

Einführung in die Medieninformatik
Wintersemester 2018/19

Übung 3: Android

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Rückblick & Fragen

Java & Processing Workshop

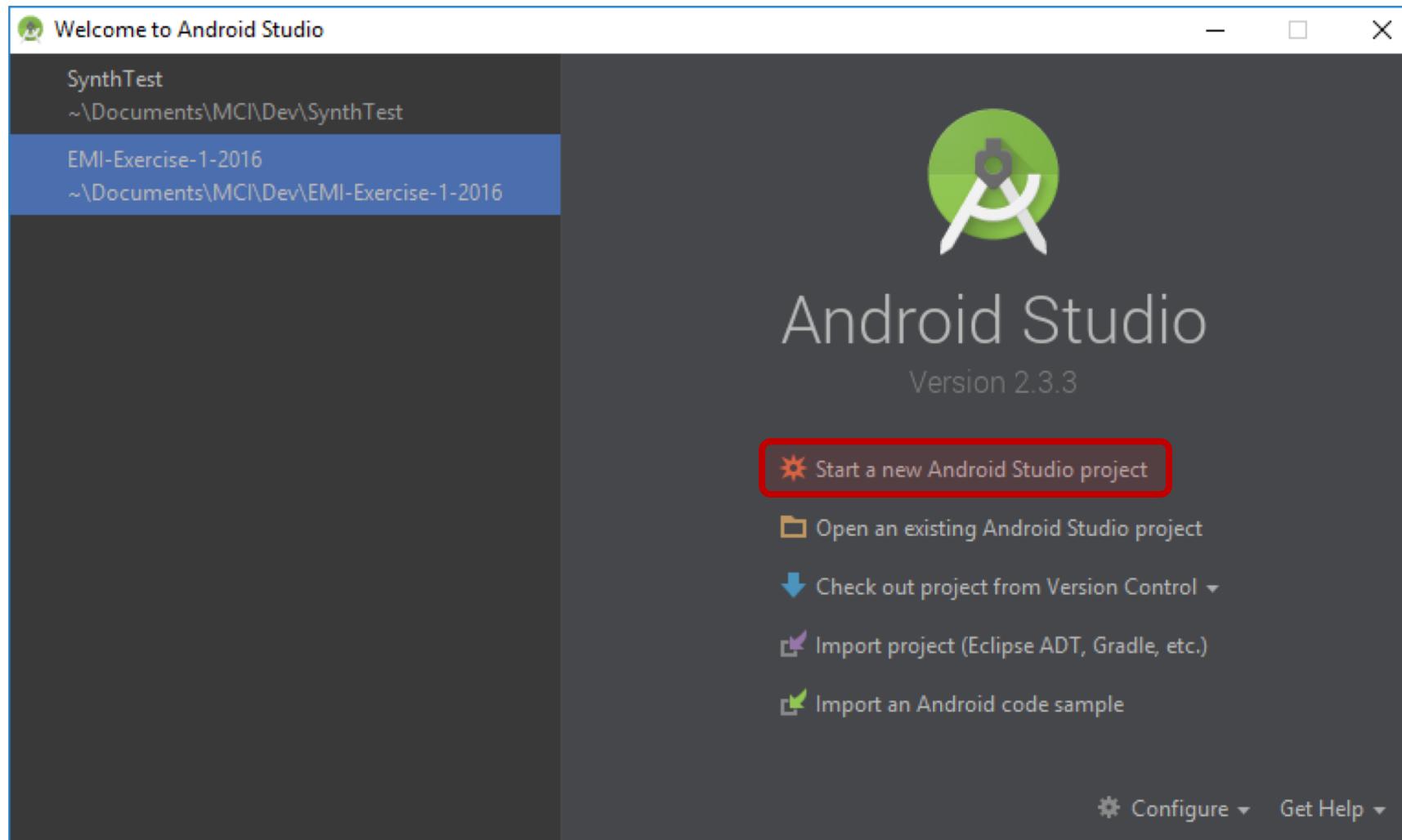
1. Processing & Java
2. Befehle und Dokumentation lesen
3. Variablen
4. Bedingte Anweisungen
5. Schleifen
6. Methoden und Funktionen
7. Klassen und Objekte
8. Arrays
9. Bibliotheken

Übung 3 - Android

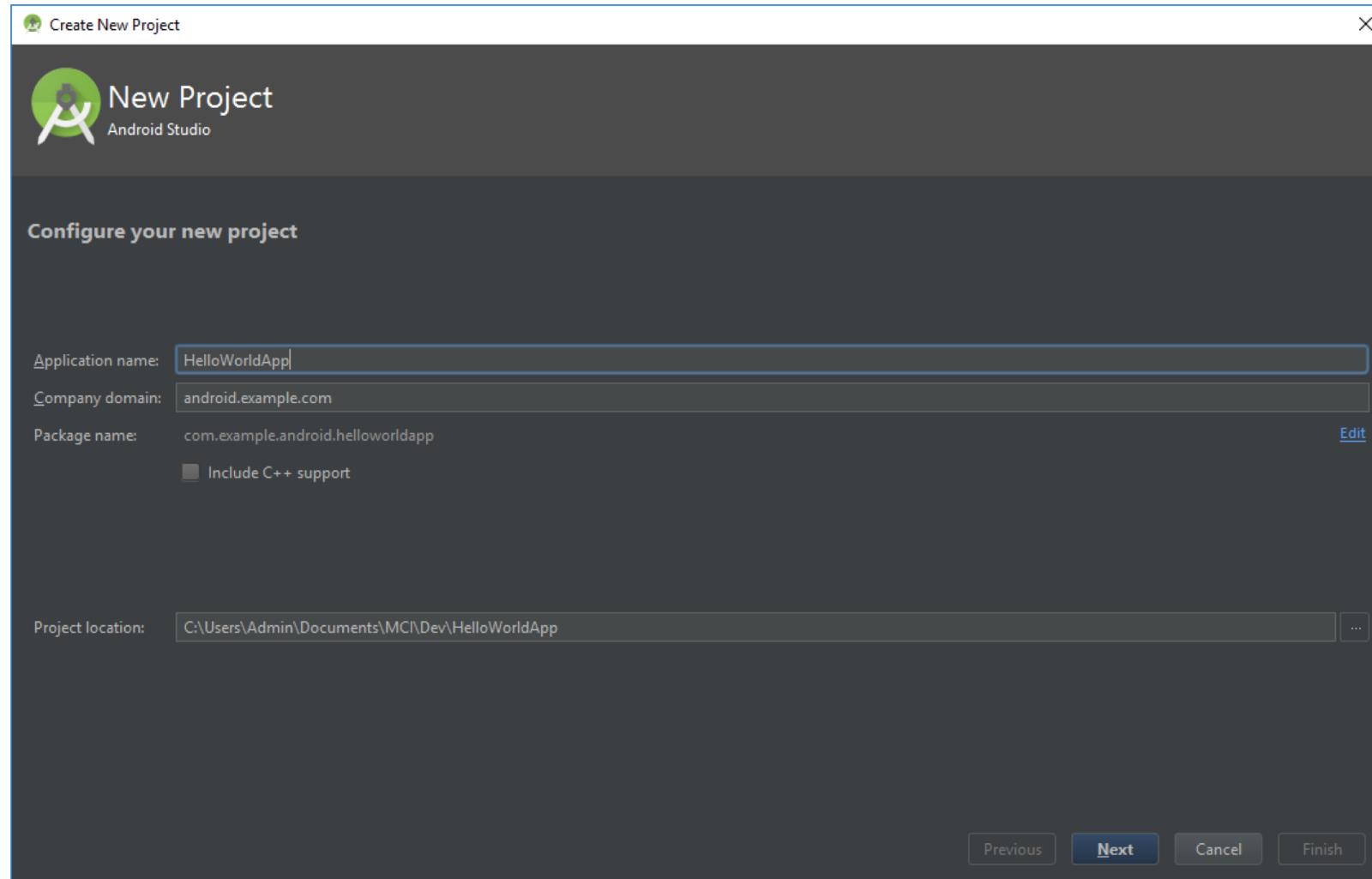


DIE ERSTE APP

NEUES PROJEKT ANLEGEN



NAMEN VERGEBEN



SDK MIND. ANDROID 4.0

Create New Project X

Target Android Devices

Select the form factors your app will run on

Different platforms may require separate SDKs

Phone and Tablet Minimum SDK API 14: Android 4.0 (IceCreamSandwich)

Lower API levels target more devices, but have fewer features available.
By targeting API 14 and later, your app will run on approximately **100.0%** of the devices that are active on the Google Play Store.

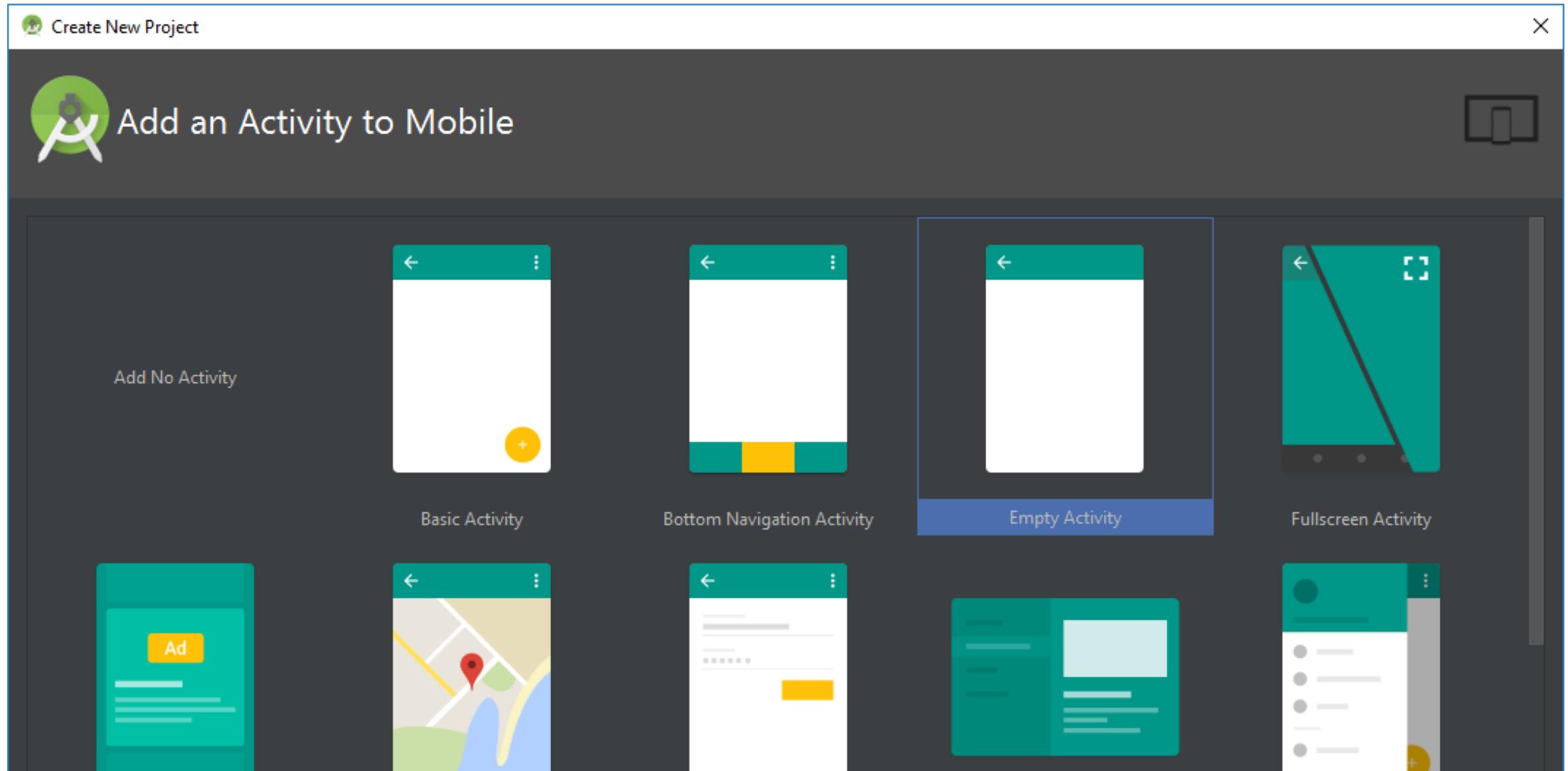
[Help me choose](#)

Wear Minimum SDK API 21: Android 5.0 (Lollipop)

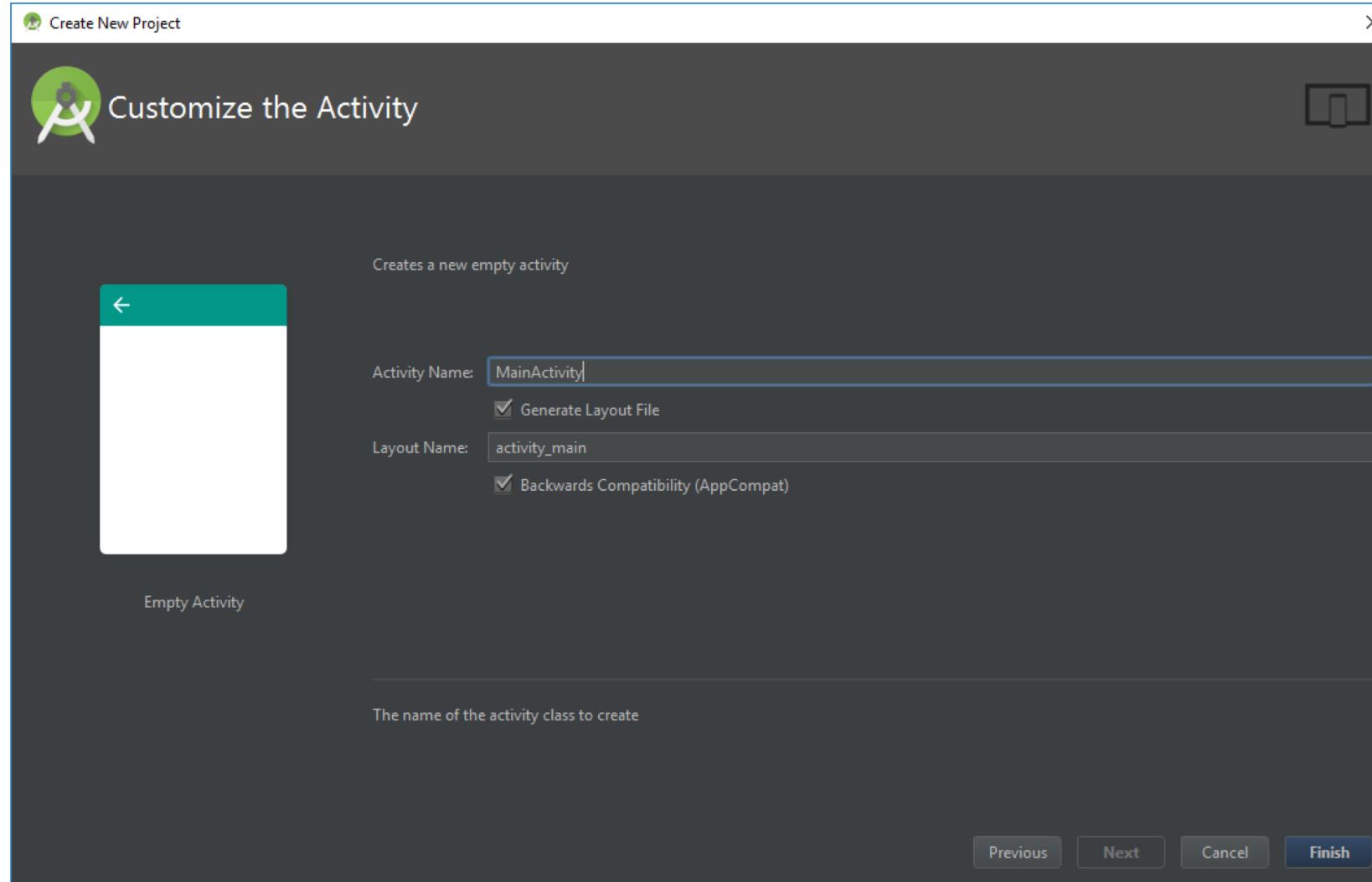
TV Minimum SDK API 21: Android 5.0 (Lollipop)

Android Auto

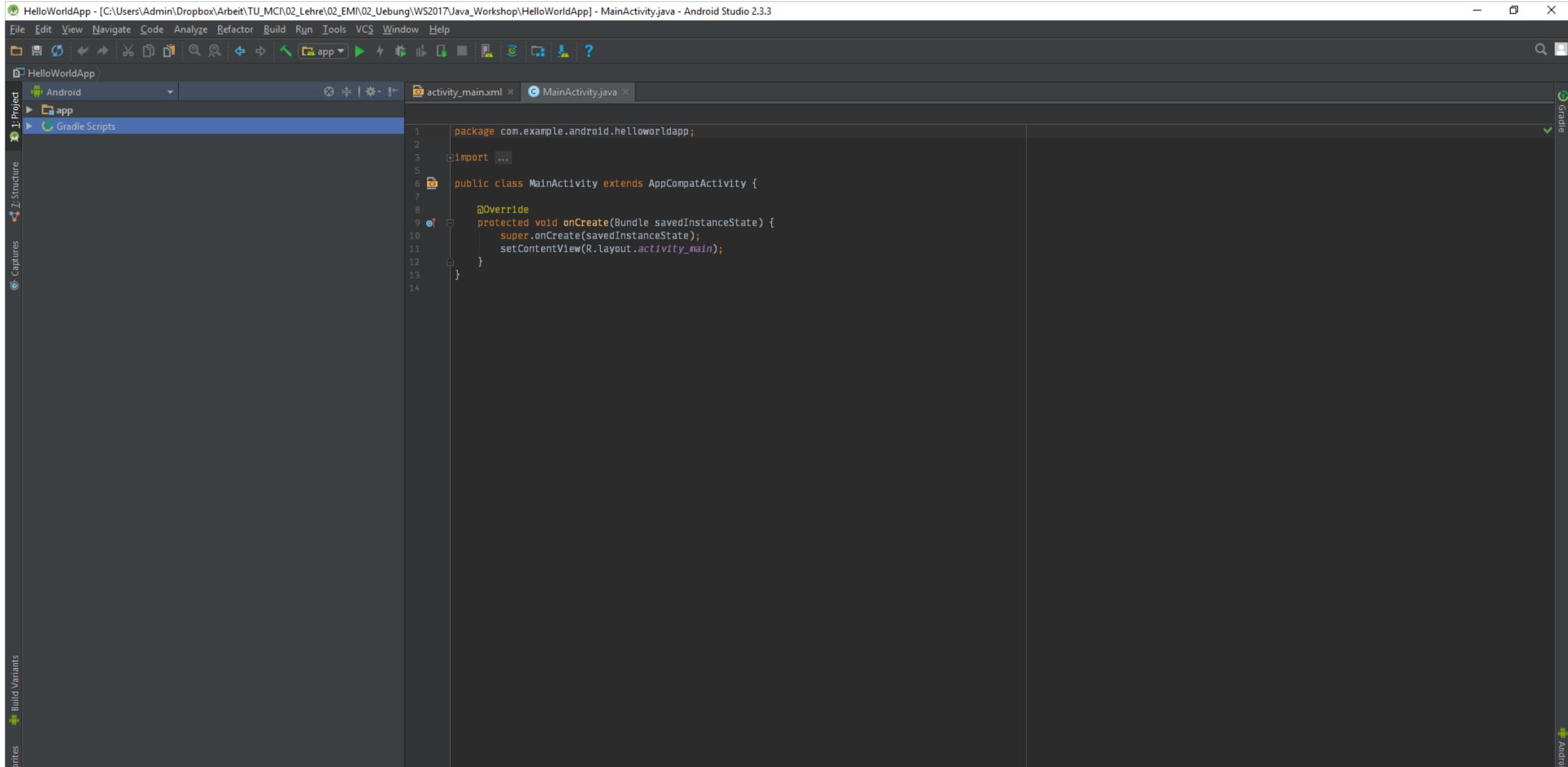
LEERE ACTIVITY ANLEGEN



LEERE ACTIVITY ANLEGEN



FERTIG IST DIE ERSTE APP



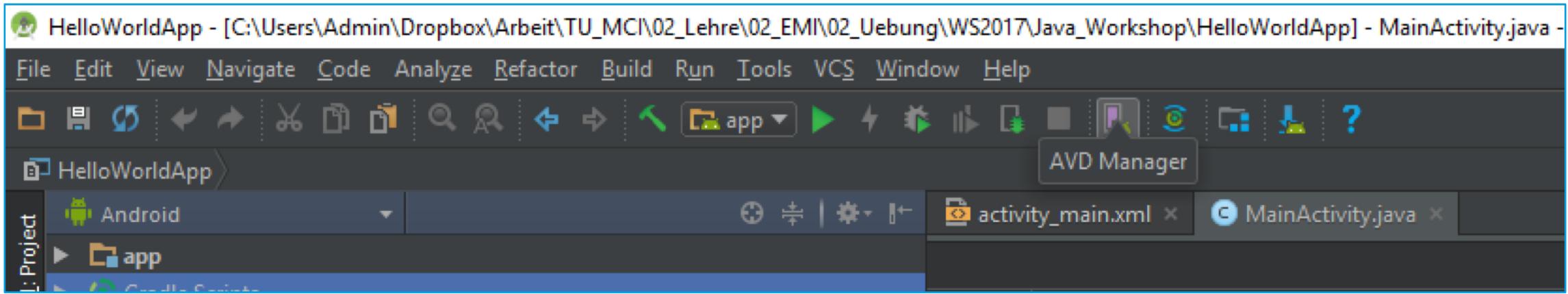
The screenshot shows the Android Studio interface with the project "HelloWorldApp" open. The code editor displays the `MainActivity.java` file, which contains the following Java code:

```
1 package com.example.android.helloworldapp;
2
3 import ...
4
5
6 public class MainActivity extends AppCompatActivity {
7
8     @Override
9     protected void onCreate(Bundle savedInstanceState) {
10         super.onCreate(savedInstanceState);
11         setContentView(R.layout.activity_main);
12     }
13
14 }
```

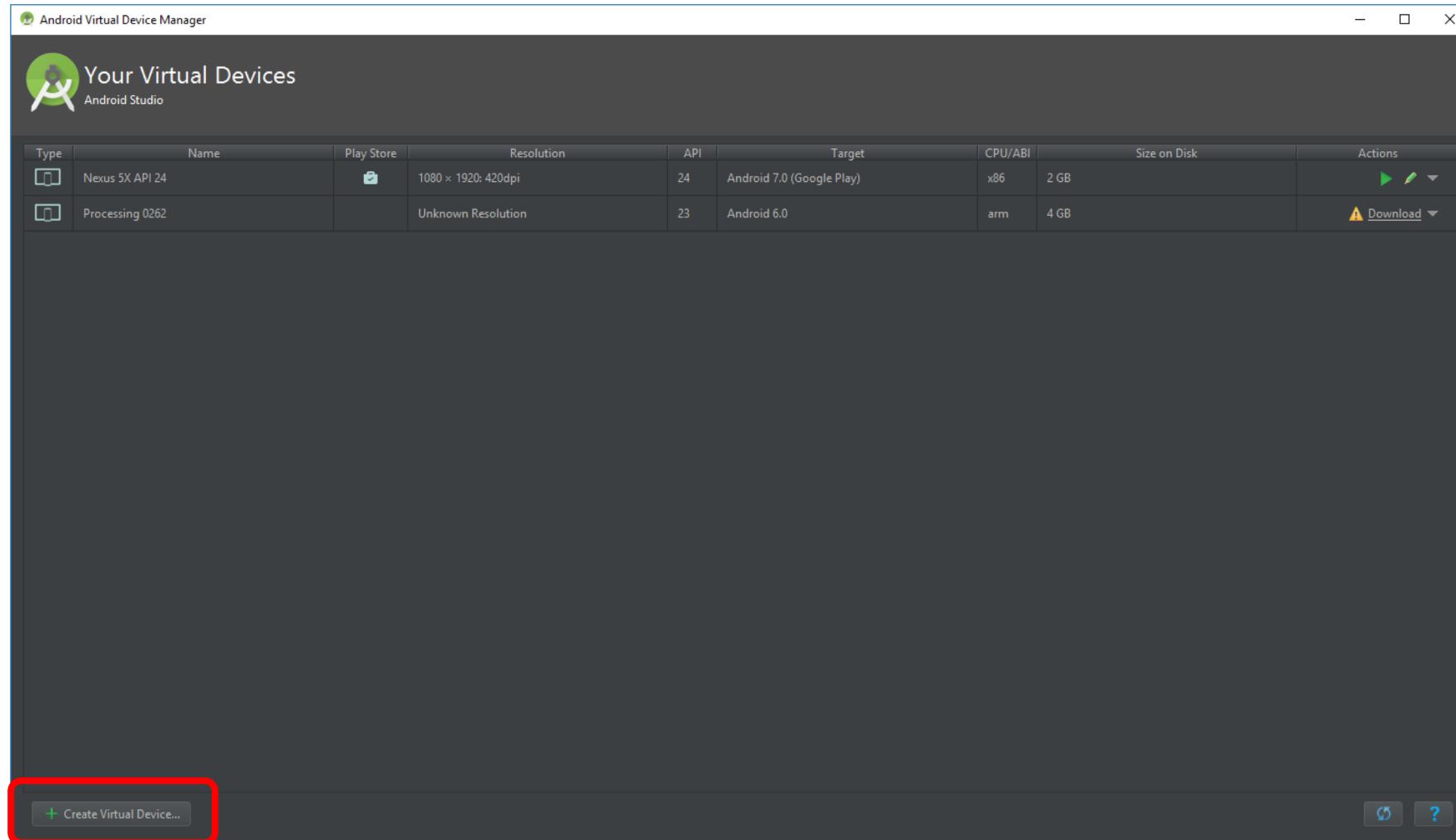
The code editor has tabs for `activity_main.xml` and `MainActivity.java`. The left sidebar shows the project structure with the `Gradle Scripts` tab selected. The bottom left corner shows navigation icons for `Build Variants`, `Run`, and `Android`.

HELLO WORLD - TESTEN

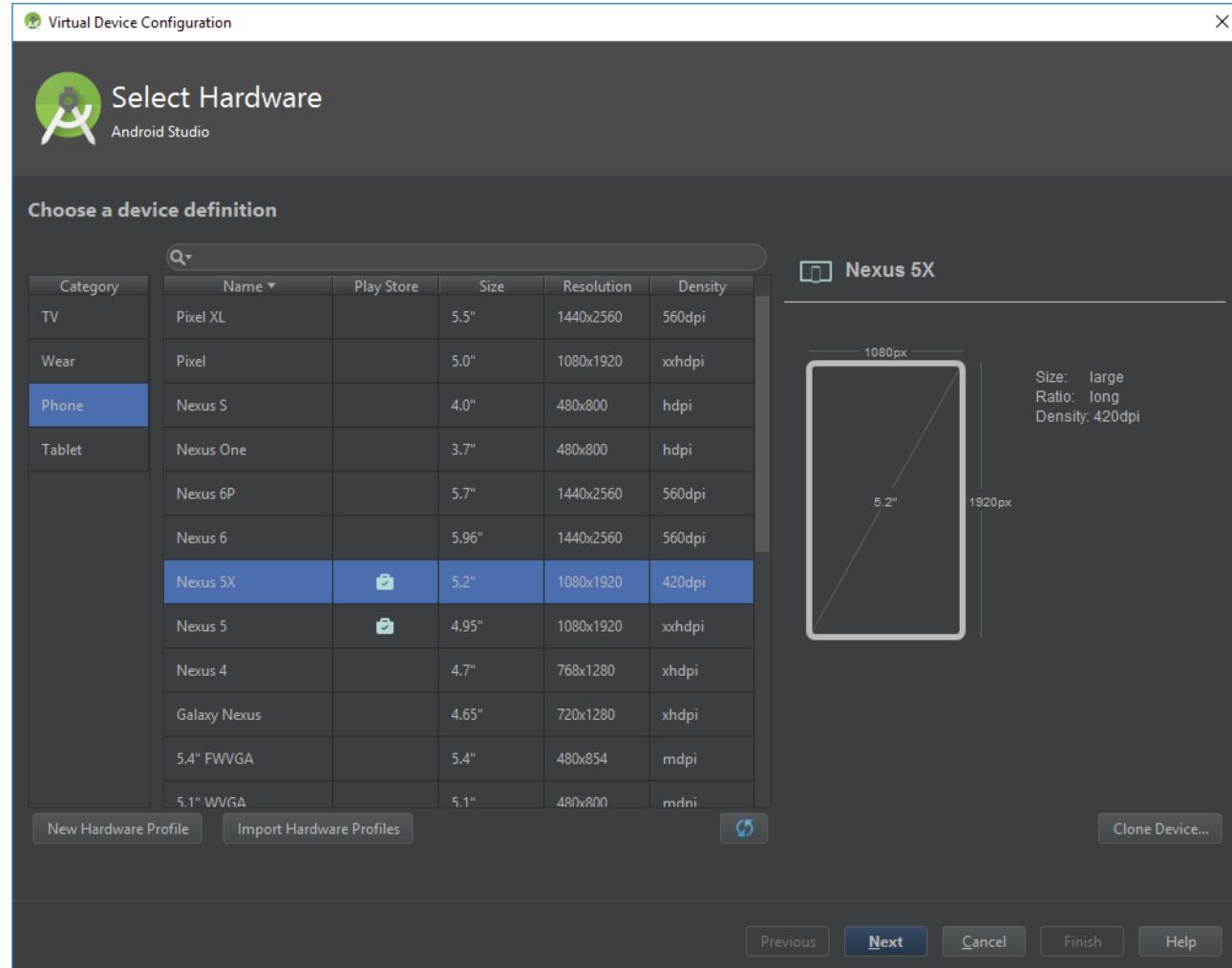
AVD MANAGER ÖFFNEN



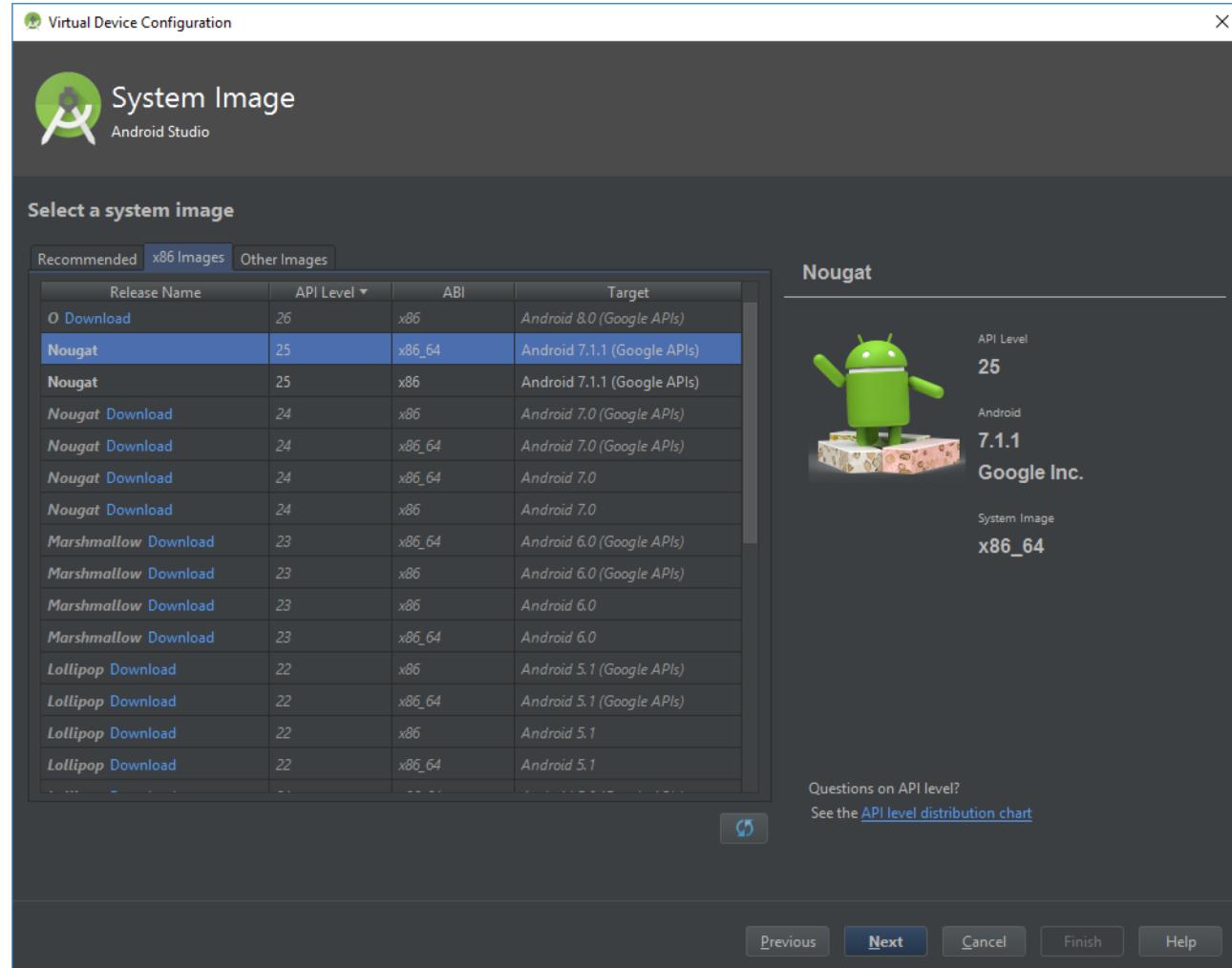
NEUES DEVICE ERSTELLEN



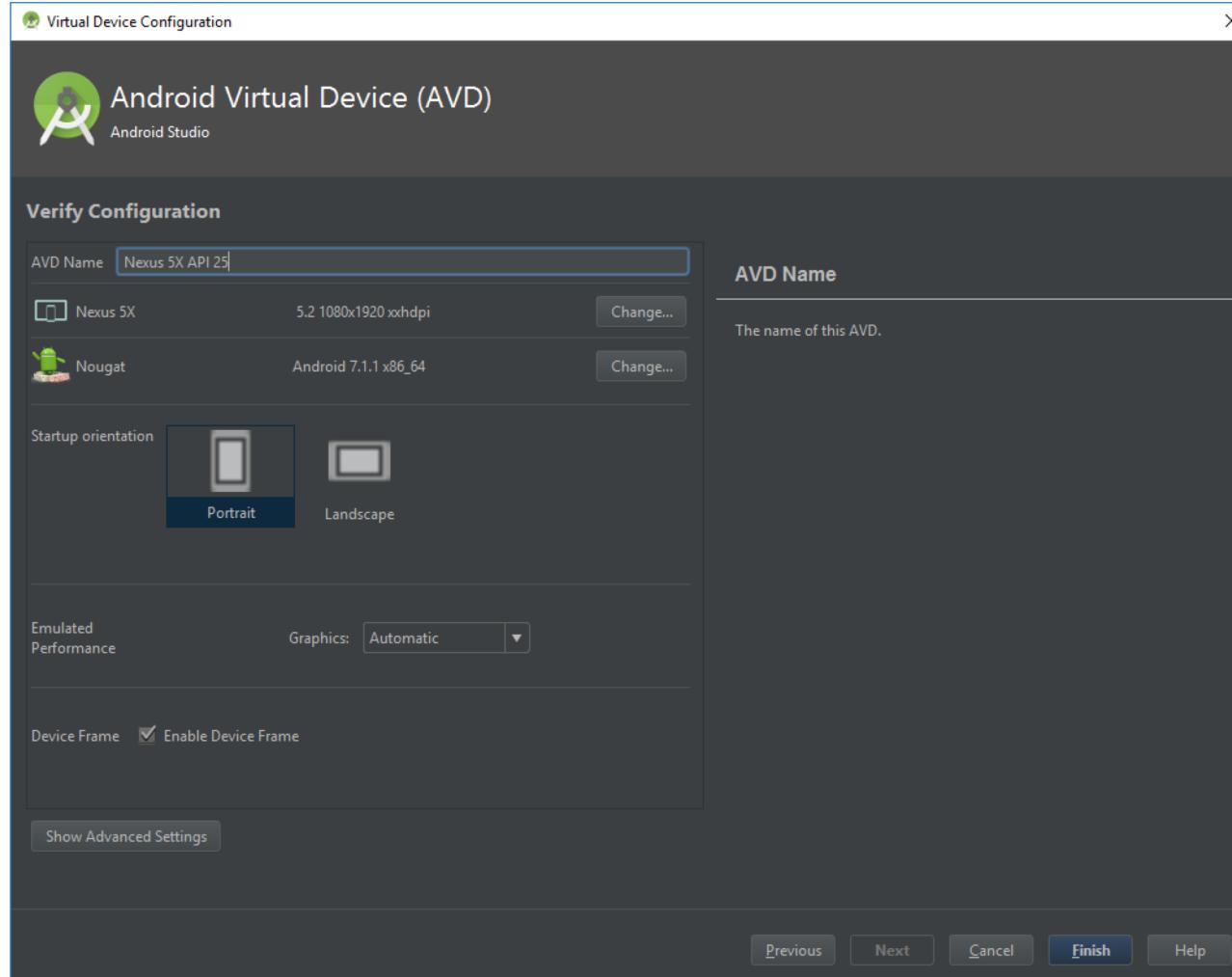
HARDWARE - NEXUS 5X



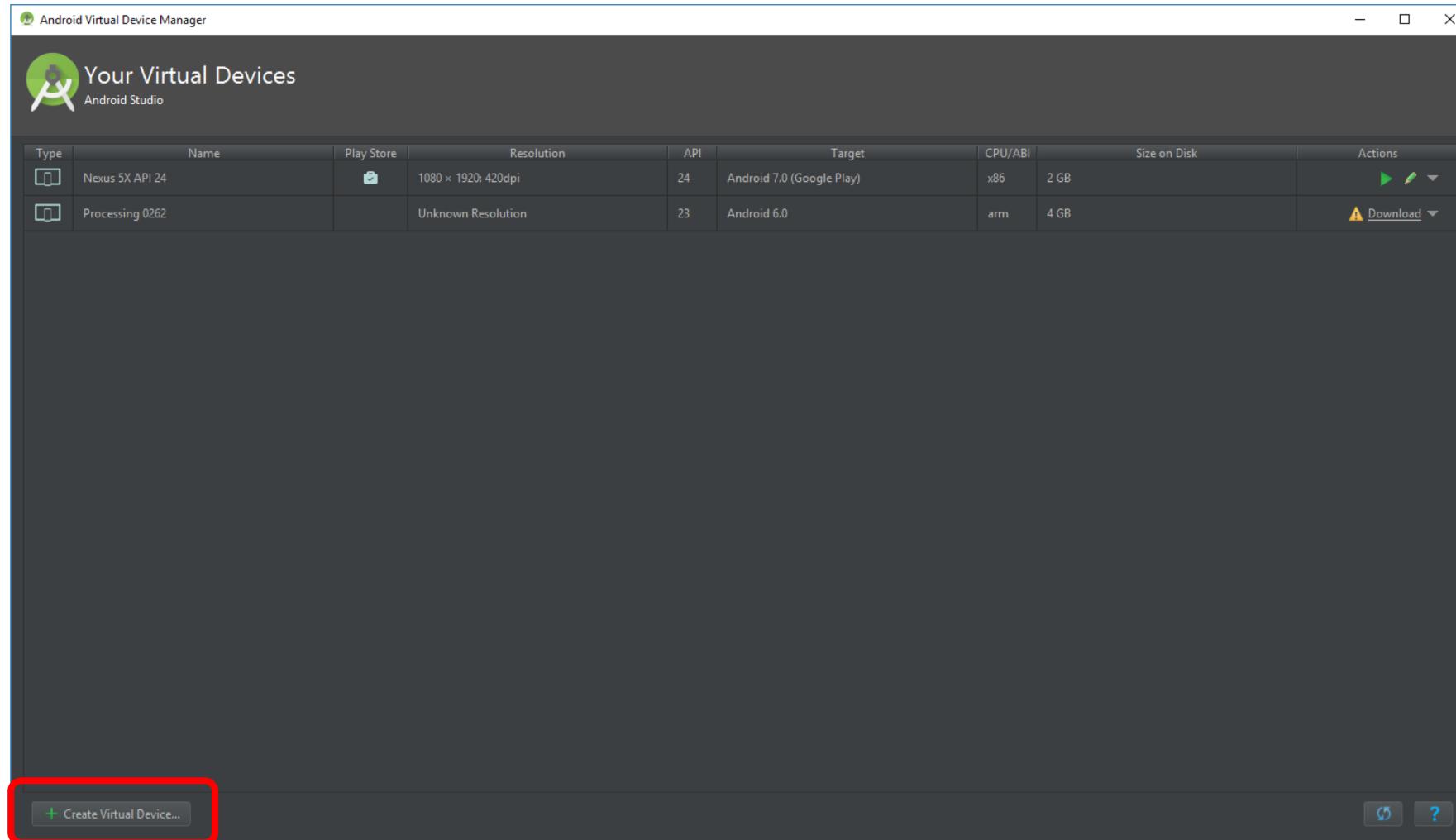
SYSTEM IMAGE - NOUGAT



UND FERTIG ...

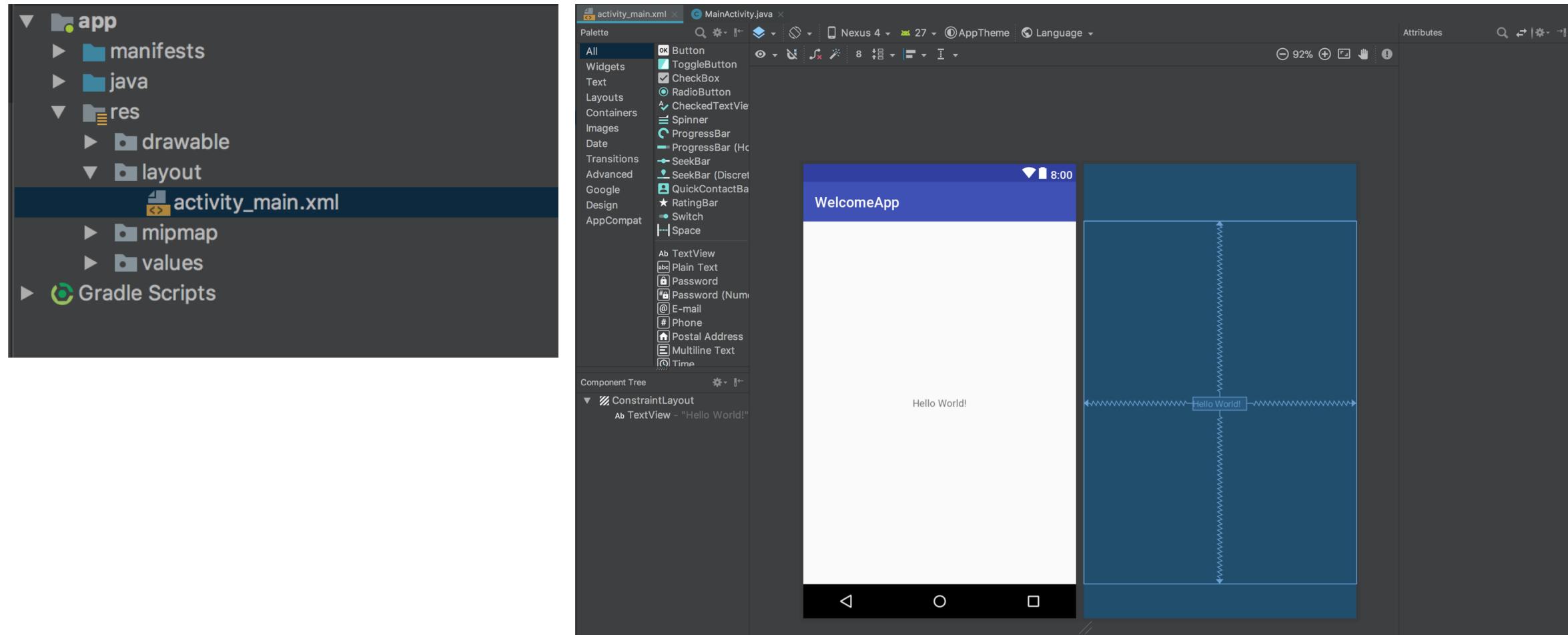


NEUES DEVICE ERSTELLEN



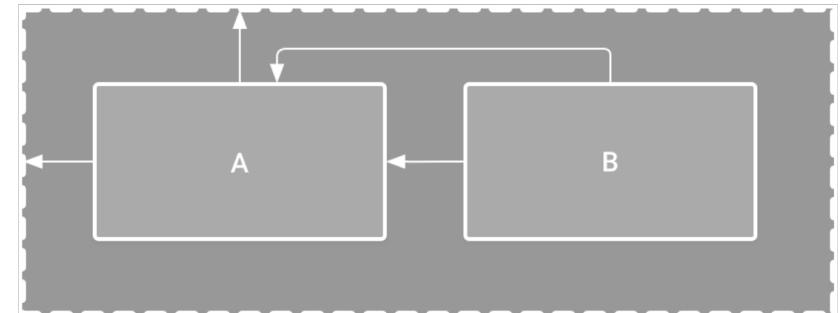
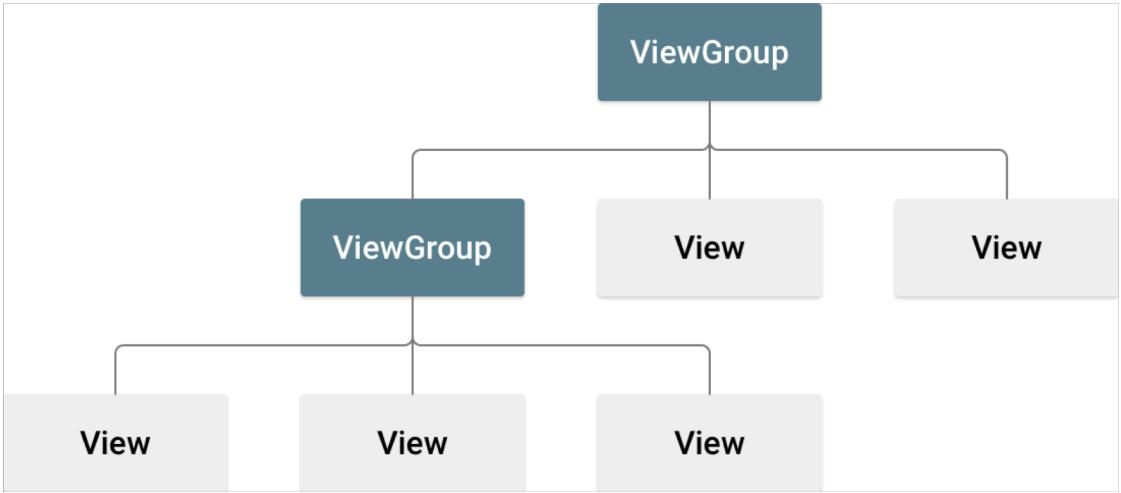
DAS USER INTERFACE

LAYOUT EDITOR



DEMO

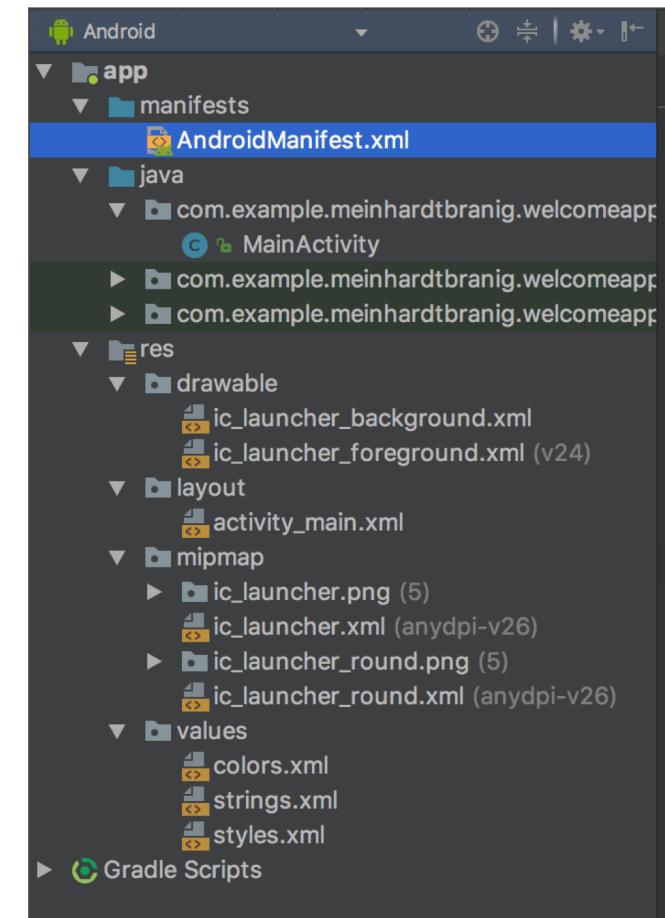
- Layouts:
 - ConstraintLayout
 - LinearLayout
 - TableLayout
 - ...
- Widgets
- Eigenschaften von Widgets
- onClick



FUNKTIONALITÄT HINZUFÜGEN

AUFBAU EINER APP

- im **Android Manifest** stehen alle Informationen zur App und dient der Konfiguration
- im **res-Ordner** finden sich alle wichtigen Daten (Bilder, Text, Layouts, etc.)
- eine **Activity** ist eine einzelne Bildschirmseite einer App
- eine App kann aus mehreren Activities bestehen
- **Widgets** bilden Activities

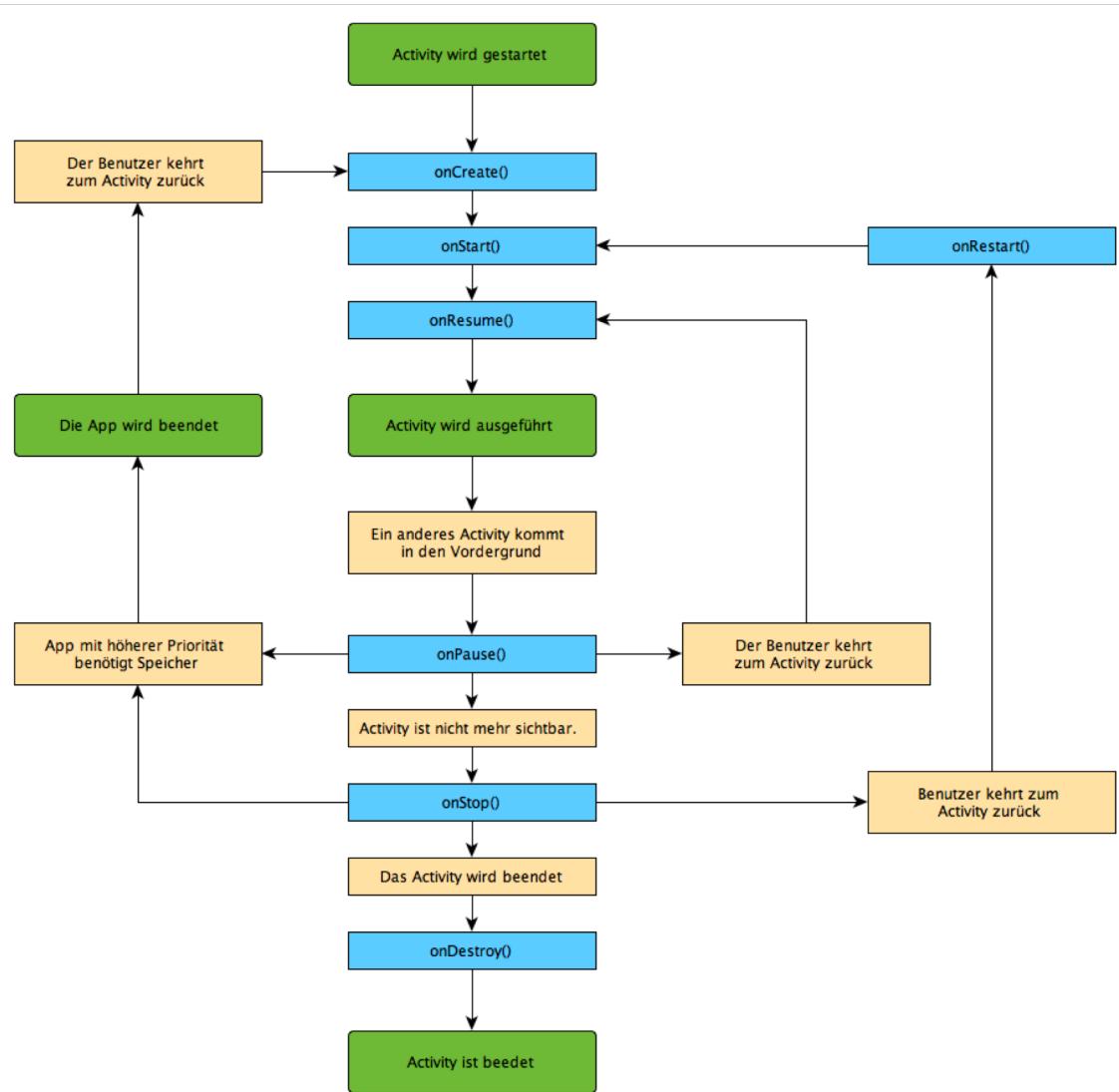


DIE VARIABLE R

- mit **R** kann man auf alle **Ressourcen** der Benutzeroberfläche zugreifen
- **Beispiel:** ImageView mit Bild aus res/drawable/myimage.png füllen

```
ImageView imageView =  
    (ImageView) findViewById(R.id.myimageview);  
imageView.setImageResource(R.drawable.myimage);
```

LEBENSZYKLUS EINER ACTIVITY



```
1 package com.example.meinhardtbranig.welcomeapp;
2
3 import ...
4
5
6 public class MainActivity extends AppCompatActivity {
7
8
9     @Override
10    protected void onCreate(Bundle savedInstanceState) {
11        super.onCreate(savedInstanceState);
12        setContentView(R.layout.activity_main);
13    }
14}
```

ÜBUNG

Implementiere das “**Nimm Spiel**“ aus der Vorlesung. Dabei erstellt der Computer eine geheime Zahl zwischen 0 und 10. Der Nutzer soll die Zahl erraten und bekommt Feedback, ob er zu hoch, zu niedrig oder richtig getippt hat.

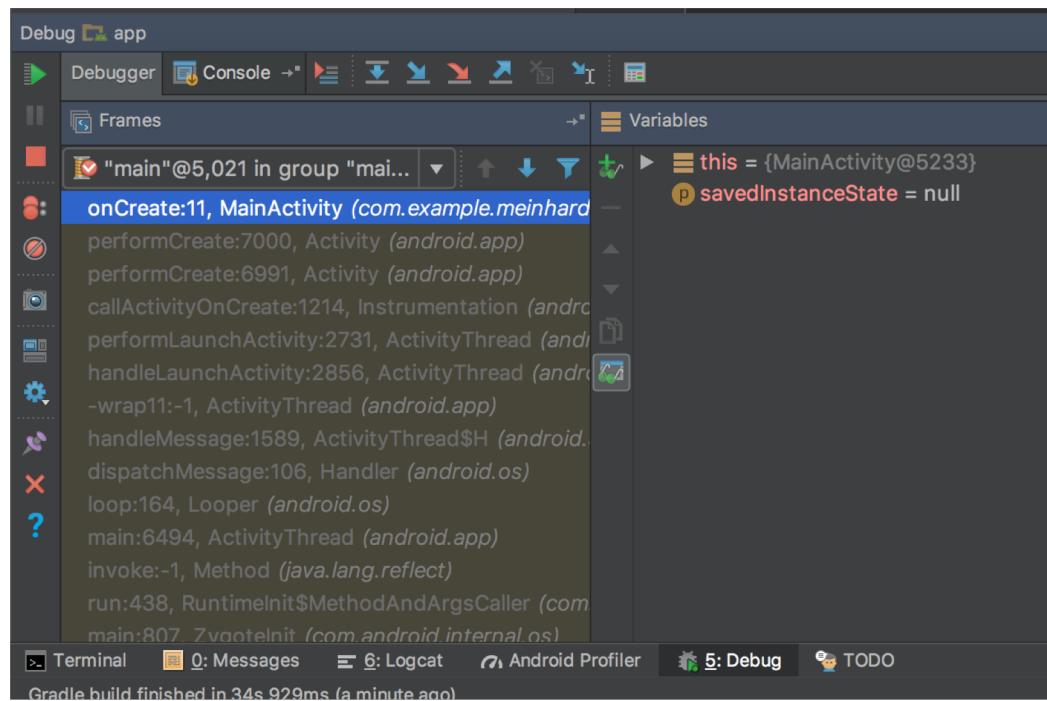
Das Festlegen einer Zufallszahl erfolgt mit:

```
Random r = new Random();
```

```
RandomNumber = r.nextInt(limit);
```

DEBUGGEN - DEMO

```
1 package com.example.meinhardtbranig.welcomeapp;
2
3 import ...
4
5
6 public class MainActivity extends AppCompatActivity {
7
8     @Override
9     protected void onCreate(Bundle savedInstanceState) {
10         super.onCreate(savedInstanceState);
11         setContentView(R.layout.activity_main);
12     }
}
```



- Breakpoint setzen
- Starten und debuggen
- Debug-Ansicht

MEHR INFOS & DOKUMENTATION

<https://developer.android.com/training/index.html>

The screenshot shows the Android Developers website with a green header. The top navigation bar includes links for DESIGN, DEVELOP, and DISTRIBUTE, along with a search bar and a PLAY CONSOLE button. A sidebar on the left lists various training categories: Getting Started, Building Your First App, Supporting Different Devices, Building a Dynamic UI with Fragments, Saving Data, Interacting with Other Apps, Working with System Permissions, and Building Apps with Content Sharing. The main content area is titled 'Getting Started' and describes the purpose of the training section, mentioning training guides and video courses. It also features a thumbnail for a Udacity course trailer.

Develop > Training

Getting Started

Welcome to Training for Android developers. Here you'll find training classes that describe how to accomplish a specific task with code samples you can re-use in your app. Classes are organized into several groups you can see at the top-level of the left navigation.

The first [training guides below](#) teach you the essentials for Android app development. If you're a new Android app developer, you should complete each of these classes in order.

Various online video courses are also available if you'd prefer an interactive video experience.

Check out this trailer for a course about the fundamentals of Android development on Udacity.

Developing Android apps on...

[START THE VIDEO COURSE](#)

Übung 3 – Anmerkungen zu den Aufgaben

Online-Test

- Fragen zu Android, Widgets, Sensoren und Barrierefreiheit
- Abgabe bis **9.12.**

Praxisaufgabe

- eigene kleine Android Anwendung schreiben
- Hinweise beachten!!
- Nutzt das Forum & Google!

Übung 3 – Hinweise zur Praxisaufgabe

Fibonacci-Zahlen

0 – 1 – 1 – 2 – 3 – 5 – 8 – 13 – 21 – 34 – ...

sequentiell

Variablen für F_{i-1} und F_{i-2}

Schleife zählt Variablen hoch

Ausgabe innerhalb der Schleife

rekursiv

Funktion ruft sich selbst auf. Feste Ausgabe für $i = 0$ und $i = 1$, sonst rekursiver Aufruf.

Quersumme

123: Quersumme: $1+2+3=6$

Addition von:

$$123 \% 10 = 3$$

Schleifendurchlauf mit:

$$123 / 10 = 12 \text{ (ganzzahlig geteilt)}$$

übernächste Woche

Übung 4 - MCI & Evaluation