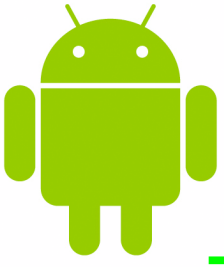
An Introduction to

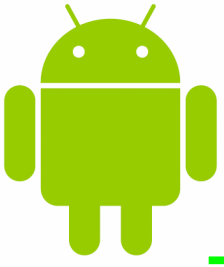
Android Development

Accessibility Capstone
Nov 19, 2010



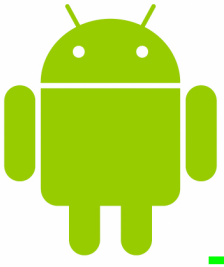
outline for today

- Why Android?
- Hello World
- Architecture Overview
- Application Lifecycle
- Application Building Blocks
- Getting Started



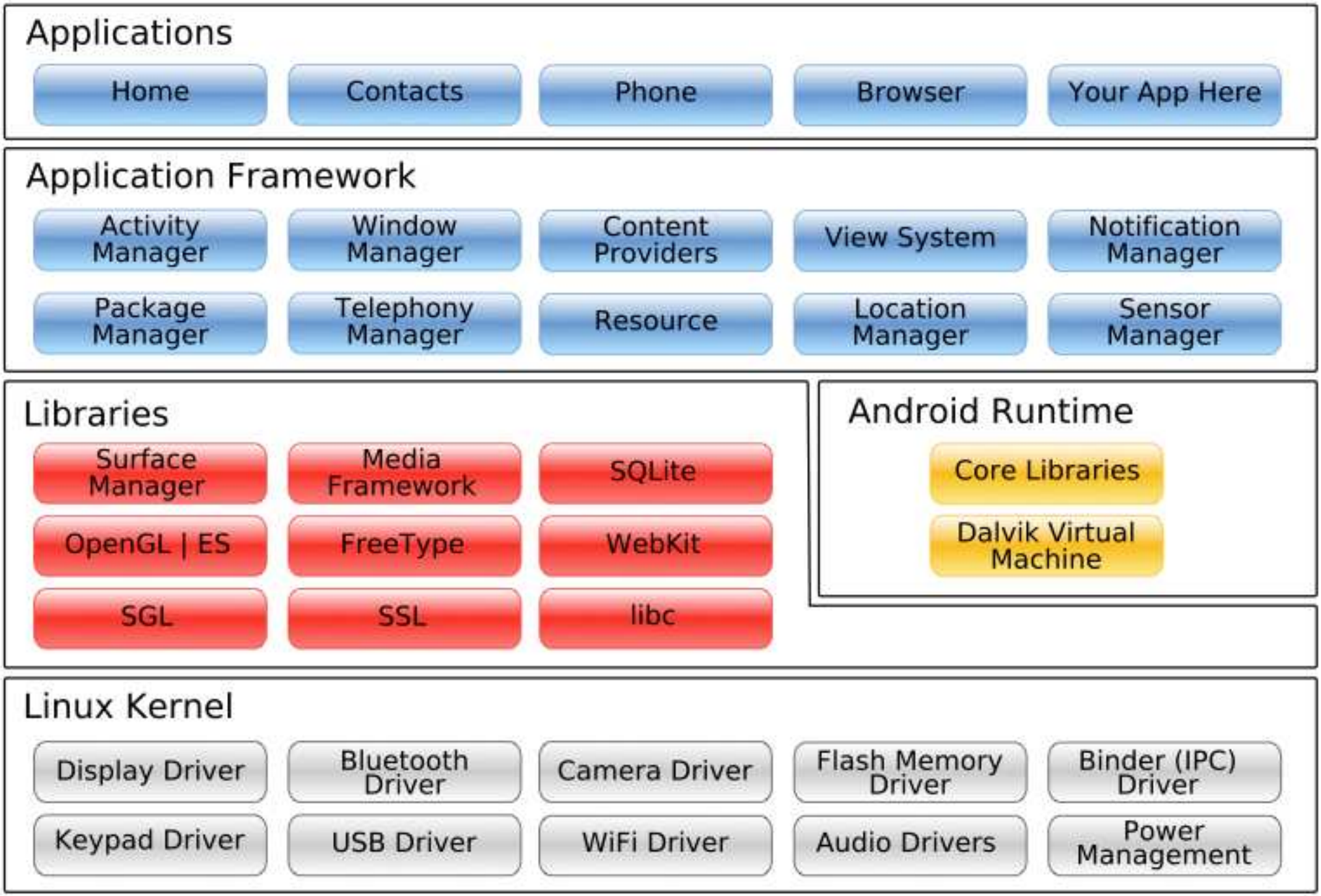
why android?

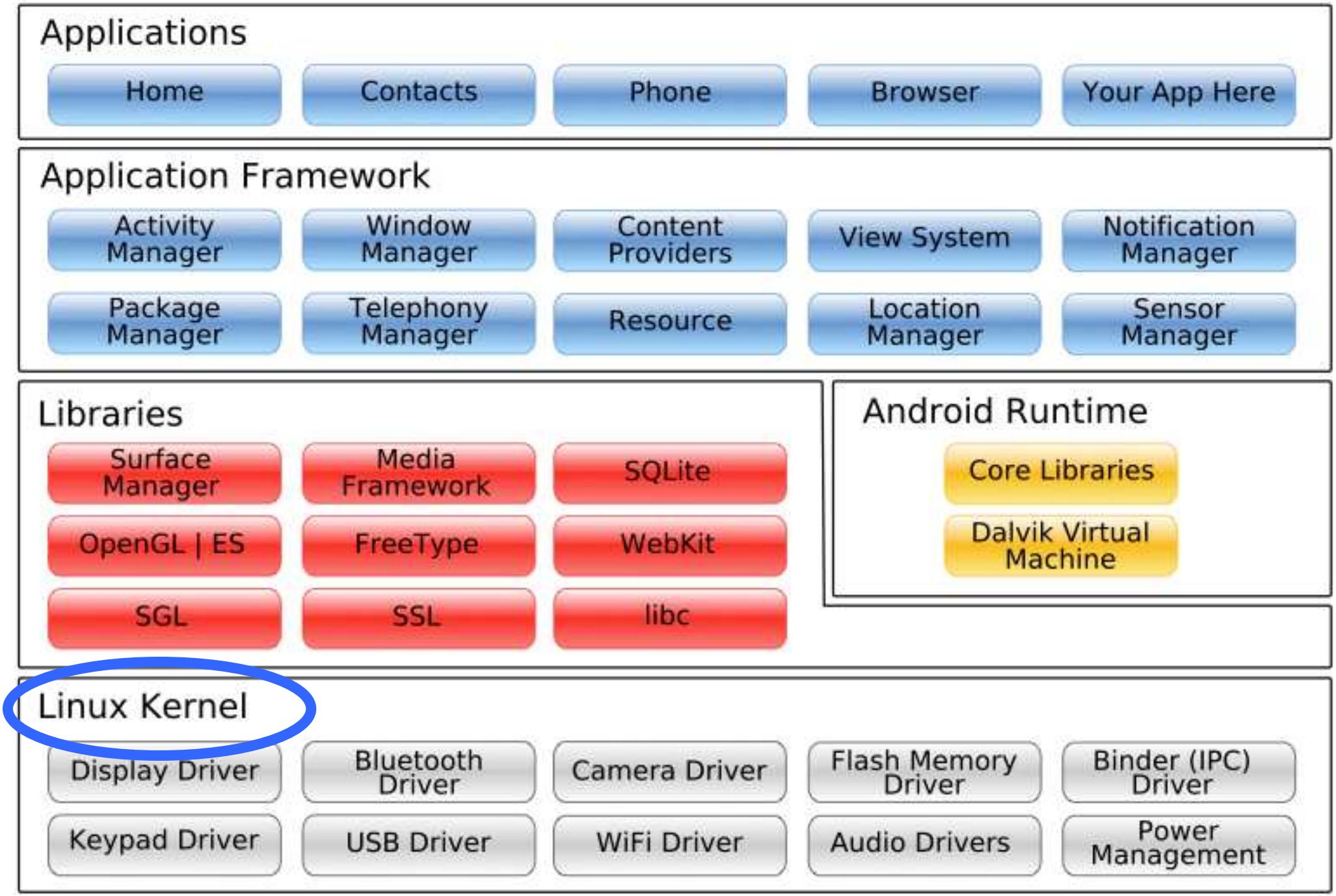
- Open, free development platform
- Built-in services out of the box
- Automatic management of app lifecycle
- Portability across hardware



architecture overview

- Linux kernel
- Native libraries
- Android runtime
- Application framework
- Applications


Applications
Home
Contacts
Phone
Browser
Your App Here
Application Framework
Activity Manager
Window Manager
Content Providers
View System
Notification Manager
Package Manager
Telephony Manager
Resource
Location Manager
Sensor Manager
Libraries
Surface Manager
Media Framework
SQLite
OpenGL | ES
FreeType
WebKit
SGL
SSL
libc
Android Runtime
Core Libraries
Dalvik Virtual Machine
Linux Kernel
Display Driver
Bluetooth Driver
Camera Driver
Flash Memory Driver
Binder (IPC) Driver
Keypad Driver
USB Driver
WiFi Driver
Audio Drivers
Power Management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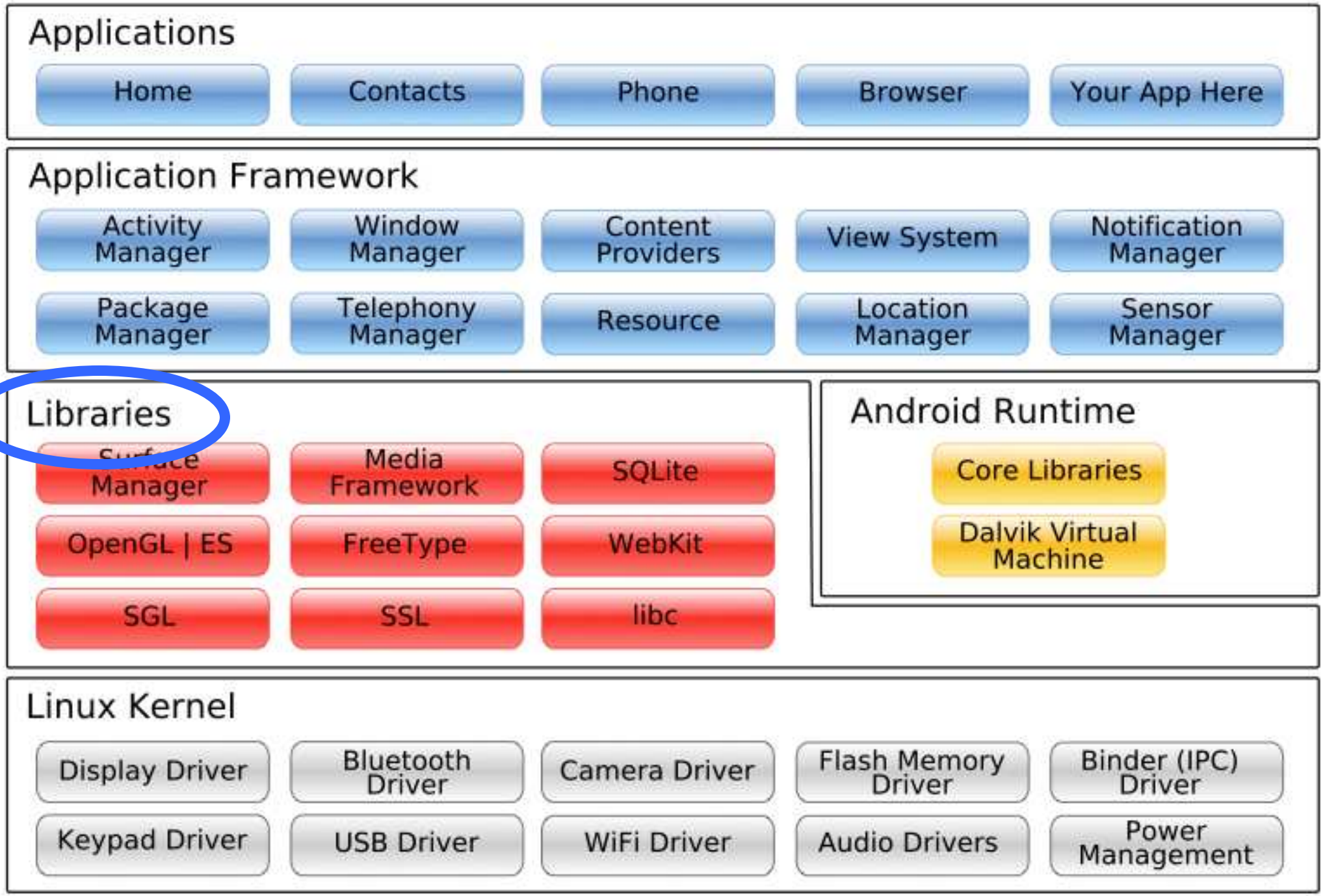
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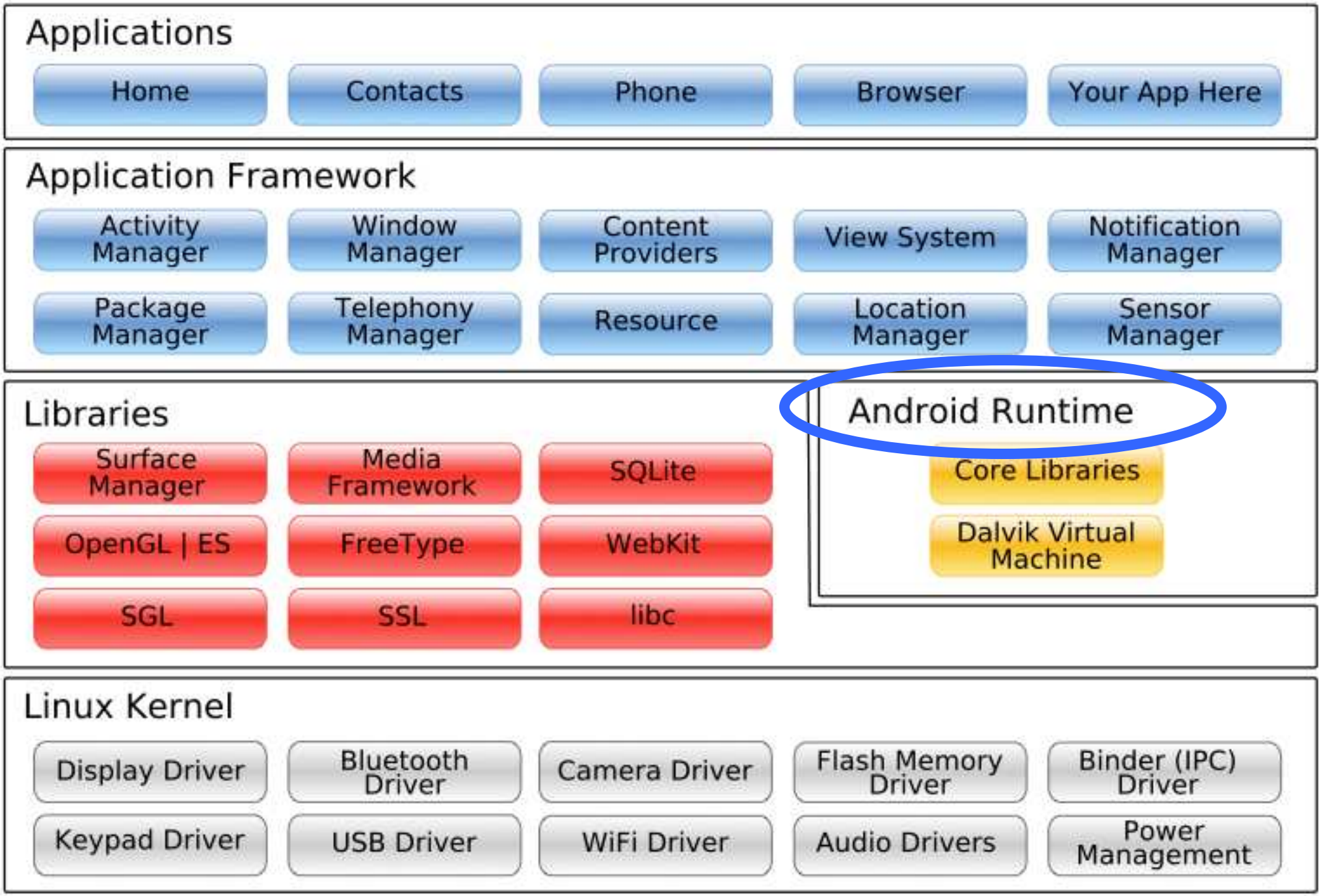
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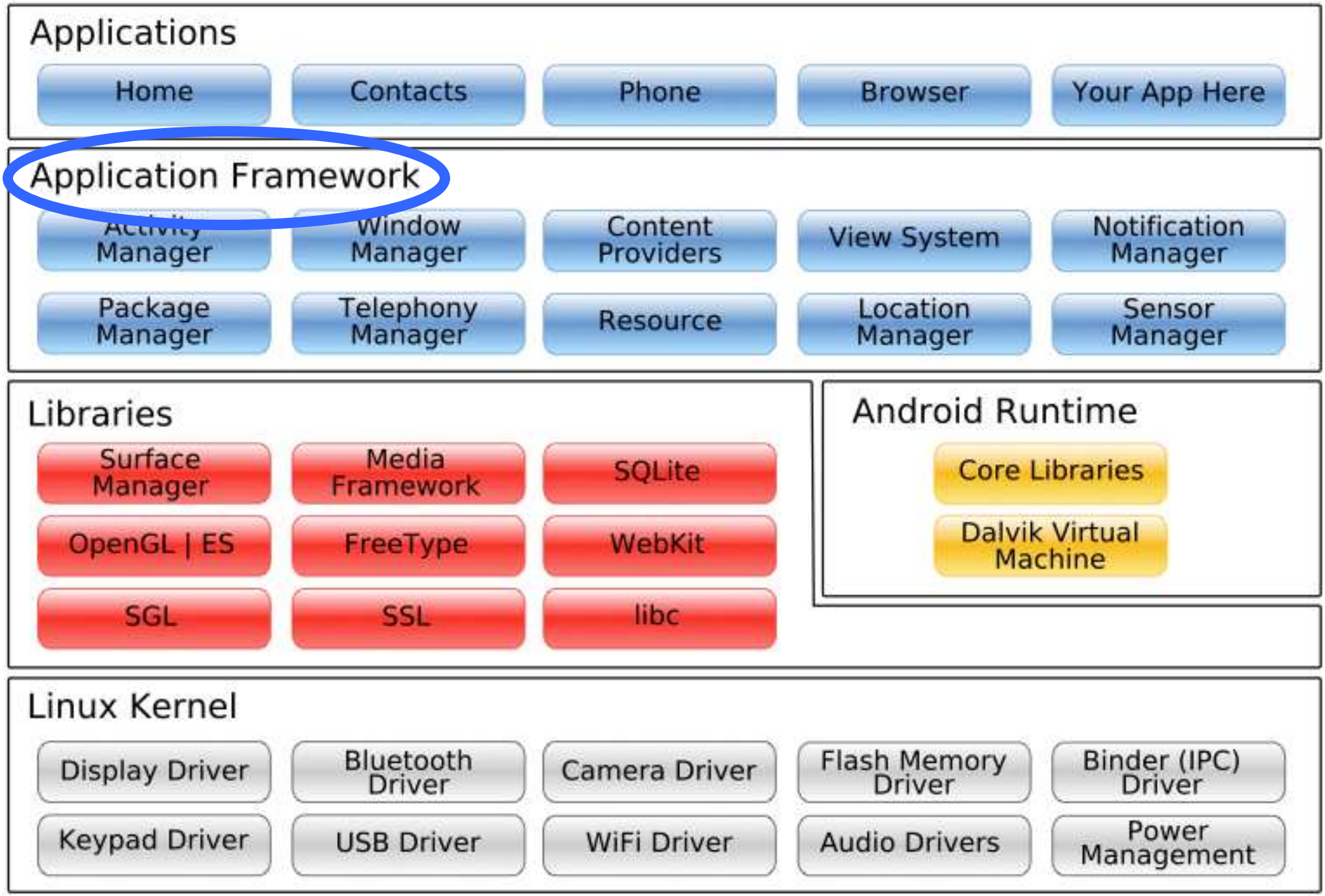
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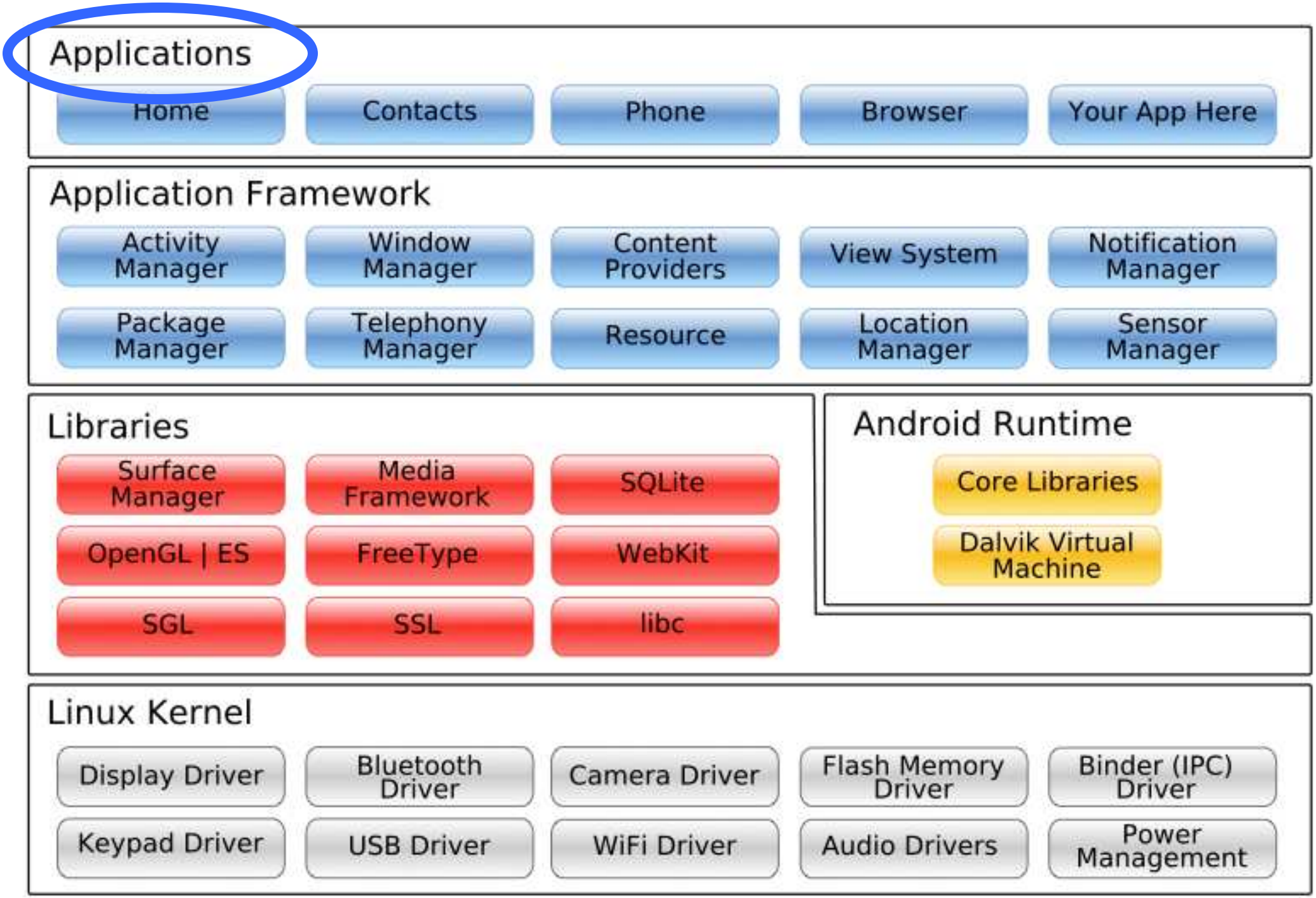
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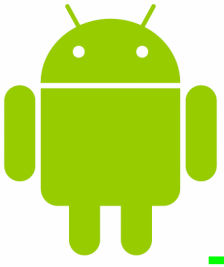
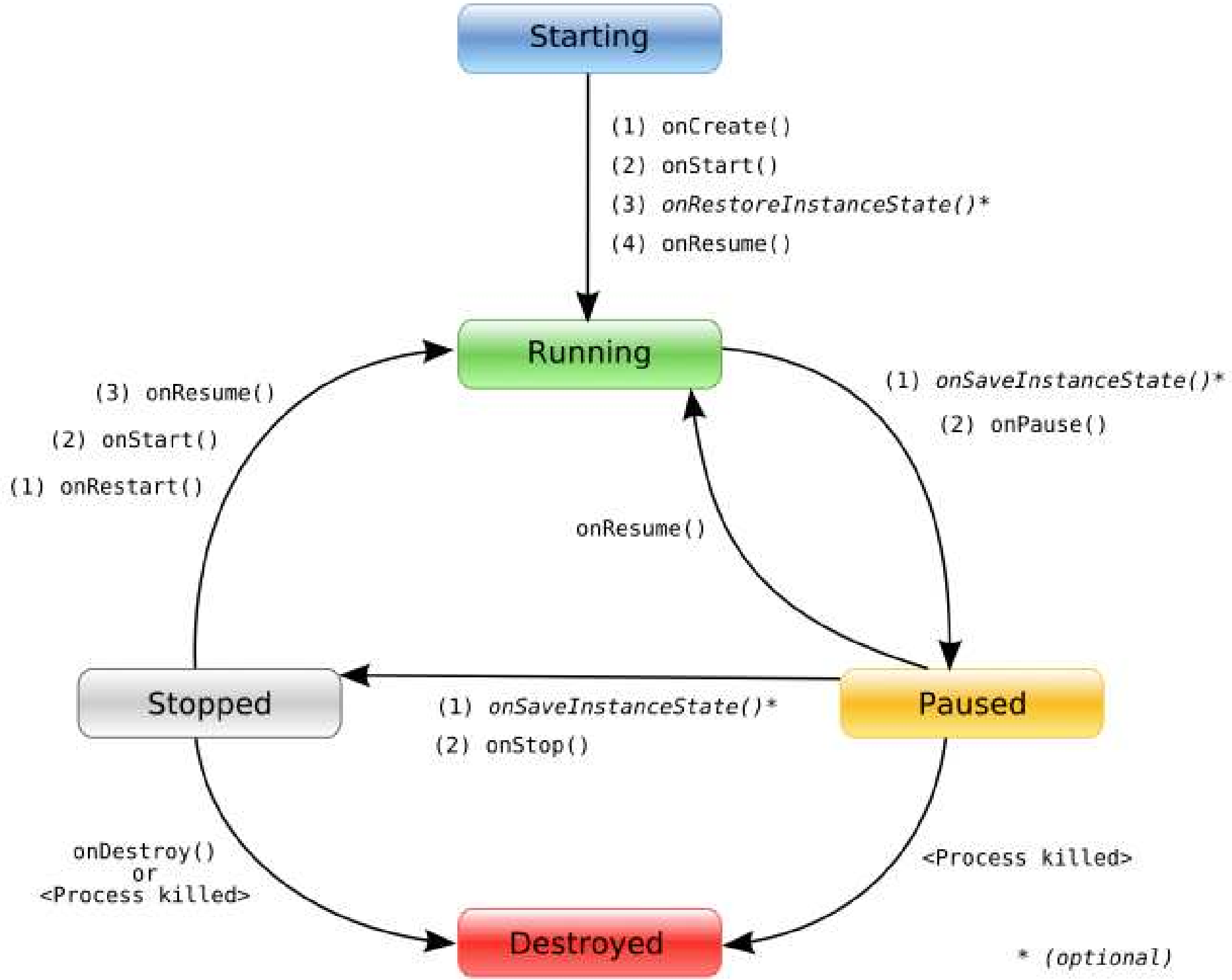
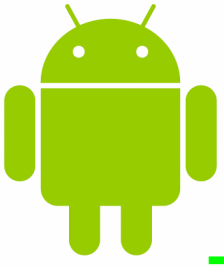


application lifecycle

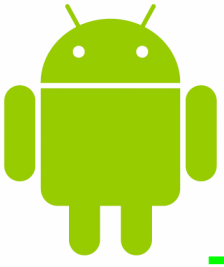
- How is Android different than desktop?
- One app in the foreground
- Move from one application to another
- User can hit “back” button


Starting
(1) onCreate()
(2) onStart()
(3) onRestoreInstanceState()*
(4) onResume()
Running
(1) onSaveInstanceState()*
(2) onPause()
Paused
(1) onSaveInstanceState()*
(2) onStop()
Stopped
(3) onResume()
(2) onStart()
(1) onRestart()
onResume()
onDestroy()
or
<Process killed>
<Process killed>
Destroyed
* (optional)



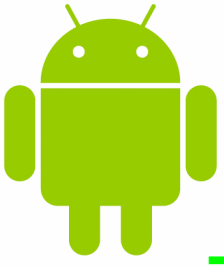
application building blocks

- Activities (activated by Intents)
  - Presents a visual user interface for one focused endeavor the user can undertake
- Services
  - No visual UI but runs in background for an indefinite period of time
- Content Providers
  - Makes a specific set of an application's data available to other applications



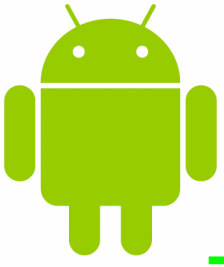
getting started

- Supported Operating Systems
  - Windows XP or Vista
  - Mac OS 10.4.8 or later
  - Linux
- Hardware Requirements
  - > 900 MB



development environments

- Eclipse IDE
  - Eclipse 3.4 (Ganymede) or 3.5 (Galileo)
    - Recommended Packages: Eclipse IDE for Java EE Developers, Eclipse IDE for Java Developers, Eclipse for RCP/Plugin-Developers, or Eclipse Classic (3.5.1+)
    - Eclipse JDT Plugin (incl. in most Eclipse IDE packages)
  - JDK 5 or JDK 6 (JRE not enough)
  - Android Development Tools Plugin



get started tutorial

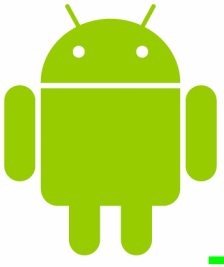
1. Install and setup the SDK

http://developer.android.com/sdk/index.html#quickstart

2. Complete the “Hello World” tutorial

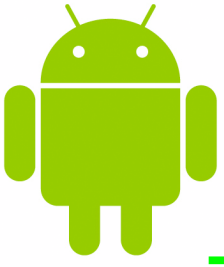
http://developer.android.com/guide/tutorials/hello-world.html

extra slides



manifest file

- Every application must have an AndroidManifest.xml file
- Where components are declared
- Set capabilities and permissions
- Include libraries
- Name Java package (unique identifier)



using lab computers

- install adt plugin
- set android preferences - sdk path
- create android virtual device
- creating own run config