Flutter Interview Questions and Answers

Basic Questions

1. What is Flutter?

Flutter is an open-source UI toolkit developed by Google for building natively compiled applications for mobile, web, and desktop from a single codebase.

2. Why is Dart used for Flutter development?

Dart is optimized for UI development, offering fast compilation, a reactive programming model, and features like hot reload. Its Ahead-of-Time (AOT) compilation ensures high performance.

3. What is a framework?

A framework provides a structure and set of tools to build applications, offering reusable code and predefined functions for faster development.

4. What is a MaterialApp?

MaterialApp is a widget that wraps the entire app, providing Material Design features like themes, routing, and navigation.

5. What is a widget?

A widget is the basic building block of a Flutter application, representing everything from UI components to layout structure.

6. Difference between main() and runApp() in Flutter?

- main(): The entry point of a Dart application.

- runApp(): Initializes the Flutter app and renders the widget tree.

Widget Types

7. Types of widgets in Flutter:

- Stateless Widgets: Do not change over time.

- Stateful Widgets: Can change dynamically based on user interaction or data changes.

8. What is the state in Flutter?

State refers to data that can change during the lifecycle of a widget. It's managed in StatefulWidget.

9. Difference between Flexible and Expanded widgets?

- Flexible: Provides flexibility to resize a child widget within a row/column.

- Expanded: Forces the child to occupy the remaining space.

10. Difference between SizedBox and Container?

- SizedBox: Used to create fixed space with defined width and height.

- Container: Offers additional styling options like color, padding, margin, and borders.

11. Difference between ListView and Column?

- ListView: A scrollable column.

- Column: Non-scrollable, fixed space for children.

12. What is the main axis alignment of Row and Column?

- Row: Aligns widgets horizontally.

- Column: Aligns widgets vertically.

Common Widgets

13. What is a Scaffold?

A Scaffold is a top-level widget providing a basic structure for the app, including AppBar, Drawer, FloatingActionButton, and Body.

14. Difference between setState and initState:

- setState: Used to rebuild the UI when state changes.

- initState: Called once when a StatefulWidget is initialized.

15. Explain the widget lifecycle of Stateful and Stateless widgets:

- Stateless Widget: Built once and doesn't change during its lifecycle.

- Stateful Widget: Lifecycle methods include initState, didChangeDependencies, build, setState, and dispose.

Advanced Concepts

16. Difference between Future and Stream:

- Future: Handles a single asynchronous operation.

- Stream: Handles a sequence of asynchronous data.

17. What is cloud and local storage?

- Cloud storage: Data stored on remote servers (e.g., Firebase, AWS).

- Local storage: Data stored on the device (e.g., SharedPreferences,

SQLite).

18. Difference between var and dynamic:

- var: Type inferred at compile-time and cannot change.

- dynamic: Type can change during runtime.

19. Difference between const and final:

- const: Compile-time constant.

- final: Runtime constant, initialized once.

20. Use of this and super keywords:

- this: Refers to the current class instance.

- super: Refers to the parent class.

Object-Oriented Concepts

21. Main pillars of OOP:

- Encapsulation, Inheritance, Polymorphism, Abstraction.

22. What is a constructor?

A constructor initializes an object and its properties when the class is instantiated.

23. What is a class?

A blueprint for creating objects.

24. What is an object?

An instance of a class.

25. What is function overriding?

A subclass provides a specific implementation of a method defined in its superclass.

26. What is inheritance, and what are the types?

Inheritance allows a class to inherit properties and methods from another class.

Types: Single, Multilevel, Hierarchical, Hybrid, and Multiple (not supported natively in Dart).

Dart Basics

27. What is a list?

A list is an ordered collection of items in Dart, equivalent to arrays.

28. What is a variable?

A named storage for data.

29. What is a datatype?

Specifies the type of data (e.g., int, double, String).

30. What is a function, and what are its types?

A reusable block of code.

Types: Anonymous, Parameterized, Void, Returning, and Arrow Functions.

Additional Questions

- What is hot reload in Flutter?

- What is a key in Flutter?

- Explain the difference between Provider and Bloc for state management.

- How do you handle errors in Flutter?

- What are Futures, async, and await in Dart?

- What is the difference between Navigator.push and Navigator.pushReplacement?

- How do you handle network calls in Flutter?