1. What are the main android application components?
   Services – It will be used to perform background functionalities.

   Activities - It is a single screen that represents GUI(Graphical User Interface) with which users can interact in order to do something like dial the phone, view email, etc.

   Broadcast receivers - Broadcast receiver is a mechanism used for listening to system-level events like listening for incoming calls, SMS, etc. by the host application.

   Content providers – This will share the data between various applications.

2. What are the features of Android architecture?
   - Linux Kernel - It is responsible for device drivers, device management, memory management, power management, and resource access.
   - Libraries - There are a set of libraries having open-source Web browser engine WebKit, well-known library libc, libraries to play and record audio and video, SQLite database for sharing of application data and storage, SSL libraries for internet security, etc.
   - Android Runtime - There are core libraries along with DVM (Dalvik Virtual Machine) or ART(Android RunTime) as runtime which is helpful for running an Android application. DVM is optimized for mobile devices. DVM provides fast performance and consumes less memory. Replacing DVM, ART(Android RunTime) virtual machine was introduced to execute android apps from Android lollipop 5.0 version (API level 21).
   - Android Framework - It consists of Android APIs like UI (User Interface), resources, content providers (data), locations, telephony, and package managers. It provides interfaces and classes for the development of Android applications.
   - Android Applications - Applications like home, games, contacts, settings, browsers, etc. uses the Android framework that will make use of Android runtime and libraries.
3. Languages used to build android application

Java,kotlin,C#,python etc

4. What is Google Android SDK? Which are the tools placed in Android SDK?

The Google Android SDK is a toolset used by developers to write applications on Android-enabled devices.

The tools placed in Android SDK are given below:

- Android Emulator - Android Emulator is a software application that simulates Android devices on your computer so that you can test the application on a variety of devices and Android API levels without having each physical device.
- DDMS(Dalvik Debug Monitoring Services) - It is a debugging tool from the Android software development kit (SDK) which provides services like message formation, call spoofing, capturing screenshots, etc.
- ADB(Android Debug Bridge) - It is a command-line tool used to allow and control communication with the emulator instance.
- AAPT(Android Asset Packaging Tool) - It is a build tool that gives the ability to developers to view, create, and update ZIP-compatible archives (zip, jar, and apk)

5. What is the use of Bundle in Android?

   Bundles are used to pass the required data between various Android activities.

6. What is an Adapter in Android?

   An adapter in Android acts as a bridge between an AdapterView and the underlying data for that view. The adapter holds the data and sends the data to the adapter view, the view can take the data from the adapter view and shows the data on different views like a spinner, list view, grid view, etc.

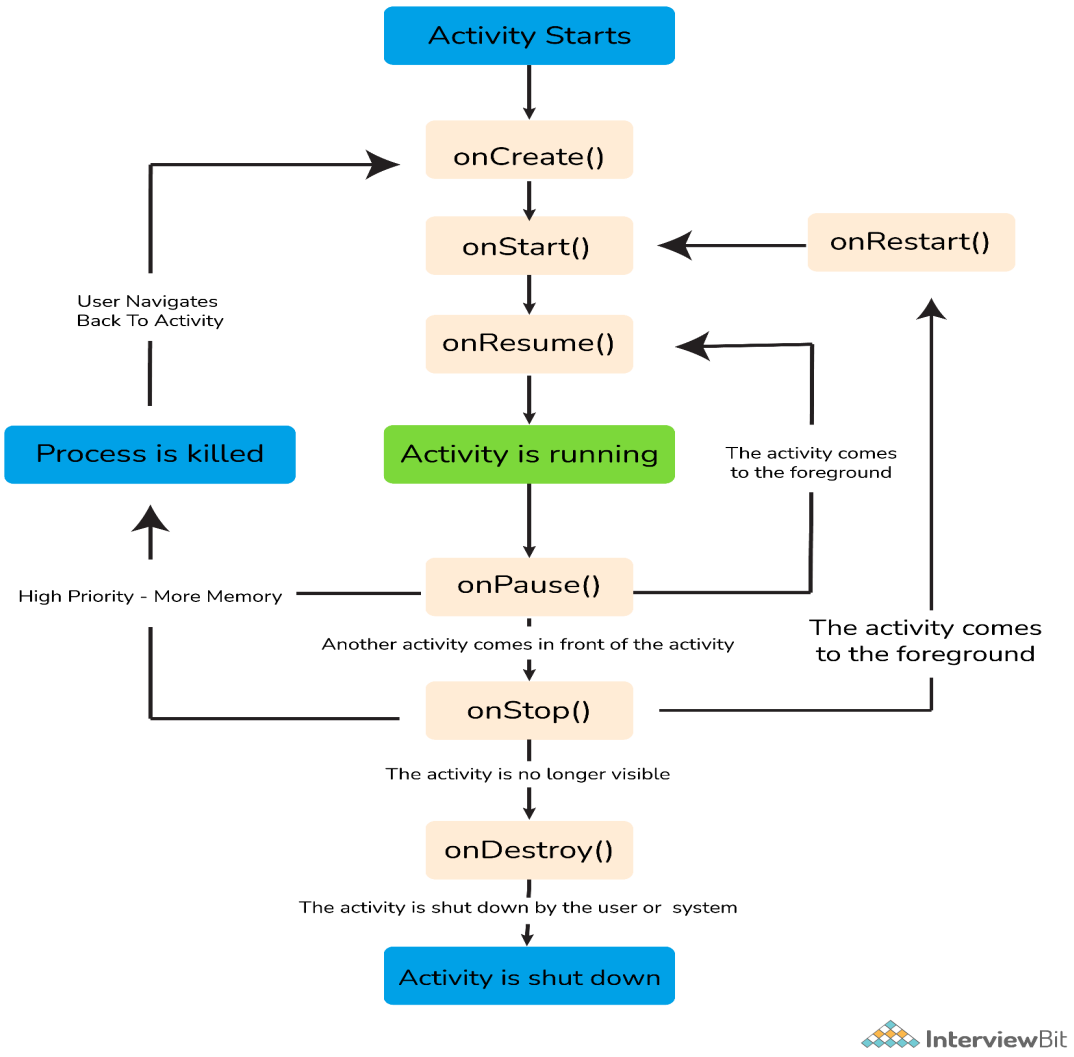
7. What is Android Debug Bridge(ADB)?

Android Debug Bridge is a command-line tool used to allow and control communication with an emulator instance. It gives the power for developers to execute remote shell commands to run applications on an emulator

8. What is the life cycle of Android activity?

- OnCreate(): It is called when activity is created. Using this, the views are created and data is collected from bundles.
- OnStart(): It is called if the activity is becoming visible to the user. It may be succeeded by onResume() if the activity comes to the foreground, or onStop() if it becomes hidden.
- OnResume(): It is called when the activity will start an interaction with the user.
- OnPause(): This is called when the activity is moving to the background but hasn't been killed yet.
- OnStop(): This is called when an activity is no longer visible to the user.
- OnDestroy(): This is called when the activity is finished or destroyed.

- OnRestart(): This is called after the activity has been stopped, prior to it being started again.



9. What is AndroidManifest.xml file and why do you need this?

- The AndroidManifest.xml file contains information regarding the application that the Android system must know before the codes can be executed.
- This file is essential in every Android application.
- It is declared in the root directory.
- This file performs several tasks such as:
    - Providing a unique name to the java package.
    - Describing various components of the application such as activity, services, and many more.
    - Defining the classes which will implement these components

10. What is an intent?

An intent is a messaging object that is used to request an action from other components of an application. It can also be used to launch an activity, send SMS, send an email, display a web page, etc.

It shows notification messages to the user from within an Android-enabled device. It alerts the user of a particular state that occurred. There are two types of intents in Android:

- Implicit Intent- Used to invoke the system components.
- Explicit Intent- Used to invoke the activity class.

11. **What is a Toast? Write its syntax.**

    Toast is a message that pops up on the screen. It is used to display the message regarding the status of the operation initiated by the user and covers only the expanse of space required for the message while the user's recent activity remains visible and interactive.

    Toast notification automatically fades in and out and it does not accept interaction events.

    Syntax:

    ```
    Toast.makeText(ProjectActivity.this, "Your message here", Toast.LENGTH_LONG).show();
    ```

12. **What is context?**

    The context in Android is the context of the current state of the application or object.

    There are two types of context. They are:

    Activity context

- This activity context is attached to the lifecycle of an activity.
- The activity context can 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 context of the activity.

Application context:

- This application context is attached to the lifecycle of an application.
- The application context should 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 activity.

UI-Layouts

The basic building block for user interface is a View object which is created from the View class and occupies a rectangular area on the screen and is responsible for drawing and event handling. View is the base class for widgets, which are used to create interactive UI components like buttons, text fields, etc.

The ViewGroup is a subclass of View and provides invisible container that hold other Views or other ViewGroups and define their layout properties.

At third level we have different layouts which are subclasses of ViewGroup class and a typical layout defines the visual structure for an Android user interface and can be created either at run time using View/ViewGroup objects or you can declare your layout using simple XML file main_layout.xml which is located in the res/layout folder of your project.

Android Layout Types

1.Linear Layout

LinearLayout is a view group that aligns all children in a single direction, vertically or horizontally.

2.Relative Layout

RelativeLayout is a view group that displays child views in relative positions.

3.Table Layout

TableLayout is a view that groups views into rows and columns.

4.Absolute Layout

AbsoluteLayout enables you to specify the exact location of its children.

5.Frame Layout

The FrameLayout is a placeholder on screen that you can use to display a single view.

6.List View

ListView is a view group that displays a list of scrollable items.

7.Grid View

GridView is a ViewGroup that displays items in a two-dimensional, scrollable grid.

View Identification

A view object may have a unique ID assigned to it which will identify the View uniquely within the tree. The syntax for an ID, inside an XML tag is –

```
android:id="@+id/my_button"
```

Android UI Controls

There are number of UI controls provided by Android that allow you to build the graphical user interface for your app.