**Q.2 Design a flutter screen with following widgets as per given hierarchy:**

* **Design two attractive themes “EmeraldTheme” and “RubyTheme”.**
* **Apply any one theme initially and display that theme name in Text widget.**
* **On tap of the ElevatedButton, apply other than the currently applied theme and display that theme name in Text widget.**

*// PRACTICAL-2: Design a flutter screen with following widgets as per given hierarchy:*

*// Design two attractive themes “EmeraldTheme” and “RubyTheme”.*

*// Apply any one theme initially and display that theme name in Text widget.*

*// On tap of the ElevatedButton, apply other than the currently applied theme and display that theme name in Text widget.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatefulWidget {

@override

\_MyAppState createState() => \_MyAppState();

}

class \_MyAppState extends State<MyApp> {

bool \_isEmeraldTheme = true; *// Flag to track the current theme*

*// Define the EmeraldTheme*

ThemeData get emeraldTheme {

return ThemeData(

colorScheme: ColorScheme.fromSeed(

seedColor: Colors.green,

primary: Colors.green,

secondary: Colors.greenAccent,

),

visualDensity: VisualDensity.adaptivePlatformDensity,

);

}

*// Define the RubyTheme*

ThemeData get rubyTheme {

return ThemeData(

colorScheme: ColorScheme.fromSeed(

seedColor: Colors.red,

primary: Colors.red,

secondary: Colors.redAccent,

),

visualDensity: VisualDensity.adaptivePlatformDensity,

);

}

*// Toggle between themes*

void \_toggleTheme() {

setState(() {

\_isEmeraldTheme = !\_isEmeraldTheme;

});

}

@override

Widget build(BuildContext context) {

return MaterialApp(

title: 'PRACTICAL 2',

theme: \_isEmeraldTheme ? emeraldTheme : rubyTheme,

home: HomeScreen(

isEmeraldTheme: \_isEmeraldTheme,

toggleTheme: \_toggleTheme,

),

debugShowCheckedModeBanner: false,

);

}

}

class HomeScreen extends StatelessWidget {

final bool isEmeraldTheme;

final VoidCallback toggleTheme;

HomeScreen({required *this*.isEmeraldTheme, required *this*.toggleTheme});

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(

title: Text('PRACTICAL 2'),

),

body: Column(

mainAxisAlignment: MainAxisAlignment.center,

children: <Widget>[

Center(

child: Text(

isEmeraldTheme ? 'Current Theme --> Emerald' : 'Current Theme --> Ruby',

style: TextStyle(

fontSize: 24,

fontWeight: FontWeight.bold,

),

),

),

SizedBox(height: 20),

Center(

child: ElevatedButton(

onPressed: toggleTheme,

child: Text('Switch Theme'),

),

),

Spacer(),

Padding(

padding: const EdgeInsets.all(16.0),

child: Text(

'202203103510097',

style: TextStyle(

fontSize: 14,

color: Colors.grey,

),

textAlign: TextAlign.center,

),

),

],

),

);

}

}

**Q.3 Develop a flutter app with two TextField widgets, a Text widget, and an ElevatedButton widget. On tap of the ElevatedButton, compute the sum of two values from TextFields and display the result in Text widget.**

*// PRACTICAL-3: Develop a flutter app with two TextField widgets, a Text widget, and an ElevatedButton widget. On tap of the ElevatedButton, compute the sum of two values from TextFields and display the result in Text widget.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

@override

Widget build(BuildContext context) {

return MaterialApp(

title: 'PRACTICAL 3',

theme: ThemeData(

primarySwatch: Colors.blue,

visualDensity: VisualDensity.adaptivePlatformDensity,

),

debugShowCheckedModeBanner: false,

home: SumPage(),

);

}

}

class SumPage extends StatefulWidget {

@override

\_SumPageState createState() => \_SumPageState();

}

class \_SumPageState extends State<SumPage> {

final TextEditingController \_controller1 = TextEditingController();

final TextEditingController \_controller2 = TextEditingController();

String \_result = "";

void \_calculateSum() {

final int? value1 = int.tryParse(\_controller1.text);

final int? value2 = int.tryParse(\_controller2.text);

if (value1 != null && value2 != null) {

setState(() {

\_result = "Sum --> ${value1 + value2}";

});

} else {

setState(() {

\_result = "Please enter valid numbers.";

});

}

}

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(

title: Text('PRACTICAL 3'),

),

body: Padding(

padding: const EdgeInsets.all(16.0),

child: Column(

mainAxisAlignment: MainAxisAlignment.center,

children: <Widget>[

TextField(

controller: \_controller1,

keyboardType: TextInputType.number,

decoration: InputDecoration(

border: OutlineInputBorder(),

labelText: 'Enter First Number',

hintText: 'e.g : 5',

),

style: TextStyle(fontSize: 18),

),

SizedBox(height: 16),

TextField(

controller: \_controller2,

keyboardType: TextInputType.number,

decoration: InputDecoration(

border: OutlineInputBorder(),

labelText: 'Enter Second Number',

hintText: 'e.g : 10',

),

style: TextStyle(fontSize: 18),

),

SizedBox(height: 24),

ElevatedButton(

onPressed: \_calculateSum,

child: Text(

'Calculate Sum',

style: TextStyle(fontSize: 18),

),

),

SizedBox(height: 24),

Text(

\_result,

style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold),

),

Spacer(),

Text(

'202203103510097',

style: TextStyle(fontSize: 14, color: Colors.grey),

),

],

),

),

);

}

}

**Q.4 Create a flutter app having a Slider and a Text widget. Display updated value in Text widget whenever user changes Slider value.**

*// PRACTICAL-4: Create a flutter app having a Slider and a Text widget. Display updated value in Text widget whenever user changes Slider value.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

@override

Widget build(BuildContext context) {

return MaterialApp(

title: 'PRACTICAL 4',

theme: ThemeData(

primarySwatch: Colors.blue,

visualDensity: VisualDensity.adaptivePlatformDensity,

),

debugShowCheckedModeBanner: false,

home: SliderPage(),

);

}

}

class SliderPage extends StatefulWidget {

@override

\_SliderPageState createState() => \_SliderPageState();

}

class \_SliderPageState extends State<SliderPage> {

double \_sliderValue = 0.0;

void \_updateSliderValue(double newValue) {

setState(() {

\_sliderValue = newValue;

});

}

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(

title: Text('PRACTICAL 4'),

),

body: Padding(

padding: const EdgeInsets.all(16.0),

child: Column(

mainAxisAlignment: MainAxisAlignment.center,

children: <Widget>[

Text(

'Value --> ${\_sliderValue.toStringAsFixed(1)}',

style: TextStyle(fontSize: 32, fontWeight: FontWeight.bold),

),

SizedBox(height: 24),

Slider(

value: \_sliderValue,

min: 0,

max: 100,

divisions: 100,

label: \_sliderValue.toStringAsFixed(1),

onChanged: \_updateSliderValue,

activeColor: Colors.teal,

inactiveColor: Colors.grey,

),

Spacer(),

Text(

'202203103510097',

style: TextStyle(fontSize: 14, color: Colors.grey),

),

],

),

),

);

}

}

**Q.5 Develop a flutter app with custom widget to display your Enrollment number, Name, and Photo. Your image should be display in circular shape. Also display your hobbies with chip widgets.**

*// PRACTICAL-5: Develop a flutter app with custom widget to display your Enrollment number, Name, and Photo. Your image should be display in circular shape. Also display your hobbies with chip widgets.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

@override

Widget build(BuildContext context) {

return MaterialApp(

title: 'PRACTICAL 5',

theme: ThemeData(

primarySwatch: Colors.blue,

visualDensity: VisualDensity.adaptivePlatformDensity,

),

debugShowCheckedModeBanner: false,

home: ProfileScreen(),

);

}

}

class ProfileScreen extends StatelessWidget {

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(

title: Text('PRACTICAL 5'),

),

body: Column(

mainAxisAlignment: MainAxisAlignment.spaceBetween, *// Space between content*

children: <Widget>[

Expanded(

child: Center(

child: ProfileWidget(

name: 'ANGAT SHAH',

enrollmentNumber: '097',

imagePath: 'assets/images/profile\_photo.jpg',

hobbies: ['Gaming', 'Dancing', 'Sports'],

),

),

),

const Padding(

padding: const EdgeInsets.all(16.0),

child: Text(

'202203103510097',

style: TextStyle(fontSize: 14, color: Colors.grey),

textAlign: TextAlign.center, *// Center text horizontally*

),

),

],

),

);

}

}

class ProfileWidget extends StatelessWidget {

final String name;

final String enrollmentNumber;

final String imagePath;

final List<String> hobbies;

ProfileWidget({

required *this*.name,

required *this*.enrollmentNumber,

required *this*.imagePath,

required *this*.hobbies,

});

@override

Widget build(BuildContext context) {

return Column(

mainAxisAlignment: MainAxisAlignment.center,

children: <Widget>[

CircleAvatar(

radius: 80,

backgroundImage: AssetImage(imagePath),

),

SizedBox(height: 20),

Text(

'Name: $name',

style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold),

),

Text(

'Enrollment Number: $enrollmentNumber',

style: TextStyle(fontSize: 18, color: Colors.grey),

),

SizedBox(height: 20),

Wrap(

spacing: 8.0, *// Gap between adjacent chips*

runSpacing: 4.0, *// Gap between lines*

children: hobbies.map((hobby) => Chip(

label: Text(hobby),

)).toList(),

),

Spacer(),

],

);

}

}

**pubspec.yaml**

assets:

- assets/images/profile\_photo.jpg

**>> Add image to /assets/images/profile\_photo.jpg**

**Q.6 Develop a flutter app with following functionalities:**

* **Display list of currently running semester-division name of your college using Listview.separated( ).**
* **On tap of semester-division, display list of students studying in that class using Listview.builder( ).**

*// PRACTICAL-6: Develop a flutter app with following functionalities: Display list of currently running semester-division name of your college using Listview.separated( ). On tap of semester-division, display list of students studying in that class using Listview.builder().*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

@override

Widget build(BuildContext context) {

return MaterialApp(

title: 'Semester Divisions',

theme: ThemeData(primarySwatch: Colors.blue),

home: SemesterDivisionList(),

debugShowCheckedModeBanner: false,

);}

}

class SemesterDivisionList extends StatelessWidget {

final List<String> semesterDivisions = [

'Semester 5 - Division A',

'Semester 5 - Division B',

'Semester 5 - Division C',

'Semester 5 - Division D', ];

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(title: Text('PRACTICAL 6')),

body: Column(

children: [

Expanded(

child: ListView.separated(

itemCount: semesterDivisions.length,

separatorBuilder: (context, index) => Divider(),

itemBuilder: (context, index) {

return ListTile(

title: Text(semesterDivisions[index]),

onTap: () {

Navigator.push(

context,

MaterialPageRoute(

builder: (context) =>

StudentList(semesterDivisions[index]),

),

);

},

);

},

),

),

Spacer(),

Padding(

padding: const EdgeInsets.all(16.0),

child: Text(

'202203103510097',

style: TextStyle(

fontSize: 14,

color: Colors.grey,

),

textAlign: TextAlign.center,

),

),

],

),

);

}

}

class StudentList extends StatelessWidget {

final String semesterDivision;

StudentList(*this*.semesterDivision);

final Map<String, List<String>> students = {

'Semester 5 - Division A': ['WALTER WHITE', 'GUSTAVO FRING'],

'Semester 5 - Division B': ['HARVEY SPECTER', 'MIKE ROSS'],

'Semester 5 - Division C': ['SPIDER', 'RAGE KLAUS'],

'Semester 5 - Division D': ['BARRY ALLEN', 'HARRISON WELLS'],

};

@override

Widget build(BuildContext context) {

final studentList = students[semesterDivision] ?? [];

return Scaffold(

appBar: AppBar(title: Text(semesterDivision)),

body: Column(

children: [

Expanded(

child: ListView.builder(

itemCount: studentList.length,

itemBuilder: (context, index) {

return ListTile(

title: Text(studentList[index]),

);

},

),

),

Spacer(),

Padding(

padding: const EdgeInsets.all(16.0),

child: Text(

'202203103510097',

style: TextStyle(

fontSize: 14,

color: Colors.grey,

),

textAlign: TextAlign.center,

),

),

],

),

);

}

}

**Q.7 Develop a flutter app to display images of images of at least 10 products using GridView.**

*// PRACTICAL-7: Develop a flutter app to display images of images of at least 10 products using GridView.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

@override

Widget build(BuildContext context) {

return MaterialApp(

home: GridViewExample(),

debugShowCheckedModeBanner: false, *// To remove the debug banner*

);

}

}

class GridViewExample extends StatelessWidget {

final List<String> productImages = [

'lib/assets/photo1.jpeg',

'lib/assets/photo2.jpeg',

'lib/assets/photo3.jpeg',

'lib/assets/photo4.jpeg',

'lib/assets/photo5.jpeg',

'lib/assets/photo6.jpeg',

'lib/assets/photo7.jpeg',

'lib/assets/photo8.JPG',

'lib/assets/photo9.JPG',

'lib/assets/photo10.JPG',

];

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(

title: const Text('PRACTICAL 7'),

),

body: Column(

children: [

Expanded(

child: GridView.builder(

gridDelegate: const SliverGridDelegateWithFixedCrossAxisCount(

crossAxisCount: 2,

crossAxisSpacing: 5,

mainAxisSpacing: 2,

),

itemCount: productImages.length,

itemBuilder: (context, index) {

return Card(

child: Image.asset(

productImages[index],

fit: BoxFit.fitHeight,

),

);

},

),

),

Footer(), *// Custom footer widget*

],

),

);

}

}

class Footer extends StatelessWidget {

@override

Widget build(BuildContext context) {

return Padding(

padding: const EdgeInsets.all(16.0),

child: Text(

'202203103510097',

style: TextStyle(

fontSize: 14,

color: Colors.grey,

),

textAlign: TextAlign.center,

),

);

}

}

**pubspec.yaml**

flutter:

uses-material-design: true

assets:

- lib/assets/photo1.jpeg

- lib/assets/photo2.jpeg

- lib/assets/photo3.jpeg

- lib/assets/photo4.jpeg

- lib/assets/photo5.jpeg

- lib/assets/photo6.jpeg

- lib/assets/photo7.jpeg

- lib/assets/photo8.JPG

- lib/assets/photo9.JPG

- lib/assets/photo10.JPG

**>> Add images to /lib/assets/photo1.jpeg ...**

**Q.8 Develop flutter app with a Text, a TextField, and an ElevatedButton displaying text “Save”. Display the greetings message in Text widget by retrieving username from shared preference. On tap of the ElevatedButton, save the username (from TextField) in shared preference.**

*// PRACTICAL-8: Develop flutter app with a Text, a TextField, and an ElevatedButton displaying text “Save”. Display the greetings message in Text widget by retrieving username from shared preference. On tap of the ElevatedButton, save the username (from TextField) in shared preference.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

import 'package:shared\_preferences/shared\_preferences.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

@override

Widget build(BuildContext context) {

return MaterialApp(

home: HomeScreen(),

debugShowCheckedModeBanner: false, *// To remove the debug banner*

);

}

}

class HomeScreen extends StatefulWidget {

@override

\_HomeScreenState createState() => \_HomeScreenState();

}

class \_HomeScreenState extends State<HomeScreen> {

final TextEditingController \_usernameController = TextEditingController();

String \_greetingMessage = 'Hello, USER!';

@override

void initState() {

*super*.initState();

\_loadUsername();

}

void \_loadUsername() async {

SharedPreferences prefs = await SharedPreferences.getInstance();

String? savedUsername = prefs.getString('username');

if (savedUsername != null) {

setState(() {

\_greetingMessage = 'Hello, $savedUsername!';

});

}

}

void \_saveUsername() async {

String username = \_usernameController.text;

SharedPreferences prefs = await SharedPreferences.getInstance();

await prefs.setString('username', username);

setState(() {

\_greetingMessage = 'Hello, $username!';

});

}

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(

title: Text('PRACTICAL 8'),

),

body: Center( *// Center the entire content*

child: Column(

mainAxisAlignment: MainAxisAlignment.center, *// Vertically center the content*

children: [

Text(

\_greetingMessage,

style: TextStyle(fontSize: 24),

),

Padding(

padding: const EdgeInsets.all(16.0),

child: TextField(

controller: \_usernameController,

decoration: InputDecoration(

labelText: 'Enter Your Username',

border: OutlineInputBorder(),

),

),

),

ElevatedButton(

onPressed: \_saveUsername,

child: Text('Save'),

),

Spacer(),

Footer(), *// Footer with enrollment number*

],

),

),

);

}

}

class Footer extends StatelessWidget {

@override

Widget build(BuildContext context) {

return Padding(

padding: const EdgeInsets.all(16.0),

child: Text(

'202203103510097',

style: TextStyle(

fontSize: 14,

color: Colors.grey,

),

textAlign: TextAlign.center,

),

);

}

}

**pubspec.yaml**

dependencies:

flutter:

sdk: flutter

shared\_preferences: ^2.2.3

**Q.9 Develop a flutter app to retrieve product name from a Web API using “http” package and display in ListView.**

*// PRACTICAL-9: Develop a flutter app to retrieve product name from a Web API using “http” package and display in ListView.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

import 'package:http/http.dart' as http;

import 'dart:convert';

void main() {

runApp(const MyApp());

}

class MyApp extends StatelessWidget {

const MyApp({*super*.key});

@override

Widget build(BuildContext context) {

return const MaterialApp(

home: ProductListApp(),

debugShowCheckedModeBanner: false,

);

}

}

class ProductListApp extends StatefulWidget {

const ProductListApp({*super*.key});

@override

\_ProductListAppState createState() => \_ProductListAppState();

}

class \_ProductListAppState extends State<ProductListApp> {

List<String> \_productNames = [];

bool \_isLoading = true;

@override

void initState() {

*super*.initState();

\_fetchProductNames();

}

\_fetchProductNames() async {

final response = await http.get(Uri.parse('https://api.escuelajs.co/api/v1/products'));

if (response.statusCode == 200) {

final List<dynamic> products = json.decode(response.body);

setState(() {

\_productNames = products.map((product) => product['title'] as String).toList();

\_isLoading = false;

});

} else {

throw Exception('Failed to load product names');

}

}

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(

title: const Text('PRACTICAL 9'),

),

body: Column(

children: [

Expanded(

child: \_isLoading

? const Center(child: CircularProgressIndicator())

: ListView.builder(

padding: const EdgeInsets.all(10),

itemCount: \_productNames.length,

itemBuilder: (context, index) {

return Card(

margin: const EdgeInsets.symmetric(vertical: 14, horizontal: 5),

elevation: 4,

shape: RoundedRectangleBorder(

borderRadius: BorderRadius.circular(15),

),

child: ListTile(

contentPadding: const EdgeInsets.all(10),

title: Text(

\_productNames[index],

style: const TextStyle(

fontSize: 16,

fontWeight: FontWeight.bold,

),

),

trailing: const Icon(Icons.chevron\_right, color: Colors.grey),

),

);

},

),

),

Padding(

padding: const EdgeInsets.all(16.0),

child: const Text(

'202203103510097',

style: TextStyle(

fontSize: 14,

color: Colors.grey, *// Set the text color to grey*

),

textAlign: TextAlign.center,

),

),

],

),

);

}

}

**pubspec.yaml**

dependencies:

flutter:

sdk: flutter

http: ^1.2.2

**Q.10 Develop a flutter app to retrieve selected student name and image from a Web API using “Chopper” package and display on screen.**

*// PRACTICAL-10: Develop a flutter app to retrieve selected student name and image from a Web API using “Chopper” package and display on screen.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

import 'package:chopper/chopper.dart';

import 'student\_api.dart';

void main() {

runApp(const MyApp());

}

class MyApp extends StatelessWidget {

const MyApp({*super*.key});

@override

Widget build(BuildContext context) {

return MaterialApp(

title: 'Students',

theme: ThemeData(

primarySwatch: Colors.blue,

),

home: const StudentListPage(),

debugShowCheckedModeBanner: false,

);

}

}

class StudentListPage extends StatefulWidget {

const StudentListPage({*super*.key});

@override

\_StudentListPageState createState() => \_StudentListPageState();

}

class \_StudentListPageState extends State<StudentListPage> {

late StudentApi api;

List<dynamic> students = [];

bool isLoading = true;

@override

void initState() {

*super*.initState();

api = StudentApi.create();

fetchStudents();

}

Future<void> fetchStudents() async {

final response = await api.getStudents();

if (response.isSuccessful) {

setState(() {

students = response.body as List;

isLoading = false;

});

} else {

setState(() {

isLoading = false;

});

}

}

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(

title: const Text('PRACTICAL 10'),

),

body: Column(

children: [

Expanded(

child: isLoading

? const Center(child: CircularProgressIndicator())

: ListView.builder(

itemCount: students.length,

itemBuilder: (context, index) {

final student = students[index];

return Card(

margin: const EdgeInsets.all(8.0),

child: ListTile(

leading: CircleAvatar(

backgroundImage: NetworkImage(

'https://i.pravatar.cc/150?img=${student['id']}'),

),

title: Text(student['name']),

),

);

},

),

),

Padding(

padding: const EdgeInsets.all(16.0),

child: const Text(

'202203103510097',

style: TextStyle(

fontSize: 14,

color: Colors.grey, *// Set the text color to grey*

),

textAlign: TextAlign.center,

),

),

],

),

);

}

}

**student\_api.dart**

import 'package:chopper/chopper.dart';

part 'student\_api.chopper.dart';

@ChopperApi()

abstract class StudentApi extends ChopperService {

static StudentApi create([ChopperClient? client]) {

if (client != null) return \_$StudentApi(client);

final newClient = ChopperClient(

baseUrl: 'https://jsonplaceholder.typicode.com',

services: [\_$StudentApi()],

converter: JsonConverter(),

);

return \_$StudentApi(newClient);

}

@Get(path: '/users')

Future<Response> getStudents();

}

**pubspec.yaml**

dependencies:

flutter:

sdk: flutter

cupertino\_icons: ^1.0.8

chopper: ^4.0.0

dev\_dependencies:

flutter\_test:

sdk: flutter

flutter\_lints: ^4.0.0

build\_runner: ^2.0.0

chopper\_generator: ^4.0.0

**>> Then run this command in the terminal:** flutter pub run build\_runner build

**Q.11 Develop a flutter app with following functionalities:**

* **Display two ElevatedButtons “Add Student” and “List Student Record” on first screen.**
* **On tap of “Add Student”, ask student name, roll number, and address of the student. Save student data in SQLite database using sqflite package on tap of “Save Student Data”.**
* **On tap of “List Student Record”, retrieve the student records stored in SQLite database and display with edit and delete functionalities.**

*// PRACTICAL-11: Develop a flutter app with following functionalities:*

*// Display two ElevatedButtons “Add Student” and “List Student Record” on first screen.*

*// On tap of “Add Student”, ask student name, roll number, and address of the student. Save student data in SQLite database using sqflite package on tap of “Save Student Data”.*

*// On tap of “List Student Record”, retrieve the student records stored in SQLite database and display with edit and delete functionalities.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

import 'student\_database.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

@override

Widget build(BuildContext context) {

return MaterialApp(

title: 'Student Management',

home: HomeScreen(),

debugShowCheckedModeBanner: false,

);

}

}

class HomeScreen extends StatelessWidget {

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(title: Text('PRACTICAL 11')),

body: Center(

child: Column(

mainAxisAlignment: MainAxisAlignment.center,

children: [

ElevatedButton(

onPressed: () {

Navigator.push(context, MaterialPageRoute(builder: (context) => AddStudentScreen()));

},

child: Text('Add Student'),

),

SizedBox(height: 20),

ElevatedButton(

onPressed: () {

Navigator.push(context, MaterialPageRoute(builder: (context) => ListStudentScreen()));

},

child: Text('List Student Record'),

),

Spacer(),

Padding(

padding: const EdgeInsets.all(16.0),

child: Text(

'202203103510097', *// Footer text*

style: TextStyle(

fontSize: 14,

color: Colors.grey,

),

textAlign: TextAlign.center,

),

),

],

),

),

);

}

}

class AddStudentScreen extends StatefulWidget {

@override

\_AddStudentScreenState createState() => \_AddStudentScreenState();

}

class \_AddStudentScreenState extends State<AddStudentScreen> {

final \_nameController = TextEditingController();

final \_rollNumberController = TextEditingController();

final \_addressController = TextEditingController();

Future<void> \_saveStudent() async {

final name = \_nameController.text;

final rollNumber = \_rollNumberController.text;

final address = \_addressController.text;

await StudentDatabase.instance.addStudent(name, rollNumber, address);

Navigator.pop(context);

}

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(title: Text('Add Student')),

body: Padding(

padding: const EdgeInsets.all(16.0),

child: Column(

children: [

TextField(controller: \_nameController, decoration: InputDecoration(labelText: 'Student Name')),

TextField(controller: \_rollNumberController, decoration: InputDecoration(labelText: 'Roll Number')),

TextField(controller: \_addressController, decoration: InputDecoration(labelText: 'Address')),

SizedBox(height: 20),

ElevatedButton(onPressed: \_saveStudent, child: Text('Save Student Data')),

],

),

),

);

}

}

class ListStudentScreen extends StatefulWidget {

@override

\_ListStudentScreenState createState() => \_ListStudentScreenState();

}

class \_ListStudentScreenState extends State<ListStudentScreen> {

late Future<List<Map<String, dynamic>>> \_studentList;

@override

void initState() {

*super*.initState();

\_fetchStudents();

}

Future<void> \_fetchStudents() async {

setState(() {

\_studentList = StudentDatabase.instance.getStudents();

});

}

Future<void> \_deleteStudent(int id) async {

await StudentDatabase.instance.deleteStudent(id);

\_fetchStudents();

}

Future<void> \_editStudent(int id, String name, String rollNumber, String address) async {

await StudentDatabase.instance.updateStudent(id, name, rollNumber, address);

\_fetchStudents();

}

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(title: Text('Student Records')),

body: FutureBuilder<List<Map<String, dynamic>>>(

future: \_studentList,

builder: (context, snapshot) {

if (!snapshot.hasData) {

return Center(child: CircularProgressIndicator());

}

final students = snapshot.data!;

return ListView.builder(

itemCount: students.length,

itemBuilder: (context, index) {

final student = students[index];

return ListTile(

title: Text(student['name']),

subtitle: Text('Roll No: ${student['roll\_number']}, Address: ${student['address']}'),

trailing: Row(

mainAxisSize: MainAxisSize.min,

children: [

IconButton(

icon: Icon(Icons.edit),

onPressed: () {

*// Add edit functionality*

\_editStudent(student['id'], student['name'], student['roll\_number'], student['address']);

},

),

IconButton(

icon: Icon(Icons.delete),

onPressed: () {

\_deleteStudent(student['id']);

},

),

],

),

);

},

);

},

),

);

}

}

**student\_database.dart**

import 'package:sqflite/sqflite.dart';

import 'package:path/path.dart';

class StudentDatabase {

static final StudentDatabase instance = StudentDatabase.\_init();

static Database? \_database;

StudentDatabase.\_init();

Future<Database> get database async {

if (\_database != null) return \_database!;

\_database = await \_initDB('students.db');

return \_database!;

}

Future<Database> \_initDB(String filePath) async {

final dbPath = await getDatabasesPath();

final path = join(dbPath, filePath);

return await openDatabase(

path,

version: 1,

onCreate: \_createDB,

);

}

Future \_createDB(Database db, int version) async {

const idType = 'INTEGER PRIMARY KEY AUTOINCREMENT';

const textType = 'TEXT NOT NULL';

await db.execute('''

CREATE TABLE students (

id $idType,

name $textType,

roll\_number $textType,

address $textType

)

''');

}

Future<int> addStudent(String name, String rollNumber, String address) async {

final db = await instance.database;

final data = {'name': name, 'roll\_number': rollNumber, 'address': address};

return await db.insert('students', data);

}

Future<List<Map<String, dynamic>>> getStudents() async {

final db = await instance.database;

return await db.query('students');

}

Future<int> updateStudent(int id, String name, String rollNumber, String address) async {

final db = await instance.database;

final data = {'name': name, 'roll\_number': rollNumber, 'address': address};

return await db.update('students', data, where: 'id = ?', whereArgs: [id]);

}

Future<int> deleteStudent(int id) async {

final db = await instance.database;

return await db.delete('students', where: 'id = ?', whereArgs: [id]);

}

Future close() async {

final db = await instance.database;

db.close();

}

}

**pubspec.yaml**

dependencies:

flutter:

sdk: flutter

cupertino\_icons: ^1.0.8

sqflite: ^2.0.0+3

path: ^1.8.1

**Q.12 Develop a flutter app to maintain tasks. Allow the user to create a task and save in SQLite using Drift package. User can remove a task, view completed or all tasks.**

*// PRACTICAL-12: Develop a flutter app to maintain tasks. Allow the user to create a task and save in SQLite using Drift package. User can remove a task, view completed or all tasks.*

*// Name: Angat Nayanbhai Shah*

*// Enrollment No: 202203103510097*

*// Branch: B.Tech Computer Science and Engineering*

*// CODE:*

import 'package:flutter/material.dart';

import 'database.dart';

import 'task\_repository.dart';

void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

@override

Widget build(BuildContext context) {

return MaterialApp(

title: 'Task Manager',

theme: ThemeData(primarySwatch: Colors.blue),

home: TaskManager(),

debugShowCheckedModeBanner: false,

);

}

}

class TaskManager extends StatefulWidget {

@override

\_TaskManagerState createState() => \_TaskManagerState();

}

class \_TaskManagerState extends State<TaskManager> {

final AppDatabase \_database = AppDatabase();

late TaskRepository \_repository;

final TextEditingController \_taskController = TextEditingController();

List<Task> \_tasks = [];

@override

void initState() {

*super*.initState();

\_repository = TaskRepository(\_database);

\_loadTasks();

}

Future<void> \_loadTasks() async {

final tasks = await \_repository.getAllTasks();

setState(() {

*// Sort tasks: incomplete tasks first, completed tasks last*

\_tasks = tasks..sort((a, b) => a.isCompleted ? 1 : -1);

});

}

void \_addTask() async {

if (\_taskController.text.isNotEmpty) {

await \_repository.addTask(\_taskController.text);

\_taskController.clear();

\_loadTasks();

}

}

void \_removeTask(int id) async {

await \_repository.removeTask(id);

\_loadTasks();

}

void \_toggleTaskCompletion(int id, bool isCompleted) async {

await \_repository.markTaskAsCompleted(id, !isCompleted);

\_loadTasks();

}

@override

Widget build(BuildContext context) {

return Scaffold(

appBar: AppBar(title: Text('PRACTICAL 12')),

body: Column(

children: [

Padding(

padding: const EdgeInsets.all(16.0),

child: Row(

children: [

Expanded(

child: TextField(

controller: \_taskController,

decoration: InputDecoration(labelText: 'TASK TITLE'),

),

),

IconButton(

icon: Icon(Icons.add),

onPressed: \_addTask,

),

],

),

),

Expanded(

child: ListView.builder(

itemCount: \_tasks.length,

itemBuilder: (context, index) {

final task = \_tasks[index];

return ListTile(

leading: Checkbox(

value: task.isCompleted,

onChanged: (value) {

\_toggleTaskCompletion(task.id, task.isCompleted);

},

),

title: Text(

task.title,

style: TextStyle(

decoration: task.isCompleted

? TextDecoration.lineThrough

: TextDecoration.none,

),

),

trailing: IconButton(

icon: Icon(Icons.delete),

onPressed: () => \_removeTask(task.id),

),

);

},

),

),

Spacer(),

Padding(

padding: const EdgeInsets.all(16.0),

child: Text(

'202203103510097',

style: TextStyle(

fontSize: 14,

color: Colors.grey,

),

textAlign: TextAlign.center,

),

),

],

),

);

}

}

**database.dart**

import 'package:drift/drift.dart';

import 'package:drift/native.dart';

part 'database.g.dart';

@DriftDatabase(tables: [Tasks])

class AppDatabase extends \_$AppDatabase {

AppDatabase() : *super*(NativeDatabase.memory());

@override

int get schemaVersion => 1;

}

*// Task table*

class Tasks extends Table {

IntColumn get id => integer().autoIncrement()();

TextColumn get title => text().withLength(min: 1, max: 100)();

BoolColumn get isCompleted => boolean().withDefault(const Constant(false))();

}

**>> Run this command to generate the database code :** flutter pub run build\_runner build

**task\_model.dart**

class Task {

final int? id;

final String title;

final bool isCompleted;

Task({*this*.id, required *this*.title, *this*.isCompleted = false});

}

**task\_repository.dart**

import 'package:drift/drift.dart';

import 'database.dart';

class TaskRepository {

final AppDatabase \_database;

TaskRepository(*this*.\_database);

Future<List<Task>> getAllTasks() async {

return await (\_database.select(\_database.tasks).get()).then((rows) {

return rows.map((row) => Task(id: row.id, title: row.title, isCompleted: row.isCompleted)).toList();

});

}

Future<void> addTask(String title) async {

await \_database.into(\_database.tasks).insert(

TasksCompanion(

title: Value(title),

isCompleted: const Value(false),

),

);

}

Future<void> removeTask(int id) async {

await (\_database.delete(\_database.tasks)..where((tbl) => tbl.id.equals(id))).go();

}

Future<void> markTaskAsCompleted(int id, bool isCompleted) async {

await (\_database.update(\_database.tasks)

..where((tbl) => tbl.id.equals(id)))

.write(TasksCompanion(

isCompleted: Value(isCompleted),

));

}

}

**pubspec.yaml**

dependencies:

flutter:

sdk: flutter

cupertino\_icons: ^1.0.8

drift: ^2.20.2

drift\_flutter: ^0.2.0

provider: ^6.1.2

dev\_dependencies:

flutter\_test:

sdk: flutter

flutter\_lints: ^4.0.0

build\_runner: ^2.4.12

drift\_dev: ^2.20.3