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Flutter Widgets: What is Container & How to Use it in Flutter?

Hello friends! In today's class, we are going to explore the Flutter **Container** widget, understand its usage, and see practical examples of how it can be implemented. Let's dive in!

1. Understanding the Container

What is a Container?

- A **Container** is an invisible box that can contain other widgets and arrange them in a specific layout.
- It is commonly used to group widgets together, apply styling, positioning, and size.

2. Properties of a Container

Key Properties

- **color**: Sets the background color of the container.
- **width** and **height**: Define the dimensions of the container.
- **child**: The single widget that this container holds.
- **decoration**: Allows you to apply various styles like background images, gradients, borders, etc.

3. Creating a Container

Basic Example

Here's a simple example of creating a **Container** in Flutter:

```
import 'package:flutter/material.dart';

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Container',
      home: Scaffold(
        appBar: AppBar(
          title: Text('Flutter Container Example'),
        ),
        body: Center(
          child: Container(
            width: 100,
            height: 100,
            color: Colors.blue,
            child: Center(
              child: Text(
                'Hello Flutter',
                style: TextStyle(color: Colors.white),
              ),
            ),
          ),
        ),
      ),
    );
  }
}
```

Explanation

- We define a **Container** with a width and height of 100.
- We set the **color** to blue.
- The **child** of the container is a centered **Text** widget displaying "Hello Flutter".

4. Advanced Container Usage

Using Decoration

You can enhance the appearance of a **Container** using the **decoration** property:

```
Container(  
  width: 200,  
  height: 200,  
  decoration: BoxDecoration(  
    color: Colors.red,  
    borderRadius: BorderRadius.circular(10),  
    boxShadow: [  
      BoxShadow(  
        color: Colors.black.withOpacity(0.5),  
        spreadRadius: 5,  
        blurRadius: 7,  
        offset: Offset(0, 3), // changes position of shadow  
      ),  
    ],  
  ),  
  child: Center(  
    child: Text(  
      'Decorated Container',  
      style: TextStyle(color: Colors.white),  
    ),  
  ),  
)
```

Explanation

- **BoxDecoration** allows setting a background color, border radius, and box shadow.
- The **borderRadius** creates rounded corners.

- `boxShadow` adds a shadow effect to the container.

5. Practical Implementation

Step-by-Step Guide

1. **Create a New Flutter Project:** Use Android Studio or VS Code to create a new Flutter project.
2. **Set Up the Main Widget:** In `main.dart`, set up your main widget as shown in the basic example.
3. **Customize the Container:** Modify the `Container` to use various properties like `width`, `height`, `color`, `decoration`, etc.

Example Project

```
import 'package:flutter/material.dart';

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Container',
      home: Scaffold(
        appBar: AppBar(
          title: Text('Flutter Container Example'),
        ),
        body: Center(
          child: Container(
            width: 200,
            height: 200,
            decoration: BoxDecoration(
              color: Colors.green,
              borderRadius: BorderRadius.circular(15),
              border: Border.all(
                color: Colors.black,
                width: 4,
              ),
            ),
          ),
          child: Center(
            child: Text(
              'Hello Flutter',
            ),
          ),
        ),
      ),
    );
  }
}
```

```
        style: TextStyle(
          color: Colors.white,
          fontSize: 20,
        ),
      ),
    ),
  ),
),
),
),
);
}
```

Explanation

- We create a **Container** with specific dimensions, background color, rounded corners, and a border.
- The **child** of the container is a **Text** widget centered within the container.

6. Conclusion

- The **Container** widget in Flutter is a versatile tool for layout and styling.
- It can hold a single child, which can be a complex layout with multiple nested widgets.
- Using properties like **color**, **width**, **height**, and **decoration**, you can create visually appealing designs.

By understanding and utilizing the **Container** widget, you can enhance your Flutter applications with more organized and stylish UIs. Happy coding!