1000 Android Interview Questions

Vamsee Puligadda

1000 Android Interview Questions and Answers

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Foreword

I am neither the owner of a famous publishing company nor am a top IT company with hundreds of in-house developers to create anything I wanted to with a great ease.

I am an independent Software developer with passion towards what I do and trust me, a lot of time, efforts were put into creating this extensive collection of questions and answers at a single place.

If it helps at least a few in their careers to achieve their dream jobs, I will be more than happy.

Thank You.

- Vamsee Puligadda.

Question 1. What Is Android?

Answer:

Android is a stack of software for mobile devices which has Operating System, middleware and some key applications. The application executes within its own process and its own instance of Dalvik Virtual Machine. Many Virtual Machines run efficiently by a DVM device. DVM executes Java languages byte code which later transforms into .dex format files.

Question 2. Explain About The Exceptions Of Android? Answer:

The following are the exceptions that are supported by Android

- * InflateException : When an error conditions are occurred, this exception is thrown
- * Surface.OutOfResourceException: When a surface is not created or resized, this exception is thrown
- * SurfaceHolder.BadSurfaceTypeException: This exception is thrown from the lockCanvas() method, when invoked on a Surface whose is SURFACE TYPE PUSH BUFFERS
- * WindowManager.BadTokenException: This exception is thrown at the time of trying to add view an invalid

WindowManager.LayoutParamstoken.

Question 3. Why To Use Android?

Answer:

Android is useful because:

- *It is simple and powerful SDK
- *Licensing, Distribution or Development fee is not required
- *Easy to Import third party Java library
- *Supporting platforms are ? Linux, Mac Os, Windows

Question 4. Describe Android Application Architecture?

Answer:

Android Application Architecture has the following components:

- * Services like Network Operation
- * Intent To perform inter-communication between activities or services
- * Resource Externalization such as strings and graphics
- * Notification signaling users light, sound, icon, notification, dialog etc.
- * Content Providers They share data between applications

Question 5. What Are The Features Of Android?

Answer:

- *Components can be reused and replaced by the application framework.
- *Optimized DVM for mobile devices
- *SQLite enables to store the data in a structured manner.
- *Supports GSM telephone and Bluetooth, WiFi, 3G and EDGE technologies
- *The development is a combination of a device emulator, debugging tools, memory profiling and plug-in for Eclipse IDE.

Question 6. Are The Android Releases Available In A Rom? Answer:

No, Android is not yet available in a ROM format. Currently Android is installed by using a clean SD Card, and booted from there. It is booted by running a special application called 'Haret.exe' residing on your SD Card which will terminate the Windows kernel and boot into Linux/Android. It can't easily be run from ROM because a) it's too experimental to risk putting in ROM and then killing a device and b) WinMo does some hardware initialisation that isn't documented, but is needed before Android can run.

Question 7. Can You Play Android 2.1 Games On Android 2.2? Answer:

no.as i have a 2.2 android phone, its very hard to find games for it. The 2.2 android will not be able to support that type of game.

Question 8. What Is Android Runtime?

Answer:

Android includes a set of core libraries that provides most of the functionality available in the corelibraries of the Java programming language. Every Android application runs in its own process, with its own instance of the Dalvik virtual machine. Dalvik has been written so that a device can run multiple VMs efficiently. The Dalvik VM executes files in the Dalvik Executable (.dex) format which is optimized for minimal memory footprint. The VM is register-based, and runs classes compiled by a Java language compiler that have been transformed into the .dex format by the included ?dx? tool.

Question 9. Creating An Android Application Using The Eclipse Plugin?

Answer:

Using the Android Eclipse plugin is the fastest and easiest way to start creating a new Androidapplication. The plugin automatically generates the

correct project structure for your application, and keeps the resources compiled for you automatically.

It is still a good idea to know what is going on though. Take a look at Overview of an AndroidApplication to understand the basics of how an Android application works.

It is also recommended that you take a look at the ApiDemos application and the other sample applications in the samples/ folder in the SDK.

Finally, a great way to started with Android development in Eclipse is to follow both the Hello Android and Notepad code tutorials. In particular, the start of the Hello Android tutorial is an excellent introduction to creating a new Android application in Eclipse.

Question 10. Can I Write Code For Android Using C/c++? Answer:

Android applications are written using the Java programming language. Android includes a set of core libraries that provides most of the functionality available in the core libraries of the Java programming language. Every Android application runs in its own process, with its own instance of the Dalvik virtual machine. Dalvik has been written so that a device can run multiple VMs efficiently. The Dalvik VM executes files in the Dalvik Executable (.dex) format which is optimized for minimal memory footprint. The VM is register-based, and runs classes compiled by a Java language compiler that have been transformed into the .dex format by the included ?dx? tool. Android only supports applications written using the Java programming language at this time.

Question 11. What Is The Ttl (time To Live)? Why Is It Required? Answer:

TTL is a value in data packet of Internet Protocol. It communicates to the network router whether or not the packet should be in the network for too long or discarded. Usually, data packets might not be transmitted to their intended destination within a stipulated period of time. The TTL value is set by a system default value which is an 8-bit binary digit field in the header of the packet. The purpose of TTL is, it would specify certain time limit in seconds, for transmitting the packet header. When the time is exhausted, the packet would be discarded. Each router receives the subtracts count, when the packet is discarded, and when it becomes zero, the router detects the discardedpackets and sends a message, Internet

Control Message Protocol message back to the originating host.

TTL(time to live) apart from determining the life time of a packet in a network also helps in avoiding the wastage of bandwith

Question 12. How Is Nine-patch Image Different From A Regular Bitmap?

Answer:

It is a resizable bitmap resource that can be used for backgrounds or other images on the device. The NinePatch class permits drawing a bitmap in nine sections. The four corners are unscaled; the four edges are scaled in one axis, and the middle is scaled in both axes.

Question 13. Explain Ip Datagram, Fragmentation And Mtu? Answer:

IP datagram can be used to describe a portion of IP data. Each IP datagram has set of fields arranged in an order. The order is specific which helps to decode and read the stream easily. IP datagram has fields like Version, header length, Type of service, Total length, checksum, flag, protocol, Time to live, Identification, source and destination ip address, padding, options and payload.

MTU:- Maximum Transmission Unit is the size of the largest packet that a communication protocol can pass. The size can be fixed by some standard or decided at the time of connection

Fragmentation is a process of breaking the IP packets into smaller pieces. Fragmentation is needed when the datagram is larger than the MTU. Each fragment becomes a datagram in itself and transmitted independently from source. When received by destination they are reassembled.

Question 14. What Is Sticky Intent?

Answer:

Is there anyway to determine if an Intent passed into a BroadcastReceiver's onReceive is the result of a sticky Boradcast Intent, or if it was just sent.

Question 15. User-generated Content: Report Abuse Which Is The Better Phone - The Iphone Or The Droid?

Answer:

The iphone 4 is better than any other phone. for one it is made out of the same material they use in helicopter and train windows.(atleas from what i haerd)another thing is that the iphone has a better app market. with over 300,000 apps it is far better than the droids 70,000. Also it comes with

more accesories and has an antenna to provide better signal while the droid doesn't. People say it has a bad connection but i think not since i have already used it. And last but not leats better resolution. it may have a smaller screen but still its graphics are better.so it all depends on you each one has its ups and its downs but i would go with iphone 4 over any phone especially the "all new droid x"

Question 16. How Long Does It Take To Build An App? Answer:

Depending on the complexity and how quickly you respond to us you could have an app built in about a month.

Question 17. How Much Does Mobile Application Development Cost? That Is A Bit Like Asking: How Much Does A Truck Cost? Answer:

The answer is that it depends on the truck. Your needs are unique and your app needs to meet only those needs. A small Toyota will cost a lot less than a huge semi tractor trailer. A tractor trailer is great if you want to haul goods across the country but dont try to take it on a Saturday night date. We help you to avoid creating too much - or too little app. This keeps costs low.

Having us create a custom smartphone app is surprisingly affordable. Many businesses find their app costs less than even a small radio or newspaper campaign. Unlike a radio campaign, the app?s usefulness does not end with the last commercial. Once it is created an app can add to your bottom line for a very long time. Our goal is to connect your audience with your cash register no matter where they are. With a smartphone app you give your customers access to you at the exact moment their buying decision is the strongest.

Question 18. Describe The Apk Format.

Answer:

The APK file is compressed the AndroidManifest.xml file, application code (.dex files), resource files, and other files. A project is compiled into a single .apk file.

Question 19. Is Sim Pin Code Working?

Answer:

It's supposed to be working, yes, but if you have ANY troubles please DISABLE SIM PIN in WinMo (SIM PIN works on the SIM, but you need

WinMo UI to disable it)

Question 20. What Is The Future Scope Of Mobile Application Developers?

Answer:

Future of the mobile application development is bright

Question 21. What Is The Mobile Application Development All About? Answer:

In the last two years, a lot of innovation has come in the mobile computing world. Apple has launched very innovative mobile phone, iphone and ipad along with app store. Google launched Android in Nov 2007. Blackberry released SDK and app world. Microsoft has come up with phone 7 framework. Almost every type of mobile can be programmed using J2ME. Making applications for all these devices is Mobile application development.

Question 22. What Is The Demand Of Mobile Application Developers? Answer:

Desktop based IT application is present but the mobile is future. All the applications that were madeto work only on desk top are being ported to mobile. In the coming 10 years, desktops will be replaced completely with mobile, and then all the applications will be designed mainly for mobile. The demand for mobile based trained engineers are increasing every year. Now after the launch of ipad by Apple, it will be even more. Therefore; the gextgen technology will be nothing else than mobile. The demand is expected to grow 70 folds in the coming 4 years.

Question 23. What Is The Risk In Blocking The Main Thread When Performing A Lengthyoperation Such As Web Access Or Heavy Computation?

Answer:

Application_Not_Responding exception will be thrown which will crash and restart the application.

Question 24. What Is A Dalvik?

Answer:

The name of Androids virtual machine. The Dalvik VM is an interpreteronly virtual machine that executes files in the Dalvik Executable (.dex) format, a format that is optimized for efficient storage and memorymappable execution. The virtual machine is register-based, and it can run classes compiled by a Java language compiler that have been transformed into its native format using the included ?dx? tool. The VM runs on top of Posix-compliant operating systems, which it relies on for underlying functionality (such as threading and low level memory management). The Dalvik core class library is intended to provide a familiar development base for those used to programming with Java Standard Edition, but it is geared specifically to the needs of a small mobile device.

Question 25. What Features Are In A Release?

Answer:

Generally, it's very difficult to detail them, unless there is a significant new feature (in which case, that will be very well advertised!). Usually it's minor speed improvements, bug fixes etc... and sometimes, new bugs are introduced (so bear that in mind)

Question 26. When Will It Be Available In A Rom?

Answer:

No time soon. Folks are working on it, but you'll need a lot of patience before it (if ever) arrives.

Question 27. I Keep Hearing 'popping/clicking' Sounds From The Speaker?

Answer:

This is a known annoyance on some devices, believed to be related to power management switching the speaker on and off (not confirmed), it actually seems worse in silent mode (ironically). If you experience this, you're not alone... most users do. When a fix is ready, it will be announced here.

Question 28. How Much Revenue Share Does The Developer Get? Answer:

The developer gets 70% revenue generated from each Android application purchase while the rest is used for settlement charges. Google doesn't take a dime out of this.

Question 29. Explain Seapine Software?

Answer:

Seapine's software development and testing tools streamline your development process, saving you significant time and money. Enjoy feature-rich tools that are flexible enough to work in any software development environment. With Seapine integrated tools, every step in the

developmentprocess feeds critical information into the next step, letting you focus on developing high quality software in less time.

Question 30. Why Is List View Not Recommended To Have Active Components?

Answer:

Clicking on the active text box will pop up the software keyboard but this will resize the list, removing focus from the clicked element.

Question 31. Why Is Open Platform Good For The Mobile Operators? Answer:

An open platform would foster faster innovation, multiple software versions, better customisation options, lower costs, which would bring down the overall service and handset costs while boostingsales.

Question 32. Describe A Real Time Scenario Where Android Can Be Used?

Answer:

Imagine a situation that you are in a country where no one understands the language you speak and you can not read or write. However, you have mobile phone with you.

With a mobile phone with android, the Google translator translates the data of one language into another language by using XMPP to transmit data. You can type the message in English and select the language which is understood by the citizens of the country in order to reach the message to the citizens.

Question 33. Why Is Open Platform Good For Developers? Answer:

Developers will be able innovate rapidly because they will have comprehensive API access tohandset capabilities that are web-ready. They will experience increased productivity because they will have comprehensive and easy-to-use developer tools. And because open source offers a deeper understanding of the underlying mobile platform, they can better optimise their applications. Finally, the distribution and commercialisation of mobile apps will be less expensive and easier.

Question 34. How Will You Record A Phone Call In Android? How To Get A Handle On Audiostream For A Call In Android?

Answer:

Permissions.PROCESS_OUTGOING_CALLS: Allows an application to

monitor, modify, or abort outgoingcalls.

Question 35. What Is An Ddms?

Answer:

Dalvik Debug Monitor Service, a GUI debugging application shipped with the SDK. It provides screen capture, log dump, and process examination capabilities.

Question 36. What Are The Advantages Of Android? Answer:

The following are the advantages of Android:

- * The customer will be benefited from wide range of mobile applications to choose, since themonopoly of wireless carriers like AT&T and Orange will be broken by Google Android.
- * Features like weather details, live RSS feeds, opening screen, icon on the opening screen can be customized
- * Innovative products like the location-aware services, location of a nearby convenience store etc., are some of the additive facilities in Android.

Question 37. Does Android Support The Bluetooth Serial Port Profile? Answer:

Yes.

Question 38. What Is The Android G1 Phone?

Answer:

The Android T-Mobile G1 phone is the world's first Android-powered mobile phone developed by HTC and T-Mobile.

Question 39. Which Is The Virtual Machine Used To Run The Android Apps?

Answer:

The VM used is called Dalvik, so named after the ancestral roots of its creator, as the story goes.

Question 40. Are The Android Apps First Scrutinised By Google? Answer:

No the Android applications can be directly posted on the Android Market once you are registered as a developer after paying the \$25 application fee.

Question 41. What Is An Intent Receiver?

Answer:

An application class that listens for messages broadcast by calling Context.broadcastIntent

Question 42. What's The Difference Between File, Class And Activity In Android?

Answer:

File - It is a block of arbitrary information, or resource for storing information. It can be of any type.

Class - Its a compiled form of .Java file . Android finally used this .class files to produce an executable apk.

Activity - An activity is the equivalent of a Frame/Window in GUI toolkits. It is not a file or a file type it is just a class that can be extended in Android for loading UI elements on view.

Question 43. How To Select More Than One Option From List In Android Xml File? Give An Example.

Answer:

Specify android id, layout height and width as depicted in the following example.

```
<ListView android:id="@+id/ListView01"
android:layout_height="wrap_content"
android:layout_width="fill_parent"></ListView>
```

Question 44. What Languages Does Android Support For Application Development?

Answer:

Android applications are written using the Java programming language.

Question 45. What Are The Dialog Boxes That Are Supported In Android? Explain.

Answer:

Android supports 4 dialog boxes:

AlertDialog: An alert dialog box supports 0 to 3 buttons and a list of selectable elements, including check boxes and radio buttons. Among the other dialog boxes, the most suggested dialog box is the alert dialog box. ProgressDialog: This dialog box displays a progress wheel or a progress bar. It is an extension of AlertDialog and supports adding buttons.

DatePickerDialog: This dialog box is used for selecting a date by the user.

TimePickerDialog: This dialog box is used for selecting time by the user.

Question 46. What Virtual Machine Android Runs On? Answer:

Dalvik virtual machine

Question 47. What Are The Differences Between A Domain And A Workgroup?

Answer:

In a domain, one or more computer can be a server to manage the network. On the other hand in aworkgroup all computers are peers having no control on each other. In a domain, user doesn?t needan account to logon on a specific computer if an account is available on the domain. In a work group user needs to have an account for every computer. In a domain, Computers can be on different local networks. In a work group all computers needs to be a part of the same local network.

Question 48. How To Remove Desktop Icons And Widgets? Answer:

Press and Hold the icon or widget. The phone will vibrate and on the bottom of the phone you will see anoption to remove. While still holding the icon or widget drag it to the remove button. Once remove turns red drop the item and it is gone.

Question 49. What Is .apk Extension?

Answer:

The extension for an Android package file, which typically contains all of the files related to a single Android application. The file itself is a compressed collection of an AndroidManifest.xml file,application code (.dex files), resource files, and other files. A project is compiled into a single .apk file.

Question 50. What Is A Layout Resource?

Answer:

An XML file that describes the layout of an Activity screen.

Question 51. What Is A Manifest?

Answer:

An XML file associated with each Application that describes the various activies, intent filters, services, and other items that it exposes.

Question 52. What Is A Theme?

Answer:

A set of properties (text size, background color, and so on) bundled together to define various default display settings. Android provides a few standard themes, listed in R.style (starting with ?Theme_?).

Question 53. What Is An Uris?

Answer:

Android uses URI strings both for requesting data (e.g., a list of contacts) and for requesting actions (e.g., opening a Web page in a browser). Both are valid URI strings, but have different values. All requests for data must start with the string ?content://?. Action strings are valid URIs that can be handled appropriately by applications on the device; for example, a URI starting with ?http://? will be handled by the browser.

Question 54. Can An Application Be Started On Powerup?

Answer:

Yes.

Question 55. What Is An Action?

Answer:

A description of something that an Intent sender desires.

Question 56. What Is Activity?

Answer:

A single screen in an application, with supporting Java code.

Question 57. What Is Intent?

Answer:

A class (Intent) describes what a caller desires to do. The caller sends this intent to Android's intent resolver, which finds the most suitable activity for the intent.

Question 58. What Is A Resource?

Answer:

A user-supplied XML, bitmap, or other file, injected into the application build process, which can later be loaded from code.

Question 59. What Is A Sticky Intent?

Answer:

sendStickyBroadcast() performs a sendBroadcast (Intent) that is "sticky," i.e. the Intent you are sending stays around after the broadcast is complete, so that others can quickly retrieve that data through the return value of registerReceiver (BroadcastReceiver, IntentFilter). In all other ways, this behaves the same as sendBroadcast (Intent).

One example of a sticky broadcast sent via the operating system is ACTION_BATTERY_CHANGED. When you call registerReceiver () for that action -- even with a null BroadcastReceiver -- you get the Intent that

was last broadcast for that action. Hence, you can use this to find the state of the battery without necessarily registering for all future state changes in the battery.

Question 60. What Is The Open Handset Alliance? Answer:

The OHA is a consortium of 30 technology and mobile companies that have joined hands to accelerate innovation in mobile technology and at the same time offer the end users a better, costeffective and richer mobile experience.

Question 61. What Innovations The Oha Members Strive To Achieve? Answer:

The OHA members have endeavored to develop Android, the open source mobile platform consisting of an OS, web browser and key applications. Different companies have different contributions to make and roles to play. For instance, the software companies like Google are developing the requisite software, the hardware companies the chipsets and the mobile companies are ensuring compatible handsets for Android.

Question 62. Why An Open Source Platform Would Be Beneficial To Consumers?

Answer:

Open source platform will ensure cheaper mobile handsets and services coupled with richer user experience in the form of a friendlier interface, cool applications and an enhanced browsing experience.

Question 63. How Will Apps Change With Android 2.2? Answer:

The answer is that with Froyo, Google's giving us a bunch of new ways to take advantage of apps from the Android Market and beyond. The highlights:SD card installations: you'll finally be able to install apps on your SD card, smashing the space limitations of Android versions past. You'll be able to select where you want each app to be installed - SD card or internal storage - and even toggle it back and forth with a couple of clicks later.

Q #63) What are the different versions of Android OS that you remember?

Answer: Given below are the various versions of Android.

Version	Name
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 4.0-4.0.4	Ice Cream Sandwich

Q #64) What is the difference between Mobile Application Testing and Mobile Testing?

Answer: Mobile app testing is the testing of applications on a device which mainly focuses on functions and features of the application.

And Mobile Testing is the testing of the actual mobile device and focuses on the mobile features like Call, SMS, Contacts, Media Player, inbuilt browsers etc.

Q #65) Name the languages supported for Android development.

Answer: Java is the widely used language for Android development. It also supports C/C++ and when used with Android SDK, it improves the performance speed too.

Q #66) What are the advantages of Android Operating System?

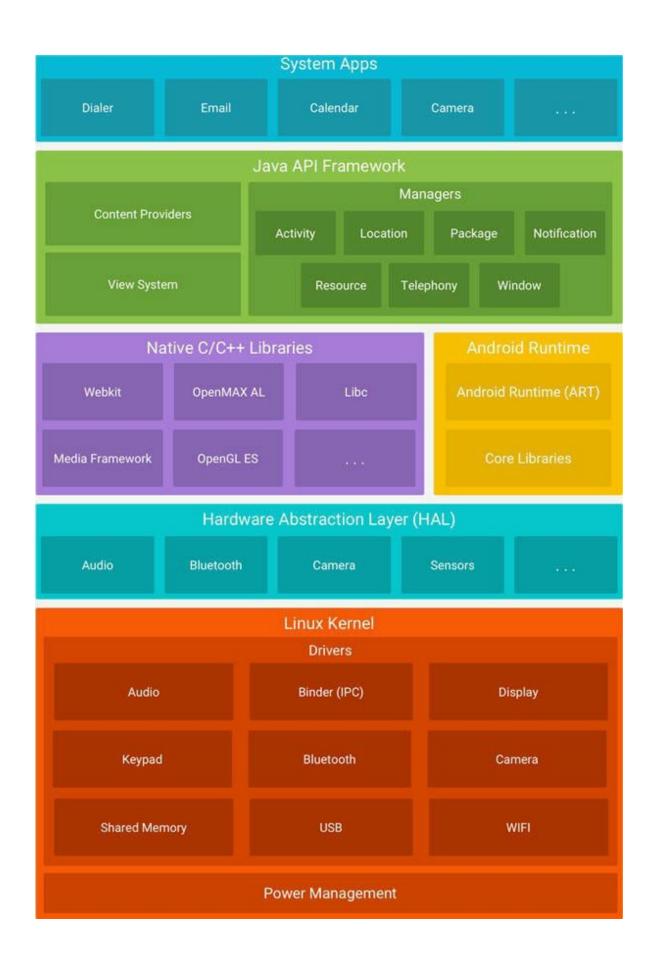
Answer: It is an open-source and platform independent. It supports various technologies like Bluetooth, Wi-Fi, etc

Q #67) 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.



source

- 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 #68) Define and explain Android Framework.

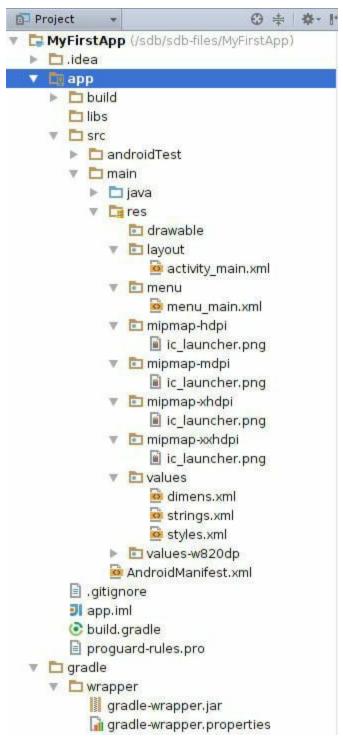
Answer: Android framework is a set of API's using which the Android developers write code for the mobile apps. It contains the methods and classes to write the programming code.

Android framework includes a different set of tools to create image pane, text field, buttons, etc. It also includes "Activities" with which the user interacts and "Services", which are the programs that run in the background. It is a package of different components like Intents, Broadcast Receivers, Content Providers, etc.

Q #69) 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.

The below image shows the Project View once an Android project is created:



source

Q #70) Provide the important core components of Android. Answer: The core components of Android operating systems are:

- Activity
- Intents

- Services
- Content Provider
- Fragment

Q #71) Explain briefly – what is meant by Activities?

Answer: Activities are the part of the mobile app which the user can see and interact with.

For Example, if you open an SMS app which has multiple activities like create new SMS, add a contact from the address book, write the content in the SMS body, send SMS to the selected contact, etc.

Activity keeps a track of the following:

- Keeps track of what a user is currently looking for in an app.
- Keeps a track of previously used processes, so that the user can switch between ongoing process and previous process.
- It helps to kill the processes so that the user can return to their previous state

An activity is implemented as a subclass of Activity class as shown below:

```
Public class MyActivity extends Activity {
}
```

Q # 72) What is meant by Services?

Answer: Service is an Android component which runs in the background and acts independently. It does not provide any user interface.

Though the services are running behind the scene, a user can continue their work on different apps. Most of the time, the users are not aware of the services which are running in the background. These services allow the system to kill the process without interrupting the user's ongoing work.

A service is implemented as a subclass of Service class:

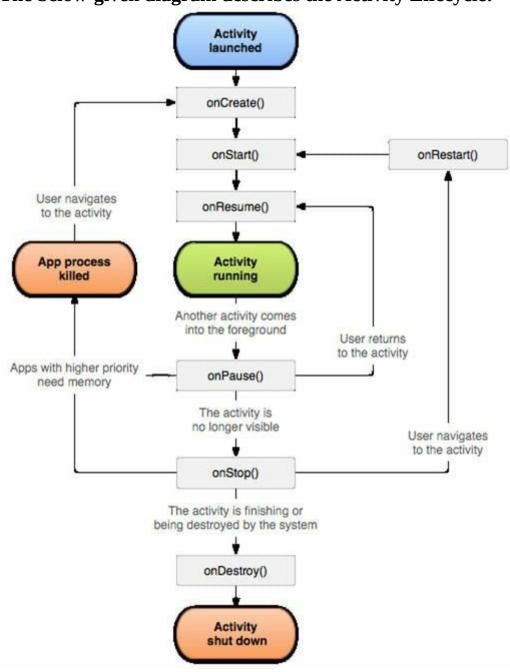
```
Public class MainService extends Service {
}
```

Q #73) 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:



Source

When a user is working on an app, then there are many activities involved in it like Open, Close, Save, Delete, Send, etc.

Based on the user action these activities are partially disconnected from the UI but these activities always reside in the memory so that when the user calls back the same activity, the user will be in the same state where he has left off.

Q #74) 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 #75) Explain Implicit and Explicit Intents.

Answer: Implicit Intent calls the system components while explicit Intents invoke the Activity class.

\mathbf{Q} #76) 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 #77) 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 #78) 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 #79) What is ANR in Android?

Answer: ANR stands for Application Not Responding. It is a notification or pop-up displayed by the Android platform whenever the application is performing too many functions at a time and if it is suddenly not responding for a long time to the user action.

Q #80) Which are the dialog boxes supported by Android platform? Answer: Android supports four types of dialog boxes:

- **AlertDialog**: It has a maximum of 3 buttons and sometimes AlertDialog includes check boxes and Radio buttons to select the element.
- **ProgressDialog**: It displays the progress bar or wheels.
- **TimePickerDialog**: Using this dialog box, a user selects the Time.
- **DatePickerDialog**: Using this dialog box, a user selects the Date

Q #81) 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 #82) What is ActivityCreator?

Answer: ActivityCreator is a batch file and shell script which was used to create a new Android project. It is now replaced by "Create New Project" in Android SDK.

Q #83) What is Orientation?

Answer: Orientation is the key feature in Smartphones nowadays. It has the ability to rotate the screen between Horizontal or Vertical mode.

Android supports two types of screen Orientations as mentioned below:

- **Portrait**: When your device is vertically aligned.
- **Landscape**: When your device is horizontally aligned.

setOrientation() is a method using which you can set a screen alignments. HORIZONTAL and VERTICAL are two values which can be set in the setOrientation() method. Whenever there is a change in the display orientation i.e. from Horizontal to Vertical or vice versa then onCreate() method of the Activity gets fired.

Basically, when the orientation of the Android mobile device gets changed then the current activity gets destroyed and then the same activity is recreated in the new display orientation. Android developers define the orientation in the AndroidManifest.xml file.

Q #84) What is AIDL?

Answer: In the Android platform, there are remote methods which facilitate the use of methods from one program to another. To create and implement the remote methods the first step is to define communication interface in AIDL.

AIDL stands for Android Interface Definition Language. It facilitates the communication between the client and service. It also communicates the information through inter-process communication.

For communication between processes, the data is broken down into chunks which are easily understandable by the Android platform.

Q #85) What are the data types supported by AIDL? Answer: Data Types supported by AIDL are as follows:

- String
- List
- Map
- charSequence
- Java data types such as INT, Long, Char, Boolean etc

Q #86) 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 #87) What all devices have you worked on?

Answer: There are many mobile devices available in the market with different operating systems.

Specifically, I have worked on Android, Windows, Symbian, iPhone, etc

Q #88) Which tools are used for debugging on the Android platform?

Answer: To understand the cause of the failure or cause of any issue, debugging is important. On the Android platform **Android Monitor.bat** utility is used while on iOS platform, iPhone Configuration utility is used for debugging purposes.

There are different tools for debugging which include – Android DDMS, Android Debug Bridge, iOS simulator, Debugging from Eclipse with ADT, Remote debugging on Android with Chrome etc.

Q #89) Which scenario can test only on real devices but not on emulator?

Answer: Emulators are used for performing similar kind of testing which is performed on the real devices. Basically, emulators are used as a replacement for real devices as sometimes real devices are not available for testing, use of real mobile devices for testing purpose is costlier at times.

But there are few scenarios which cannot be tested using emulator, these can be tested only using real devices. These scenarios are interrupted scenarios i.e. message, phone call interruption while using the app, low battery, Bluetooth, memory card mount and unmount etc.

Q #90) Name the mobile automation tools that are available in the market.

Answer: There are quite a few mobile automation testing tools that are available in the market but these are used only if the project requires it and if the application supports the automation.

These tools are paid as well as free tools, hence analysis needs to be done within the project team and then the appropriate mobile automation tool needs to be selected. Silk Mobile, SeeTest, Ranorex are the paid mobile automation tool while Appium, KIF, Robotium, Calabash are few free tools.

91. Android Characteristics

Criteria	Result
Type of Operating System	Open Source
OS Fragmentation	Multiple OS versions & interoperability concerns
Customization	Heightened customization possible

92. Why cannot you run standard Java bytecode on Android?

Android uses Dalvik Virtual Machine (DVM) which requires a special bytecode. First of all, we have to convert Java class files into Dalvik Executable files using an Android tool called "dx". In normal circumstances, developers will not be using this tool directly and build tools will care for the generation of DVM compatible files.

93. Can Android application only be programmed in Java?

No, it is not necessary. You can program Android apps can be created using NDK in C/C++. The NDK is a toolset that allows you to implement parts of your app using native-code languages such as C and C++. Typically, good use cases for the NDK are CPU-intensive applications such as game engines, signal processing, and physics simulation.

94. Where will you declare your activity so the system can access it?

Activity is to be declared in the manifest file. For example:

- 1. <manifest></manifest>
- 2. <application></application>

3. **<activity** android:name=".MyIntellipaat">

95. What is the difference between a regular .png and a nine-patch image?

It is a resizable bitmap resource that can be used for backgrounds or other images on the device. NinePatch class permits drawing a bitmap in nine sections. The nine patch images have extension as.9.png. It allows extension in 9 ways, i.e. 4 corners that are unscaled, 4 edges that are scaled in 1 axis, and the middle one that can be scaled into both axes.

96. What is the difference between an implicit intent and explicit intent?

There are two types of Intent implicit and explicit intent, let see some more difference between them.

Implicit: Implicit intent is when you call system default intent like send email, send SMS, dial number.

For example,

```
Intent sendIntent = new Intent();
sendIntent.setAction(Intent.ACTION_SEND);
sendIntent.putExtra(Intent.EXTRA_TEXT, textMessage);
sendIntent.setType("text/plain")
startactivity(sendIntent);
```

Explicit: Explicit intent when you call you're on application activity from one activity to another

For example, first activity to second activity:

Intent intent = new Intent(first.this, second.class);
startactivity(intent);

97. Where can you define the icon for your Activity?

The icon for an Activity is defined in the manifest file.

Code

<activity android:icon="@drawable/app_icon" android:name=".MyTestActivity"></activity>

which means you have to Open AndroidManifest.xml.Right under the root "manifest" node of the XML, we can see the "application" node. We have added this attribute to "application". (The "icon" in "@drawable/icon" refers to the file name of the icon.) android:icon="@drawable/icon"

98. What is ADB?

ADB stands for Android Debug Bridge. It is a command line tool that is used to communicate with the emulator instance. ADB can control your device over USB from a computer, copy files back and forth, install and uninstall apps, run shell commands, and more. It is a client-server program that includes three components:

- A client, which runs on your development machine. You can invoke a client from a shell by issuing an ADB command. Other Android tools such as DDMS also create ADB clients.
- A server, which runs as a background process on your development machine. The server manages communication between the client and the ADB daemon running on an emulator or device.
- A daemon, which runs as a background process on each emulator or device instance.

99. What are the different storage methods in Android?

Android offers several different options for data persistence. Shared Preferences – Store private primitive data in key-value pairs. This sometimes gets limited as it offers only key-value pairs. You cannot save your own java types. Internal Storage – Store private data on the device memory.

100. What is action in Android?

In Android, the action is a description of something that an intent sender desires.

SYNTAX:

CONTAINED IN: DESCRIPTION:

Adds an action to an intent filter. An element must contain one or more elements. If it doesn't contain any, no Intent objects will get through the filter.

Question 101. Why An Open Source Platform Would Be Beneficial To Consumers?

Answer:

Open source platform will ensure cheaper mobile handsets and services coupled with richer user experience in the form of a friendlier interface, cool applications and an enhanced browsing experience.

102) What Is the Google Android SDK?

The Google Android SDK is a toolset that developers need in order to write apps on Android enabled devices. It contains a graphical interface that emulates an Android driven handheld environment, allowing them to test and debug their codes.

103) What is the Android Architecture?

Android Architecture is made up of 4 key components:

- Linux Kernel
- Libraries
- Android Framework
- Android Applications

104) Describe the Android Framework.

The Android Framework is an important aspect of the Android Architecture. Here you can find all the classes and methods that developers would need in order to write applications on the Android environment.

105) 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.

106) What is the importance of having an emulator within the Android environment?

The emulator lets developers "play" around an interface that acts as if it were an actual mobile device. They can write and test codes, and even debug. Emulators are a safe place for testing codes especially if it is in the early design phase.

107) What is the use of an activity Creator?

An activityCreator is the first step towards the creation of a new Android project. It is made up of a shell script that will be used to create new file system structure necessary for writing codes within the Android IDE.

108) Describe Activities.

Activities are what you refer to as the window to a user interface. Just as you create windows in order to display output or to ask for an input in the form of dialog boxes, activities play the same role, though it may not always be in the form of a user interface.

109) What are Intents?

Intents displays notification messages to the user from within the Android enabled device. It can be used to alert the user of a particular state that occurred. Users can be made to respond to intents.

110) Differentiate Activities from Services.

Activities can be closed, or terminated anytime the user wishes. On the other hand, services are designed to run behind the scenes, and can act independently. Most services run continuously, regardless of whether there are certain or no activities being executed.

111) What items are important in every Android project?

These are the essential items that are present each time an Android project is created:

- AndroidManifest.xml
- build.xml
- bin/
- src/
- res/
- assets/

112) What is the importance of XML-based layouts?

The use of XML-based layouts provides a consistent and somewhat standard

means of setting GUI definition format. In common practice, layout details are placed in XML files while other items are placed in source files.

113) What are containers?

Containers, as the name itself implies, 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, as examples.

114) What is Orientation?

Orientation, which can be set using setOrientation(), dictates if the LinearLayout is represented as a row or as a column. Values are set as either HORIZONTAL or VERTICAL.

115) What is the importance of Android in the mobile market?

Developers can write and register apps that will specifically run under the Android environment. This means that every mobile device that is Android enabled will be able to support and run these apps. With the growing popularity of Android mobile devices, developers can take advantage of this trend by creating and uploading their apps on the Android Market for distribution to anyone who wants to download it.

116) What do you think are some disadvantages of Android?

Given that Android is an open-source platform, and the fact 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. One app that runs on this particular version of Android OS may or may not run on another version. Another disadvantage is that since mobile devices such as phones and tabs come in different sizes and forms, it poses a challenge for developers to create apps that can adjust correctly to the right screen size and other varying features and specs.

117) What is adb?

Adb is short for Android Debug Bridge. It allows developers the power to execute remote shell commands. Its basic function is to allow and control communication towards and from the emulator port.

118) What are the four essential states of an activity?

- 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

119) What is ANR?

ANR is short for Application Not Responding. This is actually a dialog that appears to the user whenever an application have been unresponsive for a long period of time.

120) Which elements can occur only once and must be present?

Among the different elements, the and elements must be present and can occur only once. The rest are optional, and can occur as many times as needed.

121) How are escape characters used as attribute?

Escape characters are preceded by double backslashes. For example, a newline character is created using '\\n'

122) What is the importance of settings permissions in app development?

Permissions allow certain restrictions to be imposed primarily to protect data and code. Without these, codes could be compromised, resulting to defects in functionality.

123) What is the function of an intent filter?

Because every component needs to indicate which intents they can respond to, intent filters are used to filter out intents that these components are willing to receive. One or more intent filters are possible, depending on the services and activities that is going to make use of it.

124) Enumerate the three key loops when monitoring an activity

- Entire lifetime activity happens between onCreate and onDestroy
- Visible lifetime activity happens between onStart and onStop
- Foreground lifetime activity happens between onResume and onPause

125) When is the onStop() method invoked?

A call to onStop method happens when an activity is no longer visible to the user, either because another activity has taken over or if in front of that

activity.

126) Is there a case wherein other qualifiers in multiple resources take precedence over locale?

Yes, there are actually instances wherein some qualifiers can take precedence over locale. There are two known exceptions, which are the MCC (mobile country code) and MNC (mobile network code) qualifiers.

127) What are the different states wherein a process is based?

There are 4 possible states:

- foreground activity
- visible activity
- background activity
- · empty process

128) How can the ANR be prevented?

One technique that prevents the Android system from concluding a code that has been responsive for a long period of time is to create a child thread. Within the child thread, most of the actual workings of the codes can be placed, so that the main thread runs with minimal periods of unresponsive times.

129) What role does Dalvik play in Android development?

Dalvik serves as a virtual machine, and it is where every Android application runs. Through Dalvik, a device is able to execute multiple virtual machines efficiently through better memory management.

130) What is the AndroidManifest.xml?

This file is essential in every application. It is declared in the root directory and contains information about the application that the Android system must know before the codes can be executed.

131) What is the proper way of setting up an Android-powered device for app development?

The following are steps to be followed prior to actual application development in an Android-powered device:

- -Declare your application as "debuggable" in your Android Manifest.
- -Turn on "USB Debugging" on your device.
- -Set up your system to detect your device.

132) Enumerate the steps in creating a bounded service through AIDL.

- 1. create the .aidl file, which defines the programming interface
- 2. implement the interface, which involves extending the inner abstract Stub class as well as implanting its methods.
- 3. expose the interface, which involves implementing the service to the clients.

133) What is the importance of Default Resources?

When default resources, which contain default strings and files, are not present, an error will occur and the app will not run. Resources are placed in specially named subdirectories under the project res/ directory.

134) When dealing with multiple resources, which one takes precedence?

Assuming that all of these multiple resources are able to match the configuration of a device, the 'locale' qualifier almost always takes the highest precedence over the others.

135) When does ANR occur?

The ANR dialog is displayed to the user based on two possible conditions. One is when there is no response to an input event within 5 seconds, and the other is when a broadcast receiver is not done executing within 10 seconds.

136) What is AIDL?

AIDL, or Android Interface Definition Language, handles the interface requirements between a client and a service so both can communicate at the same level through interprocess communication or IPC. This process involves breaking down objects into primitives that Android can understand. This part is required simply because a process cannot access the memory of the other process.

137) What data types are supported by AIDL?

AIDL has support for the following data types:

- -string
- -charSequence
- -List
- -Map
- -all native Java data types like int,long, char and Boolean

138) What is a Fragment?

A fragment is a part or portion of an activity. It is modular in a sense that you

can move around or combine with other fragments in a single activity. Fragments are also reusable.

139) What is a visible activity?

A visible activity is one that sits behind a foreground dialog. It is actually visible to the user, but not necessarily being in the foreground itself.

140) When is the best time to kill a foreground activity?

The foreground activity, being the most important among the other states, is only killed or terminated as a last resort, especially if it is already consuming too much memory. When a memory paging state has been reach by a foreground activity, then it is killed so that the user interface can retain its responsiveness to the user.

141) Is it possible to use or add a fragment without using a user interface?

Yes, it is possible to do that, such as when you want to create a background behavior for a particular activity. You can do this by using add(Fragment, string) method to add a fragment from the activity.

142) How do you remove icons and widgets from the main screen of the Android device?

To remove an icon or shortcut, press and hold that icon. You then drag it downwards to the lower part of the screen where a remove button appears.

143) What are the core components under the Android application architecture?

There are 5 key components under the Android application architecture:

- services
- intent
- resource externalization
- notifications
- content providers

144) What composes a typical Android application project?

A project under Android development, upon compilation, becomes an .apk file. This apk file format is actually made up of the AndroidManifest.xml file, application code, resource files, and other related files.

145) What is a Sticky Intent?

A Sticky Intent is a broadcast from sendStickyBroadcast() method such that

the intent floats around even after the broadcast, allowing others to collect data from it.

146) Do all mobile phones support the latest Android operating system?

Some Android-powered phone allows you to upgrade to the higher Android operating system version. However, not all upgrades would allow you to get the latest version. It depends largely on the capability and specs of the phone, whether it can support the newer features available under the latest Android version.

147) What is portable wi-fi hotspot?

Portable Wi-Fi Hotspot allows you to share your mobile internet connection to other wireless device. For example, using your Android-powered phone as a Wi-Fi Hotspot, you can use your laptop to connect to the Internet using that access point.

148) What is an action?

In Android development, an action is what the intent sender wants to do or expected to get as a response. Most application functionality is based on the intended action.

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

In general, a Nine-patch image allows resizing that can be used as background or other image size requirements 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.

150) What language is supported by Android for application development?

The main language supported is Java programming language. Java is the most popular language for app development, which makes it ideal even for new Android developers to quickly learn to create and deploy applications in the Android environment.

151) What is AAPT?

AAPT is an acronym for android asset packaging tool. It handles the packaging process.

152) What is NDK?

NDK stands for Native Development Kit. By using NDK, you can develop a part of app using native language such as C/C++ to boost the performance.

153) What is the Google Android SDK?

The Google Android SDK is a toolset which is used by developers to write apps on Android enabled devices. It contains a graphical interface that emulates an Android driven handheld environment and allow them to test and debug their codes.

154) What is an APK format?

APK is a short form stands for Android Packaging Key. It is a compressed key with classes, UI's, supportive assets and manifest. All files are compressed to a single file is called APK.

155) Which types of flags are used to run an application on Android?

Following are two types of flags to run an application in Android:

FLAG_ACTIVITY_NEW_TASK

FLAG_ACTIVITY_CLEAR_TOP

156) What is singleton class in Android?

A singleton class is a class which can create only an object that can be shared all other classes.

157) What is DDMS?

DDMS stands for Dalvik Debug Monitor Server. It gives the wide array of debugging features:

Port forwarding services, Screen capture, Thread and heap information,

Network traffic tracking, Location data spoofing

158) What is intent?

It is a kind of message or information that is passed to the components. It is used to launch an activity, display a web page, send sms, send email etc. There are two types of intents in android:

Implicit Intent

Explicit Intent

159) What are the core building blocks of android?

The core building blocks of android are:

Activity, View, Intent, Service, Content Provider, Fragment etc.

160) Can you describe the core building blocks of an Android application?

This top-level question is a great way to warm up the developer and get a feel for how well they understand the basics of building an Android app from scratch. The basic components are as follows:

Activity: An activity is a subclass of the "ContextThemeWrapper" class. Since almost all activities interact directly with the user, it is often helpful to think of an activity as the screen for a particular action, such as logging in or taking a picture.

View: The view is everything you can see on the screen of the app—think of the individual UI elements like buttons, labels, and text fields.

Intent: The main purpose of intent is to invoke individual components. Common uses include starting the service, launching activities, displaying a list of contacts, dialing a phone number, or displaying a web page.

Service: A service is a background process that can either be local or remote.

Local services may be accessed from within the application while remote services are intended to be used by other applications running on the same device.

Content Provider: Content providers share data between applications.

Fragment: Fragments are best thought of as parts of an activity—you can display more than one fragment on the screen at the same time.

Android Manifest: The AndroidManifest.xml file provides essential information about your app required for it to run on the Android operating system. All Android apps have this file in their root directory.

161) Can you list and explain the four Java classes related to using sensors on the Android platform?

If your app requires the use of sensors like the accelerometer or gyroscope, you'll want to make sure your developer is familiar with these four classes.

Sensor Manager: This class provides methods regarding the registration of sensor event listeners, the management of data acquisition, and calibration. It also provides methods for accessing and listing sensors.

Sensor: This class creates an instance of a specific sensor, providing methods that allow you to determine its capabilities.

SensorEvent: This class provides information on a sensor event by creating a sensor event object.

SensorEventListener: This interface provides two callback methods that can receive notifications of sensor events.

162) What are some measures you can take to avoid ANR?

The dreaded ANR (Application Not Responding) message appears to the user when an Android application remains unresponsive for a long period of time. ANR is typically caused when the app performs too much on the main thread. To avoid ANR, an app should perform lengthy database or networking

operations in separate threads. For background task-intensive apps, you can alleviate pressure from the UI thread by using the IntentService. In general, it helps to always define time-outs for all your web service calls and to remain ever vigilant for infinite loops in complex calculations.

163) Why cannot you run standard Java bytecode on Android?

Android uses Dalvik Virtual Machine (DVM) which requires a special bytecode. First of all, we have to convert Java class files into Dalvik Executable files using an Android tool called "dx". In normal circumstances, developers will not be using this tool directly and build tools will care for the generation of DVM compatible files.

164) Can Android application only be programmed in Java?

No, it is not necessary. You can program Android apps can be created using NDK in C/C++. The NDK is a toolset that allows you to implement parts of your app using native-code languages such as C and C++. Typically, good use cases for the NDK are CPU-intensive applications such as game engines, signal processing, and physics simulation

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• A client, which runs on your development machine. You can invoke a client

from a shell by issuing an ADB command. Other Android tools such as DDMS also create ADB clients.

- A server, which runs as a background process on your development machine. The server manages communication between the client and the ADB daemon running on an emulator or device.
- A daemon, which runs as a background process on each emulator or device instance

167) Can you deploy executable JARs on Android? Which packaging is supported by Android?

No, Android platform does not support JAR deployments. Applications are packed into Android Package (.apk) using Android Asset Packaging Tool (AAPT) and then deployed onto Android platform. Google provides Android Development Tools for Eclipse that can be used to generate Android Package

168) Under what condition could the code sample below crash your application? How would you modify the code to avoid this potential problem? Explain your answer.

```
Intent sendIntent = new Intent();
sendIntent.setAction(Intent.ACTION_SEND);
sendIntent.putExtra(Intent.EXTRA_TEXT, textMessage);
sendIntent.setType(HTTP.PLAIN_TEXT_TYPE); // "text/plain" MIME type
startActivity(sendIntent);
```

An implicit intent specifies an action that can invoke any app on the device able to perform the action. Using an implicit intent is useful when your app cannot perform the action, but other apps probably can. If there is more than one application registered that can handle this request, the user will be prompted to select which one to use.

However, it is possible that there are no applications that can handle your intent. In this case, your application will crash when you invoke startActivity(). To avoid this, before calling startActivity() you should first verify that there is at least one application registered in the system that can handle the intent. To do this use resolveActivity() on your intent object:

```
// Verify that there are applications registered to handle this intent //
(resolveActivity returns null if none are registered)

if (sendIntent.resolveActivity(getPackageManager()) != null)
{    startActivity(sendIntent);
}
```

169) What are the services that can be allowed to run in a single process?

- Android allows all the services and applications to run on a single process. This behavior is the default behavior that can be changed by using the different settings and functions.
- The process can be declared by using android: process attribute. This places the component explicitly on the process. Service is not a separate process and itself it's a process if not defined separately.
- The service is not used as a thread as well but it defines other threads in the program to do the work and create the application.
- The application runs and finds the errors in the program and the service just takes the necessary actions on them. The service also responds to the errors whenever necessary.

171) What is the importance of XML-based layouts?

The use of XML-based layouts provides a consistent and somewhat standard means of setting GUI definition format. In common practice, layout details are placed in XML files while other items are placed in source files.

172) What are the containers?

Containers, as the name itself implies, 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, as examples.

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Given that Android is an open-source platform and the fact 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. One app that runs on this particular version of Android OS may or may not run on another version. Another disadvantage is that since mobile devices such as phones and tabs come in different sizes and forms, it poses a challenge for developers to create apps that can adjust correctly to the right screen size and other varying features and specs.

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- Active—if the activity is at the foreground
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- 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

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defects in functionality.

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Because every component needs to indicate which intents they can respond to, intent filters are used to filter out intents that these components are willing to receive. One or more intent filters are possible, depending on the services and activities that are going to make use of it.

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One technique that prevents the Android system from concluding a code that has been responsible for an extended period is to create a child thread. Within the child thread, most of the actual workings of the codes can be placed, so that the main thread runs with minimal periods of unresponsive times.

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182) What is the importance of Default Resources?

When default resources, which contain default strings and files, are not present, an error will occur and the app will not run. Resources are placed in specially named sub-directories under the project res/ directory.

183) When is the best time to kill a foreground activity?

The foreground activity, being the most important among the other states, is only killed or terminated as a last resort, especially if it is already consuming too much memory. When a foreground activity has reached a memory paging state, then it is killed so that the user interface can retain its responsiveness to the user.

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186) What is an action?

In Android development, an action is what the intent sender wants to do or expected to get as a response. Most application functionality is based on the intended action.

187) What is a Sticky Intent?

sendStickyBroadcast() performs a sendBroadcast(Intent) known as sticky, i.e. the Intent you are sending stays around after the broadcast is complete so that others can quickly retrieve that data through the return value of registerReceiver(BroadcastReceiver, IntentFilter). In all other ways, this behaves the same as sendBroadcast(Intent). One example of a sticky broadcast sent via the operating system is ACTION_BATTERY_CHANGED. When you call registerReceiver() for that action—even with a null BroadcastReceiver—you get the Intent that was the last broadcast for that action. Hence, you can use this to find the state of the battery without necessarily registering for all future state changes in the battery.

188) What is the difference between a regular .png and a nine-patch image?

This is one of the most popular Android Interview questions, asked in several interviews ranging from 1 to 2 years of experience to 5 years. The answer is, It is a re-sizable bitmap resource that can be used for backgrounds or other images on the device. The NinePatch class permits drawing a bitmap in nine sections. The nine patch images have an extension as .9.png. It allows extension in 9 ways e.g. 4 corners that are unscaled, 4 edges that are scaled in 1 axis, and the middle one that can be scaled into both axes.

189) What is Setting Breakpoints?

Breakpoints are a mechanism by which you can tell Android Studio to temporarily pause execution of your code.

190) What is dp, sp, pt, and px?

dp—Density: -independent pixel. 1 dp is equivalent to one pixel on a 160 dpi screen. This is the recommended unit of measurement when you're specifying the dimension of views in your layout.

sp—Scale:- independent pixel. This is similar to dp and is recommended for specifying font sizes.

pt—Point:- A point is defined to be 1/72 of an inch, based on the physical screen size.

px—Pixel:- Corresponds to actual pixels on the screen. Using this unit is not recommended, as your UI might not render correctly on devices with a different screen resolution.

191. What is an ANR notification in Android?

ANR is short for Application Not Responding. Android systems show this dialog if the application is performing too much of task on the main thread and has been unresponsive from a long time.

192. Enumerate three key loops when monitoring an activity?

- **Entire lifetime** activity happens between onCreate and onDestroy
- **Visible lifetime** activity happens between onStart and onStop
- **Foreground lifetime** activity happens between onResume and onPause

193. How do you find any view element into your program?

Findviewbyid : Finds a view that was identified by the id attribute from the XML processed inActivity.OnCreate(Bundle).

Syntax

[Android.Runtime.Register("findViewById", "(I)Landroid/view/View;", "GetFindViewById_IHandler")]

public virtual View FindViewById (Int32 id)

Advanced Questions

194. Which dialog boxes can you use in your Android application?

- **AlertDialog :** An alert dialogue box supports 0 to 3 buttons and a list of selectable elements.
- **ProgressDialog**: An extension to AlertDialog and you may add buttons to it. It shows a progress wheel or a progress bar.
- **DatePickerDialog**: It is used for selecting a date by the user.
- **TimePickerDialog**: It is used for selecting time by the user.

195. Name the resource that is a compiled visual resource and can be used as a background, title, or in other part of the screen.

Drawable is the virtual resource that can be used as a background, title, or in other parts of the screen. It is compiled into an android.graphics.drawable subclass. A Drawable resource is a general concept for a graphic which can

be drawn. The simplest case is a graphical file (bitmap), which would be represented in Android via a BitmapDrawable class.

The Drawable is stored as individual files in one of the res/drawable folders. The ADT project creation wizard creates these folders by default. You would store bitmaps for different resolutions in the -mdpi, -hdpi, -xhdpi, -xxhdpi subfolders of res/drawable If these bitmaps are provided in a different folder, the Android system selects the correct one automatically based on the device configuration.

196. How can two Android applications share same Linux user ID and share same VM?

The applications must sign with the same certificate in order to share same Linux user ID and share same VM.

197. Can you deploy executable JARs on Android? Which packaging is supported by Android?

No, Android platform does not support JAR deployments. Applications are packed into Android Package (.apk) using Android Asset Packaging Tool (AAPT) and then deployed onto Android platform. Google provides Android Development Tools for Eclipse that can be used to generate Android Package.

198. Is it okay to change the name of an application after its deployment?

It is not recommended to change the application name after its deployment because this action may break some functionality. For example, shortcuts will not work if you change application name.

199. How can ANR be prevented?

One technique that prevents the Android system from concluding a code that has been responsive for a long period of time is to create a child thread. Within the child thread, most of the actual tasks of the codes can be placed, so that the main thread runs with minimal periods of unresponsive time.

200. How can your application perform actions that are provided by

other application e.g. sending email?

Intents are created to define an action that we want to perform and launches the appropriate activity from another application.

Code

Intent intent = new
Intent(Intent.ACTION_SEND);intent.putExtra(Intent.EXTRA_EMAIL,
recipientArray);

startActivity(intent);

201. What is Application?

The Application class in Android is the base class within an Android app that contains all other components such as activities and services. The Application class, or any subclass of the Application class, is instantiated before any other class when the process for your application/package is created.

202. What is Context?

A **Context** is a handle to the system; it provides services like resolving resources, obtaining access to databases and preferences, and so on. An Android app has activities. Context is like a handle to the environment your application is currently running in.

Application Context: This context is tied to the lifecycle of an application. The application context can be used where you need a context whose lifecycle is separate from the current context or when you are passing a context beyond the scope of an activity.

Activity Context: This context is available in an activity. This context is tied to the lifecycle of an activity. The activity context should be used when you are passing the context in the scope of an activity or you need the context whose lifecycle is attached to the current context.

203. What is Army7?

There are 3 CPU architectures in Android. **ARMv7** is the most common as it is optimised for battery consumption. **ARM64** is an evolved version of that that supports 64-bit processing for more powerful computing. **ARMx86**, is the least used for these three, since it is not battery friendly. It is more powerful than the other two.

204. Why bytecode cannot be run in Android?

Android uses **DVM** (Dalvik Virtual Machine) rather using JVM(Java Virtual Machine).

205. What is a BuildType in Gradle? And what can you use it for?

Build types define properties that Gradle uses when building and packaging your Android app.

- 1. A build type defines how a module is built, for example whether ProGuard is run.
- 2. A product flavour defines what is built, such as which resources are included in the build.
- 3. Gradle creates a build variant for every possible combination of your project's product flavours and build types.

206. Explain the build process in Android:

- 1. First step involves compiling the resources folder (/res) using the aapt (android asset packaging tool) tool. These are compiled to a single class file called R.java. This is a class that just contains constants.
- 2. Second step involves the java source code being compiled to .class files by javac, and then the class files are converted to Dalvik bytecode by the "dx" tool, which is included in the sdk 'tools'. The output is classes.dex.
- 3. The final step involves the android apkbuilder which takes all the input and builds the apk (android packaging key) file.

207. What is the Android Application Architecture?

Android application architecture has the following components:

- 1. **Services** It will perform background functionalities
- 2. **Intent** It will perform the inter connection between activities and the data passing mechanism
- 3. **Resource Externalization** strings and graphics
- 4. **Notification** light, sound, icon, notification, dialog box and toast
- 5. **Content Providers** It will share the data between applications

208. Describe activities

Activities are basically containers or windows to the user interface.

209. Lifecycle of an Activity

- OnCreate(): This is when the view is first created. This is normally where we create views, get data from bundles etc.
- OnStart(): Called when the activity is becoming visible to the user. Followed by onResume() if the activity comes to the foreground, or onStop() if it becomes hidden.
- OnResume(): Called when the activity will start interacting with the user. At this point your activity is at the top of the activity stack, with user input going to it.
- OnPause(): Called as part of the activity lifecycle when an activity is going into the background, but has not (yet) been killed.
- OnStop(): Called when you are no longer visible to the user.
- OnDestroy(): Called when the activity is finishing
- OnRestart(): Called after your activity has been stopped, prior to it being started again

210. What's the difference between onCreate() and onStart()?

• The onCreate() method is called once during the Activity lifecycle, either when the application starts, or when the Activity has been destroyed and then recreated, for example during a configuration

change.

• The onStart() method is called whenever the Activity becomes visible to the user, typically after onCreate() or onRestart().

211. Scenario in which only onDestroy is called for an activity without onPause() and onStop()?

If finish() is called in the OnCreate method of an activity, the system will invoke onDestroy() method directly.

212. Why would you do the setContentView() in onCreate() of Activity class?

As onCreate() of an Activity is called only once, this is the point where most initialisation should go. It is inefficient to set the content in onResume() or onStart() (which are called multiple times) as the setContentView() is a heavy operation.

213. onSavedInstanceState() and onRestoreInstanceState() in activity?

OnRestoreInstanceState() - When activity is recreated after it was previously destroyed, we can recover the saved state from the Bundle that the system passes to the activity. Both

the onCreate() and onRestoreInstanceState() callback methods receive the same Bundle that contains the instance state information. But because the onCreate() method is called whether the system is creating a new instance of your activity or recreating a previous one, you must check whether the state Bundle is null before you attempt to read it. If it is null, then the system is creating a new instance of the activity, instead of restoring a previous one that was destroyed.

onSaveInstanceState() - is a method used to store data before pausing the activity.

214. Launch modes in Android?

• **Standard**: It creates a new instance of an activity in the task from which it was started. Multiple instances of the activity can be created and multiple instances can be added to the same or different tasks.

Eg: Suppose there is an activity stack of $A \rightarrow B \rightarrow C$. Now if we launch B again with the launch mode as "standard", the new stack will be $A \rightarrow B \rightarrow C \rightarrow B$.

• **SingleTop**: It is the same as the standard, except if there is a previous instance of the activity that exists in the **top** of the stack, then it will **not** create a new instance but rather send the intent to the existing instance of the activity.

Eg: Suppose there is an activity stack of $A \rightarrow B$.

Now if we launch C with the launch mode as "singleTop", the new stack will be $A \rightarrow B \rightarrow C$ as usual.

Now if there is an activity stack of $A \rightarrow B \rightarrow C$.

If we launch C again with the launch mode as "singleTop", the new stack will still be $A \rightarrow B \rightarrow C$.

• **SingleTask**: A new task will always be created and a new instance will be pushed to the task as the root one. So if the activity is already in the task, the intent will be redirected to onNewIntent() else a new instance will be created. At a time only one instance of activity will exist.

Eg: Suppose there is an activity stack of $A \rightarrow B \rightarrow C \rightarrow D$. Now if we launch D with the launch mode as "singleTask", the new stack will be $A \rightarrow B \rightarrow C \rightarrow D$ as usual.

Now if there is an activity stack of $A \rightarrow B \rightarrow C \rightarrow D$.

If we launch activity B again with the launch mode as "singleTask", the new activity stack will be A -> B. Activities C and D will be destroyed.

• **SingleInstance**: Same as single task but the system does not launch any activities in the same task as this activity. If new activities are launched, they are done so in a separate task. Eg: Suppose there is an activity stack of A -> B -> C -> D. If we launch activity B again with the launch mode as "singleInstance", the new activity stack will be:

$$Task1$$
— $A \rightarrow B \rightarrow C$
 $Task2$ — D

215. How does the activity respond when the user rotates the screen?

When the screen is rotated, the current instance of activity is destroyed a new instance of the Activity is created in the new orientation. The onRestart() method is invoked first when a screen is rotated. The other lifecycle methods get invoked in the similar flow as they were when the activity was first created.

16. How to prevent the data from reloading and resetting when the screen is rotated?

- The most basic approach would be to use a combination of **ViewModels** and onSaveInstanceState() . So how we do we that?
- Basics of ViewModel: A ViewModel is **LifeCycle-Aware.** In other words, a ViewModel will not be destroyed if its owner is destroyed for a configuration change (e.g. rotation). The new instance of the owner will just re-connected to the existing ViewModel. So if you rotate an Activity three times, you have just created three different Activity instances, but you only have one ViewModel.
- So the common practice is to store data in the ViewModel class (since it persists data during configuration changes) and use OnSaveInstanceState to store small amounts of UI data.
- For instance, let's say we have a search screen and the user has entered a query in the Edittext. This results in a list of items being displayed in the RecyclerView. Now if the screen is rotated, the ideal way to prevent resetting of data would be to store the list of search items in the ViewModel and the query text user has entered in the OnSaveInstanceState method of the activity.

217. Mention two ways to clear the back stack of Activities when a new Activity is called using intent

The first approach is to use a **FLAG_ACTIVITY_CLEAR_TOP** flag. The second way is by using **FLAG_ACTIVITY_CLEAR_TASK** and **FLAG_ACTIVITY_NEW_TASK** in conjunction.

218. What's the difference between FLAG_ACTIVITY_CLEAR_TASK and FLAG_ACTIVITY_CLEAR_TOP?

FLAG_ACTIVITY_CLEAR_TASK is used to clear all the activities from the task including any existing instances of the class invoked. The Activity launched by intent becomes the new root of the otherwise empty task list. This flag has to be used in conjunction with FLAG_ACTIVITY_NEW_TASK.

FLAG_ACTIVITY_CLEAR_TOP on the other hand, if set and if an old instance of this Activity exists in the task list then barring that all the other activities are removed and that old activity becomes the root of the task list. Else if there's no instance of that activity then a new instance of it is made the root of the task list. Using FLAG_ACTIVITY_NEW_TASK in conjunction is a good practice, though not necessary.

219. Describe content providers

A ContentProvider provides data from one application to another, when requested. It manages access to a structured set of data. It provides mechanisms for defining data security. ContentProvider is the standard interface that connects data in one process with code running in another process.

When you want to access data in a ContentProvider, you must instead use the ContentResolver object in your application's Context to communicate with the provider as a client. The provider object receives data requests from clients, performs the requested action, and returns the results.

220. Access data using Content Provider:

Start by making sure your Android application has the necessary read access permissions. Then, get access to the ContentResolver object by calling getContentResolver() on the Context object, and retrieving the data by constructing a query using ContentResolver.query().

The ContentResolver.query() method returns a Cursor, so you can retrieve data from each column using Cursor methods.

221. Describe services

A Service is an application component that can perform long-running operations in the background, and it doesn't provide a user interface. It can run in the background, even when the user is not interacting with your application. These are the three different types of services:

- **Foreground Service:** A foreground service performs some operation that is noticeable to the user. For example, we can use a foreground service to play an audio track. A Notification must be displayed to the user.
- **Background Service:** A background service performs an operation that isn't directly noticed by the user. In Android API level 26 and above, there are restrictions to using background services and it is recommended to use WorkManager in these cases.
- **Bound Service:** A service is bound when an application component binds to it by calling bindService(). A bound service offers a client-server interface that allows components to interact with the service, send requests, receive results. A bound service runs only as long as another application component is bound to it.

222. Difference between Service & Intent Service

- Service is the base class for Android services that can be extended to create any service. A class that directly extends Service runs on the main thread so it will block the UI (if there is one) and should therefore either be used only for short tasks or should make use of other threads for longer tasks.
- IntentService is a subclass of Service that handles asynchronous requests (expressed as "Intents") on demand. Clients send requests through startService(Intent) calls. The service is started as needed, handles each Intent in turn using a worker thread, and stops itself when it runs out of work.

223. Difference between AsyncTasks & Threads?

- **Thread** should be used to separate long running operations from main thread so that performance is improved. But it can't be cancelled elegantly and it can't handle configuration changes of Android. You can't update UI from Thread.
- **AsyncTask** can be used to handle work items shorter than 5ms in duration. With AsyncTask, you can update UI unlike java Thread. But many long running tasks will choke the performance.

224. Difference between Service, Intent Service, AsyncTask & Threads

- **Android service** is a component that is used to perform operations on the background such as playing music. It doesn't has any UI (user interface). The service runs in the background indefinitely even if application is destroyed.
- AsyncTask allows you to perform asynchronous work on your user interface. It performs the blocking operations in a worker thread and then publishes the results on the UI thread, without requiring you to handle threads and/or handlers yourself.
- IntentService is a base class for Services that handle asynchronous requests (expressed as Intents) on demand. Clients send requests through startService(Intent) calls; the service is started as needed, handles each Intent in turn using a worker thread, and stops itself when it runs out of work.
- A **thread** is a single sequential flow of control within a program. Threads can be thought of as mini-processes running within a main process.

225. What are Handlers?

Handlers are objects for managing threads. It receives messages and writes code on how to handle the message. They run outside of the activity's lifecycle, so they need to be cleaned up properly or else you will have thread leaks.

- Handlers allow communicating between the background thread and the main thread.
- A Handler class is preferred when we need to perform a background task repeatedly after every x seconds/minutes.

226. What is a Job Scheduling?

Job Scheduling api, as the name suggests, allows to schedule jobs while letting the system optimize based on memory, power, and connectivity conditions. The JobScheduler supports batch scheduling of jobs. The Android system can combine jobs so that battery consumption is reduced.

JobManager makes handling uploads easier as it handles automatically the unreliability of the network. It also survives application restarts. Some scenarios:

- Tasks that should be done once the device is connect to a power supply
- Tasks that require network access or a Wi-Fi connection.
- Task that are not critical or user facing
- Tasks that should be running on a regular basis as batch where the timing is not critical
- You can click on this link to learn more about Job Schedulers.

227. What is the relationship between the life cycle of an AsyncTask and an Activity? What problems can this result in? How can these problems be avoided?

An AsyncTask is not tied to the life cycle of the Activity that contains it. So, for example, if you start an AsyncTask inside an Activity and the user rotates the device, the Activity will be destroyed (and a new Activity instance will be created) but the AsyncTask will not die but instead goes on living until it completes.

Then, when the AsyncTask does complete, rather than updating the UI of the new Activity, it updates the former instance of the Activity (i.e., the one in which it was created but that is not displayed anymore!). This can lead to an Exception (of the type java.lang.IllegalArgumentException: View not attached to window manager if you use, for instance, findViewById to retrieve a view inside the Activity).

There's also the potential for this to result in a memory leak since the AsyncTask maintains a reference to the Activity, which prevents the Activity from being garbage collected as long as the AsyncTask remains alive.

For these reasons, using AsyncTasks for long-running background tasks is generally a bad idea . Rather, for long-running background tasks, a different mechanism (such as a service) should be employed.

Note: AsyncTasks by default run on a single thread using a serial executor,

meaning it has only 1 thread and each task runs one after the other.

228. What is the onTrimMemory() method?

onTrimMemory(): Called when the operating system has determined that it is a good time for a process to trim unneeded memory from its process. This will happen for example when it goes in the background and there is not enough memory to keep as many background processes running as desired.

Android can reclaim memory for from your app in several ways or kill your app entirely if necessary to free up memory for critical tasks. To help balance the system memory and avoid the system's need to kill your app process, you can implement the ComponentCallbacks2 interface in your Activity classes. The provided onTrimMemory() callback method allows your app to listen for memory related events when your app is in either the foreground or the background, and then release objects in response to app lifecycle or system events that indicate the system needs to reclaim memory. **Reference**

229. Android Bound Service

A bound service is a service that allows other android components (like activity) to bind to it and send and receive data. A bound service is a service that can be used not only by components running in the same process as local service, but activities and services, running in different processes, can bind to it and send and receive data.

• When implementing a bound service we have to extend Service class but we have to override onBind method too. This method returns an object that implements IBinder, that can be used to interact with the service.

Implementing Android bound service with Android Messenger

- Service based on Messenger can communicate with other components in different processes, known as Inter Process Communication (IPC), without using AIDL.
- A service handler: this component handles incoming requests from clients that interact with the service itself.
- A Messenger: this class is used to create an object implementing

IBinder interface so that a client can interact with the service.

• Example Implementation: Link

230. AIDL vs Messenger Queue

- As Ariq Ahmad mentioned in the response, Messenger Queue builds us a queue and the data/messages are passed between 2 or more processes sequential. But in case of AIDL the messages are passed in parallel.
- AIDL is for the purpose when you've to go application level communication for data and control sharing, a scenario depicting it can be: An app requires list of all contacts from Contacts app (content part lies here) plus it also wants to show the call's duration and you can also disconnect it from that app (control part lies here).
- In Messenger queues you're more IN the application and working on threads and processes to manage the queue having messages so no Outside services interference here.
- Messenger is needed if you want to bind a remote service (e.g. running in another process).

231. What is a ThreadPool? And is it more effective than using several separate Threads?

Creating and destroying threads has a high CPU usage, so when we need to perform lots of small, simple tasks concurrently, the overhead of creating our own threads can take up a significant portion of the CPU cycles and severely affect the final response time. ThreadPool consists of a task queue and a group of worker threads, which allows it to run multiple parallel instances of a task.

232. Difference between Serializable and Parcelable?

Serialization is the process of converting an object into a stream of bytes in order to store an object into memory, so that it can be recreated at a later time, while still keeping the object's original state and data.

How to disallow serialization? We can declare the variable as transient.

Serializable is a standard Java interface. Parcelable is an Android specific interface where you implement the serialization yourself. It was created to be far more efficient than Serializable (The problem with this approach is that reflection is used and it is a slow process. This mechanism also tends to create a lot of temporary objects and cause quite a bit of garbage collection.).

233. Difference between Activity & Service

Activities are basically containers or windows to the user interface. Services is a component that is used to perform operations on the background. It does not have an UI.

234. How would you update the UI of an activity from a background service?

We need to register a LocalBroadcastReceiver in the activity. And send a broadcast with the data using intents from the background service. As long as the activity is in the foreground, the UI will be updated from the background. Ensure to unregister the broadcast receiver in the onStop() method of the activity to avoid memory leaks. We can also register a Handler and pass data using Handlers. You can find more details on how to implement here.

235. What is an intent?

Intents are messages that can be used to pass information to the various components of android. For instance, launch an activity, open a webview etc. Two types of intents-

- *Implicit:* Implicit intent is when you call system default intent like send email, send SMS, dial number.
- **Explicit:** Explicit intent is when you call an application activity from another activity of the same application.

236. What is a Sticky Intent?

Sticky Intents allows communication between a function and a service. sendStickyBroadcast() performs a sendBroadcast(Intent) known as sticky, i.e. the Intent you are sending stays around after the broadcast is complete, so that others can quickly retrieve that data through the return

value of registerReceiver(BroadcastReceiver, IntentFilter). For example, if you take an intent for ACTION_BATTERY_CHANGED to get battery change events: When you call registerReceiver() for that action—even with a null BroadcastReceiver—you get the **Intent that was last Broadcast for that action**. Hence, you can use this to find the state of the battery without necessarily registering for all future state changes in the battery.

237. What is a Pending Intent?

If you want someone to perform any Intent operation at future point of time on behalf of you, then we will use Pending Intent.

238. What is an Action?

Description of the intent. For instance, ACTION_CALL—used to perform calls

239. What are intent Filters?

Specifies the type of intent that the activity/service can respond to.

240. Describe fragments:

Fragment is a UI entity attached to Activity. Fragments can be reused by attaching in different activities. Activity can have multiple fragments attached to it. Fragment must be attached to an activity and its lifecycle will depend on its host activity.

241. Describe fragment lifecycle

- onAttach(): The fragment instance is associated with an activity instance. The fragment and the activity is not fully initialized.

 Typically you get in this method a reference to the activity which uses the fragment for further initialization work.
- onCreate(): The system calls this method when creating the fragment. You should initialize essential components of the fragment that you want to retain when the fragment is paused or stopped, then resumed.
- onCreateView(): The system calls this callback when it's time for the fragment to draw its user interface for the first time. To draw a UI for your fragment, you must return a View component from this

- method that is the root of your fragment's layout. You can return null if the fragment does not provide a UI.
- onActivityCreated(): The onActivityCreated() is called after the onCreateView() method when the host activity is created. Activity and fragment instance have been created as well as the view hierarchy of the activity. At this point, view can be accessed with the findViewById() method. example. In this method you can instantiate objects which require a Context object
- onStart(): The onStart() method is called once the fragment gets visible.
- onResume(): Fragment becomes active.
- onPause(): The system calls this method as the first indication that the user is leaving the fragment. This is usually where you should commit any changes that should be persisted beyond the current user session.
- onStop(): Fragment going to be stopped by calling onStop()
- onDestroyView(): Fragment view will destroy after call this method
- onDestroy() :called to do final clean up of the fragment's state but Not guaranteed to be called by the Android platform.

242. What is the difference between fragments & activities. Explain the relationship between the two.

An Activity is an application component that provides a screen, with which users can interact in order to do something whereas a Fragment represents a behavior or a portion of user interface in an Activity (with its own lifecycle and input events, and which can be added or removed at will).

243. When should you use a fragment rather than an activity?

- When there are ui components that are going to be used across multiple activities.
- When there are multiple views that can be displayed side by side

(viewPager tabs)

• When you have data that needs to be persisted across Activity restarts (such as retained fragments)

244. Difference between adding/replacing fragment in backstack?

- **replace** removes the existing fragment and adds a new fragment. This means when you press back button the fragment that got replaced will be created with its onCreateView being invoked.
- **add** retains the existing fragments and adds a new fragment that means existing fragment will be active and they wont be in 'paused' state hence when a back button is pressed on Create View is not called for the existing fragment (the fragment which was there before new fragment was added).
- In terms of fragment's life cycle events onPause, onResume, onCreateView and other life cycle events will be invoked in case of replace but they wont be invoked in case of add.

245. Why is it recommended to use only the default constructor to create a Fragment?

The reason why you should be passing parameters through bundle is because when the system restores a fragment (e.g on config change), it will automatically restore your bundle. This way you are guaranteed to restore the state of the fragment correctly to the same state the fragment was initialised with.

246. You're replacing one Fragment with another—how do you ensure that the user can return to the previous Fragment, by pressing the Back button?

We need to save each Fragment transaction to the backstack, by calling addToBackStack() before you commit() that transaction

247. Callbacks invoked during addition of a fragment to back stack and while popping back from back stack:

addOnBackStackChangedListener is called when fragment is added or removed from the backstack. Checkout this <u>link</u> for reference.

248. What are retained fragments?

By default, Fragments are destroyed and recreated along with their parent Activity's when a configuration change occurs.

Calling setRetainInstance(true)allows us to bypass this destroy-and-recreate cycle, signaling the system to retain the current instance of the fragment when the activity is recreated.

249. Difference between FragmentPagerAdapter vs FragmentStatePagerAdapter?

- **FragmentPagerAdapter:** the fragment of each page the user visits will be stored in memory, although the view will be destroyed. So when the page is visible again, the view will be recreated but the fragment instance is not recreated. This can result in a significant amount of memory being used. FragmentPagerAdapter should be used when we need to store the whole fragment in memory. FragmentPagerAdapter calls detach(Fragment) on the transaction instead of remove(Fragment).
- FragmentStatePagerAdapter: the fragment instance is destroyed when it is not visible to the User, except the saved state of the fragment. This results in using only a small amount of Memory and can be useful for handling larger data sets. Should be used when we have to use dynamic fragments, like fragments with widgets, as their data could be stored in the savedInstanceState.Also it won't affect the performance even if there are large number of fragments.

250. What is Toast in Android?

Android Toast can be used to display information for the short period of time. A toast contains message to be displayed quickly and disappears after sometime.

251. What are Loaders in Android?

Loader API was introduced in API level 11 and is used to load data from a data source to display in an activity or fragment. Loaders persist and cache results across configuration changes to prevent duplicate queries.

Checkout the Sample Implementation.

252. What is the difference between Dialog & DialogFragment?

A fragment that displays a dialog window, floating on top of its activity's window. This fragment contains a Dialog object, which it displays as appropriate based on the fragment's state. Dialogs are entirely dependent on Activities. If the screen is rotated, the dialog is dismissed. Dialog fragments take care of orientation, configuration changes as well.

253. Difference between margin & padding?

Padding will be space added inside the container, for instance, if it is a button, padding will be added inside the button. Margin will be space added outside the container.

254. What is View Group? How are they different from Views?

View: View objects are the basic building blocks of User Interface(UI) elements in Android. View is a simple rectangle box which responds to the user's actions. Examples are EditText, Button, CheckBox etc. View refers to the android.view.View class, which is the base class of all UI classes.

ViewGroup: ViewGroup is the invisible container. It holds View and ViewGroup. For example, LinearLayout is the ViewGroup that contains Button(View), and other Layouts also. ViewGroup is the base class for Layouts.

255. What is the difference between a regular .png and a nine-patch image?

It is one of a resizable bitmap resource which is being used as backgrounds or other images on the device. The NinePatch class allows drawing a bitmap in nine sections. The four corners are unscaled; the middle of the image is scaled in both axes, the four edges are scaled into one axis.

256. Difference between RelativeLayout and LinearLayout?

Linear Layout—Arranges elements either vertically or horizontally. i.e. in a row or column.

Relative Layout—Arranges elements relative to parent or other elements.

257. What is ConstraintLayout?

It allows you to create large and complex layouts with a flat view hierarchy (no nested view groups). It's similar to RelativeLayout in that all views are laid out according to relationships between sibling views and the parent layout, but it's more flexible than RelativeLayout and easier to use with Android Studio's Layout Editor.

258. When might you use a FrameLayout?

Frame Layouts are designed to contain a single item, making them an efficient choice when you need to display a single View.

If you add multiple Views to a FrameLayout then it'll stack them one above the other, so FrameLayouts are also useful if you need overlapping Views, for example if you're implementing an overlay or a HUD element.

259. What is Adapters?

An adapter responsible for converting each data entry into a View that can then be added to the AdapterView (ListView/RecyclerView).

260. How to support different screen sizes?

- Create a flexible layout—The best way to create a responsive layout for different screen sizes is to use ConstraintLayout as the base layout in your UI. ConstraintLayout allows you to specify the position and size for each view according to spatial relationships with other views in the layout. This way, all the views can move and stretch together as the screen size changes.
- Create stretchable nine-patch bitmaps
- **Avoid hard-coded layout sizes**—Use wrap_content or match_parent. **Create alternative layouts**—The app should provide alternative layouts to optimise the UI design for certain screen sizes. For eq: different UI for tablets
- **Use the smallest width qualifier**—For example, you can create a layout named main_activity that's optimised for handsets and tablets by creating different versions of the file in directories as follows:

res/layout/main_activity.xml—For handsets (smaller than 600dp

available width)

res/layout-sw600dp/main_activity.xml—For 7" tablets (600dp wide and bigger).

• The smallest width qualifier specifies the smallest of the screen's two sides, regardless of the device's current orientation, so it's a simple way to specify the overall screen size available for your layout.

261. Outline the process of creating custom Views:

- Create a class that Subclass a view
- Create a res/values/attrs.xml file and declare the attributes you want to use with your custom View.
- In your View class, add a constructor method, instantiate the Paint object, and retrieve your custom attributes.
- Override either onSizeChanged() or onMeasure().
- Draw your View by overriding onDraw().

262. Briefly describe some ways that you can optimize View usage

- Checking for excessive overdraw: install your app on an Android device, and then enable the "Debug GPU Overview" option.
- *Flattening your view hierarchy:* inspect your view hierarchy using Android Studio's 'Hierarchy Viewer' tool.
- Measuring how long it takes each View to complete the measure, layout, and draw phases. You can also use Hierarchy Viewer to identify any parts of the rendering pipeline that you need to optimise.

263. Bitmap pooling in android?

Bitmap pooling is a simple technique, that aims to reuse bitmaps instead of creating new ones every time. When you need a bitmap, you check a bitmap stack to see if there are any bitmaps available. If there are not bitmaps available you create a new bitmap otherwise you pop a bitmap from the stack and reuse it. Then when you are done with the bitmap, you can put it on a

stack.

265. What are the permission protection levels in Android?

- **Normal**—A lower-risk permission that gives requesting applications access to isolated application-level features, with minimal risk to other applications, the system, or the user. The system automatically grants this type of permission to a requesting application at installation, without asking for the user's explicit approval.
- **Dangerous**—A higher-risk permission. Any dangerous permissions requested by an application may be displayed to the user and require confirmation before proceeding, or some other approach may be taken to avoid the user automatically allowing the use of such facilities.
- **Signature**—A permission that the system grants only if the requesting application is signed with the same certificate as the application that declared the permission. If the certificates match, the system automatically grants the permission without notifying the user or asking for the user's explicit approval.
- **SignatureOrSystem**—A permission that the system grants only to applications that are in the Android system image or that are signed with the same certificate as the application that declared the permission.

266. What is an Application Not Responding (ANR) error, and how can you prevent them from occurring in an app?

An ANR dialog appears when your UI has been unresponsive for more than 5 seconds, usually because you've blocked the main thread. To avoid encountering ANR errors, you should move as much work off the main thread as possible.

267. What is a singleton class in Android?

A singleton class is a class which can create only an object that can be shared all other classes.

268. What's the difference between commit() and apply() in SharedPreferences?

commit() writes the data synchronously and returns a boolean value of success or failure depending on the result immediately.

apply() is asynchronous and it won't return any boolean response. Also if there is an apply() outstanding and we perform another commit(). The commit() will be blocked until the apply() is not completed.

269. How does RecyclerView work?

- RecyclerView is designed to display long lists (or grids) of items. Say we want to display 100 row of items. A simple approach would be to just create 100 views, one for each row and lay all of them out. But that would be wasteful because at any point of time, only 10 or so items could fit on screen and the remaining items would be off screen. So RecyclerView instead creates only the 10 or so views that are on screen. This way you get 10x better speed and memory usage.
- But what happens when you start scrolling and need to start showing next views? Again a simple approach would be to create a new view for each new row that you need to show. But this way by the time you reach the end of the list you will have created 100 views and your memory usage would be the same as in the first approach. And creating views takes time, so your scrolling most probably wouldn't be smooth. This is why RecyclerView takes advantage of the fact that as you scroll, new rows come on screen also old rows disappear off screen. Instead of creating new view for each new row, an old view is recycled and reused by binding new data to it.
- This happens inside the onBindViewHolder() method. Initially you will get new unused view holders and you have to fill them with data you want to display. But as you scroll you will start getting view holders that were used for rows that went off screen and you have to replace old data that they held with new data.

270. How does RecyclerView differ from ListView?

- **ViewHolder Pattern:** Recyclerview implements the ViewHolders pattern whereas it is not mandatory in a ListView. A RecyclerView recycles and reuses cells when scrolling.
- What is a ViewHolder Pattern?—A ViewHolder object stores each of the component views inside the tag field of the Layout, so you can immediately access them without the need to look them up repeatedly. In ListView, the code might call findViewById() frequently during the scrolling of ListView, which can slow down performance. Even when the Adapter returns an inflated view for recycling, you still need to look up the elements and update them. A way around repeated use of findViewById() is to use the "view holder" design pattern.
- LayoutManager: In a ListView, the only type of view available is the vertical ListView. A RecyclerView decouples list from its container so we can put list items easily at run time in the different containers (linearLayout, gridLayout) by setting LayoutManager.
- **Item Animator:** ListViews are lacking in support of good animations, but the RecyclerView brings a whole new dimension to it.

271. How would you implement swipe animation in Android

Q #273) 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

274. How to reduce apk size in Android?

The summary the article states:

- Enable proguard in your project by adding following lines to your release build type.
- Enable shrinkResources.
- Strip down all the unused locale resources by adding required resources name in "resConfigs".
- Convert all the images to the webp or vector drawables.

275. How to reduce build time of an android application?

What I got from the article was: A few commands we can add to the gradle.properties file:

- org.gradle.configureondemand=true This command will tell gradle to only build the projects that it really needs to build.
- Use Daemon—org.gradle.daemon=true Daemon keeps the instance of the gradle up and running in the background even after your build finishes. This will remove the time required to initialize the gradle and decrease your build timing significantly.
- org.gradle.parallel=true Allow gradle to build your project in parallel. If you have multiple modules in you project, then by enabling this, gradle can run build operations for independent modules parallelly.
- Increase Heap Size—org.gradle.jvmargs=-Xmx3072m XX:MaxPermSize=512m -XX:+HeapDumpOnOutOfMemoryError -Dfile.encoding=UTF-8 Since android studio 2.0, gradle uses dex in the process to decrease the build timings for the project. Generally, while building the applications, multiple dx processes runs on different VM instances. But starting from the Android Studio 2.0, all these dx processes runs in the single VM and that VM is also shared with the gradle. This decreases the build time significantly as all the dex process runs on the same VM instances. But this requires larger memory to accommodate all the dex processes and gradle. That means you need to increase the heap size required by the gradle daemon. By default, the heap size for the daemon is about 1GB.
- Ensure that dynamic dependency is not used. i.e. do not use implementation 'com.android.support:appcompat-v7:27.0.+'. This command means gradle will go online and check for the latest version every time it builds the app. Instead use fixed versions i.e. 'com.android.support:appcompat-v7:27.0.2'

I followed the steps in there and reduced by build time from **167** seconds to **65**seconds \sim **38%.**

277. Difference between MVC & MVP & MVVM?

MVC is the **Model-View-Controller** architecture where model refers to the

data model classes. The view refers to the xml files and the controller handles the business logic. The issue with this architecture is unit testing. The model can be easily tested since it is not tied to anything. The controller is tightly coupled with the android apis making it difficult to unit test. Modularity & flexibility is a problem since the view and the controller are tightly coupled. If we change the view, the controller logic should also be changed. Maintenance is also an issues.

MVP architecture: Model-View-Presenter architecture. The View includes the xml and the activity/fragment classes. So the activity would ideally implement a view interface making it easier for unit testing (since this will work without a view).

MVVM: Model-View-ViewModel Architecture. The Model comprises data, tools for data processing, business logic. The View Model is responsible for wrapping the model data and preparing the data for the view. IT also provides a hook to pass events from the view to the model.

278. S.O.L.I.D principles in software development?

- The Single Responsibility Principle (SRP)
- The Open-Closed Principle (OCP)
- *The Liskov Substitution Principle (LSP)*
- *The Interface Segregation Principle (ISP)*
- The Dependency Inversion Principle (DIP)

Q #279) What is DDMS?

Answer: Android Studio has debugging tools known as DDMS i.e. Dalvik Debug Monitor Server.

It has wide debugging features which include:

- Port forwarding services.
- Screen capture on the device.
- Thread and Heap information.
- Incoming call and SMS spoofing.

- Logcat
- Radio state information.
- Location data spoofing.

DDMS is integrated with the Android studio. To launch the DDMS, you need to open Android Device Monitor (ADM) first and then click on the DDMS menu button. Once DDMS is launched, then on the left-hand side the list of connected devices are displayed along with the processes which are running on each device.

With the help of DDMS, you can debug both on real devices and emulators.

Q #280) What are the different data storage options available on the Android platform?

Answer: Android platform provides a wide range of data storage options. These options must be used based on the need such as data is secure and used with the permission only or can be accessed publicly.

Below is the list of data storage options on the Android platform:

- **SharedPreference**: It stores data in XML files. It is the simplest way to store private data in the key-value pair.
- **SQLite**: It stores structure data in the private database.
- **Internal Storage**: It stores data in the device file system and any other app cannot read this data.
- **External Storage**: Data is stored in the file system but it is accessible to all apps in the device

281. What's the difference between an implicit and an explicit intent?

An **explicit intent** is where you tell the system which Activity or system component it should use to respond to this intent. **Implicit intents**allow you to declare the action you want to perform; the Android system will then check which components are registered to handle that action.

Here, you're looking for an understanding of when you should use each type of intent, as the vast majority of the time you'll use explicit intents to start components in your own application, while implicit intents are most commonly used to communicate with components from other third party applications.

282. When should you use a Fragment, rather than an Activity?

This is still a much-debated topic, but the code used to create an Activity is fundamentally more involved than the code used to create a Fragment. The old Activity has to be destroyed, paused or stopped, and a new Activity has to be created. The developer should acknowledge that the best practice is to only use Activities when you need to swap the entire screen, and use fragments everywhere else.

Bonus points if the Android developer mentions any of the following use cases, where you'll *almost always use* a Fragment, rather than an Activity:

- When you're working with UI components or behavior that you're going to use across multiple Activities.
- When you're using one of the navigational methods that are closely linked to fragments, such as swipe views.
- When your users would benefit from seeing two different layouts

side-by-side.

• When you have data that needs to persist across Activity restarts (i.e you need to use retained fragments).

283. You're replacing one Fragment with another — how do you ensure that the user can return to the previous Fragment, by pressing the Back button?

This question provides an insight into the app developer's understanding of the lifecycle of dynamic fragments, as well as Fragment transactions, and the back stack.

If the "Back" button is going to return the user to the previous Fragment, then you'll need to save each Fragment transaction to the back stack, by calling addToBackStack() before you commit() that transaction.

The developer definitely **shouldn't suggest** creating a "Back" button specifically to handle navigating between fragments, but bonus points if they mention that you should never try to commit a FragmentTransaction after calling onSaveInstanceState(), as this can result in an exception.

284. How would you create a multi-threaded Android app without using the Thread class?

If you only need to override the run() method and no other Thread methods, then you should implement Runnable.

In particular, be on the lookout for an Android developer demonstrating an understanding that you should *only* extend from a class when you need to modify some of its functionality.

285. What is a ThreadPool? And is it more effective than using several separate Threads?

ThreadPool consists of a task queue and a group of worker threads, which allows it to run multiple parallel instances of a task.

Here, you're assessing the app developer's understanding of how multithreading has the potential to improve an app's performance, but also how it can negatively impact performance when used incorrectly.

Using ThreadPool is more efficient than having multiple operations waiting to run on a single thread, but it also helps you avoid the considerable overhead of creating and destroying a thread every time you require a worker thread.

286. What is the relationship between the lifecycle of an AsyncTask and the lifecycle of an Activity? What problems can this result in, and how can these problems be avoided?

An **AsyncTask** is not tied to the lifecycle of the Activity that contains it. If the Activity is destroyed and a new instance of the Activity is created, the AsyncTask won't be destroyed. This can lead to a number of problems, but the major ones an Android developer should be aware of are:

- Once the AsyncTask completes, it'll try to update the former instance of the Activity, resulting in an IllegalArgumentException.
- Since the AsyncTask maintains a reference to the previous instance of the Activity, that Activity won't be garbage collected, resulting in a memory leak.

The solution is to avoid using AsyncTasks for long-running background tasks.

287. How would you access data in a ContentProvider?

Start by making sure your Android application has the necessary read access permissions. Then, get access to the ContentResolver object by calling getContentResolver() on the Context object, and retrieving the data by constructing a query using ContentResolver.query().

The ContentResolver.query() method returns a Cursor, so you can retrieve data from each column using Cursor methods.

Accessing data is one of the tasks that's most likely to block the main

thread, so the developer should stress the importance of performing data queries on a separate thread.

288. What is the difference between Serializable and Parcelable?

Serializable is a standard Java interface that's easy to integrate into your app, as it doesn't require any methods. Despite being easy to implement, Serializable uses the Java reflection API, which makes it a slow process that creates lots of temporary objects.

Parcelable is optimized for Android, so it's *faster* than Serializable. It's also fully customizable, so you can be explicit about the serialization process, which results in less garbage objects.

While the developer may acknowledge that implementing Parcelable does require more work, the performance benefits mean that they should advise using Parcelable over Serialization, wherever possible.

289. What is an Adapter?

Here, you're checking that the Android eveloper understands that you need an additional component to connect an AdapterView (such as ListView or GridView), to an external data source. An Adapter acts as this bridge, and is also responsible for converting each data entry into a View that can then be added to the AdapterView.

290. What is an Application Not Responding (ANR) error, and how can you prevent them from occurring in your app?

This question checks whether the developer is aware of the **golden rule** of threading on Android: never perform lengthy or intensive operations on the main thread.

An ANR dialog appears when your UI has been unresponsive for more than 5 seconds, usually because you've blocked the main thread. To avoid encountering ANR errors, you should move as much work off the main thread as possible.

291. Outline the process of creating custom Views

This is a complex topic, so you're only looking for a high-level overview of the steps involved. However, the developer should make it clear that you should always subclass the View that most closely resembles the custom component you want to create — very rarely would you extend the View class.

After extending your class, you need to complete the following steps:

- Create a res/values/attrs.xml file and declare the attributes you want to use with your custom View.
- In your View class, add a constructor method, instantiate the Paint

object, and retrieve your custom attributes.

- Override either onSizeChanged() or onMeasure().
- Draw your View by overriding onDraw().

292. What is a BuildType in Gradle? And what can you use it for?

Build types define properties that Gradle uses when building and packaging your Android app.

This question allows you to check that the developer can differentiate between product flavors, build variants, and build types, as these are very similar concepts that are a common source of confusion:

- A build type defines how a module is built, for example whether
 ProGuard is run.
- A **product flavor** defines what is built, such as which resources are included in the build.
- Gradle creates a build variant for every possible combination of your project's product flavors and build types.

293. What are the major difference between ListView and

RecyclerView?

There are many differences between ListView and RecyclerView, but the

Android developer should be aware of the following in particular:

- The ViewHolder pattern is entirely optional in ListView, but it's baked into RecyclerView.
- ListView only supports vertical scrolling, but RecyclerView isn't limited to vertically scrolling lists.

294. Briefly describe some ways that you can optimize View usage.

There are a number of methods, but the ones that tend to have the most impact are:

- Checking for excessive overdraw: install your app on an Android device, and then enable the "Debug GPU Overview" option.
- **Flattening your view hierarchy**: inspect your view hierarchy using Android Studio's 'Hierarchy Viewer' tool.
- Measuring how long it takes each View to complete the measure, layout, and draw phases. You can also use Hierarchy Viewer to identify any parts of the rendering pipeline that you need to optimize.

295. What is a Handler typically used for?

You use **Handler** to communicate between threads, most commonly to pass

an action from a background thread to Android's main thread.

This question allows you to check that the developer understands another fundamental concept of multithreading in Android: you cannot update the UI from any thread other that the main thread.

296. What are the steps involved in creating a bound service through Android Interface Definition Language (AIDL)?

- **Define** an AIDL interface in an .aidl file.
- Save this file in the src/ directory of the application hosting the
 Activity and any other application that needs to bind to this service
 the latter is particularly important, and is often overlooked.
- **Build** your application. Android SDK tools will then generate an IBinder interface file in your gen directory.
- **Implement** this interface, by extending the generated Binder interface and implementing the methods inherited from the .aidl file.
- Extend Service and override onBind() to return your implementation of the Stub class.

297. What's the difference between onCreate() and onStart()?

The onCreate() method is called once during the Activity lifecycle, either

when the application starts, or when the Activity has been destroyed and then recreated, for example during a configuration change.

The onStart() method is called whenever the Activity becomes visible to the user, typically after onCreate() or onRestart().

298. When might you use a FrameLayout?

Here, you're looking for an understanding that you should **always use the simplest layout possible** for what you want to achieve, as FrameLayouts are designed to contain a single item, making them an efficient choice when you need to display a single View.

If you add multiple Views to a FrameLayout then it'll stack them one above the other, so FrameLayouts are also useful if you need overlapping Views, for example if you're implementing an overlay or a HUD element.

Q #299) How do you troubleshoot android application which is crashing frequently?

Answer: Given below are the few steps that we need to follow while troubleshooting the crashing issue:

- **Free up memory space**: There is only a limited space available on the mobile devices for mobile apps. To avoid crashing issue or memory related issue, you need to first check the memory space.
- **Clear app data usage**: You can clear the app data using the Application Manager under "Settings". This will clear the cache memory and allow some free space to install another app or it will boost up your current app.
- **Memory Management**: Some apps run perfectly on one type of mobile device but the same app may not work on another type of

device as for such devices the processing power, memory management, and CPU speed is different. For any app to run properly on any type of mobile device, you should manage the memory on the device.

• **Compatibility issue**: It is always not possible to test mobile app on all mobile devices, browsers, operating systems etc. So you need test your mobile app on as many mobile devices as you can in order to avoid any compatibility issue.

Q #300) How do you find memory leaks in the mobile app on Android platform?

Answer: Android Studio is using Android Device Manager (ADM), this ADM is used to detect the memory leaks in the Android platform. When you open ADM in the Android Studio then on the left-hand side of the ADM, you will find your device or emulator in which a heap sign will be displayed. When you are running any mobile app then you will see the heap size, memory analysis and other statistics displayed on it.

301. What is Android and who founded it?

Android is an open-source, linux-based operating system. It was founded by Andy Rubin and it is used in mobiles, tablets, televisions etc.

302. Please name the Android Application Architecture.

- **Activities** dictate the UI and handle the user interaction with a smartphone screen. Activity performs actions on the screen.
- Broadcast Receivers respond to broadcast messages from other application in or from the system. This is implemented as a subclass of BroadcastReceiver class and each message is recognized as an Intentobject.
- **Services**. These are used to perform background functions.
- **Intent**. This is what enables inter connectivity between activities and data passing mechanism.
- **Resource Externalisation** which refers to strings and graphics.
- Notification for dialogue box, icon, light, notification, sound and

toast

• **Content Providers** for sharing data between applications

303. What are the additional components of Android?

- **Fragments** serve as a portion of user interface in an Activity.
- **Views** are UI elements that are drawn on-screen including buttons, lists forms, etc.
- **Layouts** view hierarchies that control screen format and the appearance of the views.
- **Intents** are messages that wire components together.
- **Resources** are external elements (strings, constants and drawable pictures).
- **Manifest** is the configuration file for the app.

304. What notifications are available in Android and what is their usage?

Snackbars & Toast Notification – Shows up as a pop up message on the surface of the window.

Snackbars contain a single line of text that is directly relation to the operation that is performed. They typically contain a text action and no icons. Only one snackbar can be displayed at a time and it can contain a singly action, neither of which may be "Dismiss" or "Cancel."

Toasts are only available with Androids and they are used for system message. They also display at the bottom of the screen but they can't be swiped off-screen.

Status Bar Notifications show notifications on the status bar.

Dialogue Notification – An actively related notification.

305. How do you Translate in Android?

Android uses Google translator to translate data from one language into another language and places it as a string while development.

306. What types of flags are used to run an application in Android?

FLAG_ACTIVITY_NEW_TASK FLAG_ACTIVITY_CLEAR_TOP.

307. Android Versions go under code names, please give as many of the code names as you know.

Aestro, Blender, Cupcake, Donut, Eclair, Froyo, Gingerbread, Honeycomb, Ice Cream Sandwich, Jelly Bean, Kitkat, Lollipop, Marshmallow

308. What are the main advantages of Android?

Android is an open source operating system which means that is is free to the end user. There are no license, development or distribution fees. It supports many different technologies including camera, bluetooth, wifi, speech, and edge. In addition it also utilises a highly optimised virtual machine called DVM (Dalvik Virtual Machine) for use on mobile devices.

309. Can you name the database which Android uses and give a brief description about it?

The name of the database is SQLite which is an open-source relational database. It can be used to perform the usual database functions on Android devices. Not only is it easy to store, manipulate and retrieve data but it is also embedded into the Android platform as a default. No setup is necessary, the administration is already in place.

310. What are the different types of storages that are available in Android and what is their usage?

- Shared Preferences store private primitive data in key-value pairs. SharedPreferences class helps to provide a general framework that allows users to save and retrieve persistent key-value pairs of primitive data types. SharedPreferences can be used to save primitive data such as booleans, floats, ints, longs and strings. This data persists across user sessions even when one's application is killed. For more information on how to get a SharedPreferences object for one's
- **Internal Storage** stores private data on the device memory. Once can save files directly on the device's internal storage. The files

saved to the internal storage are private to you application by default and other applications cannot access them either. When the user uninstalls your application, the files will then be removed.

- **External Storage** stores public date on the shared external storage. Every Android-compatible device can support a shared "external storage" where one's files can be saved. This can be removable storage media (SD card) or internal (non-removable) storage.
- **SQLite Databases** stores structured data in a private database. Android provides full support for SQLite databases. Any databases that one creates can be accessible by name to any class in the application. Please note they are not accessible outside of the application.
- **Network Connection** stores data on the web with one's own network server. In order to do network operations, one must use classes in the following packages below:

311. What are application Widgets in Android?

Application Widgets are miniature application views that can embedded in other applications (such as the Home screen) and receive periodic updates. These views are often referred to as Widgets in the user interface, and you can publish one with an App Widget provider.

312. What are the Android core building blocks

The core building blocks for Android are as follows:

- Activity—The class representing a single screen, i.e. a Frame in AWT
- **View**—The UI element for example a label, button or text field. Basically anything that is seen is a view
- **Intent**—that which is used for invoking components. For example start the service, display a web page or broadcast a message.
- **Service**—the background process. These come in two types local which is accessed from the application and remote which can be

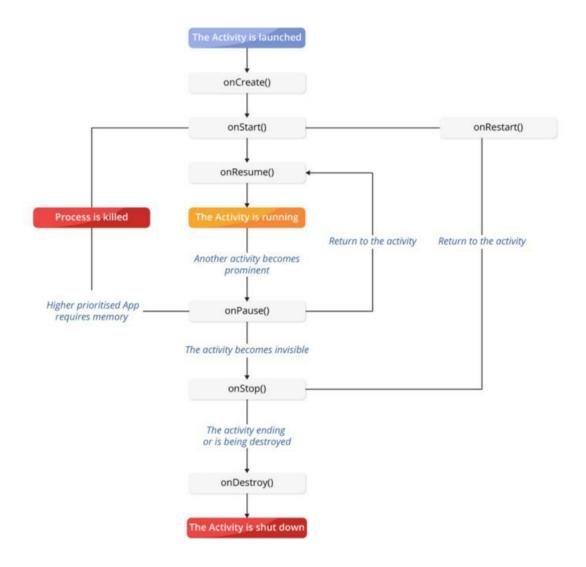
accessed from other devices.

- **Content Provider**—these are used to share data between different applications.
- **Fragment**—separate parts of the activity which can be displayed in multiples at the same time.
- **AndroidManifest.xml**—This holds information regarding activities, permissions and content providers etc.
- **Android Virtual Device (AVD)**—Which is used for testing the application without need a tablet or other device.

313. Can you name the 7 life-cycle methods of Android activity and explain a little about each one?

The 7 life-cycle methods are as follows:

- 1) **onCreate()**—meaning that an activity has been created
- 2) **onStart()**—meaning it has become visible to the user.
- 3) **onResume()**—meaning that the activity has started interacting with the user
- 4) **onPause()**—meaning the activity is not visible to the user
- 5) **onStop()**—meaning it is no longer visible to the end user
- 6) **onRestart()**—meaning the activity has stopped, prior to being started
- 7) on**Destroy()**—meaning the activity will be destroyed



314. What does ADB in Android stand for?

ADB acts as a bridge between emulator and IDE. It also executes remote shell commands to run applications on an emulator.

315. What is ANR in Android?

ANR stands for application is not responding. It is a dialog box that appears when the application is not responding.

316. What does ADT stand for?

ADT is Android development tool and it is used to develop the applications and test the applications.

317. What does DDMS stand for and what are its capabilities

This refers to the Delvik Debug Monitor Server. Thesis a debugging tool that is included in Android Studio. It can be used for port-forwarding services, thread and heap information on the device, screen capture on the device, logcat, process, and radio state information. In addition it provides, among other services, incoming call and SMS spoofing, and location data spoofing.

318. What is an intent and give three examples of how it is used?

Three common uses for an intent are:

- **Starting an Activity** It is normal to start a new instance of an activity by passing an intent to *startActivity()* method.
- **Delivering a Broadcast** This can be done by passing an intent to *sendBroadcast()*, *sendStickyBroadcast()*, *and sendOrderedBroadcast()*
- **Starting a Service** this can be used to perform a one-time operation, for example download a file. It's achieved by passing an intent to *startService()*

319. Can an intent be used to give data to a ContentProvider?

No, an *intent* cannot be used to give data to a *ContentProvider*. In order to use data in a *ContentProvider* you have to use *ContentResolver* instead. This is in the application's *Context* and is used to communicate with the provider as a client. The provider object works by receiving data requests, performing the required action and then returning the results.

320. Using with intent, we can launch an activity.

Intent intent = new Intent(this, MyTestActivity.class);
 startActivity(intent);

321. Define the application resource file in Android.

JSON,XML bitmap.etc are application resources. You can injected these files to build process and can load them from the code.

322. What is an Adapter in Android?

An Adapter acts as a bridge. It converts data items into new items so it can be displayed in UI components.

323. Where are layouts placed in Android?

In The Layout folder, layouts are placed as XML files.

324. What is a singleton class in Android?

A class that can create only an object, that object can be shared with other classes.

325. What is a fragment in Android?

A fragment is a piece of activity and it is always contained in activity. With fragment, we can reuse it in many activities and it is more flexible to locate on a screen.

326. What is sleep mode in Android?

Sleep mode means that the CPU will be sleeping and it doesn't accept any commands from an Android device except Radio interface layer and alarm.

327. Which kernal is used in Android?

Android is a customised Linux 3.6 kernel.

328. Which exceptions are available in Android?

Inflate Exception, Surface. Out Of Resource Exception, Surface Holder. Bad Surface Window Manager. Bad Token Exception

329. What is the order of the dialog-box in Android?

The order is: Positive, Neutral, Negative.

330. What is a drawable folder in Android?

A compiled visual resource that can used as a backgrounds, banners, icons, splash screen etc.

331. What does ContentProvider mean and what is it's normal use?

A ContentProvider is used to manage access of a structured set of data. It identifies the data and provides mechanisms for defining the data security. It is the standard interface connecting data within one process with the code running in another. For more information please refer to **this section**of the Android Developer's Guide.

332. How do you pass the data to sub-activities android?

Using with Bundle, we can pass the data to sub activities.

Bundle bun = new Bundle();

bun.putString("EMAIL", "contact@tutorials.com");

333. You are reorienting a screen, instead of Android tearing down the foreground and restoring the view values in the activity's layout, a view's value is not restored after the reorientation. What is the likely reason for this?

The most likely reason is that the developer has not verified that it has a valid *id*. An Android system will only restore the state of views in the activity if each view is given a unique *id*. This is supplied by the attribute, *android:id*

334. Describe the Android library.

An Android library is a development project that holds shared Android source code and other resources. It holds everything necessary in order to build an app including source code, resource files, and an Android manifest. It compiles everything into an Android Archive (AAR) file that can be used as a dependency for an Android app module.

335. When is the Android library module used?

The Android library module can be used when one is building multiple apps that require or use the same components like activities, services, or UI layouts. It's also used when one is building an app that exists in multiple APK variations such as free and paid version that need the same core components for both.

In order to stay up-to-date with the latest Android developments, it's important that you continue to develop your skills as the systems develop and change over time as well. This will allow you to stay ahead of the competition and become a more valuable asset to your client and your team.

336. What is a Thread?

"A *thread* is a thread of execution in a program." Each thread has a priority and the higher priority the thread has they're executed in preference to threads with lower priority. When code is running in thread and creates a new Thread object, the new thread has its priority initially set equal to the priority

of the creating thread, and is a daemon thread if and only if the creating thread is a daemon.

337. How does one create a new thread of execution?

There are two ways that one can create a new thread of execution. One is by declaring a class to be a subclass of Thread. The subclass will override the run method of class **Thread.** The subclass can be allocated and started. An example of a thread that compuets primes larger than a stated value is below:

```
class PrimeThread extends Thread {
    long minPrime;
    PrimeThread(long minPrime) {
        this.minPrime = minPrime;
    }
    public void run() {
        // compute primes larger than minPrime
        ...
    }
}
```

The code below would create a thread and start it running:

```
PrimeThread p = new PrimeThread(143);
p.start();
```

Another way to create a thread is to declare a class that implements a **Runnable interface.** This class will implement the run method. The class can be allocated, passed as an argument when creating Thread and started.

```
class PrimeRun implements Runnable {
    long minPrime;
    PrimeRun(long minPrime) {
        this.minPrime = minPrime;
    }
```

```
public void run() {
    // compute primes larger than minPrime
    ...
}
```

The code below would create a thread and start running:

```
PrimeRun p = new PrimeRun(143);
    new Thread(p).start();
```

338. Can more than one thread have the same name?

Yes. Every thread has a name in order to be identified. If a name is not specified when a thread is created, a new name is created for it.

339. How will you pass data to sub-activities?

We can use Bundles to pass data to sub-activities. There are like HashMaps that and take trivial data types. These Bundles transport information from one Activity to another

Code

```
Bundle b=new Bundle();
b.putString("Email", "abc@xyz.com");
i.putExtras(b); //where I is intent
```

Q340. How will you pass data to other activities? Write code?

- 1 Intent intent = new Intent(CurrentActivity.this, OtherActivity.class);
- 2 intent.putExtras("key", "value");
- 3 startActivity(intent);

Q341. Write code for a Toast that will display the message "I am a Toast"?

- 1 Toast.makeText(getApplicationContext(), "I am a Toast",
- 2
- 3 Toast.LENGTH_LONG).show();

Q342. Is it true that android applications can only be programmed in Java?

No. You can write your code in C or C++ using the NDK development tools.

Q343. Explain different phases of Activity Life Cycle.

For better explanation about Activity Life Cycle join our famous Demo Class on Android.

Q344. Which database is used for Android?

- We use SQLite database in Android.
- Some points about SQLite:
 - **Open Source** *Database*
 - SQLite is available on every Android device
 - It supports standard relational database features like
 - *SQL syntax*
 - transactions
 - SQL statements
- Very **light weight** database
- Requires very little memory

- Approx. **250KB**
- SQLite Database is automatically managed by Android Platform

Q345. What is ViewGroup?

A ViewGroup is a special view that can contain other views. Ex – LinearLayout, RelativeLayout etc. For more details about layouts

Q346. How do you handle multiple resolution screens in android?

The following five properties help you to achieve multiple resolution screens in android:

- **Screen size** Screen sizes are divided into four generalized sizes: small, normal, large, and extra-large.
- **Screen density** Screen densities are also divided into four generalized densities: low, medium, high, and extra-high.
- **Orientation** When user rotates the device the orientation of the device also gets changed.
- **Resolution** The total number of physical pixels on a screen.
- Density independent pixel (dp) Provides you a density-independent way to define your layouts.

Q347. What is the importance of declaring permissions in android application development?

The limitation is imposed to protect critical data and code that could be misused to distort or damage the user experience. If an application needs

access to a feature protected by a permission, it must declare that it requires that permission with a <uses-permission> element in the manifest. Then, when the application is installed on the device, the user determines whether or not to grant the requested permission by checking the authorities that signed the application's certificates and, in some cases, asking the user. — reference Android Developers.

Q348. If I have all the drawable folders like xhdpi, hdpi, mdpi and ldpi and I am running my application on xhdpi devices, the images will be picked up from which folder.(I have not placed any image in xhdpi).

The system will first look for the image in drawable-xhdpi/ folder. If no matching resource is found then it will pick the image from the default folder i.e. drawable/ folder

Q349. Which is the latest version of Android? What upgrades does it have over the previous version?

The latest version is **Android Lollipop**, Kitkat is its predecessor. The upgrade was aimed at improving the **User Interface functionality and performance**.

Knowledge of the different versions of Android would help you answer such questions.

Q350. What type of listener is used to get the ratings from the RatingBar Widgets?

onRatingBarChangeListener() is used. Click to get more details

about RatingBar and SeekBar.

Q351. Write a code snippet to generate a Button dynamically.

```
1
2
    @Override
3
   protected void onCreate(Bundle savedInstanceState) {
4
5
   super.onCreate(savedInstanceState);
6
7
   Button button = new Button(this);
8
   button.setText("Button");
9
   setContentView(button);
11
12 });
13
```

#352 Question

What is a marshmallow in Android?

In the latest update of Android version 6.0, the official Android code name is known as a marshmallow. It was launched in May 2015. This was the successor of the Android version 5.0 named as Lollipop. Google named this version as a marshmallow on 17th August 2015 for Nexus devices.

#353 Question

What are runnable in android?

Android is a diverse operating system than any other operating system. The growth has been seen rapidly over the years and is the most used smartphone operating system in the world. The reason may be because of adding a large number of phones from different companies, by bringing in their twist, developing gradually day by day. It is mainly designed for Java applications. Android has a unique system-wide log and easy to download. It is an indispensable way to enable data sharing between applications. Thus, the Android platform is vast, and therefore a developer must cover all its aspects

before facing the interview. All the best.

354) What are the code names of android?

- 1. Aestro
- 2. Blender
- 3. Cupcake
- 4. Donut
- 5. Eclair
- 6. Froyo
- 7. Gingerbread
- 8. Honeycomb
- 9. Ice Cream Sandwich
- 10. Jelly Bean
- 11. KitKat
- 12. Lollipop
- 13. Marshmallow

355) What are the advantages of Android?

Open-source: It means no license, distribution and development fee.

Platform-independent: It supports Windows, Mac, and Linux platforms.

Supports various technologies: It supports camera, Bluetooth, wifi, speech, EDGE etc. technologies.

Highly optimized Virtual Machine: Android uses a highly optimized virtual machine for mobile devices, called DVM (Dalvik Virtual Machine).

356) Does android support other languages than java?

Yes, an android app can be developed in C/C++ also using android NDK (Native Development Kit). It makes the performance faster. It should be used with Android SDK.

357) What are the core building blocks of android?

The core building blocks of Android are:

- Activity
- View
- Intent
- Service
- Content Provider
- Fragment etc.

358) What is activity in Android?

Activity is like a frame or window in java that represents GUI. It represents one screen of android.

359) What are the life cycle methods of android activity?

There are 7 life-cycle methods of activity. They are as follows:

- 1. onCreate()
- 2. onStart()
- 3. onResume()
- 4. onPause()
- 5. onStop()
- 6. onRestart()
- 7. onDestroy()

360) What is intent?

It is a kind of message or information that is passed to the components. It is used to launch an activity, display a web page, send SMS, send email, etc. There are two types of intents in android:

- 1. Implicit Intent
- 2. Explicit Intent

361) How are view elements identified in the android program?

View elements can be identified using the keyword findViewById.

362) Define Android toast.

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.

363) Give a list of impotent folders in android

The following folders are declared as impotent in android:

- AndroidManifest.xml
- build.xml
- bin/
- src/
- res/
- assets/

364) Explain the use of 'bundle' in android?

We use bundles to pass the required data to various subfolders.

365) What is an application resource file?

The files which can be injected for the building up of a process are called as application resource file.

356) What is the use of LINUX ID in android?

A unique Linux ID is assigned to each application in android. It is used for the tracking of a process.

367) Can the bytecode be written in java be run on android?

No

368) List the various storages that are provided by Android.

The various storage provided by android are:

- Shared Preferences
- Internal Storage
- External Storage
- SQLite Databases
- Network Connection

369) How are layouts placed in Android?

Layouts in Android are placed as XML files.

370) Where are layouts placed in Android?

Layouts in Android are placed in the layout folder.

371) What is the implicit intent in android?

The Implicit intent is used to invoke the system components.

372) What is explicit intent in android?

An explicit intent is used to invoke the activity class.

373) How to call another activity in android?

- Intent i = new Intent(getApplicationContext(), ActivityTwo.class);
- startActivity(i);

374) What is service in android?

A service is a component that runs in the background. It is used to play music, handle network transaction, etc.

375) What is the name of the database used in android?

SQLite: An opensource and lightweight relational database for mobile devices.

376) What is AAPT?

AAPT is an acronym for android asset packaging tool. It handles the packaging process.

377) What is a content provider?

A content provider is used to share information between Android applications.

378) What is fragment?

The fragment is a part of Activity by which we can display multiple screens on one activity.

379) What is ADB?

ADB stands for Android Debug Bridge. It is a command line tool that is used to communicate with the emulator instance.

380) What is NDK?

NDK stands for Native Development Kit. By using NDK, you can develop a part of an app using native language such as C/C++ to boost the performance.

381) What is ANR?

ANR stands for Application Not Responding. It is a dialog box that appears if the application is no longer responding.

382) What is the Google Android SDK?

The Google Android SDK is a toolset which is used by developers to write apps on Android-enabled devices. It contains a graphical interface that emulates an Android-driven handheld environment and allows them to test and debug their codes.

383) What is an APK format?

APK is a short form stands for Android Packaging Key. It is a compressed key with classes, UI's, supportive assets and manifest. All files are compressed to a single file is called APK.

384) Which language does Android support to develop an application?

Android applications are written by using the java (Android SDK) and C/C++ (Android NDK).

385) What is ADT in Android?

ADT stands for Android Development Tool. It is used to develop the applications and test the applications.

386) What is View Group in Android?

View Group is a collection of views and other child views. It is an invisible part and the base class for layouts.

387) What is the Adapter in Android?

An adapter is used to create a child view to present the parent view items.

388) What is nine-patch images tool in Android?

We can change bitmap images into nine sections with four corners, four edges, and an axis.

389) Which kernel is used in Android?

Android is a customized Linux 3.6 kernel.

390) What is application Widgets in Android?

Application widgets are miniature application views that can be embedded in other applications and receive periodic updates.

391) Which types of flags are used to run an application on Android?

Following are two types of flags to run an application in Android:

- FLAG_ACTIVITY_NEW_TASK
- FLAG_ACTIVITY_CLEAR_TOP

392) What is a singleton class in Android?

A singleton class is a class which can create only an object that can be shared by all other classes.

393) What is sleep mode in Android?

In sleep mode, CPU is slept and doesn't accept any commands from android device except Radio interface layer and alarm.

394) What do you mean by a drawable folder in Android?

In Android, a drawable folder is compiled a visual resource that can use as a background, banners, icons, splash screen, etc.

395) What is DDMS?

DDMS stands for Dalvik Debug Monitor Server. It gives the wide array of debugging features:

- 1. Port forwarding services
- 2. Screen capture
- 3. Thread and heap information
- 4. Network traffic tracking
- 5. Location data spoofing

396) Define Android Architecture?

The Android architecture consists of 4 components:

- 1. Linux Kernal
- 2. Libraries
- 3. Android Framework
- 4. Android Applications

397) What is a portable wi-fi hotspot?

The portable wi-fi hotspot is used to share internet connection to other wireless devices.

398) Name the dialog box which is supported by Android?

- Alert Dialog
- Progress Dialog
- Date Picker Dialog
- Time picker Dialog

399) Name some exceptions in Android?

- Inflate Exception
- Surface.OutOfResourceException
- SurfaceHolder.BadSurfaceTypeException

• WindowManager.BadTokenException

400) What are the basic tools used to develop an Android app?

- JDK
- Eclipse+ADT plugin
- SDK Tools

#401 Question

Is the latest Android operating system supported in all mobile phones?

The supporting facility of Android new version depends on the capabilities and specs of the phone. There are few Android power phones that allow the user to update their version to the higher operating version. Few don't allow getting the updated version work. Either the new feature will not be supported, or the performance of the operating device will slow down.

#402 Question

What are the Android application components?

Android application components are the building block essentially used in the Android application. The application manifest file named Android manifest.xml couples the components. This describes each component of the application and describes how they interact, and then the processing activity takes place.

There are four main components, which are:

- **Activities:** They show the UI and handle the interaction of the users in smartphone screen.
- **Services:** They take care of the processing associated with the application.
- **Broadcast Receivers:** They handle the communication process between Android OS and application.
- **Content Providers:** They handle issues with data and database management.

#403 Question

What does Fragment mean?

A fragment means behavior or the portion of user interface in a Fragment Activity. One can combine multiple fragments in a single activity to build a UI and can reuse the fragment in multiple activities. The fragment can be considered as a modular section of an activity. This has its life cycle, gets its input events, which can be added or removed accordingly. It is must host a fragment in an activity and fragments lifecycle is directly related by the host activity's lifecycle.

#404 Question

What options do the users get to save data in Android?

Android provides some options to save or store the app data. Here the choice depends on the specific needs and requirement of space by the users.

Few of the data storage options available on Android are as follows:

- **Internal file storage:** stores the private file on the device file system.
- **External file storage:** stores the file on the shared external file system.
- **Shared preferences:** stores the private primitive data in key-value pairs.
- **Databases:** stores the structured data in a private database.

To expose one app's data to other apps, the content provider can be used.

#405 Question

What is AIDL?

AIDL is Android Interface Definition Language. This IDL allows the user to define the programming interface; both the clients and service agree upon to communicate with each other using inter-process communication (IPC). On Android platform, it becomes difficult for one processor to access the memory of another process. They need to decompose their objects into primitive that the operating system can manage, and marshal the objects

across. The code to perform that marshaling is tedious to write therefore Android handles this for the users with the help of AIDL

#406 Question

What are services in Android and what is its type?

Services here is an application component that can perform long-duration operations in the background. It doesn't provide a user interface. Other application components can start a service and can continue to perform/ run in the background when the users switch to some other application. There are three different types of services:

- **Foreground:** The activity of performing the operation in foreground service is noticeable to the users. A notification is displayed for the same.
- **Background:** Generally, a background service performs its operations, which is directed not noticed by the users on their screen. Example if an app uses service to compact its storage this will be considered as background service.
- **Bound:** A service is bound when an application component binds to it by calling it as bind service. A bound service runs only as long as another application component is bound to it.

#407 Question

What is the use of Android manifest.xml?

Every application should have an Androidmanifest.xml file at the root of the project source set. This file describes the essential information required by the user for the app to the Android build tools. Apart from this, it is required for the following reasons:

- To give permission that the application requires to ensure the access is protected.
- To provide with the hardware and software features, which the app requires when installing from Google play etc.

#408 Question

What are launch modes?

It is an instruction for Android OS that specifies how the activity should be launched or performed. The activities are performed into two areas, which are:

- **Tasks:** It's a collection of activities, with which the users interact when they perform certain jobs. An application contains a number of activities.
- **Back Stack:** Back stack in a back stack the activities are arranged with the order in which each is opened. This maintained stack called back stack.

#409 Question

Explain sticky intent?

Sticky intent sticks with the Android for future broadcast listeners. For instance, if Battery low event occurs then that intent will be stick with Android, so that if any future user requested for Battery – Low, it will be fired.

#410 Question

What is the difference between Serializable and parseable?

Serializable is a standard Java interface. It is not a part of the Android SDK. Its simplicity is its biggest beauty. Just by implementing this interface the POJO will be ready to jump from one particular activity to another. There is another interface known as parseable. It is a part of the Android SDK. Paracelable was specifically designed in a way that there is no reflection left while using.

#411 Question

Give a brief idea about Android application architecture?

The architecture of Android application has few components, which have their functions to perform:

• **Service:** It performs the background functions

- **Intent:** Performs the interconnection function between activities and data passing mechanism
- **Resource:** Externalization it is used to perform strings and graphics functions
- **Notification:** This shows the lights, sound, icon, notification, incoming chats messages dialogue box, etc.
- **Content providers:** It shares the data between applications.

#412 Question

State the code names of Android along with the year when they were brought in?

Following are the code names with year:

- 1. Astro
- 2. Blender
- 3. Cupcake (April 2009)
- 4. Doughnut (September 2009)
- 5. Eclair (October 2009)
- 6. Froyo (may 2010)
- 7. Gingerbread (December 2010)
- 8. Honeycomb (February 2011)
- 9. Ice Cream Sandwich (October 2011)
- 10. Jellybean (July 2012)
- 11. Kitkat (October 2013)
- 12. Lollipop (November 2014)
- 13. Marshmallow (since October 2015)

#413 Question

State the advantages of Android?

Advantages of Android are as follows:

- It is an Open source that requires no licensing
- It is Platform independent that supports Windows, Mac, and Linux platforms.
- Supports different technologies like camera, Bluetooth, wifi, speech, EDGE, etc.
- It is a highly optimized virtual machine.

#414 Question

What are the other languages that Android supports other than JAVA?

Android supports C++, C. The app can be developed in C or C++ using Android NDK (Native development kit). This makes system works faster.

#415 Question

State the life cycle methods of Android activities?

There are seven lifecycle methods of Android activities. They are:

- On create()
- On start()
- On resume()
- On pause()
- On stop()
- On restart()
- On destroy()

#416 Question

What is DDMS?

DDMS is Dalvik Debug Monitor Server. This gives a wide array of debugging features of which are

- Port forwarding services
- Screen capture

- Thread and heap information
- Network traffic tracking
- Location data
- spoofing

#417 Question

what dialogue boxes are supported by the Android box? Dialogue box supported by Android are:

- Alert dialogue
- · Process dialogue
- Data picker dialogue
- Time picker dialogue

#418 Question

What are few exceptions in Android?

These are the following exceptions in Android:

- Inflate exception
- Surface.out of resource exception
- Surface holder bad surface type exception
- Window manager took exception.

#419 Question

What are the tools used to develop an Android app?

Tools used to develop an Android app are as follows:

- JDK
- Eclipse +ADT Plugin
- SDK Tools

#420 Question

What is meant by Google Android SDK?

The Google Android SDK is a set of tools that are used by the developers to write the app on Android-enabled devices. It contains a graphical interface that emulates an Android-driven handheld environment and allows the developers to debug their codes as per the requirements.

#421 Question

State the difference between a regular bitmap and nine- patch image?

A nine- patch image allows the resizing of the image that can be used as background or other image size requirements for the target device. The nine-patch refers to the way one can resize the image. It can be done in the in the following manners

- 4-image corner unscaled one.
- Four edges, scaled in 1 axis
- The last middle one that can be scaled into both the axes.

#422 Question

What is portable Wi-Fi hotspot?

Portable Wi-Fi hotspot allows the users to share a mobile Internet connection with another device. Using an Android powered phone as a Wi-Fi hotspot user can use their laptop to connect to the Internet using the same access point.

#423 Question

State the importance of XML- based layouts?

XML based layouts provide a consistent and standard means of setting GUI format. In general use, layout details are placed in XML files, and all other items are generally placed in a source files.

#424 Question

Explain Orientation?

Orientation is set using set orientation (), dictates whether the linear layout is represented as a row or else as a column. There the values are set as

HORIZONTAL or VERTICAL.

#425 Question

Differentiate between activities and services.

Activities can be closed or can be terminated easily as and when the user wants to. Services are designed to run on the background or behind the scenes and can act independently. Most of the services run on a continuous basis regardless of their certain or no certain activities been executed.

#426 Question

State the importance of having an emulator with the Android environment?

The emulator lets the developers "play" all around the interface that gives the experience of an actual mobile device. It is for writing and testing codes, and debug too. Emulators are safe for testing codes especially if the user is in the early stage of design.

#427 Question

What is the importance of settings permission in app development?

Permission allows certain restrictions to be imposed primarily to protect data and code. Without this, codes could be compromised, resulting in defects in the actual function.

#428 Question

What is AAPT?

AAPT is Android Asset packing tool. This provides developers with the ability to deal with zip-compatible archives, and it includes creating, extracting as well as viewing its content.

#429 Question

State few disadvantages of Android in the mobile market.

Few of the disadvantages of Android in the mobile market are as follows:

- Developers can write and register apps that will only run under the Android environment.
- With the growing popularity and demand for the Android mobile

devices, developers can easily take advantage of this trend by uploading the app on the market for the distribution purpose, and people can download it.

#430 Question

What are the four essential states of an activity?

The four initial stages of the activity are as followed:

- **Active:** If the activity is in the foreground that means it is running on the device.
- **Paused:** When the activity is at the background and is still visible on the screen.
- **Stopped:** when the activity is not visible and is actually hidden by another activity that is running on the device.
- **Destroyed:** when the activation process is killed or is terminated, it's considered to be completely destroyed.

#431 Question

What is meant by activities?

Activities are windows to an interface. Like a window is created with the aim to display the output and to know about input in the form of a dialogue box. In the same manner, activities play its role, may not always in the form of a user interface.

#432 Question

Describe intents?

Intents help to display the notification message to the user from within the Android device. Users are made to response this alert.

#433 Question

List few items, which you think may be important in every Android project? The important items for Android projects are:

AndroidManifest.xml

- Build.xml
- Bin/
- Src/
- Res/assets/

#434 Question

What are containers?

In a general term, the container means some object that can be used to hold or to procure. In a similar manner here, containers are used to hold objects and the widgets altogether. It depends on which specific item is it required and what kind of arrangement is needed. It can be used to hold labels, fields or buttons.

#435 Question

What role has Dalvik played in Android development?

Dalvik plays an important role in the development of Android. It acts as a virtual machine where the Android application runs. It is with the help of Dalvik only that devices can execute multiple virtual machines effectively along with better memory management.

#436 Question

Explain the steps in creating a bounded service through AIDL.

Follow the below steps to create a bounded service through AIDL

- Step 1. Create the .aidl file that defines the programming interface.
- Step 2. Implement the interface, by extending the inner abstract stub class and imparting its methods.
- Step 3. Expose the interface by implementing the service to the users.

#437 Question

State the importance of default resources.

Default resources contain the default string and files. If this resource is not

present the error will keep occurring, and the app will not be able to run. Resources are placed in subdirectories under the project res/ directory. Moreover, therefore helps the app to function in the desired conditions.

#438 Question

Explain fragment.

Fragments are reusable in nature and is a portion of an activity. In other words, it is modular that can be combined or is movable in an activity.

#439 Question

When is it desirable to kill the foreground activity?

Terminating or killing the foreground activity is the last and final savior. It is generally desirable or is the best time to kill this activity when it is consuming too much of memory. When the memory paging state is reached by the activity, it is killed so that the interface can sustain the responsiveness of the user of the application.

#440 Question

What is sticky intent?

It is broadcast from sendstickybroadcasr() method. This allows the intent to float even after the broadcast and allowing others to collect data from.

Question 441. Tell Me What All Major Networks To Be Considered While Performing Application Testing?

Answer:

You should test the application on 4G, 3G, 2G and WIFI. 2G is a slower network, its good if you verify your application on slower network also to track your application performance.

Question 442. Tell Me What Is The Full Form Of Mms?

Answer:

Multimedia Messaging Services.

Question 443. Tell Me What All Devices Have You Worked Till Now? Answer:

Android, Symbian, Windows, iPhone etc.

Question 444. Tell Me How To Test Different Screen Sizes Of The Devices?

Answer:

Using Emulators.

Question 445. Explain What Do You Mean By High Availability? Answer:

Having better service capacity with high availability and low latency is mission critical for almost all businesses.

Availability means the ability of the application user to access the system, If a user cannot access the application, it is assumed unavailable. High Availability means the application will be available, without interruption.

Achieving high availability for a application is not always a easy task. Using redundant server nodes with clustering is a common way to achieve higher level of availability in web applications.

Availability is commonly expressed as a percentage of uptime in a given year.

Question 446. Tell Me What Is The Difference Between Mobile Device Testing And Mobile Application Testing?

Answer:

Mobile device testing means testing the mobile device and mobile application testing means testing of mobile application on a mobile device.

Question 447. Explain What Is Web Application?

Answer:

Web applications runs from mobile web browsers like Chrome, Firefox, Opera, Safari etc using mobile network or WIFI. E.G. of web browser applications are m.facebook.com, m.gmail.com, m.yahoo.com, m.rediffmail.com etc.

Question 448. Explain What Is Scalability?

Answer:

Scalability is the ability of a system, network, or process to handle a growing amount of load by adding more resources. The adding of resource can be done in two ways.

Scaling Up:

This involves adding more resources to the existing nodes. For example, adding more RAM, Storage or processing power.

Scaling Out:

This involves adding more nodes to support more users.

Any of the approaches can be used for scaling up/out a application, however the cost of adding resources (per user) may change as the volume increases. If we add resources to the system It should increase the ability of application to take more load in a proportional manner of added resources.

An ideal application should be able to serve high level of load in less resources. However, in practical, linearly scalable system may be the best option achievable.

Poorly designed applications may have really high cost on scaling up/out since it will require more resources/user as the load increases.

Question 449. Explain When Performing Sanity Test On Mobile Application What All Criteria Should Be Taken Into Consideration? Answer:

Installation and uninstallation of the application:

Verify the device in different available networks like 2G, 3G, 4G or WIFI.

Functional testing

Interrupt testing- Able to receive the calls while running the application.

Compatibility testing - able to attach the photo in message from gallery

Test application performance on different handset.

Make some negative testing by entering the invalid credentials and test the behavior of the application.

Question 450. Explain What Is The Basic Difference Between Emulator And Simulator?

Answer:

Emulator is based on hardware and software wherein simulator is based on software. Simulation is system that behaves similar to something else

while emulation is system that exactly behave like something else.

Question 451. Do You Know Why Do You Need Clustering? Answer:

Clustering is needed for achieving high availability for a server software. The main purpose of clustering is to achieve 100% availability or a zero down time in service.

Typical server software can be running on one computer machine and it can serve as long as there is no hardware failure or some other failure.

By creating a cluster of more than one machine, we can reduce the chances of our service going un-available in case one of the machine fails.

Doing clustering does not always guarantee that service will be 100% available since there can still be a chance that all the machine in a cluster fail at the same time. However it in not very likely in case you have many machines and they are located at different location or supported by their own resources.

Question 452. Explain What Are The Types Of Mobile Applications? Answer:

Mobile applications are of three types:

Native Application- Native app installed from application store like Android's google play and apple' app store. The application which can be installed into your devices and run are known as native application for E.G. whats App, Angry birds etc.

Web Application- Web applications runs from mobile web browsers like Chrome, Firefox, Opera, Safari etc using mobile network or WIFI. E.G. of web browser applications are m.facebook.com, m.gmail.com, m.yahoo.com, m.rediffmail.com etc.

Hybrid Application- Hybrid apps are combinations of native app and web app. They can run on devices or offline and are written using web technologies like HTML5 and CSS. For E.G. ebay, flipkart etc.

Question 453. What Is Streaming Media?

Answer:

Streaming is a process of downloading the data from the server. Streaming media is the multimedia that is transferred from server or provider to the receiver.

Question 454. Do You Know What Is A Cluster?

Answer:

A cluster is group of computer machines that can individually run software. Clusters are typically utilized to achieve high availability for server software.

Clustering is used in many types of servers for high availability.

App Server Cluster:

An app server cluster is group of machines that can run a application server that can be reliably utilized with a minimum of down-time.

Database Server Cluster:

An database server cluster is group of machines that can run a database server that can be reliably utilized with a minimum of down-time.

Question 455. Explain Full Form Of The Various Extensions?

Answer:

Apk - Android Application Package File

Exe - Executable Files

IPA -iOS App Store Package

Prc - Palm Resource Compiler

Jad - Java Application Descriptor

Adb - Android Debug Bridge

Aapt - Android Asset Packing Tool

Question 456. Explain Debugging Tools For Mobile?

Answer:

Errors can be verified by the generated logs. We can use configuration utility on iOS and android monitor.bat on android. Here are few to name Android DDMS, Remote Debugging on Android with Chrome, Debugging from Eclipse with ADT, Android Debug Bridge, iOS simulator etc.

Question 457. What Is Hybrid Application?

Answer:

Hybrid apps are combinations of native app and web app. They can run on devices or offline and are written using web technologies like HTML5 and CSS. For E.G. eBay, Flipkart etc.

Question 458. Explain A Situation In Which You Persuaded Someone Of Your Point Of View. How Were You Able To Maintain Peoples' Confidence In That View?

Answer:

The number of individuals involved in technology decisions is increasing,

meaning that architects have to work with a large and diverse set of stakeholders, each with their own motivation and objectives. Architects must have strong influencing skills to ensure that EA meets its objectives. But many architects do not yet hit the bar: GGL data show that only 35% of architects are good at influencing stakeholders. When interviewing EA candidates, find out if they have a demonstrated ability to persuade others.

Question 459. Tell Me Which Things To Consider Testing A Mobile Application Through Black Box Technique?

Answer:

By testing your application on multiple devices.

By changing the port and IP addresses to make sure the device is getting connected and disconnected properly.

By making calls and sending messages to other devices.

By testing your web application on different mobile browsers like chrome, Firefox, opera, dolphin etc.

Question 460. Explain With Example Of A Time Your Team Or Organization Shifted Their Goals Or Resources. What Effect Did It Have On Your Work? How Did You Respond?

Answer:

Business priorities are constantly in flux. All of GGL Architecture members say that their business's strategy has changed frequently in the past couple of years. But many EA groups report that they struggle to react to these changes. To avoid being left behind, EA needs architects who can quickly adjust and adapt to new, different, and changing circumstances.

Question 461. Do You Know What Is The Strategy Used To Test New Mobile App?

Answer:

System integration testing:

Functional testing

Installation and uninstallation of the app

Test HTML control

Performance

Check in multiple mobile OS

Cross browser and cross device testing

Gateway testing

Network and Battery testing

Question 462. Explain With Example Of An Innovative Idea You Used

To Get Round A Problem You Had With A Project. How Did The Idea Differ From Normal Solutions?

Answer:

Business leaders are far more likely to turn to technology to improve products and services than they once were, and many of them are willing and able to run new technology projects on their own. GGL data show that nearly a third of technology spending at the average company is outside of IT, and so architects need to be flexible enough to support these new initiatives, many of which involve new or untested technologies.

Question 463. What Is Native Application?

Answer:

Native app installed from application store like Android's google play and apple' app store. The application which can be installed into your devices and run are known as native application for E.G. whats App, Angry birds etc.

Question 464. Explain What Are The Automation Tools Available For Mobile Application Testing?

Answer:

There are many automation tools available in the market for mobile application testing but iPhone Tester is the one of the best tool to test the application on iPhone and screen fly for android devices.

Question 465. Tell Me Where To Perform Forward Compatibility Testing?

Answer:

This can be done with new versions of the mobile application.

Question 466. Explain What Are The Defects Tracking Tools Used For Mobile Testing?

Answer:

You can use same testing tool which you use for web application testing like QC, Jira, Rally and Bugzilla etc.

Question 467. Explain Is Cloud Base Mobile Testing Possible? Name Any?

Answer:

Yes, Perfecto Mobile and SeeTest.

Question 468. Tell Me What Is The Latest Version Of Android? Answer:

Lollipop 5.0-5.0.2 (also changes often).

Question 469. Tell Me Can We Use Qtp/uft For Mobile Automation Testing?

Answer:

Yes, with the help of SeeTest add-in.

Question 470. Tell Me What Is The Extension Of Android Files?

Answer:

.apk (Android application package)

Question 471. Tell Me What Is The Best Way To Test Different Screen Sizes Of The Devices?

Answer:

Using emulator.

Question 472. Tell Me How Can We Install The Build On Iphone And Ipad?

Answer:

Using iTunes.

Question 473. Tell Me How To Test Cpu Usage On Mobile Devices? Answer:

There are various tools available in the market like google play or app store from where you can install apps like CPU Monitor, Usemon, CPU Stats, CPU-Z etc these are an advanced tool which records historical information about processes running on your device.

Question 474. Tell Me What Are The Common Challenges In Mobile Application Testing?

Answer:

Working on different operating systems, variety of handsets, different networks, variety of screen size.

Question 475. Tell Me What Are The Tools Based On Cloud Based Mobile Testing?

Answer:

SeeTest, Perfecto Mobile, Blaze Meter, AppThwack, Manymo, Device Anywhere etc.

Question 476. Tell Me How To Create The Log File?

Answer:

Using CAT.

Question 477. Tell Me What Is The Latest Version Of Ios?

Answer:

IOS 8. (This changes quite often, so please check the apple site for most recent info)

Question 478. Explain Why Mobile Phone Has 10 Digit Numbers? Answer:

The number of digits in a mobile phone number decides the maximum mobile phones we can have without dialing the country code.

Question 479. Do You Know What Is Web Service?

Answer:

It is a component used in software to perform the task. It is like an interface between one program to another.

Question 480. Tell Me What Is The Extension Of Ios Files?

Answer:

.ipa

Question 481. List Down Some Mobile Application Testing Tools?

Answer:

Android

Android Lint

Find Bugs

iPhone

Clang Static Analyzer

Analyze code from XCode

Question 482. Tell Me Does Selenium Support Mobile Internet Testing? Answer:

Yes it does, Opera browser is used for Mobile internet testing.

Question 483. Do You Know What Is Wap?

Answer:

WAP is Wireless Application Protocol used in network apps.

Question 484. Tell Us Does Selenium Support Google Android Operating System?

Answer:

Yes, Selenium 2.0 supports Android Operating System.

Question 485. Tell Me What Is The Latest Version Of Windows?

Answer:

Windows 10

Question 486. Tell Me What Is Gprs And How It Works?

Answer:

GPRS is General Packet Radio Service which works on mobile network with the help of IP transmissions. GPRS provides the transmission of IP packets over existing cellular networks. It provides you internet services on mobile.

Question 487. Explain How To Create Emulator On Android? Answer:

Give a name in name field -> select target API from the list -> enter the size -> select the required skin section -> click on create AVD -> select the required AVD -> click on start button -> launch it.

Question 488. Explain What Web Services Are Used By Mobile App? Answer:

They are many depend upon the application. SOAP and REST web services are used but RESRful is more common now.

Question 489. Tell Me Mobile Automation Testing Tools You Know? Answer:

Paid tools:

Ranorex, Silk Mobile, SeeTest.

Free tools:

Appium, Robotium, KIF, Calabash.

Question 490. Tell Me What Are Mt And Mo In Sms?

Answer:

Sending message is known as MO (Message originate) and receiving the message is known as MT (Message Terminate).

Q491) What is a broadcast receiver?

Broadcast Receivers are one which receives the message from other application or system itself.

Ex: The notification which we get when a battery is charged.

Q492) How to make a responsive application which is used in mobile and tablet?

The application can be made responsive my creating two different layouts

```
with same name and id's.
res/layout/main_activity.xml
                             # For phones
res/layout/main_activity_tablet.xml # For tablets
And calling it in your java class.
public class MyActivity extends Activity {
@Override protected void onCreate(Bundle savedInstanceState) {
super.onCreate();
Configuration config = getResources().getConfiguration();
if (config.smallestScreenWidthDp >= 600) {
setContentView(R.layout.main_activity_tablet);
} else {
setContentView(R.layout.main_activity);
}
}
```

Q493) What is the limit of data storage in sqlite?

Maximum data SQLite can store depends on the storage space of your device.

Q494) What is intent service?

Intent Service is used in the long task where there is no communication with the main thread. Intentservice runs on a separate worker thread.

Q495) What is the use of Bundle savedInstanceState?

Answer: savedInstanceState is a method parameter of on creates a method which saves the state of the activity.

Ex: When the activity goes into the background the state of the activity will be paused, which is stored in savedInstanceState and helps to revoke the activity from the same state

Q501) Is it possible to hold the landscape and portrait mode state, without declaring in the manifest file.

Yes, can do this from the application by calling registerActivityLifecycleCallbacks in the onCreate method.

Q502) Initially Android was developed For?

It was developed for cameras, later as day to day life mobile is important for the user so switched from cameras to mobiles.

Q503) Why all android version starts with the desert name?

In order to maintain a good relationship with the user, google name all its version names under the name of the desert.

Q504) From which version request permission is made necessary and why?

Marshmallow. Because the user has to know what are the permission the application is using.

Q505) Which is the best implementation in sNougat?

In Nougat they introduced doze. which shows better battery performances

and background services, when user never operates mobile.

Q506) What is the latest invention of google in mobiles?

Google assistant and camera in maps in top models mobiles.

Q507) What Android Logo is designed in Robot?

Coz, Andy Rubin the founder of Android Inc. was very fascinated to Robots.

Q508) What are the fees that Google gets from user to deploy the application in Play store?

25\$, for Lifetime.

Q509) Is it necessary to have Clean masters or anti-virus like application in mobiles?

No, because Android is developed on Linux. Linux is virus free OS.

Q510) Is it possible to change the Startup screen after creating two or three modules?

Yes, using intent-filter in the manifest screen.

Q511) What are fragments?

Fragments are those, on which multi-screen can be viewed in a single Activity.

Q512) How to open Google maps in android?

Using API keys, and calling the onMapReady method.

Q513) What is SQLite?

It is a lightweight database designed only for Android.

Q514) What are joins that are not supported by SQLite?

Right outer join and full outer joins

Q515) What is JSON?

JavaScript object notations is an interface between two applications. Using JSON we can send and receive data.

Q516) Which was the first mobile brand with Android Application?

First Mobile brand with Android Application was HTC.

Q517) What is the current version of Android and its API?

The current version of Android is "Pie" (as per Nov 2018) and its API level 28.

Q518) Life cycle of Activity?

OnCreate() – This method is called when the activity is created. It is called only once in activity lifecycle.

OnStart() – This method is called when the activity is getting started, no user interactions will be done at this stage, and this method will be called several times inactivity life cycle depending upon the user navigation. (Loads UI)

OnResume()- On this method call user can interact with the activity and perform actions like a click.

OnPause()- When the other application comes in the foreground, then the activity will get into a pause state.

Ex: When you are using an application ABC and call comes in, where the call

application comes in the foreground at this stage your ABC Application will enter into pause stage. When the call is disconnected again your ABC Application will come in the foreground and will move to resume stage.

OnStop()- On stop, the application will stop the activity and user interaction cannot be performed.

OnRestart()- The activity gets restarted and follows the same process.

OnDestroy()-The activity will be killed by the system

Q519) When the application is in the foreground and you get a call, in what stage your application will get into?

OnPause

Q520) Difference between nonstop() and destroy() methods in activity lifecycle?

Onstop() -It will temporarily call the destroy instance of activity to provide space for other applications.

OnDestroy()- Application will finish and shut down the activity.

Q521) What is fragment and Lifecycle of Fragments?

A fragment can be called as a mini activity which is called inside the Activity. You can add and remove fragment while activity is running.

Q522) What is android Manifest.xml?

Android manifest .xml is an XML file which contains all the activities, services details, and permissions defined in it. It contains all the essential

information about our applications.

Q523) Can Android Application be programmed only in Java?

Yes, Android application can be programmed in other languages like NDK, C, C++, and Kotlin also.

Q524) What is Intent? Difference between Implicit Intent and Explicit Intent?

The intent is used to perform an action inside the activity or to link one activity to another activity.

Implicit Intent: Performs action inside the same class such as calling webview, send SMS, call etc.

Explicit Intent: It is used connect from one activity to another.

Q525) Where do you define the icon for your activity?

<activity android:icon="@drawable/app_icon" android:name=".MyTestActivity"></activity>

Where the image is saved in drawable folder.

Q526) What is ANR notification in android and when do you get that error?

Application Not Responding is the exception raised when the too much of work is done on the main thread.

Q527) Enumerate three key loops when monitoring the activity?

Entire lifetime – activity between onCreate and onDestroy

Foreground lifetime – activity between onResume and onPause.

Visible lifetime – activity between onStart and onStop

Q528) How can ANR be prevented?

Stop doing heavy jobs on the main thread. The Instead use worker threads such as IntentService, AsyncTask or another Thread.

Q529) How to convert your code into a .apk file?

Build-> Build APK(s)

Q530) What is Service? When do you use it?

Service is a component that runs in the background to perform long-run operations. There are 2 types of service

- a) Bound: It is called when the application is running and killed when the application is killer. It is bound with the application.
- b)UnBound: It runs in the background even when the application is not running /killed.

Service is called by extending the activity with the keyword "Service"

Ex: To track the delivery boy, even if the application is not being used it will run in the background.

Q531) What is BroadCast Receiver? When do you use it?

The broadcast receiver is used to receive the broadcast messages from other applications or within the application.

Ex: Reading OTP, we check the incoming SMS using a broadcast receiver.

Q532) What is Content, Provider? When do you use it?

The content provider is used to sharing data between two or more different applications.

Ex: sharing data between cab user and driver application

Q533) What is Intent Filter? When do you use it?

The intent filter defines the type of intent to which activity, services, and broadcast receivers can respond.

Ex: In Manifest.xml we define the <intent filter> to define which activity as to be launched first.

Q534) Difference between styles and themes?

Styles is a set of field attributes and values which is applied to the element called.

A theme is set of field attribute and values which is applied for the whole application once called.

Q535) Difference between ArrayList and Hash<Map>?

ArrayList:

- 1. ArrayList is inserted in an order.
 - 2. Data is fetched from ArrayList depending upon the index.
- 3. ArrayList allows duplicate values.

4. It is represented by ArrayList keyword.

Hash<Map>:

- 1. HashMap is stored data in the key, value pair
- 2. Data is fetched from hashmap using key
- 3. Hashmap does not allow duplication
- 4. It is represented by Hash<Map>

Q536) What are the different types of storage in android?

Android uses 3 types of storage:

- 1.Shared Preference: It stores small data. Shared Preferences allow you to save and retrieve data in the form of key, value pair.
- 2.Files: It stores data in text, .mp3,mp4,.png,.jpg format, fetching data among the same type of data is difficult.
- 3.Sqlite Database: It overcomes the disadvantages of shared preference and files. It can store any type of data, update, delete easily. Sqllite storage depends on our mobile storage capacity.

Q537) Difference between Rest and Soap?

Rest:

- 1. Uses XML, text, HTML and Jason format to send and receive data.
- 2. Security is less than soap
- 3. Transfers data through HTTP only.
- 4. Performance is better than Soap since it uses less CPU
- 5. It doesn't need much bandwidth

6. Rest can make use of Soap

Soap:

- 1. Uses XML only for sending and receiving data.
- 2. It is more secure than rest.
- 3. Transfers data through HTTP ,SMTP,FTP etc.
- 4. Performance is not better than rest.
- 5. It needs more bandwidth for users.
- 6. Soap cannot use Rest.

Q538) What is Async Task and methods of Async Task?

Async task is a class that extends object class to allow short operations to run asynchronously in the background. Async task runs in a new thread.

Methods of Asynctask are:

1.onPreExecute: a step used to set up the task

2.doInBackground: a step used to perform the actual task

3.onProgressUpdate: a step used to update the current progress status of the task that is being performed in doInBackground

4.onPostExecute: once doInBackground finishes executing the task, this step delivers the result back to the main UI thread and stops the AsyncTask process

Q539) What is Shared Preference and Write its Syntax?

Shared Preference is used to store and retrieve small data like login details in the form of key-value of the pair. To save data in SharedPreference:

Editor edit=SharedPreferences();

```
edit.putString("key","value");
```

edit.commit();

To retrieve data from shared Preference:

SharedPreferences share = new

SharedPreference(key,Context.Mode_Private);

Q540) What is RecyclerView?

RecyclerView is an advanced and more flexible version of listview where single view using its custom adapter can replace listview and gridview by maintaining limited number of views and optimized memory usage.

Q541) Difference between RecyclerView and Listview/Gridview?

RecyclerView:

- 1. Horizontal scrolling is supported.
 - 2. Recycler can be used as a list or grid format depending on the requirement.
- 3. Recyclerview gives optimized memory usage, it will allocate data only to the list of data shown on screen and extra 2 on top and bottom of the list.

Listview:

1. Horizontal scrolling is not supported.

- 2. Listview cannot be used as gridview.
- 3. It allocates memory for all the items in the list and hence memory is not optimized.

Q542) What is Card View?

Card view is a UI element which displays the data in card format with corner radius and drops shadow elevation.

Q543) What are SQLite and its methods?

SQLite is a relational open source database which comes inbuilt in android devices which enables you to store, retrieve, manipulate and delete data.

Using SQLite android application can run in offline mode also.

Sqlite is implemented in our project by extending the class with SqliteOpenHelper class which overrides 2 methods i.e;

1.oncreate() -Where the database is created along with its version.

2.onUpgrade() -It is supporting function of onCreate() when the version has updated the changes in a database will be performed in an on upgrade method without disturbing the existing one.

Q544) How to integrate firebase?

Firebase gives you tools and infrastructure from Google to help you develop, Firebase provides several API where each one performs their own functions and can be utilized in our application. Let us see basic steps to integrate firebase which will be same initial steps for all the firebase API integrations.

Step1: Go to tools in your project and select firebase where it shows all the firebase api's or goes to *Developer.Firebase.com* and register your application/project

Step2: Now select the api you want to integrate and add the details of your project and register the api ex: We are implementing Crash analytics

Step 3: Download the google-service.json file provided and place it inside your project app folder

Step 4: Go to tools -> Firebase and you see the firebase API connected and follow the next process which adds the dependency into your application or dependencies can be added manually also by following the document.

Step 5: Now your firebase integration is ready where u can use this log in your code and can see in firebase account.

Q545) How to integrate Facebook into our application?

Step1: Go to Developer.facebook.com and create your project.

Step 2: Make sure your grade contains jcenter() if it doesn't exist add it.

Step 3: Add dependency in our app gradle file and build project implementation 'com.facebook.android:facebook-login:[4,5)'

Step 4:Open your /app/res/values/strings.xml file.

<string name="facebook_app_id">******62401</string>

And your facebook app_id.

Step 5: Open your manifest add internet permission:

```
<uses-permission android:name="android.permission.INTERNET"/>
Step 6: Add metadata file inside your manifest .xml file inside application tag
<meta-data android:name="com.facebook.sdk.ApplicationId"</pre>
android:value="@string/facebook_app_id"/>
<activity android:name="com.facebook.FacebookActivity"
android:configChanges=
"keyboard|keyboardHidden|screenLayout|screenSize|orientation"
android:label="@string/app_name" />
<activity
android:name="com.facebook.CustomTabActivity"
android:exported="true">
<intent-filter>
<action android:name="android.intent.action.VIEW" />
<category android:name="android.intent.category.DEFAULT" />
<category android:name="android.intent.category.BROWSABLE" />
<data android:scheme="@string/fb_login_protocol_scheme" />
</intent-filter>
</activity>
```

Step7: Add your package name, and the activity name where the facebook login button will be used.

Step 8: Generate key hash, there are several ways to generate keyhash one among them are as follows, run this set of code in an application where it generates the keyhash in log or toast, copy the keyhash code and place it in developers account

```
public void generateHashkey(){
try {
PackageInfo info =
getPackageManager().getPackageInfo(getPackageName(),
PackageManager. GET_SIGNATURES);
for (Signature signature : info.signatures) {
MessageDigest md = MessageDigest.getInstance("SHA");
md.update(signature.toByteArray());
String hashKey = new String(Base64.encode(md.digest(), 0));
Log.e("hashkey",hashKey);
}
} catch (NoSuchAlgorithmException e) {
Log.e( "hashkey", String.valueOf(e));
} catch (Exception e) {
Log.e("hashkey", String.valueOf(e));
}
```

```
}
Step 9: Add a facebook login button in the activity mentioned
<com.facebook.login.widget.LoginButton
android:id="@+id/login_button"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_gravity="center_horizontal"
android:layout_marginTop="30dp"
android:layout_marginBottom="30dp" />
Step 10: Add the following set of code which is given step by step in
facebook doc and looks like this in the end.
public class MainActivity extends AppCompatActivity {
//Facebook Login in
CallbackManager callbackManager;
//Initializing textview
TextView userdetails;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
userdetails=(TextView)findViewById(R.id.txt);
```

```
//CallbackManager of facebook -REFER Developer.Facebook.com and
follow as per the instruction
callbackManager = CallbackManager.Factory.create();
//Initializing facebook login button
LoginButton loginButton = (LoginButton) findViewById(R.id.login_button);
//Permission for the user to his email and other details
loginButton.setReadPermissions("email");
//On click of facebook login button calls the method getUserdetails
loginButton.registerCallback(callbackManager, new
FacebookCallback<LoginResult>() {
@Override
public void onSuccess(LoginResult loginResult) {
//Prints accessToken (optional) for facebook login
AccessToken accessToken = loginResult.getAccessToken();
//Prints the login userdetails provided by FB.
getUserDetails(loginResult);
//On cancel click of fetching data
@Override
public void onCancel() {
// App code
}
//On error in fetching userdetails from facebook api
@Override
```

```
public void onError(FacebookException exception) {
// App code
}
});
}
//callback manager call back method
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data)
{
super.onActivityResult(requestCode, resultCode, data);
callbackManager.onActivityResult(requestCode, resultCode, data);
}
//response of userdetails provided by facebook
protected void getUserDetails(LoginResult loginResult) {
GraphRequest data_request = GraphRequest.newMeRequest(
loginResult.getAccessToken(), new
GraphRequest.GraphJSONObjectCallback() {
@Override
public void onCompleted(
JSONObject json_object,
GraphResponse response) {
Log.e("user_details",json_object.toString());
userdetails.setText(json_object.toString());
```

```
/* Intent intent = new Intent(MainActivity.this, UserDetails.class);
intent.putExtra("userProfile", json_object.toString());
startActivity(intent);*/
}
});
Bundle permission_param = new Bundle();
permission_param.putString("fields",
"id,name,email,picture.width(120).height(120)");
data_request.setParameters(permission_param);
data_request.executeAsync();
}
protected void onResume() {
super.onResume();
// Logs 'install' and 'app activate' App Events.
AppEventsLogger.activateApp(this);
}
@Override
protected void onPause() {
super.onPause();
// Logs 'app deactivate' App Event.
AppEventsLogger.deactivateApp(this);
}
```

Q546) Difference between Picasso and glide?

Picasso:

- Doesn't support gif image.
- Downloads the image and stores a full image in cache.
- Less memory efficient compared to Glide.

Glide:

- Supports Gif images.
- Downloads the image, resize it to imageview size and stores in a disk cache.
- More memory efficient.

Q547) Difference between volley and Retrofit?

Volley:

- Volley as caching mechanism
- Volley enables retry policy
- In Volley, JSON response is parsed manually.
- Volley as inbuilt image loader support

Retrofit:

- Retrofit doesn't have caching mechanism
- Retrofit doesn't support retry policy.
- Volley supports automatic parsing.
- Retrofit doesn't have inbuilt image loader support, which can be performed by using Picasso/glide library.

Q548) What is web service and how do you achieve it?

Webservice is a means of communication between your application and the server, where the data sent from the application is stored into the server and

data stored in the server is retrieved by the application. Web Service uses Soap or REST as a means of communication.

Webservice in android can be achieved by making API call. To make an API call we can use libraries like volley, retrofit, and OK HTTP etc.

Q549) What is Service and types of services?

Service is an Android component which runs in the background even when the application that started service is destroyed.

There are two types of service:

1.Bound Service – It is bound with the application and destroyed when the application or service is killed.

2.UnBound Service -It is not bound with the application, once the service is started it runs in the background even when the application which started the service is destroyed.

Q550) What is a singleton and what is its use?

Singleton ensures only single instances/object will be created which can be used by all the other classes. It helps save memory since only one object is created.

551. What is the difference between Activity and AppCompatActivity?

AppCompatActivity provides native ActionBar support that is consistent across the application. Also, it provides backward compatibility for other material design components till SDK version 7(ActionBar was natively available since SDK 11). Extending an Activity doesn't provide any of these.

Note: Since SDK 21 every activity by default, extends AppCompatActivity.

552. Activity, AppCompatActivity, FragmentActivity and ActionBarActivity. How are they related?

Activity is the base class. FragmentActivity extends Activity.

AppCompatActivity extends FragmentActivity. ActionBarActivity extends AppCompatActivity.

FragmentActivity is used for fragments.

Since the build version 22.1.0 of the support library, ActionBarActivity is deprecated. It was the base class of appcompat-v7.

At present, AppCompatActivity is the base class of the support library. It has come up with many new features like ToolBar, tinted widgets, material design color pallets etc.

553. What is Android Support Library and why is it recommended?

The android platform supports a wide variety of the versions and devices to choose from. With the release of every new version, new Android APIs are added and evolved. To make these new Android APIs available to users on older devices the Android Support Library was designed. Android Support Library provides developers with newer APIs that are compatible on older

framework releases.

554. Describe the structure of Android Support Library?

Android Support Library is not just a single library. It's a collection of libraries that have different naming conventions and usages. On a higher level, it's divided into three types;

Compatibility Libraries: These focus on back porting features so that older frameworks can take advantage of newer releases. The major libraries include v4 and v7-appcompat. v4 includes classes like DrawerLayout and ViewPager while appcompat-v7 provides classes for support ActionBar and ToolBar.

Component Libraries: These include libraries of certain modules that don't depend on other support library dependencies. They can be easily added or removed. Examples include v7-recyclerview and v7-cardview.

Miscellaneous libraries: The Android support libraries consists of few other libraries such as v8which provides support for RenderScript, annotations for supporting annotations like @NonNull.

555. Name the seven important lifecycle methods of an Activity.

onCreate()
onStart()
onResume()

onPause() onStop() onDestroy() onRestart() Activity has started onCreate() onStart() onRestart() onResume() onPause() onStop() onDestroy()

Activity has stopped

556. Differentiate between onCreate(), onStart(), onResume(), onDestroy(), onStop(), onPause(). When are they called during the lifecycle of an Activity?

onCreate() is the first method that's invoked when an activity is launched for the first time. onStart() is invoked after onCreate() has completed it's task. onResume() is called after onStart() has completed.

When an activity leaves its foreground (probably for a smaller duration such

as standby/sleep) onPause() is invoked followed by onStop()(when the activity is not visible. eg. some other application is launched). onDestroy() is called when the activity or application is killed.

Essentially the lifecycle methods are divided into three layers of duration:

onCreate() and onDestroy() are present during the entire duration of the activity

onStart() and onStop() are present while the activity is visible onResume() and onPause() are present while the activity is in foreground

557. Pressing the home button from an application invokes on Pause() and on Stop(). Describe a scenario where only the on Pause() gets invoked.

Create and launch a new activity which obscures the current activity partially. This can be done by defining the layout_width and layout_height to partially cover the screen. This would keep the first activity visible but not in the foreground. Example: define the layout_width and layout_height as 200dp each.

558. How does the activity respond when the user rotates the screen?

When the screen is rotated, the current instance of the activity is destroyed a new instance of the Activity is created in the new orientation. The onRestart() method is invoked first when a screen is rotated. The other lifecycle methods get invoked in the similar flow as they were when the activity was first

created.

Given below is a sample layout of the activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:paddingBottom="@dimen/activity_vertical_margin"
android:paddingLeft="@dimen/activity_horizontal_margin"
android:paddingRight="@dimen/activity_horizontal_margin"
android:paddingTop="@dimen/activity_vertical_margin"
>
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="0"
android:id="@+id/textView"
android:layout_alignParentRight="true"
```

```
android:layout_alignParentEnd="true"
  android:layout_alignParentLeft="true"
  android:layout_alignParentStart="true" />
  <Button
  android:layout_width="wrap_content"
  android:layout_height="wrap_content"
  android:text="Increment"
  android:id="@+id/button"
  android:layout_centerVertical="true"
  android:layout_centerHorizontal="true" />
  </RelativeLayout>
Given below is a sample MainActivity.java class;
public class MainActivity extends AppCompatActivity {
   Button increment;
   TextView textView;
   int i=0;
   @Override
```

```
protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      increment=(Button)findViewById(R.id.button);
      textView=(TextView)findViewById(R.id.textView);
      increment.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            i++;
            textView.setText(i);
         }
      });
   }
}
```

559. The above application is designed to increment the textview value by 1 every time the button is clicked but it will crash. Why?

The application will crash with

a android.content.res.Resources\$NotFoundException: String resource ID #0x1 exception since the textview expects a string value. The above code is passing the integer directly. We need to convert it into a string. This can be done in either of two ways:

```
textView.setText(""+i);
textView.setText(String.valueOf(i));
```

560. This is a follow up question to the case above. How does the above application respond when the screen orientation is changed?

On-screen rotation the activity restarts and the objects are initialized again. Hence the textView counter resets to zero every time the orientation is changed.

561. How to prevent the data from reloading and resetting when the screen is rotated?

The most basic approach is to add an element attribute tag android:configChanges inside the activity tag in the AndroidManifest.xml as shown below.

```
<activity android:name=".MainActivity"

android:configChanges="orientation|screenSize">
<intent-filter>
```

```
<action android:name="android.intent.action.MAIN" />
           <category android:name="android.intent.category.LAUNCHER"</pre>
/>
   </intent-filter>
</activity>
In general, the configChanges for any activity are defined as
android:configChanges="orientation|screenSize|keyboardHidden"
The keyboardHidden configuration is to prevent the keyboard from resetting
if it's pulled out.
   An example layout of activity_main.xml is given below. The
   MainActivity.java only contains the blank onCreate() method.
   <?xml version="1.0" encoding="utf-8"?>
   <RelativeLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
     android:layout_width="match_parent"
     android:layout_height="match_parent"
     android:paddingBottom="@dimen/activity_vertical_margin"
   android:paddingLeft="@dimen/activity_horizontal_margin"
```

```
android:paddingRight="@dimen/activity_horizontal_margin"
android:paddingTop="@dimen/activity_vertical_margin"
>
 <EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Hello World!"
android:layout_alignParentRight="true"
android:layout_alignParentEnd="true"
android:layout_alignParentLeft="true"
android:layout_alignParentStart="true" />
</RelativeLayout>
```

The configChanges are defined in the AndroidManifest.xml as android:configChanges="orientation|screenSize|keyboardHidden"

562. Does the input text entered in the EditText persist when the orientation is changed? Yes/No? Explain.

No. Despite the configChanges defined in the AndroidManifest.xml, the EditText input text entered resets when the orientation is changed. This is because no resource id has been defined. On orientation change, the instance

of the EditText gets lost. To fix this issue to work correctly add an android:id attribute element in the EditText tag.

563. Why is android:configChanges not recommended? Are there more better ways to handle orientation changes?

android:configChanges is not the recommended way by Google. Though it's the simplest way to use, it comes with its own share of drawbacks. First, the common perception that android:configChanges = "orientation" will magically retain the data is a complete misinterpretation. The orientation changes can occur from a number of other events such as changing the default language can trigger a configuration change and destroy and recreate the activity.

Second, the activity can restart itself if it's in the background and Android decides to free up its heap memory by killing it. When the application returns to the foreground it'll restart it's data to the original state and the user may not like that.

A better alternative of android:configChanges is;

Saving the current state of the activity when it's being destroyed and restoring the valuable data when it's restarted can be done by overriding the methods onSaveInstanceState() and onRestoreInstanceState() of the activity class.

565. Where do onSaveInstanceState() and onRestoreInstanceState() come in the activity lifecycle? How is the data saved and restored

from these methods?

In general the onSaveInstanceState() is invoked after onPause() and before the onStop(). But the API documentation explicitly states that the onSaveInstanceState() method will be called before onStop() but makes no guarantees it will be called before or after onPause(). The onRestoreInstanceState() is called after onStart() is invoked. The onRestoreInstanceState() method is invoked only when the activity was killed before. If the activity is NOT killed the onSaveInstanceState() is NOT called. When the activity is being destroyed, the onSaveInstanceState() gets invoked. The onSaveInstanceState contains a Bundle parameter. The data to be saved is stored in the bundle object in the form of a HashMap.

The bundle object is like a custom HashMap object. The data is retrieved in the onRestoreInstanceState() method using the keys.

You've been given a layout that contains an EditText field. Implement the onSaveInstanceState() and onRestoreInstanceState() to save and restore the current input text when the screen is rotated without declaring the android:configChanges attribute in the manifest file. The MainActivity.java is given below.

```
public class MainActivity extends AppCompatActivity {
    EditText editText;
    @Override
```

```
protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      editText = (EditText) findViewById(R.id.editText);
   }
}
public class MainActivity extends AppCompatActivity {
   EditText editText;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      editText = (EditText) findViewById(R.id.editText);
   }
   @Override
   public void onSaveInstanceState(Bundle outState) {
      super.onSaveInstanceState(outState);
      outState.putString("myData", editText.getText().toString());
```

```
@Override
protected void onRestoreInstanceState(Bundle savedInstanceState) {
    super.onRestoreInstanceState(savedInstanceState);
    editText.setText(savedInstanceState.getString("myData"));
}

567. How to keep the screen orientation fixed? Also implement a mechanism so that the screen is always on for a particular activity.
```

The screen orientation can be fixed by adding the attribute android:screenOrientation="portrait" or android:screenOrientation="] the activity tag.

To keep the screen always on for a particular screen add the android:keepScreenOn="true" in the root tag of the activity layout.

568. How to restart an activity programmatically? Implement the method restartActivity() that restarts an Activity on a button click.

Given below is the MainActivity.java class

public class MainActivity extends AppCompatActivity {
 Button btn;
 @Override

```
protected void onCreate(Bundle savedInstanceState) {
   super.onCreate(savedInstanceState);
   setContentView(R.layout.activity_main);
   btn = (Button) findViewById(R.id.btn);
   btn.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {
         restartActivity();
      }
   });
}
public void restartActivity() {
   //Complete the code
}
```

We need to invoke the recreate method on the Activity instance as shown

}

below.

```
public void restartActivity() {
          MainActivity.this.recreate();
}
```

569. Describe three common usages of intent and how are they invoked.

Android Intents are used to

The string is parsed as a URI.

```
start an activity - startActivity(intent)
start a service - startService(intent)
deliver a broadcast - sendBroadcast(intent)
```

570. Implement two actions using intents namely calling a phone number and opening a URL.

To enable calling from the application we need to add the following permission in the manifest tag of AndroidManifest.xml

<uses-permission android:name="android.permission.CALL_PHONE" />
In the MainActivity the following code invokes an action call to the given
number represented as a string.

String phone_number = "XXXXXXX" // replace it with the number

Intent intent=new Intent(Intent.ACTION_CALL,Uri.parse("tel:"+phone number);

startActivity(intent);

To open a URL we need to add the following permission.

<uses-permission android:name="android.permission.INTERNET" />

The intent to view a URL is defined below.

Intent intent = new Intent(Intent.ACTION_VIEW,
Uri.parse("https://www.journaldev.com/"));
startActivity(intent);

571. What's the difference between setFlags() and addFlags() on an Intent object?

When we're using setFlags, we're replacing the old flags with a new set of Flags. When we use addFlags, we're appending more flags.

572. Mention two ways to clear the back stack of Activities when a new Activity is called using intent.

The first approach is to use a FLAG_ACTIVITY_CLEAR_TOP flag.

Intent intent= new Intent(ActivityA.this, ActivityB.class);

intent.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP);
startActivity(intent);

finish();

The second way is by using FLAG_ACTIVITY_CLEAR_TASK and FLAG_ACTIVITY_NEW_TASK in conjunction.

Intent intent= new Intent(ActivityA.this, ActivityB.class);
intent.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK |
Intent.FLAG_ACTIVITY_CLEAR_TASK);
startActivity(intent);

573. What's the difference between FLAG_ACTIVITY_CLEAR_TASK and FLAG_ACTIVITY_CLEAR_TOP?

FLAG_ACTIVITY_CLEAR_TASK is used to clear all the activities from the task including any existing instances of the class invoked. The Activity launched by intent becomes the new root of the otherwise empty task list. This flag has to be used in conjunction with FLAG_ACTIVITY_NEW_TASK.

FLAG_ACTIVITY_CLEAR_TOP on the other hand, if set and if an old instance of this Activity exists in the task list then barring that all the other activities are removed and that old activity becomes the root of the task list. Else if there's no instance of that activity then a new instance of it is made the

root of the task list. Using FLAG_ACTIVITY_NEW_TASK in conjunction is a good practice, though not necessary.

574. Give one usage example where FLAG_ACTIVITY_NEW_TASK is necessary. Also, describe how the activity responds to this flag.

When we're trying to launch an activity from outside the activity's context, a FLAG_ACTIVITY_NEW_TASK is compulsory else a runtime exception would be thrown.

Example scenarios are: launching from a service, invoking an activity from a notification click.

If the activity instance is already on the task list when the flag is set, it will invoke the onNewIntent() method of that Activity. All the implementation stuff goes in that method.

575. Define the types of launchMode of an Activity and describe each of them.

The android:launchMode of an Activity can be of the following types:

standard: It's the default launch mode for an activity wherein every new instance of the activity called will be put on top of the stack as a separate entity. Hence calling startActivity() for a particular class 10 times will create 10 activities in the task list.
singleTop: It differs from the standard launch mode in the fact that when the Activity instance that's invoked is already present on the

top of the stack, instead of creating a new Activity, that instance will

be called. In cases where the same Activity instance is not on the top of the stack or if it doesn't exist in the stack at all then a new instance of the activity will be added to the stack. Hence we need to handle the upcoming intent in both

the onCreate() and onNewIntent()methods to cover all cases.

singleTask: This is different from singleTop in the case that if the Activity instance is present in the stack, the onNewIntent() would be invoked and that instance would be moved to the top of the stack. All the activities placed above the singleTask instance would be destroyed in this case. When the activity instance does not exist in the stack, the new instance would be placed on the top of the stack similar to the standard mode.

singleInstance: An activity with this launchMode defined would place only a <u>singleton</u> activity instance in the Task. The other activities of the application will be placed in a separate Task.

576. What is taskAffinity?

A taskAffinity is an attribute tag defined in the activity tag in the AndroidManifest.xml for launchMode singleInstance. Activities with similar taskAffinity values are grouped together in one task.

26) You've been given an EditText that already has some text in it. How would you place the cursor at the end of the text? The current situation and the output needed are given below.



Call the setSelection(position) on the EditText object with the position we need to place the cursor on. The current position is 0. To place it at the end of the current text we'll add the following code snippet in our MainActivity.

```
EditText in;
in=(EditText)findViewById(R.id.editText);
if (in != null) {
   in.setSelection(Integer.parseInt(String.valueOf(in.getText().toString));
}
```

The setSelection method requires an integer parameter. So we're wrapping the length of the string as an Integer using parseInt.

577. Implement an EditText that clears itself when the enter key is pressed. The image below demonstrates the requirement.



}

We'll add the TextWatcher class to the editText object. And check for the

```
"\n" character and clear the editText as shown below.
EditText in;
in=(EditText)findViewById(R.id.editText);
      in.addTextChangedListener(new TextWatcher() {
          @Override
         public void beforeTextChanged(CharSequence s, int start, int
count, int after) {
         }
          @Override
         public void onTextChanged(CharSequence s, int start, int before,
int count) {
             String string = s.toString();
             if (string.length() > 0 && string.charAt(string.length() - 1) ==
'\n') {
                Toast.makeText(getApplicationContext(),"ENTER KEY IS
PRESSED",Toast.LENGTH_SHORT).show();
                in.setText("");
             }
```

```
@Override
public void afterTextChanged(Editable s) {

}

});
```

578. Differentiate between LinearLayout, RelativeLayout, AbsoluteLayout.

A LinearLayout arranges its children in a single row or single column one after the other. A RelativeLayout arranges it's children in positions relative to each other or relative to parent depending upon the LayoutParams defined for each view.

AbsoluteLayout needs the exact positions of the x and y coordinates of the view to position it. Though this is deprecated now.

579. What's the difference between a FrameLayout and a TableLayout.

A FrameLayout stack up child views above each other with the last view added on the top. Though we can control the position of the children inside the FrameLayout using the layout_gravity attribute.

When the width and height of the FrameLayout are set to wrap_content, the

size of the FrameLayout equals the size of the largest child (plus padding).

A TableLayout consists of TableRows. The children are arranged in the form of rows and columns.

580. How is data stored in Shared Preferences? What's the difference between commit() and apply()? Which is the recommended one?

Data is stored in SharedPreferences in the form of a key-value pair(HashMap).

commit() was introduced in API 1 whereas apply() came up with API 9.

commit() writes the data synchronously and returns a boolean value of success or failure depending on the result immediately.

apply() is asynchronous and it won't return any boolean response. Also, if there is an apply() outstanding and we perform another commit(), then the commit() will be blocked until the apply() is not completed.

commit() is instantaneous and performs disk writes. If we're on the main UI thread apply() should be used since it's asynchronous.

581. Which method gets invoked when the user presses back button on the screen?

The onBackPressed() method of the Activity is invoked. Unless overridden it removes the current activity from the stack and goes to the previous activity.

582. How do you disable onBackPressed()?

The onBackPressed() method is defined as shown below:

```
@Override
public void onBackPressed() {
    super.onBackPressed();
}
```

To disable the back button and preventing it from destroying the current activity and going back we have to remove the line super.onBackPressed();

583. What is a StateListDrawable?

A StateListDrawable is a drawable object defined in the XML that allows us to show a different color/background for a view for different states. Essentially it's used for Buttons to show a different look for each state(pressed, focused, selected, none).

584. Implement a button that using a StateListDrawable for pressed and not pressed states with curved edges and a border around the button.

The selector drawable for a button is shown below.

```
<selector xmlns:android="http://schemas.android.com/apk/res/android">
<item android:state_pressed="false">
<shape android:shape="rectangle">
<solid android:color="@android:color/holo_red_dark"/>
```

```
<stroke android:color="#000000" android:width="3dp"/>
 <corners android:radius="2dp"/>
     </shape>
</item>
<item android:state_pressed="true">
     <shape android:shape="rectangle">
  <solid android:color="@android:color/darker_gray"/>
  <stroke android:color="#FFFF" android:width="1dp"/>
  <corners android:radius="2dp"/>
 </shape>
</item>
</selector>
We need to add this drawable XML in the android:background attribute of
the button as:
android:background="@drawable/btn_background"
The output looks like this:
```

585. What are Fragments? Describe there lifecycle methods.

Fragments are a part of an activity and they contribute there own UI to the activity they are embedded in. A single activity can contain multiple fragments. Fragments are reusable across activities.

The lifecycle methods of a Fragment are:

onAttach(Activity): is called only once when it is attached with activity.

onCreate(Bundle): it is used to initialise the fragment.

onCreateView(LayoutInflater, ViewGroup, Bundle): creates and returns view hierarchy.

onActivityCreated(Bundle): it is invoked after the completion of onCreate() method.

onViewStateRestored(Bundle): it provides information to the fragment that all the saved state of fragment view hierarchy has been restored.

onStart(): makes the fragment visible.

onResume(): makes the fragment interactive.

onPause(): is called when fragment is no longer interactive.

onStop(): is called when fragment is no longer visible

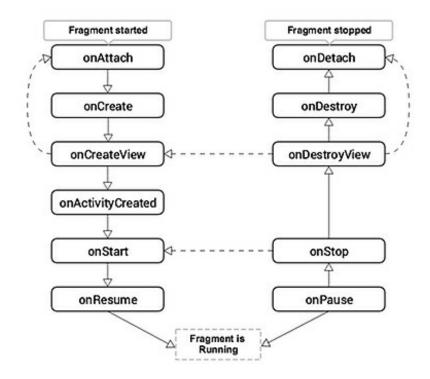
onDestroyView(): it allows the fragment to clean up resources

onDestroy(): it allows the fragment to do final clean up of fragment

state

onDetach(): it is called when the fragment is no longer associated with the activity

An image depicting the Fragments lifecycle is given below.



586. How to kill a running Activity from another Activity programmatically on Button click?

We'll declare and assign a class instance of the FirstActivity to itself as shown below.

public class FirstActivity extends AppCompatActivity {
public static FirstActivity firstActivity;

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    firstActivity=this;
}
```

We'll call finish() on the above instance of the FirstActivity to kill the activity from any other activity.

FirstActivity.firstActivity.finish()

587. What is a PendingIntent?

A PendingIntent is a wrapper for the Intent object. It's passed to a foreign application (NotificationManager, AlarmManager) such that when some given conditions are met, the desired action is performed on the intent object it holds onto. The foreign application performs the intent with the set of permissions defined in our application.

588. What is the difference between AsyncTask and Thread class?

A Thread is generally used for long tasks to be run in the background. We need a Handler class to use a Thread.

An AsyncTask is an intelligent Thread subclass. It's recommended to use AsyncTask when the caller class is the UI Thread as there is no need to manipulate the handlers. AsyncTask is generally used for small tasks that can communicate back with the main UI thread using the two methods onPreExecute() and onPostExecute() it has.

A Handler class is preferred when we need to perform a background task repeatedly after every x seconds/minutes.

Given below is an AsyncTask example.

}

```
private class MyTask extends AsyncTask {
    protected String doInBackground(String... params) {
        Toast.makeText(getApplicationContext(),"Will this
work?",Toast.LENGTH_LONG).show();

    int count = 100;
    int total = 0;
    for (int i = 0; i < count/2; i++) {
        total += i;
    }
    return String.valueOf(totalSize);</pre>
```

```
protected void onPostExecute(String result) {
}
```

589. How is the above AsyncTask started from the main thread? Will it run successfully?

We need to call the AsyncTask from the onCreate() using the following piece of code;

```
MyTask myTask= new MyTask();
myTask.execute();
```

No. The application will crash with a runtime exception since we're updating the UI Thread by trying to display a Toast message inside the doInBackground method. We need to get rid of that line to run the application successfully.

590. Where does the returned value of the doInBackground method go to? How do you get that returned value in the onCreate() method?

The returned value of the doInBackground goes to the onPostExecute() method. We can update the main UI thread from here. To get the returned value in the onCreate() method we need to use the following code snippet.

MyTask myTask= new MyTask();

String result=myTask.execute().get();

This approach is not recommended as it blocks the main UI thread until the value is not returned.

The ideal scenario to use it is when the other views of the UI thread need the value from the AsyncTask for processing.

591. Implement an AsyncTask that repeats itself after a given interval

We need to use a Handler class in the onPostExecute that executes the AsyncTask recursively.

```
private class MyTask extends AsyncTask {
    protected String doInBackground(String... params) {
        Toast.makeText(getApplicationContext(),"Will this
work?",Toast.LENGTH_LONG).show();

    int count = 100;
    int total = 0;
    for (int i = 0; i < count/2; i++) {
        total += i;
    }
    return String.valueOf(totalSize);</pre>
```

```
}
    protected void onPostExecute(String result) {
// repeats after every 5 seconds here.
new Handler().postDelayed(new Runnable() {
      @Override
      public void run() {
         new MyAsyncTask().execute("my String");
       }
   }, 5*1000);
     }
}
```

592. What is a service?

A service is a component in android that's used for performing tasks in the background such as playing Music, location updating etc. Unlike activities, a service does not have a UI. Also, a service can keep running in the background even if the activity is destroyed.

593. How to start/stop a service?

A service is started from an activity by executing the following code snippet.

startService(new Intent(this, MyService.class));

Though just executing the above code won't start a service. We need to register the service first in the AndroidManifest.xml file as shown below.

<service android:name="MyService"/>

To stop a service we execute stopService(). To stop the service from itself we call stopSelf().

595. Define and differentiate between the two types of services.

Services are largely divided into two categories : **Bound**

Services and Unbound/Started Services

Bound Services: An Android component may bind itself to a Service using bindservice(). A bound service would run as long as the other application components are bound to it. As soon as the components call unbindService(), the service destroys itself.

Unbound Services: A service is started when a component (like activity) calls startService() method and it runs in the background indefinitely even if the original component is destroyed.

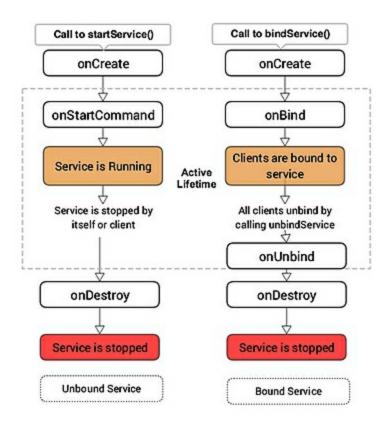
596. Describe the lifecycle methods of a service.

onStartCommand(): This method is called when startService() is invoked. Once this method executes, the service is started and can run in the background indefinitely. This method is not needed if the service is defined as a bounded service. The service will run

indefinitely in the background when this method is defined. We'll have a stop the service ourselves

onBind() This method needs to be overridden when the service is defined as a bounded service. This method gets called when bindService() is invoked. In this method, we must provide an interface that clients use to communicate with the service, by returning an IBinder. We should always implement this method, but if you don't want to allow binding, then you should return null onCreate(): This method is called while the service is first created. Here all the service initialization is done

onDestroy(): The system calls this method when the service is no longer used and is being destroyed. All the resources, receivers, listeners clean up are done here



597. Differentiate between Broadcast Receivers and Services.

A service is used for long running tasks in the background such as playing a music or tracking and updating the user's background location.

A Broadcast Receiver is a component that once registered within an application executes the onReceive() method when some system event gets triggered. The events the receiver listens to are defined in the AndroidManifest.xml in the intent filters. Types of system events that a Broadcast Receiver listens to are:

changes in the network, boot completed, battery low, push notifications received etc. We can even send our own custom broadcasts using sendBroadcast(intent).

598. How is a Broadcast Receiver registered in the manifest.xml?

The Broadcast Receiver is defined inside the receiver tags with the necessary actions defined inside the intent filter as shown below.

599. How does RecyclerView differ from ListView?

A RecyclerView recycles and reuses cells when scrolling. This is a default behaviour. It's possible to implement the same in a ListView too but we need to implement a ViewHolder there

A RecyclerView decouples list from its container so we can put list items easily at run time in the different containers (linearLayout, gridLayout) by setting LayoutManager

Animations of RecyclerView items are decoupled and delegated to ItemAnimator

600. Implement an ExpandableListView where all the header groups are expanded by default.

We need to call the method expandGroup on the adapter to keep all the group headers as expanded.

```
ExpandableListView el = (ExpandableListView)
findViewById(R.id.el_main);
elv.setAdapter(adapter);
for(int i=0; i < adapter.getGroupCount(); i++)
    el.expandGroup(i);</pre>
```

601) What is URLConnection?

A) An URLConnection used to send and receive data over the web. Data may be of any type and length. This class may be used to send and receive streaming data whose length is not known in advance.

602) What is logging (Logcat)?

A) The logging (Logcat) system provides a mechanism for collecting and viewing system debug output.

603) What is AsyncTask?

A) AsyncTask enables proper and easy use of the UI thread. This class allows to perform background operations and publish results on the UI thread without having to manipulate threads and/or handlers.

604) What is JSON?

A) JSON is a minimal, readable format for structuring data. It is used primarily to transmit data between a server and web application, as an

alternative to XML.

605) How many different logcat types are there?

A) 5

606) What are the names of the specific logcats?

A) Verbose, Debug, Info, Warn and Error

607) Logging methods require two strings, what does each string represent?

A) The first string (Tag) identifies where the log is coming from and the second is the specific log message.

608) What are the four AsyncTask methods that must be overridden?

A) onPreExecute, doInBackground, onProgressUpdate, onPostExecute

609) Where are permissions declared?

A) AndroidManifest.xml file

610) What is meant by responsive design?

A) Its a layout that adjust automatically depending on screen size.

611) What are the three layout managers?

A) LinearLayout, RelativeLayout, and FrameLayout

612) Why are view recycled?

A) Less memory overhead, smoother scrolling and less view management.

613) What is Activity Lifecycle?

A) onCreate, onStart, onResume, onPause, onStop, onDestroy

614) What is on Pause?

A) Partially visible, Popup or Dialog

615) What is onStop?

A) Not visible

616) What is Service Lifecycle

A) onCreate, startCommand, onBind

617) What is onUnbind?

A) stopService/stopSelf, onDestroy

618) What are Android Components?

A) Activity, Service, Broadcast Receiver, Content Provider

619) What Android 4.0 Library contains?

A) A project folder that contains the android jar file which includes all class libraries needed to <u>build an Android app</u> for a specified version

620) What main/assets/ directory contains?

A) Directory that contains asset files that are accessed through classic file manipulation

621) What main/gen/ directory contains?

A) Directory that contains automatically generated JAVA files

622) What is Change Gravity?

A) A tool that changes the linear alignment of a control so that is is aligned to the left, center, right top or bottom of an object or the screen

623) What is compound condition?

A) More than one condition included in an If statement

624) What is decision structure?

A) A fundamental control structure used in computer programming that deals with the different conditions that occur based on the values entered into an application

625) What is equals method?

A) A method of the String class that JAVA uses to compare strings

626) What is hexadecimal color code?

A) A triplet of three colors using hexadecimal numbers, where colors are specified first by a pound sign followed by how much red (00 to FF), how much green (00 to FF), and how much blue, (00 to FF) are in the final color.

627) What is If Else statement?

A) A statement that executes one set of instructions if a specified condition is true and another set of instructions if the condition is false.

628) What is if statement?

A) A statement that executes one set of instructions if a specified condition is true and takes no action if the condition is not true.

629) What is isChecked() method?

A) A method that tests a checked property to determine if a RadioButton object has been selected.

630) What is launcher icon?

A) An icon that appears on the home screen to represent the application.

631) What is margin?

A) Blank space that offsets a control by a certain amount of density independent pixels (dp) on each of its four sides.

632) What is nest?

A) To place one statement, such as an If statement, within another statement.

633) What is Radio Group?

A) A group of RadioButton controls; only one RadioButton control can be selected at a time.

634) What is toast notification?

A) A message that appears as an overlay on a user's screen, often displaying a validation warning.

635) What is ACTION_VIEW?

A) A generic action you can use to send any request to get the most reasonable action to occur.

636) What is adapter?

A) Provides a data model for the layout of a list and for converting the data from the array into list items.

637) What is array variable?

A) A variable that can store more than one value

638) What is a break?

A) A statement that ends a case within a Switch statement and continues with the statement following the Switch decision structure.

639) What is a case?

A) A keyword used in a Switch statement to indicate a condition. In a Switch statement, the case keyword is followed by a value and a colon.

640) What is an element?

A) A single individual item that contains a value in an array.

641) What is ListActivity?

A) A class that displays a list of items within an app.

642) What is onListItemClick()?

A) A method called when an item in a list is selected.

643) What is position?

A) The placement of an item in a list. When an item in a list is selected, the position of the item is passed from the onListItemClick method and evaluated with a decision structure. The first item is assigned the position of 0, the second item is assigned the position of 1, and so forth.

644) What is setListAdapter?

A) A command that projects your data to the onscreen list on your device by connecting the listActivity's object to array data.

645) What is Switch?

A) A type of decision statement that allows you to choose from many statements based on an integer or char input.

646) What is URI?

A) An acronym for Uniform Resource Identifier, a URI is a string that identifies the resources of the Web. Similar to a URL, a URI includes additional information necessary for gaining access to the resources required for posting the page.

647) What is URL?

A) An acronym for Uniform Resource Locator, a URL is a Web site address.

648) What is 9-patch image?

A) A special image with predefined stretching areas that maintain the same look on different screen sizes

649) What is android:oneshot?

A) An attribute of the animation-list that determines whether an animation plays once and then stops or continues to play until the Stop Animation button is tapped.

650) What is AnimationDrawable class?

A) A class that provides the methods for Drawable animations to create a sequence of frame-by-frame images

651) What is animation-list?

A) An XML root element that references images stored in the drawable folders

652) What is Frame animation?

A) A type of animation, also called frame-by-frame animation, that plays a sequence of images, as in a slide show, with a specified interval between images.

653) What is motion tween?

A) A type of animation that specifies the start state of an object, and then animates the object a predetermined number of times or an infinite number of times using a transition.

654) What is setBackgroundResource?

A) A method that places images in the frame-by-frame display for an animation, with each frame pointing to an image referenced in the XML resource file.

655) What is startAnimation?

A) A method that begins the animation process of a View object by calling the AnimationUtils class utilities to access the resources necessary to load the animation.

656) What is Tween animation?

A) A type of animation that, instead of using a sequence of images, creates an animation by performing a series of transformations on a single image, such as position, size, rotation, and transparency, on the contents of a View object.

657) What is tween effect?

A) A transition that changes objects from one state to another, such as moving, rotating, growing, or shrinking.

658) What is Android Application Module?

A) The container for application's source code, resource files, and application level settings, such as the module-level build file, resource files, and Android Manifest file

659) What is Test Module?

A) Module that contains the source code to test application projects and is built into test application that run on a device

660) What is JUnit?

A) A unit testing framework for the Java programming language

661) What is TDD (Test-driven development)?

A) A software development process that relies on the repetition of a very short development cycle: first an automated test case is written that defines a desired improvement of new function

662) What is Test case?

A) Set of conditions under which a tester will determine whether an application, software system or one of features is working as was originally established for it to do

663) What is Software system?

A) System of intercommunicating components based on software forming part of the computer system

664) What is Library module?

A) Module that contains shareable Android source code and resources that developer can reference in Android projects

665) What is GAE (Google App Engine)?

A) A PaaS cloud computing platform for developing and hosting web applications in Google-managed data centers

666) What is PaaS?

A) A category of cloud computing services that provides a platform allowing customers to develop, run, and manage applications without the complexity of building and maintaining the infrastructure

667) What is GCM (Google Cloud Messaging)?

A) A mobile service developed by Google that enables third-party application developers to send notification data or information from developer-run servers to applications

668) What is .idea/ directory?

A) Directoty for IntelliJ IDEA settings

669) What is app/directory?

A) A folder that contains application module directories and files

670) What is gradle/ directory?

A) A folder that contains the gradle-wrapper files

671) What is .gitignore?

A) Specifies the untracked files that Git should ignore

672) What is build.gradle?

A) Customizable properties for the build system

673) What is gradle.properties?

A) Project-wide gradle settings

674) What is gradlew?

A) Gradle startup script for Unix

675) What is gradlew.bat?

A) Gradle startup script for Windows

676) What is local.properties?

A) Customizable computer-specific properties for the build system, such as the path to the SDK installation

677) What is .iml directory?

A) Module file created by IntelliJ IDEA to store module information

678) What is settings.gradle?

A) Specifies the sub-projects to build

679) What is build/directory?

A) Directory that contains build folders for the specified build variants

680) What is libs/ directory?

A) Directory that contains private libraries

681) What is src/ directory?

A) Directory that contains the stub Activity file and other source code files

682) What is androidTest/ directory?

A) Directory that contains the instrumentation tests

683) What is main/java/com.cop?

A) Directory that contains Java source code for the app activities

684) What is main/jni/ directory?

A) Directory that contains native code using the JNI

685) What is Android NDK?

A) A toolset that allows you to implement parts of your app using native-code languages

686) What is IDL (interface definition language)?

A) A specification language used to describe a software component's API

687) What is main/res/ directory?

A) Directory that contains application resources, such as drawable files, layout files, and string values

688) What is anim/directory?

A) Directory for XML files that are compiled into animation objects

689) What is color/ directory?

A) Directory for XML files that describe colors

690) What is drawable/ directory?

A) Directory for bitmap files (PNG, JPG, or GIF), 9-Patch image files, and XML files that describe Drawable shapes or Drawable objects that contain multiple states

Android Developer Interview Questions

691) What is ColorStateList?

A) An object you can define in XML that you can apply as a color, but will actually change colors, depending on a state of the View object to which it is aplied

692) What is mipmap/directory?

A) Directory for app launcher icons

693) What is layout/directory?

A) Directory for XML files that are compiled into screen layouts

694) What is menu/ directory?

A) Directory for XML files that define application menus

695) What is raw/directory?

A) Directory for arbitrary raw asset files

696) What is AAPT (Android Asset Packaging Tool)?

A) AAPT is a part of SDK that allows developers to view, create and update Zip-compatible archives

697) What is values/ directory?

A) Directory for XML files that define resources by XML element type

698) What is xml/directory?

A) Directory for miscellaneous XML files that configure application components

700) What is AndroidManifest.xml?

A) The control file that describes the nature of the application and each of its components

701) What is app.iml/ directory?

A) IntelliJ IDEA module

702) What is proguard-rules.pro?

A) ProGuard settings file

703) What is API Level, codename of Android 2.3.3 – 2.3.7?

A) 9-10, Gingerbread

704) What is API Level, codename of Android 4.0.3 – 4.0.4?

A) 15, Ice Cream Sandwich

705) What is API Level, codename of Android 4.1 - 4.3?

A) 16-18, Jelly Bean

706) What is API Level, codename of Android 4.4?

A) 19, KitKat

707) What is API Level, codename of Android 5.0 – 5.1?

A) 20-21, Lollipop

708) API Level, codename of Android 6.0?

A) 23, Marshmallow

709) What is android:minSdkVersion?

A) Specifies the minimum API Level on which the application is able to run

710) What is android:targetSdkVersion?

A) Specifies the API Level on which the application is designed to run

711) What is android:maxSdkVersion?

A) Specifies the maximum API Level on which the application is able to run

712) What is applicationId?

A) Fully qualified package name for the application

713) What is hexadecimal color code?

A) A triplet of three colors using hexadecimal numbers, where colors are specified first by a pound sign followed by how much red (00 to FF), how much green (00 to FF), and how much blue, (00 to FF) are in the final color.

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the AnimationUtils class utilities to access the resources necessary to load the animation.

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A) A mobile service developed by Google that enables third-party application developers to send notification data or information from developer-run servers to applications

728) What is Android NDK?

A) A toolset that allows you to implement parts of your app using native-code languages

729) What can sensors measure?

A) Relative humidity

Pressure

Magnetic field

Steps taken

Proximity

The rate of ratation of the device on x,y,z axes

730) What is a Physical Sensor?

A) Sensors that pieces of hardware that are physically present on the device. Know as Hardware Sensors.

731) What are Synthetic sensors?

A) Sensors that are not physicall present on the device. They are derived from one or more sensors

732) What is Raw?

A) Values directly given by the sensor without any correction logic.

Accelerometers, proximity sensors, light sensors,

733) What is Calibrated?

A) Values from sensors that are corrected by the operating system

734) What is Fused?

A) Sensors that gets values from two or more sensors. These values are combined to one value

735) What is SensorManager?

A) Provides access for your app to the sensors.

736) What is Continuous?

A) That report mode when sensor events are generated at a constant rate

defined by the sampling peroid

737) What is On change?

A) That report mode when sensor events are generated only if the measured values have changed since the last known value

738) What is One shot?

A) The report mode when sensors only are triggerd once in the entire duration of the event

739) What is Special Trigger?

A) The report mode when the sensor only is trigged when it's called on. It listen for an event to fire

740) Which of the following are true about Intent.CALL_ACTION?

A) dial + dialled

741) Activity results handled by the onActivityResult() method are differentiated from one another using which code?

A) Result Code

742) Which of the following is layout that you can use in a window in an Android application?

A) FrameLayout

743) How do you access the string resource stored in the strings.xml file?

A) You can use the getResources() method

744) Which of the following methods is used to return a View from a layout file given the ID of the View?

A) .findViewById(int id)

745)	Which	of the	followi	ng used	l to dete	ct when	a user	clicks	or	taps	on a
butte	on?										

- A) OnClickListener
- 746) What is contained within the manifest xml file?
- A) The permissions the application requires Correct
- 747) Android: Which attribute will be used in XML if the Java code needs a reference to View??
- A) android:id
- 748) How do you programmatically determine whether a RadioButton is checked?
- A) You should check the isChecked() method
- 749) What is NotificationManager class?
- A) The NotificationManager class is used to display notifications on the device's status bar
- 750) Which dialog box can you use in you Android application?
- A) AlertDialog
- 751) On android, a layout can contain other layout?
- A) True
- 752) How to set data for a Spinner control?
- A) Use method setAdapter()
- 753) In auto-generated code of an Android app, what is R class?
- A) Contains IDs of the project resources

754) How does Android system manage activity's life cycle?
A) Via system activity stack
755) What is the correct HTML5 element for playing video files?
A) <video></video>
756) Does CSS support to detecting device size and orientation?
A) True
755) What is NOT correct about Controller in Sencha Touch?
A) Responsible for responding to events that occur within your app
756) Which file is entry point for Sencha Touch app?
A) app.js
757) Which doctype is correct for HTML5?
A) html
758) Which kind of application when creating with Sencha Touch?
A) Hybrid app
759) Graphics defined by SVG is in which format?
A) XML
760) In HTML5, onblur and onfocus are?
A) Event attributes
770) Which Android File API to create a file?
A) openFileOutput()

771) Does HTML5 native support for local storage? A) True 772) How to check if browser supports web storage? A) Check if typeof(Storage) !== "undefined" 773) How to apply stylesheet with HTML element by id? A) #id 774) How to get the form data in Sencha Touch? A) getFormInstance().getValues(); 775) Which permission needed in order to use MapActivity? A) <uses-permission android:name="android.permission.INTERNET" /> 776) On android services, onStart() and onBind() are the same? A) False 777) Do we need API key for displaying Google Maps in Android? A) yes 778) How to register a broadcast receiver? A) Via AndroidManifestxml file 779) Is color a new HTML5 element of input type? A) yes 780) Intent myIntent = new Intent(IntentACTION VIEW Uri.pars("http://www.google.com")); startActivity(myIntent)

- A) myIntent is implicit Intent.
- 781) In android intent. The activity can be embedded inside of another activity that hosts gadgets is belonged to
- A) CATEGORY_GADGET
- 782) Where we can create tables and columns to them, create views or triggers?
- A) onCreate()
- 783) "Gingerbread" is nickname of which version?
- A) Android versiov2.3.x
- 784) By default UI components made in the UI editor should have text defined in file?
- A) string.xml
- 785) SQLite database save data in which storage?
- A) Internal storage
- 786) How to set layout's attribute programmatically in android?
- A) Use LayoutParams class
- 787) What is base of all Sencha Touch component?
- A) ExtComponent
- 788) Which method to display a dialog?
- A) show()
- 789) How to change the main color of Sencha Touch application?

A) Change the \$base-color variable in app.scss
790) Which activity class do you need to inherit to show Google map?
A) MapActivity class
791) What are 2 ways a Service can run?
A) Bounded and Unbounded
792) How to show or hide a Sencha Touch component?
A) Call .show() or .hide() method of component itself
793) When a dialog is requested for the first time, which method will Android call from your Activity?
A) onCreateDialog(int)
794) Do we need to declare all of Controller in app.js with Sencha Touch?
A) Yes
795) In android, normally SDCard is?
A) External storage

796) Which of the following is best choice for simple animations for your

797) Which statement is correct about web storage?

798) Android UI is threadsafe? Is it true or false?

website?

A) JavaScript

A) It is key/value data

A) False

799) Do we need to register all of View classes in app.js with Sencha Touch?

A) No

800) Which class do we use for listening location update?

A) LocationManager class

801) How to make a TextView to be editable?

A) Either set its attribute editable ='true' or Use EditText class instead of TextView class

802) What is NOT correct about Store in Sencha Touch?

A) Load data via a Proxy

803) How to define a new Sencha Touch class?

A) Use Extdefine()

804) If the action is ACTION_CALL. what the data field would be?

A) URI with the number to call

805) Android MapActivity is?

A) Base class with code to manage the boring necessities of any activity that displays a MapView

806) There are five different methods to store persistent data. They are: Shared Preferences. Internal Storage. External Storage. Network and?

A) SQLite Database

807) What are location providers in Android?
A) GPS & Network
808) Android AsyncTask create new thread in background?
A) True
809) What is not true about the Android application lifecycle?
A) Each activity of an app is run in its own process
810) Intent myIntent = new Intent(this. ActivityTwo.class);?
A) myIntent is explicit Intent
811) What is value on component's attribute layout_widtlf and layout_heighl to display the component big enough to?
A) wrap_content
812) What is TRUE about localStorage?
A) It is never expired
813) How to listen to an event in Sencha Touch class?
A) Write event handler within listeners:{} body
814) Which method to open a Hap connection to an Uri?
A) url.openConnection()
815) Which statement is NOT correct about PhoneGap?
A) It doesn't support for Java phone
816) Which are location providers in android?

A) GPS
817) How many CSS files can be included in a Sencha Touch project?
A) Many
818) You must declare all application components in Manifest file in this way?
A) <pre> rovider> elements for content providers</pre>
819) In class SQLiteOpenHelper class, there are 2 methods we should usually override. What are they?
A) onCreate() and onUpgrade()
820) Is the main thread called the UI thread?
A) Yes
821) If the action is ACTION_CALL, what the data field would be?
A) URI with the number to call
822) Android Async Task create new thread in background?
A) true
823) Which of following is true?
A) myIntent is explicit intent
824) Which method to opena Http connection to an Uri?
A) url.openConnection()
825) Which are location provider in Android ?

A) LBS

826) How many css file can be included in a Sencha Touch project? A) many 827) How to set position of a Sencha Touch component? A) all of above 828) In Android, which of the following statement is CORRECT to reload a layout? A) setContentView(R.layout.some_layout) 829) In Android, which layout mode defines the positions of each component relative to each other? A) RelativeLayout 830) Read the following content and answer the question? A) SmsManager< 831) Does AsyncTask create new thread in background? A) True 832) In Android, which manifest permission is needed when use GPS location? A) ACCESS_FINE_LOCATION 833) How can you define the minimum version of Android required? A) Using the minSdkVersion attribute in the AndroidMan 834) Toast is a class to display a message in Android. How to set position of a Toast? A) Using setGravity()

- 835) In Android, what does dp unit stand for?
- A) density-independent
- 836) In Android, which method you can use to obtain the path of the external storage?
- A) getExternalStorageDirectory()
- 837) What is the permission you need to declare in AndroidManifes?
- A) WRITE_EXTERNAL_STORAGE
- 838) Given a table data (click to see the figure). And assume that this is on a device at 160 dpi?
- A) dp * scaler = px
- 839) In Android, does Service create new thread in background?
- A) False
- 840) To display a notification on upper left of Android screen, which of the following class you need to use?
- A) NotificationManager + Notification
- 841) You need to process when user clicks on a notification on upper left of Android screen?
- A) PendingIntent
- 842) Which is the method you need to use to post a notification to be shown in the status bar?
- A) notify(...)
- 843) To develop your own service in Android, what you need to do?

- A) implements on Start Command, on Bind, on Unbind, on Rebind, on Create, on Destroy methods
- 844) To get data from Webserver to Android application, which of the following class you need to use to establish connection?
- A) HttpURLConnection
- 845) What is the name of Android class do we need to use to build up an JSON object?
- A) JSONObject
- 846) Assume that we have an Android object named stored in reader variable, and inside it has a child object named?
- A) JSONObject mainObj = reader.getJSONObject("main");
- 847) In Android, can we change the GPS setting by write my own Java code?
- A) False
- 848) When you need to use mp3 file in Android application, which folder you need to create and store mp3 file?
- A) raw folder
- 849) Which of the following is NOT a right codename of Android version?
- A) Eclair
- 850) What is the android:versionCode attribute in the AndroidManifest.xml file?
- A) It is used to programmatically check if an application can be upgraded.

- 851) When you have two or more activities with the same INTENT FILTER action name, the Android OS will display a
- A) True
- 852) Which of the following is the based class for the main application class in an Android application that has a user interface?
- A) Activity
- 853) In Android, which is two location providers that you can use to obtain your position data?
- A) LocationManager.GPS_PROVIDER and LocationManager.NETWORK PROVIDER
- 854) In Android, the process technical to convert an address into its latitude and longitude is called?
- A) Geocoding
- 855) What happen if the latitude is less than -90 or greater than 90?
- A0 It returns an IllegalArgumentException
- 856) Given the following statements using openFileOutput function to store data into a file in Android?
- A) The created file can be accessed by all the other applications at the same time.
- 857) How many activities are in focus at any time?
- A) Just one
- 858) What is a change Gravity?
- A) A tool that changes the linear alignment of a control so that is is aligned to the left, center, right top or bottom of an

859) What onListItemClick() function used for?

A) A method called when an item in a list is selected

860) What setListAdapter() function used for?

A) A command that projects your data to the onscreen list on your device by connecting the listActivity

861) In Sencha Touch, app folder contains?

A) the Models, Views, Controllers and Stores for your app

862) Choose right kind of layouts supported in Sencha Touch?

A) Justify Layout

863) As discussed, there are 4 main components in Android application. And in AndroidManifest.xml file, you need to declare?

A) elements for configurations

864) Which shortcut key we can use to change orientation in an AVD simulator?

A) Ctrl+F11

865) In Android, what is contained within the XML files in layout folder?

A) The layouts and direction of screen of the app

866) What is Content Provider?

A) It is a means to share data between applications which are by default run in completely different space by Dalvik instances

867) What is Fragment?

A) A fragment can be displayed without be embedded in an activity.		
868) In Android, what is the meaning of the following code in MainActivity class?		
A) the main thread calls the UI thread		
869) Sencha Touch is?		
A) a Java framework		
870) There is a kind of animation that using an XML file to define a sequence of pictures using?		
A) Tween Animation		
871) Given the following code AsyncHttpClient asynClient = new AsyncHttpClient()?		
A) Yes, if it is not yet completed (success or failed)		
871) PhoneGap uses HTML5, CSS, and to write and deploy application.		
A) JavaScript		
872) Can PhoneGap work with Contacts data of mobile device?		
A) true		
873) Can PhoneGap framework support for playing audio?		
A) true		
874) When to use ASyncTask?		
A) When connecting to external services for specific and short time consuming services		

875) What's Volley and what's positive and negative with it?

A) An HTTP library that makes networking for the app easier. Very good at handling multiplie network connections. Not god for large download or streaming operations.

876) What types of permissions exists?

A) Normal permission – Permission that wont directly risk the user's privacy

Dangerous permission – can give the app access to the user's confidential data. I

877) What's wake locks?

A) It puts the device suspended mode when the user aren't using the device, to save battery time. If the app wants to do operations in the background without making the go to suspending mode it has request a wake lock from the system

878) What is Wake up sensor?

A) Sensor that will wake the Application Processor (AP). up from its suspended mode to report sensor events

879) What is None wake up sensor?

A) Sensors that doesn't wake the AP. Instead the sensor event is queued in a FIFO queue

880) What is CryptoObject?

A) Wrapper class for the so called crypto object

881) What is an implicit intent?

A) An implicit intent can specify an action that your app may not be able to do, but other apps on the phone likely could. Before launching this kind of

intent, confirm that another app is able to perform the action like so:

```
// Verify that there are applications registered to handle this intent
// (resolveActivity returns null if none are registered)
if (sendIntent.resolveActivity(getPackageManager()) != null) {
    startActivity(sendIntent);
}
```

882) What are the activity lifecyle callbacks?

```
A) onCreate()
onStart()
onResume()
onPause()
onStop()
onDestroy()
```

It's best to clean up resources on onStop() and onPause(), since it's not always guaranteed that onDestroy() will be called.

883) What are three common reasons to use an Intent?

A) To start an activity, start a service (one time operation such as downloading a file), or deliver a broadcast.

884) What is DDMS? Describe some of its capabilities.

A) DDMS is the Dalvik Debug Monitor Server that ships with Android. It provides a wide array of debugging features including:

port-forwarding services screen capture thread and heap information network traffic tracking incoming call and SMS spoofing simulating network state, speed, and latency location data spoofing

885) What is the relationship between the life cycle of an AsyncTask and an Activity? What problems can this result in? How can these problems be avoided?

A) Since the Async task is not tied to the lifecycle of the activity, you need to clean up an Async task if it is still running when an activity is destroyed, or it may lead to a memory leak or an IllegalArgumentException if the Async task tries to update the UI of an Activity that is no longer existing.

886) What is the difference between a fragment and an activity? Explain the relationship between the two.

A) Activity is a single, focused operation that a user can perform. Activity implementations can make use of one or more fragments to make modular UI design, and scaling UI between small and large screens.

A fragment is essentially a modular section of an activity, with its own lifecycle and input events, and which can be added or removed at will. It is important to remember, though, that a fragment's lifecycle is directly affected by its host activity's lifecycle; i.e., when the activity is paused, so are all fragments in it, and when the activity is destroyed, so are all of its fragments.

887) What is difference between Serializable and Parcelable? Which is best approach in Android?

A) Serializable is a standard Java interface. You simply mark a class Serializable by implementing the interface, and Java will automatically serialize it in certain situations.

Parcelable is an Android specific interface where you implement the serialization yourself. It was created to be far more efficient than Serializable, and to get around some problems with the default Java serialization scheme.

888) What are two launch modes for activities?

A) A launch mode is a way to associate a new instance of an activity to the current task ...you can do this either via manifest file or intent flags.

889) What is the difference between Service and IntentService? How is each used?

A) A service runs on the main thread, and an Intent service runs asynchronously.

890) How do you supply construction arguments into a Fragment?

A) Bundle, via Fragment.setArguments(Bundle) and retrieved via Fragment.getArguments(Bundle)

891) Which method is called only once in a fragment life cycle?

A) onAttach()

892) How to define a JSON Object from a String?

A) JSONObject climate = new JSONObject(jsonString)

```
Build a URI from a String called GITHUB_BASE_URL
Uri builtUri = Uri.parse(GITHUB_BASE_URL).buildUpon()
.appendQueryParameter(PARAM_QUERY, githubSearchQuery)
.appendQueryParameter(PARAM_SORT, sortBy)
.build();
```

return url;

893) How to Build a URL from URI?

```
A) URL url = null;
try {
url = new URL(builtUri.toString());
} catch (MalformedURLException e) {
e.printStackTrace();
}
```

894) Where should we add permission to the applications?

A) AndroidManifest.xml

895) The correct sintaxis to add Internet Permission?

A) <uses-permission android:name="android.permission.INTERNET" />

. 896) What is preferences/ sharedPreferences?

ans: It is a small xml file which is used to store small amount of data permenantly.

eg: Storing user registration details/ credentials.

Note: we can only store primitive data types.

897) Which API we have to use to create a preference file?

ans : getSharedPreferences()

898) What is the 2nd parameter while creating

new preference file?

ans: 1st - file name, 2nd - PRIVATE MODE [0]

899) Which API we have to use to open preference file?

ans : getSharedPreferences()

900) Can I store array of strings in a preference file? how?

ans : putStringSet() - convert array to set and store.

901. What is the use of /assets and /res/raw/ folders?

/assets folder is empty by default. We can place files such as custom fonts, game data here. Also, this folder is ideal for maintaining a custom dictionary for lookup. The original file name is preserved. These files are accessible using the AssetManager (getAssets()).

/res/raw folder is used to store xml files, and files like *.mp3, *.ogg etc. This

folder gets built using aapt and the files are accessible using R.raw.

Question 902: What is 'application'?

The **Application** class can be considered as *the baseline* of Android – it is the key class that contains all of the other important elements for other actions and services that Android performs. Probably needless to say, but this class is initialized before anything else in Android once the program is launched.

Question 903: What is the place where the GUI of Android is stored called?

First of all, let's establish what a '**GUI**' is.

GUI literally means *Graphical User Interface*. It is a tool that helps the developers to simulate certain specific scenarios and see them in the way that a user of the app would see it.

Android's GUI is stored within what is called an "**Android SDK**". For an easy comparison of what that is, imagine that you were planning to go and work in the garden. What would you need to do that? That's right – tools. Where are the tools usually stored? That's right – the shed. The Android SDK is the equivalent of a shed – it stores all of the essential and necessary tools for the developer's easy access.

It's quite an extended answer, but remember – the more Android interview questions that you expand on, the more knowledgeable you will look in front of your potential employer.

Question 904: Define 'implicit' and 'explicit' intents.

In addition to definitions, you might also encounter a lot of comparison-based Android developer interview questions during your job interview. When it comes to the basic part, these would usually require you to compare some very fundamental Android variables. The same applies in this case.

When you imply an **implicit intent**, the Android interface checks the system for settings that might help you perform your task. **The explicit intent**, on the other hand, is when you specify the components that your system should use while performing the task. To oversimplify, you basically just order the system to do as you say and leave little room for agility.

Question 905: Name the four Java sensor classes.

Android uses four specific Java classes that are based on sensors. These are as

follows: Sensor, SensorEvent, SensorEventListener and SensorManager.

Question 906: Can you run Java on Android using the standard bytecode?

No, no you can't. If this is one of the Android interview questions that your employers will ask a follow-up question (in this case it would most likely be "why?"), you can just say that Android is based on and uses a different, specific type of bytecode.

Question 907: Name a few pros of the Android system.

Sometimes, you might get this type of Android interview questions – the opinion-based ones. This is actually pretty cool because you are completely

free to tell your opinion on the matter, but (at least in this case) can be sure that it's completely subjective.

Why do employers even ask such questions, then? Well, that's pretty easy — to see what you value and prioritize the most when it comes to Android. It's a nice "trick question" for the employers to check if you're going to go on a rant that you memorized on the internet, or if you're actually thinking about it.

Since it's quite subjective, there is no one true or false answer. However, just to give you a few examples of what a lot of other people proclaim to be the best features: Android being *open-source*, being supported by a wide variety of hardware developers, being based on Java and so on.

Question 908: What does 'ContentProvider' do?

This command is used to access specific types of organized and structured sets of data. You can view it as a sort of a medium – it connects strings of code with other, different strings of code.

Question 909: What is the bytecode that Android uses?

If you remember one of the previous Android interview questions and answers in this tutorial (namely), you probably know that Android cannot use the Java bytecode because it has one of its own. This bytecode is called *Dalvik Virtual Machine*(**DVS**).

Question 910: What is the use of an Adapter?

In the Android system, **adapters** are used to connect

the **AdapterView** (whatever that might be; it depends on the specific scenario in which it is used) with an external source of data.

Question 911: What are the two main methods of storing data in Android?

These methods are **Shared Preferences** and **Internal Storage**. Shared Preferences are mainly used to store key-value pairs, which can sometimes be a limitation. Internal Storage, on the other hand, stores all of the developer's private data and information within the device's inner memory.

Question 912: How can you use 'intent'?

When it comes to advanced Android interview questions and answers, they are most likely to have more than one answer (at least in most cases). This question is no exception.

There are **three** common situations where you would use '**intent**': to start the device, to start a specific activity and to start a broadcast.

Question 913: What is an 'activity'?

A clear example of trick Android interview questions. In truth, this is actually a very simple and straightforward question with an even simpler answer – **activity is the container in the user interface**. Why is this placed in the "advanced" category, then?

As I've mentioned earlier, you are bound to get some trick Android interview questions in your job interview. Your potential employer might want to throw you off balance with sneaking in an actual super-easy question. Furthermore,

you would be surprised at how many people actually do have a hard time defining Android 'activities'.

Question 914: What are the core components of the Android OS?

In total, there are **five** main components essential to Android – **Activity**, **Content Provider**, **Fragment**, **Intents** and **Services**.

Question 915: What's the use of 'handlers'?

In Android, **handlers** are most commonly used to pass communication between different threads. This is especially true in the scenario where you would use a handler to pass an action from a background thread to the main one.

Question 916: What is the best database for Android applications?

This is considered to be one of the more advanced Android interview questions mostly because you either know it, or you don't.

The best open-source database for Android apps is **SQLite**.

Question 917: Can two different Android apps share the same Linux ID?

Yes, as a matter of fact, they can. However, needless to say, it doesn't happen just like that.

In order for the two apps to hold a shared Linux ID, they would both have to have signed with the same **certificate**. In addition to that, they would then also share the same VP.

Question 918: What's DDMS?

DDMS literally abbreviates to the *Dalvik Debug Monitor Server*. It is a bug monitoring server that comes together with the Android OS itself. It's responsible for tracking errors, incoming call, SMS, location data spoofing and – naturally – debugging.

Question 919: What is 'ANR'?

Application Not Responding. It is a pop-up that the developer would receive if he or she had initiated too many processes at the same time. It's basically Android's way of telling you that you've crashed the system.

Question 920: What's the difference between an 'AsyncTask' and a 'Thread'?

AsyncTasks are used to work with short-running processes (up to 5 seconds), while **threads** handle longer ones.

921. What happens to the AsyncTask when the Activity that's executes it, changes the orientation?

The lifecycle of an AsyncTask is not tied onto the Activity since it's occurring on a background thread. Hence an orientation change won't stop the AsyncTask. But if the AsyncTask tries to update the UI thread after the orientation is changed, it would give rise to java.lang.IllegalArgumentException: View not attached to window

manager since it will try to update the former instances of the activity that got reset

922. What are the advantages of Android?

Advantages of Android	
Advantage	Description
Modest & Potent	It is modest and potent SDK (Software Development Kit) and importantly it is open source, meaning that Licensing, Distribution or Development fee is not required.
Easy	Easy to Import third party Java library.
Multi- platform Support	Android Supports platforms such as Linux, Mac Os, Windows.
Useful Products	Ground-breaking products like Location-Aware services, location of a nearby convenience store etc. are quite helpful.
Reusable	Components of Android can be reused and replaced by the application framework. Has optimized DVM for mobile devices. SQLite enables to store the data in a structured manner.
Technology Support	Android Supports GSM telephone and Bluetooth, WI-Fi, 3G and EDGE technologies. The development is a combination of a device emulator, debugging tools, memory profiling and plug-in for Eclipse IDE.

923. What are the different phases of the Activity life cycle?

As an activity transitions from state to state, it is notified of the change by calls to the following protected methods:

- void onCreate(Bundle savedInstanceState)
- void onStart()
- void onRestart()
- void onResume()

- void onPause()
- void onStop()
- void onDestroy()

These seven methods define the entire lifecycle of an activity.

924. What is an Explicit Intent?

In an explicit intent, the activity that is required to respond to the intent is specified. To be precise, the target components are explicitly designated. This is typically used for application internal messages.

925. What is an Implicit Intent?

In an implicit intent, only the intent is declared and the activity that can respond to the intent is left to the platform. Here the target component is not declared, hence it is usually used for activating components of other applications as well.

926. What is an AndroidManifest file?

Applications confirm their components like the .apk file that also holds the application's code, files, and resources in a manifest file that's bundled into the Android package. The manifest is a structured XML file and is always named AndroidManifest.xml for all applications. It is also used for naming libraries the application that needs to be linked and identifying any permissions the application expects to be granted.

927. What's the difference between a file, a class and an activity in android?

• File – It is a chunk of arbitrary information, or resource for storing

information.

- Class It's a compiled form of Java file. Android uses the .class files to produce an executable apk
- Activity An activity is the comparable to a Frame/Window in
 GUI toolkits. It is not a file or a file type it is just a class that can
 be extended in Android for loading UI elements on view.

928. What is the significance of the .dex files?

Android programs are compiled into '.dex' (Dalvik Executable) files, which are zipped into a single .apk file on the device. '.dex' files can be created by translating compiled applications written in Java.

929. What does ADT stand for?

ADT stands for Android Development Tools. The Android SDK contains several tools and utilities to help create, test and debug your projects.

930. What are the different tools in Android and explain them?

• The Android SDK and Virtual Device Manager:

It is used to create and manage Android Virtual Devices (AVD) and SDK packages. The AVD holds an emulator, letting you specify supported SDK version, screen resolution, SD card storage available and available hardware abilities such as touch screens and GPS.

• The Android Emulator:

Android Emulator is an implementation of the Android virtual machine designed to run within a virtual device on the development computer. It is used for testing and debugging Android applications.

• Dalvik Debug Monitoring Service (DDMS):

The DDMS is used to monitor and control the Dalvik virtual machines on which the applications are being debugged.

Android Asset Packaging Tool (AAPT):

Builds the distributable Android package files '.apk'

• Android Debug Bridge(ADB):

Android Debug Bridge is a command-line debugging application distributed along with the SDK. It provides tools to browse the device, copy tools and forward ports for debugging.

931. What is Dalvik Virtual Machine?

Dalvik is the name of Android's virtual machine. The Dalvik VM is an interpreter-only virtual machine that executes files in the Dalvik Executable (.dex) format, a format that is optimized for effective storage and memory-mappable executions. The virtual machine is register-based and can run classes compiled by Java language compiler that have been altered into its native format using the included 'dx' tool. The VM runs on top of Posix-compliant operating systems depending on it for performing threading and low level memory management functionalities. The Dalvik core class library is envisioned to provide a familiar development base for those used to programming with Java Standard Edition, but is geared explicitly for the needs of a small mobile device.

932. What is Android Runtime?

Android comprises of a set of core libraries that provides most of the

functionality available in the core libraries of the Java. All Android application runs in its own process, with its own instance of the Dalvik virtual machine. Dalvik has been written in order for the device to run multiple VMs competently. The Dalvik VM executes files in the Dalvik Executable (.dex) format which is boosted for minimal memory footprint. The VM is register-based, and runs classes compiled by a Java language compiler that have been transformed into the '.dex' format by the included 'dx' tool.

933. What is the Open Handset Alliance?

The OHA is a conglomerate of 84 technologies and mobile companies that have joined hands to fast-track innovation in mobile technology and at the same time, offer the end users an improved, cost-effective and richer mobile experience. Members of this alliance include Google, HTC, Sony, Dell, Intel, Motorola, Qualcomm, Texas Instruments, Samsung, LG, T-Mobile, Nvidia. The OHA was started on 5th November, 2007 by Google and 34 other companies. Android is the main software of this alliance.

934. What is a Service?

A Service is an application component representing either an application's intent to perform a longer-running operation without interacting with the user or to provide functionality for other applications to use. Services run without a dedicated GUI, but like Activities and Broadcast Receivers, they are executable in the main thread of the application's process. A Service could be a facility for an application to expose some of its functionality to other

applications.

935. What is the difference between Service and Thread?

Service is like an Activity but has no interface. For example, for fetching information on weather, blank activity will not be created. Here Service will be used. It is also known as Background Service because it performs tasks in background.

A Thread is a concurrent unit of execution. Take note that the UI cannot be updated from a Thread. For this a Handler must be used.

936. What is a Toast Notification?

Toast notification is a message that pops up on the window. It only covers the expanse of space required for the message and the user's recent activity remains visible and interactive. The notification automatically fades in and out and does not accept interaction events.

937. What are the other Notifications?

The other notifications are:

- *Status Bar Notification:* Used for persistent reminders that originate from the background and request for user's response.
- *Dialog Notification:* Used for Activity-related notifications.

938. What is the significance of XML-based layouts?

XML-based layouts provides consistent and somewhat a standard means of setting GUI definition format. As a general practice, the layout details are placed in XML files, whereas other items are placed in source files.

939. What are Containers?

Containers hold objects and widgets together, depending on which specific items are needed and in what particular arrangement. Containers may hold labels, fields, buttons, e.t.c

940. What are the drawbacks of Android?

Android is an open-source platform and at the same time different Operating Systems have been released for different mobile devices. This provides no clear picture on how applications can adapt with different OS versions and upgrades. An app that runs on a particular version of Android OS may or may not run on another.

Another limitation is that, mobile devices comes in different size and forms. Here it becomes a challenge for developers to create apps that can auto-correct to the right screen and other feature of that particular mobile device.

941. What is ADB?

ADB is abbreviation of Android Debug Bridge. It provides developers the power to execute remote shell commands. Its basic function is to allow and control communication, to and fro from the emulator port.

942. What are the four essential states of an activity?

- *Active* If the Activity is in the foreground.
- *Paused* If the Activity is in the background and is still visible.
- Stopped If the Activity is not visible, therefore is hidden or concealed by another Activity.
- *Destroyed* When the Activity process is completed terminated.

943. What is ANR?

ANR is the acronym for Application Not Responding. This is a dialog that appears to the user whenever an application has been unresponsive for an extended period of time.

944. How are escape characters used as attribute?

Escape characters when preceded by double backslashes can be used as an attribute. For example, a newline character is created using '\\n'

945. When does other qualifiers in multiple source take precedence over Locale?

This happens at two instances: MCC (mobile country code) and MNC (mobile network code) qualifiers.

946. What is the correct way of setting up an Android-powered device for app development?

The following are steps need to be followed prior to actual application development in an Android-powered device:

- Declare application as "debuggable" in Android Manifest.
- Turn on "USB Debugging" on your device.
- Set up system to detect your device.

947. What are the steps involved in creating a bounded service through AIDL?

- Create the '.aidl' file which defines the programming interface
- Implement the interface by extending the inner abstract Stub class as well as embedding its methods.
- Describe the interface by implementing the Service to the clients.

948. What are the different data types supported by AIDL?

String, CharSequence, List and Map. All built-in Java data types like Int, Long, Char and Boolean are also supported by AIDL

949. What is a Fragment?

A fragment is a portion of an activity. It is flexible in a sense that it can moved around or combined with other fragments in a single activity. Fragments are also reusable.

950. Can Fragments be added without using a User Interface?

Yes, this can be done when creating a background behaviour for a particular activity. This can be done by using add (Fragment, string) method to add a fragment from the activity.

951. How to remove icons and widgets from the main screen of an Android device?

To remove an icon, press and hold that icon. Then drag it towards the lower part of the screen where the remove button appears.

952. Do all mobile phones support the latest Android Operating System?

Some Android phones lets you to upgrade to higher Operating System version. However, not all upgrades allows you to get the latest version. It depends mainly on whether it can support the newer features available in the latest version.

953. What is a Portable Wi-Fi Hotspot?

Portable Wi-Fi Hotspots allow you to share your mobile internet connection with other wireless devices. For example, your Android-powered phone can be used as a Wi-Fi Hotspot to make your laptop connect to the internet.

954. What is the variance between a regular Bitmap and a Nine-Patch

image?

A Nine-patch image allows resizing. 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.

955. What are the exemptions in Android?

- *InflateException*: When an error conditions occur this exception is thrown.
- *Surface.OutOfResourceException:* When a Surface is not created or resized, this exception is thrown.
- SurfaceHolder.BadSurfaceTypeException: When invoked on a Surface 'SURFACE_TYPE_PUSH_BUFFERS', this exception is thrown from lockCanvas() method.
- WindowManager.BadTokenException: This exception is thrown at the time of trying to view an invalid WindowManager.LayoutParamstoken.

956) what is broadcast receiver?

ans: It is a component of android, which is used to receive/ listen important system events.

eg: BATTERY LOW, POWER CONNECTED,

957) How do you start a receiver?

ans: By using Intent, and sendBroadcast() method

958) How do you kill a receiver?

ans : abortBroadcast() method.

959) types of receivers?

ans: static receivers, dynamic receivers, ordered receivers, sticky receivers.

960) What are the life cycle methods of broacast receiver?

ans : onreceive()

961. What is database?

ans: It is a logical container of data/information.

962. Which database do we use in android?

ans: SQLite - RDBMS

963. Where is database stored?

ans: Database is stored within the application, in Internal memory.

964. How to store images/ audios/ videos in a table using SQLite?

ans : by using **BLOB datatype** = binary large object .

First we have to convert images to 0101, then store in tablee using BLOB data type. Later while reading the image we will read 0101 and recreate the image by using BitMapFactory class.

965. what is primary key?

ans : unique + not null.

Primary key is used to uniquely identify each row.

966. what is foreign key?

ans: used to maintain relationship between tables. If a primary key of one tables comes to other table then it becomes foreign key.

Every RDBMS should support foreign key. But by default SQLite doesn't have support for foreign key. To enable foreign key support below command should be issued.

db.execSQL("pragma FOREIGN KEY;");

967. how to upgrade database? (imp)

ans:

a. change application version code and version name in build.gradle.

b. change database version in helper parameter.

c. go to inner helper class, go to onupgrade() method, use if-else condition and we can add/ remove/ alter tables based on the version.

968. Difference between delete and drop? (imp)

ans: delete is DML statement. drop is DDL command.

drop = delete the rows + delete the table.

delete = will delete only rows.

969. Difference between update and upgrade?

ans: update is DML statement. but upgrade is related to DDL.

update = will update the rows.

upgrade = create table/ drop table/ alter table in the future application releases.

note: upgrade terminology is used for databases.

970. how do you start an activity?

ans:Using intent class& startActivity() method

972. how do you start a fragment?

ans:by using FragmentManager, fragmentTransaction & add() method.

[or]

using <Fragment ..tag> in xml.

Note: first approach is dynamic fragment, 2nd is static fragment.

973. how do you kill an activity?

ans: finish() method

974. how do you kill a fragment?

ans:

fragmenttransaction.popBackstack() method [or]

fragmenttransaction.replace() [or]

fragmenttransaction.remove()

975. how do you pass data to an activity?

ans: By using Intent & putExtra() method.

976. how do you pass data to fragment?

ans: By using Bundle, setArguments() method.

976.1: What is fragment?

def: Fragment is a "re-usable UI component". Fragments are introduced in android 3.0. Fragments are used to design UI for mobiles & tablets.

977. User clicks back button, which life cycle methods will be called for activity?

ans: onpause, onstop, ondestroy.

978. User clicks home button, which life cycle methods will be called for activity?

ans: onpause, onstop

979. User is looking at screen & suddenly call comes which life cycle methods will be called for an activity?

ans: onpause, onstop

980. User rotates the phone, life cycle methods of an activity? [IMP]

ans: onpause, onsaveinstancestate, onstop, ondestroy,

oncreate, onstart, onrestoreinstancestate, onresume.

same for virtual kyeboard up/down & language changes also. same for low memory also.

981. write one line about each life cycle method.

oncreate()

- a. first life cycle method
- b. we will load screen design here
- c. we will initialize all views here

onapuse()

- a. when user is moving away from the screen this method will be called.
- b. eg: popup displayed, new screen comes, etc..
- c. important data has to be saved here. eg: saving database, saving files etc..

onsaveinstancestate()

- a. this is called in configuration changes
- b. eg: phone rotation, language changes, etc.
- c. programmer has to save activity states here and restore in onRestoreinstancestate() method.
- 982) What is the use of frgment?

ans: For designing applications for mobile phones & tablets, we use fragments.

Material Design Api classes & definitions:

CoOrdinatorLayout:

- a. It is inherited from FrameLayout
- b. It is used to place elements on one-on-top of other, with shadow/3d effect.
- c. If coordinator layout is removed, then 3d layering will not happen properly.

AppBarLayout:

- a. It is used to club ActionBar+Tabs.
- b. It is used to have parallox effect on actionbar. Parallox effect means when user scrolls up / down, then actionbar will be moved out of screen.

ToolBar:

- a. it is introduced in android 5.0
- b. it is actionbar with shadow effect.
- c. toolbar can be placed anywhere on the <u>screen.in</u> olden days, action bar used to stick at top.

TabLayout:

- a. it is used mostly with viewpager.
- b. it inherits from horizontal scrollview.
- c. mostly it is attached to actionbar/toolbar.

FloatActionButton:

- a. it appears at right corner of the screen.
- b. Most important item should be placed as FAB.
- eg: gmail app places "compose mail" as FAB.
- c. this is highest priority icon.

NagivationView:

- a. It is used to attach sliding menu with actionbar.
- b. it will have header and menu body portions.

SnackBar:

- a. it is advanced version of Toast.
- b. it comes with colors & buttons.
- c. it can be swipe deleted. [not possible with toast

RecyclerView:

- a. Advanced version of listview.
- b. it is faster & memory efficient compared to list view.
- c. It comes with viewholder design pattern.

d. can be used as listview/ gridview/ staggered grid

CardView:

- a. it inherits from framelayout.
- b. it is is used to design round cornered cards, with 3d shadow effect.
- c. mostly used along with recyclerview to show good looking rows.

883. what is a thread?

ans: thred is a light weight process [or]

thread is an independent path of execution.

884. thread vs service?

ans: thread is os component, service is android component

interview questions on services - part 2

885. what is ANR?

ans: Application Not Responding is a famous error

in android.

886. why ANR error will occur?

ans: if key events are not delivered in 5 seconds time limit, then O.S will show this error popup to user.

887. What is the root cause for ANR errors?

ans: if service is not having its own thread, then service will use main thread for doing background task. when main thread is busy in the service, it can't handle key events. That leads to ANR.

888. what precautions to take to avoid ANR errors?

ans: when we create a service, create a thread also in the service.

Note: 1 thread handling too many taks is not good design.

Activities - will always use - MainThread.

Services - should always use - separate thread.

889. Some other scenarios where ANR may occur?

ans : opening, inserting, reading database in activity is danger. It might lead to ANR.

Activities - will use - main thread.

database - also using - main thread.

890. what is the time limit of ANR?

ans: 5 seconds. [set by google]

but phone manifacturer can reduce it for more efficiency. but should not increase it.

Shared preferences

991. what is URL api?

a) it is used to represent website url.

992. what is HttpUrlConnection api?

a) it is used to establish connection between android application & server.

993. what is InputStream api?

a) this API is used for GET request. if we want to read some data from server, we will use this API. this is where the actual data will come from server.

Note: this may take some time, depending on internet connection.

994. what is InputStreamReader API?

a) it is used to convert/read the raw data [bits] coming in the input stream.

note: this api converts bits to ascii chars.

note: it is not efficient as it reads each character one by one.

995. what is BufferedReader API?

a) this api provides an efficient way to read data coming from server in big chunks, in line by line fashion.

Note: InputStreamReader vs BufferedReader is interview question.

Terminology used in websites:

Server/Webserver: it is combination of hardware & software where websites [website code] will run.

eg: apache webserver, tomcat webserver - for J2EE websites.

IIS webserver - for .NET websites.

webconfig: it is a small xml file in the server, which is similar to our android manifest xml file. this xml file contains, which URL is mapped to which Servlet this xml file also contains, which URL is mapped to which webservice.

Servlet : full form is serving the request.

Servlet is a small java file, which sits in server.

Servlet class will generally extend a predefined class HTTPServlet.

Servlet will handle all incoming requests from BROWSER.

Servlet is the first entry point in the server, which handles incoming request.

JSP: Java server pages. It is a small java file which sits in server. Main responsibility of JSP class is to prepare HTML content.

MVC: Model View Controller, is a design pattern used while designing web sites. Controller -is- servlet. View -is- JSP/ JSF. Model -is- Database connection logic.

WebServices: It is a small java file which sits in server.

Webservices will handle all incoming requests from non-browser applications.

Eg: if an android application sends a request to server, it most likely hits a web service.

Note: A website can have n-num of servlets/ webservices.

Note: Each servlet/ webservice will have one URL.

Types of webservices: RESTful & SOAP

RESTful Webservices: Representational State Transfer web services. Faster than SOAP services. Most of the RESTful services uses JSON format to transfer the data.

SOAP: Simple object access protocol. Slower compared to REST. Mostly SOAP services uses XML format to transfer the data.

HTTP: is a common language/ protocol used over internet for communicating between client & server systems.

HTTPRequest: it is a class representing request going from client to server.

HTTPResponse: it is a class representing response coming from server to client.

interview questions on services

996. what is service?

ans: component android used to do background task.

eg: connecting to internet.

997. types of services?

ans: Service & IntentService

998. service life cycle methods?

ans: oncreate, onstartcommand, ondestroy, onbind.

999. what is intent service?

ans: Service with 1 background thread.

lifecycle methods - constructor, onhandleintent

1000. how to kill a service?

ans : stopservice(intent);