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Experiment - 2

Aim - To design Flutter UI by including common widgets.

Theory -

In Flutter, widgets are the building blocks of the user interface (UI). Everything in Flutter is a widget, from the simplest elements like text and buttons to more complex structures like entire screens or even the entire application itself. Widgets are used to create the visual representation of the app and to define its behavior.

There are two main types of widgets in Flutter: StatelessWidget and StatefulWidget.

StatelessWidget:

- A StatelessWidget is immutable, meaning its properties cannot change once it's been instantiated.
- It does not store or manage any mutable state.
- The UI of a StatelessWidget is purely based on its configuration

StatefulWidget:

- A StatefulWidget is mutable and can change its internal state during its lifetime.
- It consists of two separate classes: one for the immutable widget and one for the mutable state.
- When the state changes, the widget rebuilds its UI.

Category of widgets -

Basic UI Elements:

- Text: Displays a paragraph of text.
- Image: Displays an image.
- Icon: Displays a material design icon.
- Container: A box model to contain other widgets.

- Layout Widgets:
  - Row and Column: Arrange children in a horizontal (Row) or vertical (Column) array.
  - Stack: Overlays widgets on top of each other.
  - Expanded: Takes up available space along a parent widget.
  - ListView and GridView: Scrollable lists and grids.
- Material Design Widgets:
  - AppBar: Represents the top app bar.
  - Drawer: A slide-in menu from the edge of the screen.
  - BottomNavigationBar: A material design bottom navigation bar.

- Input Widgets:
    - TextField: Accepts user input.
    - Checkbox and Radio: For selecting options.
    - Slider and Switch: Allows users to make selections on a continuous range or toggle a setting.
- Scrolling Widgets:
    - SingleChildScrollView: Allows a single child to be scrolled.
    - ListView, GridView, and PageView: Support scrolling through a list, grid, or pages.
- Navigation Widgets:
    - Navigator: Manages a stack of route objects and transitions between them.
    - MaterialPageRoute: Represents a full page that slides in from the right.
- Animation Widgets:
    - AnimatedContainer, AnimatedOpacity: Animate the properties of a widget.
    - Hero: Animates a widget transition between two screens.
- State Management Widgets:
    - StatefulWidget and StatelessWidget: Fundamental building blocks for managing state.
    - Provider, Bloc, Riverpod: External packages for more advanced state management.
- Form Widgets:
    - Form: A container for form fields, validation, and submission.
    - TextFormField: An input field within a form.
- Async Widgets:
    - FutureBuilder and StreamBuilder: Build widgets based on asynchronous data.
- Custom Widgets:
    - Developers can create their own custom widgets by extending existing ones or combining basic widgets to encapsulate specific functionality

Code -

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

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

class FoodDeliveryApp extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
   return MaterialApp(
     title: 'Food Delivery App',
     theme: ThemeData(
       primarySwatch: Colors.blue,
       visualDensity: VisualDensity.adaptivePlatformDensity,
```

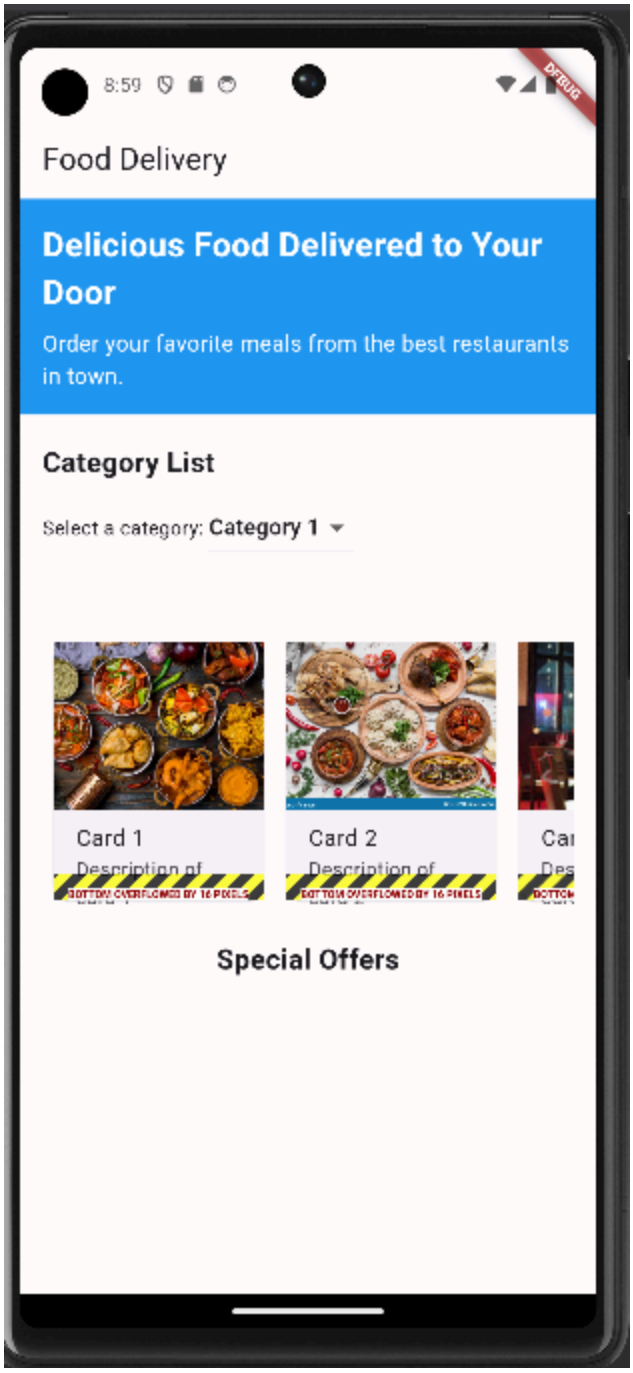
```
    ),
    home: HomePage(),
   );
 }
}

class HomePage extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
  return Scaffold(
   appBar: AppBar(
    title: Text('Food Delivery'),
   ),
   body: Column(
    children: [
     Header(),
     SizedBox(height: 20.0),
     CategoryList(),
     SizedBox(height: 20.0),
     SpecialOffer(),
    ],
   ),
  );
 }
}

class Header extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
  return Container(
   padding: EdgeInsets.all(16.0),
   decoration: BoxDecoration(
    color: Colors.blue,
   ),
   child: Column(
    crossAxisAlignment: CrossAxisAlignment.start,
    children: [
     Text(
      'Delicious Food Delivered to Your Door',
      style: TextStyle(
       color: Colors.white,
       fontSize: 24.0,
       fontWeight: FontWeight.bold,
      ),
```

```
        ),
        SizedBox(height: 8.0),
        Text(
          'Order your favorite meals from the best restaurants in town.',
          style: TextStyle(
            color: Colors.white,
            fontSize: 16.0,
          ),
        ),
      ],
    ),
  );
 }
}

class CategoryList extends StatefulWidget {
 @override
 _CategoryListState createState() => _CategoryListState();
}

class _CategoryListState extends State<CategoryList> {
 final List<String> categories = ['Category 1', 'Category 2', 'Category 3'];
 String selectedCategory = 'Category 1'; // Default category

 @override
 Widget build(BuildContext context) {
  return Container(
    padding: EdgeInsets.symmetric(horizontal: 16.0),
    child: Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      children: [
        Text(
          'Category List',
          style: TextStyle(
            fontSize: 20.0,
            fontWeight: FontWeight.bold,
          ),
        ),
        SizedBox(height: 8.0),
        Row(
          children: [
            Text('Select a category: '),
            DropdownButton<String>(
              value: selectedCategory,
```

```
      onChanged: (String? newValue) {
        // Update the selected category when the dropdown changes
        if (newValue != null) {
          setState(() {
            selectedCategory = newValue;
          });
        }
      },
      items: categories.map((String category) {
        return DropdownMenuItem<String>(
          value: category,
          child: Text(category),
        );
      }).toList(),
    ),
  ],
),
SizedBox(height: 50.0),
// Updated section with 4 cards and images
Container(
  height: 200.0,
  child: ListView.builder(
    scrollDirection: Axis.horizontal,
    itemCount: 4, // Number of cards
    itemBuilder: (context, index) {
      return Card(
        margin: EdgeInsets.all(8.0),
        child: Container(
          width: 150.0, // Customize the card width as needed
          child: Column(
            children: [
              // Add an Image widget with the image path
              Image.asset(
                'assets/card_image_${index + 1}.jpeg',
                height: 120.0,
                width: 150.0,
                fit: BoxFit.cover,
              ),
              ListTile(
                title: Text('Card ${index + 1}'),
                subtitle: Text('Description of card ${index + 1}'),
                // Add onTap callback if needed
              ),
            ],
```

```
                ),
              ),
            );
          },
        ),
      ),
    ],
  ),
 );
}
}

class SpecialOffer extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
  // Implement your special offer section here
  // For example, you can use a GridView with special offer cards
  return Container(
   padding: EdgeInsets.symmetric(horizontal: 16.0),
   child: Text(
    'Special Offers',
    style: TextStyle(
     fontSize: 20.0,
     fontWeight: FontWeight.bold,
    ),
   ),
  );
 }
}
```

Output -


8:59
DEBUG
Food Delivery
Delicious Food Delivered to Your Door
Order your favorite meals from the best restaurants in town.
Category List
Select a category: Category 1
Card 1
Card 2
Special Offers