

JAVA EN ANDROID

Día 4

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<http://chavezbosquez.github.io/diplomado/>

Contenido



1. App VIC:

a. Diseño

b. SQLite

c. Base de datos 

Contenido



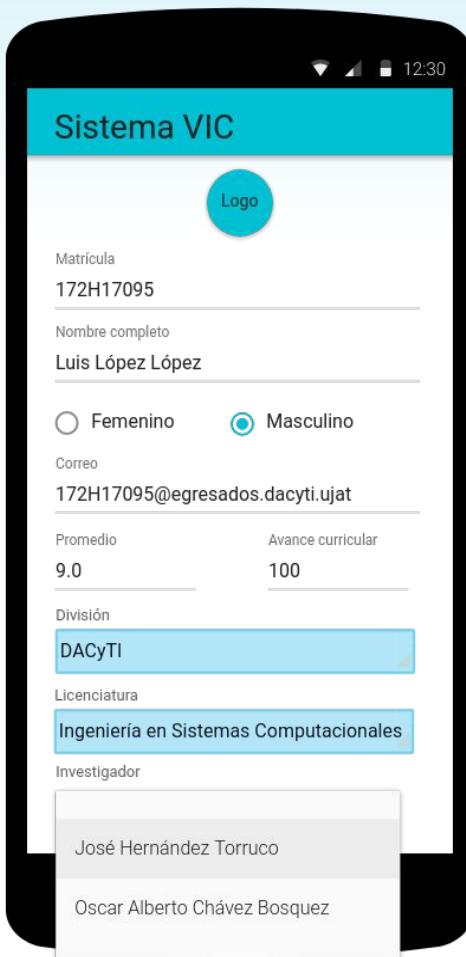
1. App VIC:

a. **Diseño**

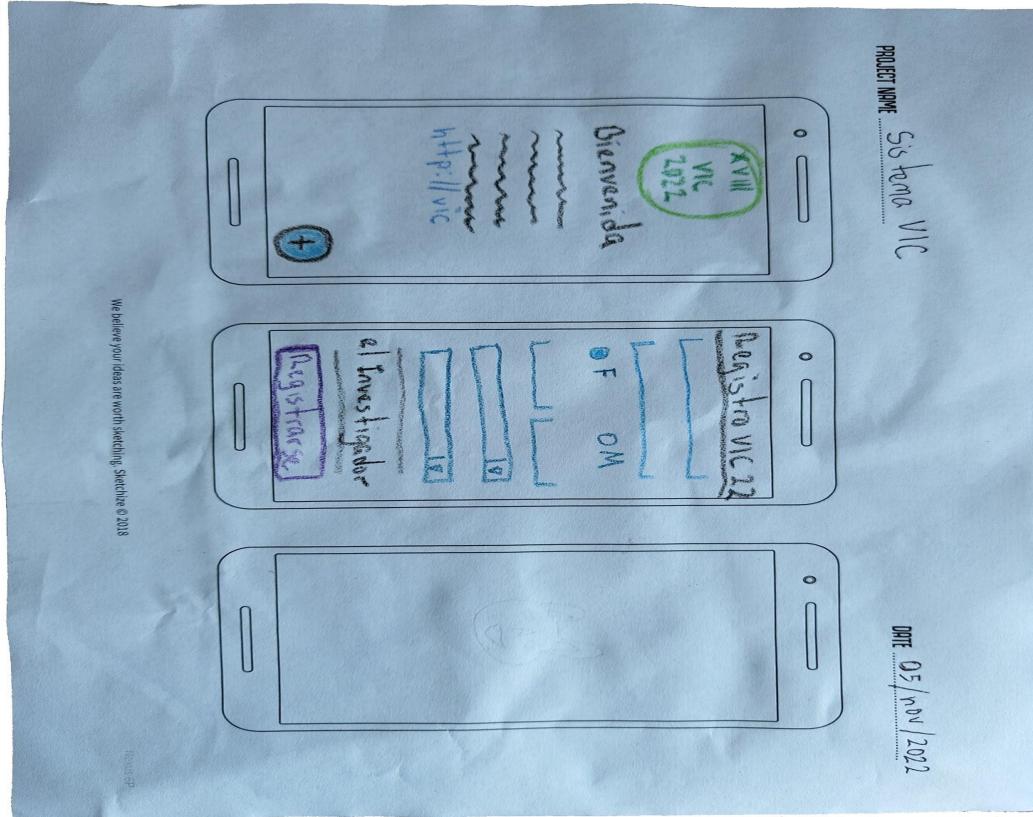
b. SQLite

c. Base de datos A light blue cloud icon.

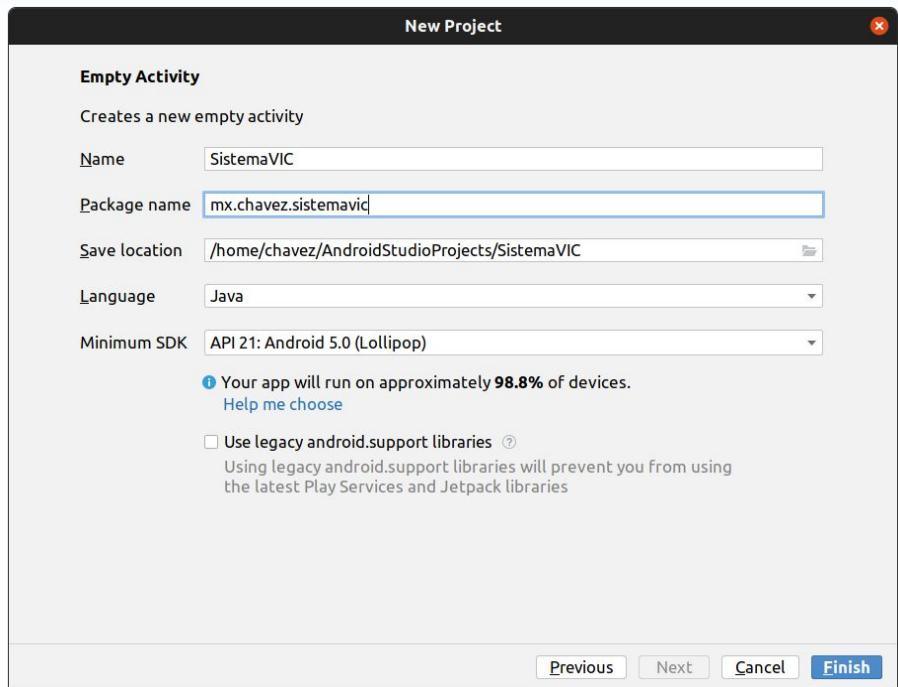
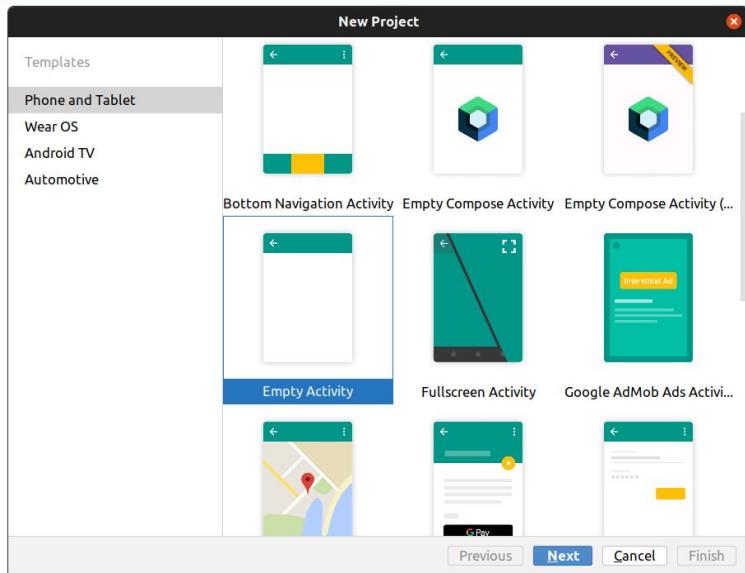
Diseño



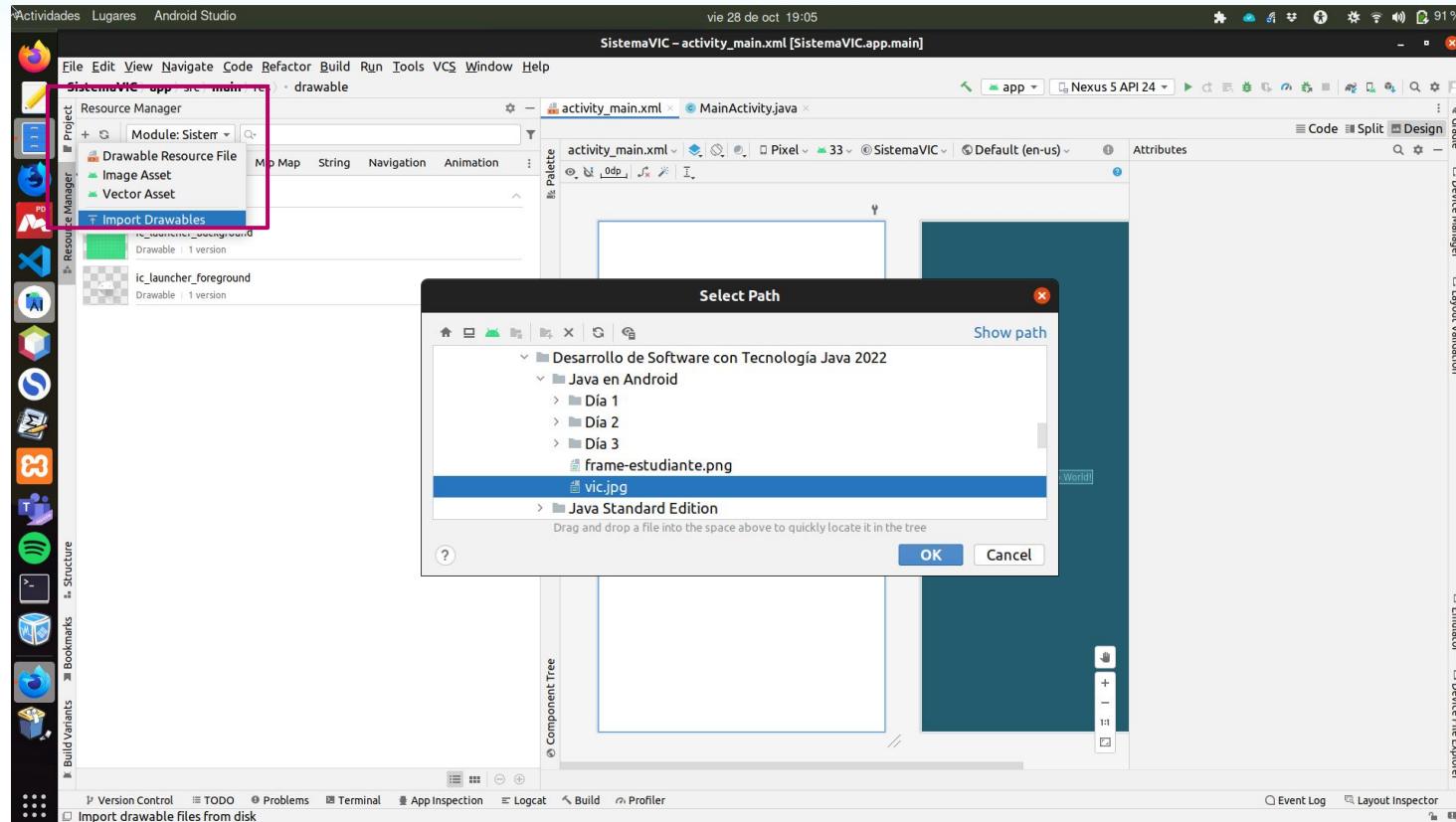
Primero el diseño



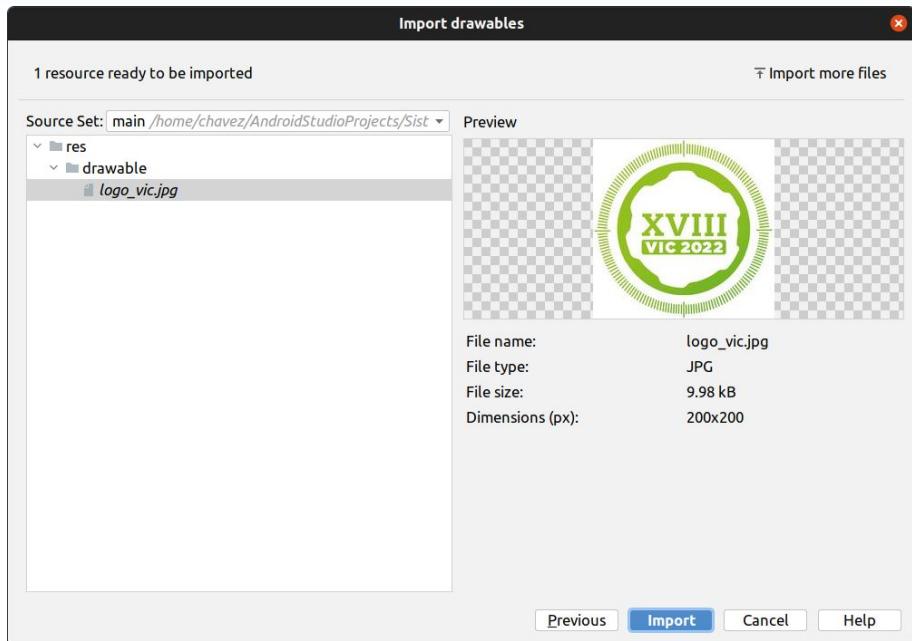
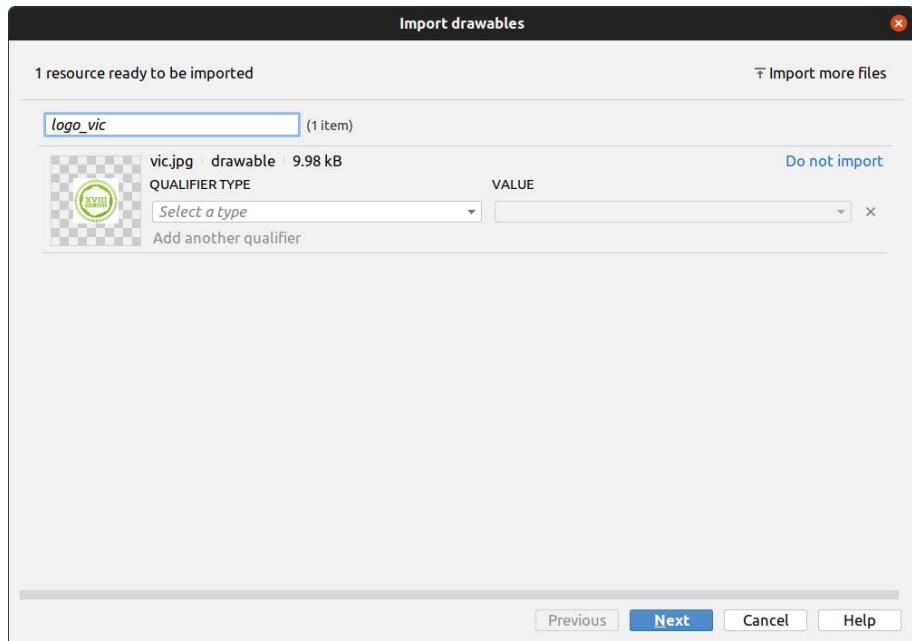
Comenzamos



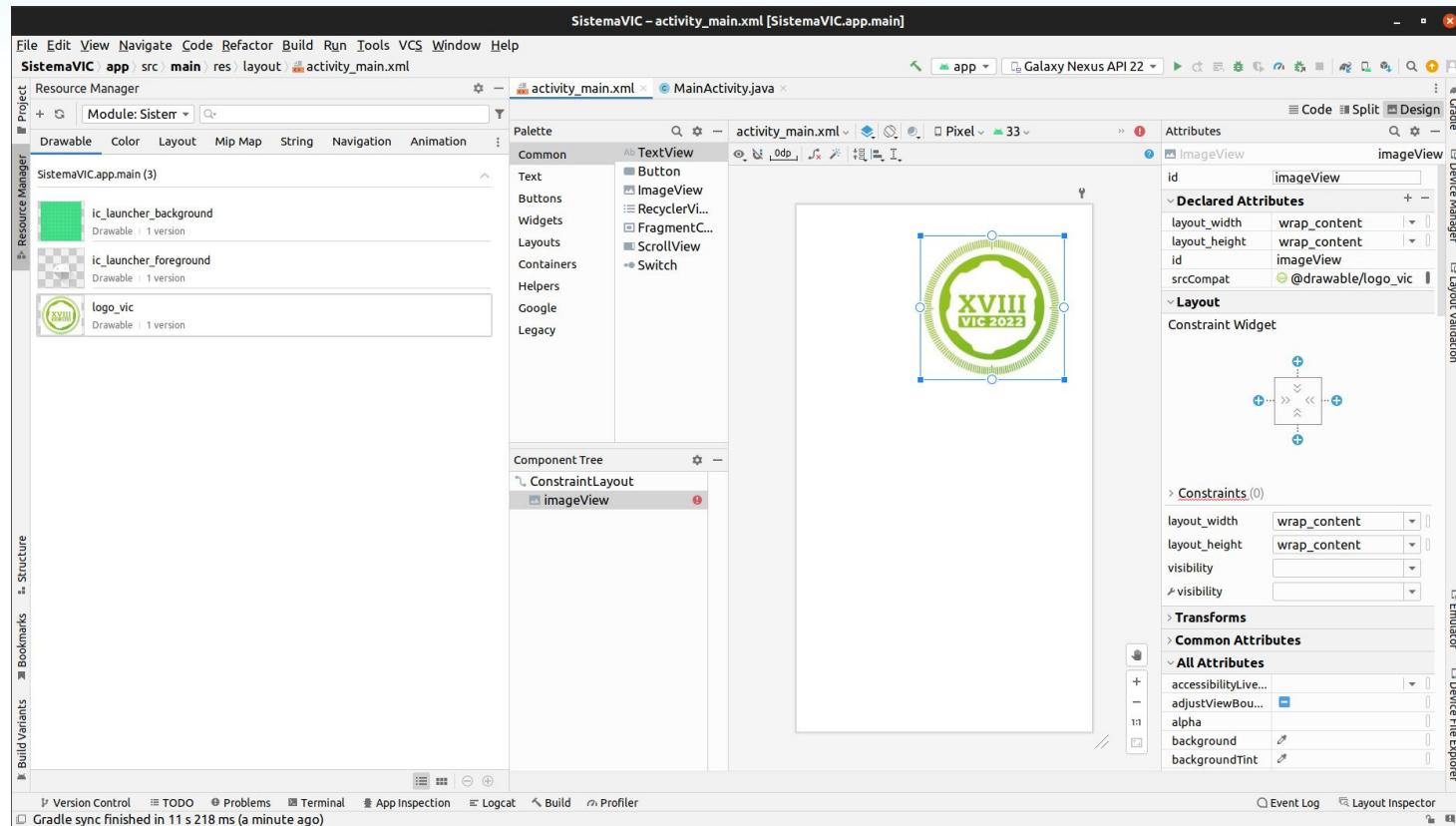
Logo de la app



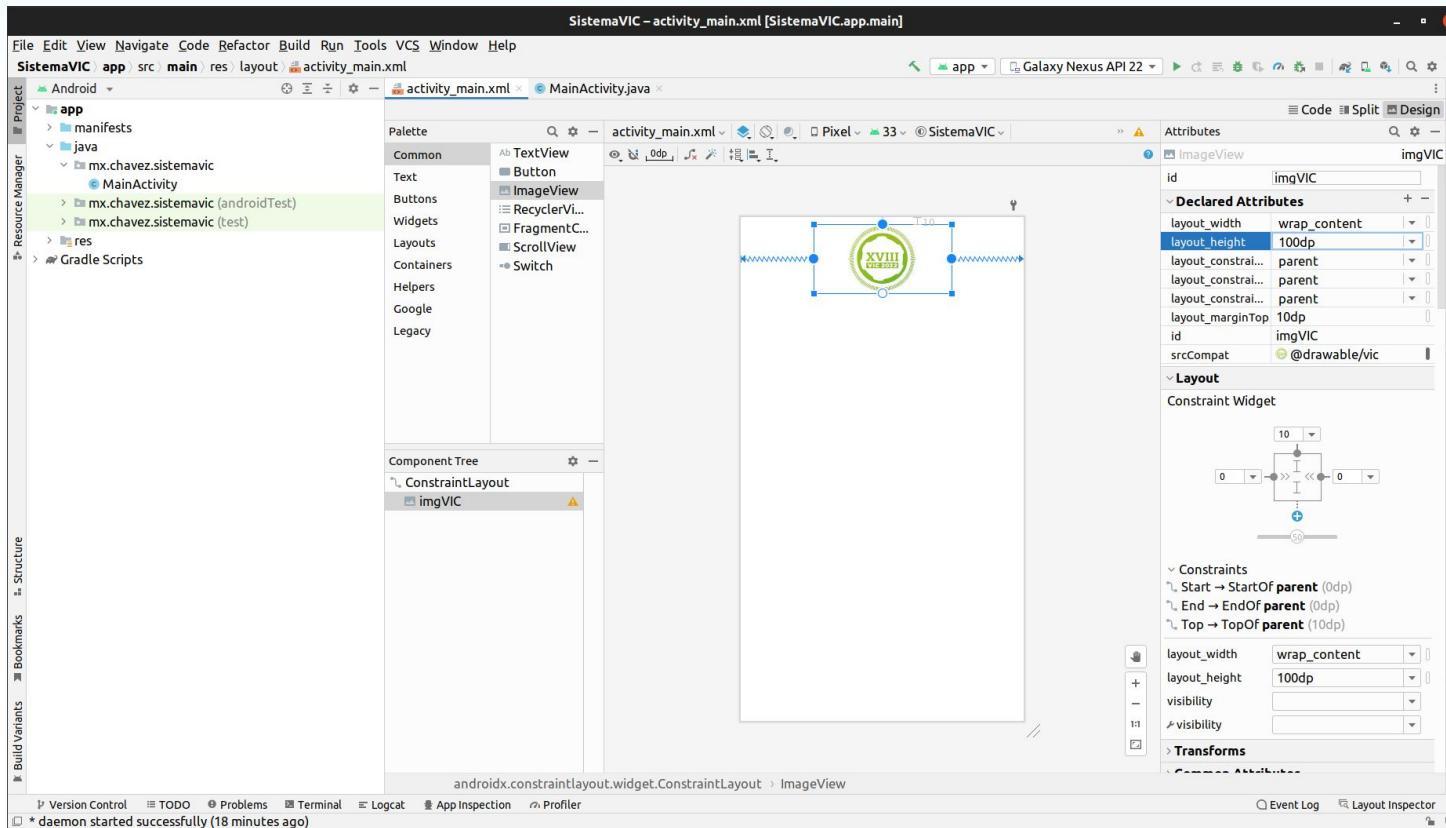
Importar recurso



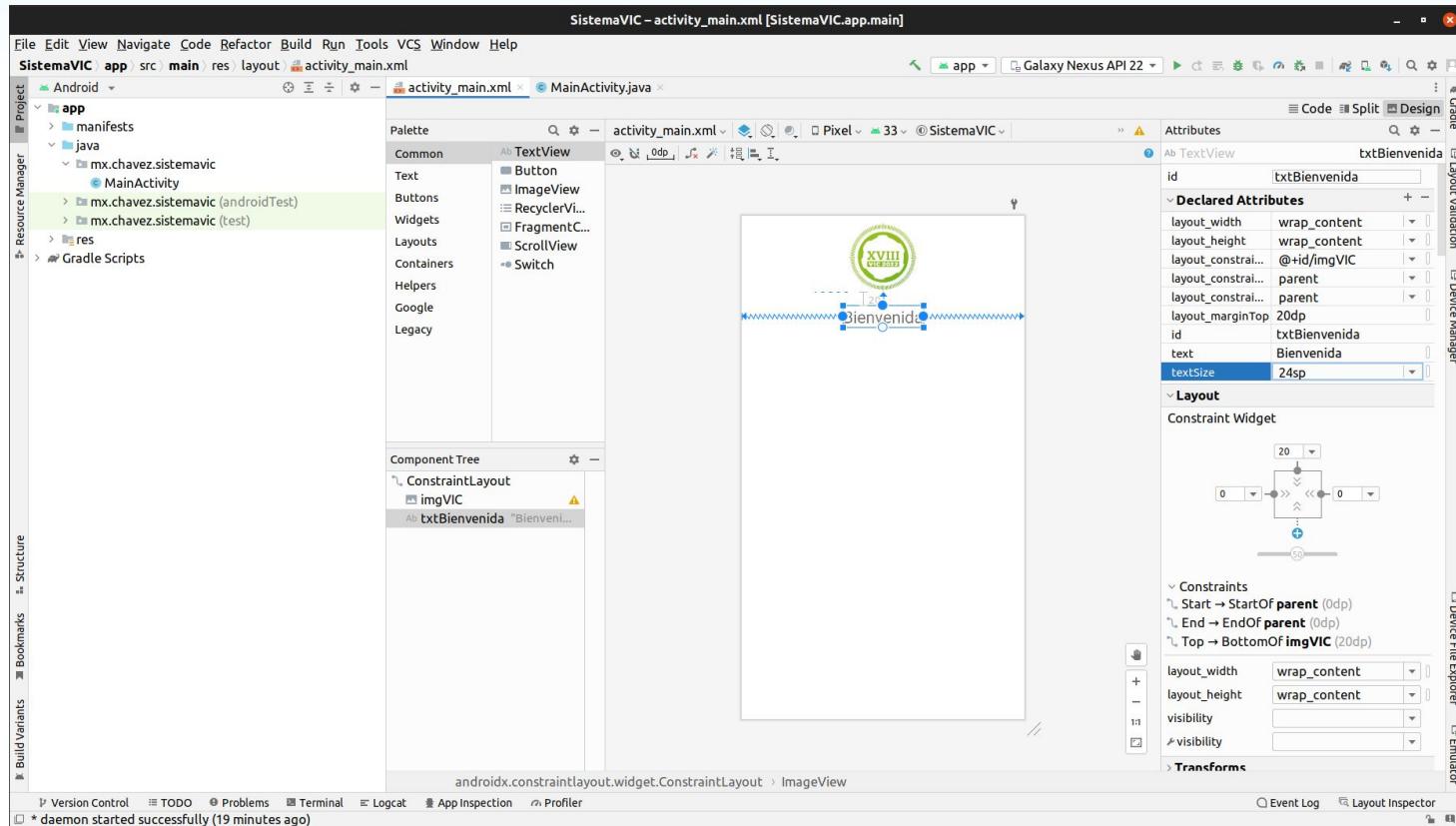
Agregar el recurso al layout



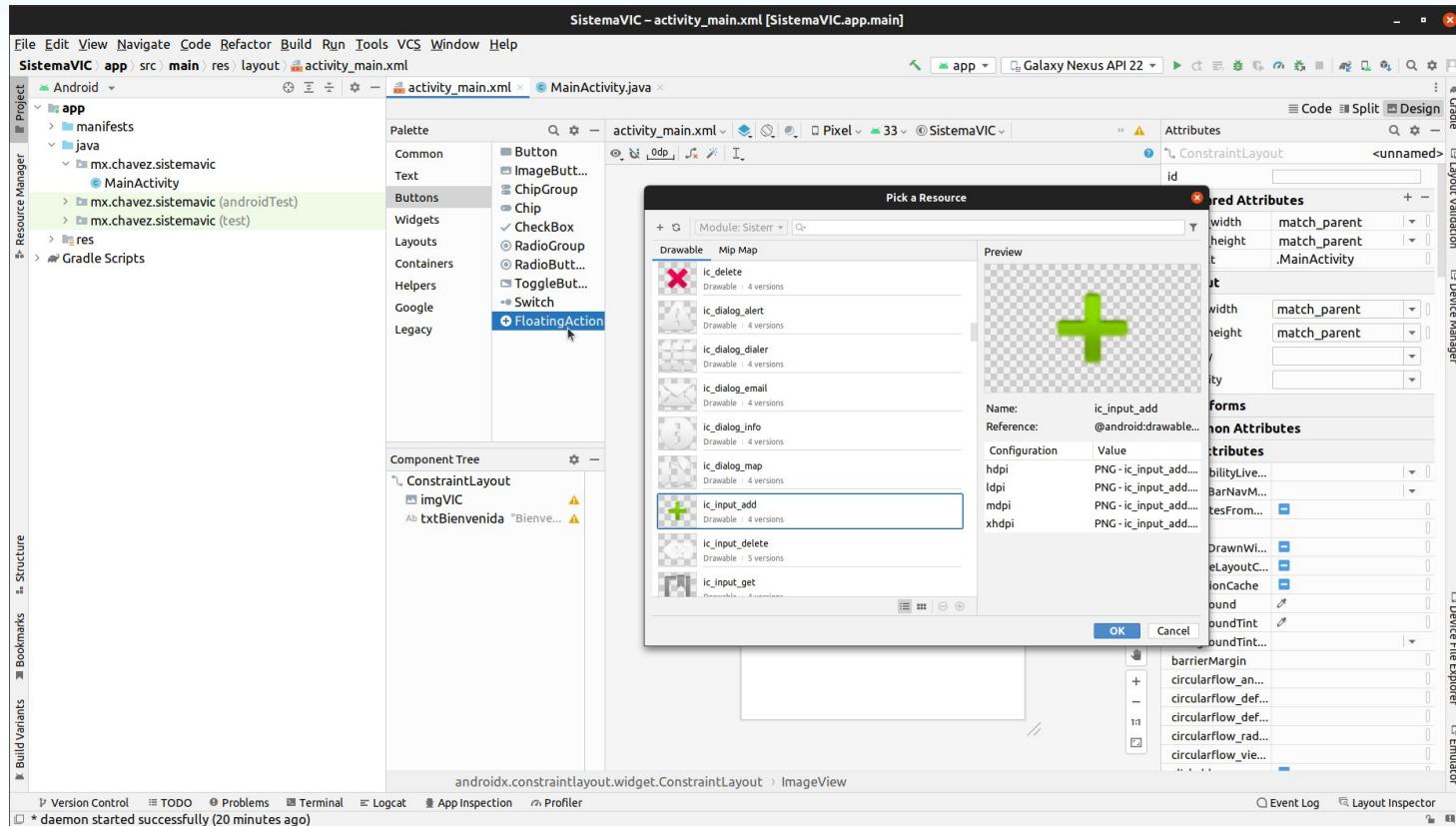
Propiedades del ImageView



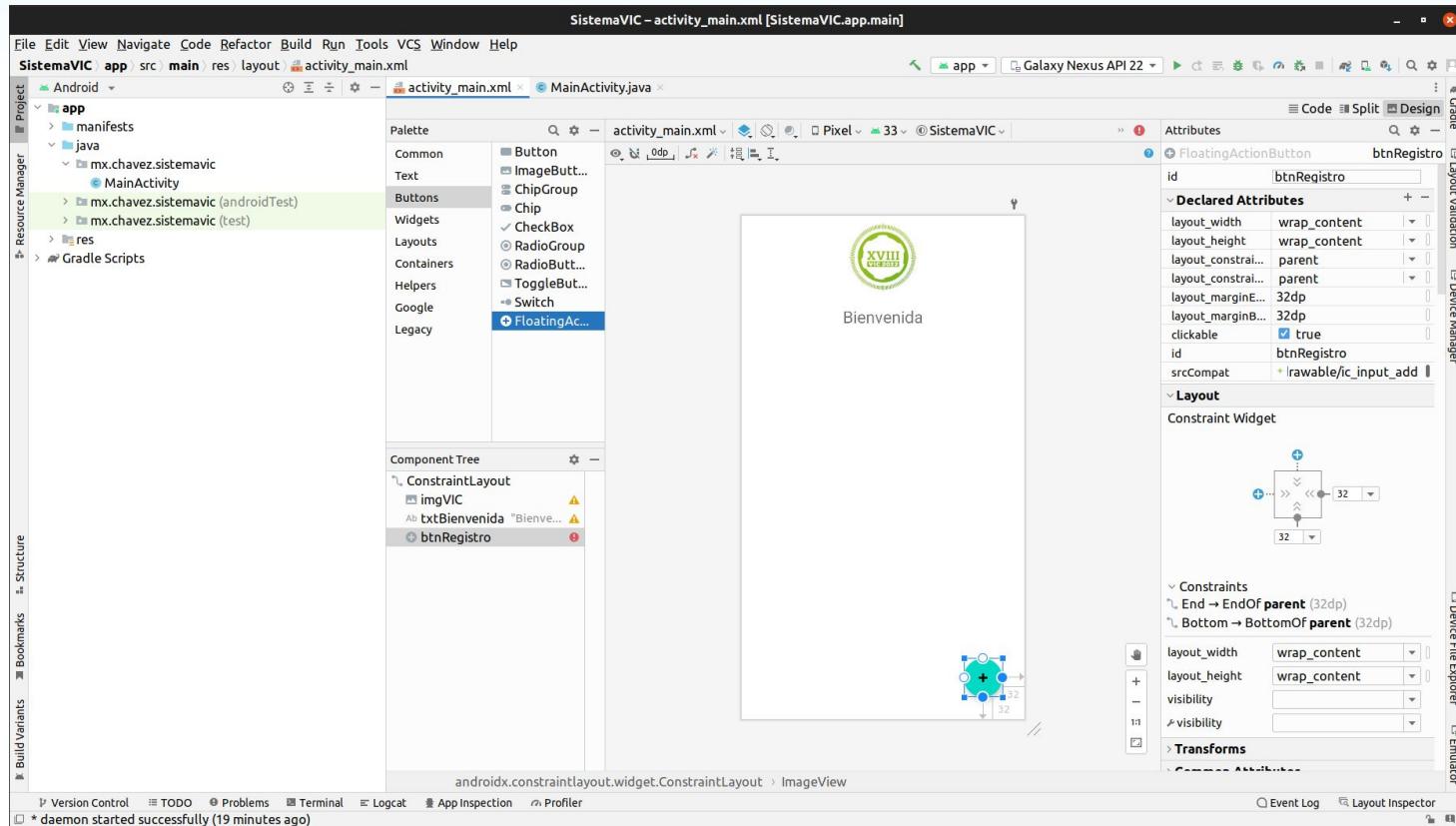
Agregando componentes



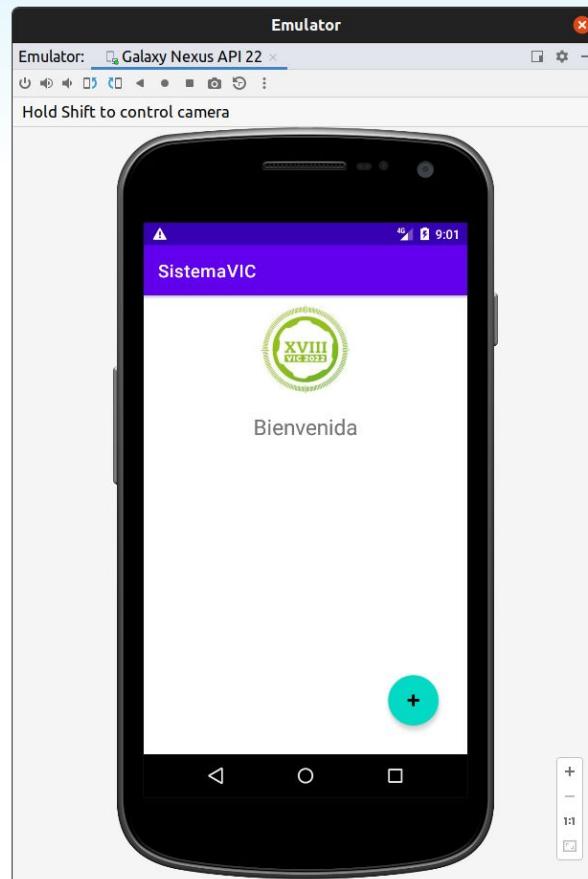
Botón flotante



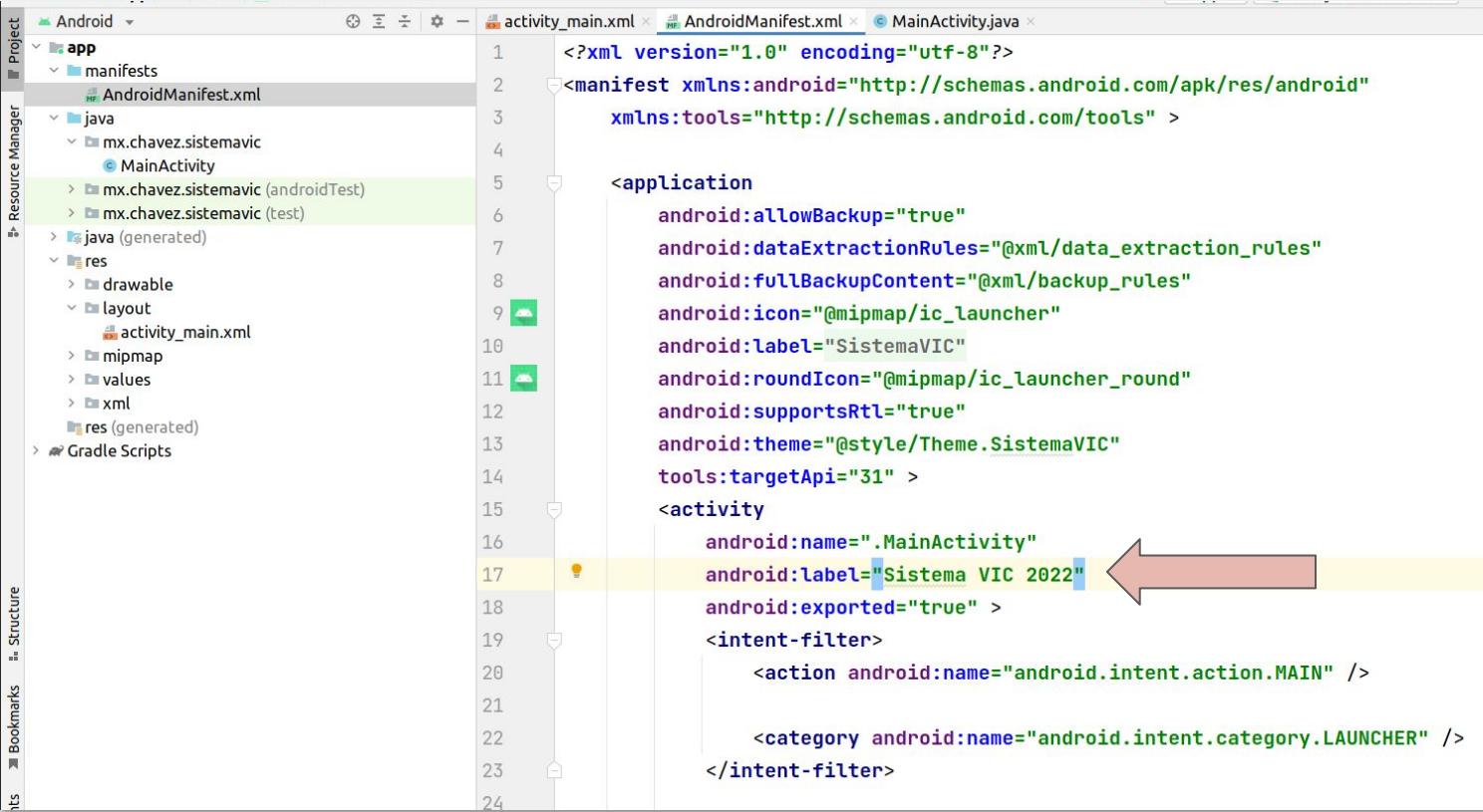
Activity principal



¿Cómo va?



Cambiar el título de la Activity



The screenshot shows the Android Studio interface with the following details:

- Project View:** Shows the project structure under "app". The "AndroidManifest.xml" file is selected.
- Code Editor:** Displays the XML content of the selected file. The code includes the application manifest and an activity definition.
- Annotations:** A red arrow points to the line containing the `android:label` attribute in the activity definition.

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="Sistema VIC"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.SistemaVIC"
        tools:targetApi="31" >
        <activity
            android:name=".MainActivity"
            android:label="Sistema VIC 2022" <-- Red arrow points here
            android:exported="true" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
    </application>
</manifest>
```

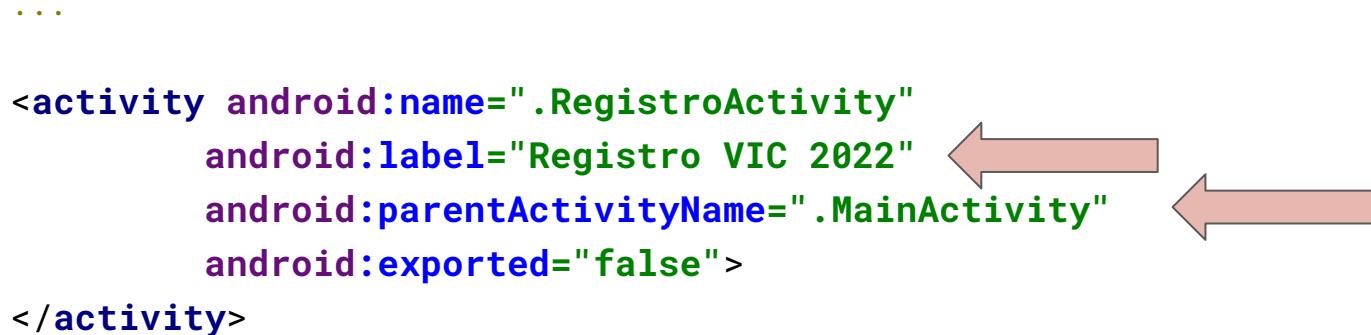
Segunda Activity

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** Activities, Lugares, Android Studio. Date: Lun 31 de oct 15:32.
- File Menu:** File, Edit, View, Navigate, Code, Refactor, Build, Run, Tools, VCS, Window, Help.
- Project Structure:** Shows the project **SistemaVIC** with modules **app** and **mx.chavez.sistemavic**. The **app** module contains **AndroidManifest.xml**, **activity_main.xml**, **MainActivity.java**, and **res** directory.
- Code Editor:** **MainActivity.java** is open, showing Java code for an activity.
- Contextual Menu:** A context menu is open over the **MainActivity.java** file, with the "New" option selected. Sub-options include: New, Add C++ to Module, Cut, Copy, Copy Path/Reference..., Paste, Find Usages, Find in Files..., Replace in Files..., Analyze, Refactor, Bookmarks, Reformat Code, Optimize Imports, Delete..., Open In, Local History, Reload from Disk, Compare With..., Mark Directory as, Convert Java File to Kotlin File, and Suprimir.
- New Activity Dialog:** A modal dialog titled "New Android Activity" is displayed. It is set to "Empty Activity".
 - Activity Name:** **RegistroActivity** (highlighted in blue).
 - Generate a Layout File:** (selected).
 - Layout Name:** **activity_registro**.
 - Launcher Activity:** (unchecked).
 - Package name:** **mx.chavez.sistemavic**.
 - Source Language:** **Java**.
- Bottom Navigation:** Device File Explorer, Emulator, Event Log, Layout Inspector, 5:26 LF, UTF-8 4 spaces.

Configurar RegistroActivity

```
...  
  
<activity android:name=".RegistroActivity"  
        android:label="Registro VIC 2022"  
        android:parentActivityName=".MainActivity"  
        android:exported="false">  
    </activity>  
  
...
```



The diagram consists of two red arrows. The top arrow points from the text 'Registro VIC 2022' to the 'android:label' attribute in the XML code. The bottom arrow points from the text 'MainActivity' to the 'android:parentActivityName' attribute.

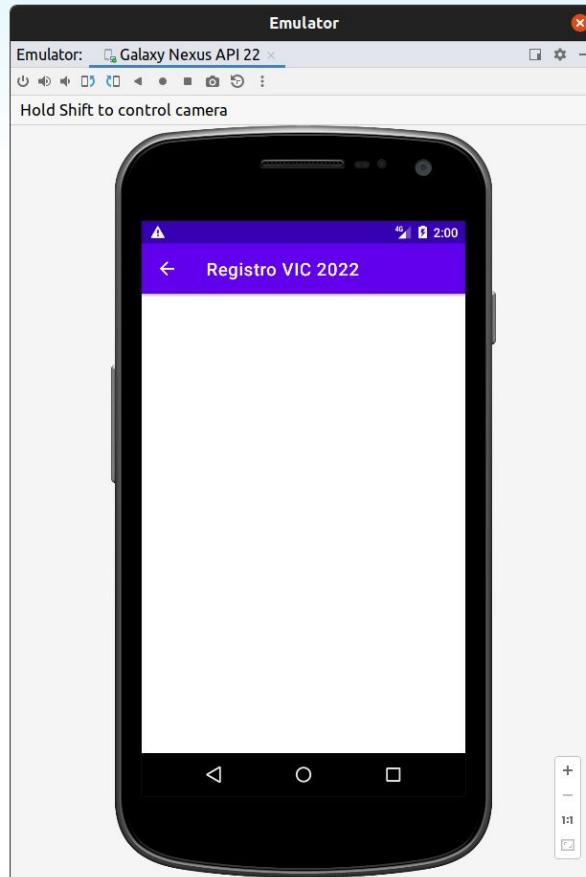
Botón Registro

```
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    FloatingActionButton btnRegistro;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnRegistro = findViewById(R.id.btnRegistro);
        btnRegistro.setOnClickListener(this);
    }

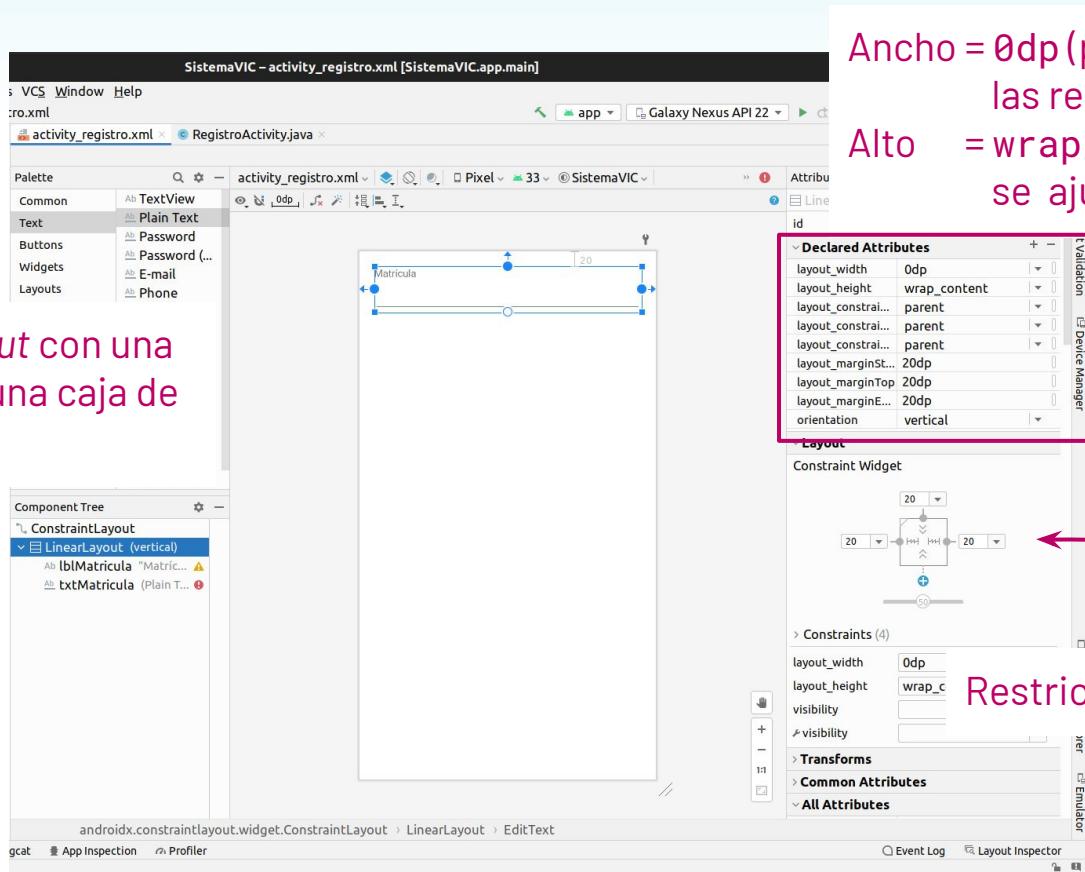
    @Override
    public void onClick(View view) {
        if (view == btnRegistro) {
            Intent intent = new Intent(MainActivity.this, RegistroActivity.class);
            MainActivity.this.startActivity(intent);
        }
    }
}
```

¿Funciona?



Diseño de RegistroActivity

Layout matrícula

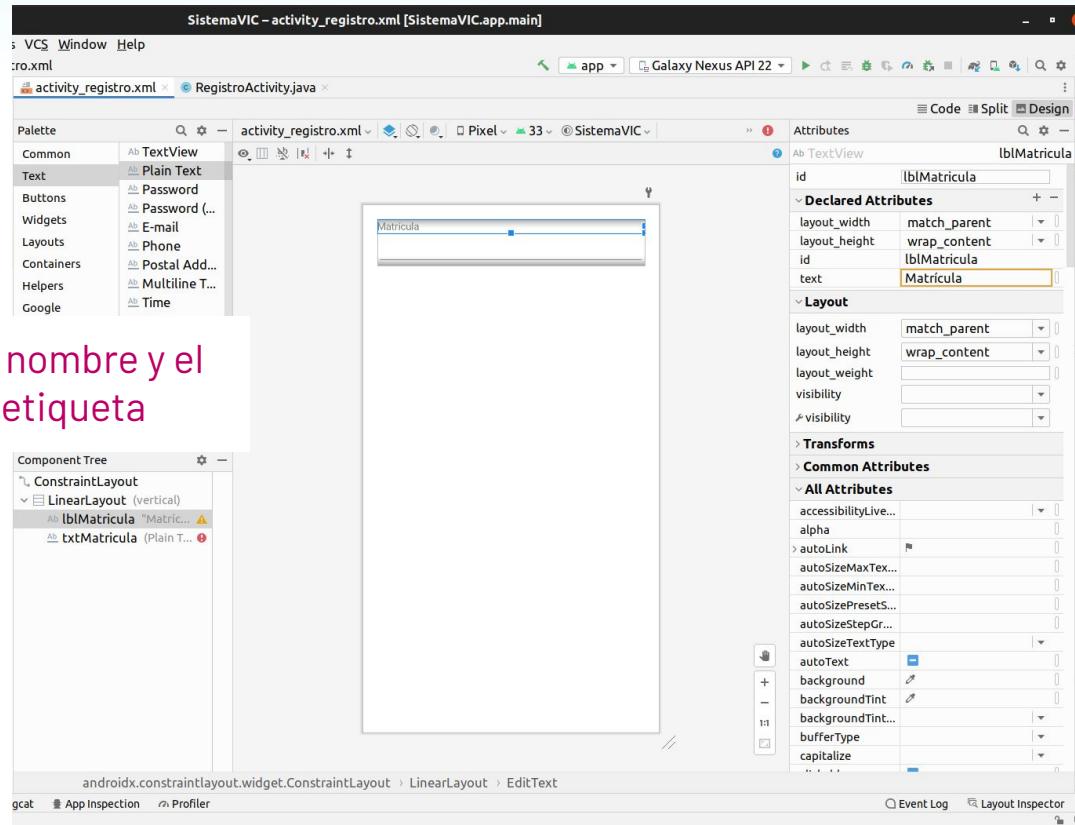


LinearLayout con una etiqueta y una caja de texto

Ancho = 0dp (para que apliquen las restricciones)
Alto = wrap_content (para que se ajuste al contenido)

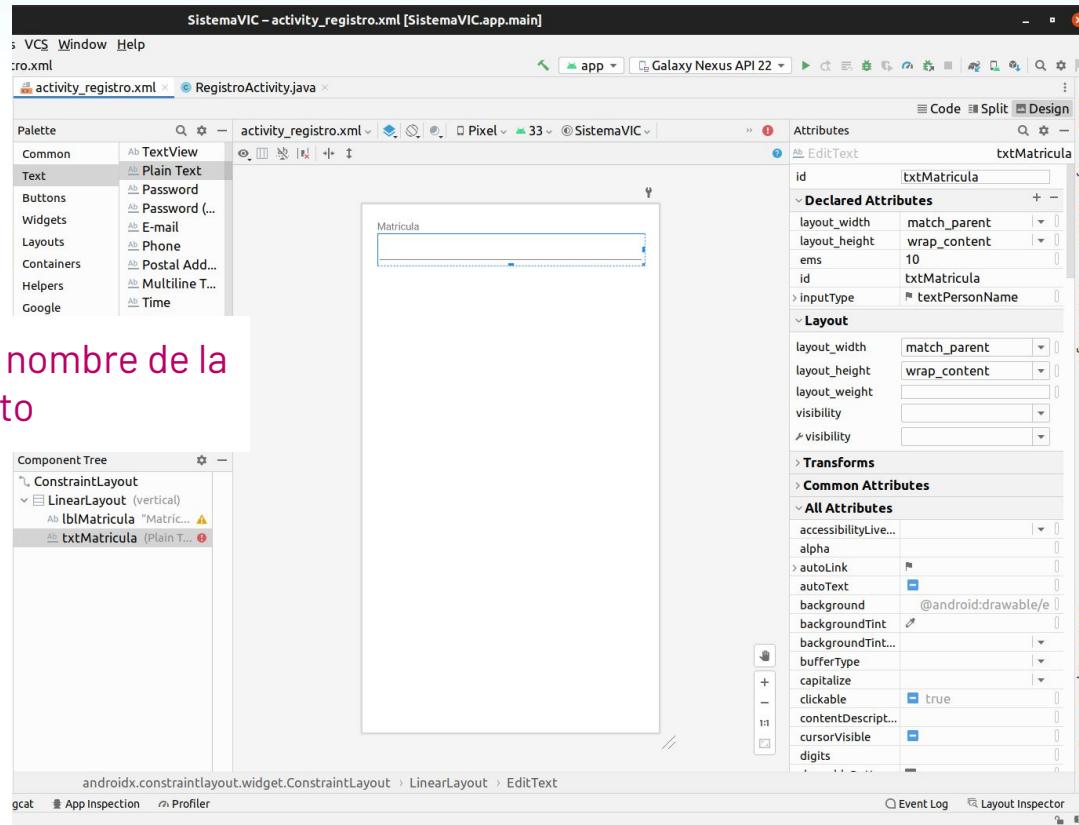
Restricciones del layout

Etiqueta



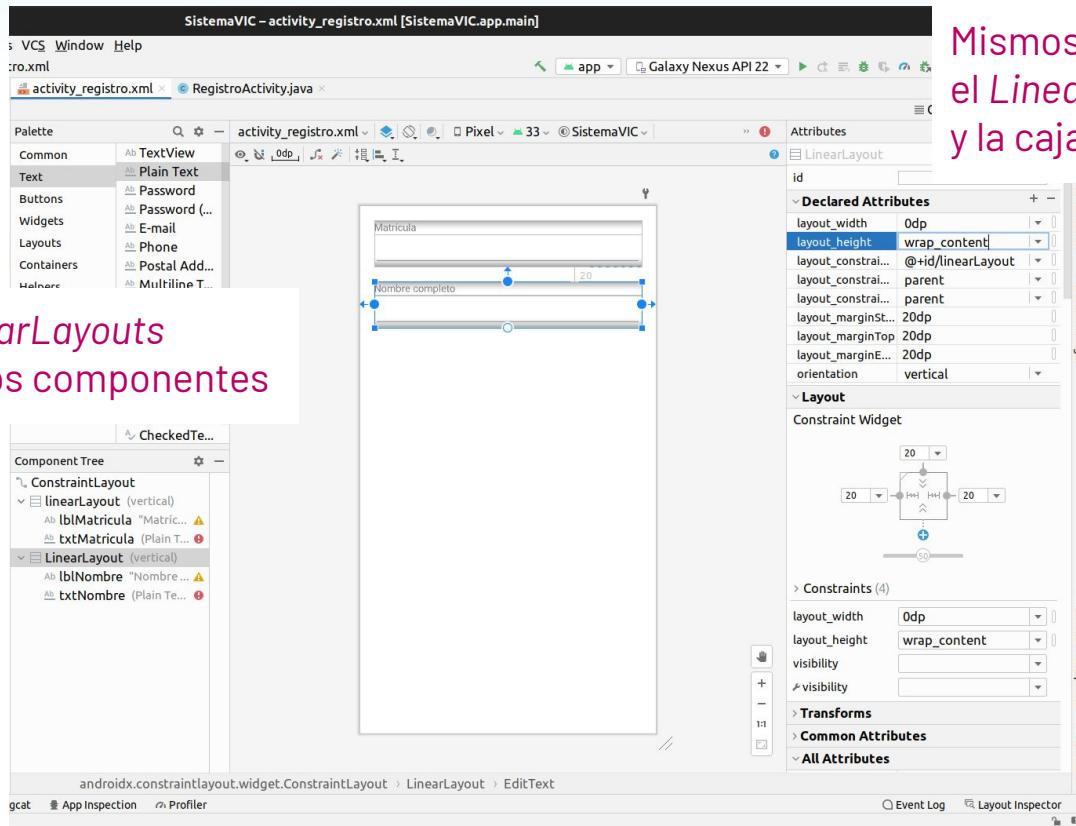
Cambiar el nombre y el
texto de la etiqueta

Caja de texto



Layout nombre completo

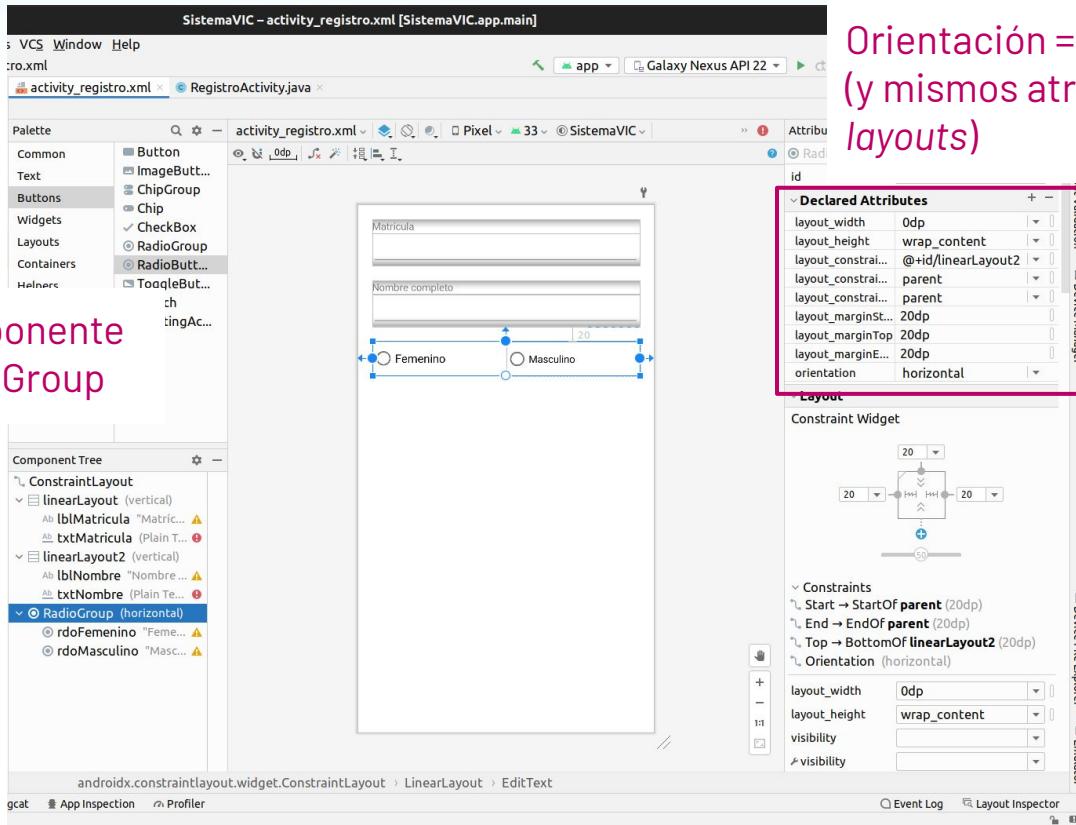
Múltiples *LinearLayouts*
con los mismos componentes



Mismos atributos para
el *LinearLayout*, la etiqueta
y la caja de texto

RadioGroup género

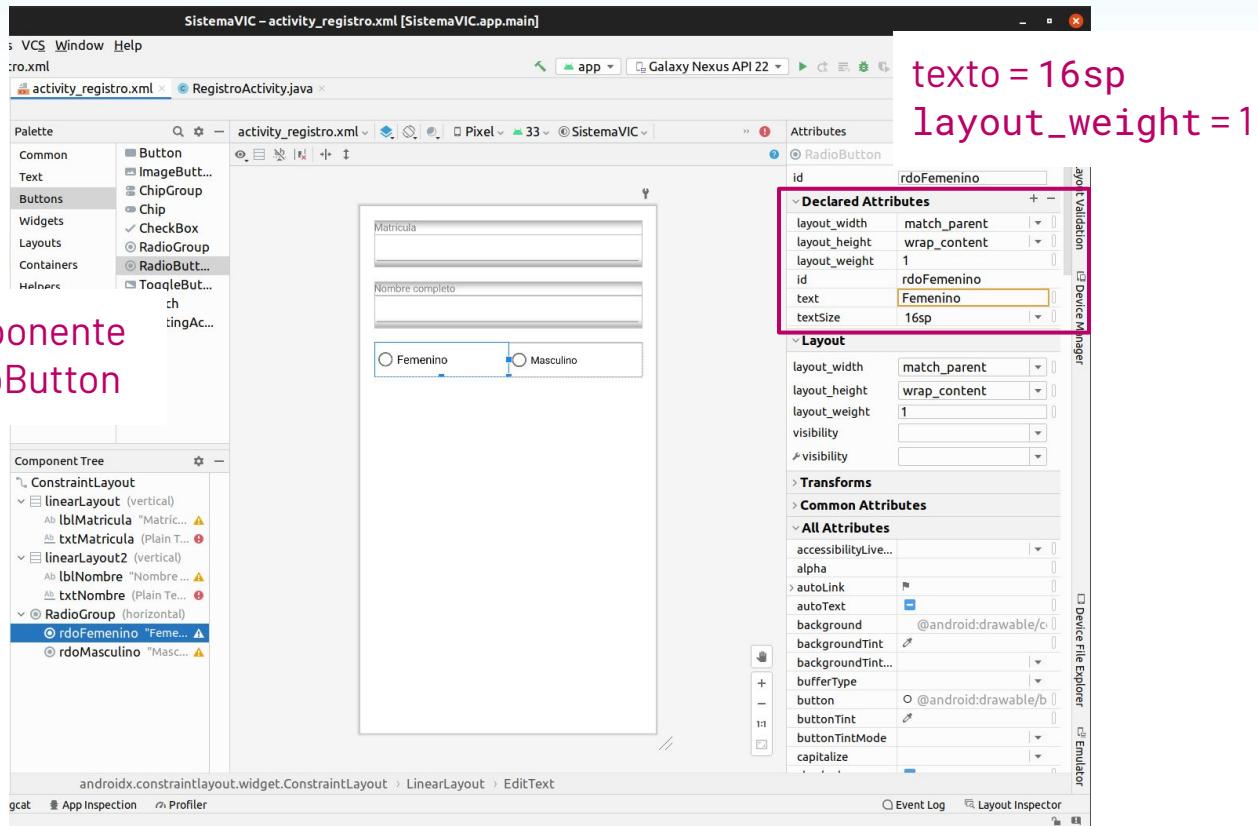
Componente
RadioGroup



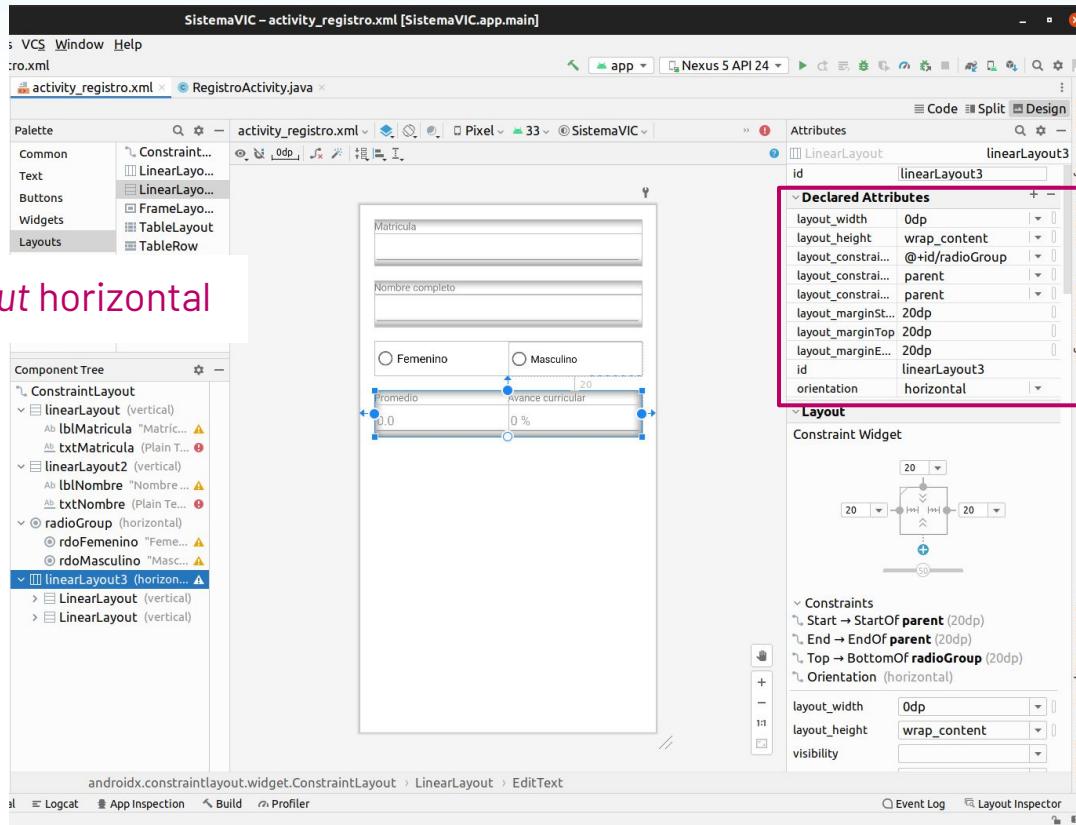
Orientación = horizontal
(y mismos atributos que los layouts)

RadioButton femenino y masculino

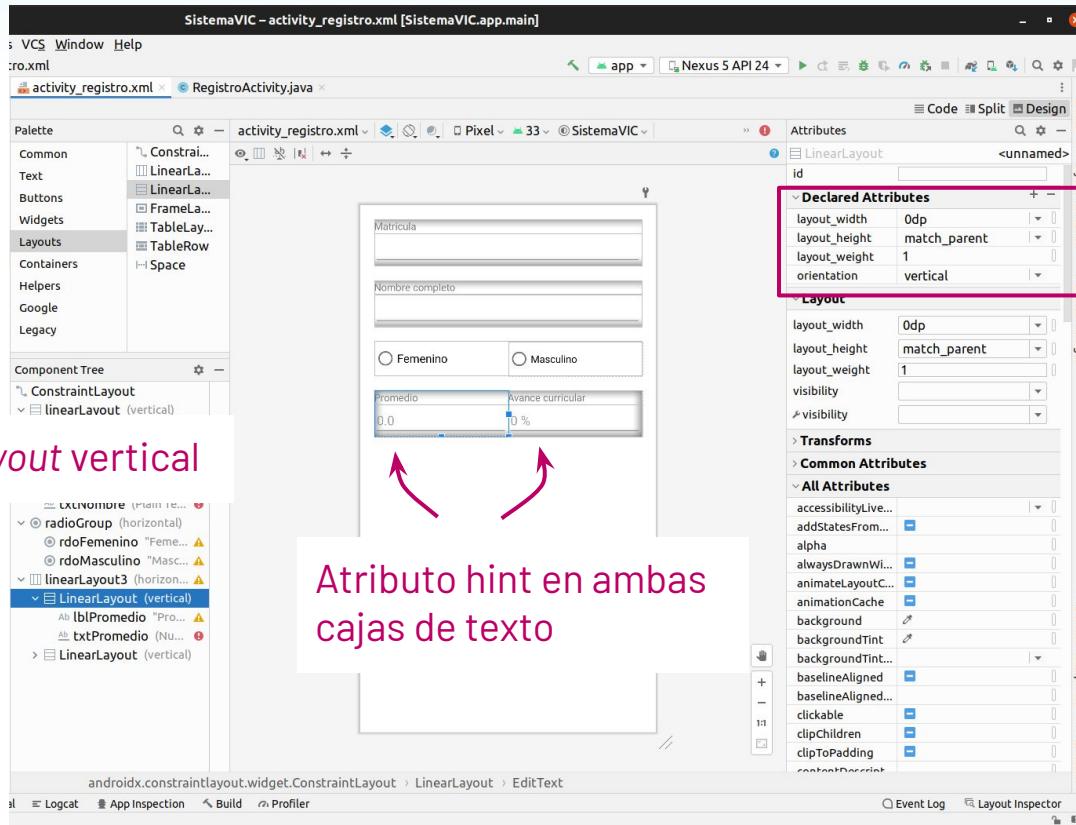
Componente
RadioButton



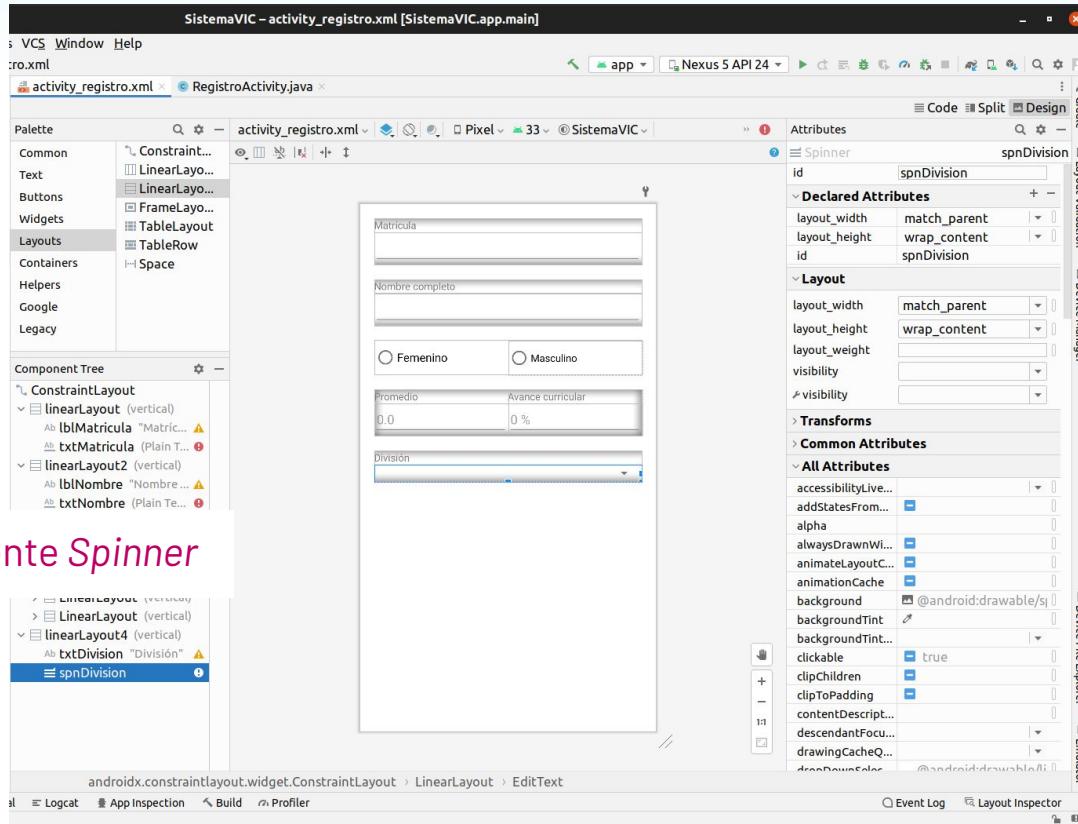
Doble layout



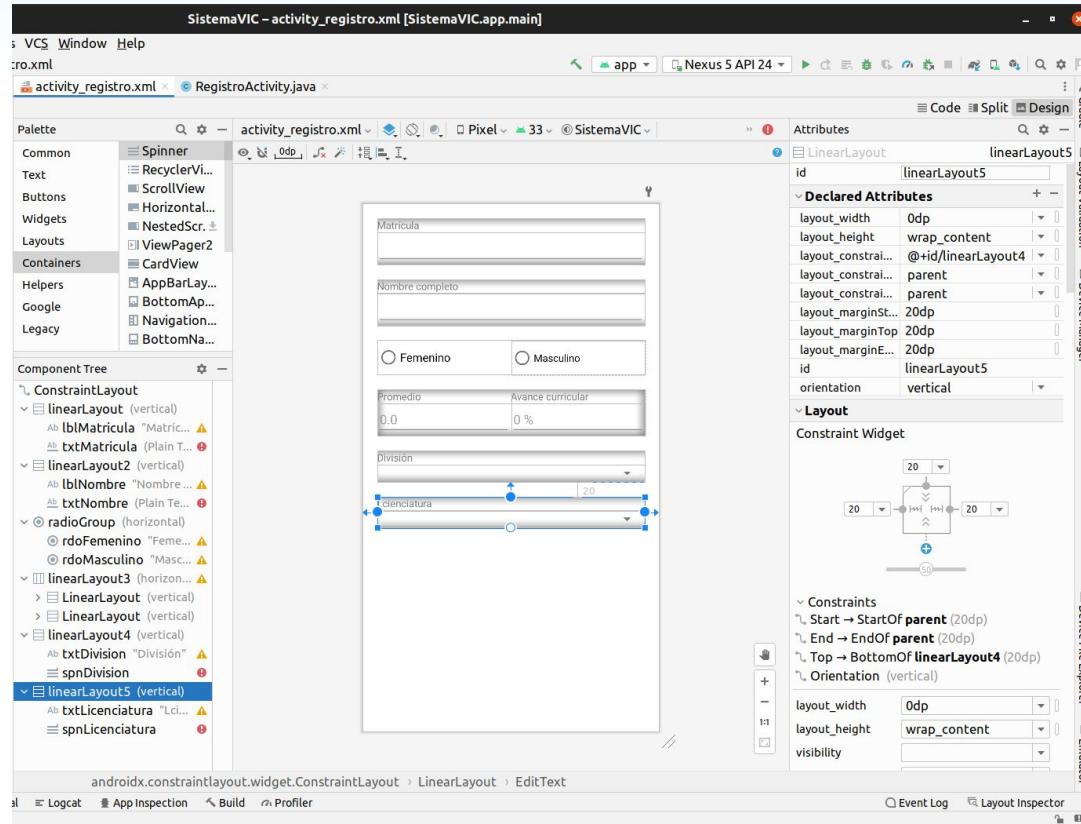
Layout promedio y avance curricular



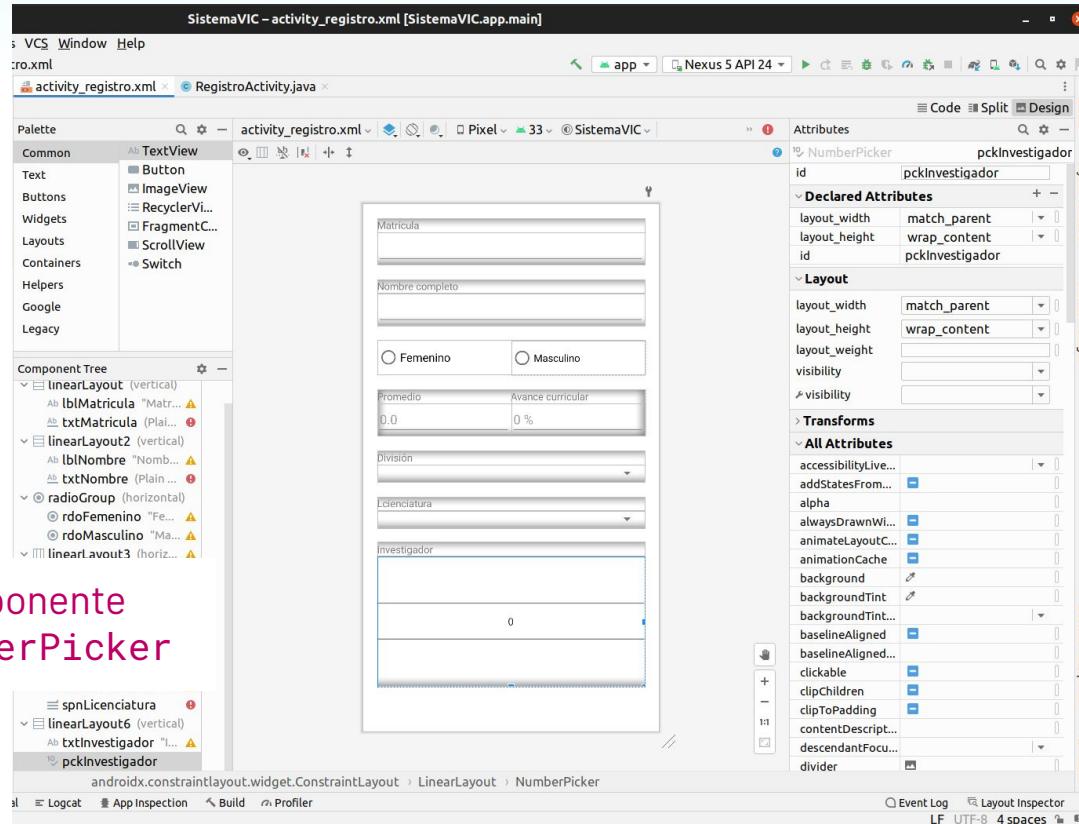
Layout división



Layout licenciatura



Layout investigador



¿No está el componente NumberPicker?

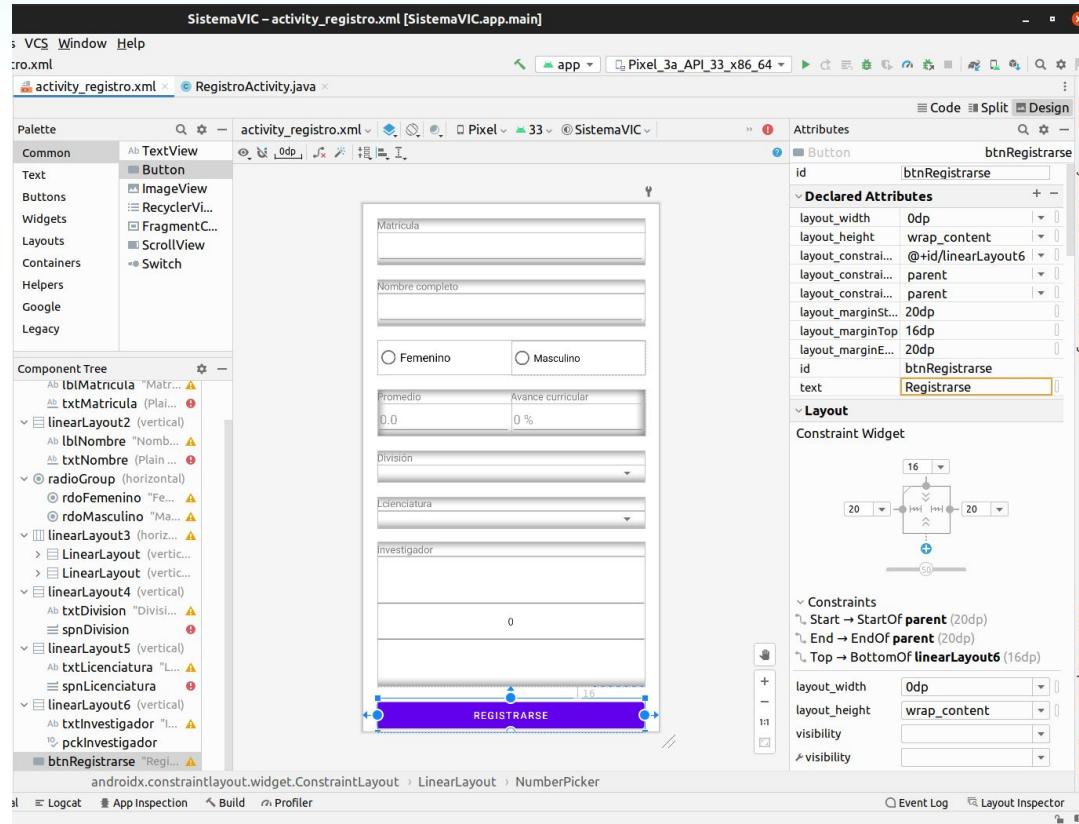
The screenshot shows the Android Studio interface with the XML layout editor open. The code editor displays the following XML snippet:

```
SistemaVIC – activity_registro.xml [SistemaVIC.app.main]
activity_registro.xml RegistroActivity.java
198     android:layout_marginTop="20dp"
199     android:layout_marginEnd="20dp"
200     android:orientation="vertical"
201     app:layout_constraintEnd_toEndOf="parent"
202     app:layout_constraintStart_toStartOf="parent"
203     app:layout_constraintTop_toBottomOf="@+id/linearLayout5">
204
205         <TextView
206             android:id="@+id/txtInvestigador"
207             android:layout_width="match_parent"
208             android:layout_height="wrap_content"
209             android:text="Investigador" />
210
211         <NumberPicker
212             android:id="@+id/pckInvestigador"
213             android:layout_width="match_parent"
214             android:layout_height="wrap_content"></NumberPicker>
215     </LinearLayout>
216
217 </androidx.constraintlayout.widget.ConstraintLayout>
```

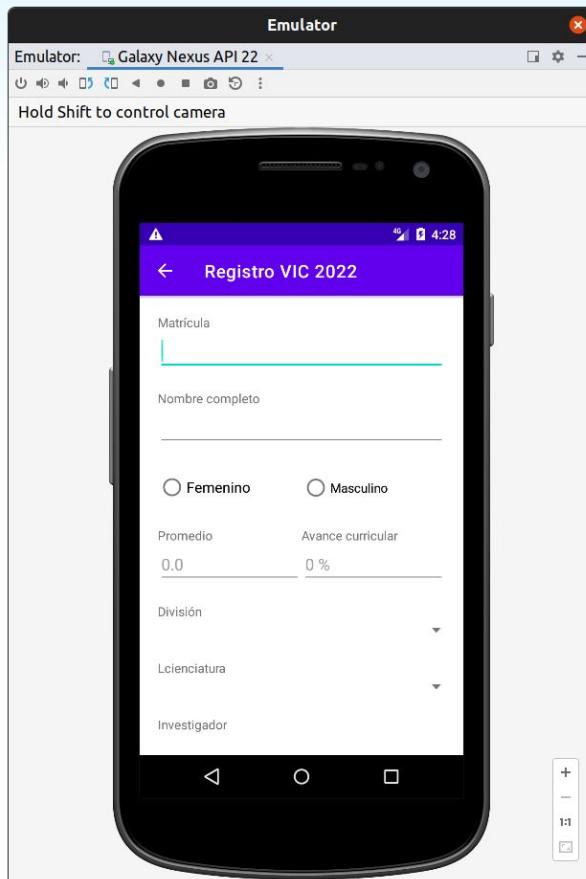
A yellow rectangular selection highlights the entire `<NumberPicker>` element. The status bar at the bottom shows the navigation path: `androidx.constraintlayout.widget.ConstraintLayout > LinearLayout > NumberPicker`. The top right corner of the interface has a red box highlighting the "Design" tab in the toolbar.

```
<NumberPicker
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
</NumberPicker>
```

Botón de registro



Prueba



¡No cabe el diseño! Añadir un ScrollView

```
<ScrollView  
    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=".RegistroActivity">  
  
    <androidx.constraintlayout.widget.ConstraintLayout  
        android:layout_width="match_parent"  
        android:layout_height="wrap_content">  
  
        ...  
        ...  
        ...  
  
    </androidx.constraintlayout.widget.ConstraintLayout>  
  
</ScrollView>
```

Contenido



1. App VIC:

a. Diseño

b. SQLite

c. Base de datos A small, light blue cloud icon.

Cargar divisiones y licenciaturas

<https://github.com/jgilfelt/android-sqlite-asset-helper>

Nota: Seguir las instrucciones de instalación y uso en el repositorio GitHub

The screenshot shows the GitHub repository page for `jgilfelt/android-sqlite-asset-helper`. The page includes a code editor with the `master` branch, a list of 70 commits, a README file, and sections for Setup, Usage, and Languages.

Code (master, 3 branches, 4 tags)

Commits (70 commits)

README.markdown

THIS PROJECT IS NO LONGER MAINTAINED

Android SQLiteAssetHelper

An Android helper class to manage database creation and version management using an application's raw asset files.

This class provides developers with a simple way to ship their Android app with an existing SQLite database (which need to manage its initial creation and any upgrades required with subsequent).

Setup

Gradle

If you are using the Gradle build system, simply add the following dependency in your `build.gradle` file:

```
dependencies {
    compile 'com.readystatesoftware.sqliteasset:sqliteassethelper:+'
}
```

Ant/Eclipse

If you are using the old build system, download the latest library JAR and put it in your project's `libs` folder.

Usage

`SQLiteAssetHelper` is intended as a drop-in alternative for the framework's `SQLiteOpenHelper`. Please familiarize yourself with the behaviour and lifecycle of that class.

Extend `SQLiteAssetHelper`, as you would normally do `SQLiteOpenHelper`, providing the constructor with a database name and version number:

```
public class MyDatabase extends SQLiteAssetHelper {
    private static final String DATABASE_NAME = "northwind.db";
    private static final int DATABASE_VERSION = 1;

    public MyDatabase(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }
}
```

`SQLiteAssetHelper` relies upon asset file and folder naming conventions. Your `assets` folder will either be under your project root, or under `src/main` if you are using the default Gradle project structure. At minimum, you must provide the following:

Instalación

The screenshot shows the Android Studio interface with the project 'SistemaVIC' open. The left sidebar displays the project structure, including the app module, manifest files, Java code, resources, and Gradle scripts. The main editor window shows the build.gradle file for the app module. The file contains configuration for minification, compile options, dependencies, and test implementations. A specific dependency line for 'com.readystatesoftware.sqliteasset:sqliteassethelper:+' is highlighted with a yellow background, indicating a warning or suggestion. The status bar at the bottom provides build statistics: 40:76 LF, UTF-8, 4 spaces.

```
build.gradle (app)
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
SistemaVIC app build.gradle
Project Resource Manager Device Manager
Sync Now Ignore these changes
Gradle Device Explorer Emulator
activity_registro.xml build.gradle (app) RegistroActivity.java
Gradle files have changed since last project sync. A project sync may be necessary for the IDE to work properly.
Sync Now Ignore these changes
activity_main.xml
activity_registro.xml
AndroidManifest.xml
MainActivity
RegistroActivity
mx.chavez.sistemavic (androidTest)
mx.chavez.sistemavic (test)
java (generated)
res
drawable
layout
mipmap
values
colors.xml
strings.xml
themes (2)
xml
res (generated)
Gradle Scripts
build.gradle (Module: SistemaVIC.app)
gradle-wrapper.properties (Gradle Version)
proguard-rules.pro (ProGuard Rules for SistemaVIC)
gradle.properties (Project Properties)
settings.gradle (Project Settings)
local.properties (SDK Location)
dependencies {
    implementation 'androidx.appcompat:appcompat:1.5.1'
    implementation 'com.google.android.material:material:1.7.0'
    implementation 'androidx.constraintlayout:constraintlayout:2.1.4'
    testImplementation 'junit:junit:4.13.2'
    androidTestImplementation 'androidx.test.ext:junit:1.1.3'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.4.0'
    // Para copiar nuestra BD al móvil
    implementation 'com.readystatesoftware.sqliteasset:sqliteassethelper:+'
}
```

Build Variants Bookmarks Structure Bookmarks

Version Control TODO Problems Terminal Logcat App Inspection Build Profiler

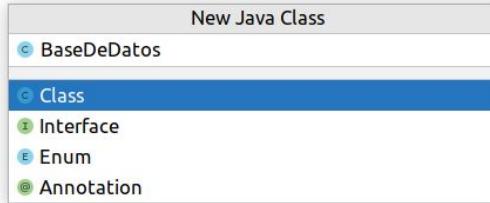
Avoid using + in version numbers; can lead to unpredictable and unrepeatable builds (com.readystatesoftware.sqliteasset:sqliteassethelper:+)

Event Log Layout Inspector 40:76 LF UTF-8 4 spaces

Nueva clase

1. Clic derecho paquete → New → Java class

2. BaseDeDatos

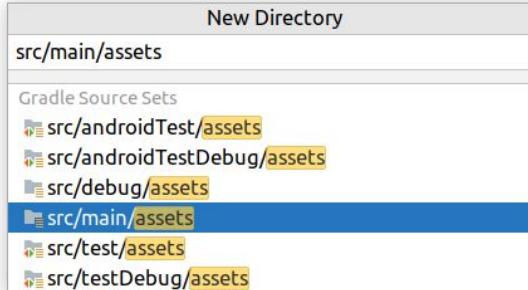


```
public class BaseDeDatos extends SQLiteAssetHelper {  
    private static final String DATABASE_NAME = "datos_vic.db";  
    private static final int DATABASE_VERSION = 1;  
  
    public BaseDeDatos(Context context) {  
        super(context, DATABASE_NAME, null, DATABASE_VERSION);  
    }  
}
```

Copiar base de datos

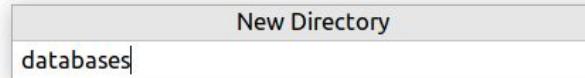
1. Clic derecho **app** → New → Directory

2. **assets**



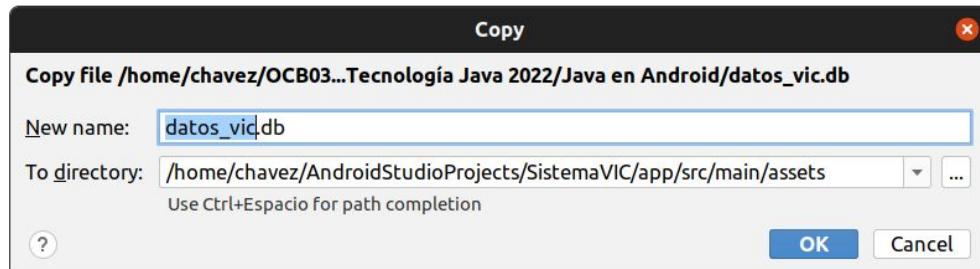
3. Clic derecho **assets** → New → Directory

4. **databases**



Copiar base de datos

5. Copiar y pegar el archivo datos_vic.db



Clase BaseDeDatos

```
public Cursor getDivisiones() {
    SQLiteDatabase bd = getReadableDatabase();
    SQLiteQueryBuilder query = new SQLiteQueryBuilder();

    String [] sqlCampos = {"acronimo", "nombre"};
    String sqlTabla = "division";

    query.setTables(sqlTabla);
    Cursor c = query.query(bd, sqlCampos, null, null,null, null, null);
    c.moveToFirst();
    return c;
}
```

Clase RegistroActivity

```
// Atributos de clase
private BaseDeDatos bd;

// Método onCreate
...
bd = new BaseDeDatos(this);
Cursor divisiones = bd.getDivisiones();
while (divisiones.moveToNext()) {
    Log.d("DEBUG", divisiones.getString(0));
}
bd.close();
...
```

iFunciona!



Ubicación de la base de datos

1. data → data → [app]
2. [app] → databases → [bd]
3. datos_vic.db

The screenshot shows the Android Studio Device File Explorer interface. The main pane displays a tree view of files and directories under 'Emulator Nexus_5_API_24'. A specific file, 'datos_vic.db', located in the 'databases' folder of the '[app]' directory, is selected and highlighted with a blue border. The bottom of the screen features the standard Android Studio navigation bar with tabs for Event Log, Layout Inspector, Emulator, and others.

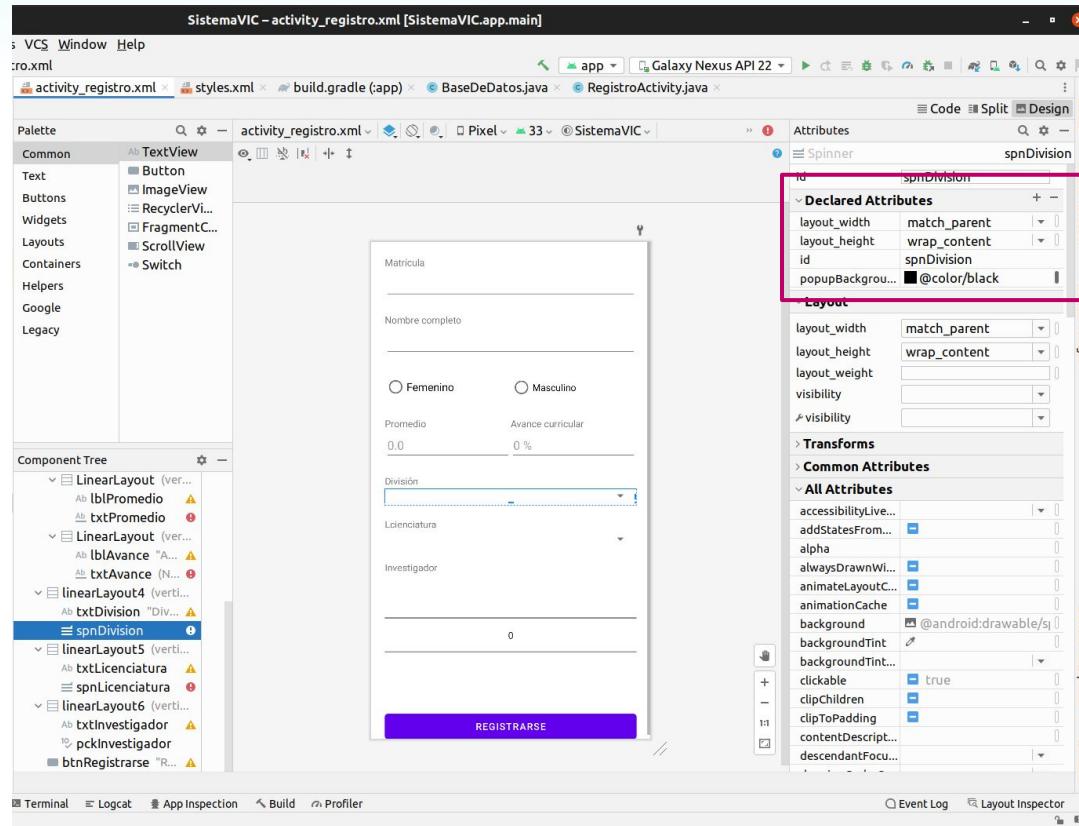
Name	Permiss...	Date	Size
com.google.android.music	rw-rw-r--	2022-10-29 00:53	4 KB
> com.google.android.onetime	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.package	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.partners	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.play.gan	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.printserv	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.setupwi	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.syncadaj	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.talk	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.tts	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.videos	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.webview	drwxrwx-x	2022-10-29 00:53	4 KB
> com.google.android.youtube	drwxrwx-x	2022-10-29 00:53	4 KB
> jp.co.omronsoft.openwnn	drwxrwx-x	2022-10-29 00:53	4 KB
mx.chavez.sistemavic	drwxrwx-x	2022-10-29 00:53	4 KB
> cache	drwxrwx-x	2022-10-29 00:53	4 KB
> databases	drwx-----	2022-11-02 20:24	4 KB
datos_vic.db	-rw-----	2022-11-02 20:24	84 KB
datos_vic.db-journal	-rw-----	2022-11-02 20:24	8.5 KB
> org.chromium.webview_shell	drwxrwx-x	2022-10-29 00:53	4 KB
> local	drwxrwx-x	2022-10-29 00:53	4 KB
> dev	drwxr-xr-x	2022-11-02 20:48	2.5 KB
> etc	lrwxrwxrwx	1970-01-01 00:00	11 B
> mnt	drwxr-xr-x	2022-11-02 20:48	220 B
> oem	drwxr-xr-x	1970-01-01 00:00	0 B
> proc	dr-xr-xr-x	2022-11-02 20:48	0 B
> root	drwx-----	2017-05-19 19:49	0 B
> sbin	drwxr-x---	1970-01-01 00:00	0 B
> sdcard	lrwxrwxrwx	1970-01-01 00:00	21 B
> storage	drwxr-xr-x	2022-11-02 20:48	100 B
> sys	dr-xr-xr-x	2022-11-02 20:48	0 B
> system	drwxr-xr-x	1970-01-01 00:00	4 KB
> var	lrwxrwxrwx	2022-11-02 20:48	9 B
> vendor	lrwxrwxrwx	1970-01-01 00:00	14 B
bugreports	lrwxrwxrwx	1970-01-01 00:00	50 B
charger	lrwxrwxrwx	1970-01-01 00:00	13 B
property_contexts	-rw-r--r--	1970-01-01 00:00	4.5 KB

Cargar divisiones en el Spinner

```
// Atributos de clase
...
Spinner spnDivision;

// Método onCreate
...
List<String> lista = new ArrayList<>();
while (divisiones.moveToFirst()) {
    lista.add( divisiones.getString(0) );
}
ArrayAdapter adapter = new ArrayAdapter(this.getBaseContext(),
                                         android.R.layout.simple_spinner_item,
                                         lista);
spnDivision.setAdapter(adapter);
bd.close();
...
```

Color de fondo de los Spinner división y licenciatura



Cargar licenciaturas: BaseDeDatos.java

```
public Cursor getLicenciaturas(String division) {
    SQLiteDatabase bd = getReadableDatabase();
    String sql = "SELECT nombre FROM licenciatura WHERE division = ?";

    return bd.query(true,
                    "licenciatura",
                    new String[] { "nombre" },
                    "division=?",
                    new String[] { division },
                    null, null, null, null);
}
```

Cargar licenciaturas: RegistroActivity.java

```
public class RegistroActivity extends AppCompatActivity
    implements AdapterView.OnItemSelectedListener {
    // Atributos de clase
    ...
    Spinner spnLicenciatura;

    // Método onCreate
    ...
    spnDivision.setOnItemSelectedListener(this);
    ...
    spnLicenciatura = findViewById(R.id.spnLicenciatura);
    ...
```

Cargar licenciaturas: RegistroActivity.java

```
// Método onItemSelected
bd = new BaseDeDatos(this);
division = spnDivision.getSelectedItem().toString();
Cursor licenciaturas = bd.getLicenciaturas( division );
List<String> lista = new ArrayList<>();
while (licenciaturas.moveToNext()) {
    lista.add( licenciaturas.getString(0) );
}
ArrayAdapter adapter = new ArrayAdapter(this.getContext(),
                                         android.R.layout.simple_spinner_item,
                                         lista);
spnLicenciatura.setAdapter(adapter);
bd.close();
...
```

Cargar investigadores: BaseDeDatos.java

```
public Cursor getInvestigadores() {  
    SQLiteDatabase bd = getReadableDatabase();  
    return bd.rawQuery("SELECT nombre FROM investigador", null);  
}
```

Cargar investigadores: RegistroActivity

```
// Atributos de clase
NumberPicker pckInvestigador;
...

// Método onCreate
...
Cursor investigadores = bd.getInvestigadores();
String[] arreglo = new String[investigadores.getCount()];
int i = 0;
while (investigadores.moveToNext()) {
    arreglo[i++] = investigadores.getString(0);
}
pckInvestigador = findViewById(R.id.pckInvestigador);
pckInvestigador.setMinValue(0);
pckInvestigador.setMaxValue( arreglo.length-1 );
pckInvestigador.setDisplayedValues( arreglo );
bd.close();
...
```

Los demás componentes

```
// Atributos de clase
EditText txtMatricula;
EditText txtNombre;
EditText txtPromedio;
EditText txtAvance;
RadioButton rdoFemenino;
RadioButton rdoMasculino;
Button btnRegistrarse;

// Método onCreate
...
txtMatricula = findViewById(R.id.txtMatricula);
txtNombre = findViewById(R.id.txtNombre);
txtPromedio = findViewById(R.id.txtPromedio);
txtAvance = findViewById(R.id.txtAvance);
rdoFemenino = findViewById(R.id.rdoFemenino);
rdoMasculino = findViewById(R.id.rdoMasculino);
btnRegistrarse = findViewById(R.id.btnRegistrarse);
}
```

Revisando los datos de entrada

```
// Método onClick
String matricula = txtMatricula.getText().toString();
String nombre    = txtNombre.getText().toString();
String genero;
if ( rdoFemenino.isChecked() ) {
    genero = "Femenino";
} else {
    genero = "Masculino";
}
float promedio = Float.parseFloat( txtPromedio.getText().toString() );
float avance   = Float.parseFloat( txtAvance.getText().toString() );
String division = spnDivision.getSelectedItem().toString();
String licenciatura = spnLicenciatura.getSelectedItem().toString();
String investigador = pckInvestigador.getDisplayedValues()[  
                                pckInvestigador.getValue() ];
Toast.makeText(this, matricula + "," + nombre + "," + genero + "," +  
                    promedio + "," + avance + "," + division + "," +  
                    licenciatura + "," + investigador,  
                    Toast.LENGTH_LONG).show();
```

Contenido



1. App VIC:

a. Diseño

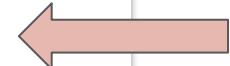
b. SQLite

c. **Base de datos** 

Conectar la app con Firebase

Puede conectar su aplicación de Android a Firebase usando una de las siguientes opciones:

- **Opción 1** : (recomendado) Use el flujo de trabajo de configuración de la consola Firebase.
- **Opción 2** : use Android Studio Firebase Assistant (puede requerir una configuración adicional).



<https://firebase.google.com/docs/android/setup#console>

Consola de Firebase

The screenshot shows the Firebase console homepage. At the top, there's a header with the Firebase logo, a search bar, and links for "Ir a la documentación" and a user profile. The main area features a large blue banner with two illustrations: a woman on the left interacting with a screen showing a 3D geometric model, and a man on the right working at a desk with a laptop. Below the banner, the text "Tus proyectos de Firebase" is displayed, along with a button to "Agregar proyecto". A project card for "Sistema VIC" (sistema-vic) is shown. The bottom section contains two cards: one for exploring a demonstration project (iOS+) and another explaining that Firebase projects are containers for apps, sharing functions like Realtime Database and Analytics. The footer includes language selection ("Idioma" set to "español (Latinoamérica)"), help links ("Asistencia", "Condiciones", "Política de Privacidad"), and a feedback icon.

Firebase

Tus proyectos de Firebase

Agregar proyecto

Sistema VIC
sistema-vic

Explorar un proyecto de demostración

iOS+

Los proyectos de Firebase son contenedores para tus apps

Las apps de un proyecto comparten funciones, como Realtime Database y Analytics

Más información

Idioma: español (Latinoamérica)

Asistencia · Condiciones · Política de Privacidad

Configuración de nuestra BD

The screenshot shows the Firebase console interface for the 'Sistema VIC' project. The left sidebar contains navigation links for Realtime Database, Compilación, Lanzamiento y supervisión, Analytics, Participación, and Todos los productos. A red box highlights the top navigation bar with 'Descripción general ...' and a gear icon.

The main dashboard displays two line graphs under the 'Compilación' section:

- Descargas (7 días en total):** Shows a peak of 59KB on October 27th.
- Almacenamiento (actual):** Shows a peak of 134B on October 28th.

Below the graphs, there is a callout for 'Almacena y sincroniza datos de app en milisegundos' featuring two icons: one of a person with a smartphone and another of a database server.

At the top right, there are links to 'Ir a la documentación', 'Registrarse', and a user profile icon.

Conectar nuestra app

The screenshot shows the Firebase Project Configuration interface. On the left, there's a sidebar with navigation links like 'Descripción general ...', 'Realtime Database', 'Compilación', 'Lanzamiento y supervisión', 'Analytics', 'Participación', and 'Todos los productos'. Below that is a 'Personaliza tu navegación' section and a 'Spark' plan summary. The main area is titled 'Configuración de proyecto' and has tabs for 'General', 'Cloud Messaging', 'Integraciones', 'Cuentas de servicio', 'Privacidad de los datos', 'Usuarios y permisos', and 'Verificación de aplicaciones'. The 'General' tab is selected. It displays project details: Nombre del proyecto (Sistema VIC), ID del proyecto (sistema-vic), Número de proyecto (1066997915196), and Ubicación predeterminada de los recursos de GCP (Aún sin seleccionar). Under 'Entorno', it says 'Sin especificar'. In the 'Configuración pública' section, Nombre público is set to 'project-1066997915196'. The 'Tus apps' section shows 'No hay apps en tu proyecto' and provides icons for selecting platforms: iOS, Android, Web, and Cloud Functions. At the bottom right, there's a 'Borrar proyecto' button.

Paquete de nuestra app

× Agrega Firebase a tu app para Android

1 Registrar app

Nombre del paquete de Android ?
mx.chavez.sistemavic

Sobrenombre de la app (opcional) ?
Mi app para Android

Certificado de firma SHA-1 de depuración (opcional) ?
00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:
ⓘ Obligatoria para Dynamic Links y el Acceso con Google o la asistencia con un número de teléfono en Auth. Puedes editar las claves SHA-1 en Configuración.

Registrar app

2 Descargar y, luego, agregar el archivo de configuración

3 Agregar el SDK de Firebase

4 Próximos pasos

Descargar archivo de configuración

×

Agrega Firebase a tu app para Android

1 Registrar app
Nombre del paquete de Android: mx.chavez.sistemavic

2 Descargar y, luego, agregar el archivo de configuración para Android Studio a continuación | [Unity](#) [C++](#)

[Descargar google-services.json](#)

Cambia a la vista Proyecto en Android Studio para ver el directorio raíz de tu proyecto.

Mueve el archivo google-services.json descargado al directorio raíz de tu módulo (nivel de app).

google-services.json

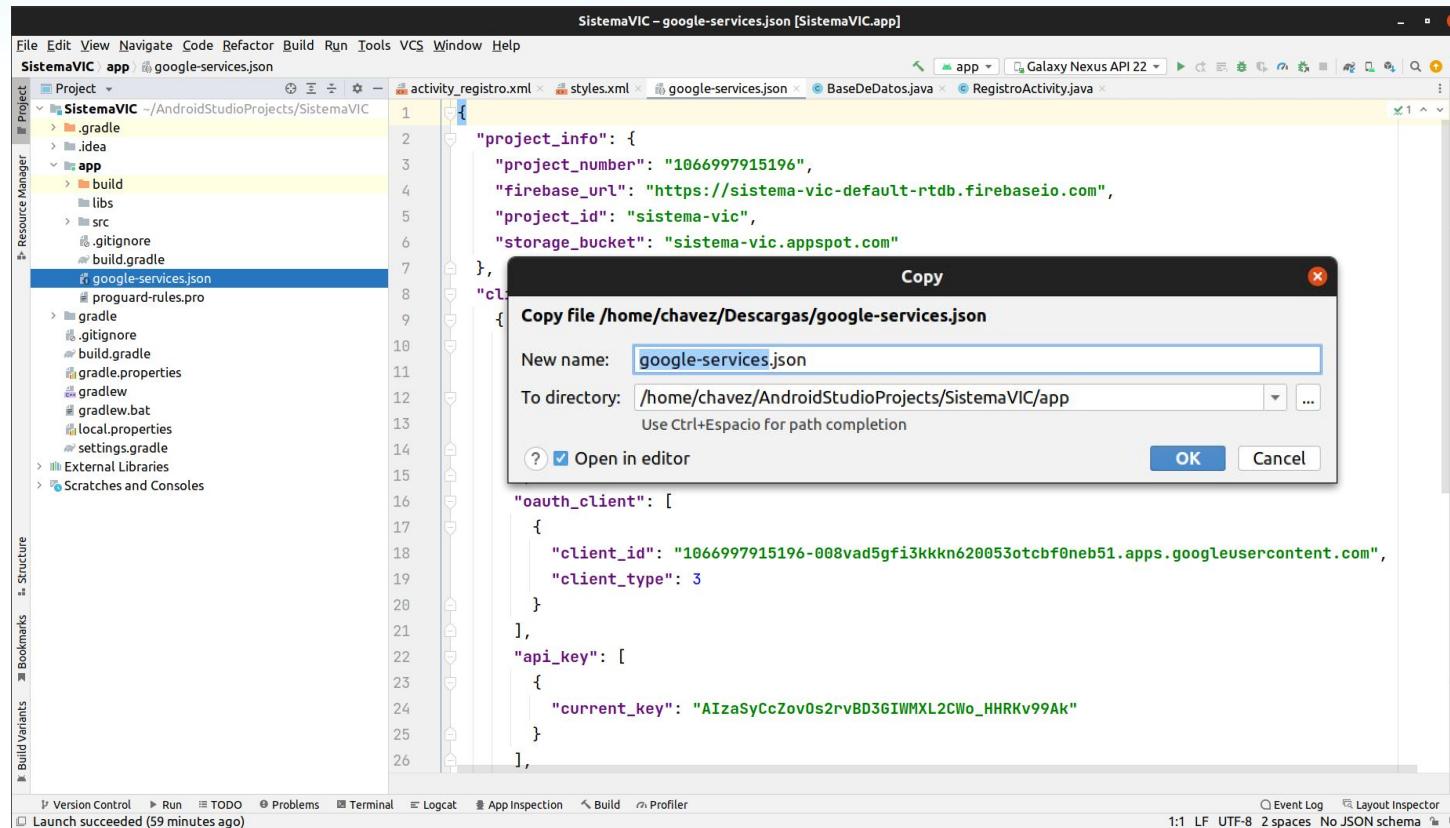
Project View showing the 'MyApplication' project structure with the 'app' module expanded. Inside 'app', there are folders for 'build', 'libs', and 'google-services.json'. A blue arrow points from the 'google-services.json' file in the text instructions to the file in the project tree.

[Siguiente](#)

3 Agregar el SDK de Firebase

4 Próximos pasos

Copiar archivo de configuración



¡Importante!

× Agrega Firebase a tu app para Android

1. Registrar app
Nombre del paquete de Android: mx.chavez.sistemavic

2. Descargar y, luego, agregar el archivo de configuración

3. Agregar el SDK de Firebase

Instrucciones para Gradle | [Unity](#) [C++](#)

1. Para que los SDK de Firebase puedan acceder a los valores de configuración de google-services.json, necesitas el complemento Gradle de los servicios de Google.

Agrega el complemento como una dependencia buildscript a tu archivo build.gradle de nivel de proyecto:

Archivo de Gradle de nivel de raíz (nivel de proyecto) (<project>/build.gradle):

```
buildscript {  
    repositories {  
        // Make sure that you have the following two repositories  
        google() // Google's Maven repository  
        mavenCentral() // Maven Central repository  
    }  
    dependencies {  
        ...  
        // Add the dependency for the Google services Gradle plugin  
        classpath 'com.google.gms:google-services:4.3.13'  
    }  
  
    allprojects {  
        ...  
        repositories {  
            // Make sure that you have the following two repositories  
            google() // Google's Maven repository  
            mavenCentral() // Maven Central repository  
        }  
    }  
}
```

Archivo 1

The screenshot shows the Android Studio interface with the project **SistemaVIC** open. The left sidebar displays the project structure, including the **app** module which contains **AndroidManifest.xml**, **java** (with files **BaseDatos**, **MainActivity**, and **RegistroActivity**), **assets**, **databases** (with **datos_vic.db**), and **res** (with drawable, layout, mipmap, values, and xml subfolders). The **Gradle Scripts** section shows the **build.gradle** files for the project and module.

The main editor window shows the **build.gradle** file for the **SistemaVIC** project. The code is as follows:

```
// Top-level build file where you can add configuration options common to all sub-projects/modules.
buildscript {
    dependencies {
        // Add the dependency for the Google services Gradle plugin
        classpath 'com.google.gms:google-services:4.3.13'
    }
}

plugins {
    id 'com.android.application' version '7.3.0' apply false
    id 'com.android.library' version '7.3.0' apply false
}
```

A red box highlights the `Sync Now` and `Ignore these changes` buttons in the top right corner of the editor.

At the bottom of the screen, there are several tabs and status indicators:

- Version Control, TODO, Problems, Terminal, Logcat, App Inspection, Build, Profiler
- Event Log, Layout Inspector
- 5:58 LF UTF-8 4 spaces

A message at the bottom states: **A newer version of com.google.gms:google-services than 4.3.13 is available: 4.3.14**.

Archivo 2

SistemaVIC – build.gradle (app)

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
SistemaVIC app build.gradle
Project
  - Android
    - app
      - manifests
        - AndroidManifest.xml
      - java
        - mx.chavez.sistemavic
          - BaseDeDatos
          - MainActivity
          - RegistroActivity
        - mx.chavez.sistemavic (androidTest)
        - mx.chavez.sistemavic (test)
        - java (generated)
      - assets
      - databases
        - datos_vic.db
      - res
        - drawable
        - layout
        - mipmap
        - values
          - colors.xml
          - strings.xml
          - styles.xml
        - themes (2)
      - xml
      - res (generated)
    - Gradle Scripts
      - build.gradle (Project: SistemaVIC)
      - build.gradle (Module: SistemaVIC.app)
      - gradle-wrapper.properties (Gradle Version)
      - proguard-rules.pro (ProGuard Rules for SistemaVIC)
      - gradle.properties (Project Properties)
      - settings.gradle (Project Settings)
      - local.properties (SDK Location)
Sync Now Ignore these changes
Gradle
Device Manager
Device File Explorer
Emulator
activity_registro.xml x google-services.json x build.gradle (SistemaVIC) x build.gradle (app) x RegistroActivity.java x
Gradle files have changed since last project sync. A project sync may be necessary for the IDE to work properly.
Sync Now Ignore these changes
plugins {
    id 'com.android.application'
    // Add the Google services Gradle plugin
    id 'com.google.gms.google-services'
}

android {
    namespace 'mx.chavez.sistemavic'
    compileSdk 32

    defaultConfig {
        applicationId "mx.chavez.sistemavic"
        minSdk 21
        targetSdk 32
        versionCode 1
        versionName "1.0"

        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
    }

    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'
        }
    }
}

versionCode 1
versionName "1.0"
```

Build Variants Bookmarks Structure

Version Control Run TODO Problems Terminal Logcat App Inspection Build Profiler Event Log Layout Inspector 4:40 LF UTF-8 4 spaces

□ Gradle sync finished in 19 s 140 ms (a minute ago)

Archivo 2

The screenshot shows the Android Studio interface with the project 'SistemaVIC' open. The left sidebar displays the project structure, including the app module with its sub-directories like 'AndroidManifest.xml', 'java', 'assets', 'databases', and 'res'. The 'build.gradle (app)' file is selected in the center editor area. A pink rectangle highlights the 'Sync Now' button located at the top right of the code editor. The code itself is a Gradle script for the application module, defining compile options, dependencies, and test implementations.

```
apply plugin: 'com.android.application'

android {
    compileSdkVersion 29
    buildToolsVersion "29.0.3"
    defaultConfig {
        applicationId "mx.chavez.sistemavic"
        minSdkVersion 16
        targetSdkVersion 29
        versionCode 1
        versionName "1.0"
        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
    }
    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'
        }
    }
}

dependencies {
    implementation 'androidx.appcompat:appcompat:1.5.1'
    implementation 'com.google.android.material:material:1.7.0'
    implementation 'androidx.constraintlayout:constraintlayout:2.1.4'
    testImplementation 'junit:junit:4.13.2'
    androidTestImplementation 'androidx.test.ext:junit:1.1.3'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.4.0'
    // Para copiar nuestra BD al móvil
    implementation 'com.readystatesoftware.sqliteasset:sqliteassethelper:+'
    // Import the Firebase BoM
    implementation platform('com.google.firebase:firebase-bom:31.0.2')
}
```

At the bottom of the screen, there are several tabs for navigation: Version Control, Run, TODO, Problems, Terminal, Logcat, App Inspection, Build, Profiler, Event Log, Layout Inspector, and Emulator. A status bar at the very bottom indicates: 'Gradle sync finished in 19 s 140 ms (a minute ago)', '44:1 LF UTF-8 4 spaces', and a battery icon.

Listo

× Agrega Firebase a tu app para Android

- ✓ Registrar app
Nombre del paquete de Android: mx.chavez.sistemavic
- ✗ Descargar y, luego, agregar el archivo de configuración
- ✗ Agregar el SDK de Firebase

④ Próximos pasos

¡Listo!

Asegúrate de revisar la [documentación](#) para conocer los primeros pasos con cada producto de Firebase que quieras usar en tu app.

También puedes explorar las [apps de muestra de Firebase](#).

También puedes ir a la consola para explorar Firebase

[Anterior](#) [Ir a la consola](#)

Configuración del proyecto Firebase

The screenshot shows the Firebase Project Configuration interface. On the left, there's a sidebar with navigation links like 'Descripción general', 'Realtime Database', 'Categorías de producto', and 'Todos los productos'. The main area is titled 'Configuración de proyecto' and has tabs for 'General', 'Cloud Messaging', 'Integraciones', 'Cuentas de servicio', 'Privacidad de los datos', 'Usuarios y permisos', and 'Verificación de aplicaciones'. The 'General' tab is selected. It displays information for an 'Android' app named 'mx.chavez.sistemavic'. The configuration section includes fields for 'Configuración del SDK' (with a link to instructions and a download button for 'google-services.json'), 'ID de la app' (value: 1:1066997915196:android:011bd82f98e40d6ec7ad39), 'Sobrenombre de la app' (placeholder: Agregar un sobrenombre), 'Nombre del paquete' (value: mx.chavez.sistemavic), 'Huellas digitales del certificado SHA' (placeholder: Agregar huella digital), and 'Tipo' (placeholder: Tipo). At the bottom right of the configuration box is a 'Quitar esta app' button.

Próximos pasos

Próximos pasos

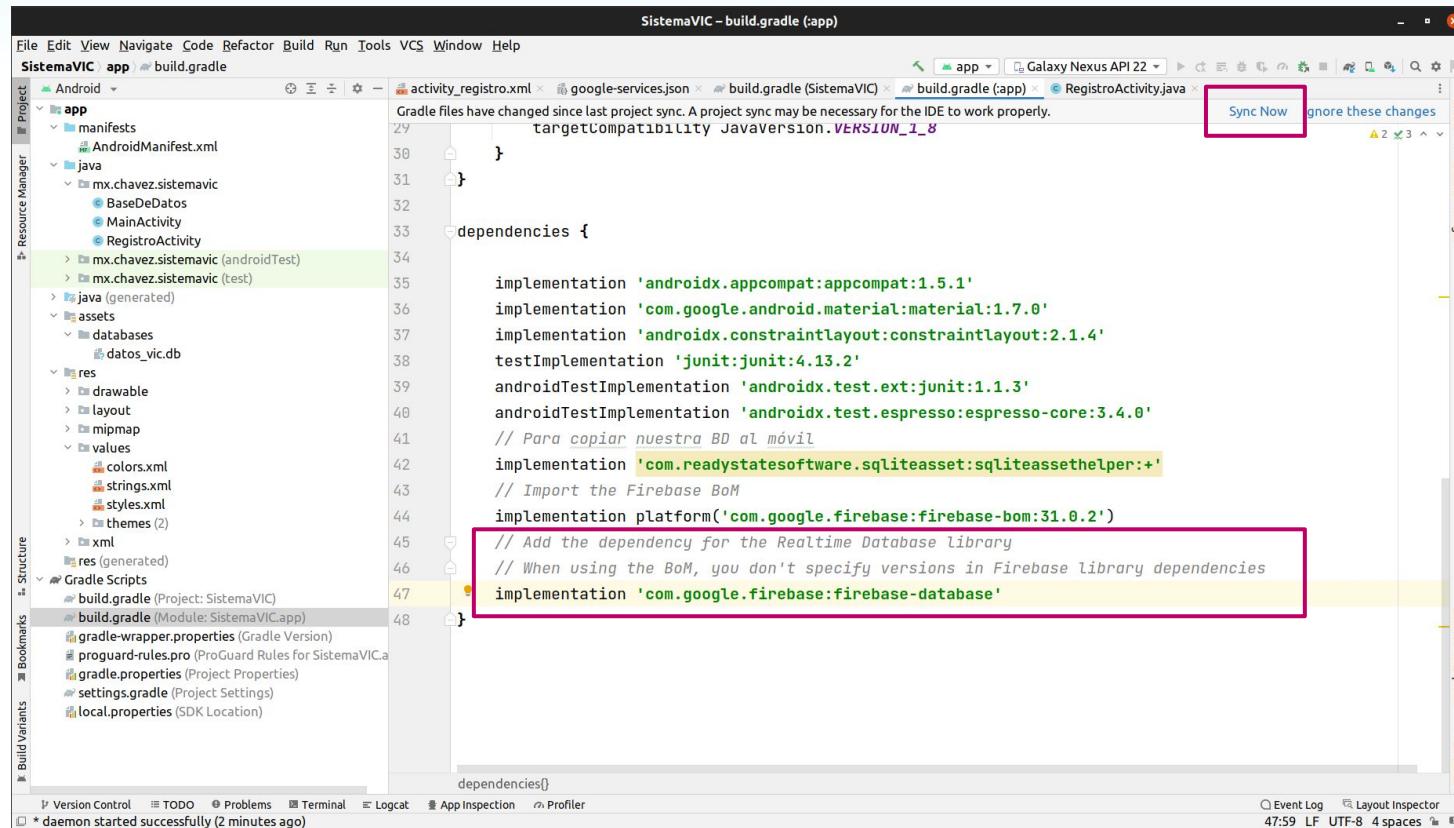
Agregue los servicios de Firebase a su aplicación:

- Obtenga información sobre el comportamiento de los usuarios con [Analytics](#) .
- Configure un flujo de autenticación de usuario con [Autenticación](#) .
- Almacene datos, como información del usuario, con [Cloud Firestore](#) o [Realtime Database](#) .
- Almacene archivos, como fotos y videos, con [Cloud Storage](#) .
- Active el código de back-end que se ejecuta en un entorno seguro con [Cloud Functions](#) .
- Envíe notificaciones con [Cloud Messaging](#) .
- Averigüe cuándo y por qué su aplicación falla con [Crashlytics](#) .



<https://firebase.google.com/docs/database/android/start>

Importar biblioteca de Firebase



The screenshot shows the Android Studio interface with the project 'SistemaVIC' open. The left sidebar displays the project structure, including the app module with its Java, XML, and resources. The main editor window shows the build.gradle file for the app module. A pink rectangular box highlights the following code snippet:

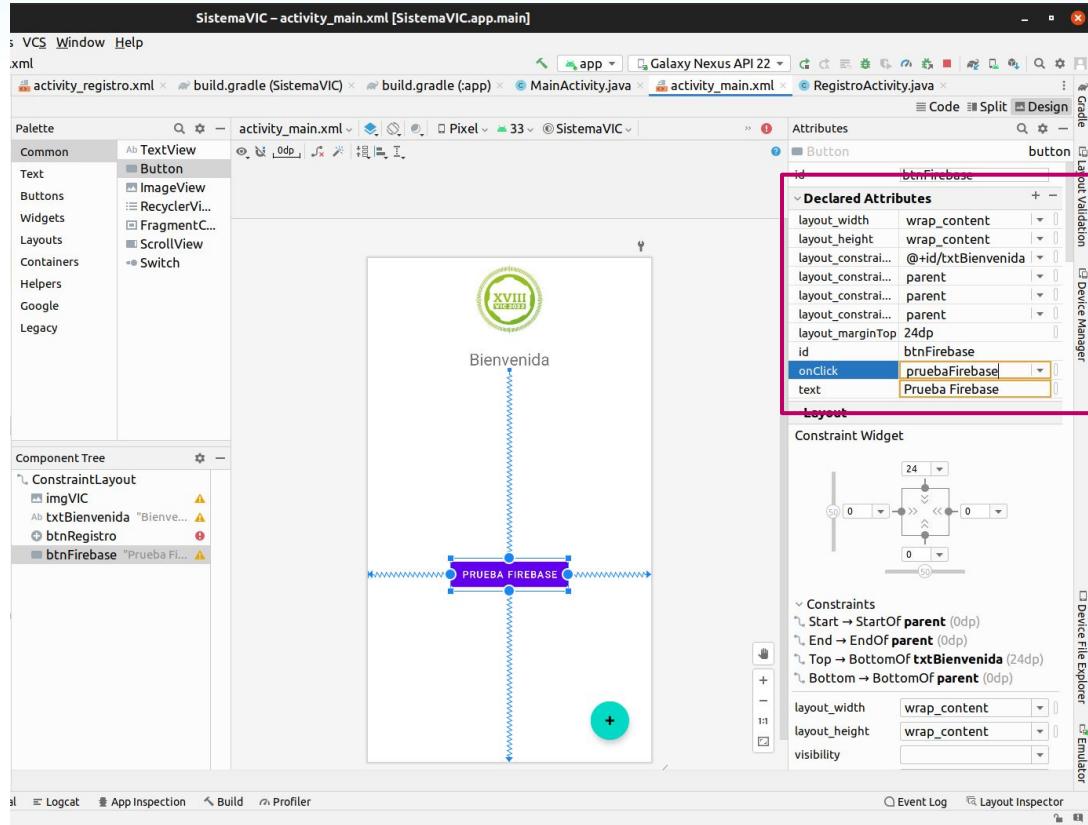
```
implementation 'com.google.firebase:firebase-database'
```

This line adds the Firebase Database dependency to the project. Above this line, another pink box highlights the following code:

```
// When using the BoM, you don't specify versions in Firebase library dependencies
```

This note provides a tip for using the Google BoM (Bom) for managing Firebase dependencies. At the top of the editor, a message indicates that gradle files have changed since the last sync, with options to 'Sync Now' or 'Ignore these changes'.

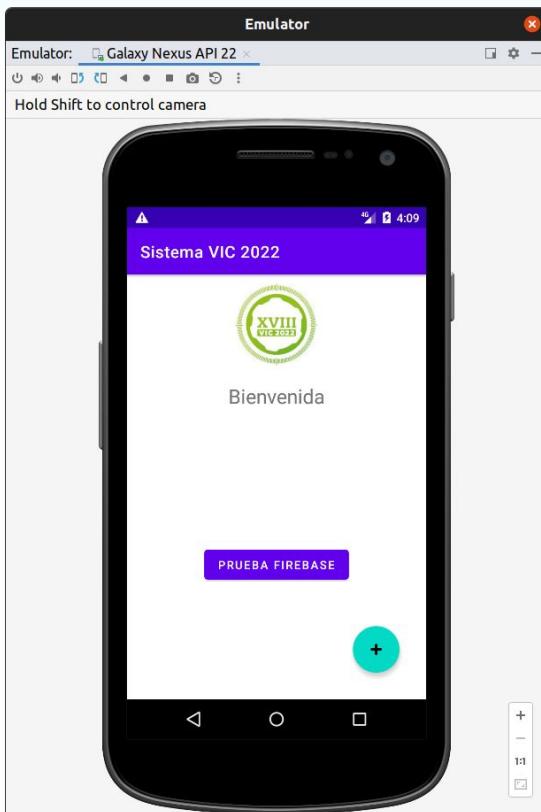
iHola, Mundo!



Código de prueba

```
public void pruebaFirebase(View view) {  
    FirebaseDatabase database = FirebaseDatabase.getInstance();  
    DatabaseReference myRef = database.getReference("mensaje");  
    myRef.setValue("¡Hola, mundo!");  
}
```

Base de datos en tiempo real



```
graph TD; estudiante[estudiante] --> 172H14003[172H14003]; estudiante --> 172H17080[172H17080]; 172H14003 --> matricula172H14003["matricula: '172H14003'"]; 172H14003 --> nombreCruz["nombre: 'Cruz Maria'"]; 172H17080 --> matricula172H17080["matricula: '172H17080'"]; 172H17080 --> nombreRichard["nombre: 'Richard'"]; mensaje[Hola, mundo!]
```

Ir a la documentación

Sistema VIC ▾

Realtime Database

Datos Reglas Copias de seguridad Uso

Protege tus recursos de Realtime Database contra los abusos, como fraudes de facturación o suplantación de identidad.

Configurar la Verificación de aplicaciones

Personaliza tu navegación

Ahora puedes personalizar la navegación para enfocar tu experiencia en la consola

Más información

Entendido

Spark Sin costo \$0 por mes Actualizar

Ubicación de la base de datos: Estados Unidos (us-central1)

Guardar registro

Próximos pasos

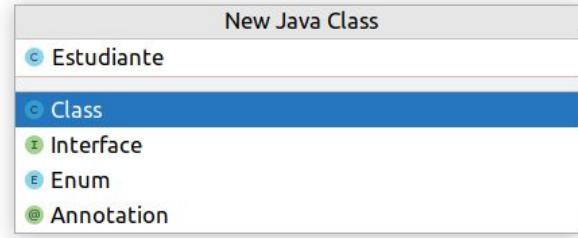
- Aprenda a [estructurar datos](#) para Realtime Database
- [Escale sus datos a través de múltiples instancias de bases de datos](#) .
- [Leer y escribir datos](#) . 
- [Vea su base de datos en la consola de Firebase](#) .

<https://firebase.google.com/docs/database/android/read-and-write>

Clase Estudiante

1. Clic derecho paquete → New → Java class

```
public class Estudiante {  
    public String matricula;  
    public String nombre;  
  
    public Estudiante() {}  
  
    public Estudiante(String matricula, String nombre) {  
        this.matricula = matricula;  
        this.nombre = nombre;  
    }  
}
```

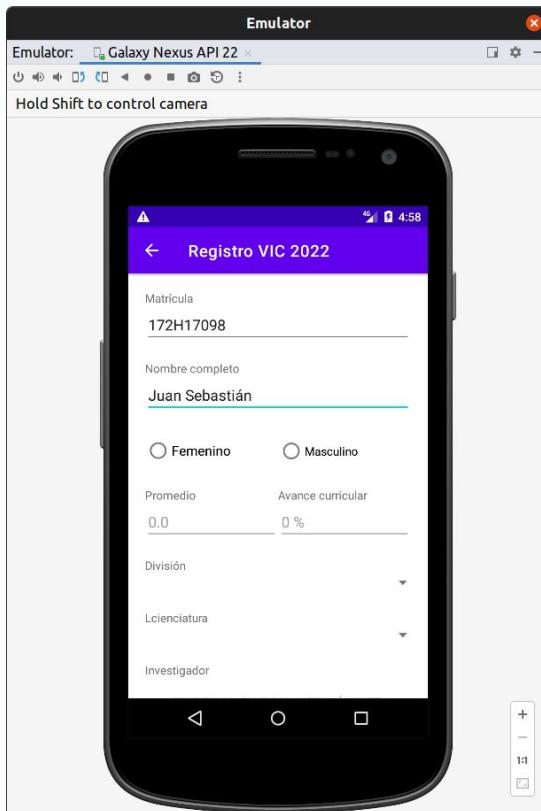


Guardar datos del estudiante

```
// Método onClick
String matricula = txtMatricula.getText().toString();
String nombre    = txtNombre.getText().toString();

Estudiante estudiante = new Estudiante(matricula, nombre);
DatabaseReference mDatabase =
    FirebaseDatabase.getInstance().getReference();
mDatabase.child("estudiante").child(matricula).setValue(estudiante);
```

Registro guardado



Protege tus recursos de Realtime Database contra los abusos, como fraudes de facturación o suplantación de identidad.

Configurar la Verificación de aplicaciones

https://sistema-vic-default-rtbd.firebaseio.com/

```
graph TD; estudiante[estudiante] --> 172H14003[172H14003]; estudiante --> 172H17080[172H17080]; estudiante --> 172H17098[172H17098]; 172H14003 --> matricula172H14003[matricula: "172H14003"]; 172H14003 --> nombreCruzMaria[nombre: "Cruz María"]; 172H17080 --> matricula172H17080[matricula: "172H17080"]; 172H17080 --> nombreRichard[nombre: "Richard"]; 172H17098 --> matricula172H17098[matricula: "172H17098"]; 172H17098 --> nombreJuanSebastian[nombre: "Juan Sebastián"]; 172H17098 --> mensajeHolaMundo[mensaje: "¡Hola, mundo!"];
```

Ubicación de la base de datos: Estados Unidos (us-central1)

¡Listo!

1. Diseñamos la app en Android Studio
2. Usamos los datos de SQLite
3. Guardamos los datos en Firebase 