PRACTICAL 2

Aim: To design flutter ui by including common widgets.

Theory:

1. Overview

The given Flutter code defines a simple study-tracking dashboard UI using the `MaterialApp` framework. It consists of a home screen (`DashboardScreen`) that displays study statistics, subjects, upcoming tasks, and recent study sessions.

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2. Application Structure

The code follows a structured approach:

- **`main.dart`**: The entry point of the Flutter application.
- **`SmartStudyApp`**: A stateless widget that initializes the app and sets up the theme.
- **`DashboardScreen`**: The main UI component where all elements are placed.

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3. Widgets Used

The UI is designed using common Flutter widgets:

1. **`MaterialApp`**:
    - Acts as the root widget for the Flutter app.
    - Defines the theme (`dark` mode) and sets `DashboardScreen` as the home screen.
2. **`Scaffold`**:
    - Provides a basic screen structure with an `AppBar`, `Body`, and layout elements.
3. **`AppBar`**:
    - Displays the title of the application, "Smart Study".
4. **`Padding & Column`**:
    - Used for proper alignment and spacing of widgets.
5. **`Row`**:
    - Used to arrange multiple `Card` widgets in a horizontal layout.
6. **`Card`**:
    - Used to display study statistics in a visually appealing way.
7. **`ElevatedButton`**:
    - Represents the "Start A Study Session" button, allowing user interaction.
8. **`Container`**:
    - Used to display empty state messages with icons for different sections.
9. **`Expanded`**:
    - Ensures the `Card` widgets are evenly distributed across the screen.

10. `Text`:
    - Displays various labels, titles, and messages.

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4. Functionality

The application consists of three main sections:

1. **Study Statistics**
    - Displays key study metrics such as:
        - Subject Count
        - Studied Hours
        - Goal Study Hours
    - This is achieved using `_infoCard(title, value)` function.
2. **Subjects, Upcoming Tasks, and Recent Study Sessions**
    - Each section is displayed with a title and an empty state message.
    - `_emptySection(icon, message, subtitle)` function is used to render placeholders.
3. **Start Study Session**
    - A button (`ElevatedButton`) is included to allow users to begin a study session.

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5. Code Reusability

- Functions like `_infoCard()` and `_emptySection()` promote reusability, reducing code duplication.
- `_sectionTitle()` helps maintain consistent formatting across section headers.

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6. Possible Enhancements

- Implementing functionality for adding subjects and tracking progress.
- Using `setState()` in a `StatefulWidget` to update the statistics dynamically.
- Storing and retrieving data using `SharedPreferences` or a database.

CODE:

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

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

class SmartStudyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
```

```
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      theme: ThemeData.dark(),
      home: DashboardScreen(),
    );
  }
}

class DashboardScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Smart Study', style: TextStyle(fontWeight: FontWeight.bold)),
        centerTitle: true,
      ),
      body: Padding(
        padding: const EdgeInsets.all(16.0),
        child: Column(
          crossAxisAlignment: CrossAxisAlignment.start,
          children: [
            Row(
              mainAxisAlignment: MainAxisAlignment.spaceBetween,
              children: [
                _infoCard("Subject Count", "0"),
                _infoCard("Studied Hours", "0.0"),
                _infoCard("Goal Study Hours", "0.0"),
              ],
            ),
            SizedBox(height: 20),
            _sectionTitle("Subjects"),
            _emptySection(Icons.menu_book, "You don't have any subjects.", "Click + to add a
subject."),
            SizedBox(height: 10),
            ElevatedButton(
              onPressed: () {},
              style: ElevatedButton.styleFrom(minimumSize: Size(double.infinity, 50)),
              child: Text("Start A Study Session"),
            ),
            SizedBox(height: 20),
            _sectionTitle("Upcoming Tasks"),
            _emptySection(Icons.checklist, "You don't have any upcoming tasks.", "Click the +
button in Subject Screen to add a task."),
            SizedBox(height: 20),
            _sectionTitle("Recent Study Sessions"),
            _emptySection(Icons.desk, "You don't have any recent study sessions.", "Start a study
session to begin recording your progress."),
          ],
        ),
```

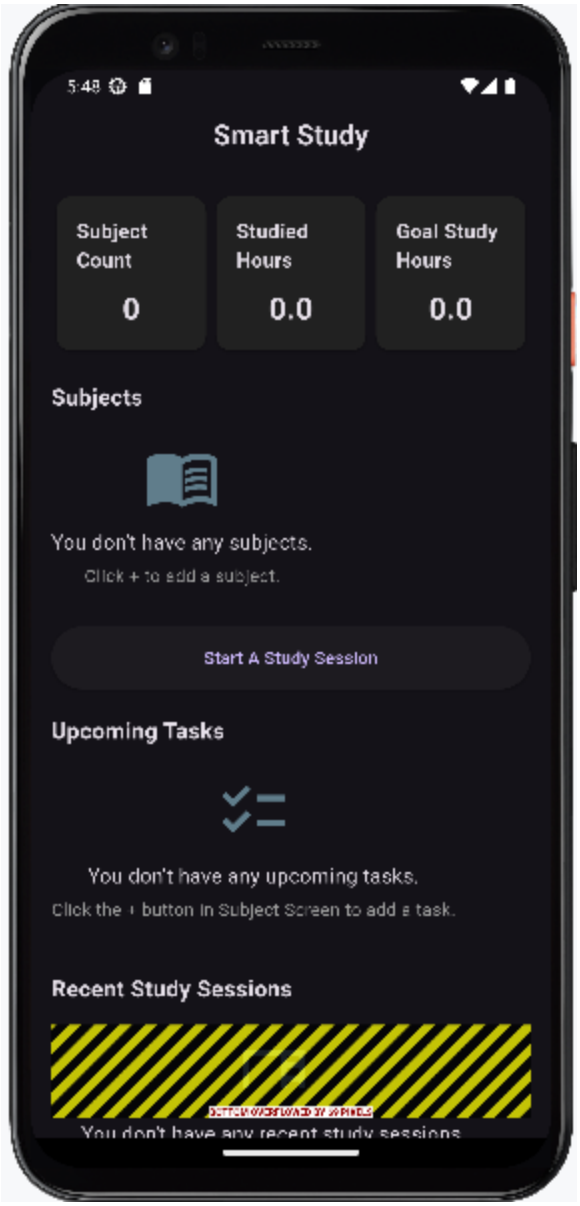
```
      ),
    );
  }

  Widget _infoCard(String title, String value) {
    return Expanded(
      child: Card(
        color: Colors.grey[900],
        child: Padding(
          padding: const EdgeInsets.all(16.0),
          child: Column(
            children: [
              Text(title, style: TextStyle(fontSize: 16, fontWeight: FontWeight.bold)),
              SizedBox(height: 10),
              Text(value, style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold)),
            ],
          ),
        ),
      ),
    );
  }

  Widget _sectionTitle(String title) {
    return Text(
      title,
      style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold),
    );
  }

  Widget _emptySection(IconData icon, String message, String subtitle) {
    return Container(
      padding: EdgeInsets.symmetric(vertical: 20),
      child: Column(
        children: [
          Icon(icon, size: 60, color: Colors.blueGrey),
          SizedBox(height: 10),
          Text(message, style: TextStyle(fontSize: 16)),
          SizedBox(height: 5),
          Text(subtitle, style: TextStyle(fontSize: 14, color: Colors.grey)),
        ],
      ),
    );
  }
}
```

OUTPUT:



Conclusion

This Flutter UI demonstrates a structured approach to designing a study-tracking app. It utilizes core Flutter widgets to build a responsive, user-friendly layout while maintaining modularity through reusable functions.