INTRODUCTION TO ANDROID APPLICATIONS

Lecture 1

Isra University

OBJECTIVES:

- Introduction
- Android Architecture
- Android Features
- Android Emulator
- Advantages

INTRODUCTION:

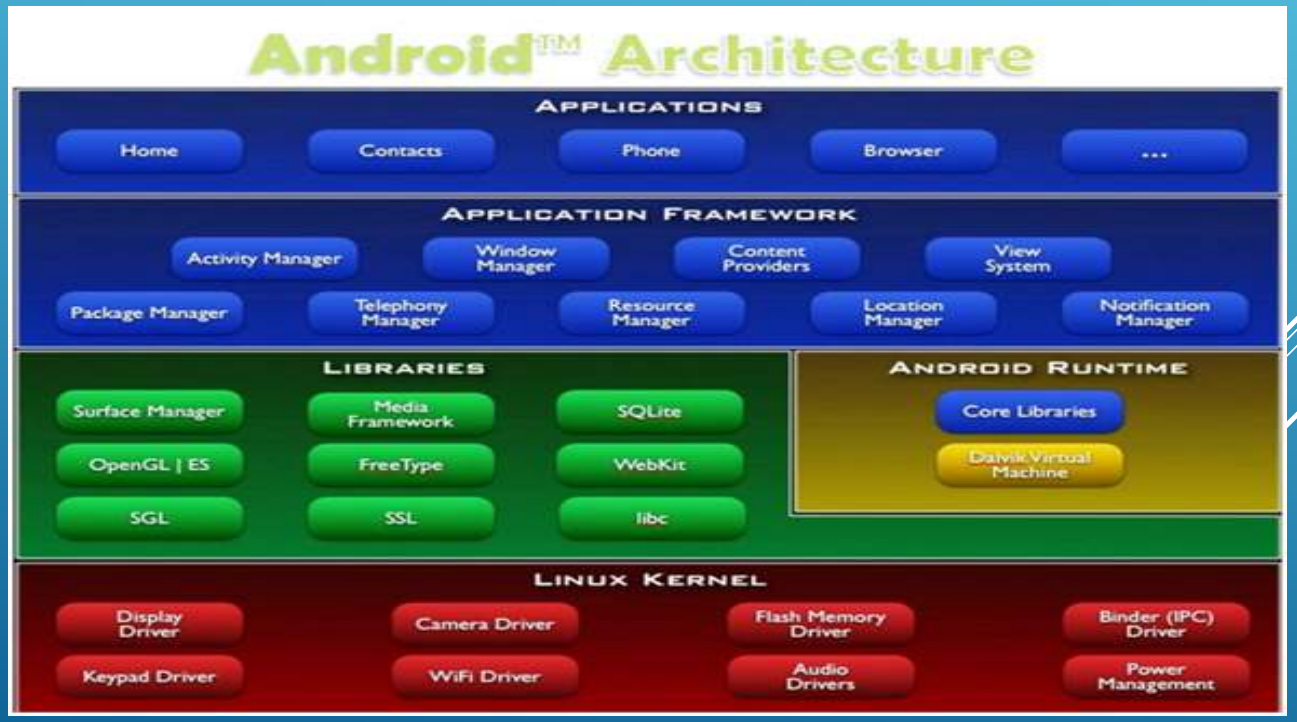
- Android is a Linux based operating system it is designed primarily for touch screens mobile devices such as smartphones and tablet computers. The operating system has developed a lot in the last 15 years starting from black and white phones to recent smartphones or mini computers. One of the most widely used mobile OS these days is android.

- Android is a powerful operating system and it supports a large number of applications in Smartphones. These applications are more comfortable and advanced for users. The android is an open-source operating system that means that it's free and anyone can use it. The android has got millions of apps available that can help you manage your life one or another way and it is available to low cost in the market for that reason android is very popular.
- Android development supports the full java programming language. Even other packages that are API and JSE are not supported. The first version 1.0 of the android development kit (SDK) was released in 2008 and the latest updated version is a jelly bean.

ANDROID ARCHITECTURE:

The android is an operating system and is a stack of software components which is divided into five sections and four main layers that is:

- Linux kernel
- Libraries
- Android runtime



ANDROID ARCHITECTURE:

Linux kernel:

The android uses the powerful Linux kernel and it supports a wide range of hardware drivers. The kernel is the heart of the operating system that manages input and output requests from the software. This provides basic system functionalities like process management, memory management, device management like camera, keypad, display etc. The kernel handles all the things. Linux is really good at networking and it is not necessary to interface it to the peripheral hardware. The kernel itself does not interact directly with the user but rather interacts with the shell and other programs as well as with the hardware devices on the system.

Libraries:

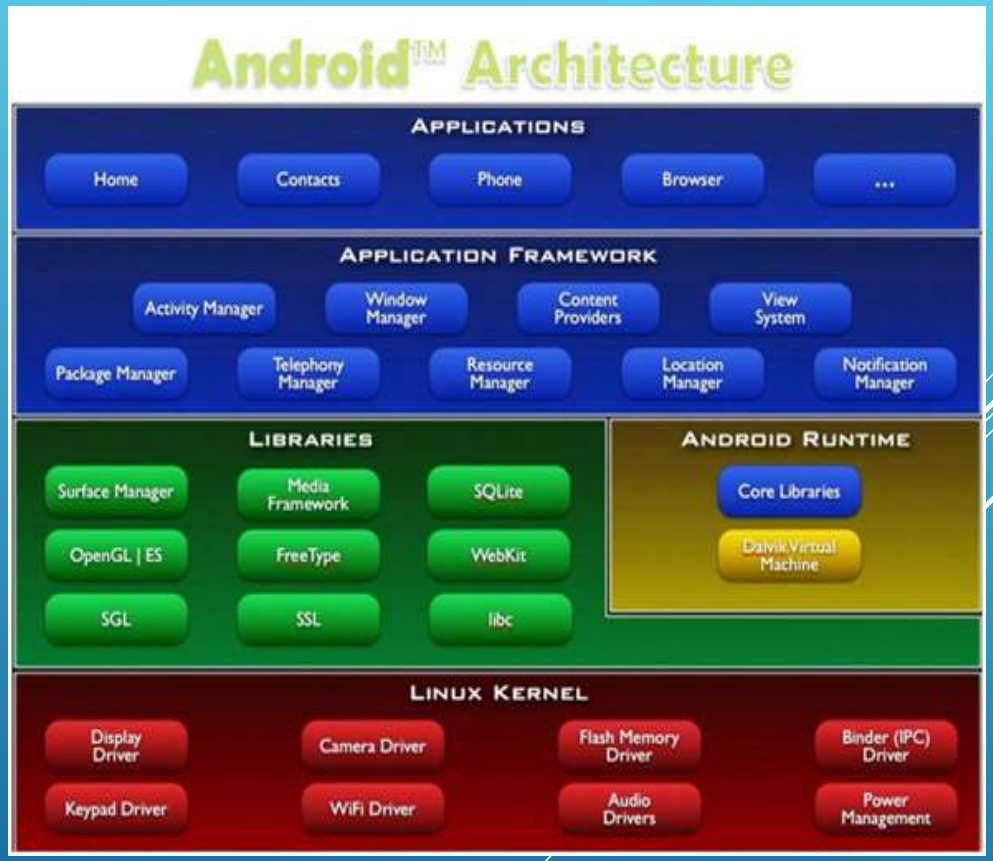
The on top of a Linux kennel there is a set of libraries including open-source web browsers such as WebKit, library libc. These libraries are used to play and record audio and video. The SQLite is a database that is useful for the storage and sharing of application data. The SSL libraries are responsible for internet security etc.

ANDROID ARCHITECTURE:

Android Runtime:

The android runtime provides a key component called Dalvik Virtual Machine which is a kind of java virtual machine. It is specially designed and optimized for android. The Dalvik VM is the process virtual machine in the android operating system. It is a software that runs apps on android devices.

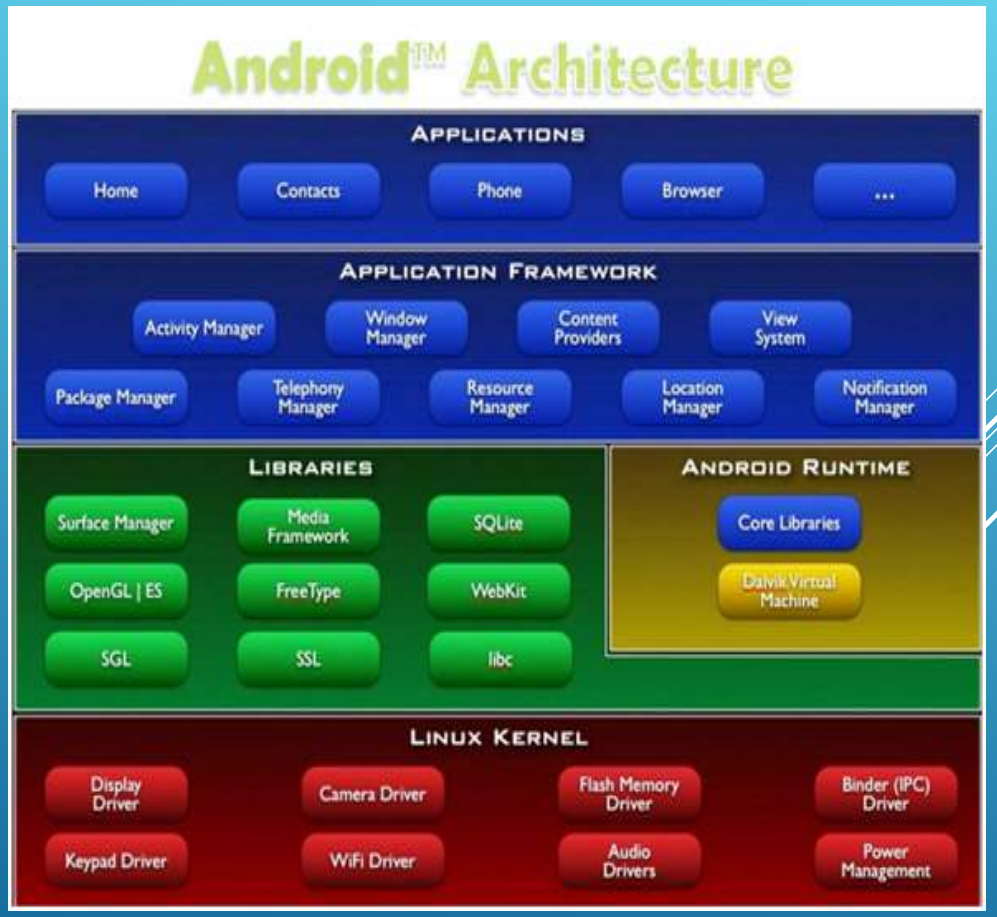
The Dalvik VM makes use of Linux core features like memory management and multithreading which is in java language. The Dalvik VM enables every Android application to run its own process. The Dalvik VM executes the files in the .dex format.



ANDROID ARCHITECTURE:

Application framework:
The application framework layer provides many higher-level services to applications such as windows manager, view system, package manager, resource manager, etc. The application developers are allowed to make use of these services in their application.

You will find all the android applications at the top layer and you will write your application and install it on this layer. Examples of such applications are contacts, books, browsers, services, etc. Each application performs a different role in the overall applications



ANDROID FEATURES:

- Headset layout
- Storage
- Connectivity: GSM/EDGE, IDEN, CDMA, Bluetooth, WI-FI, EDGE,3G,NFC, LTE,GPS.
- Messaging: SMS, MMS, C2DM (could to device messaging), GCM (Google could messaging)
- Multilanguage support
- Multi-touch
- Video calling
- Screen capture
- External storage
- Streaming media support
- Optimized graphics

ANDROID EMULATOR:

- The Emulator is a new application in the Android operating system. The emulator is a new prototype that is used to develop and test android applications without using any physical device.

- The android emulator has all of the hardware and software features like mobile devices except phone calls. It provides a variety of navigation and control keys. It also provides a screen to display your application. The emulators utilize the android virtual device configurations. Once your application is running on it, it can use services of the android platform to help other applications, access the network, play audio, video, store, and retrieve the data.

ADVANTAGES:

- Android is a Linux based open-source operating system, it can be developed by anyone
- Easy access to android apps
- You can replace the battery and mass storage, disk drive and UDB option
- Its supports all Google services
- The operating system is able to inform you of a new SMS and Emails or latest updates.
- It supports Multitasking
- Android phone can also function as a router to share internet
- It’s free to customize
- Can install a modified ROM
- Its supports 2D and 3D graphics

REFERENCES:

https://www.elprocus.com/what-is-android-introduction-features-applications/