Android SDK & Stack

What is Android?

- Mobile operating system based on Linux kernel
- User Interface for touch screens
- Used on over 80% of all smartphones
- Powers devices such as watches, TVs, and cars
- Over 2 Million Android apps in Google Play store
- Highly customizable for devices / by vendors
- Open source

Android user interaction

- Touch gestures: swiping, tapping, pinching
- Virtual keyboard for characters, numbers, and emoji
- Support for Bluetooth, USB controllers and peripherals

Android and sensors

Sensors can discover user action and respond

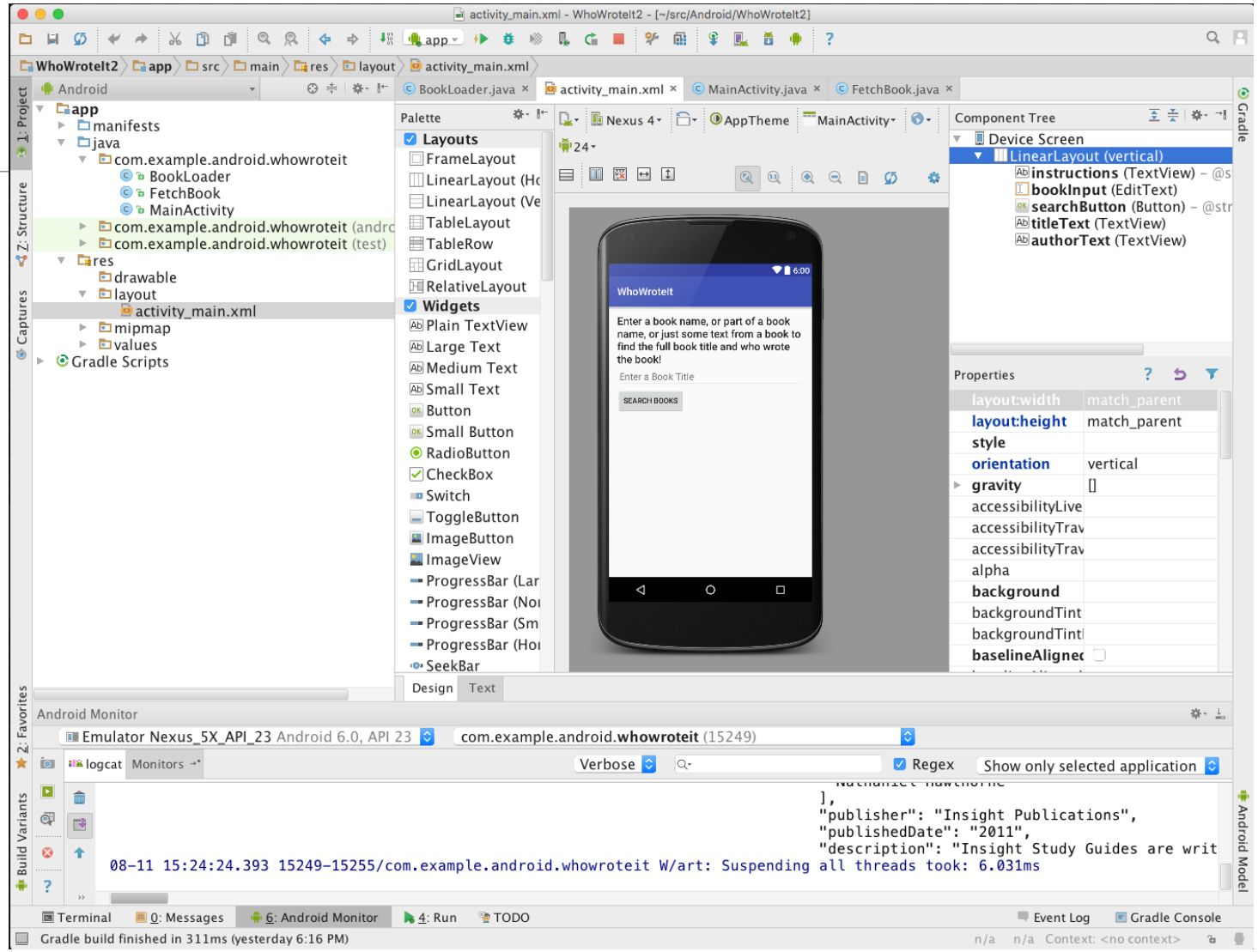
- Device contents rotate as needed
- Walking adjusts position on map
- Tilting steers a virtual car or controls a physical toy
- Moving too fast disables game interactions

Android Software Developer Kit (SDK)

- Development tools (debugger, monitors, editors)
- Libraries (maps, wearables)
- Virtual devices (emulators)
- Documentation (developers.android.com)
- Sample code

Android Studio

- Official Android IDE
- Develop, run, debug, test, and package apps
- Monitors and performance tools
- Virtual devices
- Project views
- Visual layout editor



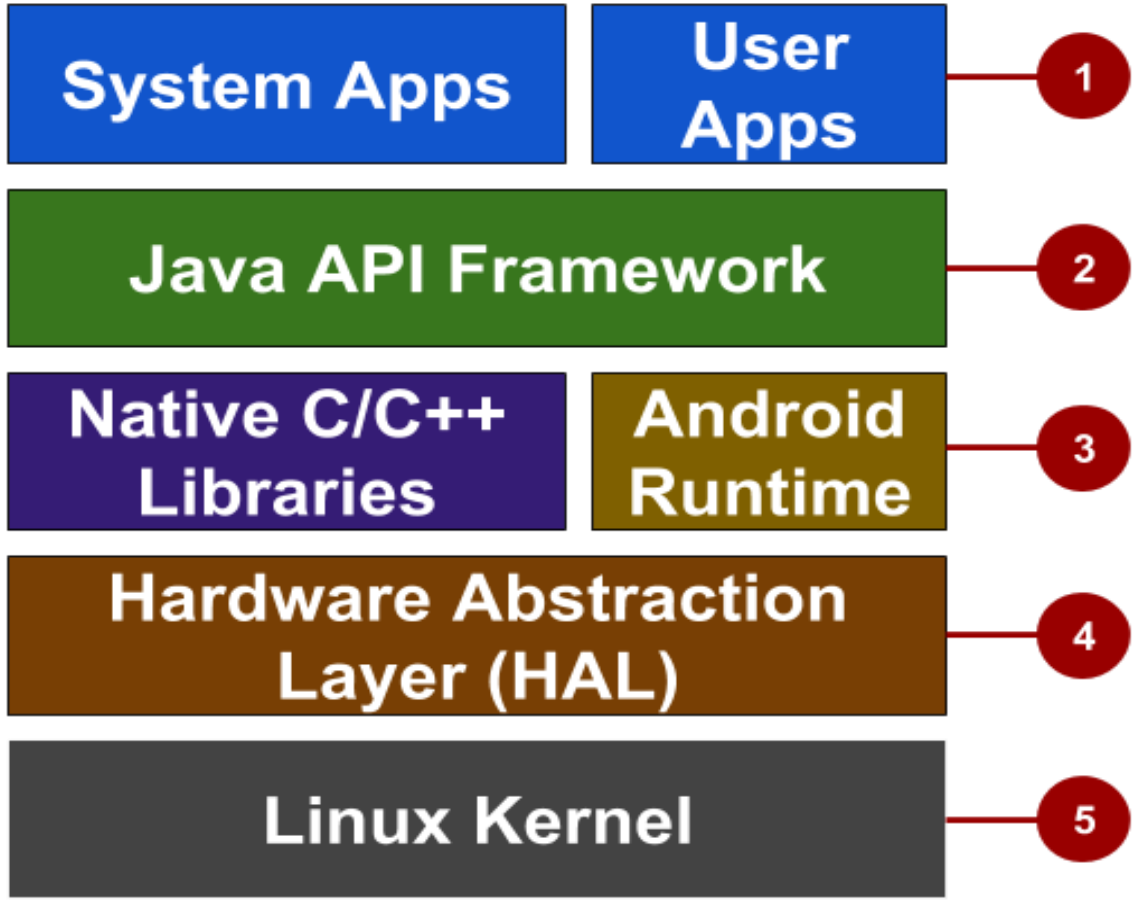
Google Play store

Publish apps through Google Play store:

- Official app store for Android
- Digital distribution service operated by Google

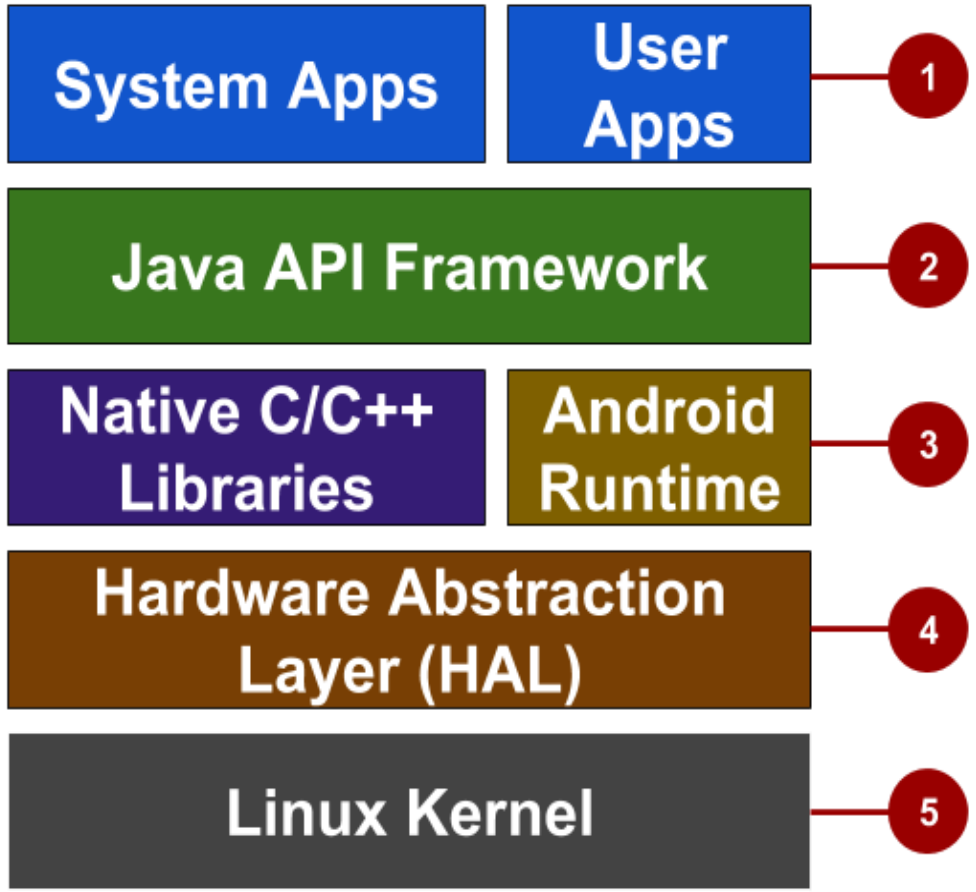
Android stack

1. System and user apps
2. Android OS API in Java framework
3. Expose native APIs; run apps
4. Expose device hardware capabilities
5. Linux Kernel



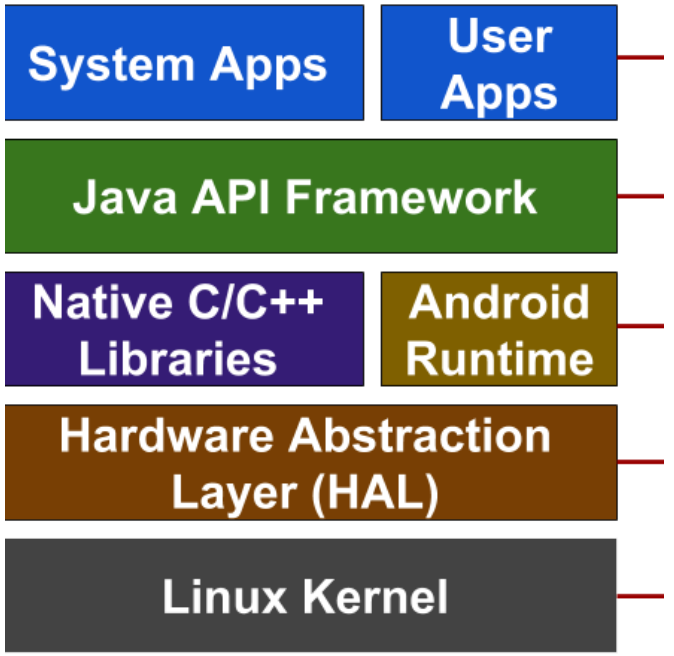
Java API Framework

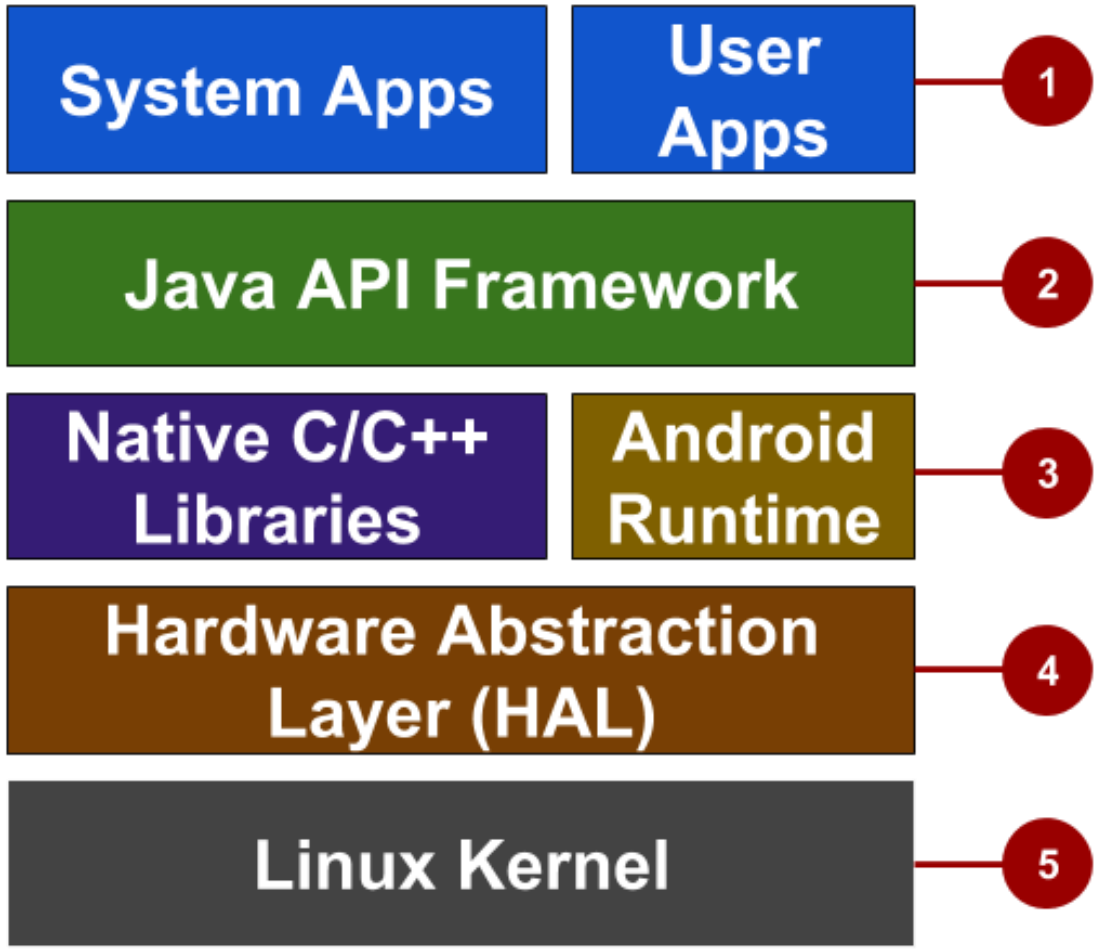
The entire feature-set of the Android OS is available to you through APIs written in the Java language.



Android runtime

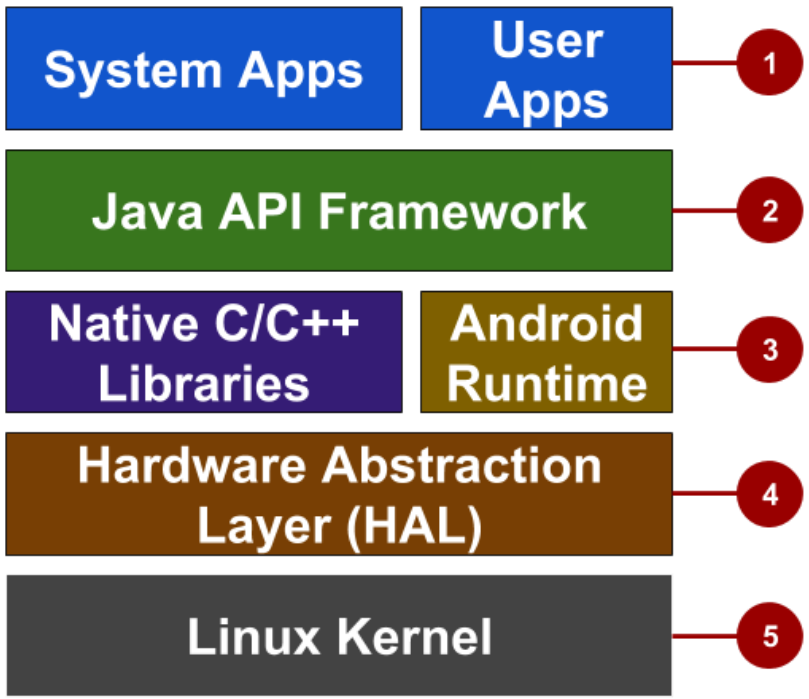
Each app runs in its own process with its own instance of the Android Runtime.





C/C++ libraries

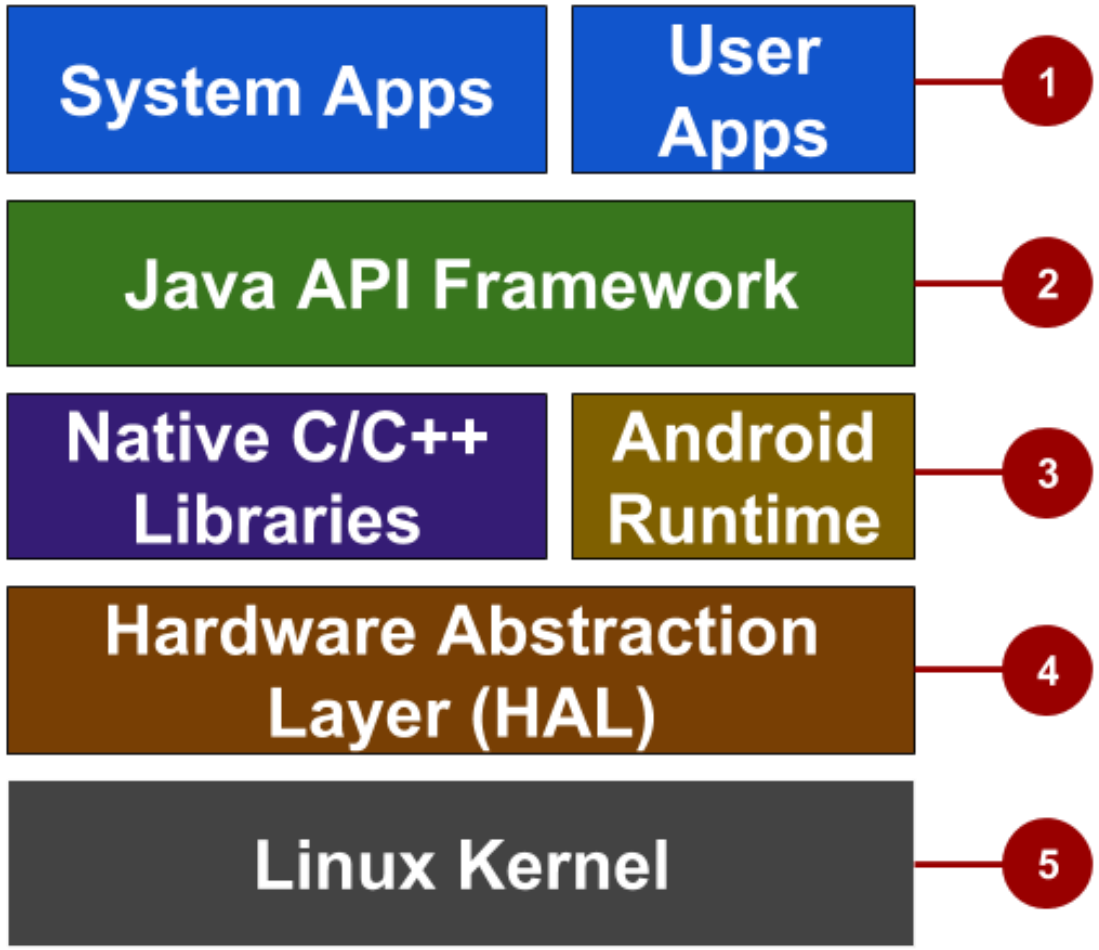
- Core C/C++ Libraries give access to core native Android system components and services.



Hardware Abstraction Layer (HAL)

- Standard interfaces that expose device hardware capabilities as libraries

  Examples: Camera, bluetooth module



Linux Kernel

Threading and low-level memory management

Security features

Drivers