

Sare zerbitzuak eta aplikazioak

4. Gailu mugikorrak

Merkatuaren garapena

Aukera ezberdinak

iPhone, ~~Symbian~~, Windows Mobile, Tizen,
Android, ~~Bada~~

Aukera eramangarri bat: web teknologiak
HTML5 + Javascript + CSS

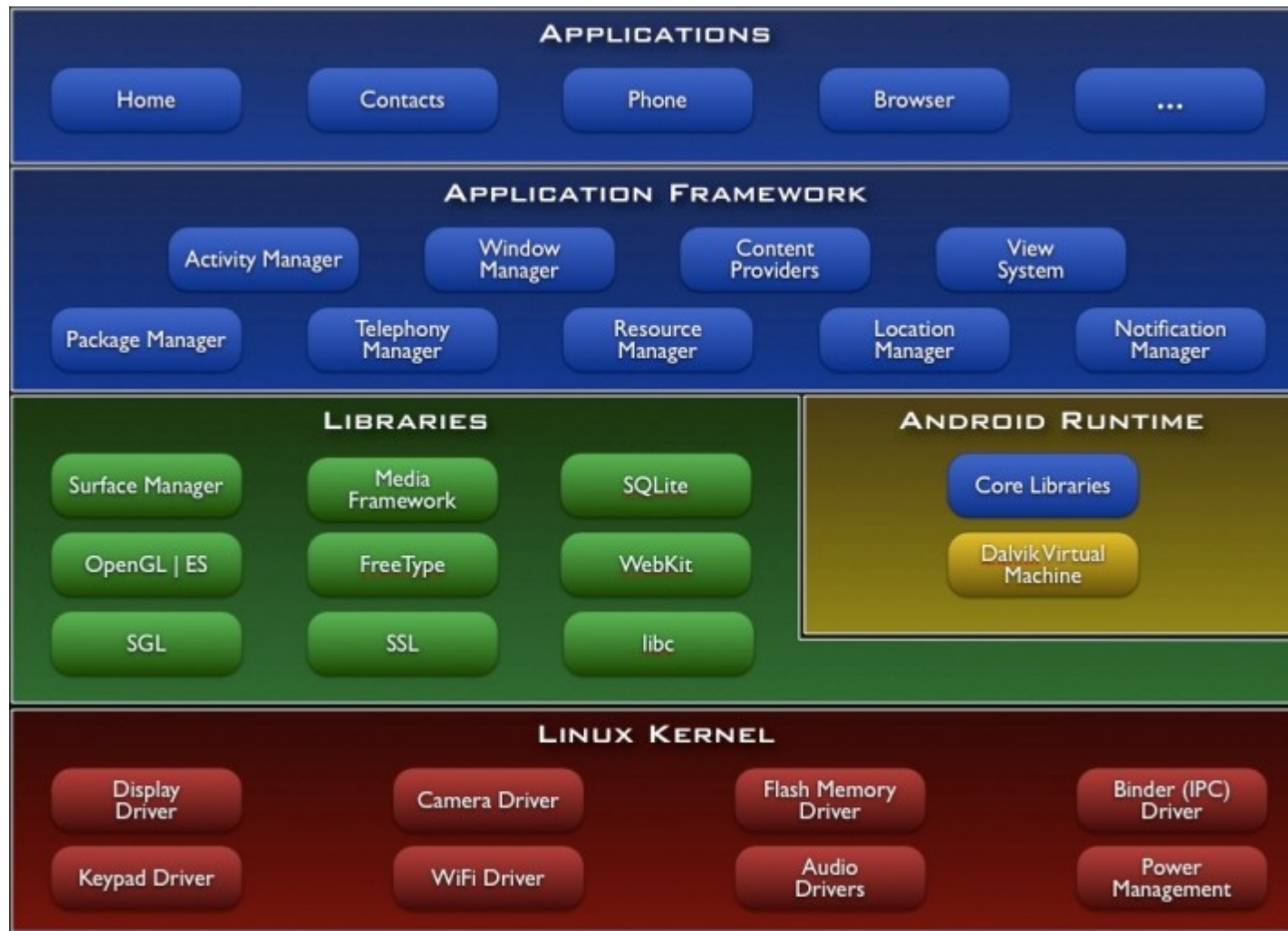


אנדרואיד

Ezaugarriak

- **Gailuak:** smartphone, tablet, PC...
- **Java:** Dalvik alegiazko makina optimizatua
- **Web:** WebKit
- **Grafiko aurreratuak:** 2D eta 3D liburutegiak (OpenGL)
- **Biltegitratzea:** SQLite
- **Multimedia:** Formatu gehienak
- **Konektibitatea:** GSM, UMTS, 3G, Wifi, WiMAX, Bluetooth...
- **Hw:** Kamara, GPS, iparrorratza, azelerometroa...
- **Garapen ingurunea:** Emuladorea, SDK, Android Studio...

Arkitektura



Sistemaren osagaiak

- ***Activity***
- ***View***
- ***Service***
- ***Content Provider***
- ***Intents***
- ***Broadcast Receiver***

Jarduerak (*Activities*)

- Aplikazio baten zereginetako bat deskribatzen du
- Aplikazio bat jarduera bat edo gehiagoz osatua dago
- Jarduera nagusi bat egoten da
- *Activity* klasearen azpiklaseak dira
- Normalki pantaila osoa hartzen duen diseinu (layout) bat izaten dute lotuta: *Linear*, *Grid*, *Tab*, ...
- *Layout* bat *View* elementuez osatzen da: botoiak, zerrendak, aukera-botoiak, web view-ak...

Zerbitzuak (*Services*)

- 2. planoko atazak
- Ez dute erabiltzaile interfazerik
- *Service* klasearen instantziak
- Adibideak
 - Jarduera batek behar dituen datuak saretik jaitsi
 - Musika

Broadcast jasotzaileak (*Broadcast receivers*)

- *Broadcast* seinaleak jasotzen dituzten osagaiak
- Ohiko seinaleak: bateria baxua, hizkuntza aldaketa...
- Sistema edo aplikazio batek bidal ditzake
- *BroadcastReceiver* klasearen instantziak
- Erabiltzailearen interfazerik izan ez arren...
 - Jarduera bat martxan jarri dezakete
 - Pantailan ohar bat erakutsi dezakete
 - Soinu bat erreproduzitu dezakete
 - Gailua bibrarazi dezakete

Eduki hornitzaileak (*Content providers*)

- Aplikazioen arteko informazio elkartrukea ahalbidetzen dute
 - Adibidez: kontaktuak...
- Aukerak: Fitxategi sistema, SQLite...
- *ContentProvider* klasearen instantziak
- *ContentResolver* klasearen bitartez atzituak

Intent: Funtzionalitate eskaera

- Funtzionalitate bat eskatzeko mezu asinkronoa
 - Jarduera
 - Zerbitzua
 - Broadcast jasotzailea
- *Intent* klaseko instantziak

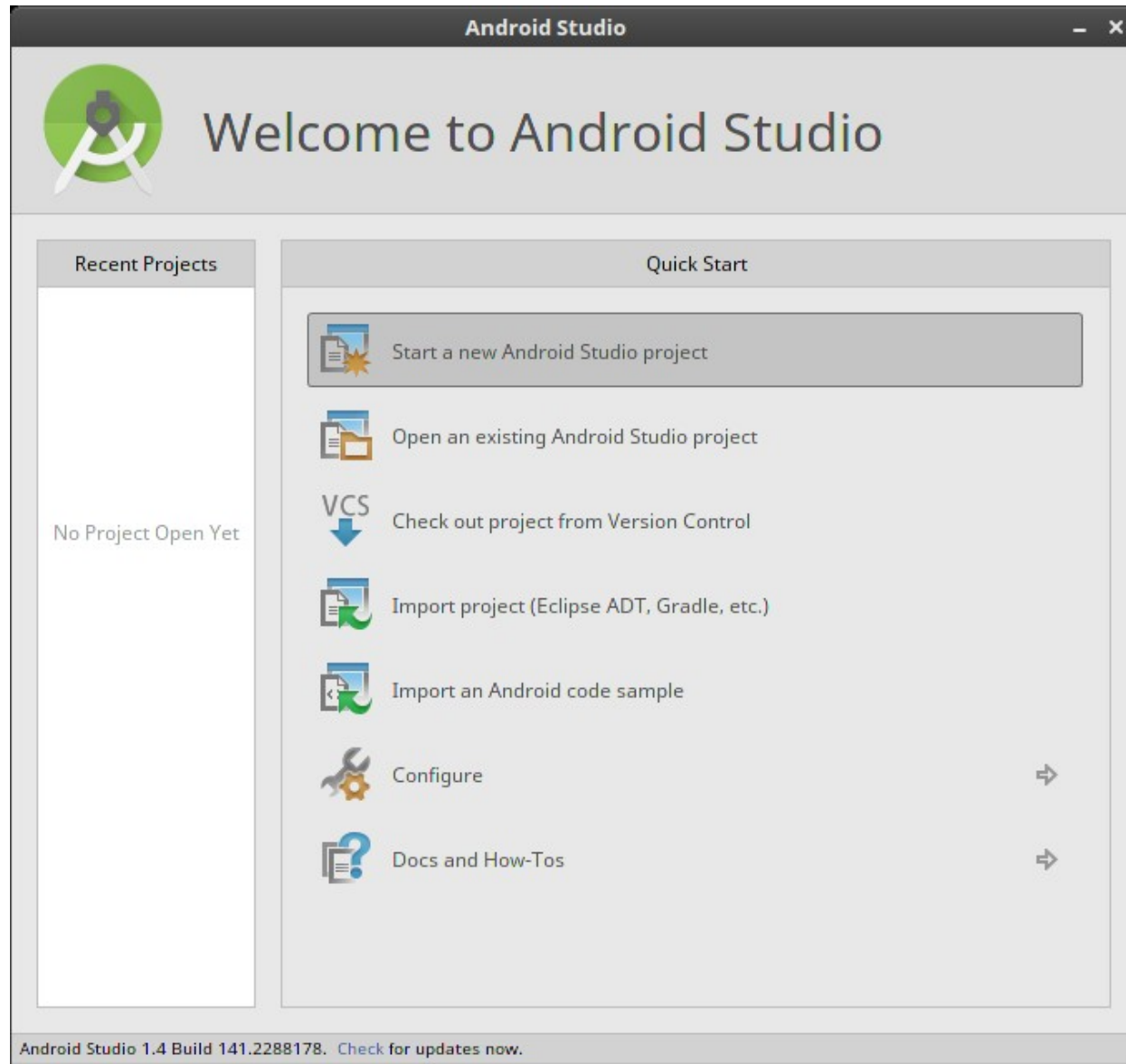
AndroidManifest.xml

- Aplikazio baten deskribapena
- Erabiltzen dituen osagai guztien erazagupena:
 - Jarduerak
 - Zerbitzuak
 - Broadcast jasotzaileak
 - Eduki hornitzaileak
- Baimen eta liburutegien zehaztapena

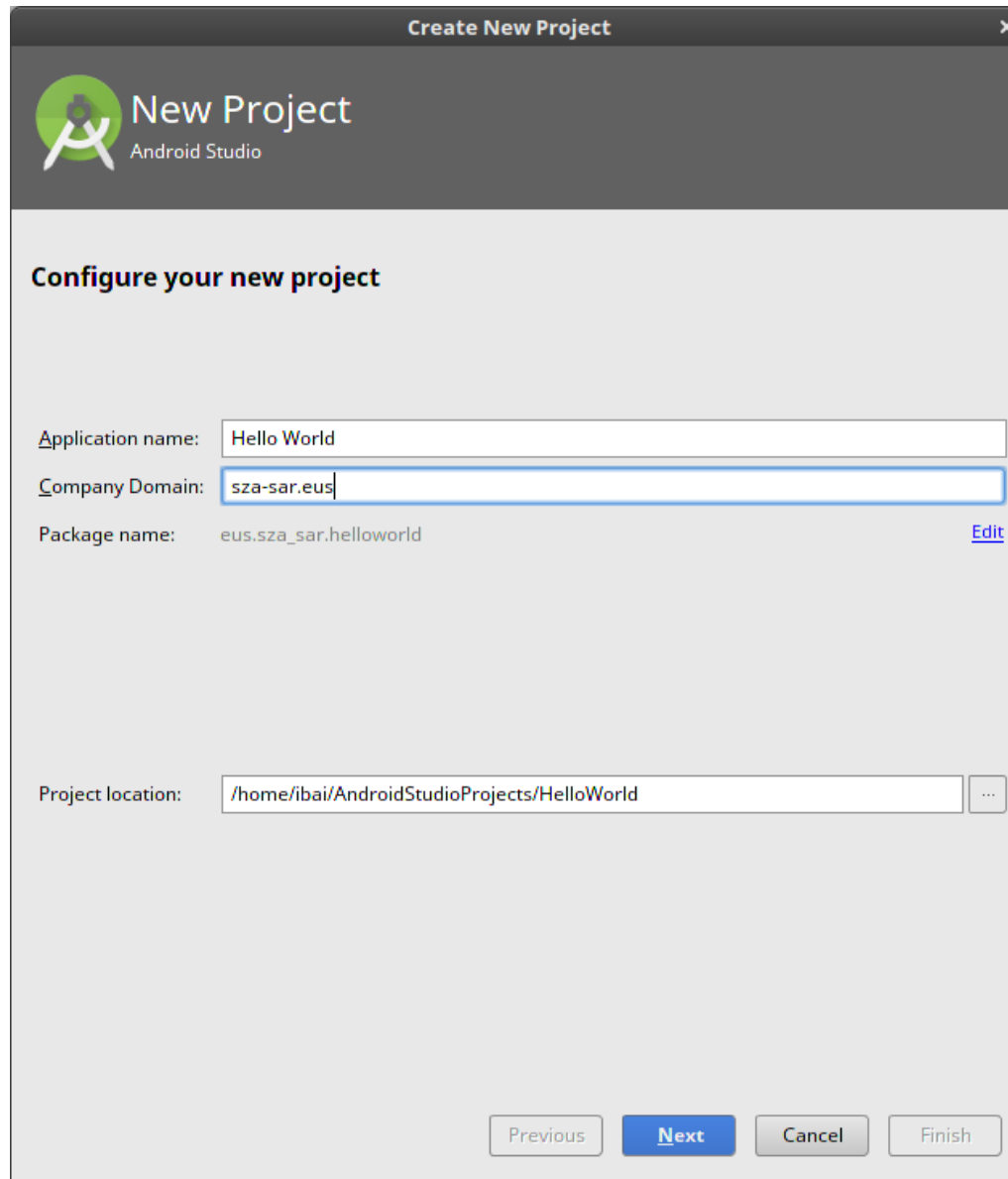
Garapen ingurunea

- *JDK*
- Android Studio
- Android SDK
 - SDK Manager
 - Android Virtual Device (AVD) Manager
 - Android Debug Bridge (ADB)


Android projektu bat sortu



Android proiektu bat sortu



Create New Project

 **New Project**
Android Studio

Configure your new project

Application name:


Company Domain:

Package name: eus.sza_sar.helloworld [Edit](#)

Project location:

Android projektu bat sortu

Create New Project

Target Android Devices

Select the form factors your app will run on
Different platforms may require separate SDKs

☒ Phone and Tablet

Minimum SDK

API 15: Android 4.0.3 (IceCreamSandwich)

Lower API levels target more devices, but have fewer features available. By targeting API 15 and later, your app will run on approximately **94.0%** of the devices that are active on the Google Play Store.
[Help me choose](#)

☐ Wear

Minimum SDK

API 21: Android 5.0 (Lollipop)

☐ TV

Minimum SDK

API 21: Android 5.0 (Lollipop)

☐ Android Auto

☐ Glass (Not Installed) [Download](#)

Minimum SDK

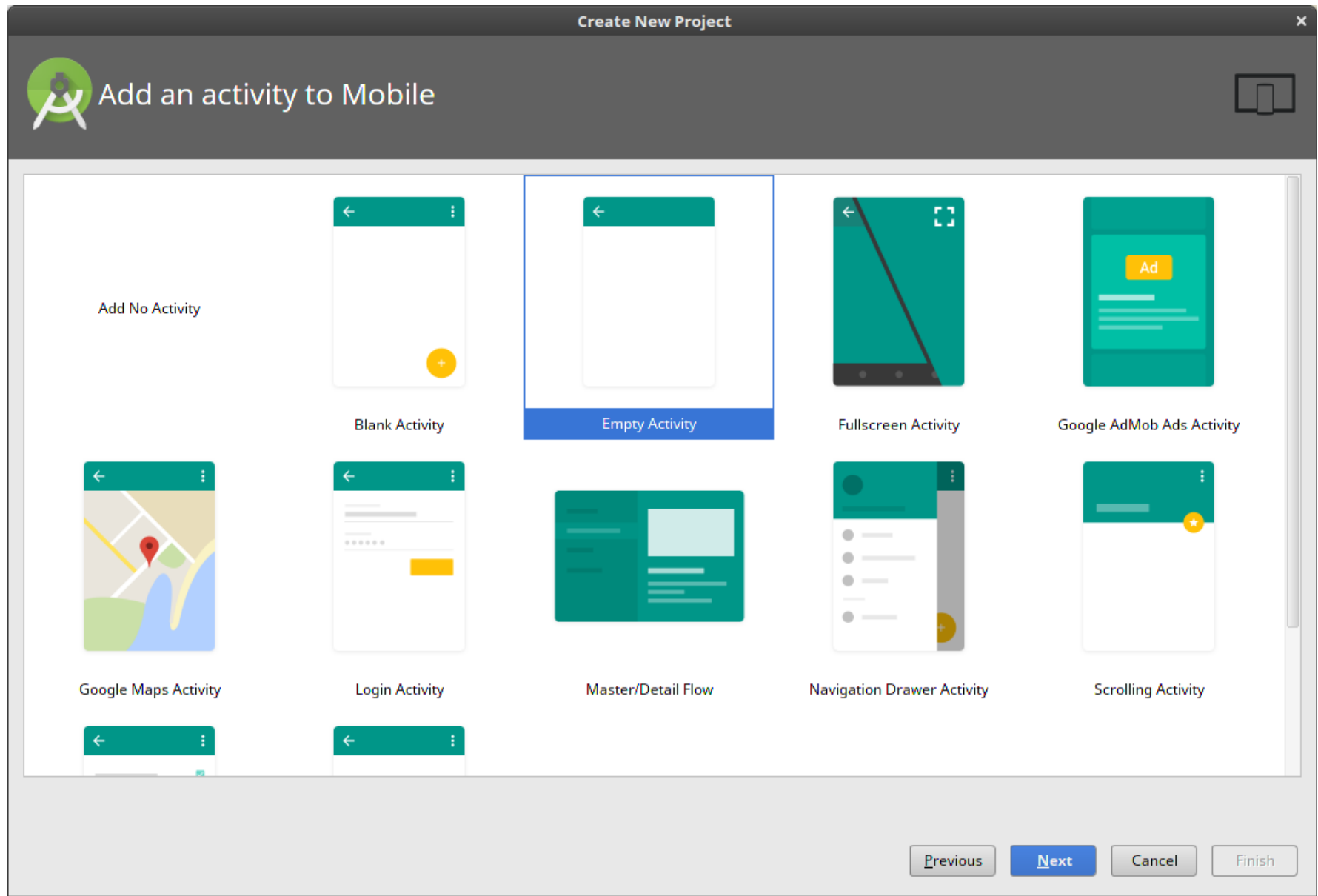
Previous

Next

Cancel


Finish


Android projektu bat sortu

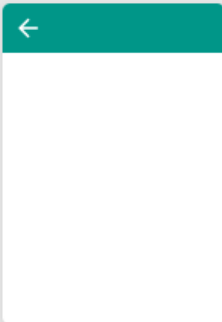


Android projektu bat sortu

Create New Project

Customize the Activity





Empty Activity

Creates a new empty activity

Activity Name:

☒ Generate Layout File

Layout Name:

The name of the activity class to create

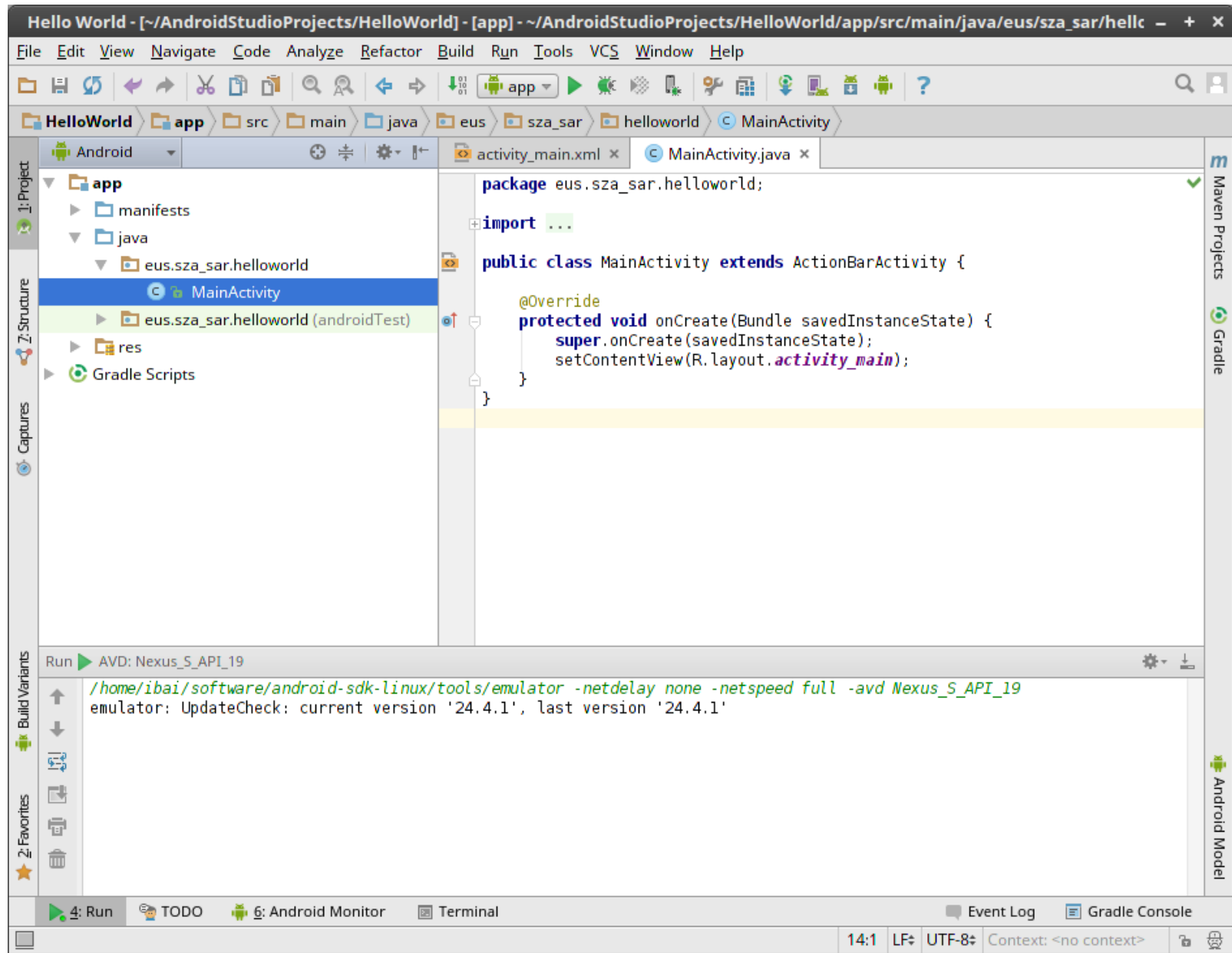
Previous

Next

Cancel

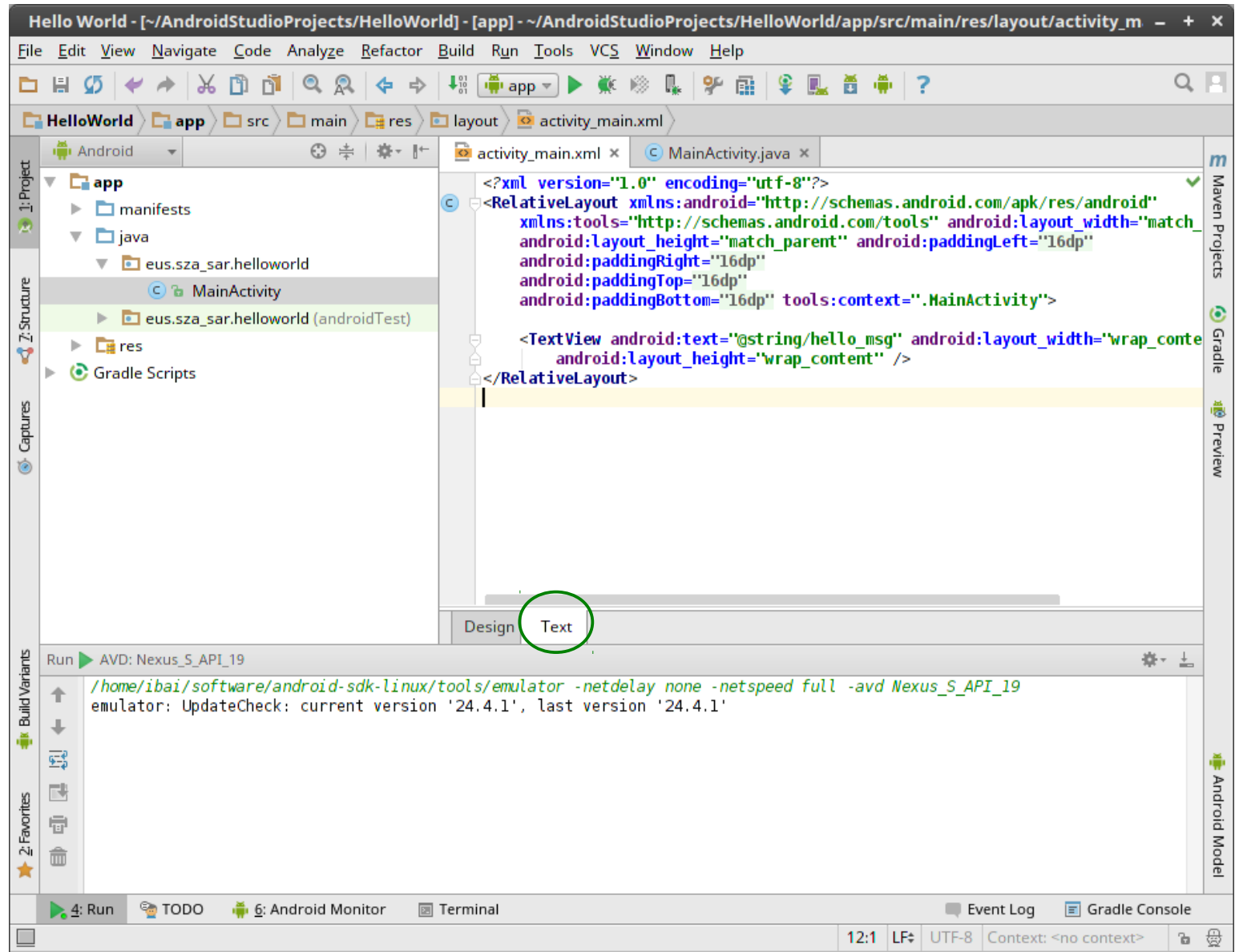
Finish

Osagai nagusiak: Jarduera



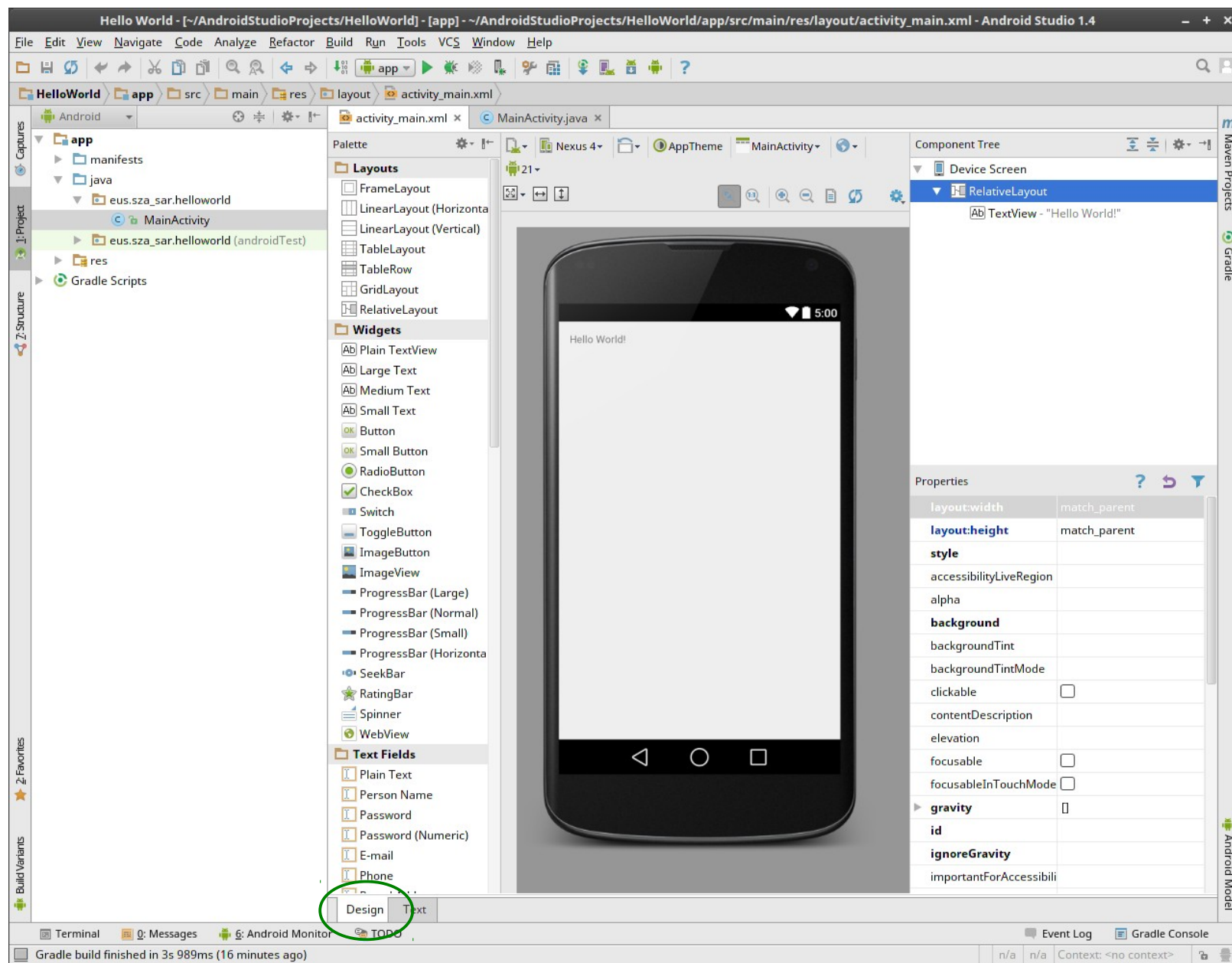
Osagai nagusiak: *Layout*

Testu modua



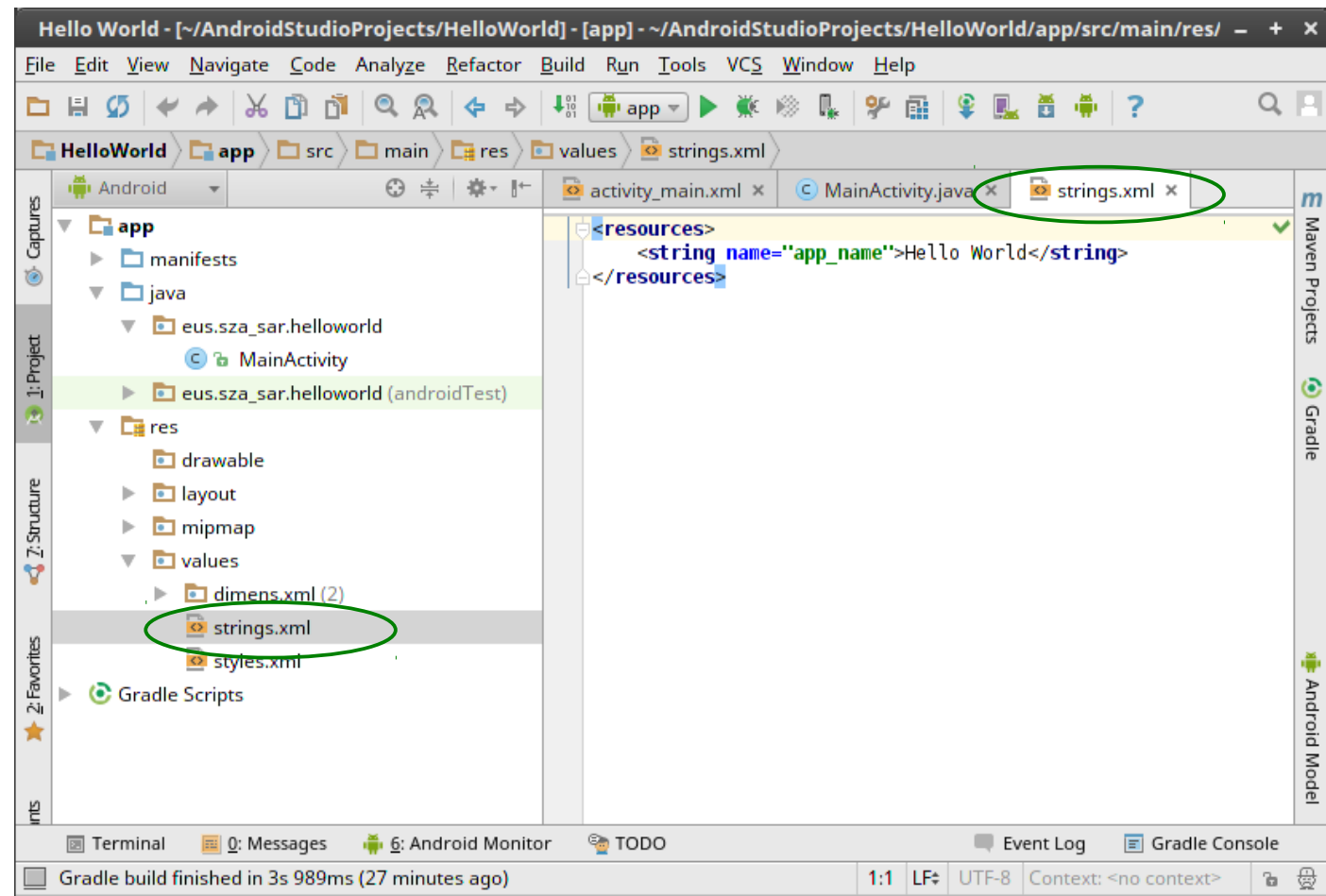
Osagai nagusiak: *Layout*

Modu
grafikoa



Osagai nagusiak: balioak

- Baliabideak:
 - karaktere kateak
 - koloreak
 - *menuak*
 - *estiloak*
 - ...



Osagai nagusiak: balioak

- Gehitu:

```
<string name="hello_msg">Hello World!</string>
```

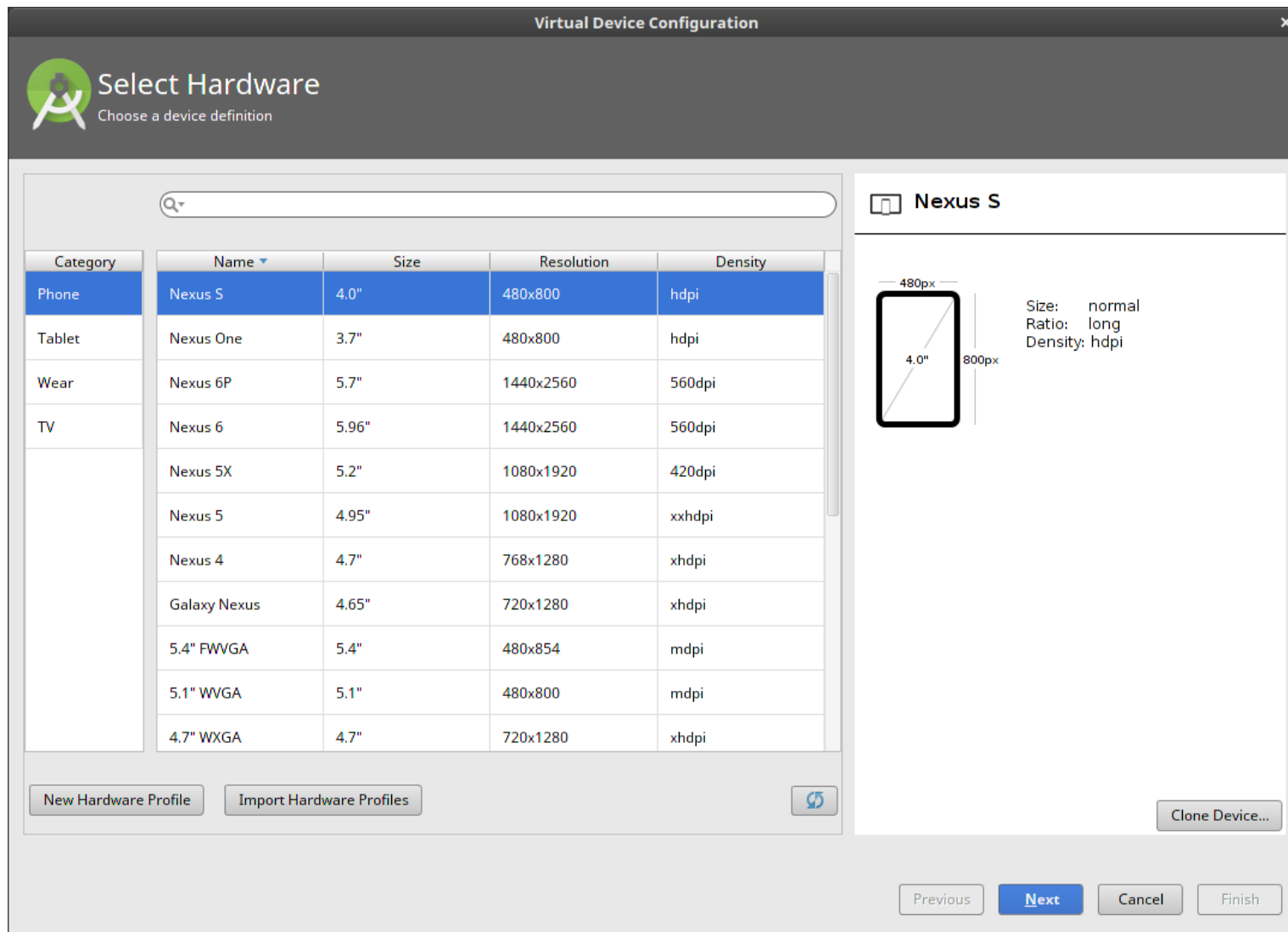
- Aldatu layout:

```
<TextView android:text="Hello World!" ...
```

```
<TextView android:text="@string/hello_msg" ...
```


AVD bat sortu

- Tools | Android | AVD Manager → Create Virtual Device...



AVD bat sortu

Virtual Device Configuration




System Image


Select a system image

Release Name	API Level	ABI	Target
KitKat	19	armeabi-v7a	Android 4.4
KitKat	19	x86	Android 4.4
KitKat	19	armeabi-v7a	Android 4.4
KitKat	19	x86	Android 4.4

☐ Show downloadable system images



KitKat



API Level

19

Android

4.4

Android Open Source Project

System Image

armeabi-v7a

Recommendation

Consider using an x86 system image for better emulation performance.

Consider using a system image with Google APIs to enable testing with Google Play Services.

Questions on API level?

See the [API level distribution chart](#)

Previous


Next

Cancel

Finish


AVD bat sortu

Virtual Device Configuration

 **Android Virtual Device (AVD)**
Verify Configuration


AVD Name

Nexus S API 19

 Nexus S

4.0" 480x800 hdpi

Change...



 KitKat

Android 4.4 armeabi-v7a

Change...

Startup size and orientation

Scale: Auto

Orientation:  Portrait  Landscape

Emulated Performance

☒ Use Host GPU

☐ Store a snapshot for faster startup

You can either use Host GPU or Snapshots

Device Frame

☒ Enable Device Frame

AVD Name

The name of this AVD.

Recommendation

Consider using an x86 system image for better emulation performance.
Consider using a system image with Google APIs to enable testing with Google Play Services.

Show Advanced Settings

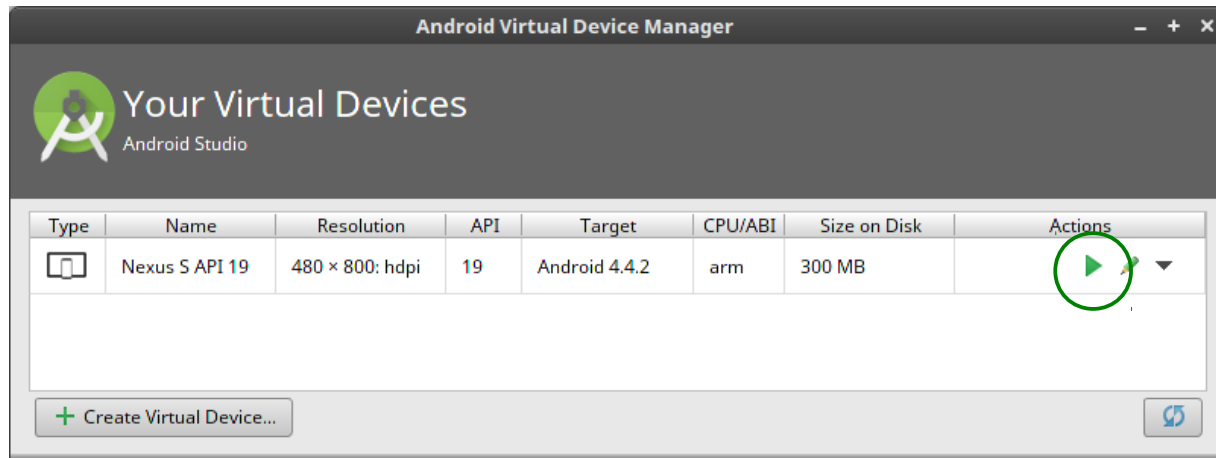
Previous

Next

Cancel

Finish

Emuladorea

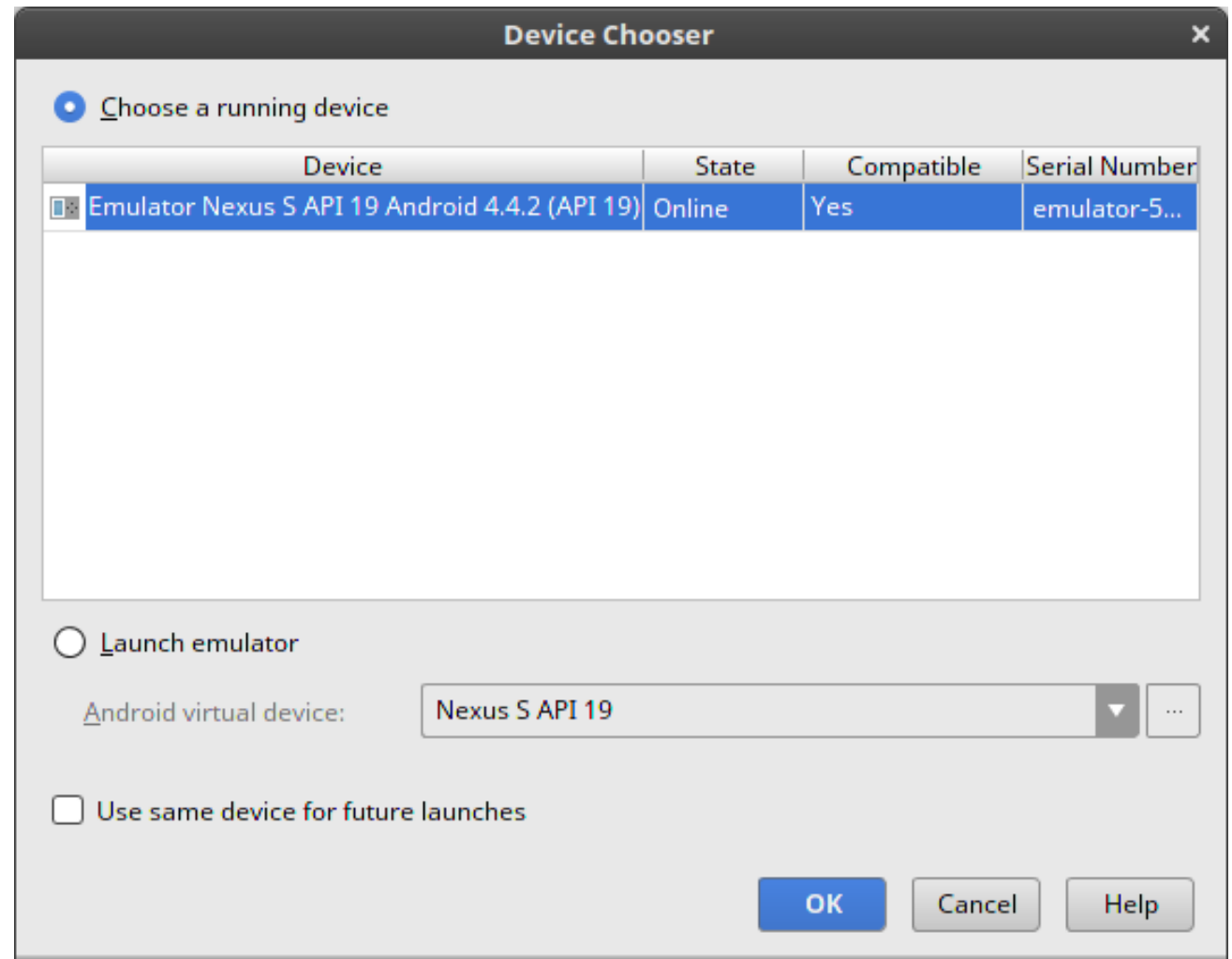


“Hello World!” abiarazi

- Run



- AVD aukeratu
- Instalatu eta abiarazten da



“Hello World!” instalatua

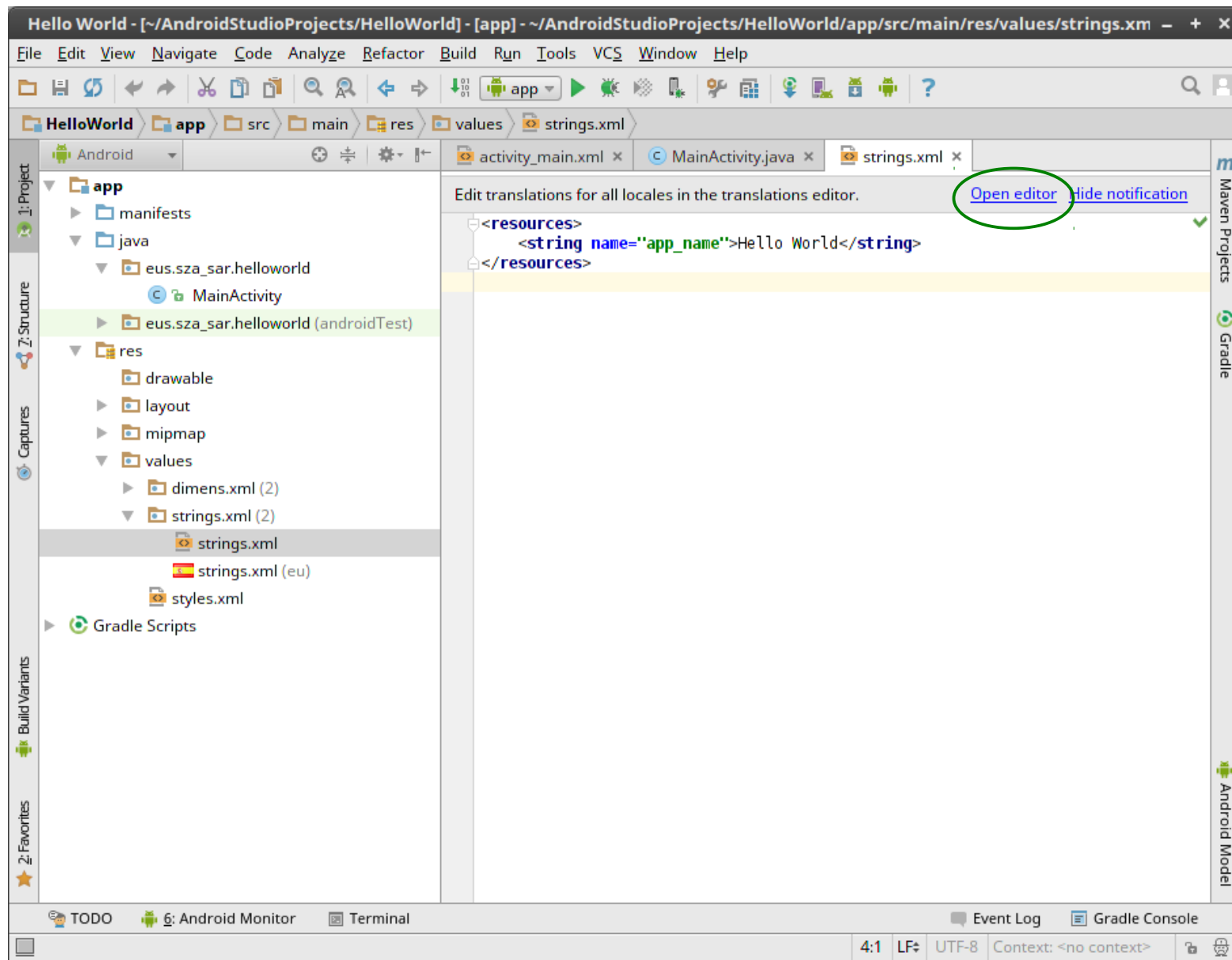


“Hello World!” instalatua

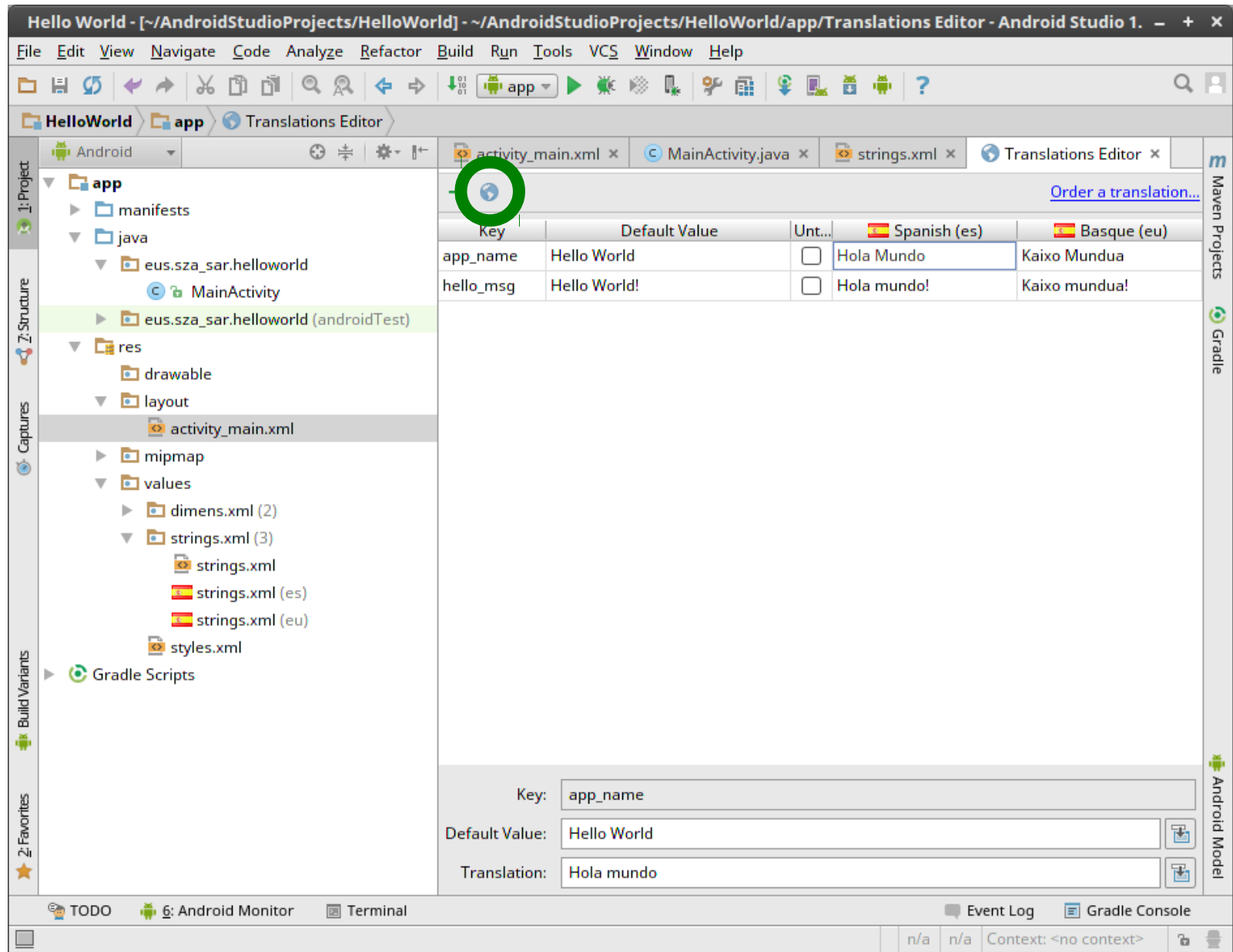
- Aplikazio menua



Hizkuntza anitzetarako garapena



Hizkuntza anitzetarako garapena

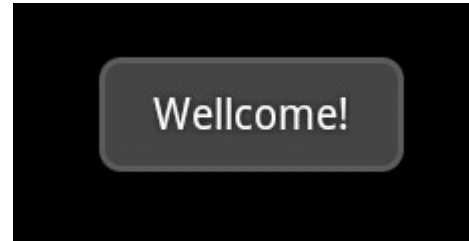


AVD: Hizkuntza konfiguratu

- Hizkuntza aukeratu:
 - Settings → Language & Input → Language
- Hizkuntza berri bat gehitu (euskara):
 - Custom Locale → Add New... → eu_ES

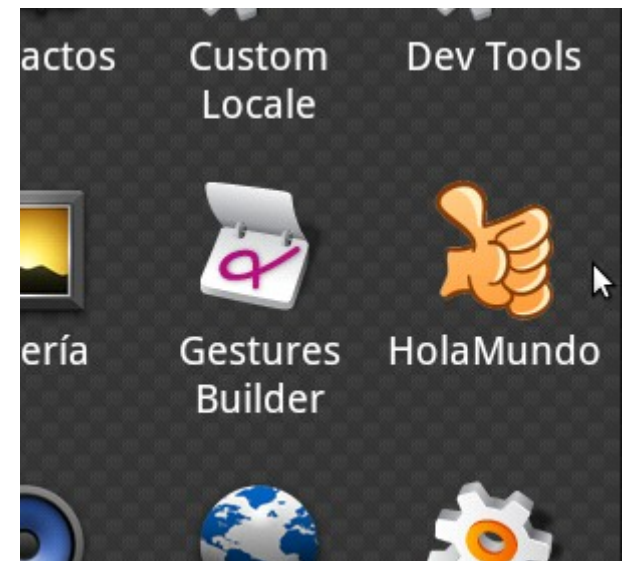
Android garapena: hainbat ideia

- `Toast.makeText`



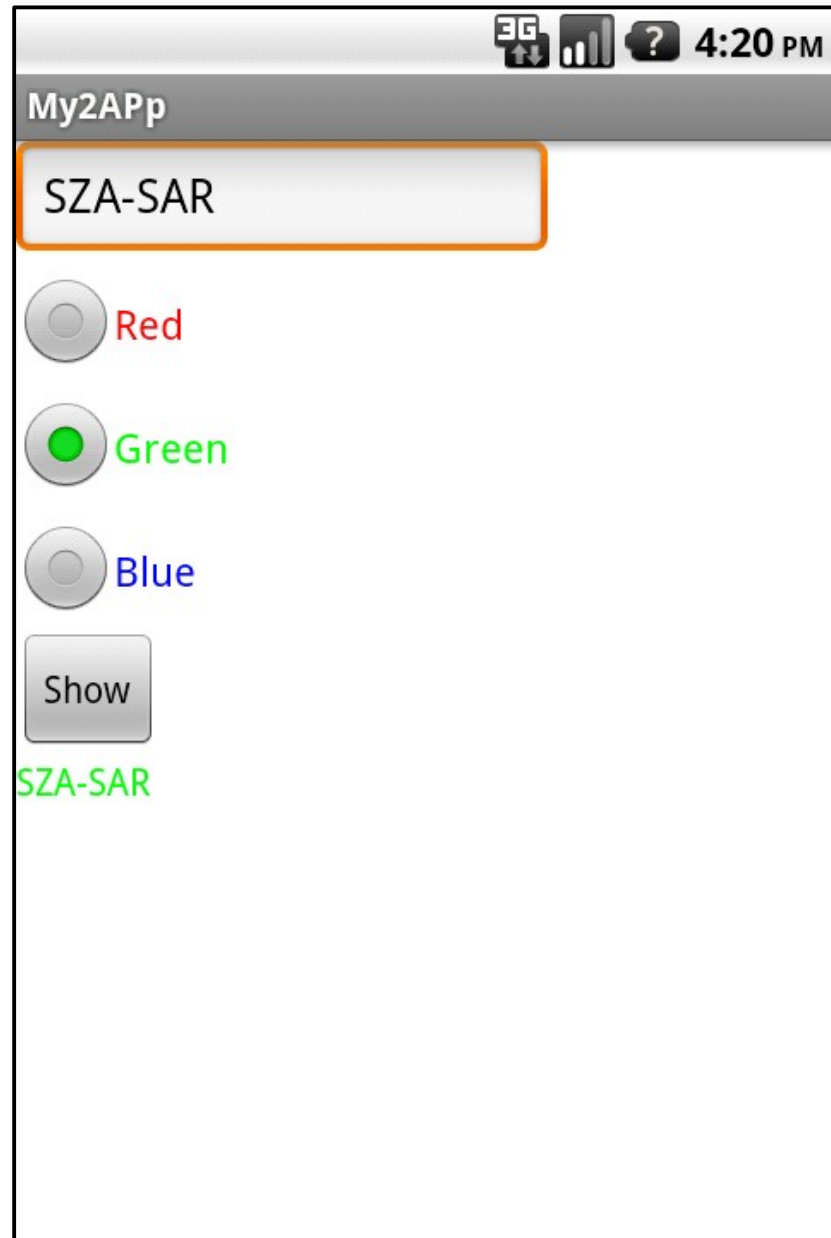
- Ikonoa aldatu

– File → New → Image Asset



Android garapena: interfaze grafikoa

My2App



Android garapena: interfaze grafikoa

1. Aldatu layouta: Relative layout → Linear layout
2. Gehitu identifikadoreak kolore eta karaktere kateetarako

• $3 \text{ cl_}^* + 4 \text{ st_}^*$

3. Gehitu osagai grafikoak diseinuari

- EditText
- RadioGroup
 - 3 RadioButton
- Button
- TextView

Android garapena: interfaze grafikoa

4. Aldatu osagaien propietateak

- “Edit Id...” (ed_*, rd_*, bt_*, tx_*. . .)

android:id="@+id/rd_red"

- “Edit Text...”

android:text="@string/st_red"

- “TextColor...”

android:textColor="@color/cl_red"

Android garapena: interfaze grafikoa

5. Maneiatzaileak (*handler*) lotu

- “OnClick...”

android:onClick="myClickHandler"

6. Funtzionalitatea gehitu: “My2AppActivity.java”

```
public class My2AppActivity extends Activity {  
    EditText text;  
    TextView result;  
  
    /** Called when the activity is first created. */  
    @Override  
    public void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.main);  
  
        text = (EditText)findViewById(R.id.ed_text);  
        result = (TextView)findViewById(R.id.tx_result);  
    }  
}
```

Android garapena: interfaze grafikoa

6. Funtzionalitatea gehitu: "My2AppActivity.java"

```
public void myClickHandler(View view){
    RadioGroup rg_colors = (RadioGroup) findViewById(R.id.rg_colors);
    switch(view.getId()){
        case R.id.bt_show:
            // Kolorea ezarri
            switch(rg_colors.getCheckedRadioButtonId()){
                case R.id.rd_red:
                    result.setTextColor(
                        getResources().getColor(R.color.cl_red)); break;
                case R.id.rd_green:
                    result.setTextColor(
                        getResources().getColor(R.color.cl_green)); break;
                case R.id.rd_blue:
                    result.setTextColor(
                        getResources().getColor(R.color.cl_blue)); break;
            }
            // Testua idatzi
            result.setText(text.getText().toString());
            break;
    }
}
```