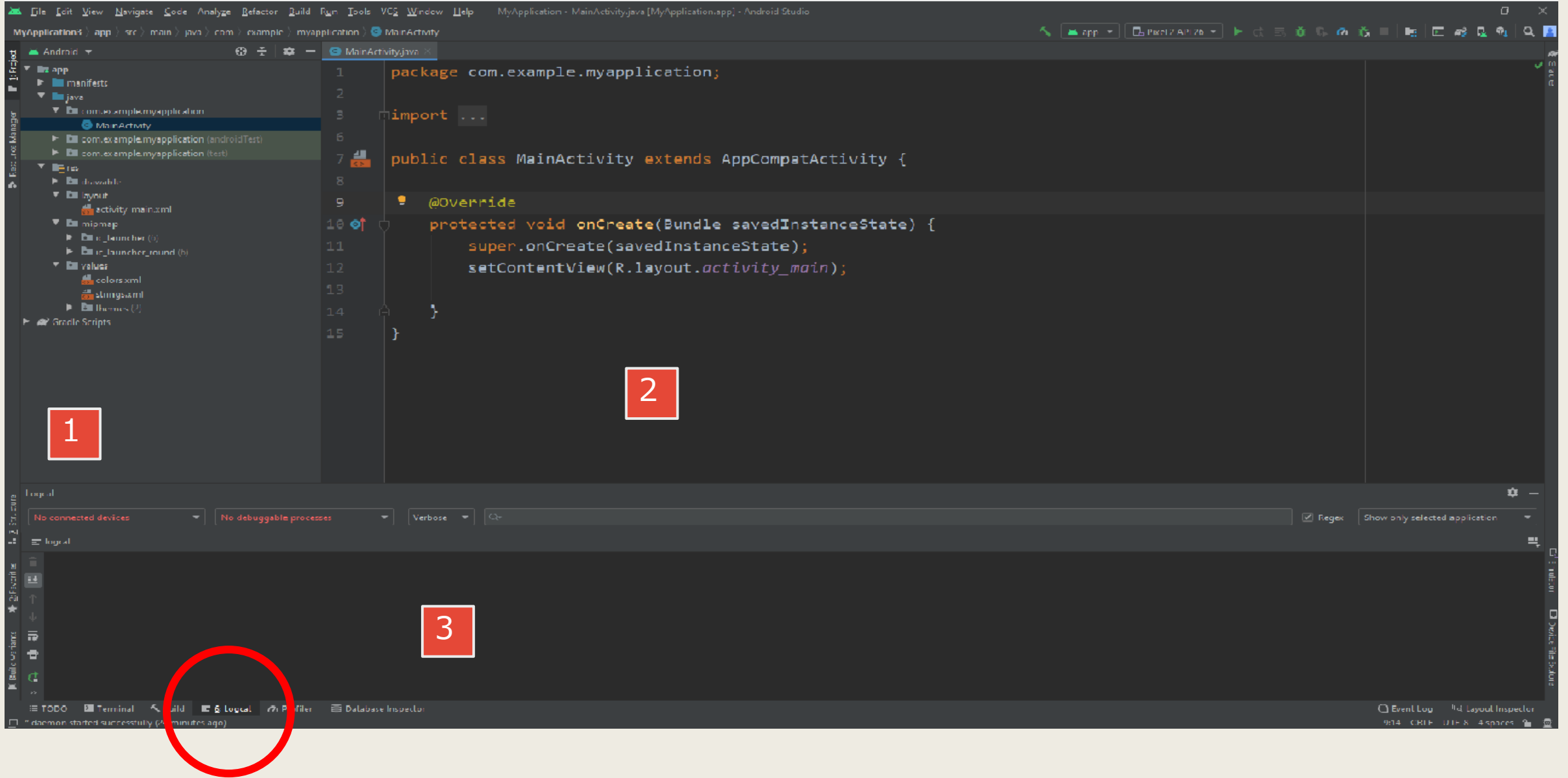
Basic UI elements

– Text View

– Edit Text

– Button

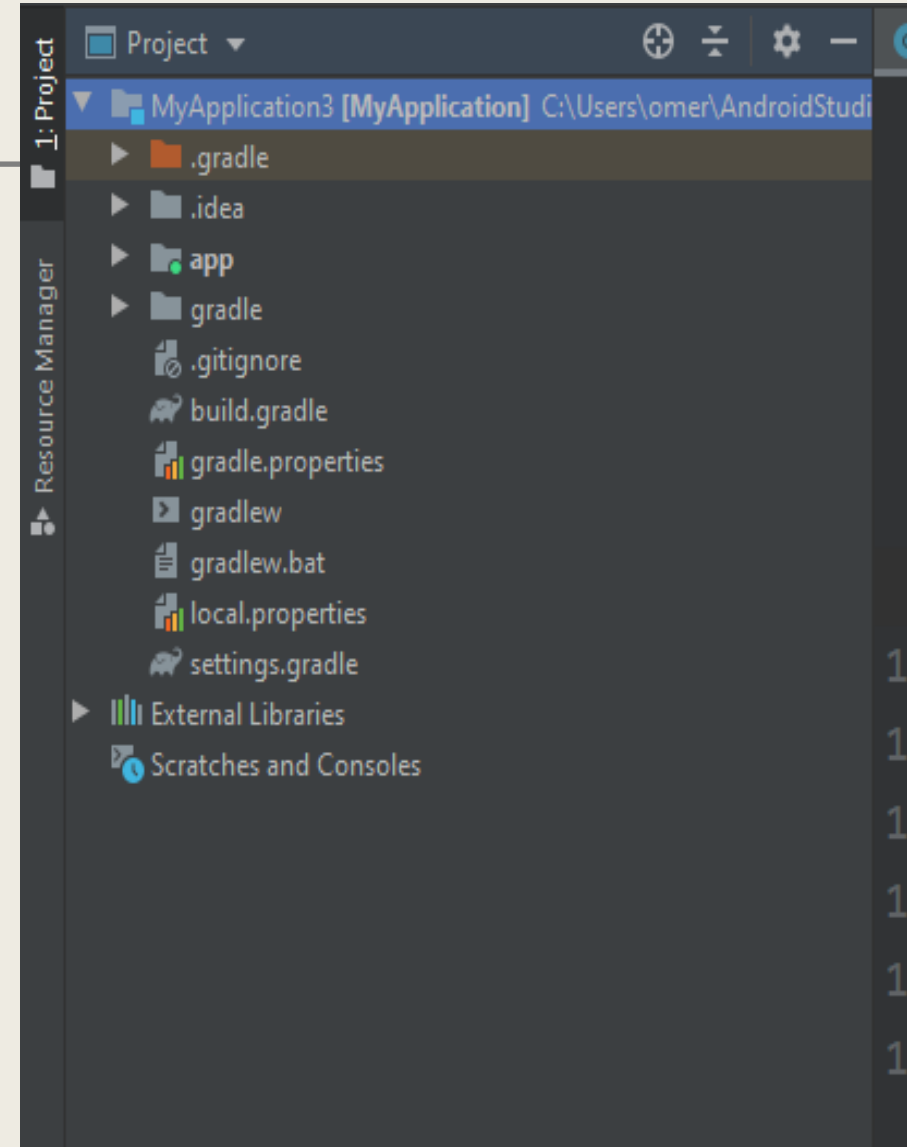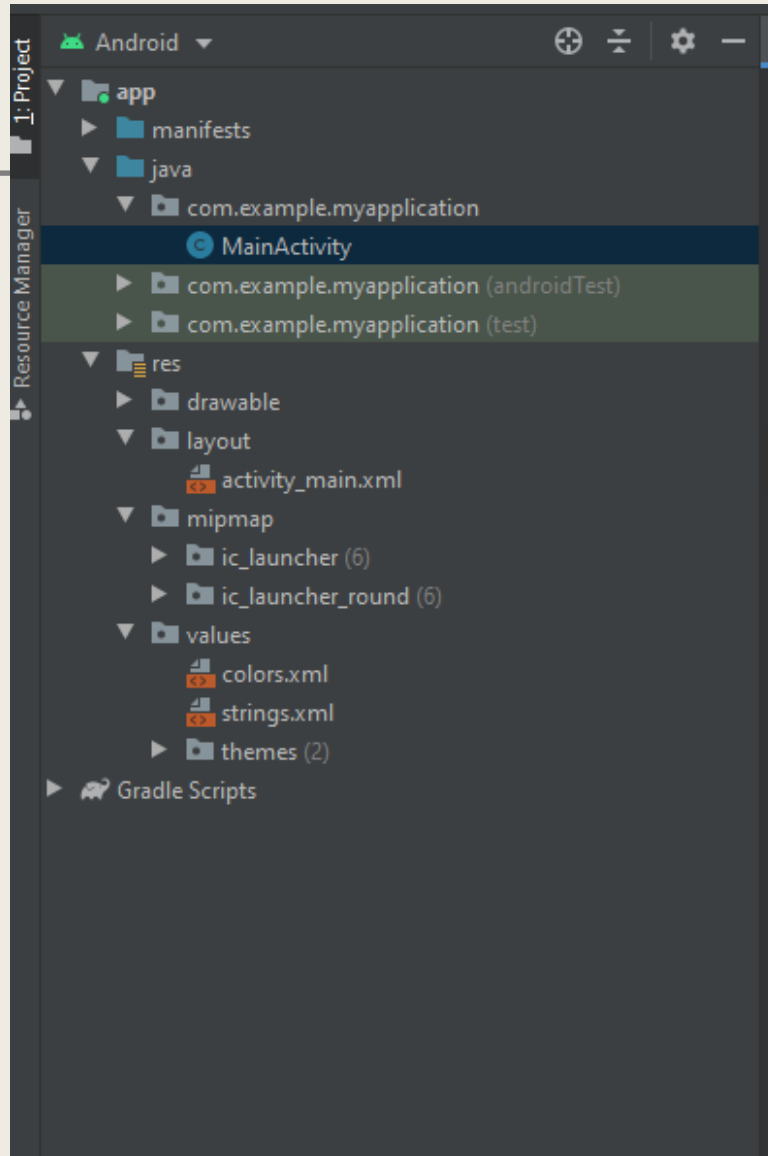Activity and Activity life cycle

Toast Message / Log

Examples

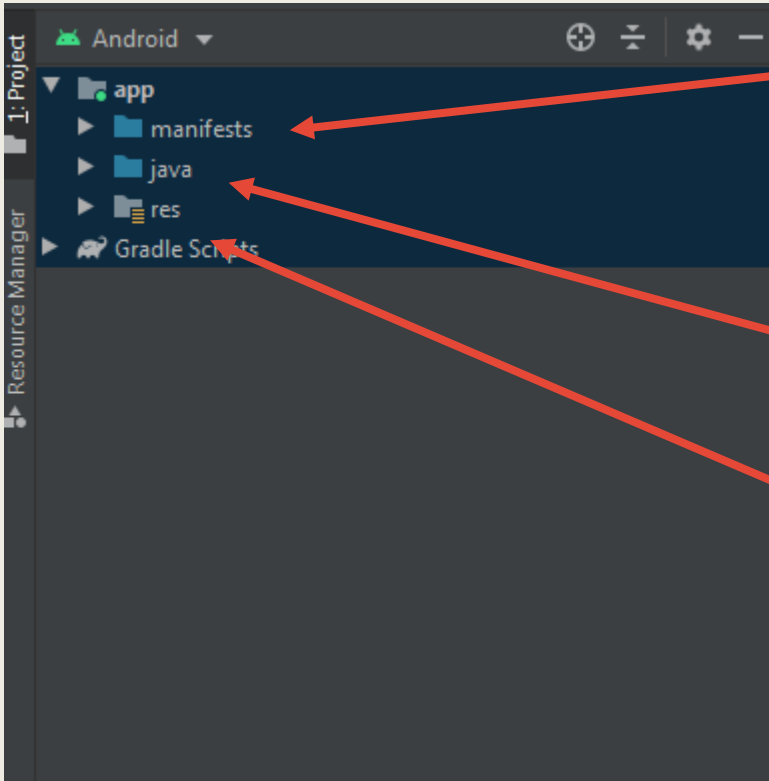1- Project window   2- Editor window   3- logcat window (for debuging)

The project Views

Android View of resources

Three Main Folders

Manifest: to view **android manifest** file

Java: java source code

res: include all resources such as xml files ,images …

Main Directories of the Android Application

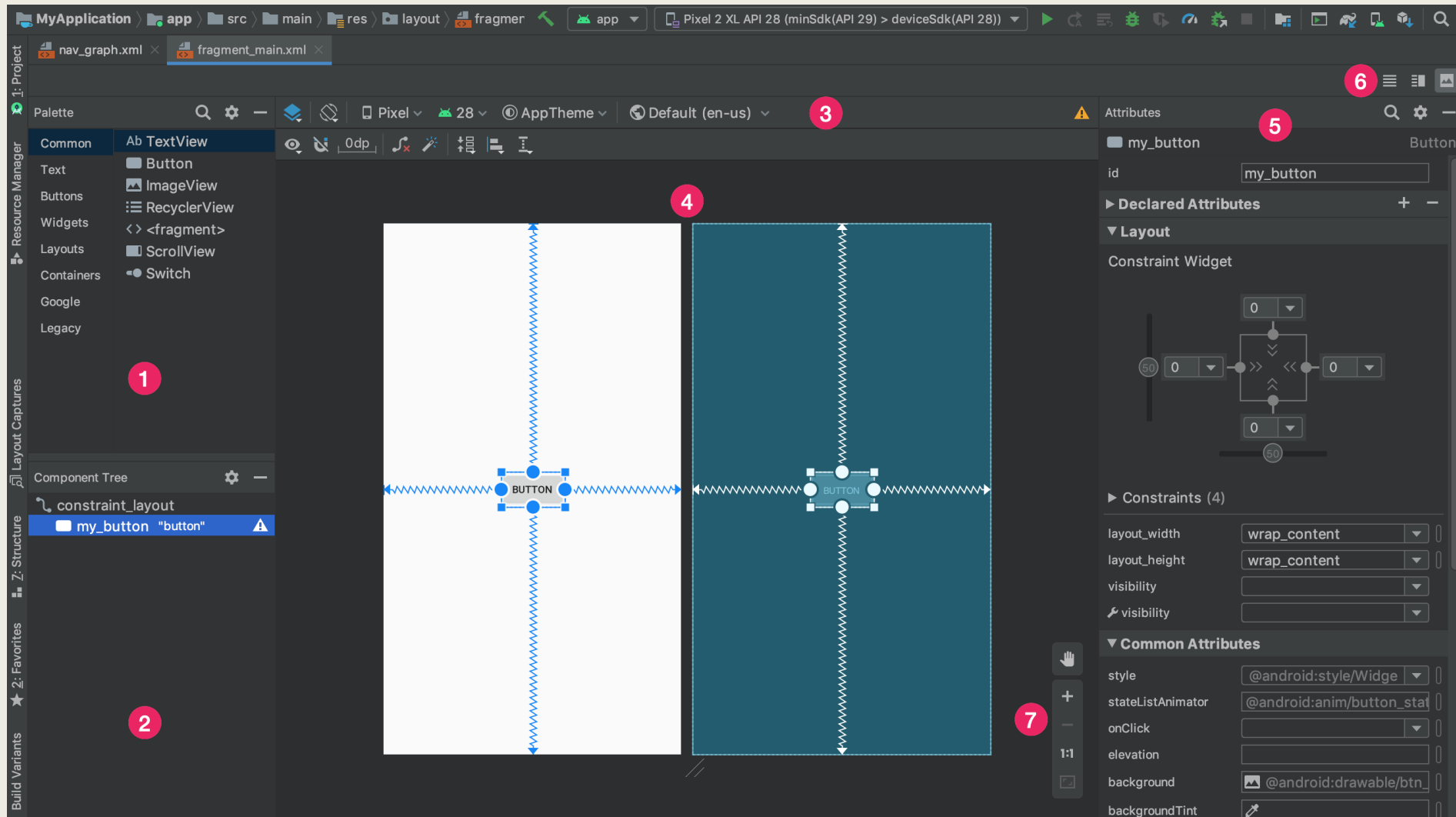**src/**   Required folder for all source code.

src/main/AndroidManifest.xml   The central configuration file for the application. It defines your application's capabilities and permissions as well as how it runs.

src/main/java/ Folder for the main Activity file and other .java files.

src/main/res/   Application resources such as **drawable graphics, images , layout files, data such as strings and numbers, xml, and raw files**.

src/main/res/layout — Application layouts that define Views displayed on the Screen (defined as XML files)

Layout Editor

Src: https://developer.android.com/studio/write/layout-editor

Activity (Android Page/ View)

Activity (Android Page/ View)

User Interface (UI)

❖ *buttons , text , text inputs , images* …
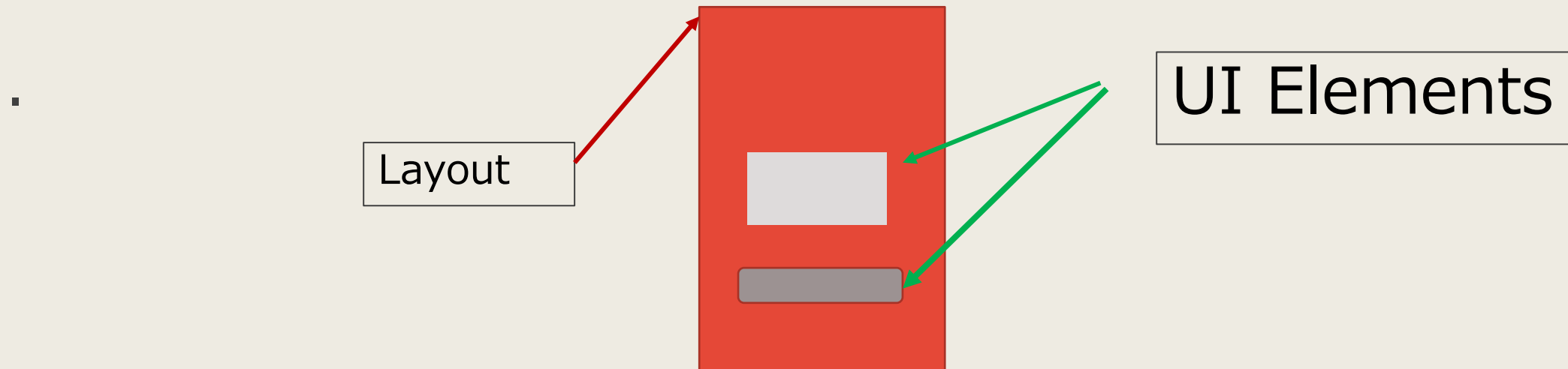
❖ *xml file*

Code / Functionality

❖ preforming an action when the user click a button

❖ -java /Kotlin

Android User Interface

Android UI contain:

1- **Widget**s: UI elements such as button , Text Views

2- **Layout** :   a container that hold the widgets / UI elements .

.

Layout

UI Elements

Layouts in android

Linear Layout

A layout that arranges its UI elements in a single column or row.

Relative Layout

A layout where the positions can be set relative to other widgets or the parent container .

Constraint Layout

allow you to position a given widget relative to another one. You can constrain a widget on the horizontal and vertical axis

Example

- Create android Application

- Change Hello World text to "Welcome to Android"

- Add a button

Note:(run the app after each step)

❖ Add 2 or 3 TextView in the main_activity Layout file .

❖ Change the width and height of TextView.

❖ Change the text color/size.

❖ Assign the string resources you just added to the text views.

Adding TextView in xml

```xml
<TextView
    android:id="@+id/my_text_view"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/hello_world"
/>
```

Assign an id

Set width and height of the view

Getting string from string.xml

EditText

Tag for Edit Text

```
<EditText
    android:id="@+id/my_edit_text"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="@string/enter_text"
/>
```

Assign an id

width and height

getting value from string resources

EditText

```
<EditText
    android:id="@+id/my_edit_text"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="@string/enter_text"
/>
```

Assign an id

width and height

Getting value from string resources

Changing text programmatically

1- get reference to UI component in layout

```
TextView tv   =   findViewById<TextView>(R.id.text_view)
```

```
// changing the text via java code

tv.text = "Android is cool ";
```

Handling Click Event

```xml
<Button
    android:id="@+id/my_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/my_button_text"
    android:onClick="myMethod"
/>
```

Method name

```java
public void myMethod( View v) {
    // write the code here
}
```

Toast Message

We can display messages to the user by using Toasts

```
Toast.makeText(this, "hello", Toast.LENGTH_LONG).show() ;
```

The Message

Duration

Displaying debug messages in Logcat

We can display debug message in Logcat using Log class

```
Log.d("TAG", " debug message ") ;
```

Exercise 1   (Lab exercise example)

Create simple login Screen

  UI should contain

– *Title*

– *input field for username*

- *Input field for password*

- *Button*

- when the use click the button display username and password in logcat /and as toast message

- Upload the application to https://appetize.io/

References

https://developer.android.com/studio/write/layout-editor

https://developer.android.com/studio/debug/am-logcat