Android Architecture

APPLICATION LAYER

Native Apps (Contacts, Maps, Browser, etc.)	Third-Party Apps	Developer Apps

APPLICATION FRAMEWORK

Location-Based Services	Content Providers	Window Manager	Activity Manager	Package Manager
Telephony	Bluetooth / NFC / Wi-Fi Direct	Notifications	Views	Resource Manager

LIBRARIES

Graphics (OpenGL, SGL, FreeType)	Media	SSL & Webkit
libc	SQlite	Surface Manager

ANDROID RUN TIME

Android Libraries
Dalvik Virtual Machine

LINUX KERNEL

Hardware Drivers (USB, Display, Bluetooth, etc.)	Power Management	Process Management	Memory Management

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Linux Kernel

LINUX KERNEL

| Hardware Drivers (USB, Display, Bluetooth, etc.) | Power Management | Process Management | Memory Management |
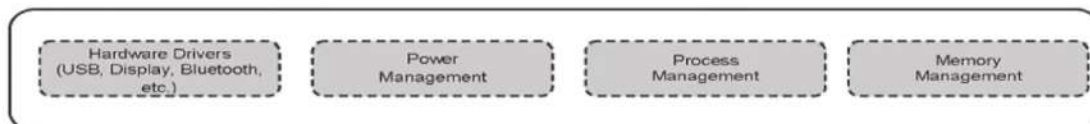
- It is like heart of android operating system and present at the bottom of android architecture.

- It contains essential hardware drivers like display, audio, camera, bluetooth, wifi, etc.
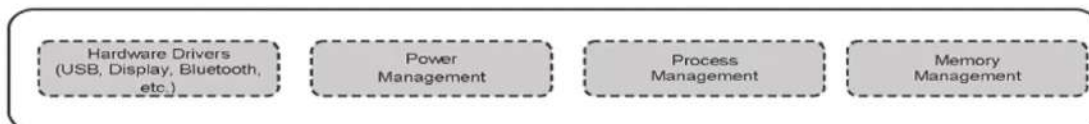
Linux Kernel

LINUX KERNEL

| Hardware Drivers (USB, Display, Bluetooth, etc.) | Power Management | Process Management | Memory Management |

- It provides functionalities such as power management, process management and memory management.

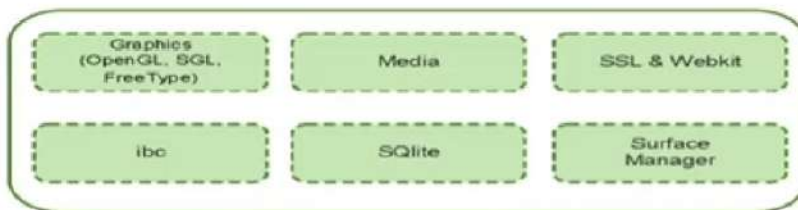- It provides a level of abstraction between device hardware and upper layers of Android software stack.

Libraries

LIBRARIES

Graphics (OpenGL, SGL, FreeType)	Media	SSL & Webkit
ibc	SQlite	Surface Manager

- Above Linux kernel there are native libraries such as SQLite, WebKit, OpenGL, SSL, etc.

Libraries

LIBRARIES

Graphics (OpenGL, SGL, FreeType)	Media	SSL & Webkit
ibc	SQlite	Surface Manager
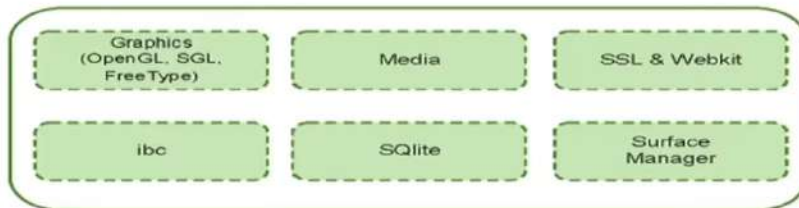
- Some of these libraries are briefly explained below.

  - SQLite – It provides various classes used for database management.

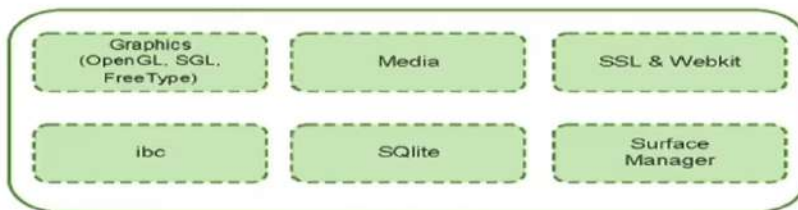 - WebKit – It is a web browser engine used to [ ]ay internet content.

Libraries

LIBRARIES

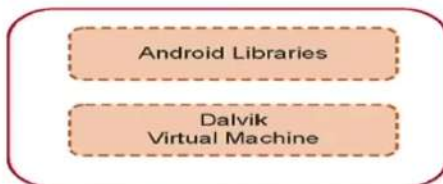|		
Graphics (OpenGL, SGL, FreeType)	Media	SSL & Webkit
ibc	SQlite	Surface Manager

- **SSL** – It provides internet security.
- **OpenGL** – It is a Java interface to the OpenGL ES 3D graphics rendering API.

Android Run Time

ANDROID RUN TIME

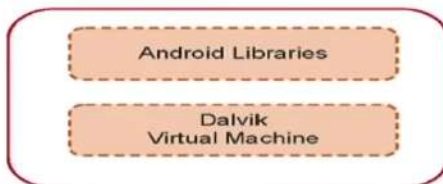Android Libraries

Dalvik
Virtual Machine

- It is third section which is also present on the second layer from bottom of Android architecture.

- Android runtime provides core libraries and Dalvik Virtual Machine (DVM).

Android Run Time

ANDROID RUN TIME

- Android Libraries
- Dalvik Virtual Machine

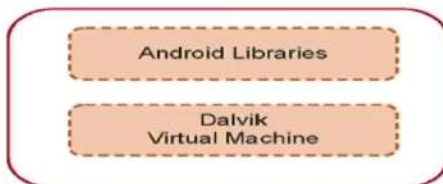- These core libraries enable Android developers to write Android applications using standard Java programming language.

- DVM is a major component of Android OS. It is s e as like Java Virtual Machine (JVM).

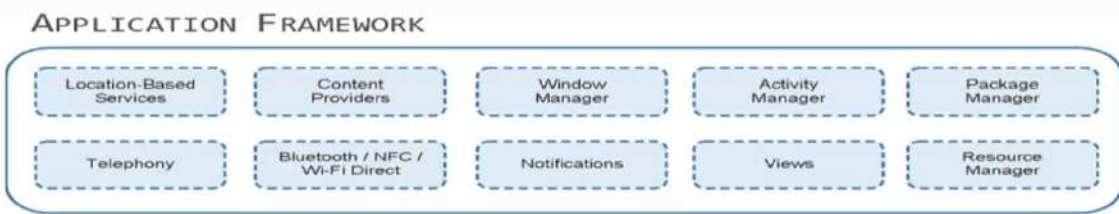www.wscubetech.com

Android Run Time

ANDROID RUN TIME

- DVM is responsible for running Android applications. It consumes less memory and provides very fast performance.

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Application Framework

APPLICATION FRAMEWORK

| Location-Based Services | Content Providers | Window Manager | Activity Manager | Package Manager |
| Telephony | Bluetooth / NFC / Wi-Fi Direct | Notifications | Views | Resource Manager |

- It is the fourth section and third layer present on the top of native libraries and android runtime.

- It provides various API's like activity manager, resource manager, content providers, telephony manager, et

Application Framework

APPLICATION FRAMEWORK

Location-Based Services	Content Providers	Window Manager	Activity Manager	Package Manager
Telephony	Bluetooth / NFC / Wi-Fi Direct	Notifications	Views	Resource Manager

- These API's are used by Android application developers.

Application Layer

APPLICATION LAYER

Native Apps (Contacts, Maps, Browser, etc.)	Third-Party Apps	Developer Apps

- Applications layer is present at the top. Various applications created by developers like games, contacts, browser, etc. are installed on this layer.

Application Layer

APPLICATION LAYER

| Native Apps (Contacts, Maps, Browser, etc.) | Third-Party Apps | Developer Apps |

- This layer consists of 3 main parts:
  - Native apps.
  - Third Party apps.
  - Developer apps.

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