Practical No: - 01

Flutter program to work with SQLite Database

DatabaseHelper.dart:

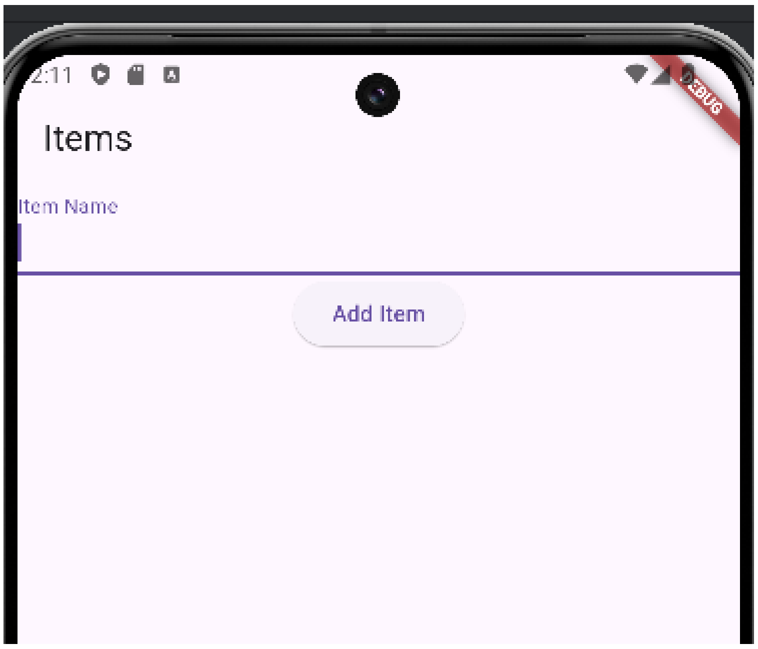
```
import 'package:flutter/material.dart';
import 'package:path/path.dart';
import 'package:sqflite/sqflite.dart';
class DatabaseHelper {
  static final DatabaseHelper _instance = DatabaseHelper._internal();
  factory DatabaseHelper() => _instance;
  static Database? _database;
  DatabaseHelper._internal();
  Future<Database> get database async {
    _database ??= await _initDatabase();
    return _database!;
  }
  Future<Database> _initDatabase() async {
    String path = join(await getDatabasesPath(), 'simple_database.db');
    return await openDatabase(
      path,
      onCreate: (db, version) {
        return db.execute(
          'CREATE TABLE items(id INTEGER PRIMARY KEY
AUTOINCREMENT, name TEXT)',
        );
      },
      version: 1,
    );
  }
  Future<void> insertItem(String name) async {
    final db = await database;
    await db.insert(
      'items',
      {'name': name},
      conflictAlgorithm: ConflictAlgorithm.replace,
    );
  }
  Future<List<Map<String, dynamic>>> fetchItems() async {
    final db = await database;
    return await db.query('items');
  }
  Future<void> deleteItem(int id) async {
    final db = await database;
    await db.delete(
      'items',
      where: 'id = ?',
      whereArgs: [id],
    );
  }
}
```

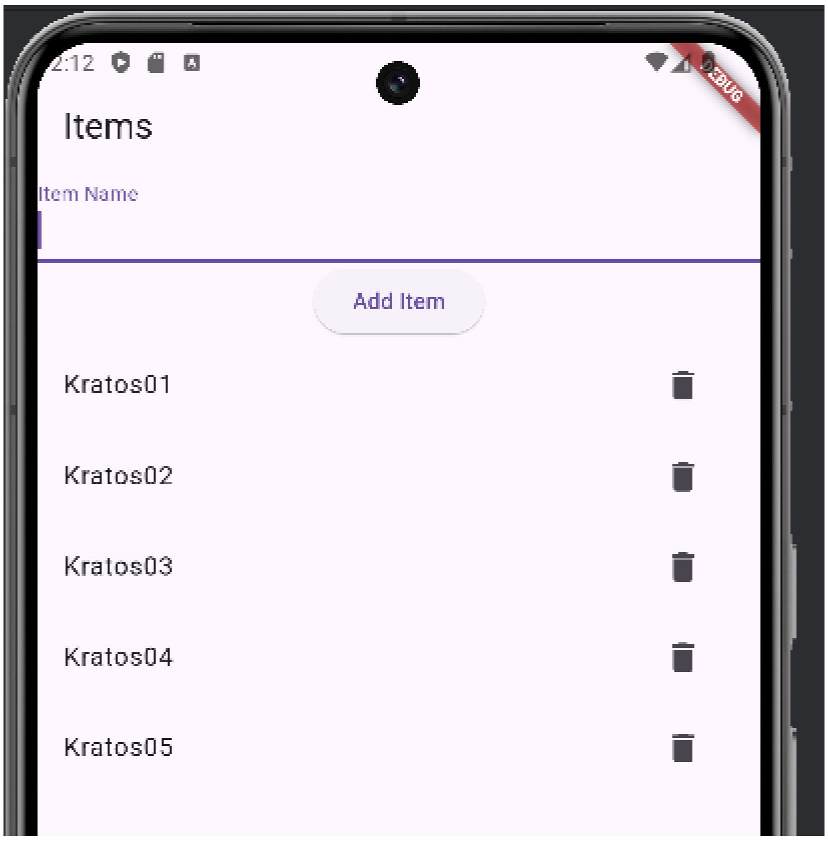
Main.dart:

```
import 'package:flutter/material.dart';
import 'package:flutter/material.dart';
import 'DatabaseHelper.dart';
void main() {
  runApp(MyApp());
}
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Simple Database App',
      home: ItemListScreen(),
    );
  }
}
class ItemListScreen extends StatefulWidget {
  @override
  _ItemListScreenState createState() => _ItemListScreenState();
}
class _ItemListScreenState extends State<ItemListScreen> {
  final DatabaseHelper _databaseHelper = DatabaseHelper();
  final TextEditingController _controller = TextEditingController();
  List<Map<String, dynamic>> _items = [];
```

```
@override
void initState() {
  super.initState();
  _loadItems();
}
Future<void> _loadItems() async {
  final items = await _databaseHelper.fetchItems();
  setState(() {
    _items = items;
  });
}
Future<void> _addItem() async {
  if (_controller.text.isNotEmpty) {
    await _databaseHelper.insertItem(_controller.text);
    _controller.clear();
    _loadItems();
  }
}
Future<void> _deleteItem(int id) async {
  await _databaseHelper.deleteItem(id);
  _loadItems();
}
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(title: Text('Items')),
    body: Column(
      children: [
        TextField(
          controller: _controller,
          decoration: InputDecoration(labelText: 'Item Name'),
        ),
        ElevatedButton(
          onPressed: _addItem,
          child: Text('Add Item'),
        ),
        Expanded(
            child: ListView.builder(
              itemCount: _items.length,
              itemBuilder: (context, index) {
                return ListTile(
                  title: Text(_items[index]['name']),
                  trailing: IconButton(
                    icon: Icon(Icons.delete),
                    onPressed: () => _deleteItem(_items[index]['id']),
                  ),
                );
              },
            ),
          ),
        ],
      ),
    );
  }
}
```

Output:





Items

Item Name

Add Item

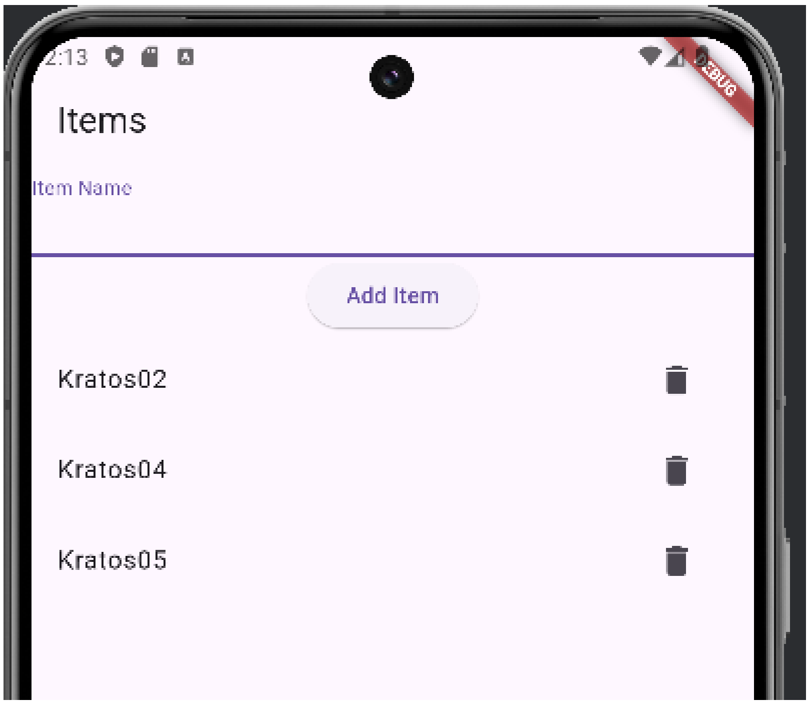
Kratos01

Kratos02

Kratos03

Kratos04

Kratos05



Items

Item Name

Add Item

Kratos02

Kratos04

Kratos05

Practical No: - 02

Flutter program based on RestAPI (Json format)

Main.dart: -

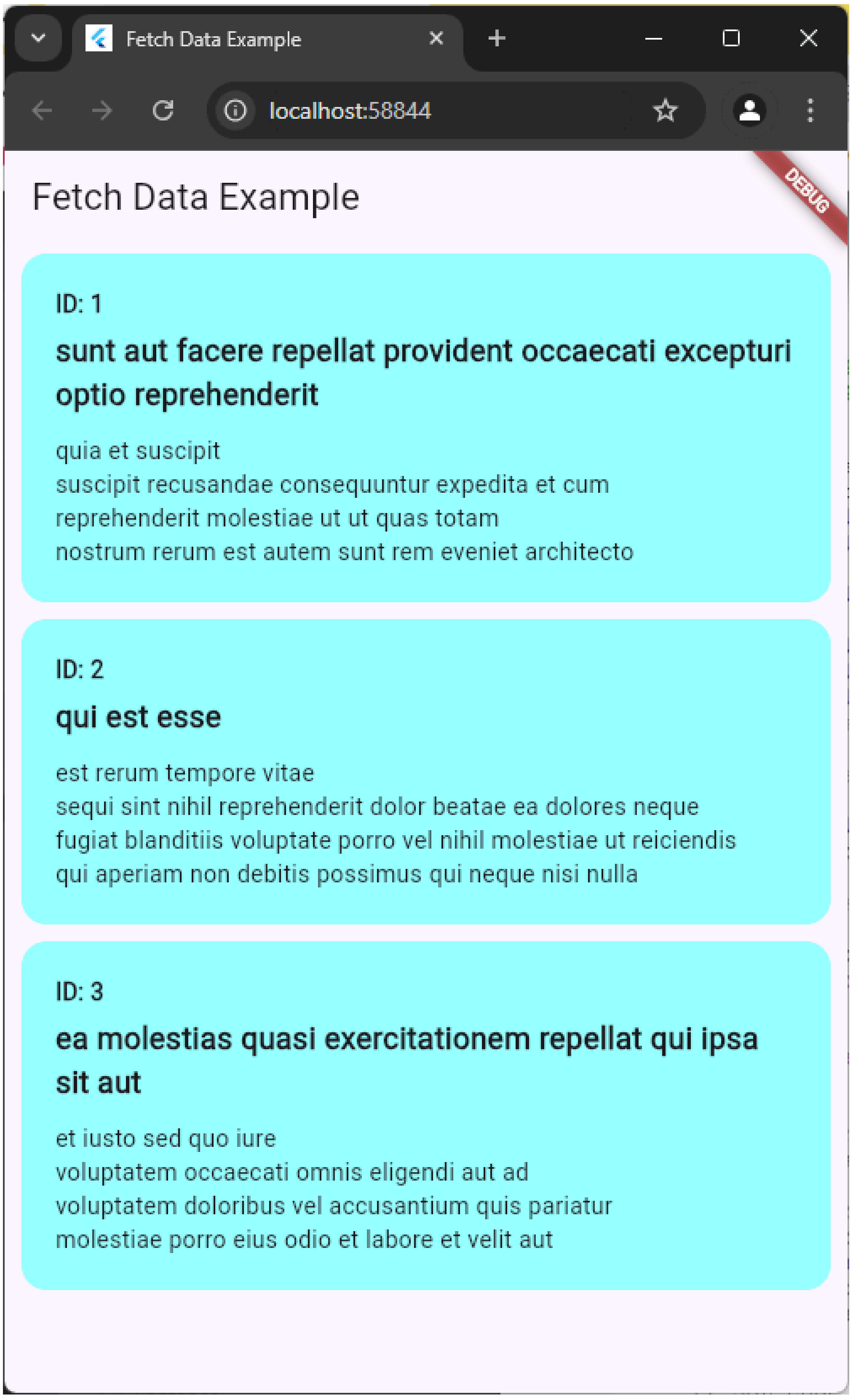
```
import 'dart:convert';
import 'package:flutter/material.dart';
import 'package:http/http.dart' as http; // Import the http package
import 'package:json3/post.dart';
Future<List<Post>> fetchPost() async {
  final response = await
http.get(Uri.parse('https://jsonplaceholder.typicode.com/posts'));
  if (response.statusCode == 200) {
    final parsed = json.decode(response.body).cast<Map<String, dynamic>>();
    // Limit to the first 3 posts
    return parsed.take(3).map<Post>((json) => Post.fromMap(json)).toList();
  } else {
    throw Exception('Failed to load posts');
  }
}
void main() => runApp(MyApp());
class MyApp extends StatefulWidget {
  @override
  _MyAppState createState() => _MyAppState();
}
class _MyAppState extends State<MyApp> {
  late Future<List<Post>> futurePost;
  @override
  void initState() {
    super.initState();
    futurePost = fetchPost();
  }

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Fetch Data Example',
      theme: ThemeData(
        primaryColor: Colors.lightBlueAccent,
),
home: Scaffold(
  appBar: AppBar(
    title: Text('Fetch Data Example'),
  ),
  body: FutureBuilder<List<Post>>(
    future: futurePost,
    builder: (context, snapshot) {
      if (snapshot.hasData) {
        return ListView.builder(
          itemCount: snapshot.data!.length,
          itemBuilder: (_, index) => Container(
            margin: EdgeInsets.symmetric(horizontal: 10, vertical: 5),
            padding: EdgeInsets.all(20.0),
            decoration: BoxDecoration(
              color: Color(0xff97FFFF),
              borderRadius: BorderRadius.circular(15.0),
            ),
            child: Column(
              mainAxisAlignment: MainAxisAlignment.start,
              crossAxisAlignment: CrossAxisAlignment.start,
              children: [
                Text(
                  "ID: ${snapshot.data![index].id}",
                  style: TextStyle(
                    fontSize: 14.0,
                    fontWeight: FontWeight.bold,
                  ),
                ),
                SizedBox(height: 5),
                Text(
                  "${snapshot.data![index].title}",
                  style: TextStyle(
                    fontSize: 18.0,
                    fontWeight: FontWeight.bold,
                  ),
                ),
                    SizedBox(height: 10),
                    Text("${snapshot.data![index].body}"),
                  ],
                ),
              ),
            );
          } else {
            return Center(child: CircularProgressIndicator());
          }
        },
      ),
    ),
  );
 }
}
```

Post.dart: -

```
import 'dart:convert';
List<Post> postFromJson(String str) =>
  List<Post>.from(json.decode(str).map((x) => Post.fromMap(x)));
class Post {
 Post({
  required this.userId,
  required this.id,
  required this.title,
  required this.body,
 });
 int userId;
 int id;
 String title;
 String body;
 factory Post.fromMap(Map<String, dynamic> json) => Post(
  userId: json["userId"],
  id: json["id"],
  title: json["title"],
  body: json["body"],
 );
}
```

Output: -



```
Fetch Data Example

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ID: 3
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```