Android: Oral Questions & Answers

Q 1) What is Android?

Answer: Android is an open source operating system and is mainly popular for Smartphones and Tablets.

This operating system is Linux Kernel based. Using Android operating system, the developer develops the functions or programs which can perform basic as well as the advanced type of operations on the Smartphone.

Q 2) What is Android SDK?

Answer: To develop a mobile application, Android developers require some tools and this requirement is satisfied by "Android SDK" which is a set of tools that are used for developing or writing apps.

It has a Graphical User Interface which emulates the Android environment. This emulator acts as an actual mobile device on which the developers write their code and then debug/test the same code to check if anything is wrong.

Q 3) What is current versions of Android OS ?

Answer:

Android 9.0	Pie
Android 8.0	Oreo
Android 7.0 – 7.1.2	Nougat
Android 6 – 6.0.1	Marshmallow
Android 5 – 5.1.1	Lollipop
Android 4.4 – 4.4.4	KitKat
Android 4.1 – 4.3	Jelly Bean
Android 4.0-4.0.4Ice	Cream Sandwich

Q 4) Which components are necessary for a New Android project?

Answer: Whenever a new Android project is created, the below components are required:

- manifest: It contains xml file.
- build/: It contains build output.
- src/: It contains the code and resource files.
- res/: It contains bitmap images, UI Strings and XML Layout i.e. all non-code resources.
- assets/: It contains a file which should be compiled into a .apk file.

Q 5) Provide the important core components of Android.

Answer: The core components of Android operating systems are:

- Activity
- Intents

- Services
- Content Provider
- Fragment

Q 6) What is an Intent?
Answer: Android has an Intent class when the user has to navigate from one Activity to another. Intent displays notifications from the device to the user and then the user can respond to the notification if required.
Given below are the two types:

- Implicit Intents
- Explicit Intents

Q 7) Explain Implicit and Explicit Intents.
Answer: Implicit Intent calls the system components while explicit Intents invoke the Activity class.

Q 8) What is the importance of setting up permission in app development?
Answer: Once the permissions are set for the app development, then the data and code are restricted to the authorized users only.

If the code is kept without any restriction or if it is accessible to anyone then there are chances of compromise of code which results in defect leakage.

Q 9) What is .apk extension in Android?
Answer: It is a default file format that is used by Android Operating System. Application Package Kit (APK) is used for installation of mobile apps. The .apk contains resource file, certificate, manifest file and other code.
APK files are archive files in the zip format with .apk extension.

Q 10) What is the database used for Android platform?
Answer: SQLite is the database that is used for Android platform. It is an open-source, serverless database.

Q 11) What is ADB?
Answer: Android Debug Bridge (ADB) is a command line tool which performs shell commands.
ADB is used for direct communication between the emulator ports. It gives the direct control of the communication between the emulator instances to the developer.

Q 12) Explain AndroidManifest.xml file and why do you need this?
Answer: Every application must have AndroidManifest.xml file in the root directory. It contains the information about your app and provides the same to the Android system.
The information includes the package name, Android components such as Activity, Services, Broadcast Receivers, Content Providers, etc. Every Android system must have this information before running any app code.

AndroidManifest.xml file performs the following tasks:

- It provides a name to the Java package and this name is a unique identifier for the application.
- It describes the various components of the application which include Activity, Services, Content Providers, etc. Also, it defines the classes which implement these components.
- It is responsible to protect the application and it declares the permission for accessing the protected part of the app.
- It also declares the Android API which is going to be used by the application.
- It contains the library file details which are used and linked to the application.

Q 13) Explain Sensors in Android.
Answer: Android-enabled devices have built-in Sensors which measures Orientation, Motion and other conditions.
These sensors provide data with high accuracy, which will help to monitor positioning and movement of the device. Some of the sensors are hardware based and few are software based.

There are three categories of sensors as mentioned below:

- Motion Sensors: These sensors measure the rotational & acceleration forces and it includes gravity sensors, rotational vector sensor, accelerometers, etc.
- Environmental Sensors: It measures air temperature, pressure, humidity, etc.
- Position Sensors: It measures the physical position of the device and includes orientation sensors and magnetometers.

There are four types of Java Classes as shown below:

- Sensor Manager
- Sensor
- SensorEvent
- SensorEventListener

Q 14) Define Android toast.
Answer: An android toast provides feedback to the users about the operation being performed by them. It displays the message regarding the status of operation initiated by the user.

Q 15) What is the use of WebView in Android?
WebView is a view that display web pages inside your application. According to Android, "this class is the basis upon which you can roll your own web browser or simply display some online content within your Activity. It uses the WebKit rendering engine to display web pages and includes methods to navigate forward and backward through a history, zoom in and out, perform text searches and more."

In order to add WebView to your application, you have to add <WebView>element to your xml layout file.

Q 16) What are the different kinds of context in Android?
Context defines the current state of an App. Context provides access to creating new activity instance, access databases, start a service, etc. There is a base class ApplicationContext, and sub classes for components: Activity, Service.

Q 17) What are the different storage methods in Android
Android offers several options to save persistent application data. They are:
Shared Preferences – Store private primitive data in key-value pairs.
Internal Storage – Store private data on the device memory
External Storage – Store public data on the shared external storage
SQLite Databases – Store structured data in a private database.

Q 18) What are the tools required to develop Android Apps?
The tools required are:
JDK
Eclipse + ADT plugin
SDK Tools
You can also use Android Studio by Google.

Q 19) What is Intent?
An Intent is an "intention" to do an action.
According to Android, "An Intent is a messaging object you can use to request an action from another app component." There are three use cases for Intent:
To start an activity
To start a service
To deliver a broadcast

There are two types of Intent in Android:
Implicit Intent
Explicit Intent

Q 20) What is a Sticky Intent?
A Sticky Intent is a broadcast from sendStickyBroadcast() method which floats around even after the broadcast, allowing others to collect data from it.

Q 21) Explain Folder, File & Description of Android Apps
src: contains the .java source files for your project.
gen: contains the .R file, a compiler-generated file that references all the resources found in your project.
bin: contains the Android package files .apk built by the ADT during the build process and everything else needed to run an Android application.
res/drawable-hdpi: this is a directory for drawable objects that are designed for high-density screens.
res/layout: this is a directory for files that define your app's user interface.
res/values: this is a directory for other various XML files that contain a collection of resources, such as strings and colors definitions.
AndroidManifest.xml: this is the manifest file which describes the fundamental characteristics of the app and defines each of its components.

Q 22) How to 'Start Another Activity'?
Intent i = new Intent(getApplicationContext(), Activity2.class);
startActivity(i);

Q 23) What is AAPT?
AAPT is short for Android Asset Packaging Tool. This tool provides developers with the ability to deal with zip-compatible archives, which includes creating, extracting as well as viewing its contents.

Q 24) What are containers?
Containers, holds objects and widgets together, depending on which specific items are needed and in what particular arrangement that is wanted. Containers may hold labels, fields, buttons, or even child containers.

Q 25) What are some of the disadvantages of Android?
Android being an open-source platform, and considering that different Android operating systems have been released on different mobile devices, there's no clear cut policy to how applications can adapt with various OS versions and upgrades. An app that runs on one version of Android OS may or may not run on another version.

Another disadvantage is that it can be challenging for developers to create apps that can adjust correctly to the right screen size and other varying features and specs of various Android devices.

Q 26) Name the four essential states of an activity

The four essential states of an activity are:
Active – if the activity is at the foreground
Paused – if the activity is at the background and still visible
Stopped – if the activity is not visible and therefore is hidden or obscured by another activity
Destroyed – when the activity process is killed or completed terminated

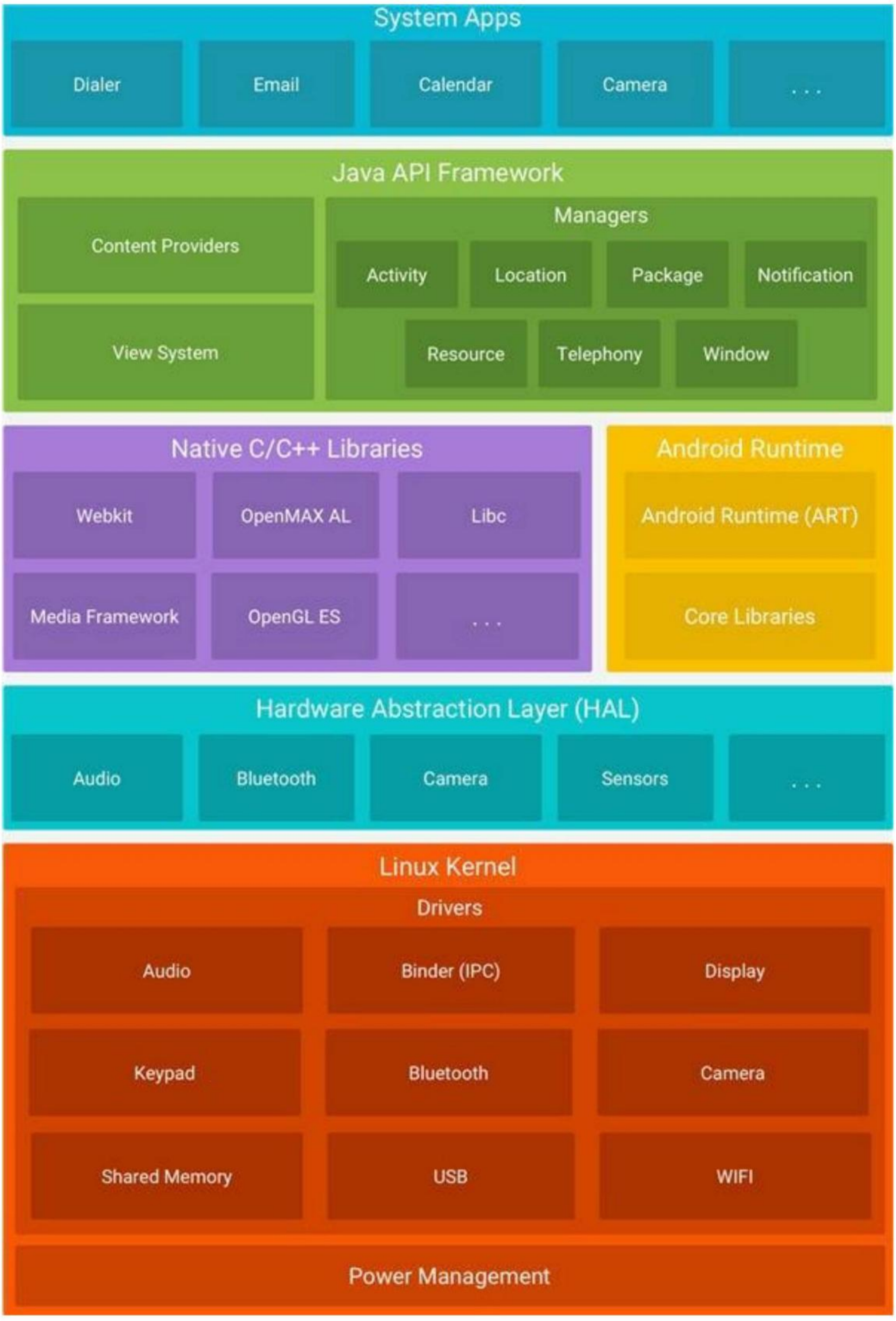
Q 27) What is the difference between a regular bitmap and a nine-patch image?

A nine-patch image, unlike bitmap, can be resized and used as background or other image sizes for the target device. The Nine-patch refers to the way you can resize the image: 4 corners that are unscaled, 4 edges that are scaled in 1 axis, and the middle one that can be scaled into both axes. This is what differentiates a nine-patch image from a regular bitmap.

Q 28) Explain Android Architecture briefly.

Answer: Android architecture is in the form of software stack components.
The below diagram describes the different layers in the Android architecture.

- Linux Kernel: Linux Kernel is placed at the bottom of the software stack and is the foundation of the Android architecture. Using Linux kernel, Android provides a connection between the other layers of the software. It helps to develop drivers like the keypad, display, audio for device manufacture etc.
- Hardware Abstraction Layer (HAL): HAL provides an interface between device drivers and API framework. It consists of library modules which are specific to the hardware component.
- Android Runtime: Linux kernel provides multi-tasking execution environment so that multiple processes can execute each process runs on its own instance of Android Runtime (ART). Android has core runtime libraries like Dalvik VM specific libraries, Java Interoperability Libraries, Android Libraries and C/C++ libraries.



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- Application Framework (Java API Framework): The entire android functionalities are available through the API. It consists of multiple services like Activity Manager, Resource Manager, Notification Manager, etc., which form the environment in which the android application runs.
- Applications: The Android application is a top layer and all types of in-built applications such as SMS, Browsers, Contact, etc are included in this top layer. It also includes third party applications which are installed by the user such as Games, etc.

Q 29) Explain Activity Lifecycle briefly.

Answer: When a user interacts with the app and moves here and there, out of the app, returns to the app, etc. During all this process "Activity" instances also move in the different stages in their lifecycle. There are seven different states like – onCreate(), onStart(), onRestart(), onResume(), onPause(), onStop(), and onDestroy(). These are termed as a 'callback'. Android system invokes these callbacks to know that the state has been changed.

The below-given diagram describes the Activity Lifecycle: