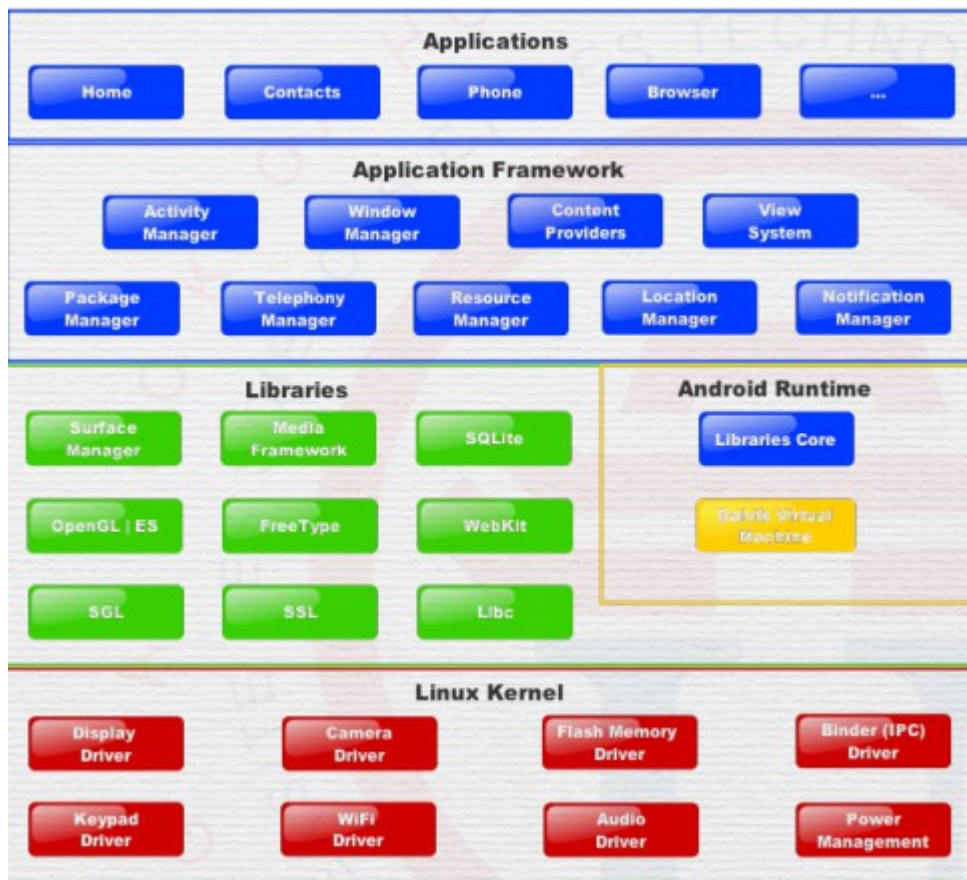# ANDROID FUNDAMENTAL

Chapter Objectives

Understand content of MVC model and some components od Android

I. **Architecture:**

- Application:
  - o Written in java
  - o Example: Phone, Browser,…
- Application framework:

- Java, Higher level, User Interface, Location service, Notation,..

- Window manager, Resource Manager

- Libraries:

  - Mostly in C/C++, Low level, Render text Play media, Local databases

  - OpenCL, SQLite, …

- Linux Kernel:

  - Active development, Secured, Well shaped

  - Display driver, Audio driver

II. **Compilation:**

- Java source code, Java Complier: complier code and run everywhere or on different platform.
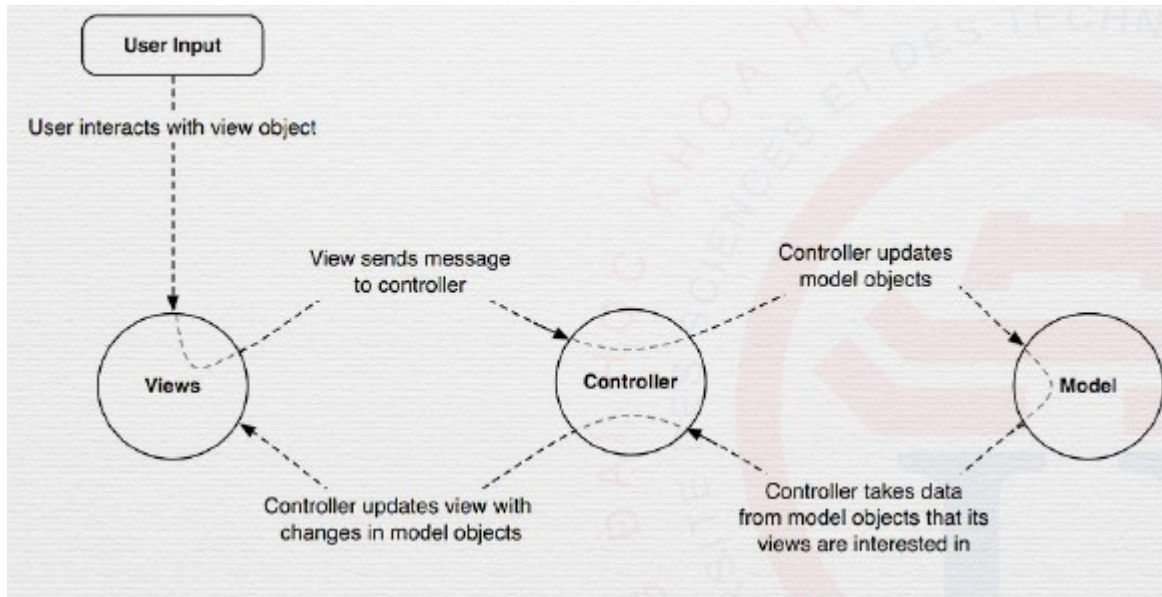
From Source to device:
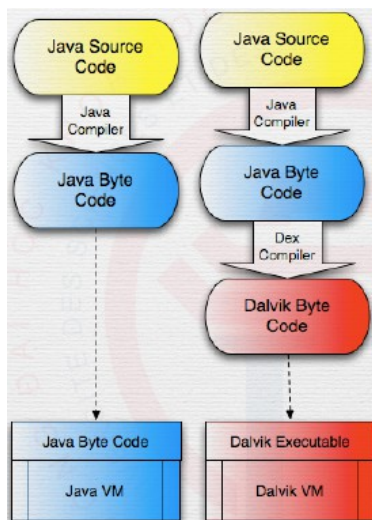
- Example: Dalvik, ART

III. **Controller:**

1. **Context and Application:**

- MVC Model:

- Context:

    o Central command center

    o Access application-specific data •

        ▪ Settings

        ▪ Private files

        ▪ Resources

        ▪ Assets

    o System services

- Application:

    o A context

    o Can be subclasses:

        Example: Global data, early initialization of libraries

    o Android memory management

        Example: Garbage collector, Upper limit for each application

    o AndroidManifest.xml

Example: Metadata about the app, target SDK

2. **Activity:**

- A kind of controller - mean in the middle of model and view, update model

  to UI

- Activity:

  o fundamental building block

  o Has a unique task or purpose

  o Need at least one per application

  o Handle display of single screen
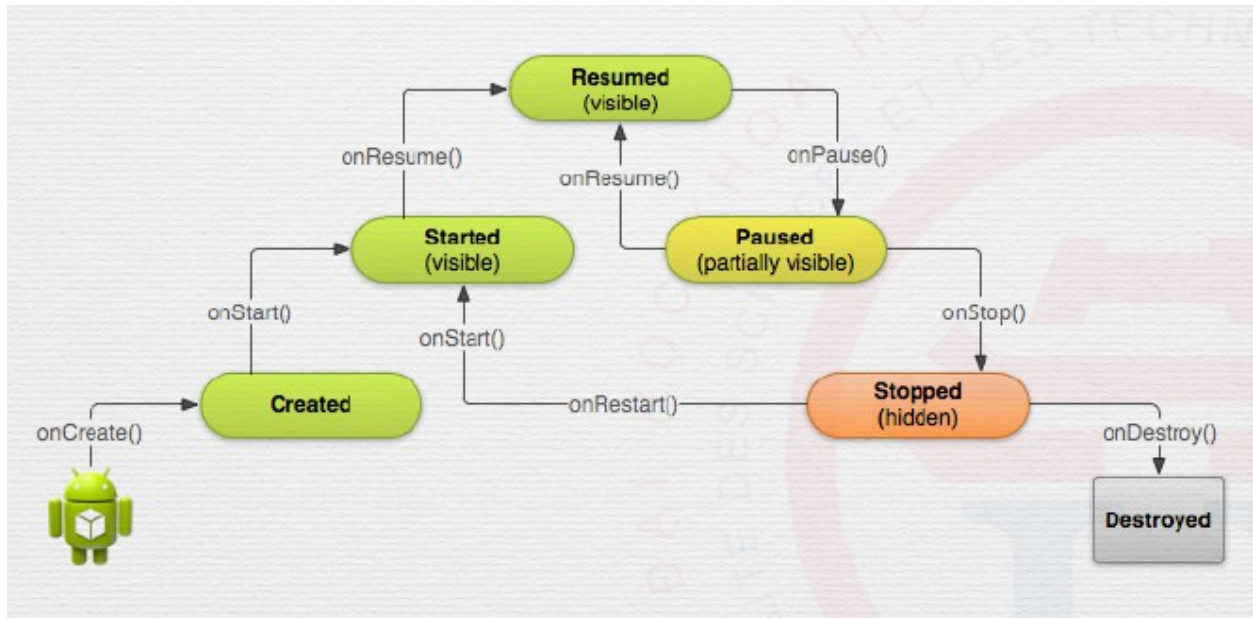
Activity lifecycle

Activity lifecycle: states different from webpage (all content cleared when closed)

- onCreate() : initialization

- onStart(): visible state

- onPause(): do not have to override (just cases you need)

- onStop()

- onResume(): continue

- Screen orientaion

  - o onSaveInstanceState()

  - o onDestroy() - will be called if no memory leak

- Create a new activity instance

  - o onCreate()

  - o onRestoreInstanceState()

- Close current activity: finish()

3. **Fragment:**

- Fragment is used to:

  - o Represents a behavior or a portion of user interface

  - o Building block of the Fundamental building blocks

  - o Supported from Honeycomb [API 11]

  - o Optional

- Functional: Adapt UI according to devices - explosion in the variety of devices, screen size, resolution, density, orientation.

- Activity with fragments

  - o Simplified

  - o Coordinates fragments

  - o [optionally, but mostly] uses FragmentManager (or SupportFragmentManager)

  - o Put inside a layout XML

  - o Dynamically created using codes

IV. **View:**

- Basic building blocks of UI - what user interacts with

- Attributes

- o   id: findViewById()

- o   width, height

- o   padding and margin

- o   visibility: visible, invisible, non

- o   alpha: classic transparent

- o   rotation

- o   background

- o   click

- TextView

  - o   setText() :can contain one and only one icon

  - o   drawable, font, gravity, style, align

- ImageView

  - o   src: setImageResource()

  - o   scaleType: fitXY, fitStart, fitEnd, centerCrop, centerIn side

  - o   tint, crop, viewBounds

- View Group

  - o   Contain children

  - o   LayoutParams

- Button

  - o   Push-button

  - o   onClick()

- EditText

  - o   TextBoxes: allow to edit a text

  - o   getText()

- Selection