Bootcamp XI
Fundamentos de Android

KEEPCODING
Tech School

Android Studio

- IDE Official
- InteliJ IDEA + Plugins

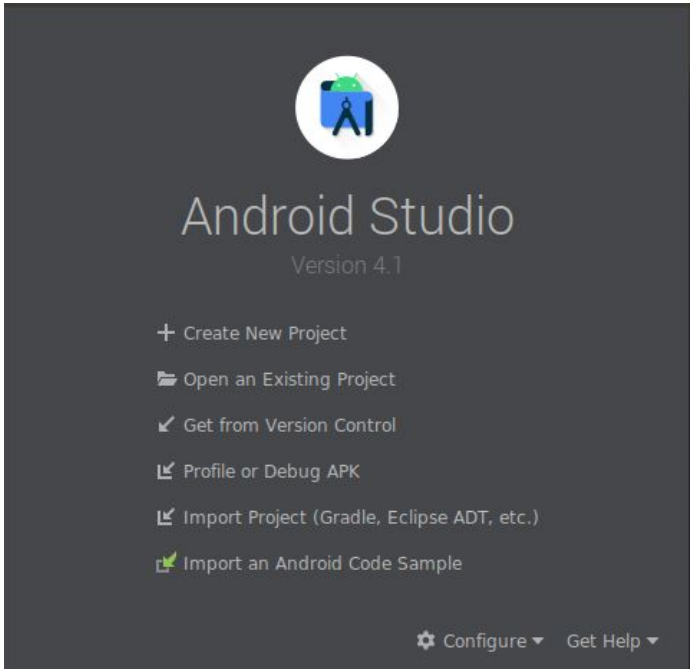
https://developer.android.com/studio

Android SDK

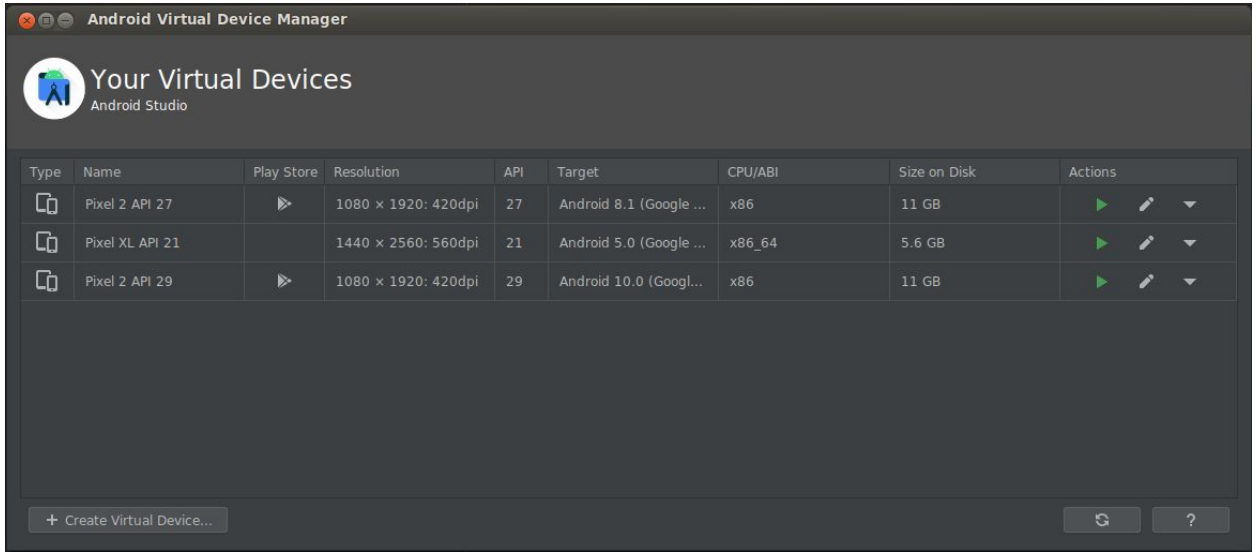
- Entorno de desarrollo
- Android API Versions

https://developer.android.com/docs

Welcom to Androdi Studio



Emuladores



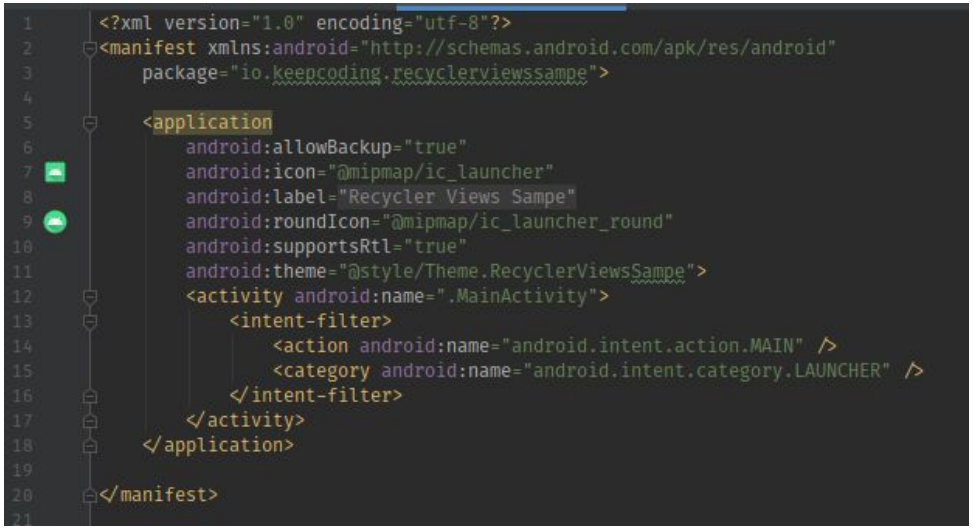
Gradle

- Build Automation Tools
- Dependencies Manager
- Scripts
- Groovy/Kotlin DSL

```
plugins {
    id 'com.android.application'
    id 'kotlin-android'
}

android {
    compileSdkVersion 30
    buildToolsVersion "30.0.2"

    defaultConfig {
        applicationId "io.keepcoding.recyclerviewssampe"
        minSdkVersion 21
        targetSdkVersion 30
        versionCode 1
        versionName "1.0"

        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
    }

    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'
        }
    }
    compileOptions {
        sourceCompatibility JavaVersion.VERSION_1_8
        targetCompatibility JavaVersion.VERSION_1_8
    }
    kotlinOptions {
        jvmTarget = '1.8'
    }
}

dependencies {

    implementation "org.jetbrains.kotlin:kotlin-stdlib:$kotlin_version"
    implementation 'androidx.core:core-ktx:1.3.2'
    implementation 'androidx.appcompat:appcompat:1.2.0'
    implementation 'com.google.android.material:material:1.3.0'
    implementation 'androidx.constraintlayout:constraintlayout:2.0.4'
    testImplementation 'junit:junit:4.+'
    androidTestImplementation 'androidx.test.ext:junit:1.1.2'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.3.0'
}
```

Android Manifest

- Define la Información esencial de la aplicación
- Icono de la App
- Nombre de la App
- “Pantallas” (Activities)
- Servicios
- Permisos



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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="Recycler Views Sampe"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.RecyclerViewsSampe">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

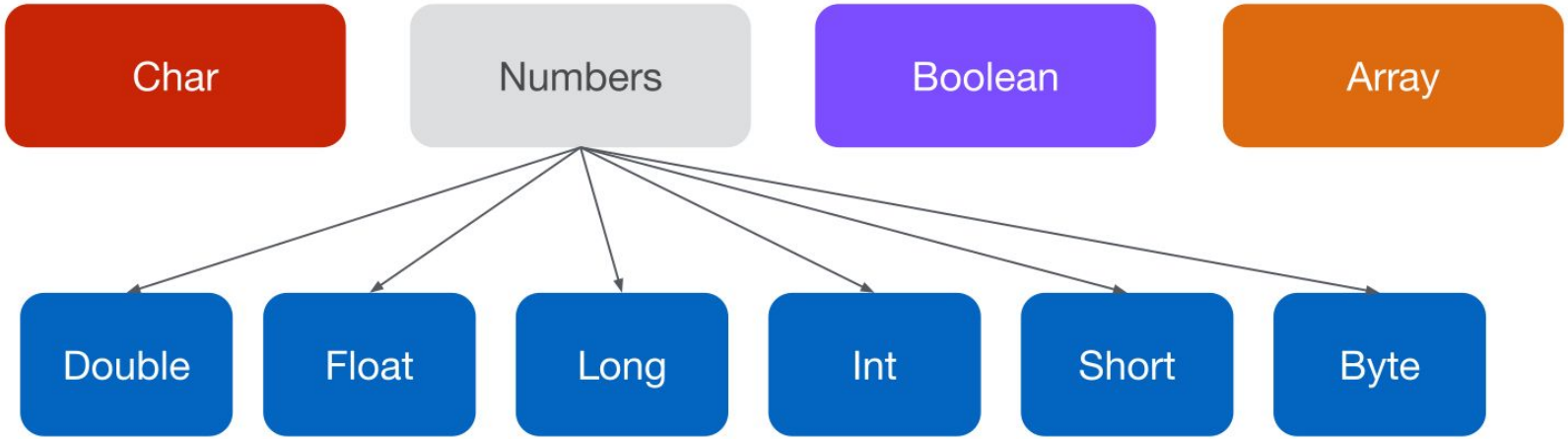
Kotlin

- JVM
- Interoperabilidad con Java
- Tipado Estático
- Inferencia de tipos
- Programación orientada a Objetos
- Conceptos de Lenguajes funcionales

Kotlin - Mutabilidad

```kotlin
// Mutable variable
var variable: String = "Hello World"

// Immutable variable
val constant: String = "Hello World"
```


Kotlin - Tipos Básicos



Kotlin - String Interpolation

```kotlin
val name = "Jc Miñarro"
val age = 31

val text = "Hello, \nmy name is $name and I am $age years old"

println("My birthday is in September and I will be ${age + 1} years old")

val message = """
    Hello,
    How are you?
    Where are you from?
""".trimIndent()
```

Kotlin - Class

- Class
- Interface
- Abstract Class
- Data Class
- Enum
- Sealed Class
- Object

Kotlin - Nullability

- Compile-Time vs Runtime
- Identificador de Nullabilida -> ?
- Safe-Navigation Operator -> ?.
- Elvis Operator -> ?:

```
val nullableString = String? = generateStringOrNull()
val size = nullableString?.size ?: 0
```

Kotlin - Cast

- Operador is y !is
- Operador as y as?
- Smart Cast

```
val something: Any = "Hello"
if(something is String)
    something.size
```


Kotlin - When

- Condition Expression

```
when (x) {
    1 -> print("x == 1")
    2 -> print("x == 2")
    else -> { // Note the block
        print("x is neither 1 nor 2")
    }
}
```


Kotlin - Extensions Function

```
fun ThirdPartyClass.someFunction(): String {
    // `this` reprensent the instance
    return "Hello $this"
}
```


Kotlin - Extension Properties

- Last Index of a generic list

```
val <T> List<T>.lastIndex: Int
    get() = size - 1
```

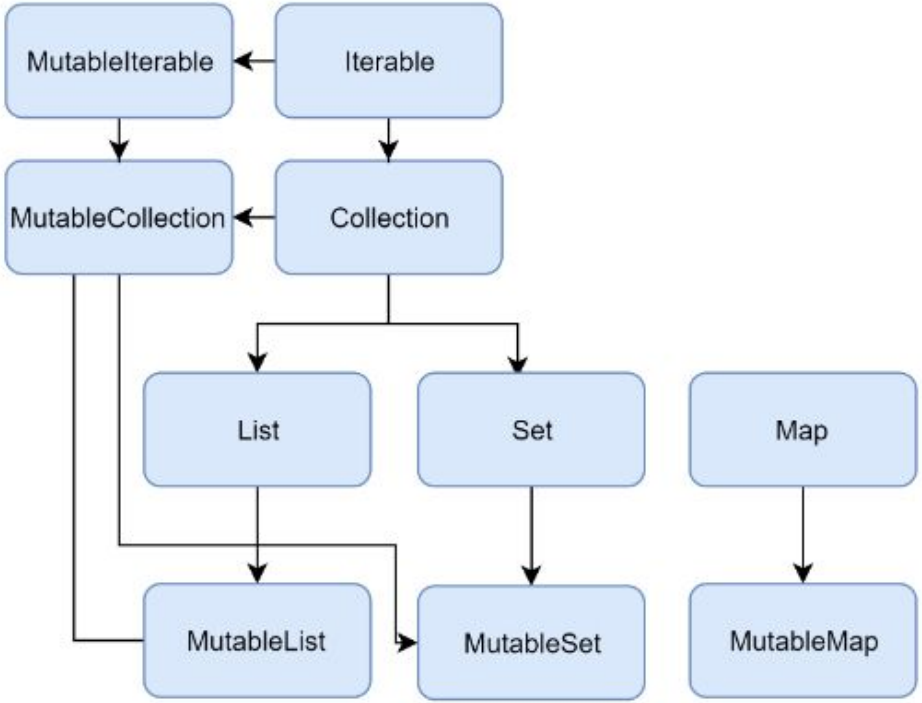
- Visibility of a View

```
var View.isVisible: Boolean
    get() = visibility == View.VISIBLE
    set(value) {
        visibility = if (value) View.VISIBLE else View.GONE
    }
```


Kotlin - Extension Function

- `fun <T, R> T.let(block: (T) -> R): R`
- `fun <T> T.apply(block: T.() -> Unit): T`
- `fun <T, R> with(receiver: T, block: T.() -> R): R`
- `fun <T, R> T.run(block: T.() -> R): R`
- `fun <T> T.also(block: (T) -> Unit): T`

Kotlin - Collections



Kotlin - Collections

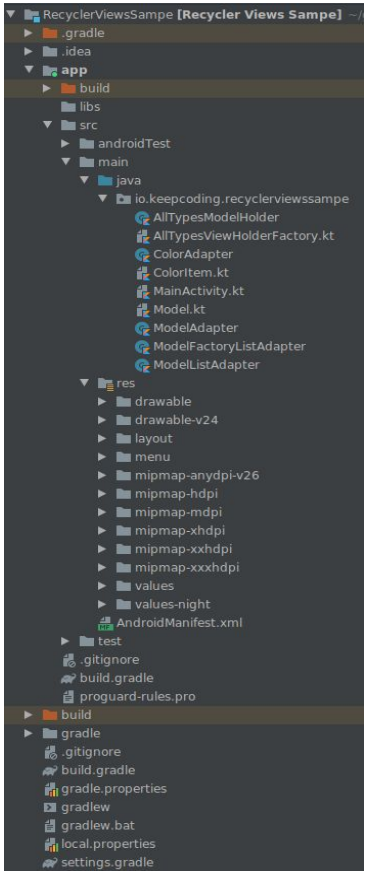
- `listOf(1, 2, 3, 4) // [1, 2, 3, 4]`
- `mutableListOf("a", "b", "c") // ["a", "b", "c"]`
- `emptyList<Double>() // []`
- `setOfNotNull(1, null, 3, null) // [1, 3]`
- `mutableMapOf(1 to "first", 2 to "second", 3 to "third")`
  `// [1:"first", 2:"second", 3:"third" ]`

Kotlin - Collections

- `forEach { }`
- `map { }`
- `flatMap { }`
- `fold { }`

Estructura del projecto

- Projecto
  - Modulo App
    - src
      - main
        - java
        - res
      - test
    - build.gradle (modulo)
    - proguard
  - build.gradle (Global del projecto)
  - settings.gradle
  - gradlew



Resources

- String
- Color
- Dimens
- Styles
- Drawables
- Layout
- Menu

Activity

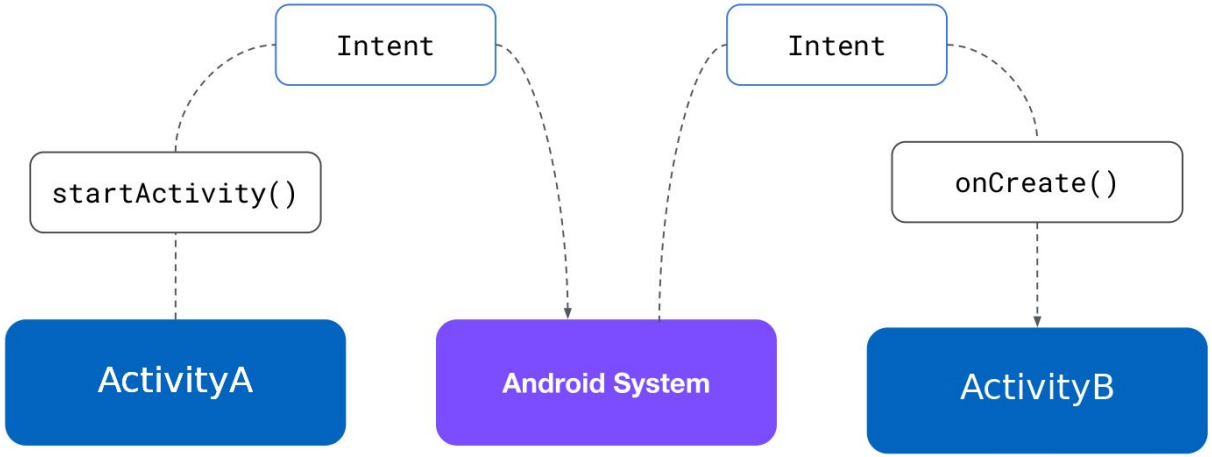
- Punto de entrada
- Define “la pantalla” que se muestra
- Debe estar incluida en el Manifest

Context

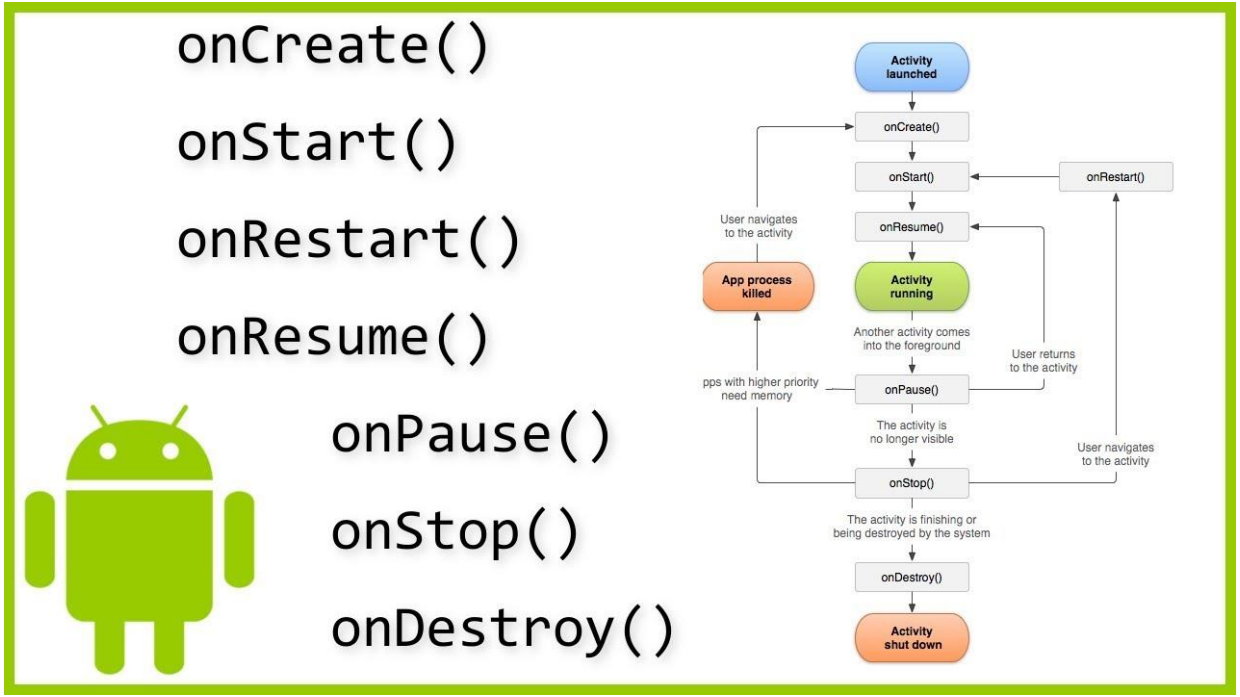
- Obtención de recursos específicos de la aplicación
- Hay diferentes tipos:
  - Application
  - Activity
  - Service
  - BroadcastReceiver
  - ContentProvider

Intent

- Objeto de intercambio de información
- Define Acciones a realizar
- Intent-Filter
- Extras

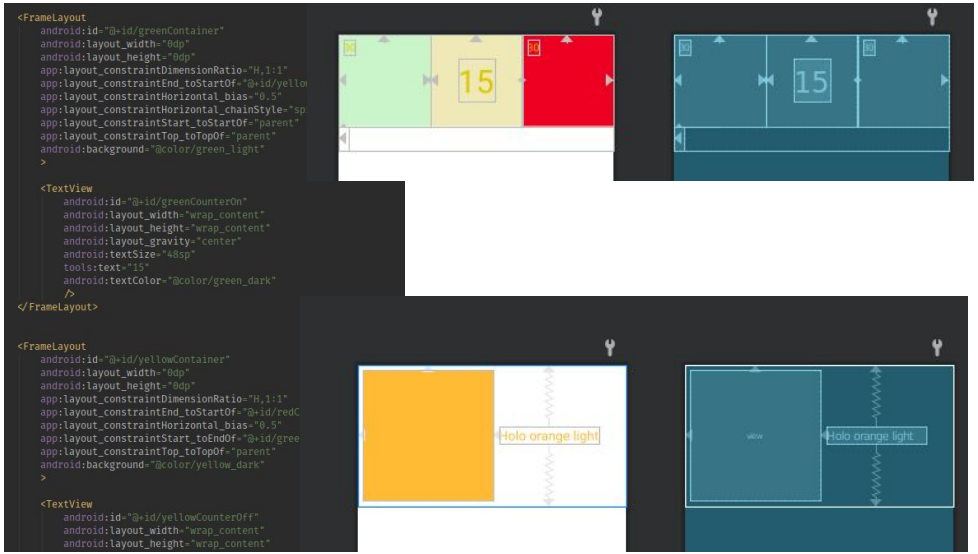


Activity Lifecycle



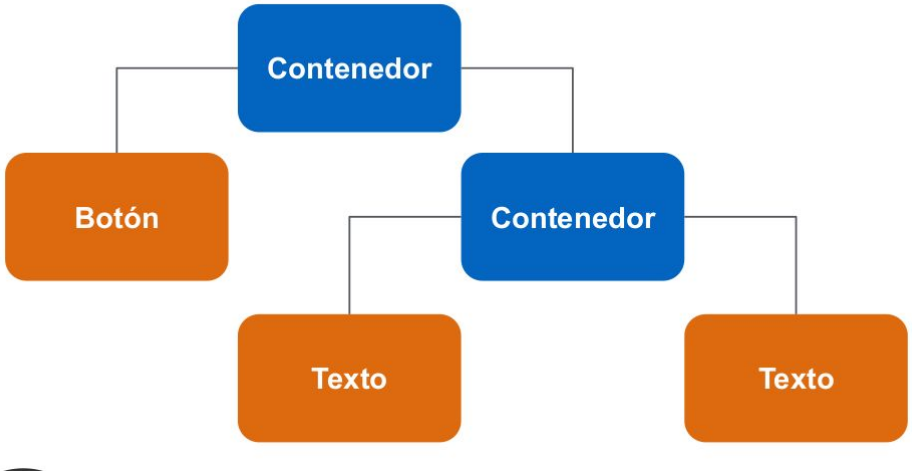
Vistas en Android

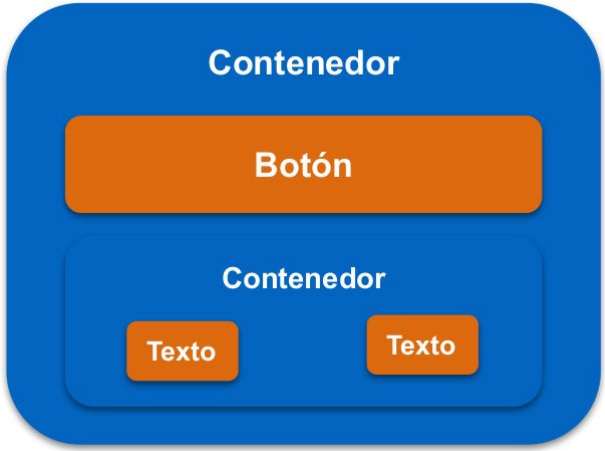
- View
  - TextView
  - EditText
  - Button
  - ImageView
  - Snackbar
  - ViewGroup
    - LinearLayout
    - RelativeLayout
    - FrameLayout
    - ConstraintLayout



View

Jerarquía de Vistas





View

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    >

    <TextView
        android:id="@+id/viewId"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/text"
        android:layout_margin="8dp"
        android:textSize="@dimen/text_size"
        />
</FrameLayout>
```

TextView


```
<TextView
        android:id="@+id/viewId"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/text"
        android:layout_margin="8dp"
        android:textSize="@dimen/text_size"
        android:textColor="@android:color/holo_purple"
        android:background="@android:color/holo_orange_dark"
        />
```

EditText

```
<EditText
        android:id="@+id/viewId"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="8dp"
        android:hint="@dimen/hint_name"
        android:inputType="text|textCapWords"
        />
```

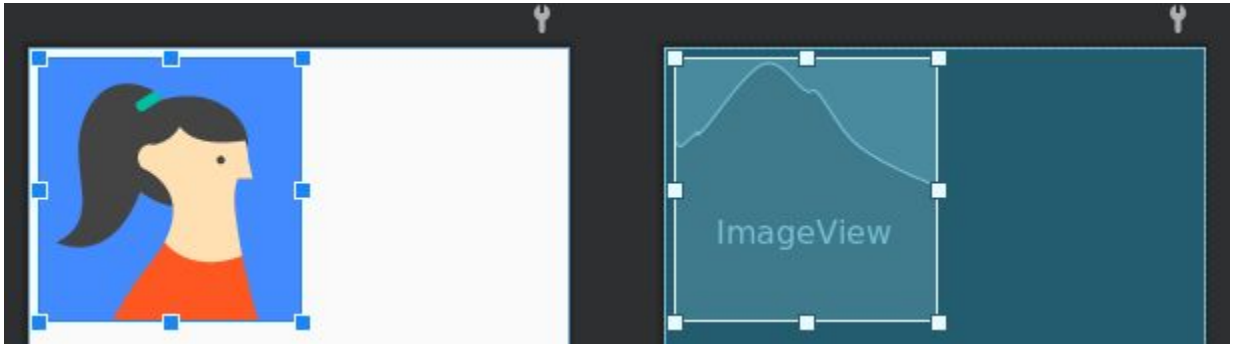
Button

```xml
<?xml version="1.0" encoding="UTF-8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android">
    <stroke android:width="2dp" android:color="@color/yellow_dark" />
    <corners android:radius="5dp" />
    <solid android:color="@color/red_dark" />
</shape>
```

```xml
<Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="8dp"
        android:text="@string/not_click_me"
        android:textColor="@color/yellow_dark"
        android:background="@drawable/button_background"
        />
```

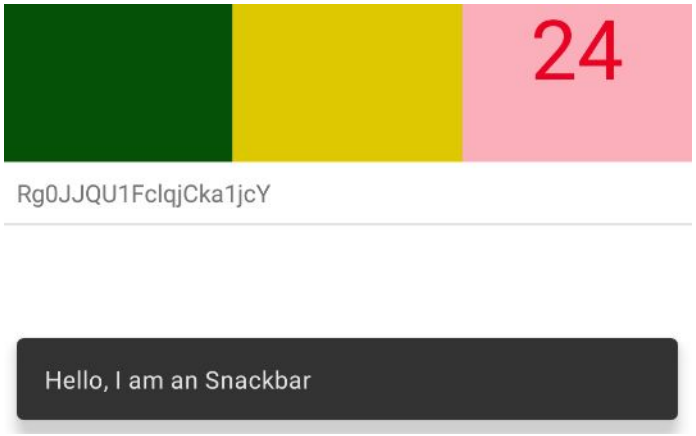
ImageView

```
<ImageView
        android:id="@+id/avatar"
        android:layout_width="200dp"
        android:layout_height="200dp"
        android:layout_margin="8dp"
        tools:src="@tools:sample/avatars"
        />
```

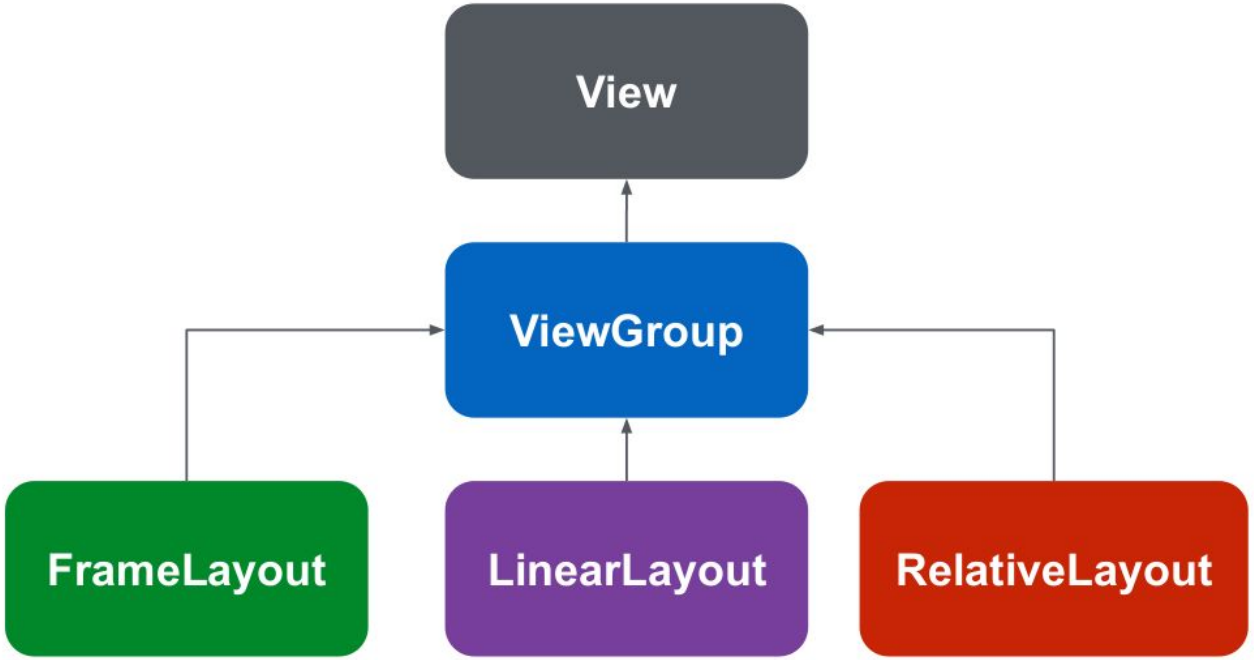


Snackbar

```
Snackbar
    .make(targetView, "Hello, I am an Snackbar", Snackbar.LENGTH_SHORT)
    .show()
```

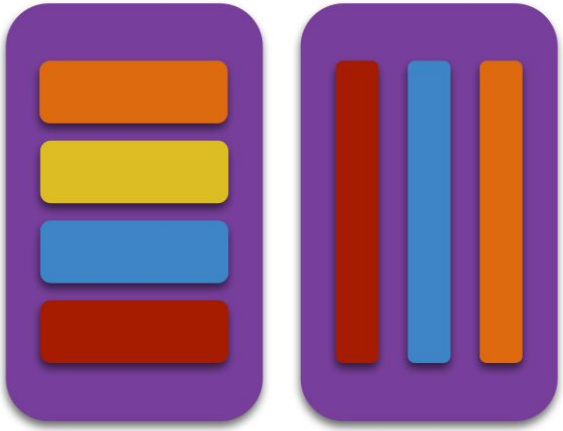


ViewGroup

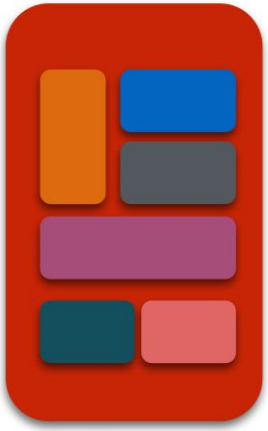


ViewGroup

FrameLayout



LinearLayout



RelativeLayout / ConstraintLayout

Styles and Theme

- Apariencia de nuestra App
- Define:
  - Colores
  - Fuentes
  - Apariencia de Textos
  - Dimensions
  - Gravity

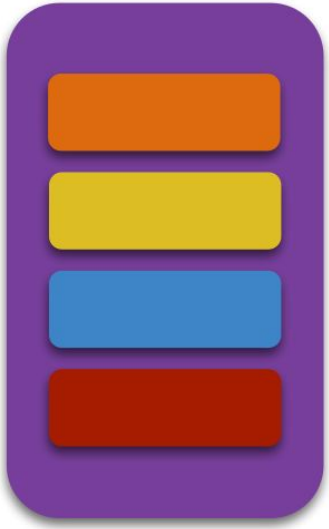
View Listeners

```
button.setOnClickListener { view ->
        // `view` represent the view that was clicked
        performAction()
    }


button.setOnLongClickListener {
        // Long Click over the button
        performOtherAction()
    }
```

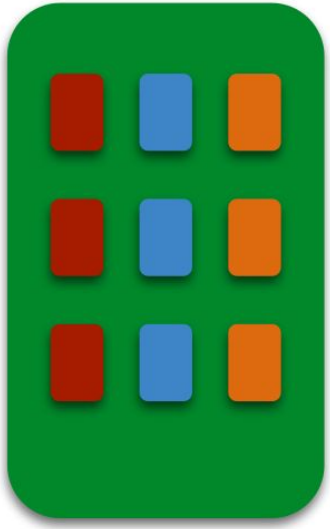

RecyclerView

- Listado de datos
- Renderización optimizada
- Reutiliza vistas

RecyclerView - LayoutManager

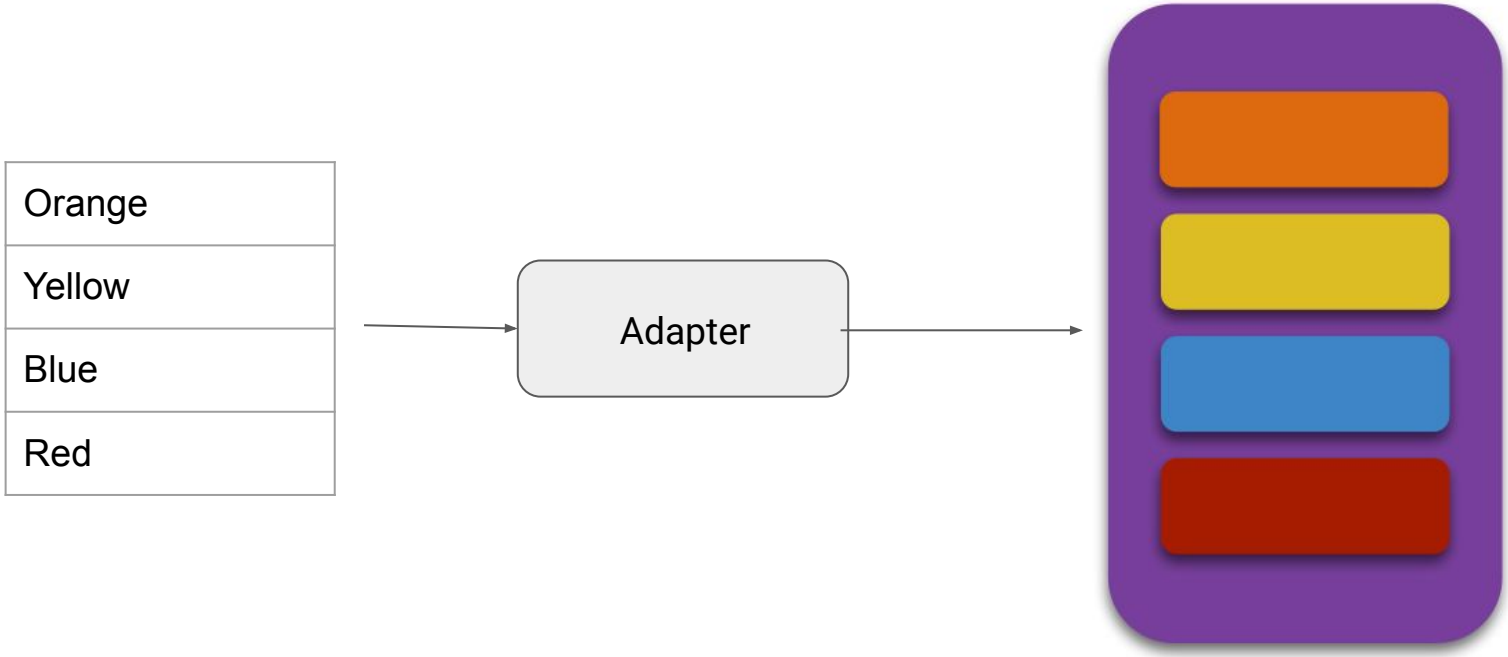


LinearLayoutManager



GridLayoutManager

RecyclerView - Adapter



SharedPreferences

- Internal XML File
- Datos Primitivos
- Tamaño Limitado
- Lento

Jetpack DataStore

- Primitives
- Protocol buffer
- Flow
- Beta Version

DataBase - SQLite

- Gestor DB “de fábrica”
- Operaciones limitadas
- Procesamiento lento
- Complejo de configurar (Queries, SQLiteOpenHelper...)

DataBase - Realm

- No-SQL DataBase
- Object-Oriented Data Mode
- Muy rápida
- Multiplatform
- Online Sync

DataBase - Room

- SQLite Wrapper
- Object-Oriented Data Mode
- Fácil de configurar
- Asincronía

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