UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO
FACULTAD DE CONTADURÍA Y ADMINISTRACIÓN
LICENCIATURA EN INFORMÁTICA

Sistema Universidad Abierta

UNIDAD 5
ACTIVIDAD 1

Materia:

PROGRAMACIÓN DE DISPOSITIVOS MÓVILES

Asesor:

Cristian Cardoso Arellano

Semestre:

6°
Semestre

Alumno:

Sealtiel Esteban Solano Flores

Octubre 2025.

Unidad 5.

Actividad 1.

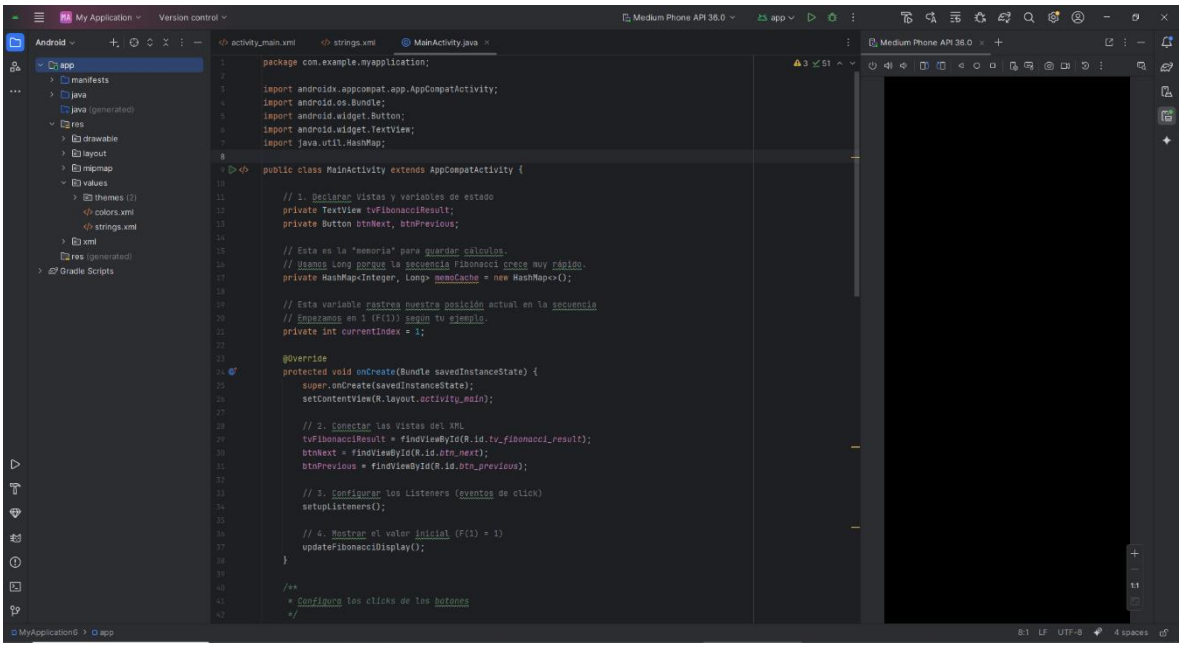
1. Calcula la secuencia de fibonacci de cualquier número "*n*"
2. Deberá de emplear la estructura de control "*For*" o "Recursividad" para la ejecución de su programa.
3. Agregar dos botones en la vista, utilizando recursos XML. a. Primer botón de avance b. Segundo botón de retroceso.
4. Agregar un TextView en la vista utilizando recursos XML, éste *textView* mostrará el valor actual de la secuencia *fibonacci*.
5. Al dar click en el botón deberá de realizar la secuencia *fibonacci* empezando con el número 1.

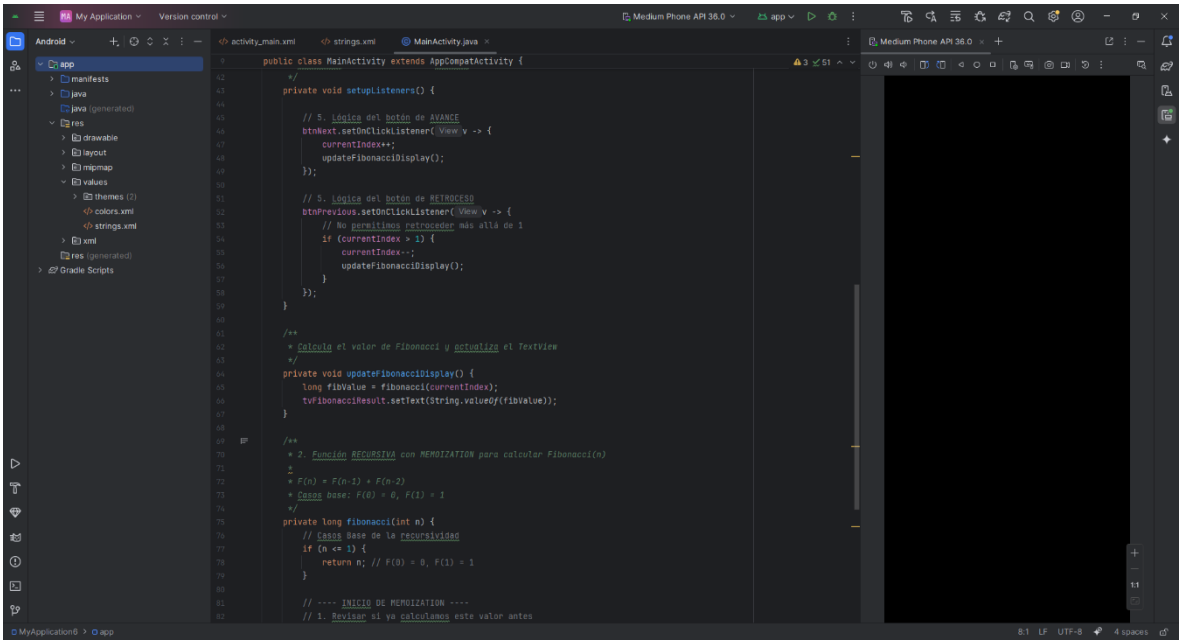
#1 click, el textview deberá de mostrar el valor de: 1
#2 click, el textview deberá de mostrar el valor de: 1
#3 click, el textview deberá de mostrar el valor de: 2
#4 click, el textview deberá de mostrar el valor de: 3
#5 click, el textview deberá de mostrar el valor de: 5
#6 click, el textview deberá de mostrar el valor de: 8
… consecutivamente …
Incluir "*memoization*" en el cálculo de la secuencia fibonacci.

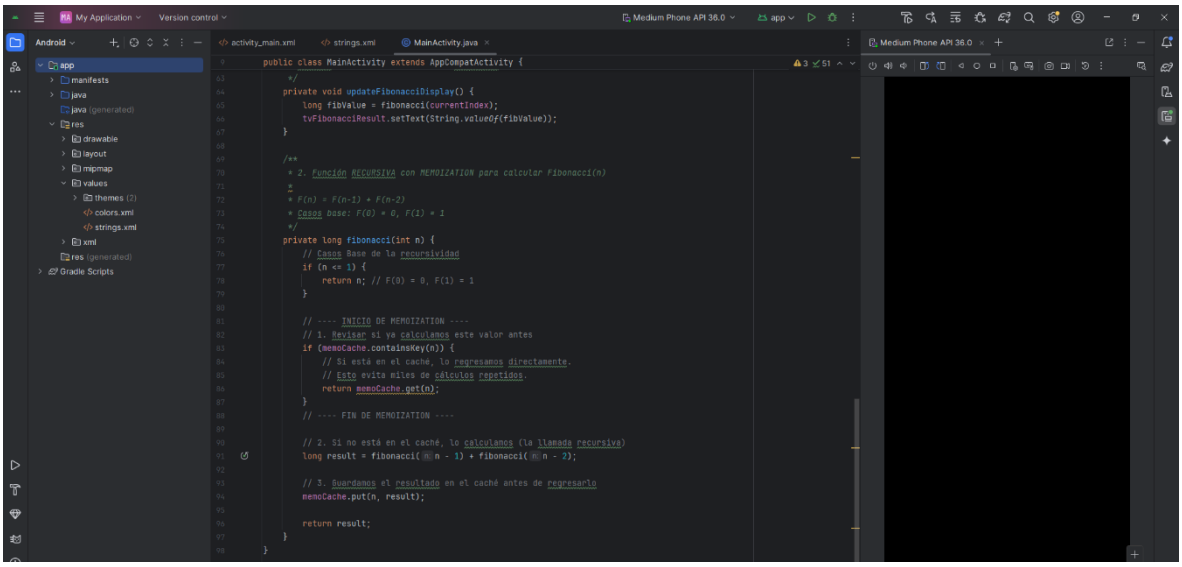
```
package com.example.myapplication;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Button;
import android.widget.TextView;
import java.util.HashMap;

public class MainActivity extends AppCompatActivity {

    // 1. Declarar Vistas y variables de estado
    private TextView tvFibonacciResult;
    private Button btnNext, btnPrevious;

    // Esta es la "memoria" para guardar cálculos.
    // Usamos Long porque la secuencia Fibonacci crece muy rápido.
    private HashMap<Integer, Long> memoCache = new HashMap<>();

    // Esta variable rastrea nuestra posición actual en la secuencia
    // Empezamos en 1 (F(1)) según tu ejemplo.
    private int currentIndex = 1;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // 2. Conectar las Vistas del XML
        tvFibonacciResult = findViewById(R.id.tv_fibonacci_result);
        btnNext = findViewById(R.id.btn_next);
        btnPrevious = findViewById(R.id.btn_previous);
```

```
        // 3. Configurar los Listeners (eventos de click)
        setupListeners();

        // 4. Mostrar el valor inicial (F(1) = 1)
        updateFibonacciDisplay();
    }

    /**
     * Configura los clicks de los botones
     */
    private void setupListeners() {

        // 5. Lógica del botón de AVANCE
        btnNext.setOnClickListener(v -> {
            currentIndex++;
            updateFibonacciDisplay();
        });

        // 5. Lógica del botón de RETROCESO
        btnPrevious.setOnClickListener(v -> {
            // No permitimos retroceder más allá de 1
            if (currentIndex > 1) {
                currentIndex--;
                updateFibonacciDisplay();
            }
        });
    }

    /**
     * Calcula el valor de Fibonacci y actualiza el TextView
     */
    private void updateFibonacciDisplay() {
        long fibValue = fibonacci(currentIndex);
        tvFibonacciResult.setText(String.valueOf(fibValue));
    }

    /**
     * 2. Función RECURSIVA con MEMOIZATION para calcular Fibonacci(n)
     *
     * F(n) = F(n-1) + F(n-2)
     * Casos base: F(0) = 0, F(1) = 1
     */
    private long fibonacci(int n) {
        // Casos Base de la recursividad
        if (n <= 1) {
            return n; // F(0) = 0, F(1) = 1
        }

        // ---- INICIO DE MEMOIZATION ----
        // 1. Revisar si ya calculamos este valor antes
        if (memoCache.containsKey(n)) {
            // Si está en el caché, lo regresamos directamente.
            // Esto evita miles de cálculos repetidos.
            return memoCache.get(n);
        }
        // ---- FIN DE MEMOIZATION ----
```

```
        // 2. Si no está en el caché, lo calculamos (la llamada
recursiva)
        long result = fibonacci(n - 1) + fibonacci(n - 2);

        // 3. Guardamos el resultado en el caché antes de regresarlo
        memoCache.put(n, result);

        return result;
    }
}
```

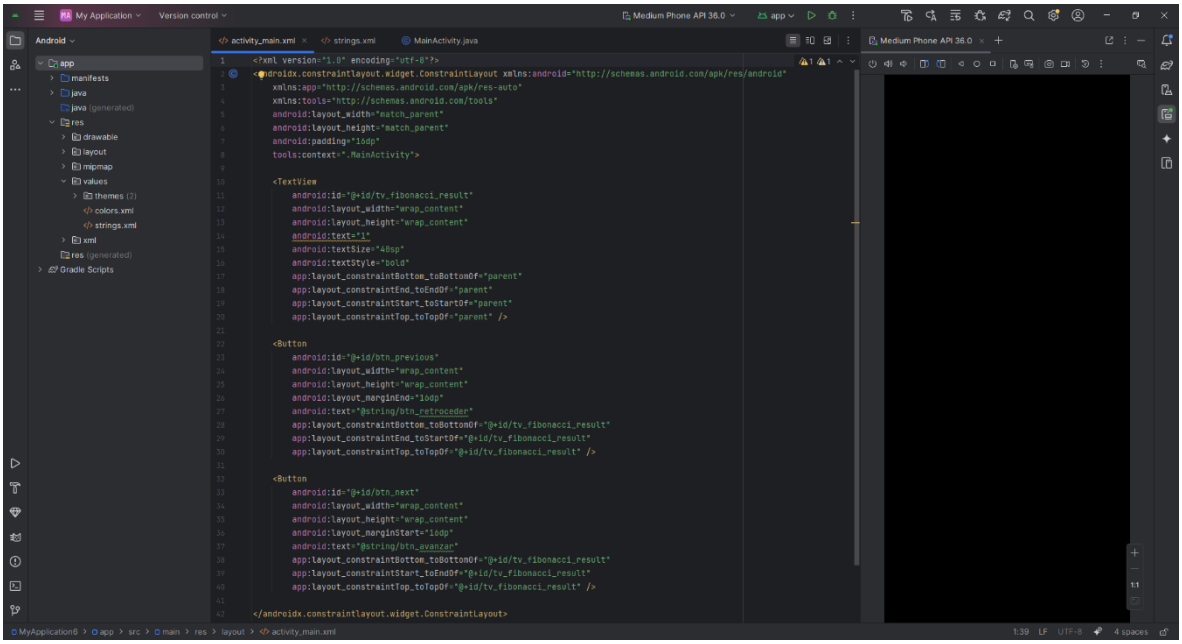


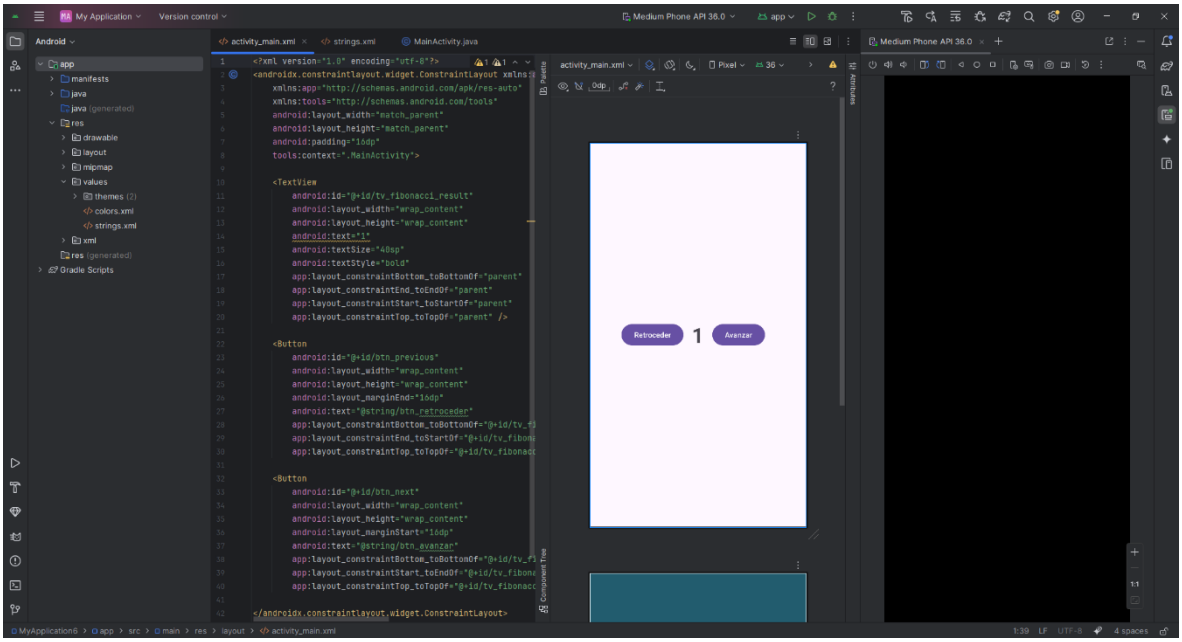


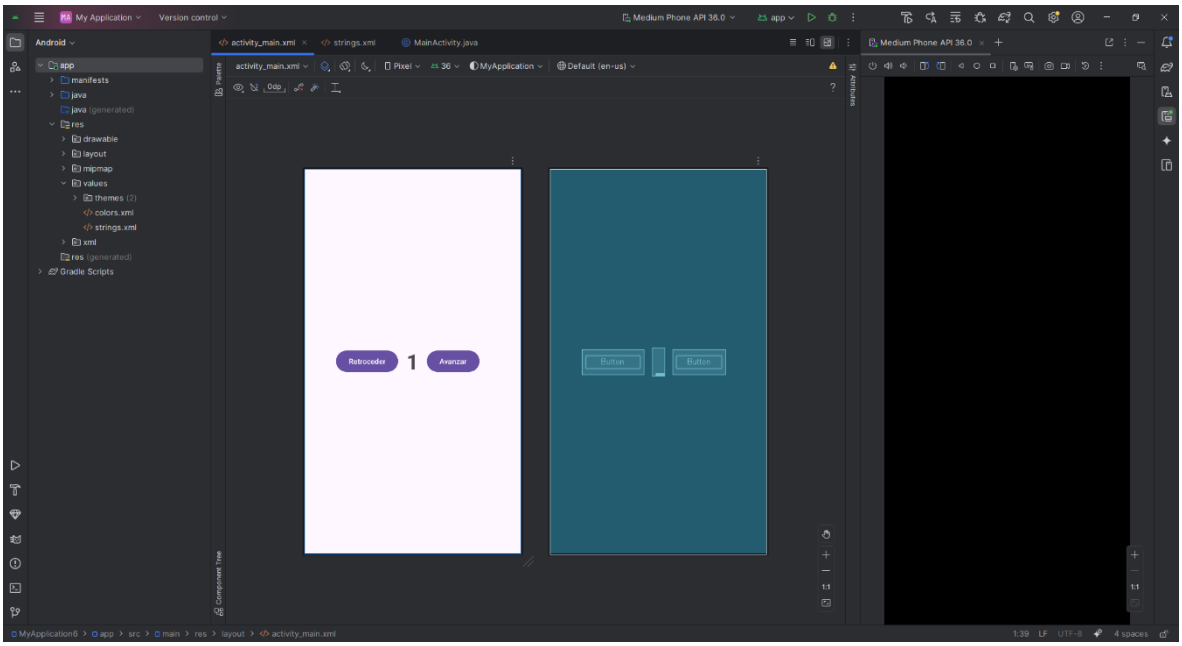


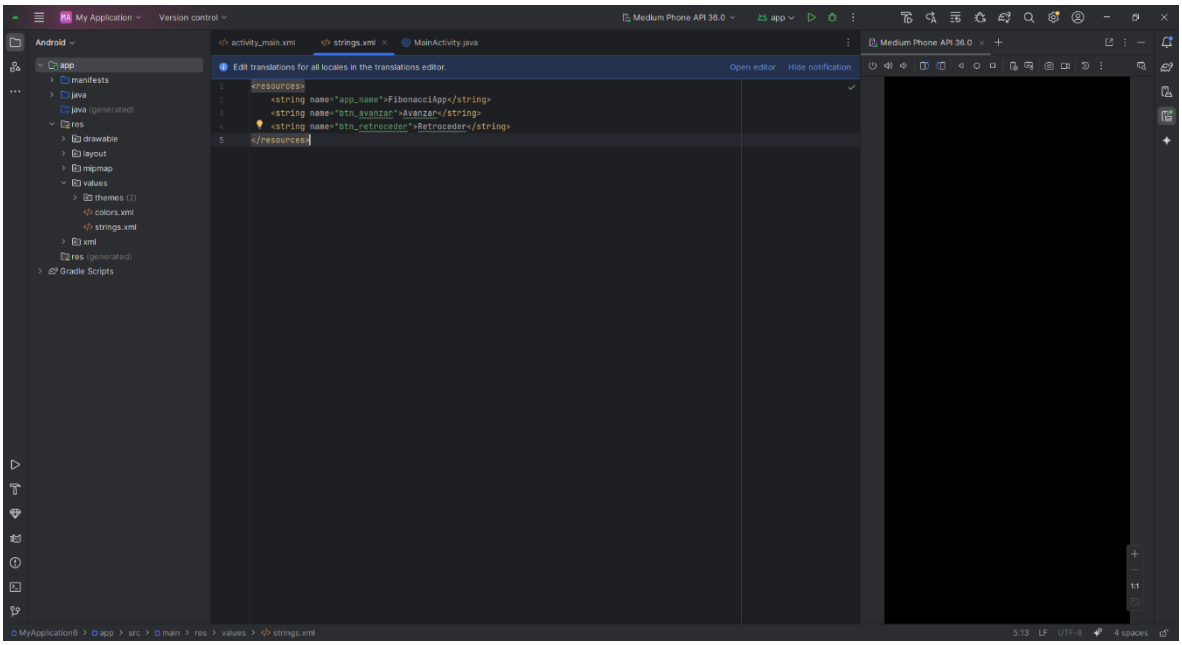

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/tv_fibonacci_result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="1"
        android:textSize="40sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/btn_previous"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="16dp"
        android:text="@string/btn_retroceder"
        app:layout_constraintBottom_toBottomOf="@+id/tv_fibonacci_result"
        app:layout_constraintEnd_toStartOf="@+id/tv_fibonacci_result"
        app:layout_constraintTop_toTopOf="@+id/tv_fibonacci_result" />

    <Button
        android:id="@+id/btn_next"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:text="@string/btn_avanzar"
```

```
        app:layout_constraintBottom_toBottomOf="@+id/tv_fibonacci_result"
        app:layout_constraintStart_toEndOf="@+id/tv_fibonacci_result"
        app:layout_constraintTop_toTopOf="@+id/tv_fibonacci_result" />

</androidx.constraintlayout.widget.ConstraintLayout>
```






Retroceder
1
Avanzar
Button
Button


Edit translations for all locales in the translations editor.
Open editor
Hide notification
<resources>
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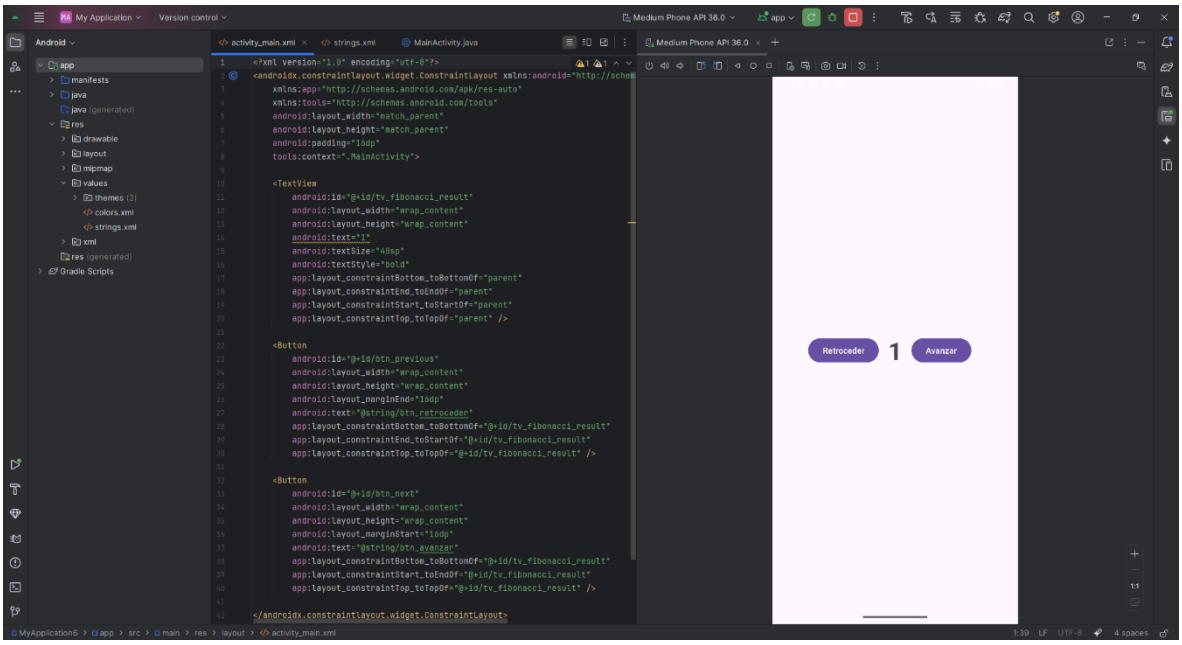
<string name="btn_avanzar">Avanzar</string>
<string name="btn_retroceder">Retroceder</string>
</resources>

Avanzar.


activity_main.xml
strings.xml
MainActivity.java
Medium Phone API 36.0
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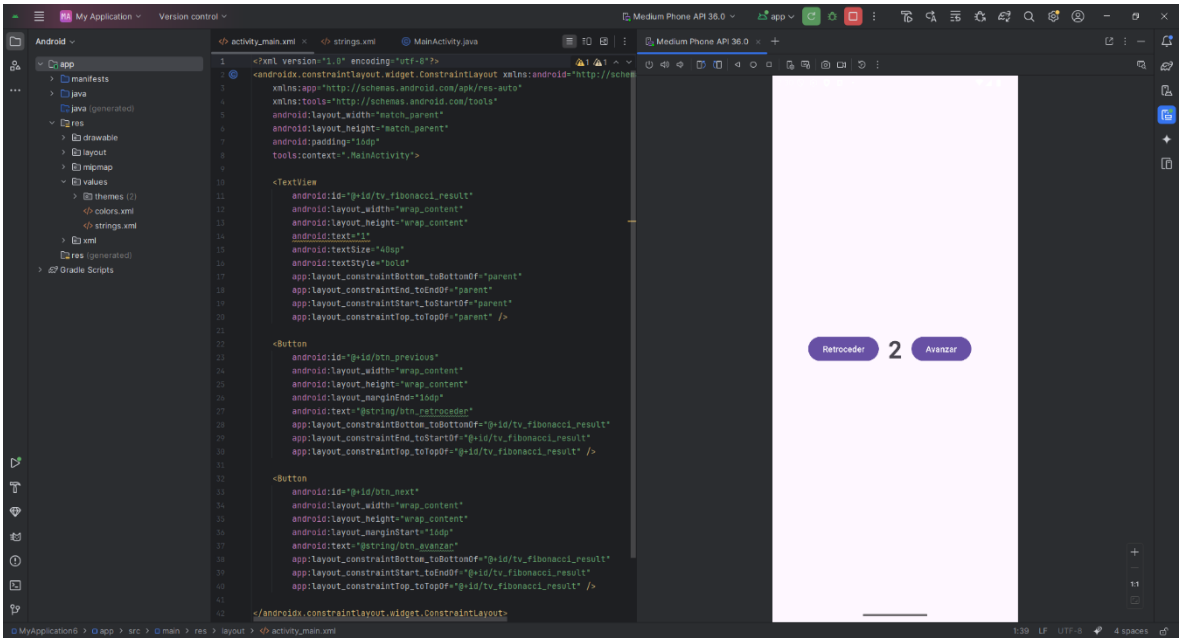
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MainActivity.java
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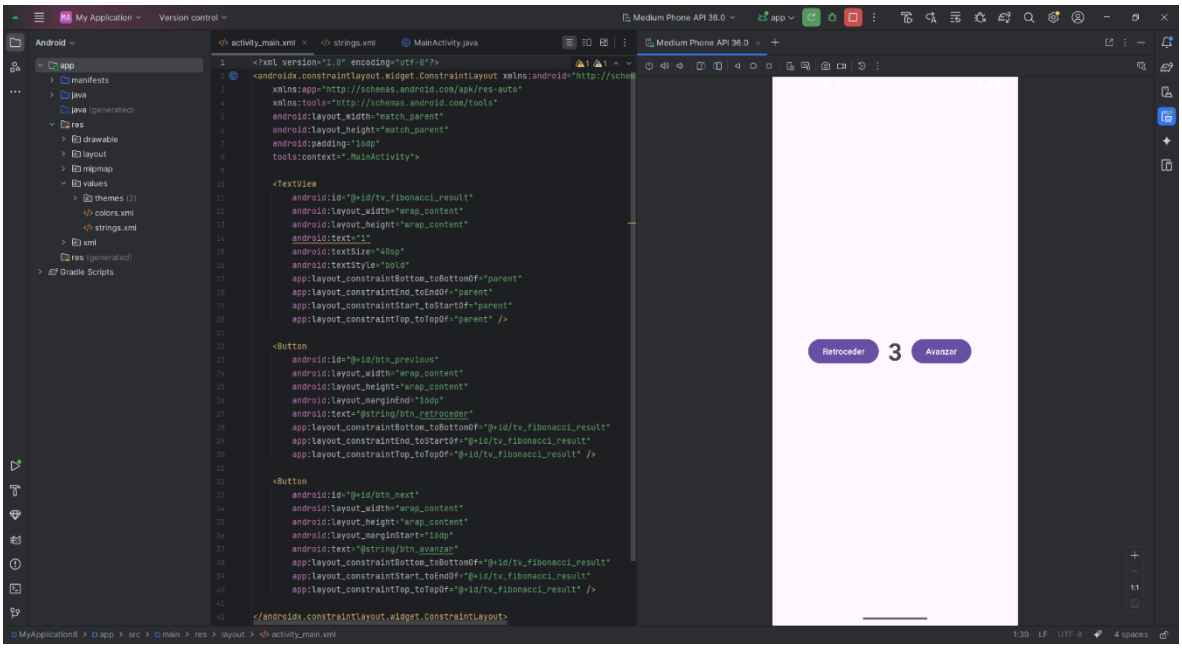
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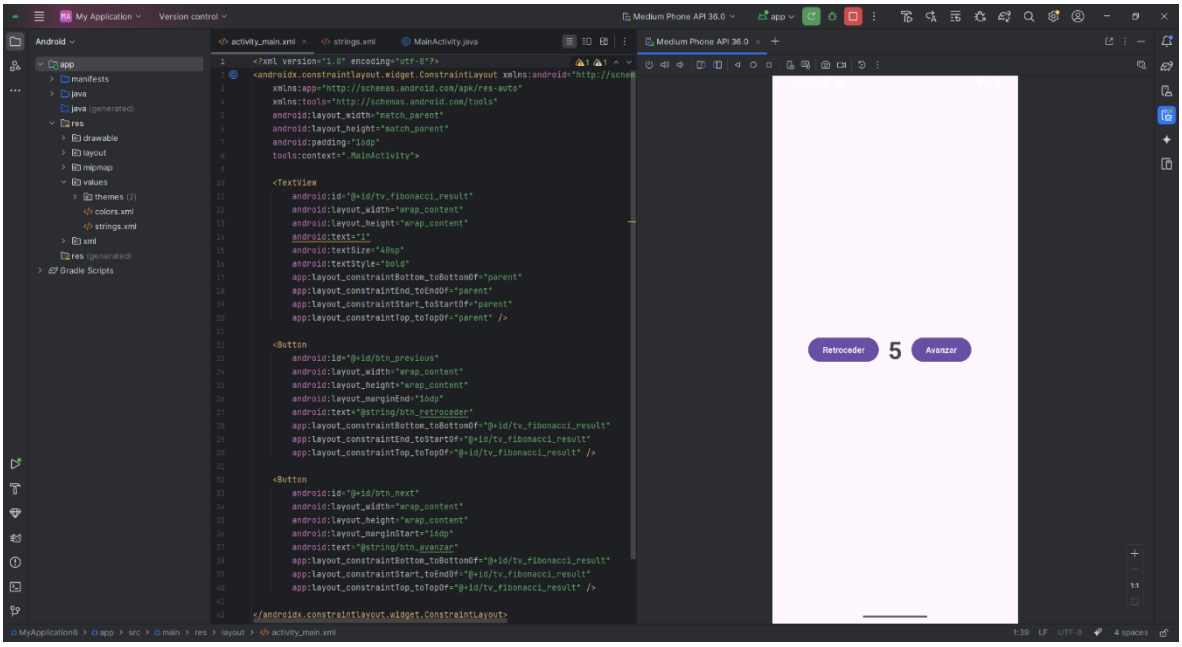
Retroceder
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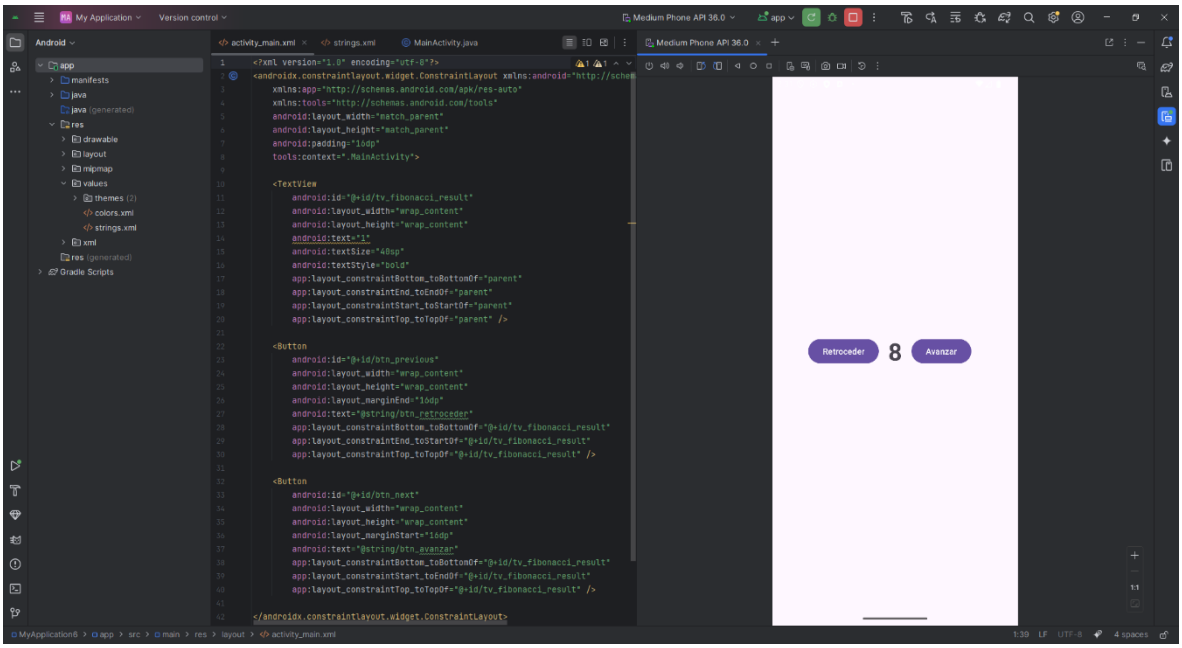
My Application
Version control
Medium Phone API 36.0
app
Android
activity_main.xml
strings.xml
MainActivity.java
Medium Phone API 36.0
Retroceder
8
Avanzar
MyApplication6 › app › src › main › res › layout › activity_main.xml
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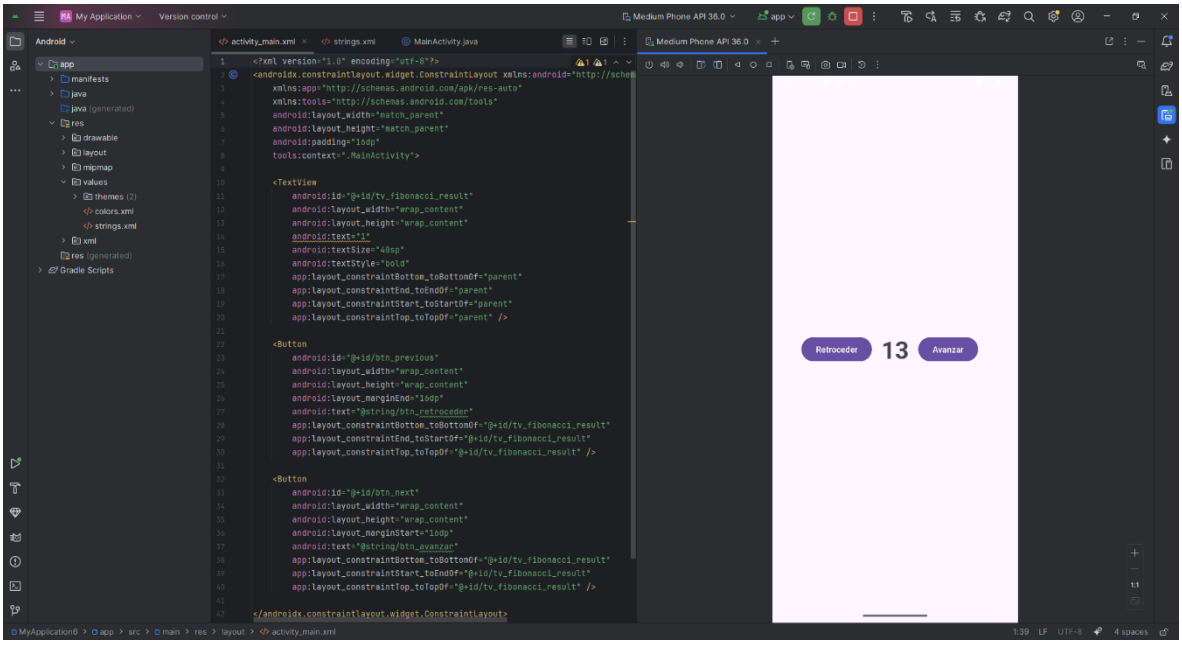
4 spaces


My Application
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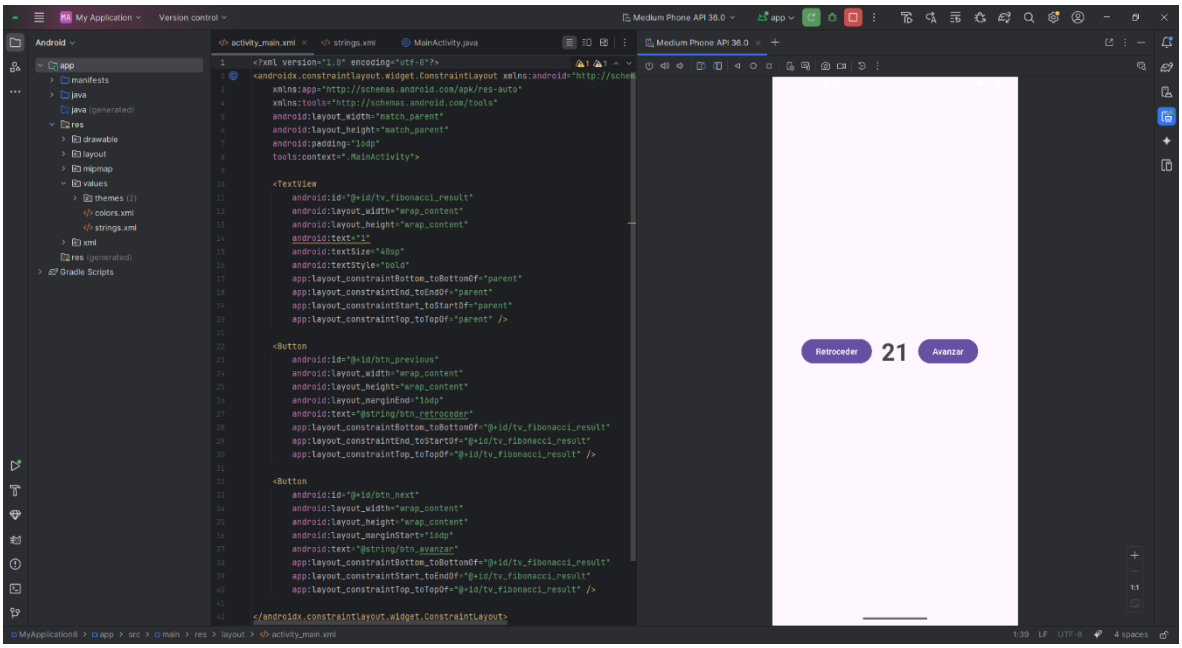
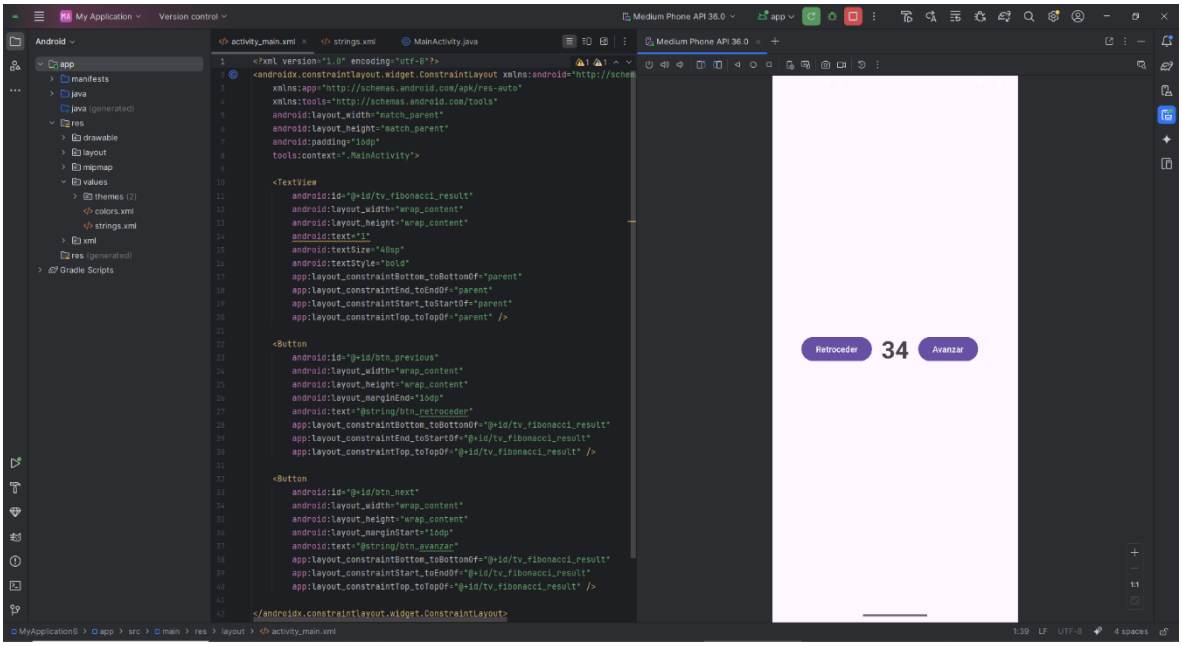
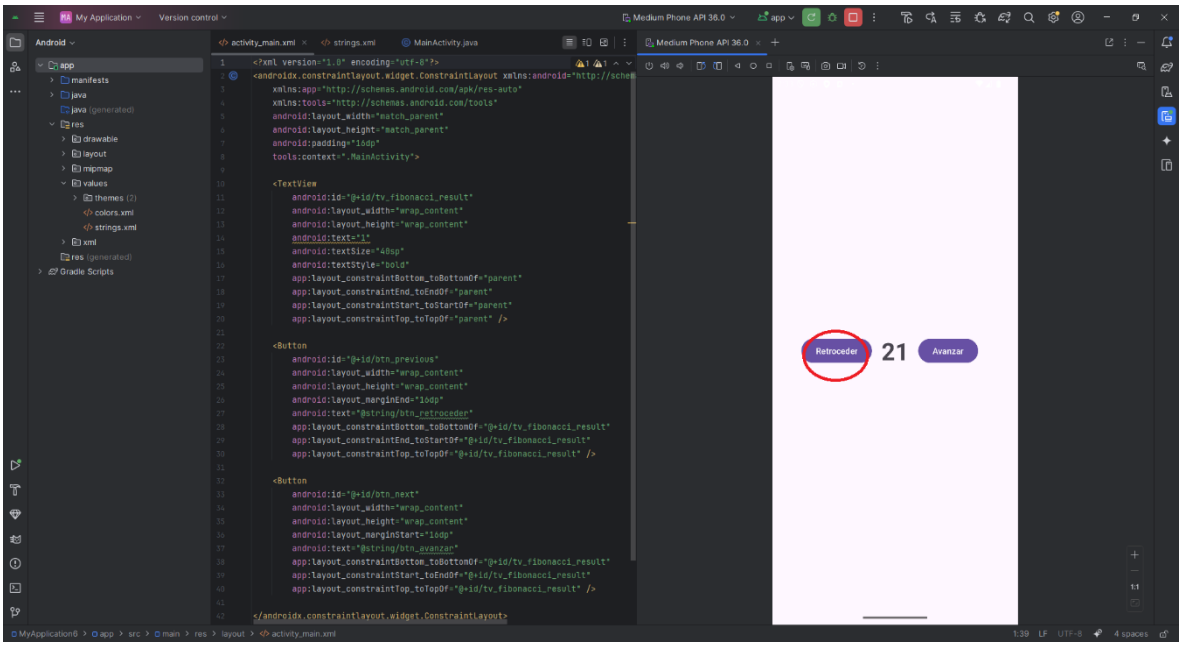




Retroceder.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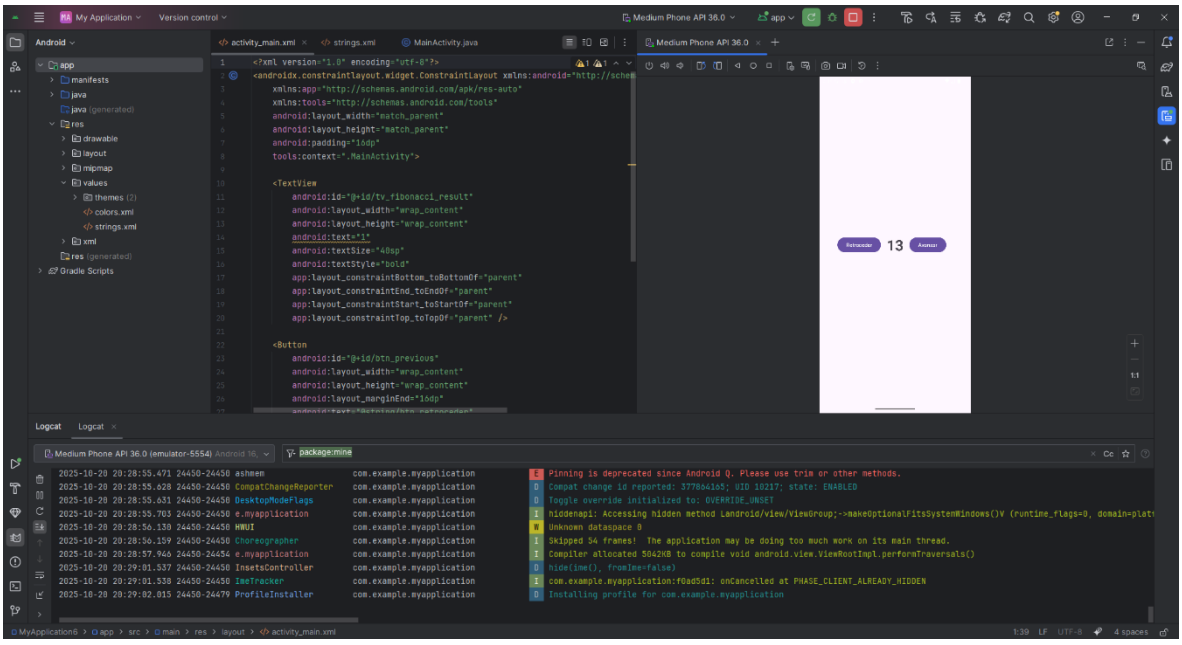
Avanzar


Retroceder
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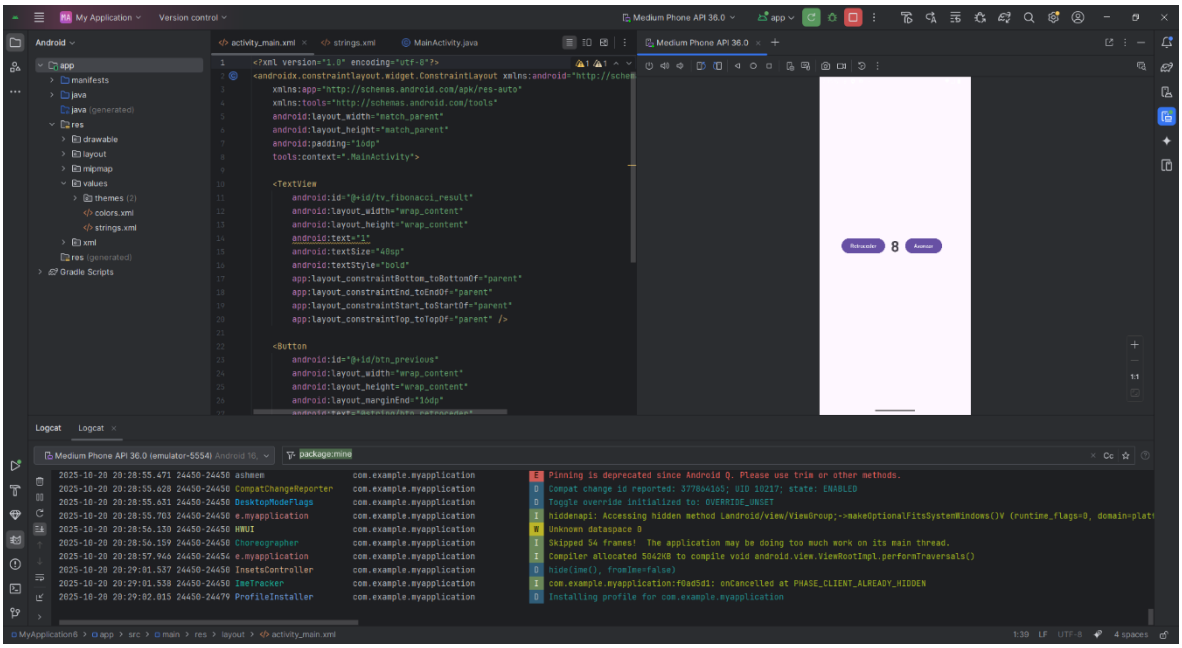
My Application
Version control
Medium Phone API 36.0
app
Android
activity_main.xml
strings.xml
MainActivity.java
app
manifests
java
java (generated)
res
drawable
layout
mipmap
values
themes (2)
colors.xml
strings.xml
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Gradle Scripts
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://sche
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"
android:padding="16dp"
tools:context=".MainActivity">
<TextView
android:id="@+id/tv_fibonacci_result"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="1"
android:textSize="48sp"
android:textStyle="bold"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
<Button
android:id="@+id/btn_previous"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginEnd="16dp"
Medium Phone API 36.0
8
Logcat
Logcat
Medium Phone API 36.0 (emulator-5554) Android 16,
package:mine
2025-10-20 20:28:55.471 24450-24450 ashmem com.example.myapplication E Pinning is deprecated since Android Q. Please use trim or other methods.
2025-10-20 20:28:55.628 24450-24450 CompatChangeReporter com.example.myapplication D Compat change id reported: 377804165; UID 10217; state: ENABLED
2025-10-20 20:28:55.631 24450-24450 DesktopModeFlags com.example.myapplication D Toggle override initialized to: OVERRIDE_UNSET
2025-10-20 20:28:55.703 24450-24450 e.myapplication com.example.myapplication I hiddenapi: Accessing hidden method Landroid/view/ViewGroup;->makeOptionalFitsSystemWindows()V (runtime_flags=0, domain=plat
2025-10-20 20:28:56.130 24450-24450 HWUI com.example.myapplication W Unknown dataspace 0
2025-10-20 20:28:56.159 24450-24450 Choreographer com.example.myapplication I Skipped 54 frames! The application may be doing too much work on its main thread.
2025-10-20 20:28:57.946 24450-24454 e.myapplication com.example.myapplication I Compiler allocated 5042KB to compile void android.view.ViewRootImpl.performTraversals()
2025-10-20 20:29:01.537 24450-24450 InsetsController com.example.myapplication D hide(ime(), fromIme=false)
2025-10-20 20:29:01.538 24450-24450 ImeTracker com.example.myapplication I com.example.myapplication:f0ad5d1: onCancelled at PHASE_CLIENT_ALREADY_HIDDEN
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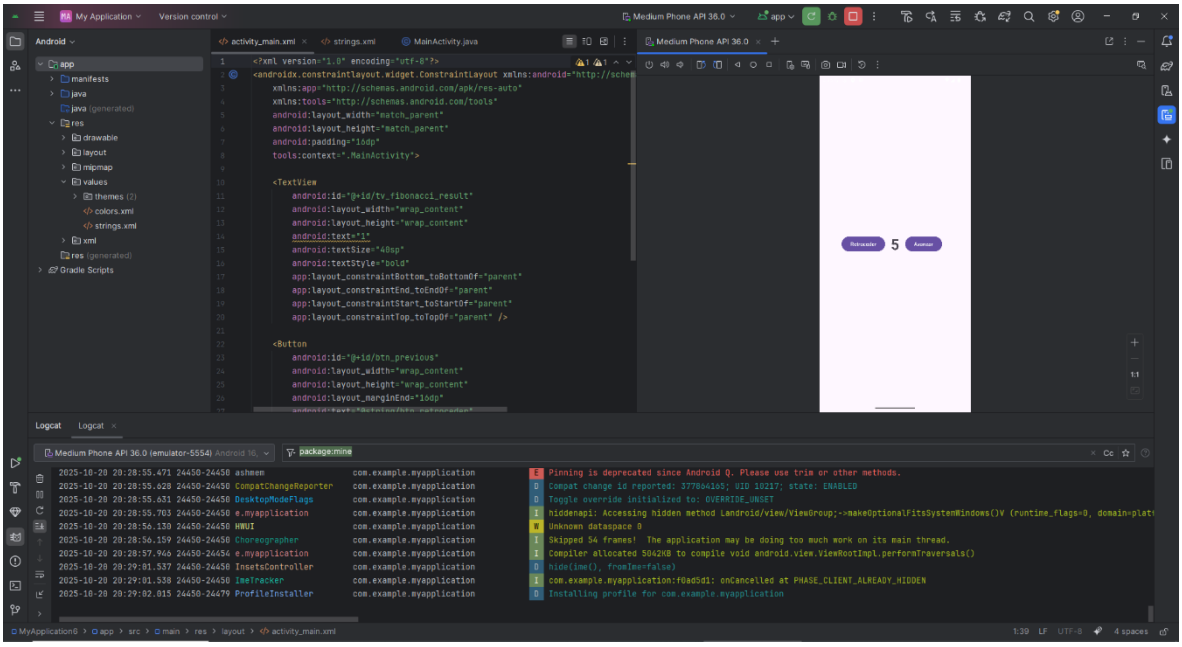
My Application
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MainActivity.java
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app:layout_constraintBottom_toBottomOf="parent"
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app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
<Button
android:id="@+id/btn_previous"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginEnd="16dp"
Medium Phone API 36.0
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Logcat
Logcat
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2025-10-20 20:28:55.703 24450-24450 e.myapplication com.example.myapplication I hiddenapi: Accessing hidden method Landroid/view/ViewGroup;->makeOptionalFitsSystemWindows()V (runtime_flags=0, domain=plat
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2025-10-20 20:28:56.159 24450-24450 Choreographer com.example.myapplication I Skipped 54 frames! The application may be doing too much work on its main thread.
2025-10-20 20:28:57.946 24450-24454 e.myapplication com.example.myapplication I Compiler allocated 5042KB to compile void android.view.ViewRootImpl.performTraversals()
2025-10-20 20:29:01.537 24450-24450 InsetsController com.example.myapplication D hide(ime(), fromIme=false)
2025-10-20 20:29:01.538 24450-24450 ImeTracker com.example.myapplication I com.example.myapplication:f0ad5d1: onCancelled at PHASE_CLIENT_ALREADY_HIDDEN
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MyApplication6 > app > src > main > res > layout > activity_main.xml
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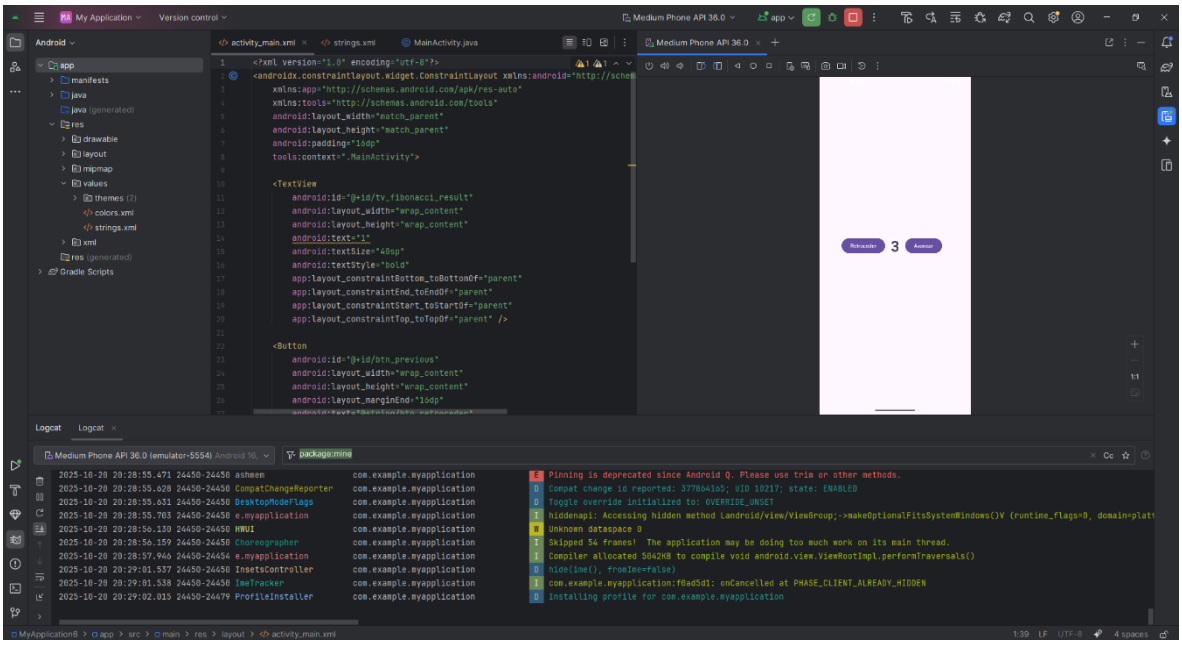
My Application
Version control
Medium Phone API 36.0
app
Android
activity_main.xml
strings.xml
MainActivity.java
Medium Phone API 36.0
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://sche
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xmlns:tools="http://schemas.android.com/tools"
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android:textSize="48sp"
android:textStyle="bold"
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app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
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android:id="@+id/btn_previous"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginEnd="16dp"
Retroceder
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Avanzar
Logcat
Medium Phone API 36.0 (emulator-5554) Android 16,
package:mine
2025-10-20 20:28:55.471 24450-24450 ashmem com.example.myapplication E Pinning is deprecated since Android Q. Please use trim or other methods.
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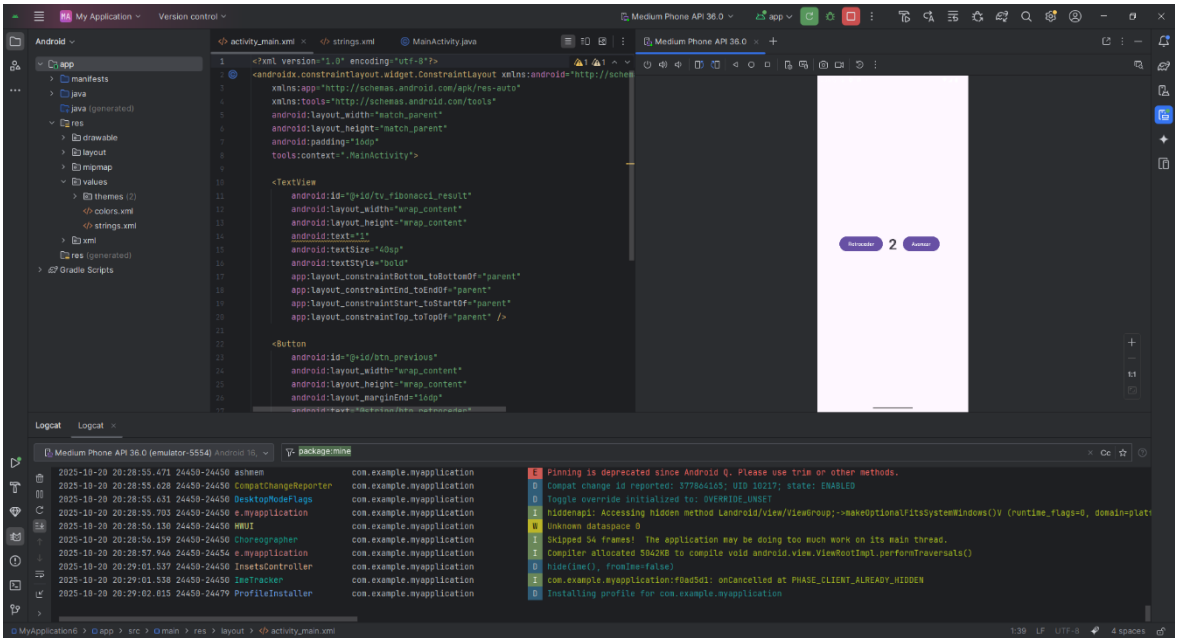
My Application
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app
Android
activity_main.xml
strings.xml
MainActivity.java
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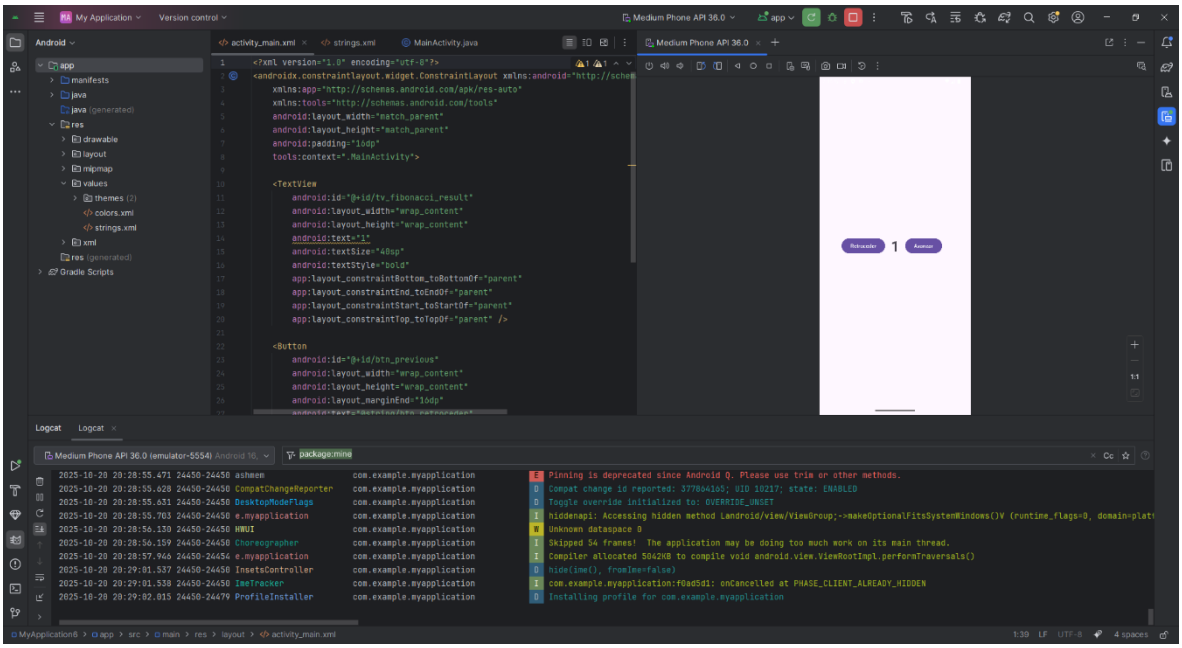
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://sche
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:padding="16dp"
tools:context=".MainActivity">
<TextView
android:id="@+id/tv_fibonacci_result"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="1"
android:textSize="48sp"
android:textStyle="bold"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
<Button
android:id="@+id/btn_previous"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginEnd="16dp"
Retroceder
2
Avanzar
Logcat
Medium Phone API 36.0 (emulator-5554) Android 16,
package:mine
2025-10-20 20:28:55.471 24450-24450 ashmem com.example.myapplication E Pinning is deprecated since Android Q. Please use trim or other methods.
2025-10-20 20:28:55.628 24450-24450 CompatChangeReporter com.example.myapplication D Compat change id reported: 377864165; UID 10217; state: ENABLED
2025-10-20 20:28:55.631 24450-24450 DesktopModeFlags com.example.myapplication D Toggle override initialized to: OVERRIDE_UNSET
2025-10-20 20:28:55.703 24450-24450 e.myapplication com.example.myapplication I hiddenapi: Accessing hidden method Landroid/view/ViewGroup;->makeOptionalFitsSystemWindows()V (runtime_flags=0, domain=platf
2025-10-20 20:28:56.130 24450-24450 HWUI com.example.myapplication W Unknown dataspace 0
2025-10-20 20:28:56.159 24450-24450 Choreographer com.example.myapplication I Skipped 54 frames! The application may be doing too much work on its main thread.
2025-10-20 20:28:57.946 24450-24454 e.myapplication com.example.myapplication I Compiler allocated 5042KB to compile void android.view.ViewRootImpl.performTraversals()
2025-10-20 20:29:01.537 24450-24450 InsetsController com.example.myapplication D hide(ime(), fromIme=false)
2025-10-20 20:29:01.538 24450-24450 ImeTracker com.example.myapplication I com.example.myapplication:f0ad5d1: onCancelled at PHASE_CLIENT_ALREADY_HIDDEN
2025-10-20 20:29:02.015 24450-24479 ProfileInstaller com.example.myapplication D Installing profile for com.example.myapplication


My Application
Version control
Medium Phone API 36.0
app
Android
app
manifests
java
java (generated)
res
drawable
layout
mipmap
values
themes (2)
colors.xml
strings.xml
xml
res (generated)
Gradle Scripts
activity_main.xml
strings.xml
MainActivity.java
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://sche
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
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app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
<Button
android:id="@+id/btn_previous"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginEnd="16dp"
Medium Phone API 36.0
1
1:1
Logcat
Logcat
Medium Phone API 36.0 (emulator-5554) Android 16,
package:mine
2025-10-20 20:28:55.471 24450-24450 ashmem com.example.myapplication E Pinning is deprecated since Android Q. Please use trim or other methods.
2025-10-20 20:28:55.028 24450-24450 CompatChangeReporter com.example.myapplication D Compat change id reported: 377864165; UID 10217; state: ENABLED
2025-10-20 20:28:55.031 24450-24450 DesktopModeFlags com.example.myapplication D Toggle override initialized to: OVERRIDE_UNSET
2025-10-20 20:28:55.703 24450-24450 e.myapplication com.example.myapplication I hiddenapi: Accessing hidden method Landroid/view/ViewGroup;->makeOptionalFitsSystemWindows()V (runtime_flags=0, domain=plat
2025-10-20 20:28:56.130 24450-24450 HWUI com.example.myapplication W Unknown dataspace 0
2025-10-20 20:28:56.159 24450-24450 Choreographer com.example.myapplication I Skipped 54 frames! The application may be doing too much work on its main thread.
2025-10-20 20:28:57.946 24450-24454 e.myapplication com.example.myapplication I Compiler allocated 5042KB to compile void android.view.ViewRootImpl.performTraversals()
2025-10-20 20:29:01.537 24450-24450 InsetsController com.example.myapplication D hide(ime(), fromIme=false)
2025-10-20 20:29:01.538 24450-24450 ImeTracker com.example.myapplication I com.example.myapplication:f0ad5d1: onCancelled at PHASE_CLIENT_ALREADY_HIDDEN
2025-10-20 20:29:02.015 24450-24479 ProfileInstaller com.example.myapplication D Installing profile for com.example.myapplication
MyApplication6 > app > src > main > res > layout > activity_main.xml
1:39
LF
UTF-8
4 spaces