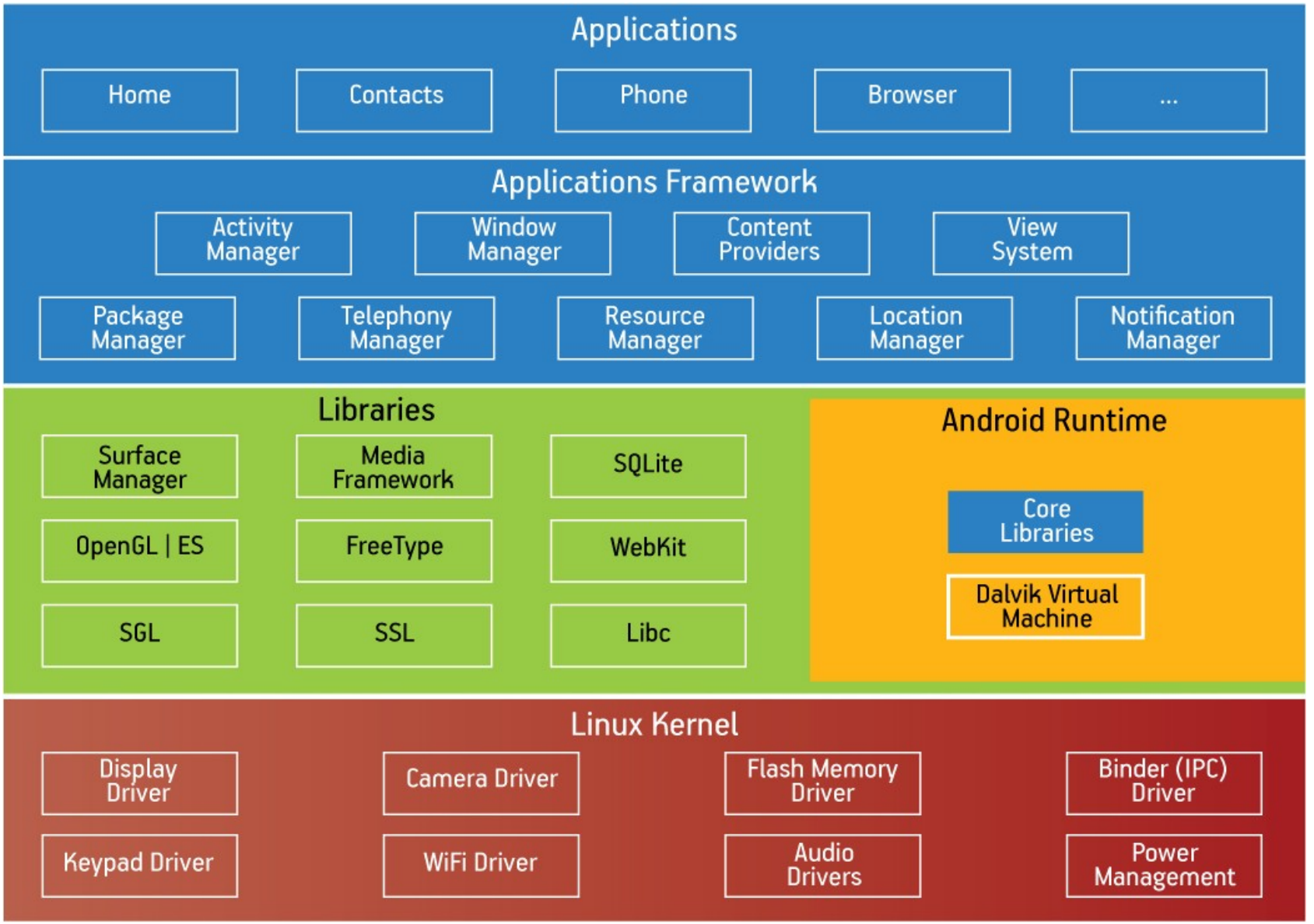
IT – Entrepreneurship
Introduction to Android

What is Android?

- An open source and Linux-based Operating System for mobile devices
- Android has the largest installed base of all operating systems (OS) of any kind.

Android Architecture



Android Architecture - Kernel

- At the root of an android OS lies device drivers
- Linux Kernel provides a lot of core operation system features that are robust.
- It provides device drivers, memory management, security module, networking etc.
- The Linux kernel is written in C

Android Architecture - Libraries

- Written in C and C++
- This is where the core power of android comes from.
- Surface Manager, is responsible for drawing different surfaces onto the screen.
- OpenGL/ES is a 3d library
- SGL is a 2d library
- Media Framework contains all the media codecs, such as mp4, avi, mpeg etc

Android Architecture - Libraries

- FreeType to render fonts
- SqLite is the core of data storage
- Webkit is an open source browser engine, it’s the same browser that powers Safari for Apple.

Android Architecture - Runtime

- This layer contains core Java libraries
- Just as Java Virtual Machine (JVM) is used to run programs on a computer, Dalvik Virtual Machine is used to run application on android phones.
- JVM was heavy weight for mobile platform, so the developers created a light version and it was named Dalvik Virtual Machine.
- Since android 5.0 Dalvik is replaced by a new runtime called Android Runtime (ART)

Android Architecture - Runtime

- The core libraries are written in JAVA
- DVM is written in C/C++

Android Architecture – Application Framework

- Application Framework is the toolkit that all applications use.
- The Activity Manager maintains the life-cycle of applications.
- Package Manager, keeps track of which applications are installed on your device.
- Windows Manager, maintains windows.
- Telephony Manager, provides the APIs used to built phone apps

Android Architecture – Application Framework

- Content Providers are a unique framework which allows applications to share their data with other applications.
- Resource Manager is used to store resoures such as Strings, Images, Layout files etc
- View System, contains things like buttons and lists.

Android Architecture – Application Framework

- This is where all the applications get written.
- All the pre-installed applications, google applications and your applications would fall under this layer.

Android Building Block

- Activity
- IntentReceiver
- Service
- ContentProvider

Activity

- An activity is just piece of UI, typically corresponding to one screen.
- A Messaging app would probably be composed of atleast three activities.
- First activity would be display your inbox
- Second activity would open your converstion
- And third activity would be to compose a message.

IntentReceiver

- Intent Receiver is a sort of a code that does not run until triggered by an external event.

Service

- A task that doesn’t have any UI
- It runs in the background
- Example is of a music player; once you play a song, you would like to continue playing even if the activity is changed or closed

ContentProvider

- Content Providers allow us to share some data with other processes or applications.