 Marwadi University Marwadi Chandarana Group	NAAC A+	Marwadi University Faculty of Technology Department of Information and Communication Technology	
Subject: Cross-Platform Mobile Application Development (01CT1517)		Aim: To design a layout of the Flutter App using layout widgets. Create a flutter app to manage Todos with the add , remove , complete and list of todo.	
Experiment No:- 05	Date:- 03-10-2024	Enrollment No:- 92200133030	

Objective:- To design a layout of the Flutter App using layout widgets. Create a flutter app to manage Todos with the add , remove , complete and list of todo.

Code :-

➤ lib

- constants

- colors.dart

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

// Define a constant color for red, typically used for errors or alerts
const Color tdRed = Color(0xFFDA4040);

// Define a constant color for blue, can be used for primary buttons or highlights
const Color tdBlue = Color(0xFF5F52EE);

// Define a constant color for black, useful for text or dark backgrounds
const Color tdBlack = Color(0xFF3A3A3A);

// Define a constant color for grey, often used for disabled elements or secondary text
const Color tdGrey = Color(0xFF717171);

// Define a constant background color, providing a light theme to the app
const Color tdBGColor = Color(0xFFEEEEFF5);
```

- controller


- todo_item.dart

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

import '../model/todo.dart'; // Importing the ToDo model.
import '../constants/colors.dart'; // Importing custom color constants.

class ToDoItem extends StatelessWidget {
  final ToDo todo; // The ToDo item to be displayed.
  // Callback function when the ToDo item is changed (completed or not).
  // ignore: prefer_typing_uninitialized_variables
  final onToDoChanged;
  // Callback function when the delete icon is pressed.
  // ignore: prefer_typing_uninitialized_variables
  final onDeleteItem;

  const ToDoItem({
    super.key,
```


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```

required this.todo, // Required parameter for the ToDo item.
required this.onToDoChanged, // Required callback for item change.
required this.onDeleteItem, // Required callback for item deletion.
});

@override
Widget build(BuildContext context) {
  return Container(
    margin: const EdgeInsets.only(bottom: 20), // Space between items.
    child: ListTile(
      onTap: () {
        // This triggers when the ToDo item is tapped.
        // print('Clicked on Todo Item.');// Uncomment for debugging.
        onToDoChanged(todo); // Call the callback to update ToDo status.
      },
      shape: RoundedRectangleBorder(
        borderRadius:
          BorderRadius.circular(20), // Rounded corners for the tile.
      ),
      contentPadding: const EdgeInsets.symmetric(
        horizontal: 20, vertical: 5), // Padding inside the tile.
      tileColor: Colors.white, // Background color of the tile.
      leading: Icon(
        // Icon showing whether the ToDo is completed or not.
        todo.isDone ? Icons.check_box : Icons.check_box_outline_blank,
        color: tdBlue, // Color for the checkbox icon.
      ),
      title: Text(
        todo.todoText!, // Display the text of the ToDo item.
        style: TextStyle(
          fontSize: 16, // Font size for the ToDo text.
          color: tdBlack, // Text color.
          decoration: todo.isDone
            ? TextDecoration.lineThrough
            : null, // Strikethrough if done.
        ),
      ),
      trailing: Container(
        padding: const EdgeInsets.all(
          0), // No padding inside the trailing container.
        margin: const EdgeInsets.symmetric(
          vertical: 12), // Vertical margin for the container.
        height: 35, // Fixed height for the delete button.
        width: 35, // Fixed width for the delete button.
        decoration: BoxDecoration(
          color: tdRed, // Background color for the delete button.
          borderRadius: BorderRadius.circular(
            5), // Rounded corners for the delete button.
        ),
        child: IconButton(
          color: Colors.white, // Icon color.
          iconSize: 18, // Size of the delete icon.

```

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```

        icon: const Icon(Icons.delete), // Delete icon.
        onPressed: () {
          // This triggers when the delete icon is pressed.
          // print('Clicked on delete icon'); // Uncomment for debugging.
          onDeleteItem(
            todo.id); // Call the callback to delete the ToDo item.
        },
      ),
    ),
  );
}
}

```

- **model**

- **todo.dart**

```

class ToDo {
  // Unique identifier for the ToDo item
  String? id;


  // The text description of the ToDo item
  String? todoText;

  // Flag to indicate whether the ToDo item is completed or not
  bool isDone;

  // Constructor for the ToDo class, with 'id' and 'todoText' being required
  // 'isDone' is optional and defaults to false
  ToDo({
    required this.id,
    required this.todoText,
    this.isDone = false,
  });

  // Static method to return an empty List of ToDo items
  static List<ToDo> todoList() {
    return []; // Returns an empty List of ToDo objects
  }
}

```

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- view
 - **home.dart**

```
import 'package:flutter/material.dart';
import 'package:flutter/services.dart';
import '../model/todo.dart'; // Importing the ToDo model
import '../constants/colors.dart'; // Importing color constants
import '../controller/todo_item.dart'; // Importing the ToDoItem widget


// The main Home widget, a StatefulWidget to manage state
class Home extends StatefulWidget {
  const Home({super.key});

  @override
  State<Home> createState() => _HomeState();
}

// State class for Home
class _HomeState extends State<Home> {
  // List to hold all the ToDo items
  final todosList =
    ToDo.todoList(); // Initializing the list with predefined items
  List<ToDo> _foundToDo = []; // List to hold filtered ToDo items
  final _todoController =
    TextEditingController(); // Controller for the TextField

  @override
  void initState() {
    _foundToDo = todosList; // Initialize _foundToDo with all todos
    super.initState();
  }


  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: tdBGColor, // Setting background color
      appBar: _buildAppBar(), // Building the app bar
      body: Stack(
        children: [
          Container(
            padding: const EdgeInsets.symmetric(
              horizontal: 20,
              vertical: 15,
            ),
          ),
          child: Column(
            children: [
              searchBar(), // Search box for filtering todos
              Expanded(
                child: ListView(
                  children: [
                    Container(
```

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```

margin: const EdgeInsets.only(
  top: 50,
  bottom: 20,
),
child: const Text(
  'All Todos', // Title for the ToDo list
  style: TextStyle(
    fontSize: 30,
    fontWeight: FontWeight.w500,
  ),
),
),
// Displaying each ToDo item in reverse order
for (ToDo todo in _foundToDo.reversed)
  ToDoItem(
    todo: todo, // Passing the current ToDo item
    onToDoChanged:
      _handleToDoChange, // Callback for when ToDo is
changed
      onDeleteItem:
        _deleteToDoItem, // Callback for deleting a ToDo
item
  ),
),
],
),
),
],
),
),
// Bottom input field and button for adding new ToDo items
Align(
  alignment: Alignment.bottomCenter,
  child: Row(children: [
    Expanded(
      child: Container(
        margin: const EdgeInsets.only(
          bottom: 20,
          right: 20,
          left: 20,
        ),
        padding: const EdgeInsets.symmetric(
          horizontal: 20,
          vertical: 5,
        ),
        decoration: BoxDecoration(
          color: Colors.white, // White background for input field
          boxShadow: const [
            BoxShadow(
              color: Colors.grey, // Shadow effect
              offset: Offset(0.0, 0.0),
              blurRadius: 10.0,
              spreadRadius: 0.0,

```

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```

    ),
  ],
  borderRadius: BorderRadius.circular(10), // Rounded corners
),
child: TextField(
  controller: _todoController, // TextField controller
  decoration: const InputDecoration(
    hintText: 'Add a new todo item', // Placeholder text
    border: InputBorder.none), // No border
),
),
),
Container(
  margin: const EdgeInsets.only(
    bottom: 20,
    right: 20,
  ),
  child: ElevatedButton(
    onPressed: () {
      _addToDoItem(_todoController.text); // Adding new ToDo item
    },
    style: ElevatedButton.styleFrom(
      backgroundColor: tdBlue, // Button background color
      minimumSize: const Size(60, 60), // Button size
      elevation: 10, // Button shadow
    ),
    child: const Text(
      '+', // Button text
      style: TextStyle(
        fontSize: 40, color: Colors.white), // Text style
    ),
  ),
),
),
),
]),
),
],
),
);
}

// Handle change of ToDo item status (completed or not)
void _handleToDoChange(ToDo todo) {
  setState(() {
    todo.isDone = !todo.isDone; // Toggle the isDone status
  });
}

// Delete ToDo item from the list by its ID
void _deleteToDoItem(String id) {
  setState(() {
    todosList
      .removeWhere((item) => item.id == id); // Remove item from the list
  });
}

```

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```

    });
  }



// Add new ToDo item to the list
void _addToDoItem(String todo) {
  setState(() {
    todosList.add(ToDo(
      id: DateTime.now()
        .millisecondsSinceEpoch
        .toString(), // Unique ID based on timestamp
      todoText: todo, // ToDo text
    ));
  });
  _todoController.clear(); // Clear the text field after adding
}

// Filter ToDo items based on search input
void _runFilter(String enteredKeyword) {
  List<ToDo> results = [];
  if (enteredKeyword.isEmpty) {
    results = todosList; // If search input is empty, show all todos
  } else {
    results = todosList
      .where((item) => item.todoText!.toLowerCase().contains(
        enteredKeyword.toLowerCase())) // Filter based on search input
      .toList();
  }

  setState(() {
    _foundToDo = results; // Update found ToDo list
  });
}

// Widget for the search box
Widget searchBox() {
  return Container(
    padding: const EdgeInsets.symmetric(horizontal: 15),
    decoration: BoxDecoration(
      color: Colors.white, // White background for the search box
      borderRadius: BorderRadius.circular(20), // Rounded corners
    ),
    child: TextField(
      onChanged: (value) => _runFilter(value), // Run filter on text change
      decoration: const InputDecoration(
        contentPadding: EdgeInsets.all(0), // Padding for the input
        prefixIcon: Icon(
          Icons.search, // Search icon
          color: Colors.black,
          size: 20,
        ),
        prefixIconConstraints: BoxConstraints(
          maxHeight: 20,

```

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```

        minWidth: 25,
      ),
      border: InputBorder.none, // No border for the input field
      hintText: 'Search', // Placeholder text
      hintStyle: TextStyle(color: tdGrey), // Hint text style
    ),
  ),
);
}

// Widget to build the app bar
AppBar _buildAppBar() {
  return AppBar(
    backgroundColor: tdBGColor, // App bar background color
    elevation: 0, // No shadow
    title: const Row(
      mainAxisAlignment: MainAxisAlignment.spaceBetween,
      children: [
        Icon(
          Icons.menu, // Menu icon
          color: tdBlack,
          size: 30,
        ),
      ],
    ),
  );
}

// Main application widget
class MyApp extends StatelessWidget {
  const MyApp({super.key});

  // This widget is the root of your application.
  @override
  Widget build(BuildContext context) {
    SystemChrome.setSystemUIOverlayStyle(const SystemUiOverlayStyle(
      statusBarColor: Colors.transparent)); // Setting the status bar color
    return const MaterialApp(
      debugShowCheckedModeBanner: false, // Disable debug banner
      title: 'ToDo App', // Application title
      home: Home(), // Home widget as the main screen
    );
  }
}


```

- **main.dart**

```

import 'package:flutter/material.dart'; // Importing Flutter material package for
UI components
import 'package:flutter/services.dart'; // Importing Flutter services package for
system UI control
import './view/home.dart'; // Importing the Home widget from the view directory

```


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```


void main() {
  runApp(
    const MyApp(), // Running the MyApp widget as the root of the application
  )

class MyApp extends StatelessWidget {
  const MyApp({super.key}); // Constructor for MyApp with a key parameter

  // This widget is the root of your application.
  @override
  Widget build(BuildContext context) {
    // Setting the system UI overlay style to make the status bar transparent
    SystemChrome.setSystemUIOverlayStyle(
      const SystemUiOverlayStyle(statusBarColor: Colors.transparent));

    // Building the MaterialApp widget which serves as the main app structure
    return const MaterialApp(
      debugShowCheckedModeBanner: false, // Hiding the debug banner in the app
      title: 'ToDo App', // Setting the title of the application
      home: Home(), // Specifying the Home widget as the starting screen
    );
  }
}

```

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Output:-

