

RSET IEEE SB Android Workshop



In Association with



Joseph Varghese
Android Developer



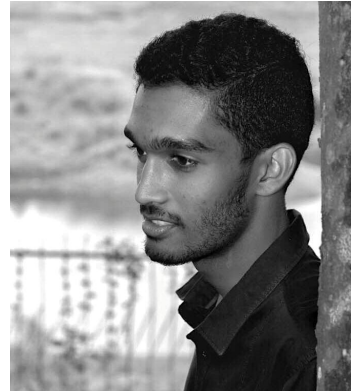
Hi, I am **Joseph**.

Your Instructor for this Workshop.

I am an Android Developer at **RoundMelon Studio**.

Here in RoundMelon Studio we build mobile and web apps.

Feel free to Contact Me via [Mail](#).



Android

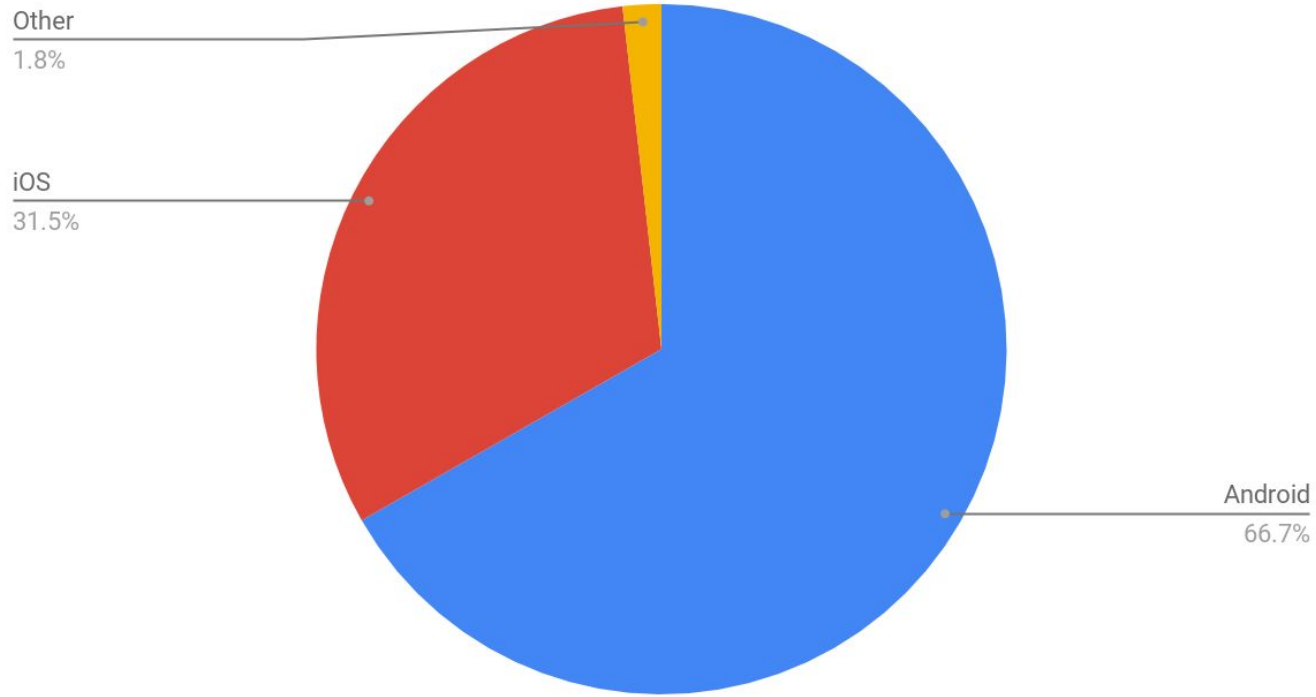
- Mobile operating system developed by Google
- Based on Linux kernel
- Initially developed by Android Inc. which google bought in 2005
- First unveiled in 2005 with the founding of Open Handset Alliance
- Written in java, c and c++

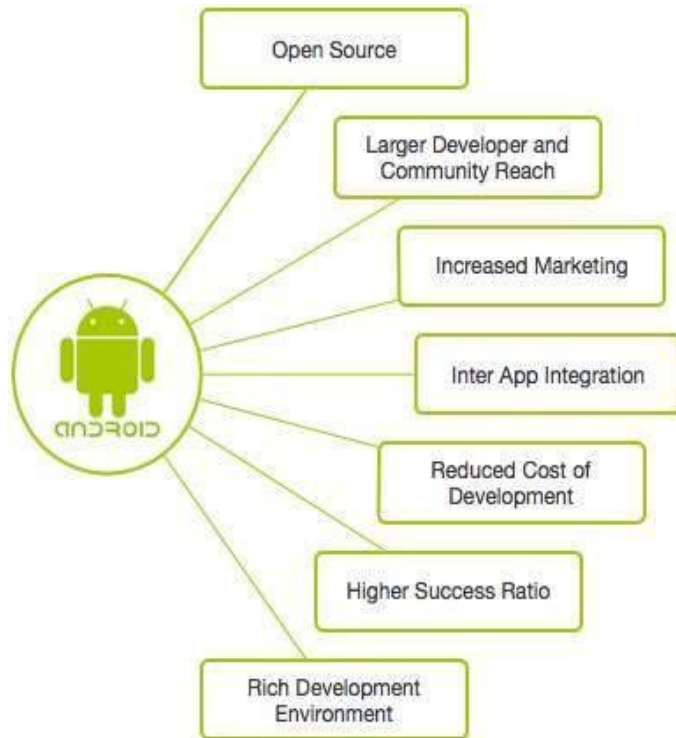


So Why Choose
Android
Development
Over Other OS?



Android Market Share - Pie Chart





AOSP

“Android Open Source Project (AOSP) repository offer the information and source code you need to create custom variants of the Android stack, port devices and accessories to the Android platform, and ensure your devices meet compatibility requirements.”



Visit source.android.com for more

So what all do you need?

- Java Development Kit
- Android Studio
- Android Phone
- Laptop/Desktop (Running Windows, Mac OS or Linux)
- Data Cable



Android Studio

- Official IDE for google's android operating system
- Built on JetBrains' IntelliJ IDEA
- Designed specifically for Android development
- Replacement for Eclipse Android development Tools(ADT)
- First stable version was released in 2014
- Current stable version is Android Studio 3.0
- Written in java
- Built-in support for Google Cloud Platform, Firebase, Google App Engine



Latest Version Of Android
Android 8.0 Oreo



- Officially Released On 21 August 2017
- SDK Version 26



HELLO
WORLD



Android Project Structure

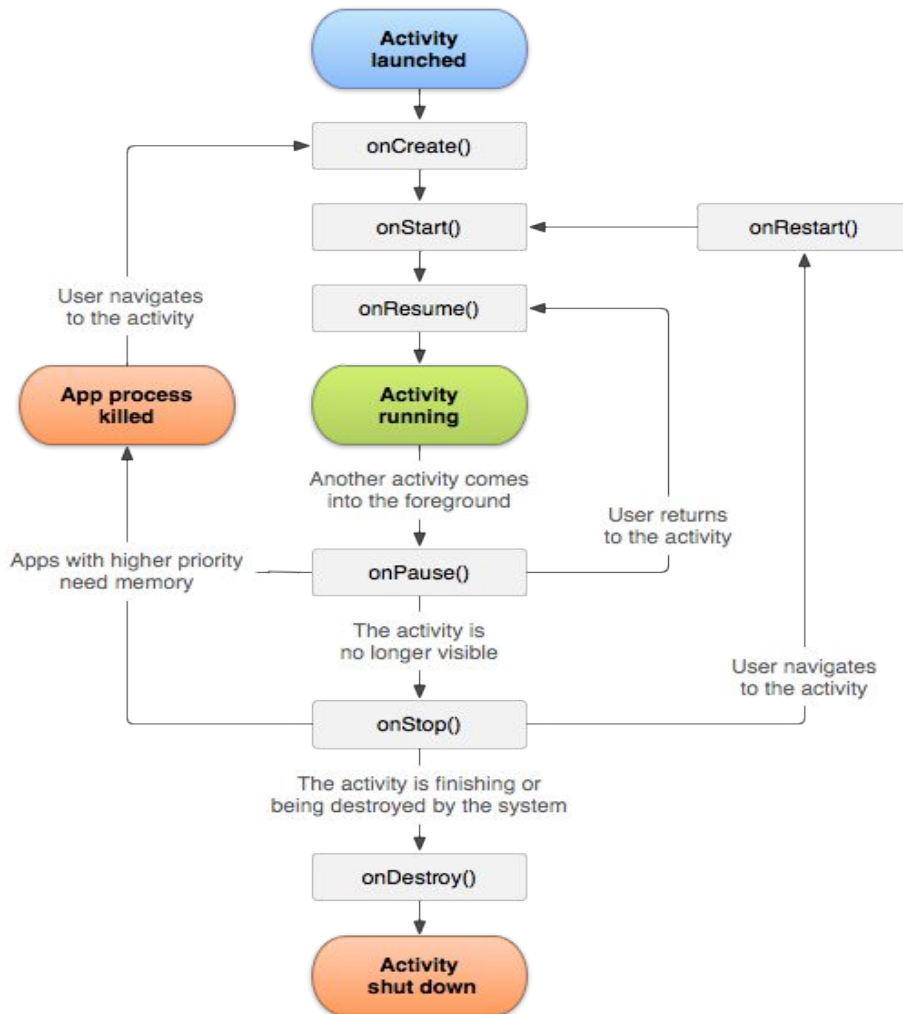


App Manifest

- Every app must have an Androidmanifest.xml file
- It provides essential information about the app to the Android system
- It names the java package for the application
- It declares the permissions the app must have to perform certain tasks
- It describes each and every component of the app

Activity

- An activity is a single, focused thing the user can do
- Activities in the system are managed by activity stack
- The new activity is placed on top the stack
- Previous activity comes to the foreground only when the new activity exists.



The entire lifetime of an activity happens between the first call to **onCreate()** through to a simple call to **onDestroy()**

Gradle

- Gradle is an open source build automation system
- Gradle can automate the building, testing, publishing, deployment and more of a software package or project.
- Before Android Studio and Eclipse developers had to build the apk file from the command like
- Tools like



ANDROID PLATFORM VERSION	API LEVEL	CUMULATIVE DISTRIBUTION
4.0 Ice Cream Sandwich	15	
4.1 Jelly Bean	16	99.2%
4.2 Jelly Bean	17	96.0%
4.3 Jelly Bean	18	91.4%
4.4 KitKat	19	90.1%
5.0 Lollipop	21	71.3%
5.1 Lollipop	22	62.6%
6.0 Marshmallow	23	39.3%
7.0 Nougat	24	8.1%
7.1 Nougat	25	1.5%

Android API Distribution

SDK Version

- SDK - Standard Development Kit
- Forward compatibility is a strong focus of android
- Existing apps built for prior SDK should not break when the user upgrades to a newer version of android
- `compileSdkVersion`
- `minSdkVersion`
- `targetSdkVersion`

minSdkVersion

- It is the lower bound for your app
- Google Play uses this to check if an app can be installed on a device



Android SDK

compileSdkVersion

- Telling gradle what version of Android SDK to compile your app
- Always compile with the latest SDK
- It is not included in the APK
- It is purely used at compile time



targetSdkVersion

- It has nothing to do with your app at compile time
- It is the SDK level your app is targeting
- Eg : Runtime permission from Marshmallow



So,

minSdkVersion <= **targetSdkVersion** <= **compileSdkVersion**

But Ideally,

minSdkVersion <= **targetSdkVersion** = **compileSdkVersion**

Basic Layouts

- Linear Layout
- Relative Layout
- Web View
- Constraint Layout
- Frame Layout
- Table Layout
- Grid Layout
- List View
- Fragment



Linear Layout

A layout that organizes its children into a single horizontal or vertical row. It creates a scrollbar if the length of the window exceeds the length of the screen.



Relative Layout

Enables you to specify the location of child objects relative to each other (child A to the left of child B) or to the parent (aligned to the top of the parent).



Web View

Displays web pages.

Attributes

- android:id
- android:layout_width
- android:layout_height
- android:layout_marginTop
- android:layout_marginBottom
- android:layout_marginLeft
- android:layout_marginRight
- android:layout_gravity
- android:layout_x
- android:layout_y
- android:layout_weight
- android:paddingLeft
- android:paddingRight
- android:paddingTop
- android:paddingBottom

Specifying Layout/View Dimensions

- wrap_content
- match_parent
- You can even specify absolute values in dp,sp,etc