

Beginner Topics

1. Flutter Basics

- Introduction to Flutter
- Setting up the development environment
- Basic syntax and data types

2. Widgets and Layouts

- Introduction to widgets
- Basic widgets (Text, Image, Button, etc.)
- Layouts (Row, Column, Stack, etc.)

3. State Management

- Introduction to state management
- Basic state management using StatefulWidget

4. Navigation and Routing

- Introduction to navigation and routing
- Basic navigation using Navigator

5. Forms and Input

- Introduction to forms and input
- Basic form widgets (TextField, DropdownButton, etc.)

Intermediate

1. Advanced State Management

- Introduction to provider, BLoC, and Riverpod
- Using state management libraries

2. Custom Widgets and Animations

- Creating custom widgets
- Introduction to animations
- Basic animation widgets (AnimatedContainer, AnimatedBuilder, etc.)

3. Networking and API Integration

- Introduction to networking and API integration
- Using the http package
- JSON serialization and deserialization

4. Storage and Database

- Introduction to storage and database
- Using the shared_preferences package
- Introduction to SQLite and Firebase Realtime Database

5. Testing and Debugging

- Introduction to testing and debugging
- Writing unit tests and widget tests
- Using the debugger and DevTools

Advanced Topics

1. Architecture and Design Patterns

- Introduction to architecture and design patterns

- Using the Clean Architecture pattern
- Introduction to the BLoC pattern

2. Advanced Animations and Graphics

- Introduction to advanced animations and graphics
- Using the CustomPainter class
- Introduction to shaders and GPU acceleration

3. Machine Learning and AI

- Introduction to machine learning and AI
- Using the ML Kit library
- Introduction to TensorFlow Lite

4. Web and Desktop Support

- Introduction to web and desktop support
- Using the Flutter Web library
- Introduction to Flutter Desktop

5. Security and Best Practices

- Introduction to security and best practices
- Using secure coding practices
- Introduction to code review and testing

Expert Topics

1. Flutter Engine and Internals

- Introduction to the Flutter engine and internals
- Understanding the rendering pipeline
- Introduction to the widget tree

2. Custom Render Objects and Layers

- Introduction to custom render objects and layers
- Creating custom render objects
- Introduction to layer trees

3. Advanced Performance Optimization

- Introduction to advanced performance optimization
- Using the Flutter DevTools
- Introduction to GPU profiling and optimization

4. Flutter and WebAssembly

- Introduction to Flutter and WebAssembly
- Using the Flutter WebAssembly library
- Introduction to WebAssembly modules

5. Flutter and IoT

- Introduction to Flutter and IoT
- Using the Flutter IoT library
- Introduction to IoT protocols and devices