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Experiment No: 1

Title:

Design of Arithmetic App

Problem Statement:

Creating Simple project and Study of android project structure and installing apk on mobile device / tablet. Configuring mobile device / tablet in Android Studio with developer option and running app directly on mobile device / tablet

Theory:

• Android OS Stack:

- The Android operating System is like a Cake Consisting of various layers.
- Each layer has its own characteristics and purpose but the layers are not always cleanly seperated & often seep into one another.
- Although Android is based on linux, it is not just another flavour of Linux, in the way that Ubuntu, Fedora, or Red Hat are
- on the other hand, Android adds quite a bit to the Linux kernel, such as.
- an improved power management that is well-suited for mobile battery - powered devices.
- a very fast interprocess Communication mechanism.

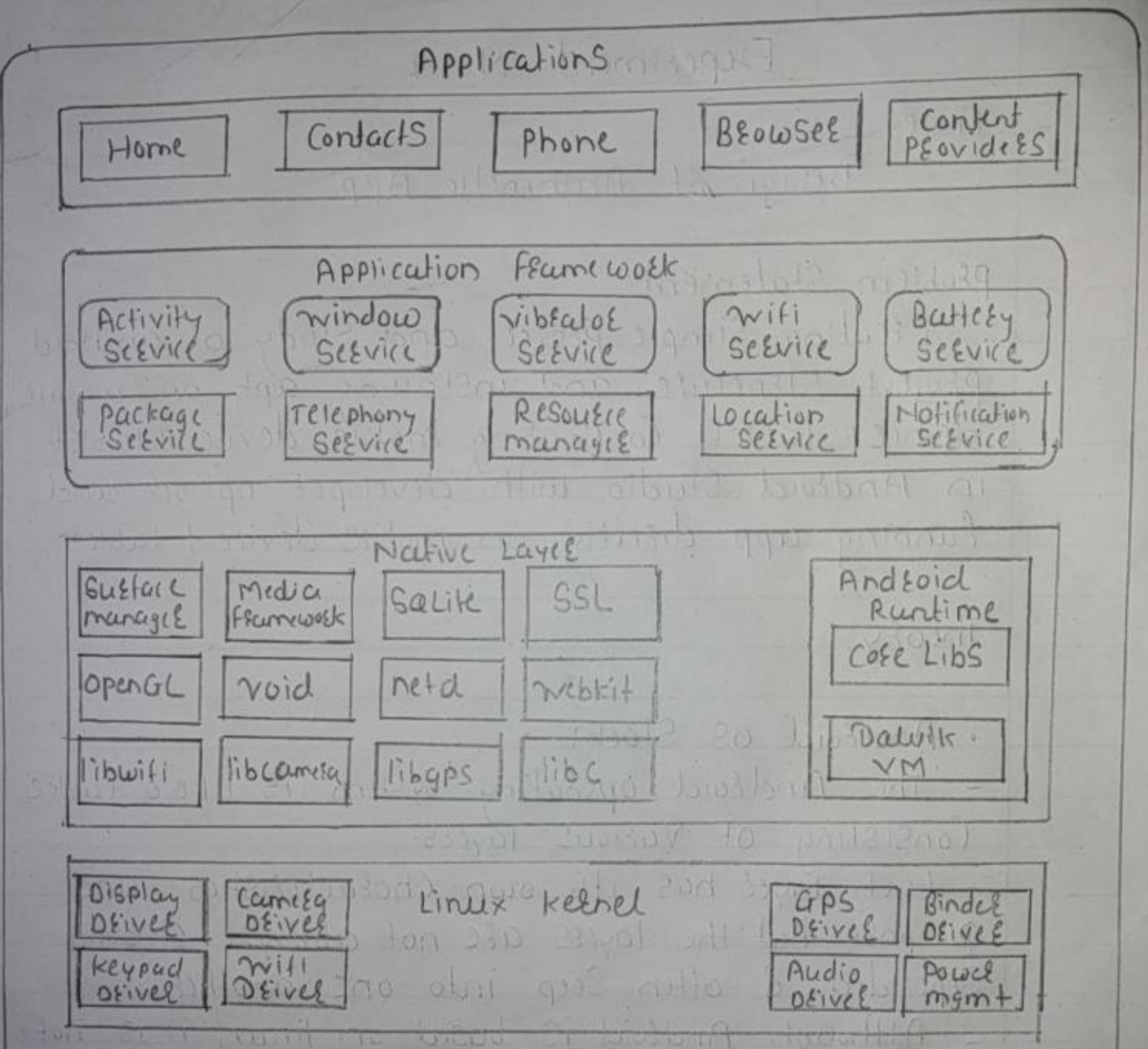

Fig: Android Architecture

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1) Linux Kernel:
- At the bottom of the layer is Linux. Linux 3.6 with approximately 115 patches. This provides a level of abstraction between the device hardware and it contains all the essential hardware drivers like Camera, keypad, display etc. Also, the kernel handels all the things that linux is really good at such as networking and a vast array of device drivers, which take the pain out of interfacing to peripheral hardware.
- Kernel provides the basic architectural model for resource, Scheduling, memory management, process management, network management and Security.

2) Native Libraries / DVM:-
- The native libraries are C/C++ libraries. Their primary job is to support the Android Application framework layer.
- Some of these libraries are purpose built for the Android OS, whereas others are often taken from the open source community in order to complete the operating System.

a) Salite:
- It is used to work with Salite Database.

b) SSL:
- It is used to provide internet Security

c) open GL:
- It provides libraries to work with open GL

d) Media Framework:-
- Used to work with different media frames.

e) webkit:
- It is the browser engine used to display internet content of HTML content.

f) SGL:
- Skia Graphics Library. It is a Compact open Source graphics library used to render graphics in chrome & firefox.

Android Runtime
- Dalvik Virtual Machine (DVM):
- The Dalvik Virtual machine is an android virtual machine Specially for mobile devices it is optimized for memory & battery life & performance.
- Here Dalvik is the name of Ireland & it is written by Dan Bornstein.

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3) Application Framework :-
- Android applications directly interact with application framework. Application framework manages basic functions of android device such as resource management, voice call management.

a) Activity manager:
- It is used to manage complete life cycle of activity in application.

b) Content provider:
- It is block used to share data between two applications.

c) Telephony manager:
- It is block used to manage all voice calls.

d) Location Manager:
- It is used to manage location obtained using GPS

e) Resource manager:
- It is used to manage different types of resources used in android app.

4) Applications :

- on top of Native libraries and android runtime, there is android framework. on top of android framework there are applications All Application such as home, Contact, Settings, games, browsers are using android framework that uses android runtime and libries, Android runtime and native libraries are using linux kernel.