Virtual Lecture
On
Android Mobile OS
By

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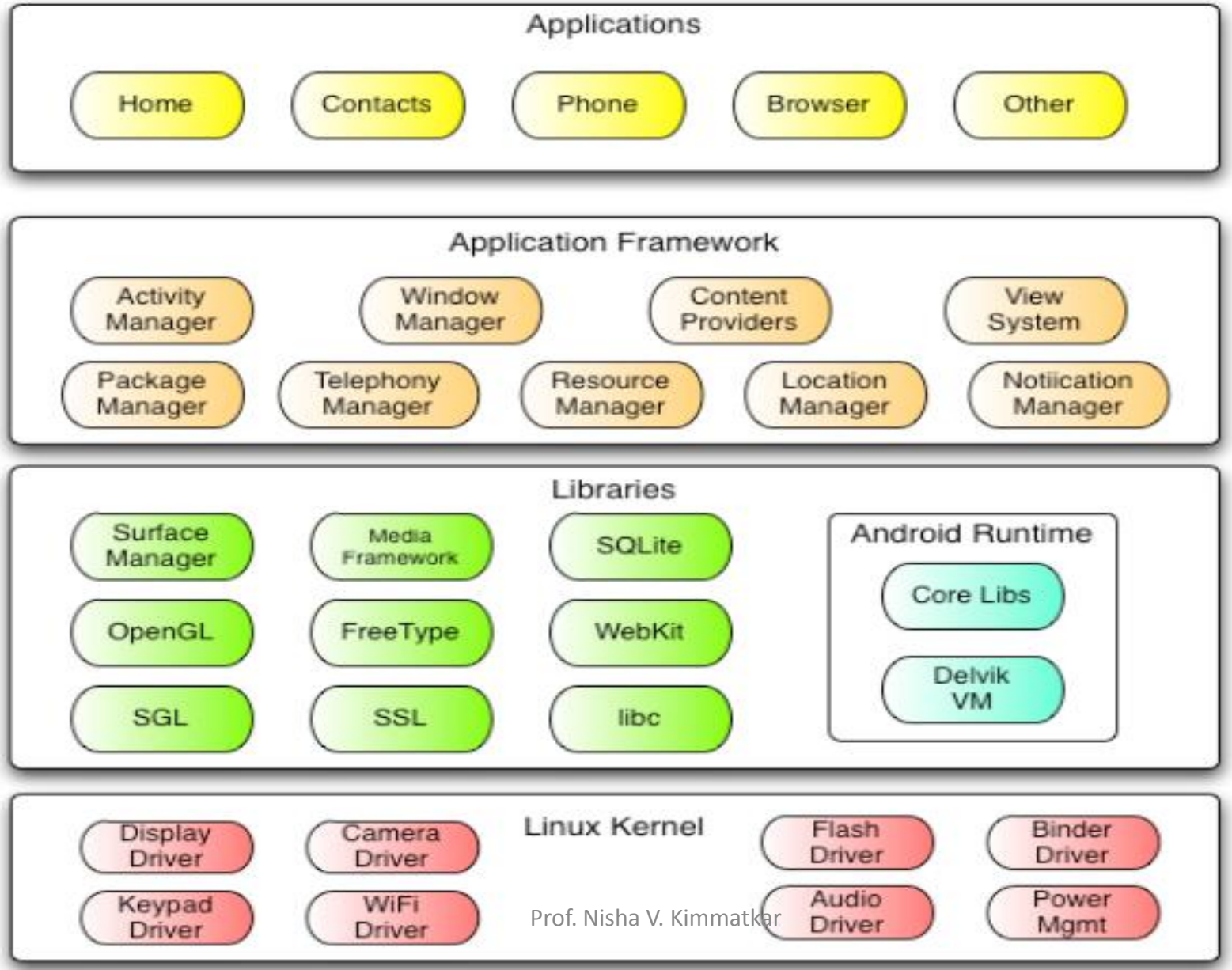
The Stack

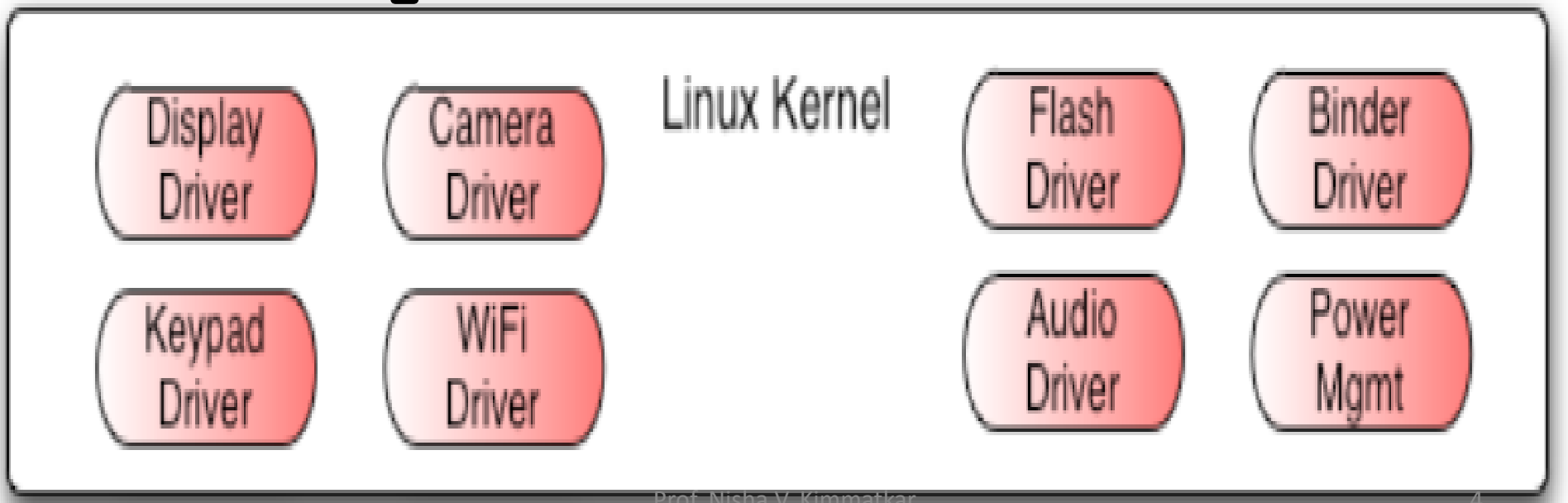

Applications
Home
Contacts
Phone
Browser
Other
Application Framework
Activity Manager
Window Manager
Content Providers
View System
Package Manager
Telephony Manager
Resource Manager
Location Manager
Notiication Manager
Libraries
Surface Manager
Media Framework
SQLite
OpenGL
FreeType
WebKit
SGL
SSL
libc
Android Runtime
Core Libs
Delvik VM
Linux Kernel
Display Driver
Camera Driver
Flash Driver
Binder Driver
Keypad Driver
WiFi Driver
Audio Driver
Power Mgmt

LINUX KERNEL

Android runs on Linux

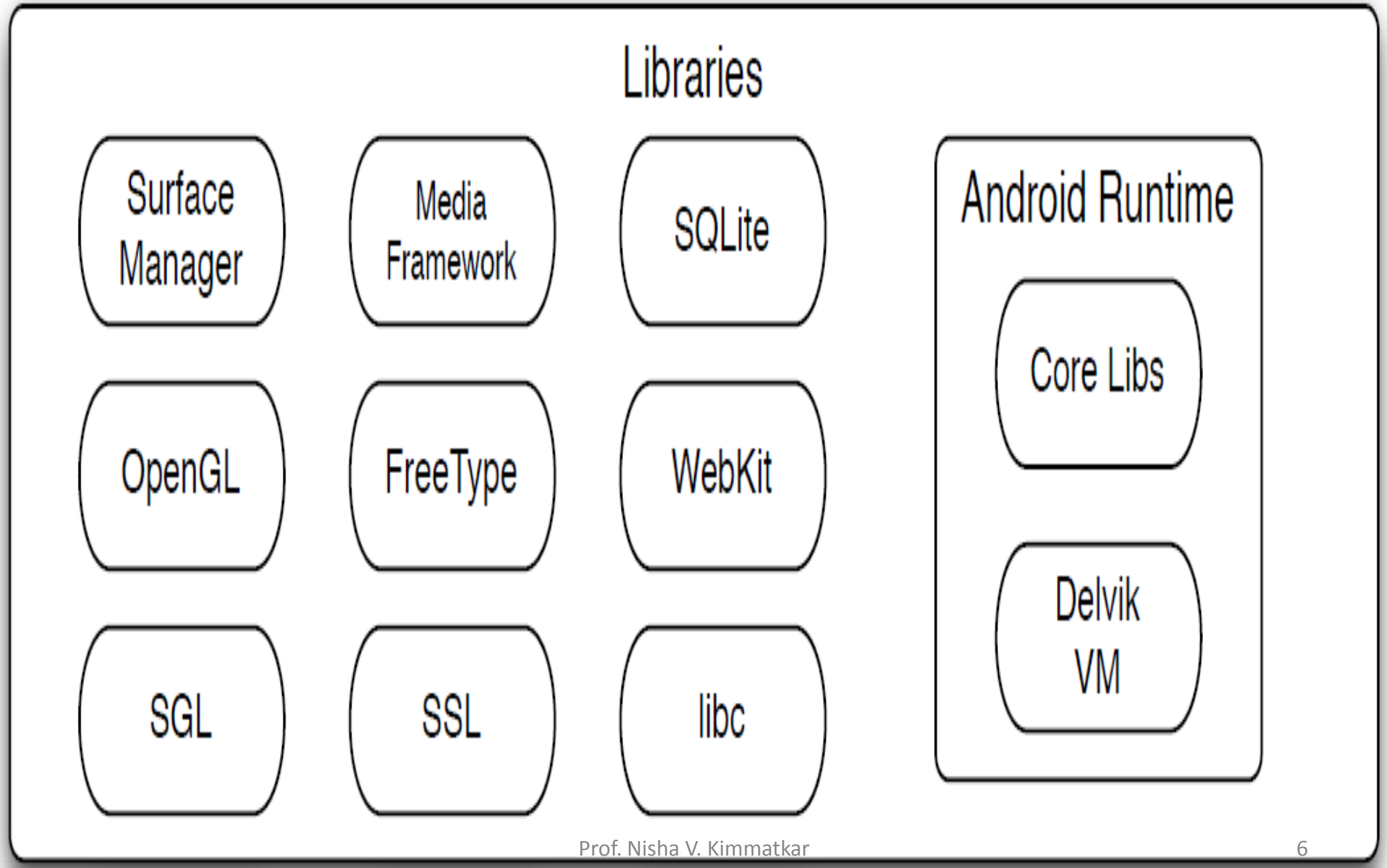
Linux provides

1. Hardware abstraction layer
2. Memory Management
3. Process Management
4. Networking



- Users never see Linux sub system
- The adb shell command opens Linux shell

Native Libraries



Bionic

- a super fast and small
- license-friendly libc library
- optimized for embedded use

Surface Manager

- for composing
- window manager with off-screen buffering

2D and 3D graphics hardware

- support or software simulation

Media codecs

- offer support for
- major audio/video codecs

SQLite database

- WebKit library for fast HTML
- rendering

Dalvik

Before discussing Dalvik VM will discuss Android mobile booting process.

(UNIT II Last Portion)

Dalvik

- Dalvik VM is Google's implementation of Java
- Optimized for mobile devices

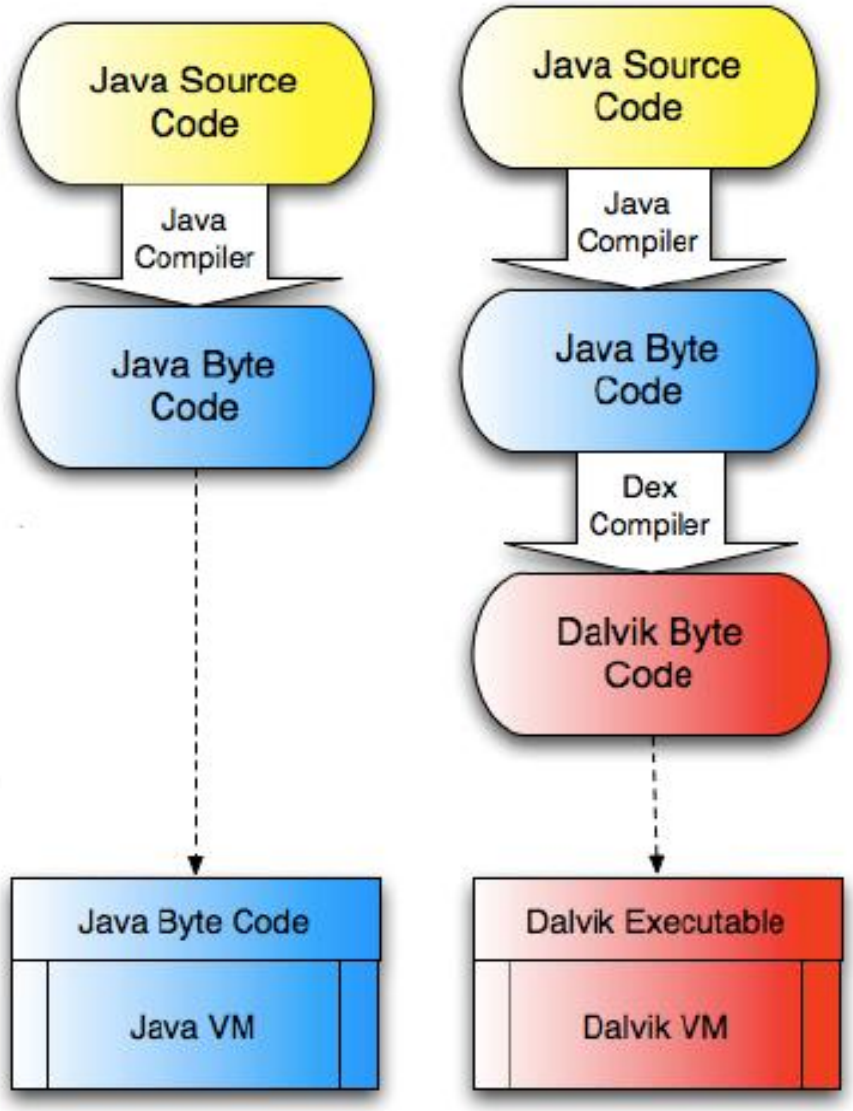
Key Dalvik differences:

- Register-based versus stack-based VM
- Dalvik runs .dex files
- More efficient

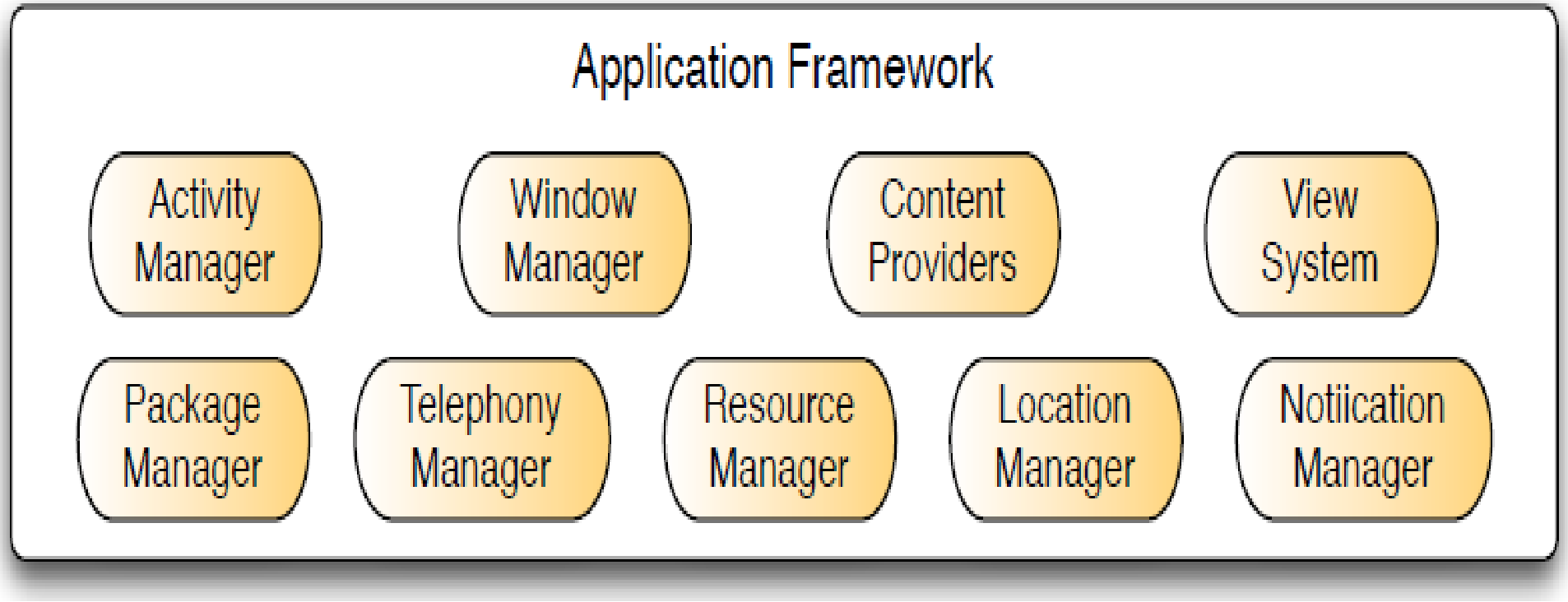
  compact implementation
- Different set of Java libraries than SDK

Android and Java

Android Java =
Java SE –
AWT/Swing +
Android API



Application Framework



Activation manager

controls the life cycle of the app

Content providers

encapsulate data that is shared (e.g. contacts)

Resource manager

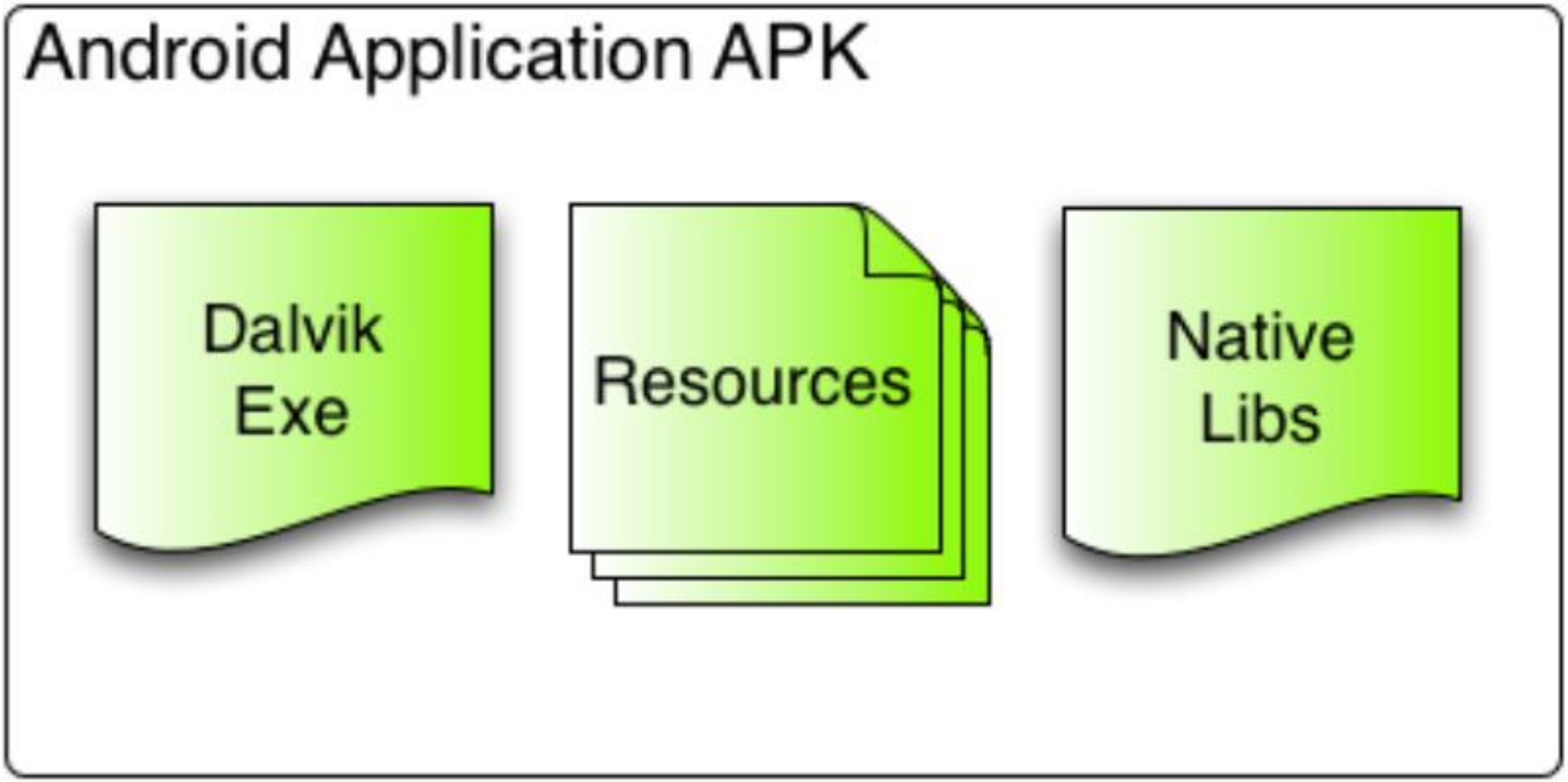
manages everything that is not the code

Location manager

figures out the location of the phone (GPS, GSM,WiFi)

Notification manager

for events such as arriving messages, appointments, etc


Android Application APK
Dalvik
Exe
Resources
Native
Libs

File System

The file system has three main mount points.

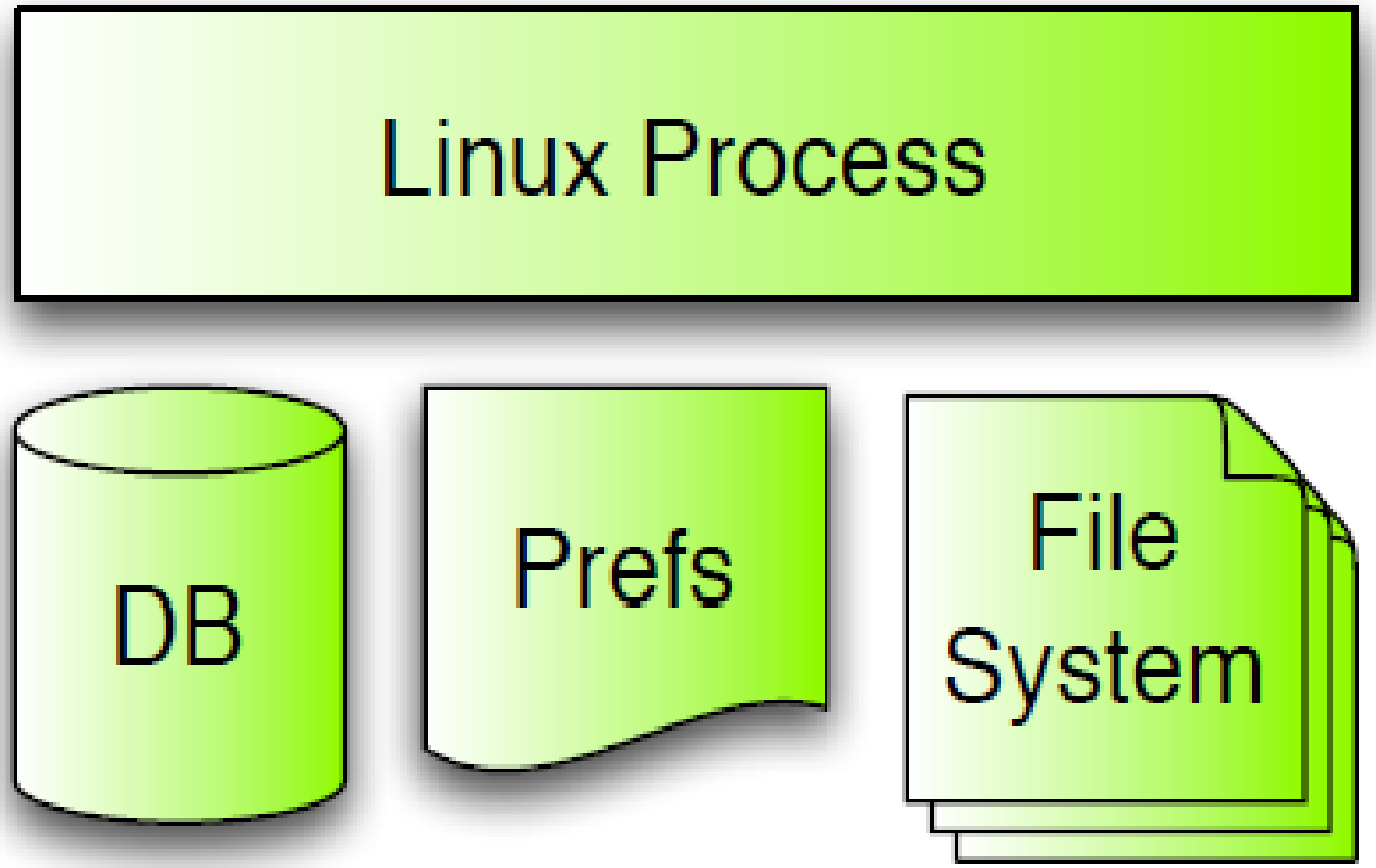
1. One for system,
2. one for the apps,
3. for whatever.

Each app has its own sandbox easily accessible to it. No one else can access its data.

Security

- Each Android application runs inside its own Linux process.
- Additionally, each application has its own sandbox file system with its own set of preferences and its own database.
- Other applications cannot access any of its data, unless it is explicitly shared.

Android Application



LIMITATIONS:-

- Making source code available to everyone inevitably invites the attention of hackers.
- Android operating system uses more amount of battery as compared to normal mobile phones.
- As there are so many user sometimes it becomes difficult to connect all the users.
- As we call Android is world of applications we continuously need to connected with the internet which is not possible for all the users.