Introduction to App Development for Android

Android Studio

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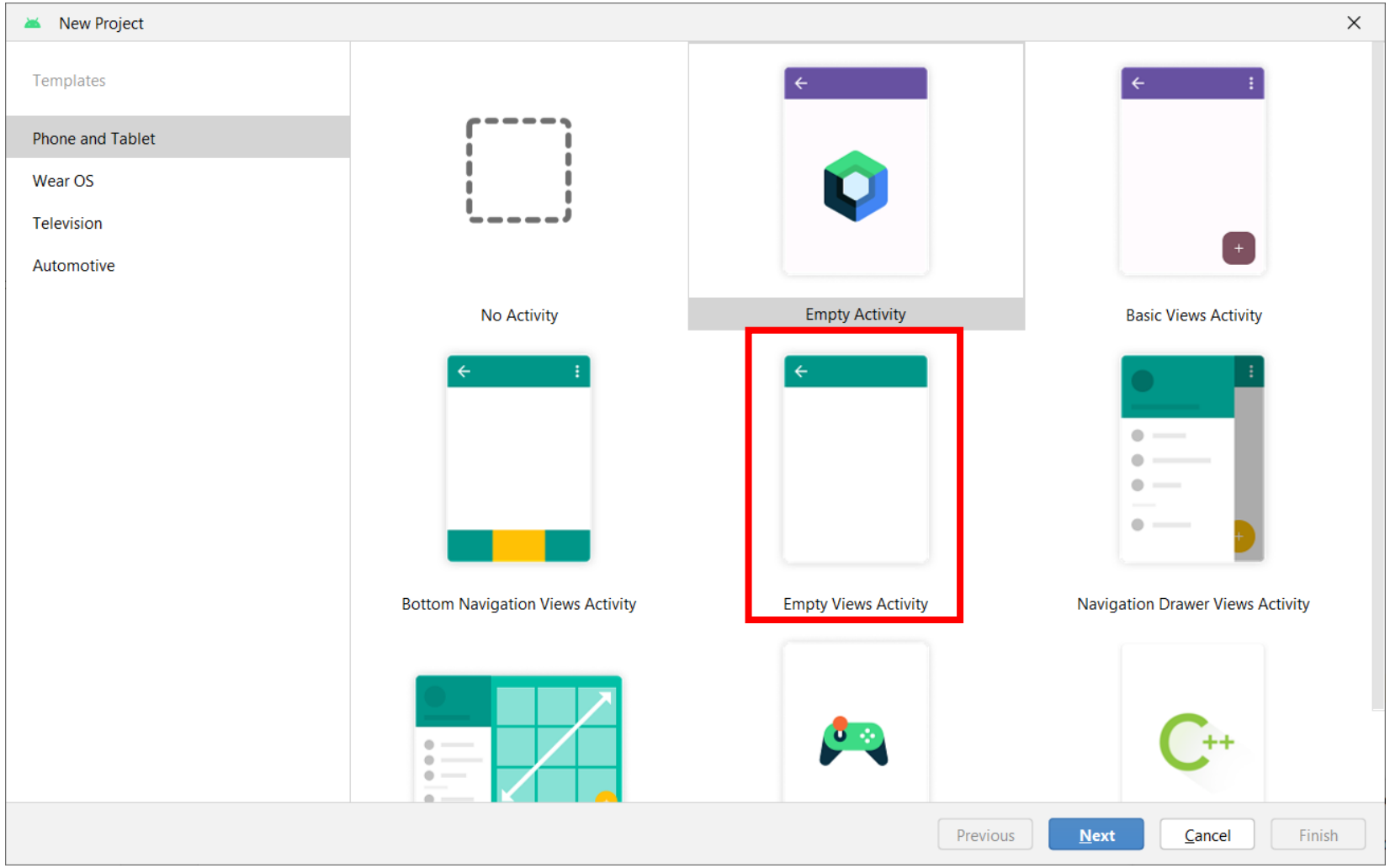
Android Studio

- Standard development environment Android Apps
- Eclipse also possible if the needed plugins are installed
- Android Studio is more comfortable, because everything is allready preconfigured for App development

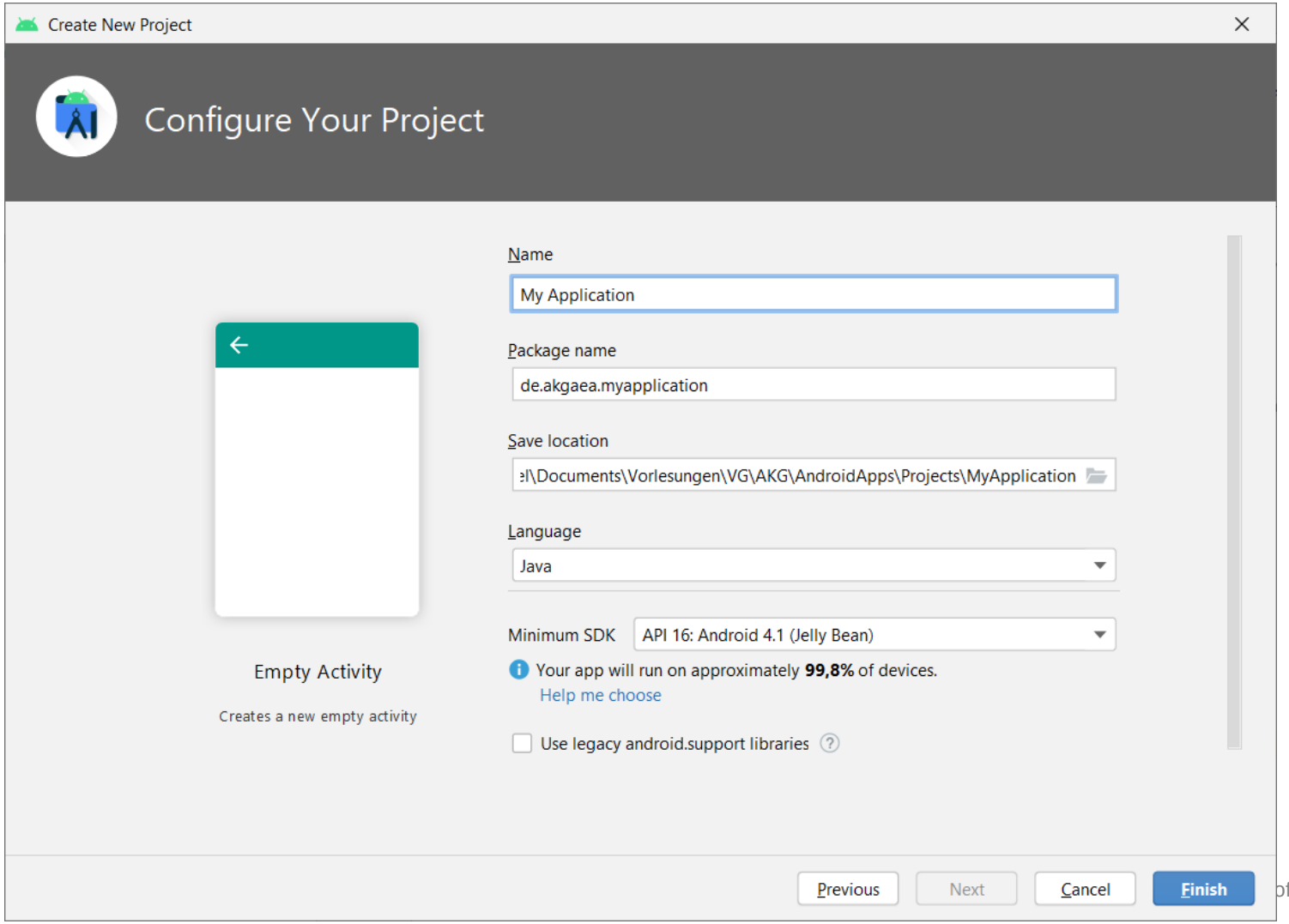
First start of Android Studio

- A screen appears, where you can make a new project
- Selection of a project template
- Several infos about the project
- After clicking he finish button a new directory is created and many files in a fixed directory structure are created
  - Don‘t change this structure!
  - If it has to be changed for some reason, only apply changes using the Android Studio
  - Never with the Windows Explorer

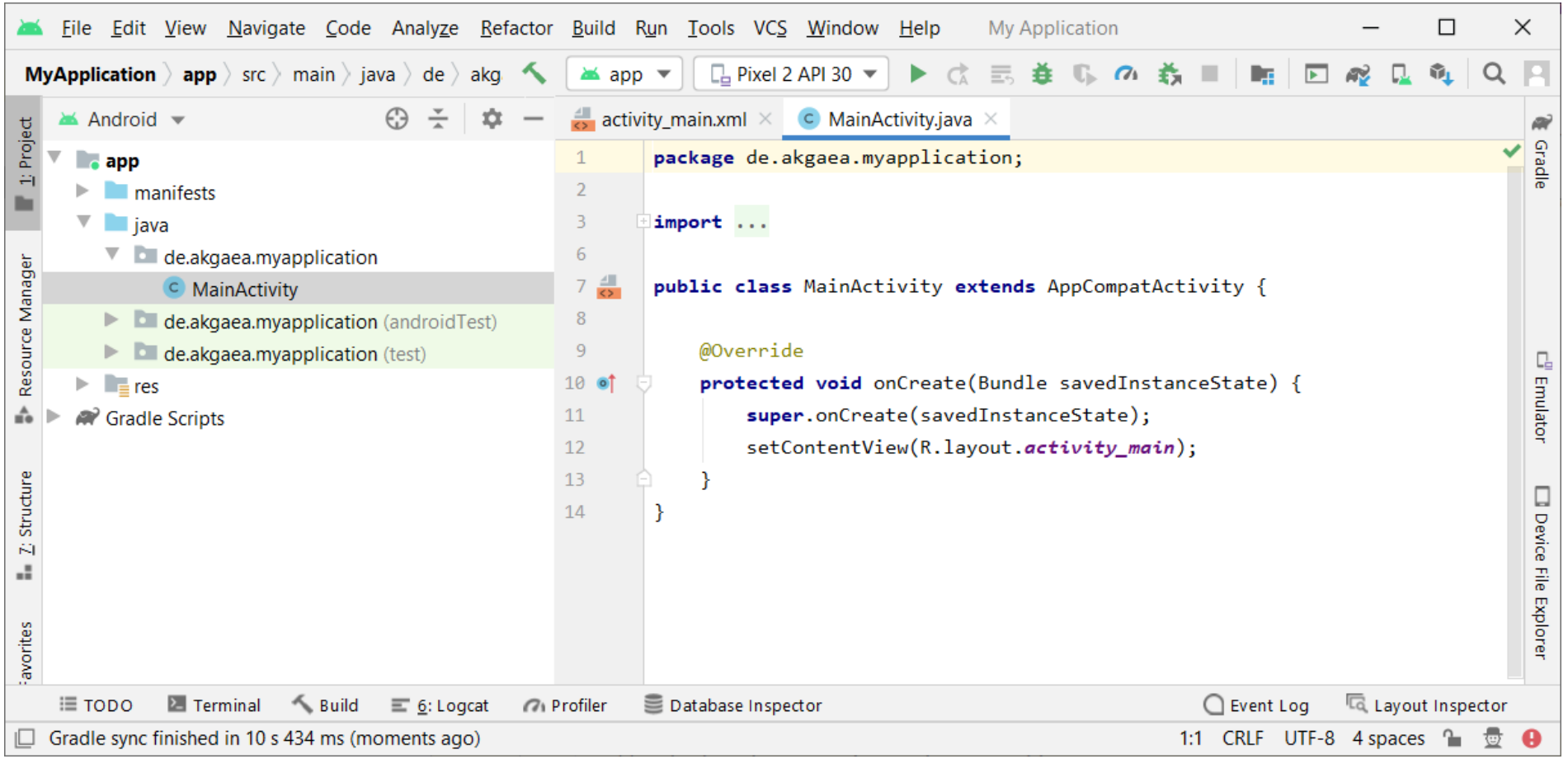
Android Studio Project templates



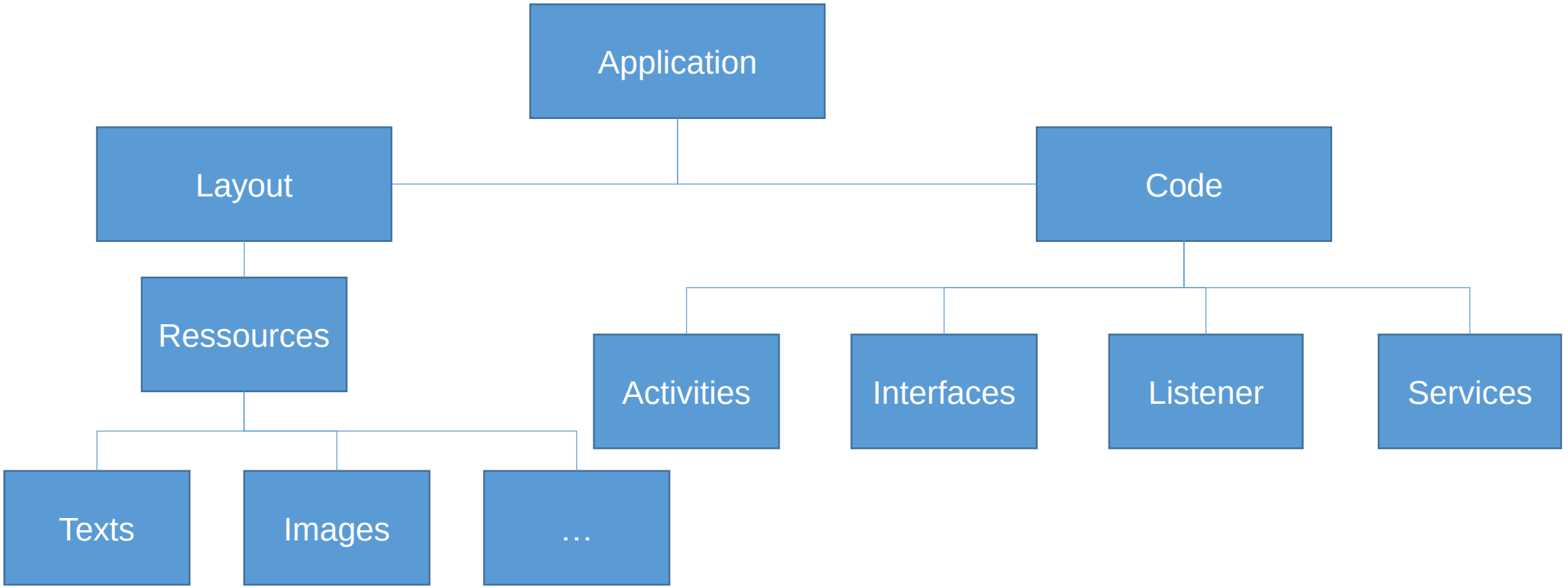
Android Studio – several Infos



Android Studio



Components of an App

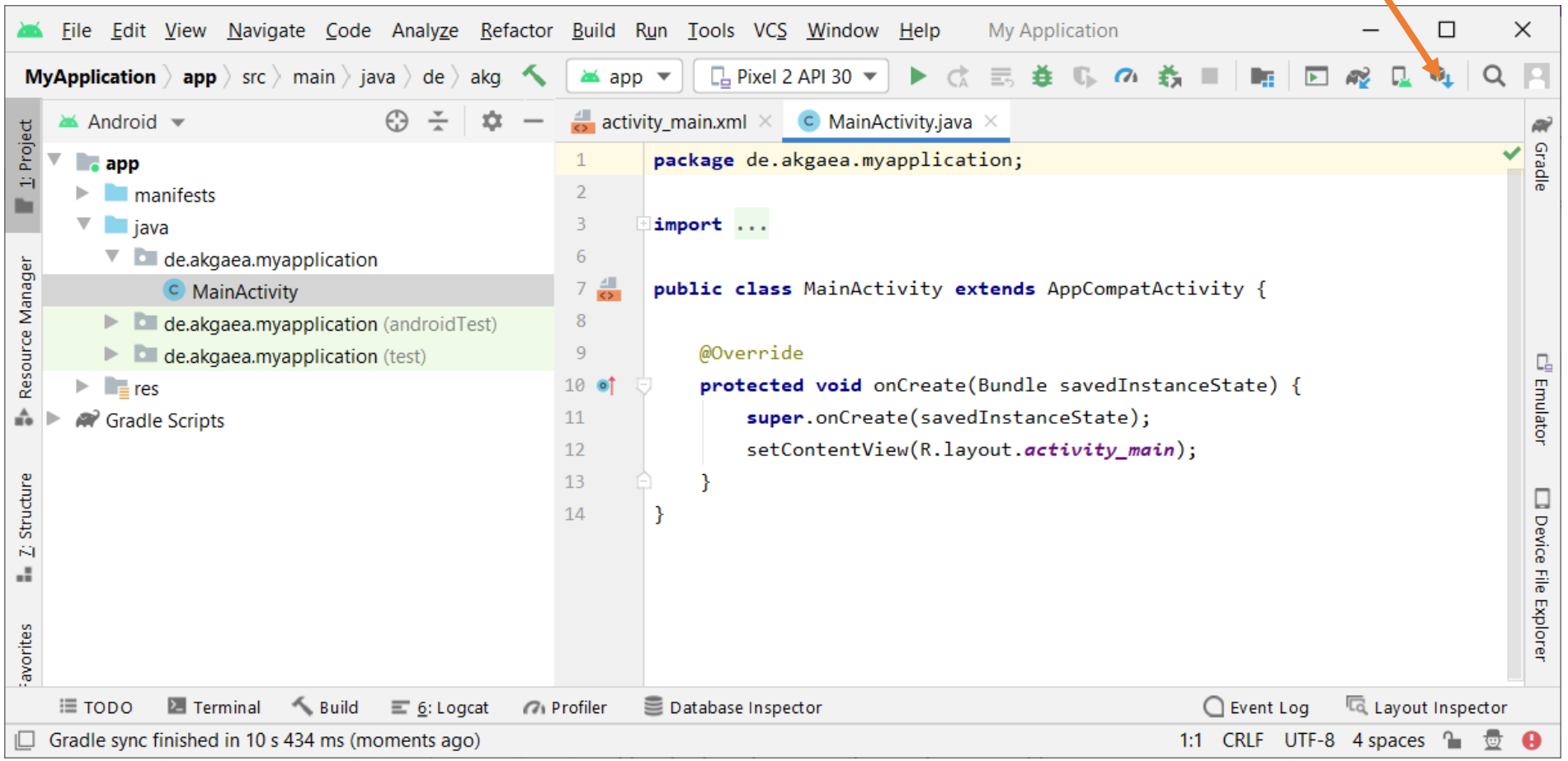


First running App

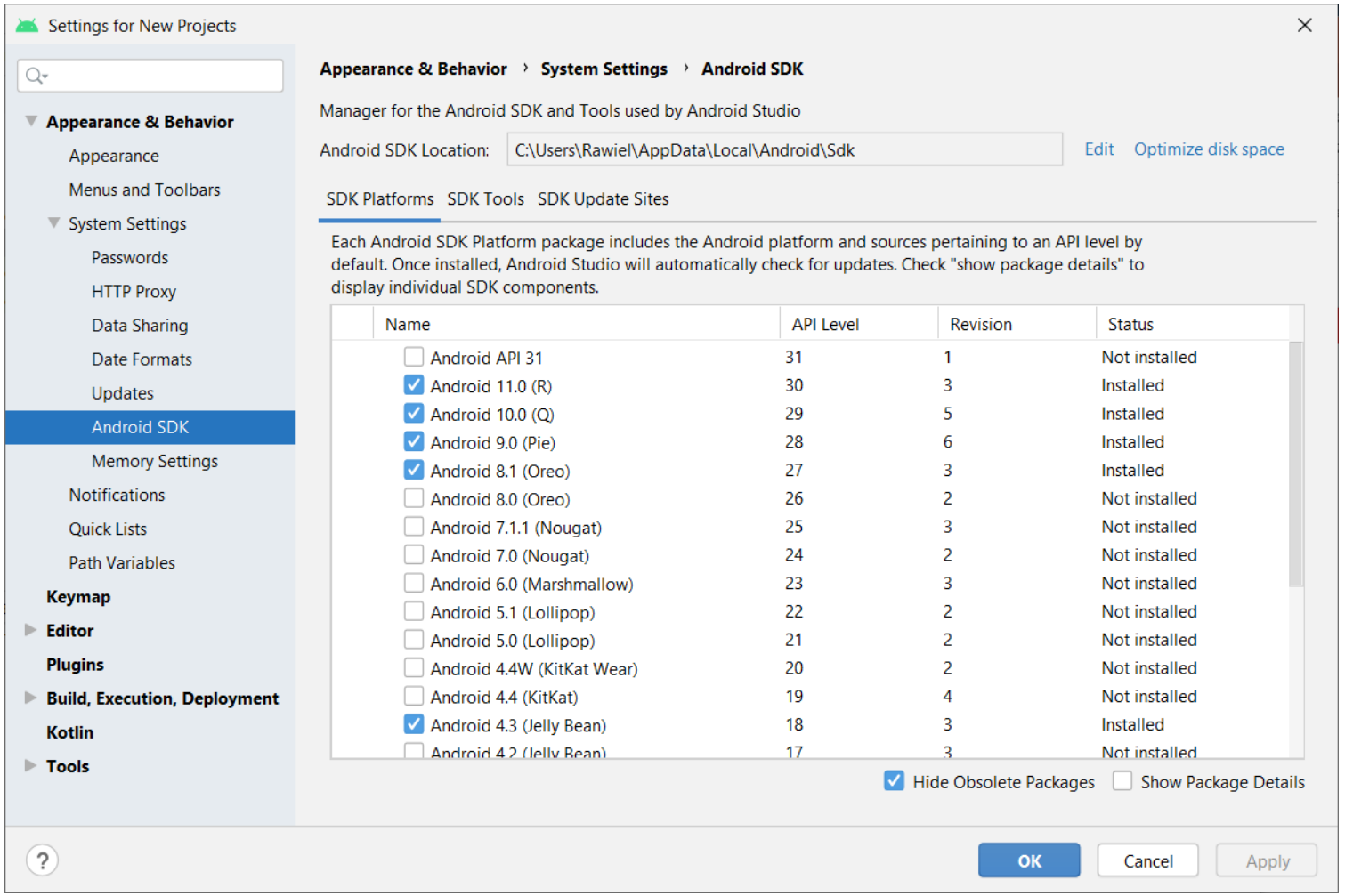
- This is how the created App
- Looks like
- It doesn‘t do anything
- Just shows a text:
  - Hello World
- Where does that come from?
- How can we make the App do something – how can we communicate with the App?

Primeiro …

SDK Manager

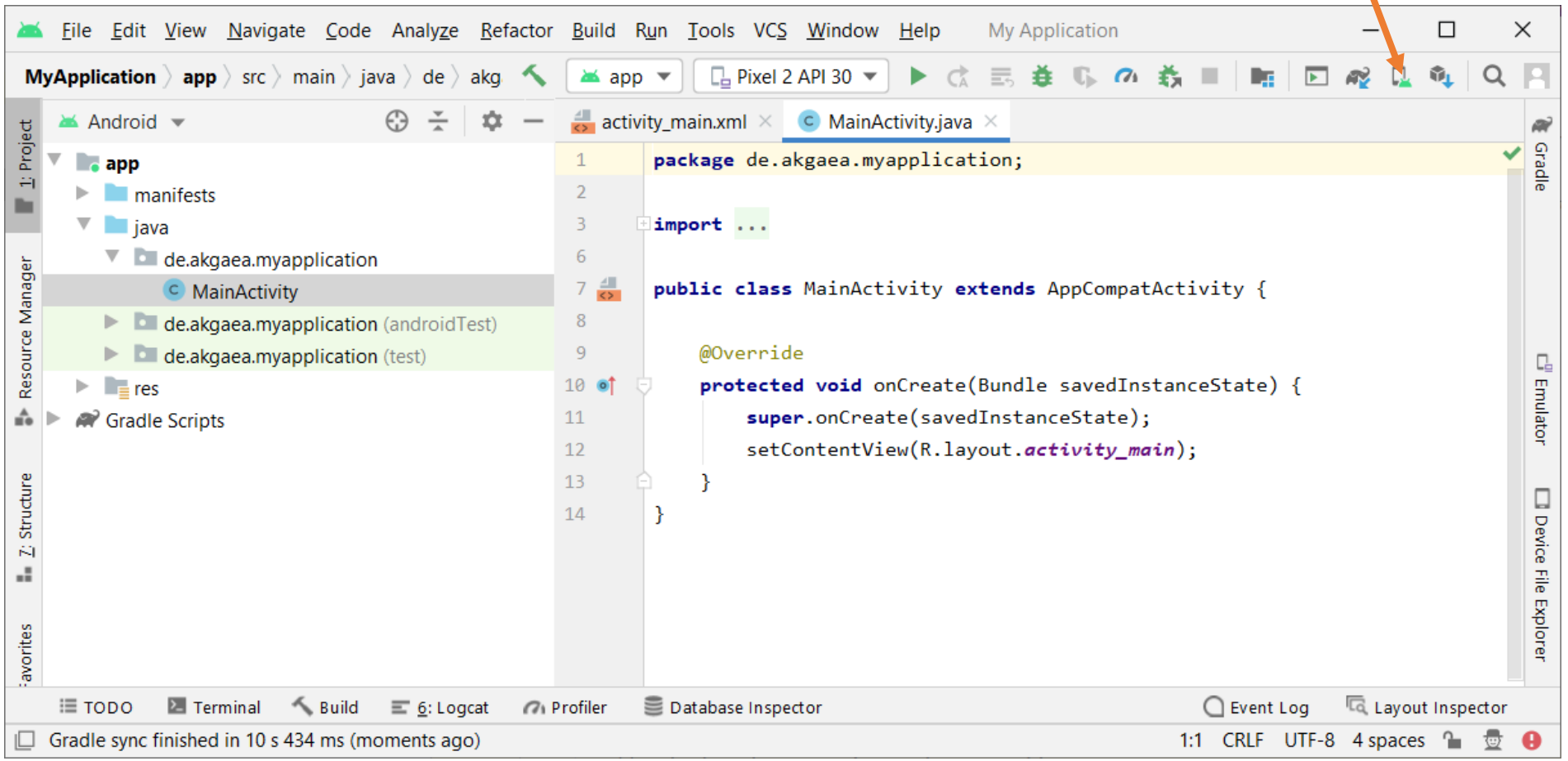


Der SDK Manager

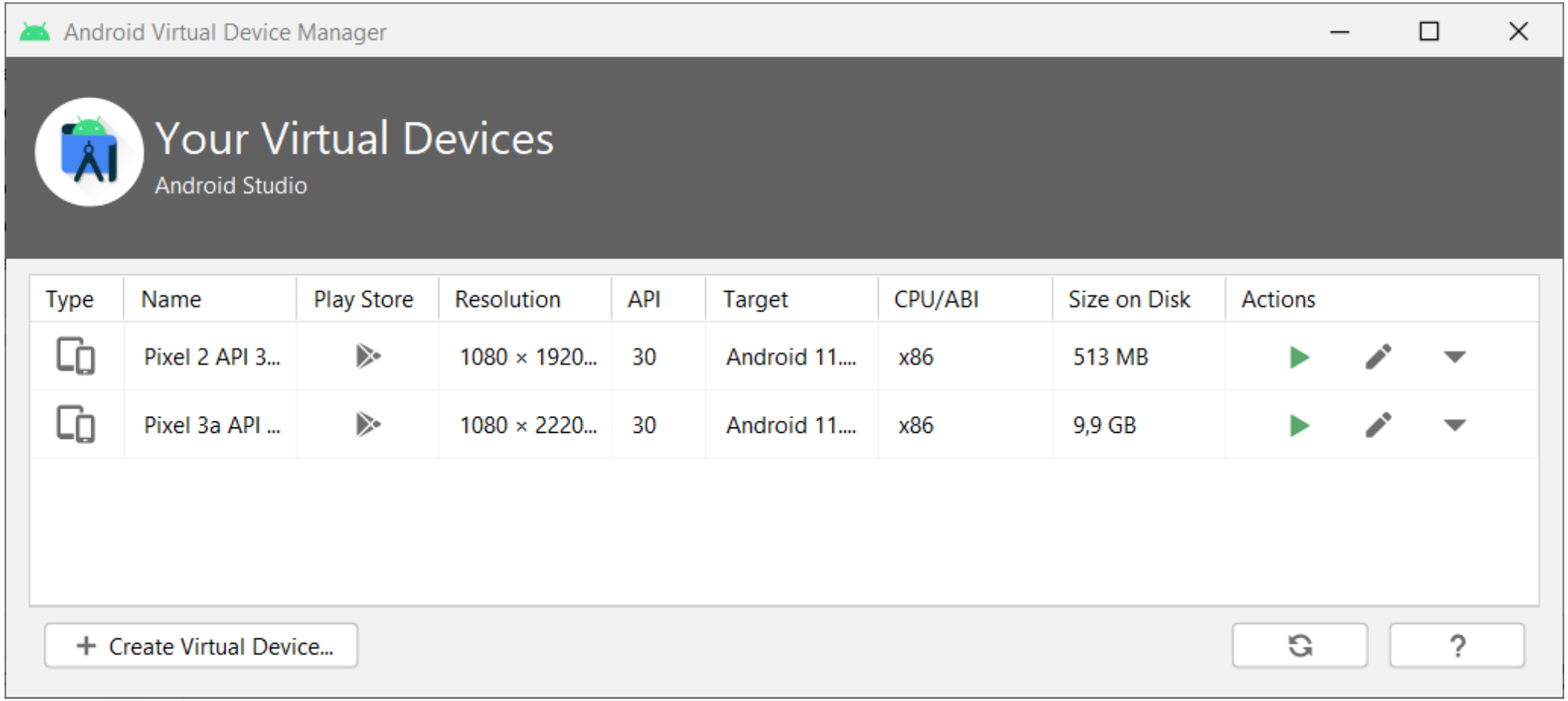


And then…

AVD Manager



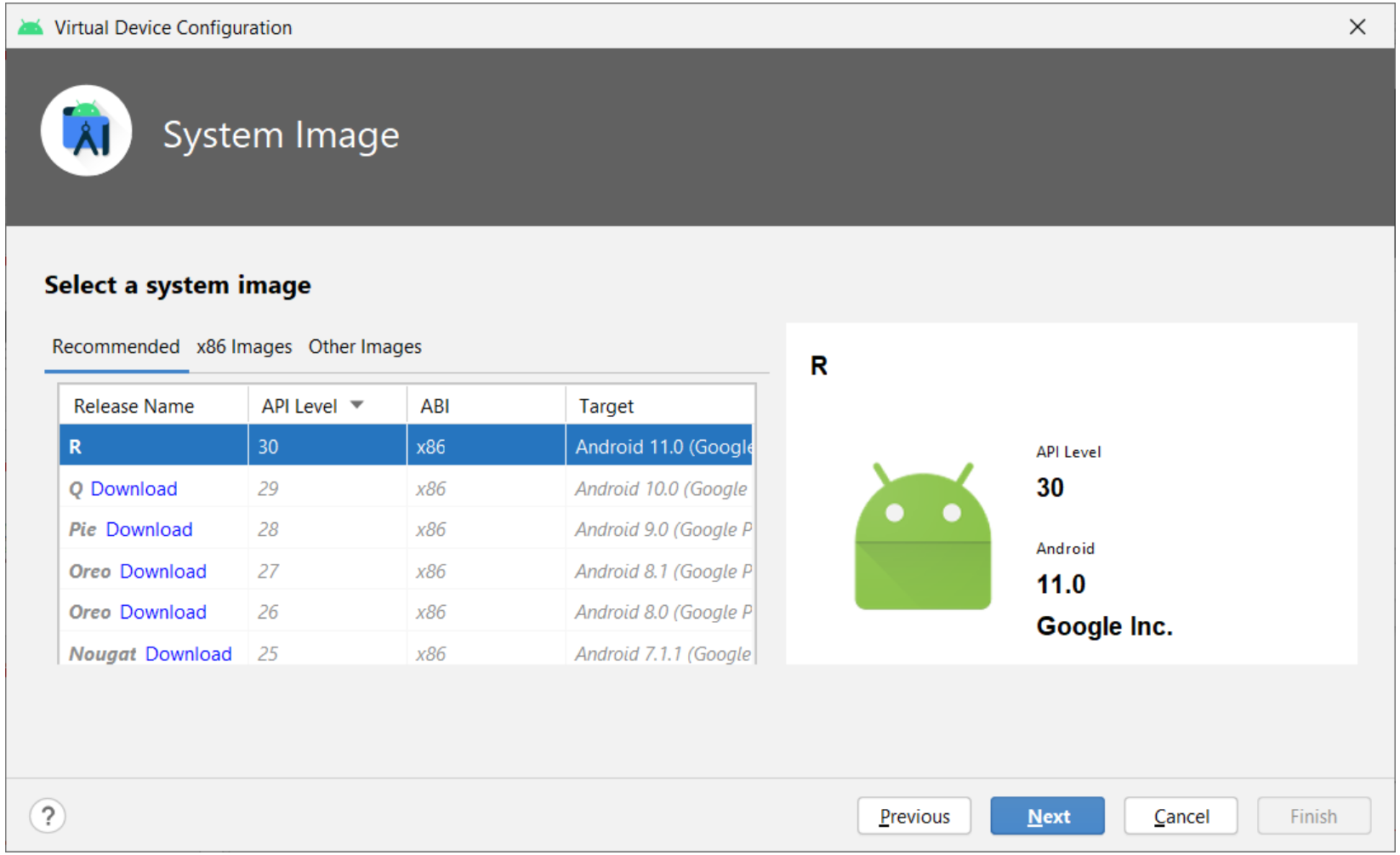
Der AVD Manager



The AVD Manager

- Create a new Android Virtual Device (AVD)
- Select a hardware profile
- Download of an Android version (System Image) for this hardware profile
  - Takes a lot of disk space, don‘t install too many
  - One is enough
  - For this workshop we don‘t need that if everybody has an android smartphone

Der AVD Manager



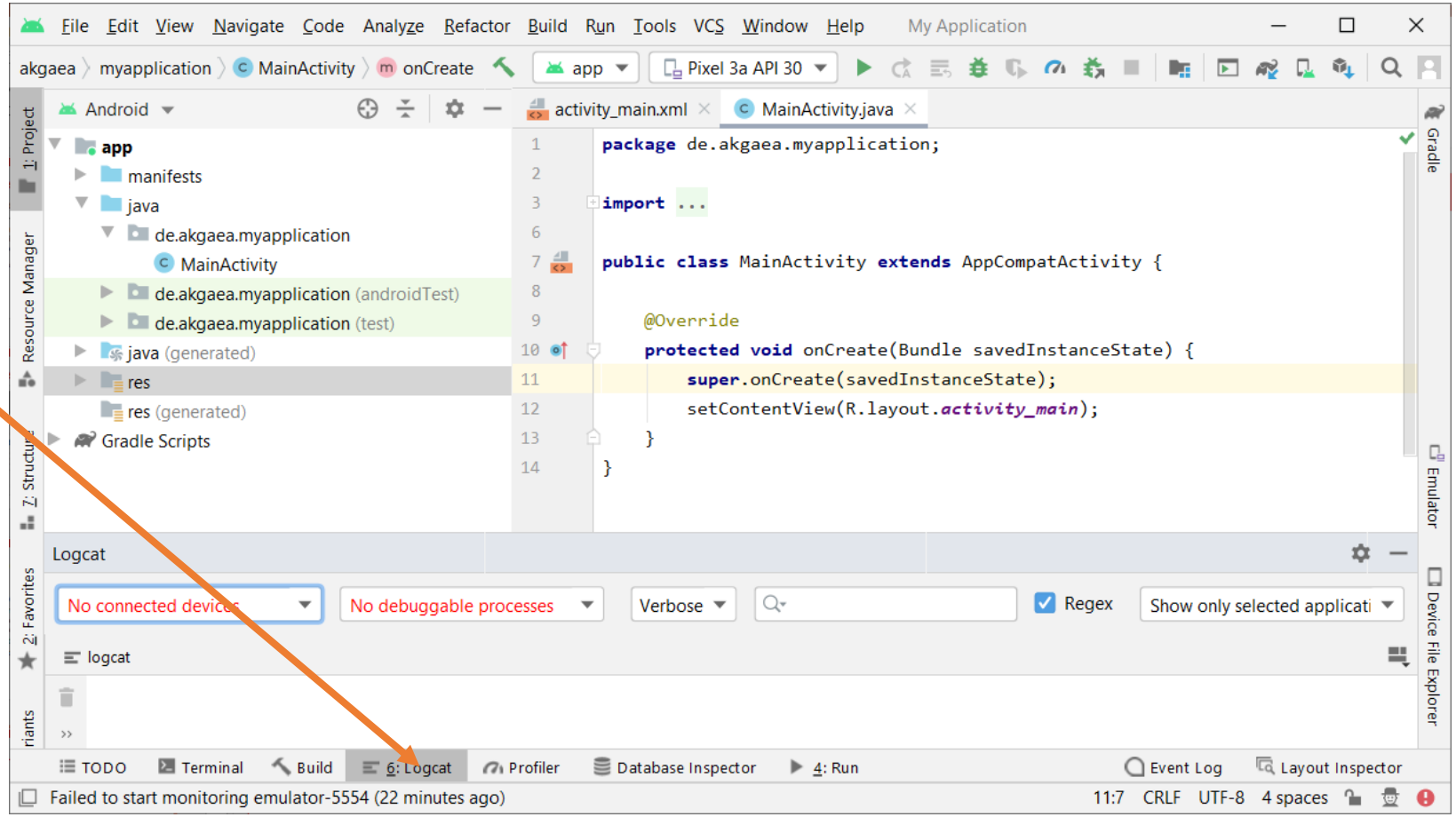
Testing of an App

- On the Virtual Device
- On the real smartphone
- The necessary settings in the developer options have to be set
- Connect the smartphone via USB cable to the computer

→ it will be detected by the Android Studio and can be chosen as the destiny for the App

Help to find errors

Logcat



The Logcat window

- Here everything that happens on the phone is shown, after you started an App out of Android Studio
- Many entries with different Log Level
  - E = Error
  - W = Warning
  - I = Info
  - D = Debug
  - V = Verbose (extensive)

The Logcat Window

- Create own messages
- The `Log` class
  - Static methods to add lines to the protocol schown in the logcat window
  - Example: `Log.e(„My Tag“, „error description“);`

  →Produces a message of the error type
  - `Log.d` produces a message of the debug type
- The first string serves to better find your message
- The second string can be any text, that will be shown as message

Debugging

- Android Studio comes with a powerful debugger
- For debugging you have to set a breakoint where the execution of the code will be stopped
- Start the App in Debug Mode
  - Icon the icon with the green bug
- The App can then be executed command by command

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What are the options?

- the Smartphone can
  - listen (Microfon)
  - talk (Lautsprecher)
  - see (Kamera)
  - Determine where it is
  - Measure several things
- Communication through
  - Input of text
  - Buttons
  - Touchscreen
- …

Some important programming concepts

- classes and objects
  - constructors
  - Import classes
- Data administration
  - Lists
  - Loops
- inheritance
- Interfaces
- Listener