Introduction to Android Programming

Unit-2

Focus On

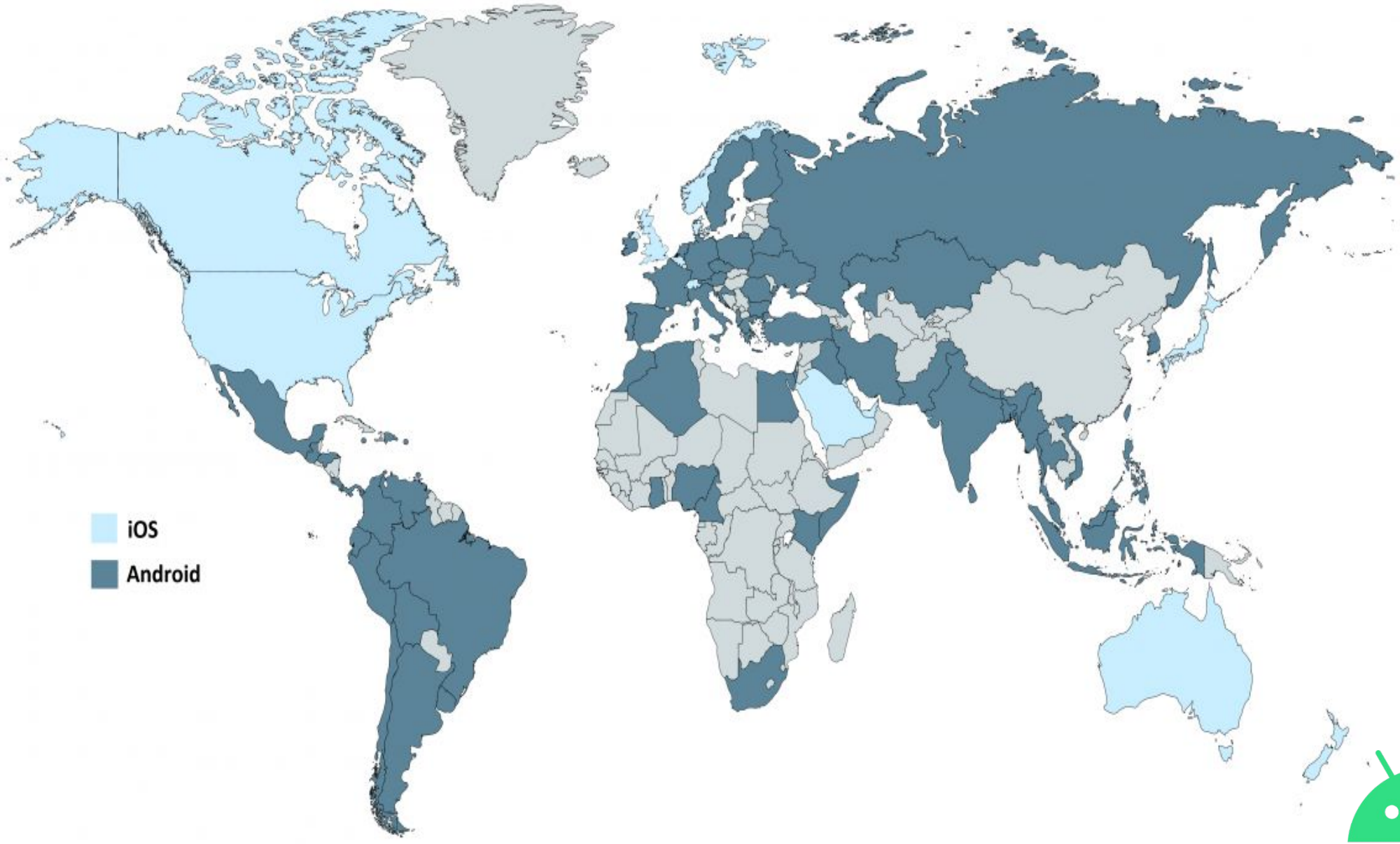
1. Android Platform
2. History of Android
3. Environment Setup
4. Creating an Android Project
5. Laying out the User Interface
6. The View Hierarchy
7. Widgets Attributes
8. Creating String Resources
9. Previewing the Layout
10. Creating a New Class
11. Resource and Resources ID’s
12. Setting Up the Project
13. Running on the Emulator

1.Android Platform

- ✔ Mobile operating system based on Linux kernel
- ✔ Primarily designed for touch screen mobile devices such as smartphones and tablet
- ✔ Android was developed by the *Open Handset Alliance*, led by Google, and other companies
- ✔ Android is open source operating system
- ✔ World’s most popular mobile platform

2. Why Android?

- ✔ **2.5 billion active android devices**
- ✔ **2.8 million number of apps available in the Google Play Store (December 2009 – September 2019)** *(#source: Statista 2019)*
- ✔ **Quicker Time to promote**
- ✔ **Huge Market**
- ✔ **Larger developer and community reach**



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3. History

- **Initially Developed by Android Inc. lead by Andy Rubin**
- **In July 2005, Google acquired Android Inc. *($50 million)***
- **Key employees of Android Incorporation are Andy Rubin, Rich Miner, Chris White and Nick Sears**
- **Originally intended for camera but shifted to smart phones later because of low market for camera only**
- **Android is the nick name of Andy Rubin given by co-coworkers because of his love to robots**
- **Android unveiled in 2007, the first released android**

HTC Dream (T-Mobile G1), the first commercially released device running Android 1.0 (September 23, 2008)

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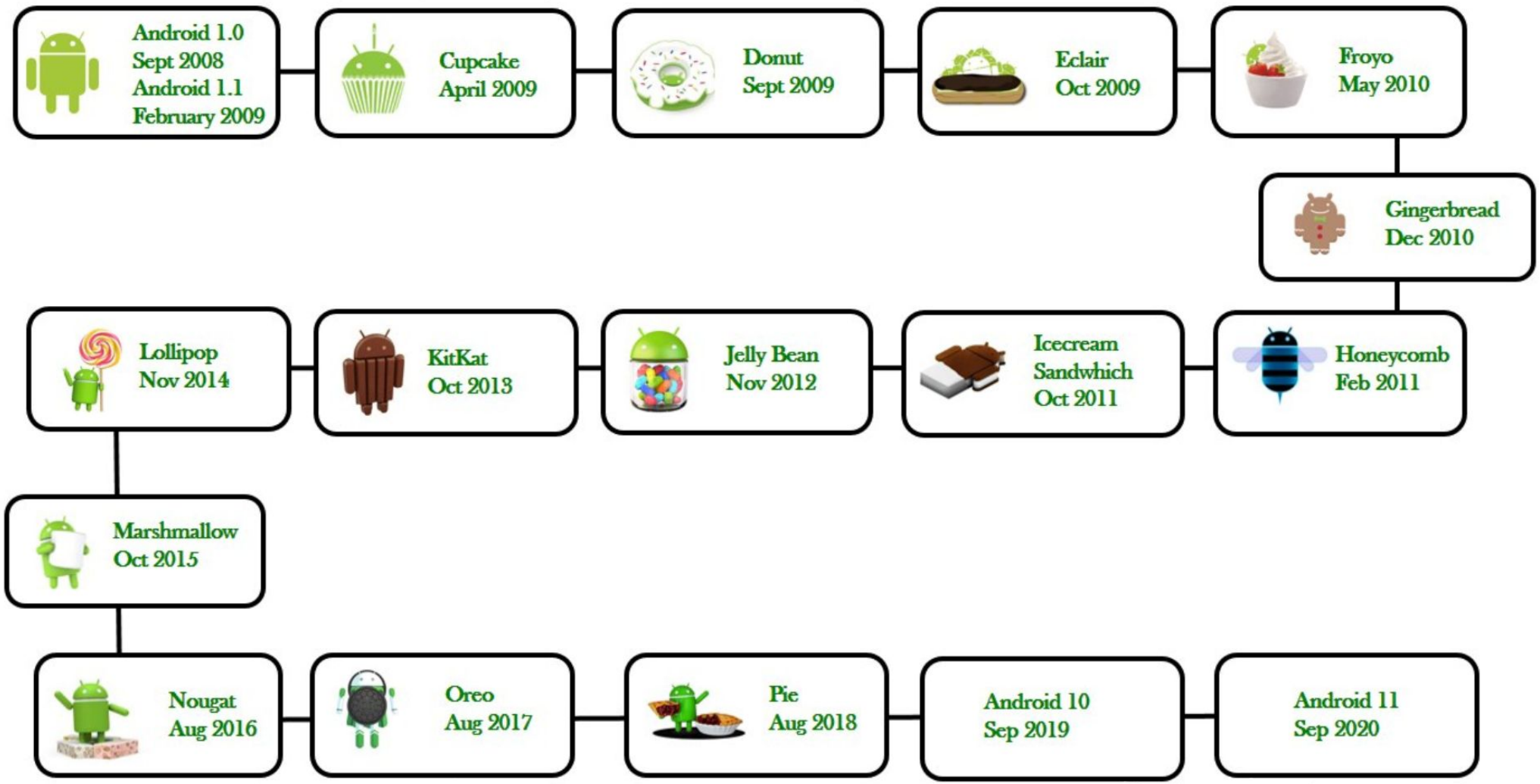
Android Version



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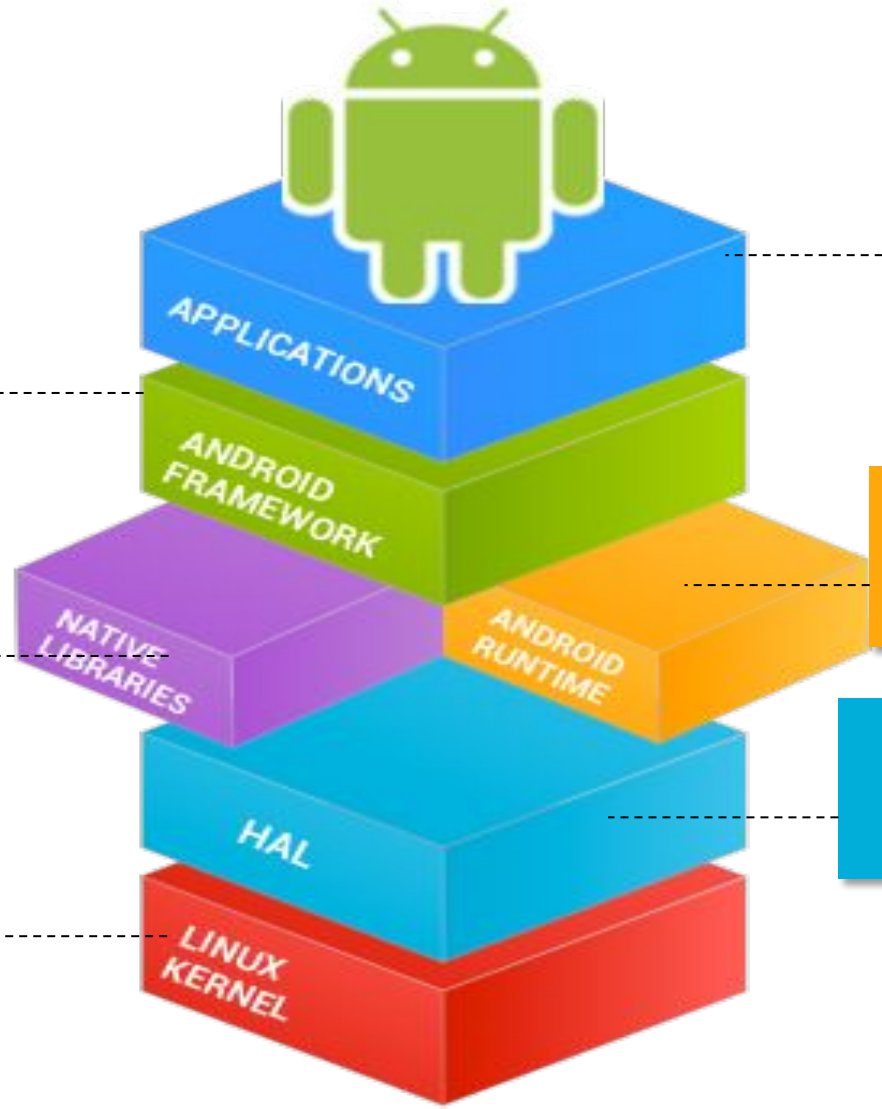
Android Platform Architecture



Home, Browser, Camera, Contacts, Media Player, Albums,...

Notification Manager, Telephony Manager, Resource Manager, Location Manager, Content Providers,...

Core Libraries, Dalvik Virtual Machine

SQLite, OpenGL, WebKit, Media Framework ....

Camera HAL, Audio HAL, Graphics HAL, Others HAL..

Wifi Driver, Display Driver, Audio Driver, Bluetooth Driver, Camera Driver ..

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The View Hierarchy

- Widget which exist in a hierarchy of View objects called the view hierarchy
- Widgets are the building blocks we use to compose a user interface
- A widget can show text or graphics, interact with the user, or arrange other widgets on the screen
- Buttons, text input controls, and check boxes are all types of widgets

Resources and Resource ID’s

- A layout is a resource
- A resource is a piece of application that is not code-things like images files, audios files, XML files

Android Development

- Language
  - Java
  - Kotlin (Official Language)

- Test Devices
  - Emulator
  - Genymotion (https://www.genemotion.com/fun-zone)
  - Bluestack (https://www.bluestacks.com/)
  - Your own phone

AndroidManifest.xml

- Every app must have AndroidManifest.xml file at root of the project
- The manifest file describes essential information about app to the Android build tools, the Android operating system, and Google Play.

Required things to declare in manifest file

- The app's package name, which is usually matches our code's namespace.
- The components of the app, which include all activities, services, broadcast receivers, and content providers.
- The permissions that the app needs in order to access protected parts of the system or other apps.
- The hardware and software features the app requires, which affects which devices can install the app from Google Play

Elements of AndroidManifest.xml

- <manifest> and <application> elements are required. They each must occur only once, but other elements can occur zero or more times
- <manifest> : the root element of the AndroidManifest.xml file
- <application> : the declaration of the application
- <activity> : declares an activity component
- <provider> : declares a content provider component
- <service> : declares a service content
- <receiver> : declares a broadcast receiver component

Intent filters

- App activities, services, and broadcast receivers are activated by intents
- An intent is a message defined by an Intent object that describes an action to perform, including the data to be acted upon, the category of component that should perform the action, and other instructions.
- When an app issues an intent to the system, the system locates an app component that can handle the intent based on intent filter declarations in each apps manifest file. The system launches an instance of the matching component and passes the Intent object to that component.
- If more than one app can handle the intent, then the user select which app to use
- An app component can have any number of intent filters, describing a different capability of that Component.

Thank You!!