Architecture of Android

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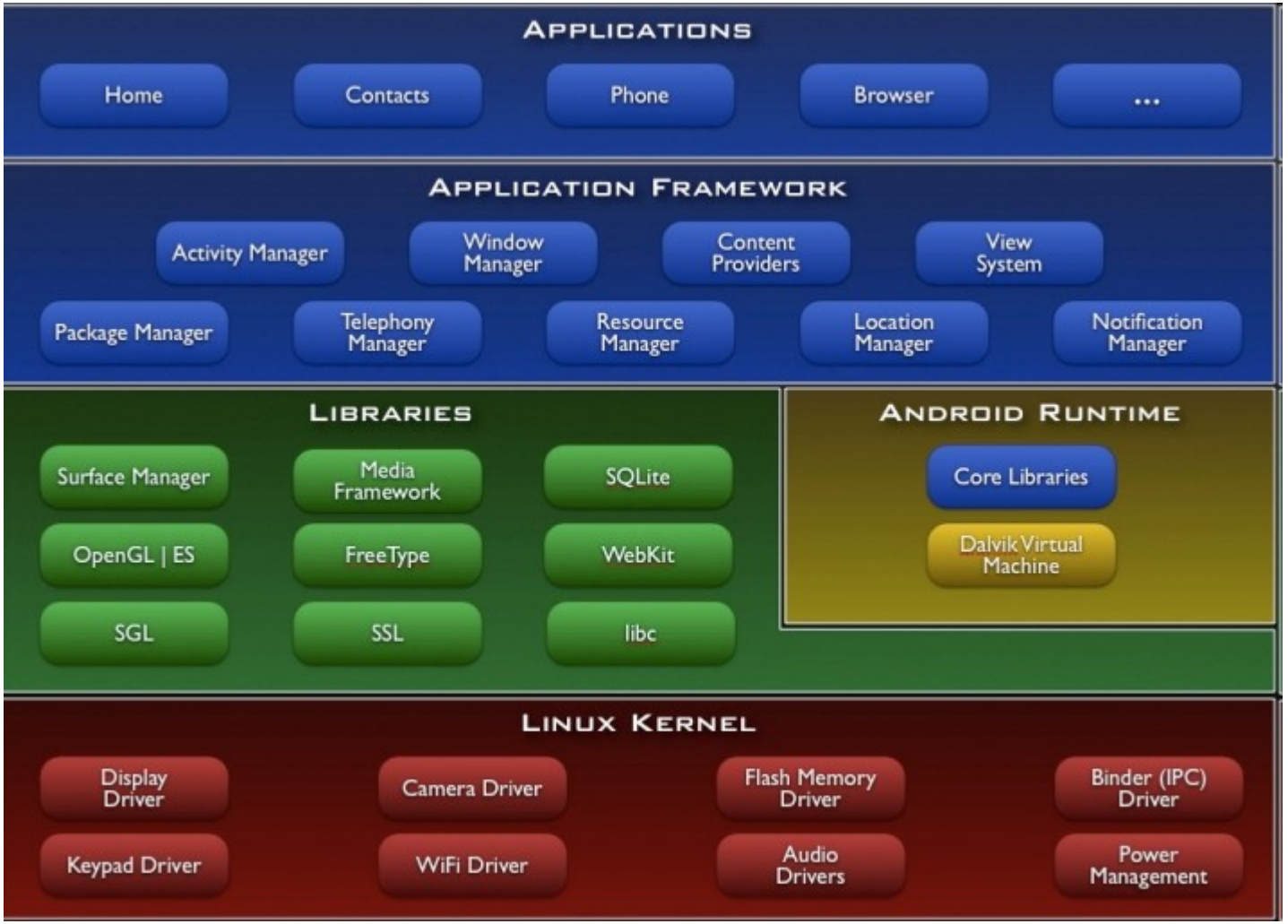
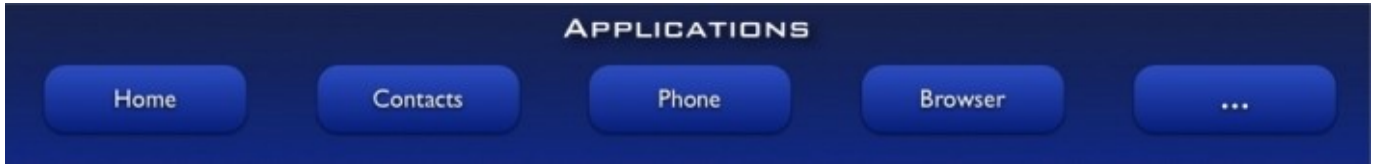
Android Architecture



Android Software Stack



- Android provides a set of core applications:
  - Email Client
  - SMS Program
  - Calendar
  - Maps
  - Browser
  - Contacts
  - Etc
- All applications are written using the Java language.

Android Application Framework

- Enabling and simplifying the reuse of components
  - Developers have full access to the same framework APIs used by the core applications.
  - Users are allowed to replace components.

Android Application Framework

Feature	Role
View System	Used to build an application, including lists, grids, text boxes, buttons, and embedded web browser
Content Provider	Enabling applications to access data from other applications or to share their own data
Resource Manager	Providing access to non-code resources (localized strings, graphics, and layout files)
Notification Manager	Enabling all applications to display customer alerts in the status bar
Activity Manager	Managing the lifecycle of applications and providing a common navigation backstack

Android Software Stack-Libraries

- Including a set of C/C++ libraries used by components of the Android system
- Exposed to developers through the Android application framework.

Android Software Stack-Runtime

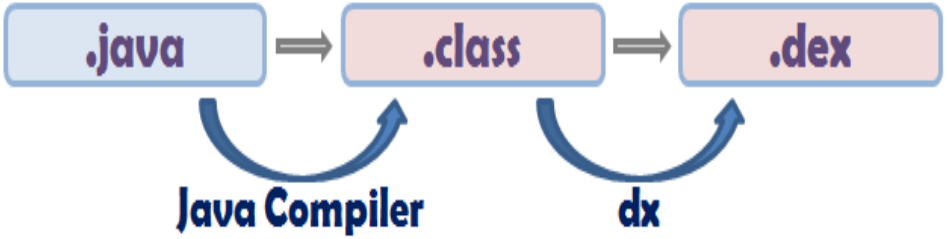
- Core Libraries
  - Providing most of the functionality available in the core libraries of the Java language
  - APIs
    - Data Structures
    - Utilities
    - File Access
    - Network Access
    - Graphics
    - Etc

Android Software Stack-Runtime

- Dalvik Virtual Machine
  - Providing environment on which every Android application runs
  - Each Android application runs in its own process, with its own instance of the Dalvik VM.
  - Dalvik has been written such that a device can run multiple VMs efficiently.
- Register-based virtual machine

Android Software Stack-Runtime

- Dalvik Virtual Machine (Cont)
  - Executing the Dalvik Executable (.dex) format
  - .dex format is optimized for minimal memory footprint.



- Compilation
  - Relying on the Linux Kernel for:
    - Threading
    - Low-level memory management

Android Software Stack-Linux Kernel

- Relying on Linux Kernel 3.0+ for core system services
  - Memory and Process Management
  - Network Stack
  - Driver Model
  - Security
- Providing an abstraction layer between the H/W and the rest of the S/W stack

Thank you

Web Resources
http://mitu.co.in
http://tusharkute.com

Blogs
http://digitallocha.blogspot.in
http://kyamputar.blogspot.in

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