1. **What is Android?**
    a. Android is an open-source operating system that is mainly used on mobile devices like tablets and Smartphones.
    b. Its operations are mainly based on the Linux kernel system which comprises rich elements that enable developers to develop and run apps that are able to carry out both basic and advanced functions.

2. **What do you know about Intents?**
    a. Intents display messages of notification from within the Android enabled device to the user.
    b. Intents are used to notify the user when a particular state occurs, and users have the opportunity to respond to the notification.
    c. There are two types of Intents:
        i. Explicit Intent
        ii. Implicit Intent.

3. **What is an Explicit Intent?**
    a. Explicit intent specifies the particular activity that should respond to the intent.
    b. They are used for application internal messages.

4. **What is an Implicit Intent?**
    a. In case of Implicit Intent, an intent is just declared.
    b. It is for the platform to find an activity that can respond to it.
    c. Since the target component is not declared, it is used for activating components of other applications.

5. **What is the use of Orientation in LineraLayout?**
    a. Orientation decides if the LinearLayout should be presented in row wise or column wise fashion.
    b. The values are set using setOrientation()
    c. The values can be HORIZONTAL or VERTICAL

6. **What is adb?**
    a. Adb simply stands for Android Debug Bridge.
    b. It presents developers with the power to perform shell commands that are remote.
    c. Its major work is to permit and direct communication towards and from the emulator port.

7. **What is the Google Android SDK?**
    a. Google Android SDK is a set of tools required by developers to enable them write apps on Android enabled devices.
    b. It has a graphical interface which imitates an Android handheld environment, enabling them in testing and debugging their codes.

8. **Which are the tools placed in Android SDK?**
    a. The Google Android SDK is a toolset used by developers to write applications on Android-enabled devices.
    b. The tools placed in Android SDK are given below:
        i. 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.
        ii. 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.

iii. ADB(Android Debug Bridge) - It is a command-line tool used to allow and control communication with the emulator instance.

iv. 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).

9. What is Android Architecture?

a. Android architecture contains different number of components to support any android device needs.

i. Applications
ii. Application Framework
iii. Android Runtime
iv. Platform Libraries
v. Linux Kernel

10. Describe the Android Framework.

a. The Android Framework is an important aspect of the Android Architecture.
b. Applications is the **top layer of android architecture**. The pre-installed applications like *home, contacts, camera, gallery etc and third party applications* downloaded from the play store like chat applications, games etc. will be installed on this layer only.
c. Application Framework provides **several important classes** which are used to create an Android application.
d. Android Runtime contains components like **core libraries** and the **Dalvik virtual machine(DVM)**. Mainly, it provides the *base for the application framework and powers our application* with the help of the core libraries.
e. The Platform Libraries includes various C/C++ core libraries and Java based libraries such as **Media, Graphics, Surface Manager, OpenGL** etc. to provide a support for android development.
f. **Linux Kernel is heart of the android architecture.** It manages all the available drivers such as display drivers, camera drivers, Bluetooth drivers, audio drivers, memory drivers, etc. which are required during the runtime.

11. What is DVM?

a. Like Java Virtual Machine (JVM), Dalvik Virtual Machine (DVM) is a register-based virtual machine and specially designed and optimized for android to ensure that a device can run multiple instances efficiently.
b. It depends on the layer Linux kernel for threading and low-level memory management

12. What is the latest version of the Android Studio?

a. The latest stable version of Android Studio is 2025.1.4 (Narwhal 4 Feature Drop).

13. What is the latest version of the Android?

a. The latest major release of Android is Android 16, which was officially launched on June 10, 2025.

14. What is AOSP?

a. The Android Open-Source Project (AOSP) is the repository of source code and the foundation which maintains it that is responsible for the core of the Android operating system.
b. Using code from AOSP, anyone can download and create their own operating system based on Android.

15. What are the components of Android Application?

a. Application components are the essential building blocks of an Android application.
b. These components are loosely coupled by the application manifest file AndroidManifest.xml that describes each component of the application and how they interact.
    i. **Activities:** They dictate the UI and handle the user interaction to the smartphone screen
    ii. **Services:** They handle background processing associated with an application.
    iii. **Broadcast Receivers: They** handle communication between Android OS and applications.
    iv. **Content Providers: They** handle data and database management issues.

16. What are the Advantages of Android?

a. Open-source: It means no license, development, and distribution fee.
b. Platform-independent: Android development platform(Android studio & Android SDK) is platform-independent. Android applications can be developed on any operating system with the help of Android studio & Android SDK.
c. Highly optimized virtual machine: Android uses a highly optimized virtual machine i.e, DVM (Dalvik Virtual Machine) for mobile devices. Replacing DVM, ART(Android RunTime) virtual machine was introduced to execute android apps from Android lollipop 5.0 version (API level 21).
d. Supports various technologies: It supports camera, speech, BlueTooth, Wifi, EDGE, etc. technologies.
e. Millions of available apps: Millions of Android apps are available that you can install on the device from the Google Play store as well as from other alternative stores.

17. **What are the disadvantages of Android?**

a. Fake applications: There are thousands of fake applications available on the market, which when installed may try to steal your data.
b. Streamlining issues:
c. There are various kinds of Android devices available in the market with different screen sizes and dimensions, but more importantly, different Android operating systems.
d. An application that runs smoothly on one version of the Android OS might crash on another Android OS.
e. Background processes:
f. In the older version of Android, most applications always run in the background and come to the foreground as they wish. From the Android 8.0 version, apps that are running in the background now have limits on how freely they can access background services.
g. As few apps run in the background, they consume mobile battery and your device battery vanishes quickly.
h. Poor data connection: Android phones have a large number of background processes that keep on running in the background and it results in excess usage of data and poor internet speed. Sometimes it can be very annoying.

18. List the languages used to build android.

a. The most popular programming languages that can be used to develop applications in Android are:
b. Java: It has always been a starting point for new developers and used by the majority of people who work with Android development. Eclipse, NetBeans, and IntelliJ IDE are the most popular IDE's(Integrated Development Environment) used for developing an Android application using java.
c. Kotlin: Kotlin is a relatively new, modern, safe, and object-oriented cross-platform programming language used in developing an Android application. IDE's used with kotlin are Android studio, Eclipse IDE, etc.

d. C#: Developers can build native iOS and Android mobile applications by using the C# language. Visual Studio is the best tool for developing an Android application using C#.
e. Python: It is a dynamic and object-oriented programming language. It is very popular in machine learning. Pydroid 3, Dcoder, spck code editor is some of the code editors for Python.
f. Other languages which can be used in Android development are C++, HTML 5. C4droid, CppDroid, AIDE, etc. are IDE's for C++. Acode, spck code editor, etc. are examples of IDE's used with HTML.

19. What is the scope of the Android ?

a. We need Android in the mobile market because it helps smartphone users to download applications that can give different services.
b. Android developers can publish their apps on different platforms like SlideME, Mobango,
c. Amazon app store, Opera mobile store, etc. Most of these platforms or markets are free. Such platforms are creating a huge market for Android mobile application development in India.

20. What is the use of Bundle in Android?

a. Bundles are used to pass the required data between various Android activities. These are like HashMap that can take trivial data types.
b. Below code shows how to transfer a piece of data by using bundle:

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

21. What is a service in Android?

a. Service is an application component that facilitates an application to run in the background in order to perform long-running operations without user interaction.
b. A service can run continuously in the background even if the application is closed or even after the user switches to another application.

22. Differentiate between Activities and Services

a. A user can close or terminate activities anytime he/she wishes to do so.
b. Services, on the other hand, run behind the scene and are able to act in an independent manner.
c. Whether or not there are certain activities being executed, the majority of services run continuously.

23. Describe Activities.

a. Activities are what you refer to as the window to a user interface.
b. 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.

24. State the life cycle methods of Android activities?

a. There are seven lifecycle methods of Android activities. They are:
    i. On create()
    ii. On start()
    iii. On resume()
    iv. On pause()
    v. On stop()
    vi. On restart()
    vii. On destroy()

25. What are the four essential states of an activity?

a. Active: if the activity is at the foreground
b. Paused: if the activity is at the background and still visible
c. Stopped: if the activity is not visible and therefore is hidden or obscured by another activity
d. Destroyed: when the activity process is killed or completed terminated

26. What is flutter?

a. Flutter is a cross-platform SDK from Google.
b. **Flutter** was initially launched by Google in 2017, is emerging as one of the fastest application development platforms.
c. With Flutter and Dart developers can build IOS and Android apps with just one codebase and only one programming language.

27. what is dart?

a. **Dart** is a platform-independent, open-source, and object-oriented programming language that comprises a range of useful features for a software developer.
b. It is a **client side programming language** that renders an extensive range of app development utilities, such as a collection of design features, dynamic typing, interface, classes, and optional typing.
c. Dart is developed for both server and browser.

28. What are different types of layout widgets in flutter?

a. Single Child Widget
    i. The single child layout widget is a type of widget, which can have only **one child widget** inside the parent layout widget.
    ii. These widgets can also contain special layout functionality.
    iii. Flutter provides us many single child widgets to make the app UI attractive.
    iv. If we use these widgets appropriately, it can save our time and makes the app code more readable.
    v. Example
        1. **Container**
        2. **Padding**
        3. **Center**
        4. **Align**
        5. **SizedBox**
        6. **ConstrainedBox**

b. Multiple Child Widget
    i. The multiple child widgets are a type of widget, which contains **more than one child widget**, and the layout of these widgets are **unique**.
    ii. Example
        1. **Row**
        2. **Column**
        3. **Listview**
        4. **GridView**
        5. **Table**

29. **Compare Dart and flutter.**

	Flutter	Dart
Description	Open-Source UI SDK	Client side programming language for web and mobile apps
Category	Framework	Programming language
Programming Language	Dart	Dart
Initial Release Date	2017	2013
Developer	Google	Goole
Open Source	Yes	Yes
Free to Use	Yes	Yes
License	BSD 3-Clause "New" or "Revised" License	BSD 3-Clause "New" or "Revised" License
Advantages	Same UI across multiple platforms Native performance Own Rendering Engine	Easy to learn High performance Stability
Popular apps	Philips MGM Resorts ByteDance	Flutter

30. What is stateless widget in flutter?

a. The **widgets whose state cannot be altered once they are built** are called stateless widgets.
b. These widgets are immutable once they are built i.e any amount of change in the variables, icons, buttons, or retrieving data cannot change the state of the app.

31. What is the importance of having an emulator within the Android environment?

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

32. What items are important in every Android project?

a. These are the essential items that are present each time an Android project is created:
    i. AndroidManifest.xml
    ii. build.xml
    iii. bin/
    iv. src/
    v. res/
    vi. assets/

33. What is the importance of XML-based layouts?

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

34. What are containers?

a. 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.
b. Containers may hold labels, fields, buttons, or even child containers, as examples.

35. What is the importance of Android in the mobile market?

a. 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.
b. 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.

36. what is a stateful widget in flutter?

a. This is the most important widget in flutter, because it holds a state widget, this one knows when something changes and re-draws anything necessary on the screen.
b. A stateful widget is defined as **any widget which changes its state within its lifetime**.

37. What is the importance of settings permissions in app development?

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

38. what is single child layout widget in flutter? Give example.

a. The single child layout widget is a type of widget, which can have only **one child widget** inside the parent layout widget.
b. These widgets can also contain special layout functionality.
c. Flutter provides us many single child widgets to make the app UI attractive.
d. If we use these widgets appropriately, it can save our time and makes the app code more readable.
e. Example
    i. **Container**
    ii. **Padding**
    iii. **Center**
    iv. **Align**
    v. **SizedBox**
    vi. **ConstrainedBox**

39. what is multiple child layout widget in flutter? Give example.

a. The multiple child widgets are a type of widget, which contains **more than one child widget**, and the layout of these widgets are **unique**.
b. Example
    1. **Row**
    2. **Column**
    3. **Listview**
    4. **GridView**
    5. **Table**

40. What is a Fragment?

a. A fragment is a part or portion of an activity.
b. It is modular in a sense that you can move around or combine with other fragments in a single activity.
c. Fragments are also reusable.

41. What is JASON?

a. JSON stands for JavaScript Object Notation.
b. JSON is a lightweight data-interchange format
c. JSON is plain text written in JavaScript object notation
d. JSON is used to send data between computers
e. JSON is language independent
f. It is an independent data exchange format and is the best alternative for XML.
g. Android provides four different classes to manipulate JSON data.
h. These classes are
    i. JSONArray
    ii. JSONObject
    iii. JSONStringer
    iv. JSONTokenizer
i. A JSON file consists of many component
    - **Array ([)**
      In a JSON file, square bracket ([) represents a JSON array
    - **Objects ({)**
      In a JSON file, curly bracket ({) represents a JSON object
    - **Key**
      A JSON object contains a key that is just a string.
      Pairs of key/value make up a JSON object
    - **Value**
      Each key has a value that could be string, integer or double e.t.c

```
{
"_id": "5c8a1d5b0190b214360dc097",
"category": “Crio Bytes",
"clusterName": "OOP Foundations",
"bytes": [“Abstraction”, “Inheritance”, “Encapsulation”, “Polymorphism”]
"isFree": true
}
```

42. Synchronous vs Asynchronous calls

a. **Synchronous** means that you call a web service (or function or whatever) and wait until it returns - all other code execution and user interaction is stopped until the call returns.
b. **Asynchronous** means that you do not halt all other operations while waiting for the web service call to return. Other code executes and/or the user can continue to interact with the page (or program UI).

43. Synchronous vs Asynchronous calls

a. **Synchronous calls**
    i. The **advantages** of synchronous requests are: simple understanding; simple implementation; the response result can be returned for subsequent processing;
    ii. The **disadvantage** of synchronous request is that it cannot support high concurrency, and it will affect performance in scenarios where real-time request response is not high.
b. **Asynchronous Call using AsyncTask**
    i. require an AsyncTask(Android driven) wrapper around it. That means **it doesn’t**

support cancelling a request. Also, AsyncTasks generally **leak the Activity's context,** which is not preferred.

ii. **Asynchronous Calling (API driven)** is the recommended way since it supports native cancelling, tagging multiple requests and canceling them all with a single method call (by invoking the cancel on the Activity instance inside the onPause or onDestroy method).

44. What is rest api?

a. A REST API is an API that conforms to the design principles of the REST, or representational state transfer architectural style. For this reason, REST APIs are sometimes referred to RESTful APIs.
b. A REST API is designed to provide a lightweight form of communication (less bandwidth) between producer (ex: Twitter) and consumer (ex: Twitter client)
c. REST APIs provide a flexible, lightweight way to integrate applications, and have emerged as the most common method for connecting components in microservices architectures.
d. RESTful API is an application program interface (API) that uses HTTP requests to GET, PUT, POST and DELETE data.
e. This data can be delivered to a client in virtually any format including **JavaScript Object Notation (JSON), HTML, XLT, Python, PHP, or plain text.**

45. What is okhttp?

a. OkHttp is an HTTP and HTTP/2 client for Android and java application for making restful API calls that's efficient by default.
b. OkHttp is a third-party library that was introduced by Square in 2013 to send and receive HTTP- based network requests.
c. Using OkHttp is easy.
d. Its request/response API is designed with fluent builders and immutability.
e. It supports both synchronous blocking calls and async calls with callbacks.
f. OkHttp supports modern TLS (Transport Layer Security) features (TLS 1.3, ALPN, certificate pinning).
g. It can be configured to fall back for broad connectivity.

46. What is an android manifest file?

a. Every application must have an AndroidManifest.xml file (with precisely that name) in its root directory.
b. The manifest file presents essential information about your app to the Android system, information the system must have before it can run any of the app's code

47. What is an Adapter in android?

a. The Adapter is used to create child views to represent the parent view items.

48. Define the application resource file in android?

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

49. What are application Widgets in android?

a. Each element on a screen of the Flutter app is a widget.
b. App Widgets are miniature application views that can embedded in other applications (such as the home screen) and receive periodic updates.
c. These views have referred to as Widgets in the user interface, and you can publish one with an App Widget provider.

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

a. Using with findViewById we can find view element.

51. What is drawable folder in android?

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

52. Where are layout details placed? Why?

a. Layout details are placed in XML files.
b. XML-based layouts provide a consistent and standard means of setting GUI definition format.

53. What do containers hold?

a. Containers hold objects and widgets in a specified arrangement.
b. They can also hold labels, fields, buttons, or child containers.

54. What is volley?

a. Volley is an HTTP library that makes networking very easy and fast, for Android apps.
b. It was developed by Google and introduced during Google I/O 2013.
c. The volley library has the features like automatic scheduling of network requests, multiple concurrent connections, request prioritization, cancel/block a request, easier management of UI with data fetched asynchronously from the network and also offers easier customization.
d. By default, all the volley network calls work asynchronously, so we don't have to worry about using AsyncTask anymore.
e. It manages the processing and caching of network requests and it saves developers valuable time from writing the same network call/cache code again and again.
f. Volley is not suitable for large download or streaming operations since Volley holds all responses in memory during parsing.

55. What is the use of retrofit?

a. Retrofit android is a type-safe HTTP client for Android and Java.
b. Retrofit is a REST Client for Java, Android, and Kotlin by Square Inc. under Apache 2.0 license.
c. Retrofit will save your development time and also you can keep your code developer-friendly.
d. Retrofit has given almost all the APIs to make a server call and to receive a response.
e. Retrofit automatically serialize the JSON response using a POJO (Plain Old Java Object) which must be defined in advanced for the JSON Structure.

56. What is the use of Content Resolver?

a. The ContentResolver object sends requests (like create, read, update, and delete) to the **ContentProvider** as a client.
b. After receiving a request, ContentProvider process it and returns the desired result.

57. What is Content Provider?

a. A ContentProvider in Android shares data between applications.
b. Each application usually runs in its own process.
c. By default, applications can't access the data and files of other applications.
d. In contrast, with a ContentProvider you can publish and expose a particular data type for other applications to query, add, update, and delete, and those applications don't need to have any prior knowledge of paths, resources, or who provides the content.

58. What is Cursor class?

a. Cursors are **what contain the result set of a query made against a database in Android**.
b. The Cursor class has an API that allows an app to read (in a type-safe manner) the columns that were returned from the query as well as iterate over the rows of the result set.
c. A Cursor represents the result of a query and basically points to one row of the query result.
d. This way Android can buffer the query results efficiently; as it does not have to load all data into memory.
e. To get the number of elements of the resulting query use the getCount() method.
f. Cursor also provides the getColumnIndexOrThrow(String) method which allows to get the column index for a column name of the table.
g. A Cursor needs to be closed with the close () method call.
h. A query returns a Cursor object.

59. Explain SQLiteOpenHelper class.

a. A helper class to manage database creation and version management.
b. You can create a subclass implementing onCreate(SQLiteDatabase), onUpgrade(SQLiteDatabase, int, int) and optionally onOpen(SQLiteDatabase), and this class takes care of opening the database if it exists, creating it if it does not, and upgrading it as necessary.

60. What is SQLite database?

a. SQLite Database is an open-source database provided in Android which is used to store data inside the user's device in the form of a Text file.
b. We can perform so many operations on this data such as adding new data, updating, reading, and deleting this data.
c. SQLite is an offline database that is locally stored in the user's device and we do not have to create any connection to connect to this database.

61. Explain AnimationDrawable class?

a. AnimationDrawable class is used for frame animation and it loads all images into memory at once so there are chances of **OOM** (Out of Memory Exception) so, be careful about the **size of images** and always try to use **a smaller number of images** and lower size images to avoid Out of Memory Exception.

62. What is frame by frame animation?

a. Frame-by-frame animation changes the contents of the Stage in every frame.
b. In Android Frame Animation, you will be **swapping frames repeatedly**, so that it appears continuous to the human eye and we feel that it is animated.
c. Frame is referred to an image.
d. So, to implement frame by frame animation in android, one needs to have set of images, which describes a motion.

63. **State the advantages of Android?**

a. Advantages of Android are as follows:
    i. It is an Open source that requires no licensing
    ii. It is Platform independent that supports Windows, Mac, and Linux platforms.
    iii. Supports different technologies like camera, Bluetooth, wifi, speech, EDGE, etc.
    iv. It is a highly optimized virtual machine.

64. What are the different storage methods in android?

a. Android offers several different options for data persistence.
    i. Shared Preferences:
        1. Store private primitive data in key-value pairs. This sometimes gets limited as it offers only key value pairs.
        2. You cannot save your own java types.
    ii. Internal Storage:
        1. Store private data on the device memory
    iii. External Storage:
        1. Store public data on the shared external storage.
    iv. SQLite Databases:
        1. Store structured data in a private database.
        2. You can define many number of tables and can store data like other RDBMS.

65. What is pub in flutter?

a. The package manager for Dart is **pub**.
b. Pub helps to install packages in the repository.
c. The repository of packages hosted can be found at https://pub.dartlang.org/.

66. What is the use of pubspec.yaml file in flutter?

a. The **package metadata** is defined in a file, **pubspec.yaml**.
b. YAML is the acronym for **Yet Another Markup Language**.
c. The **pub** tool can be used to download all various libraries that an application requires.
d. Every Dart application has a **pubspec.yaml** file which contains the application dependencies to other libraries and metadata of applications like application name, author, version, and description.

```
name: 'vector_victor'
version: 0.0.1
description: An absolute bare-bones web app.
...
dependencies: browser: '>=0.10.0 <0.11.0'
```

67. Compare flutter and android.

Flutter	Android Studio
Flutter appears to have its own tech stack classification, "Cross-Platform Mobile Development."	Android Studio belongs to the category of technology suite known as "Integrated Development Environment."
Flutter provides access to native applications and other SDKs by allowing you to use or reuse your prior javascript, swift, and object code, among other programming languages.	Android studio offers a solution based on Gradle that is extremely flexible and easy to use because it has already been developed.
It is intended to aid developers and designers in creating mobile applications for iOS and Android devices that adhere to a current paradigm.	Android Studio is constructed with variants and APK versions from numerous generations.
In flutter studio, applications are developed at a swift rate. Hot reload is a feature that enables you to quickly and easily experiment with various settings and resolve any potential issues.	In addition, it includes a template that is compatible with Google services and a variety of other devices.
Companies such as Hybrid Heroes, Policygenius, and pludoni GmbH use Flutter.	Google, Lyft, and 9GAG are some well-known companies that use Android Studio.

a. With Flutter, developers can construct the best available cross-platform applications.
b. Both have distinct advantages and disadvantages.
c. Flutter is superior to Android Studio in many respects due to its Hot Load functionality. Whereas, Android Studio enables the development of native Android applications, which are more functional than cross-platform applications and are therefore preferable over those developed using cross- platform.

68. Explain JSON serialization and JSON deserialization.

a. Json Serialization means to convert an object(string) into jason format.
b. jsonEncode () converts object to a JSON string.
c. Jason deserialization means to convert a jason format into object(string).
d. jsonDecode() parses the string and returns the resulting object.

69. What is asynchronous function?

a. Async means that this function is asynchronous and you might need to wait a bit to get its result.
b. Await literally means - wait here until this function is finished and you will get its return value.

70. What is Future<T> class?

a. The result of an asynchronous computation.
b. An *asynchronous computation* cannot provide a result immediately when it is started, unlike a synchronous computation which does compute a result immediately by either returning a value or by throwing.
c. An asynchronous computation may need to wait for something external to the program (reading a file, querying a database, fetching a web page) which takes time.
d. Instead of blocking all computation until the result is available, the asynchronous computation immediately returns a Future which will *eventually* "complete" with the result.

71. What is Firebase Realtime Database?

a. Firebase Realtime Database is a cloud-hosted NoSQL database that stores data as JSON and synchronizes it in real time to every connected client.

72. What is CRUD operation in Firebase?

a. CRUD stands for Create, Read, Update, and Delete operations. In Firebase, these correspond to:
   i. **Create:** set () or push ()
   ii. **Read:** onValue, once()
   iii. **Update:** update()
   iv. **Delete:** remove()

73. How do you write data to Firebase Realtime Database?

a. We use the set() or push() methods.
b. Example (in Flutter):

```
DatabaseReference ref = FirebaseDatabase.instance.ref("users");
ref.push().set({"name": "John", "age": 25});
```

74. **How do you read data from Firebase?**

a. You can read using a listener or by fetching once:

```
ref.onValue.listen((event) {
var data = event.snapshot.value;
});
```

b. This continuously listens for data changes in real time.

75. **How do you update data in Firebase?**

a. You can update data using the update() method.

```
ref.child("user1").update({"age": 26});
```

76. How do you delete data in Firebase?

a. Use the remove() method:
b. ref.child("user1").remove();

77. What is the difference between set() and push()?

a. set() replaces data at the specified path.
b. push() creates a unique key each time, useful for adding new records without overwriting.

78. What are the advantages of using Firebase Realtime Database?

a. Real-time synchronization
b. Offline support
c. Scalability
d. Easy integration with Flutter and Android

79. What data format is used in Firebase Realtime Database?

a. Firebase uses **JSON (JavaScript Object Notation)** format to store and transfer data.

80. What is the difference between Realtime Database and Firestore?

a. **Realtime Database:** JSON tree, simpler, real-time sync
b. **Firestore:** Collections and documents, structured, supports advanced queries

81. What is Sqflite in Flutter?

a. Sqflite is a Flutter plugin that allows performing SQLite database operations on local storage.

82. What is the purpose of SQLite in a mobile app?

a. SQLite is used for **local data storage**, enabling offline functionality and fast access to structured data.

83. How do you create a table in Sqflite?

a. await db.execute('CREATE TABLE students(id INTEGER PRIMARY KEY, name TEXT, age INTEGER)');

84. How do you insert data in Sqflite?

a. await db.insert('students', {'name': 'John', 'age': 20});

85. How do you fetch data from Sqflite?

a. List<Map> result = await db.query('students');

86. How do you update data in Sqflite?

a. await db.update('students', {'age': 21}, where: 'id = ?', whereArgs: [1]);

87. How do you delete data from Sqflite?

a. await db.delete('students', where: 'id = ?', whereArgs: [1]);

88. How do you open or create a database in Sqflite?

```
var db = await openDatabase('mydb.db', version: 1,
onCreate: (db, version) {
db.execute('CREATE TABLE students(id INTEGER PRIMARY KEY, name TEXT, age
INTEGER)');
});
```

89. What is the difference between Firebase and Sqflite?

Feature	Firebase	Sqflite
Storage	Cloud-based	Local device
Data type	NoSQL (JSON)	Relational (Tables)
Sync	Real-time	Manual
Internet	Required	Works offline

90. When should you use Sqflite vs Firebase?

a. Use **Sqflite** for local/offline apps that don't need syncing.
b. Use **Firebase** when you need cloud storage, multi-user access, or real-time updates.

91. What are widgets in Flutter?

a. In Flutter, **widgets** are the **basic building blocks of the user interface (UI)**.
Everything you see on the screen — text, buttons, images, layouts, even the entire app itself — is a widget.