LAPORAN PRAKTIKUM
PEMROGRAMAN PERANGKAT BERGERAK

MODUL XIV

Data Storage (API)

Disusun Oleh :

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SE 06 2

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PROGRAM STUDI S1 REKAYASA PERANGKAT LUNAK

FAKULTAS INFORMATIKA

TELKOM UNIVERSITY PURWOKERTO

2024

1. GUIDED

Source Code

- main.dart

```
import 'package:flutter/material.dart';
import 'package:praktikum_14/screen/home_screen.dart';

void main() {
  runApp(const MyApp());
}

class MyApp extends StatelessWidget {
  const MyApp({super.key});

  // This widget is the root of your application.
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Demo',
      theme: ThemeData(
        colorScheme: ColorScheme.fromSeed(seedColor:
Colors.deepPurple),
        useMaterial3: true,
      ),
      home: HomepageScreen(),
    );
  }
}
```

- home_screen.dart

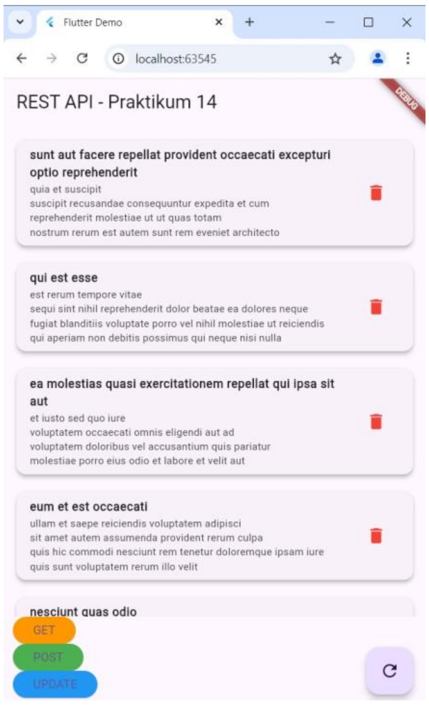
```
import 'package:flutter/material.dart';
import 'package:praktikum_14/services/api_service.dart';

class HomepageScreen extends StatefulWidget {
  const HomepageScreen({super.key});

  @override
  State<HomepageScreen> createState() =>
_HomepageScreenState();
}

class _HomepageScreenState extends State<HomepageScreen> {
  List<dynamic> _posts = []; // Menyimpan list posts
  bool _isLoading = false; // Untuk indikator loading
  final ApiService _apiService = ApiService(); // Instance
ApiService

  // Fungsi untuk menampilkan SnackBar
/*************  ✨ Codeium Command ⭐  *************/
  /// Membuat dan menampilkan SnackBar dengan pesan yang
diberikan.
```

```
/******  12753b93-c031-4ec5-b0ac-88f2831b5a13  *******/  void
_showSnackBar(String message) {
    ScaffoldMessenger.of(context).showSnackBar(
      SnackBar(content: Text(message)),
    );
  }

  // Fungsi untuk memanggil API dan menangani operasi
  Future<void> _handleApiOperation(
      Future<void> operation, String successMessage) async {
    setState(() {
      _isLoading = true;
    });
    try {
      await operation; // Menjalankan operasi API
      setState(() {
        _posts = _apiService.posts; // Mengupdate posts setelah
operasi berhasil
      });
      _showSnackBar(successMessage); // Menampilkan SnackBar
sukses
    } catch (e) {
      _showSnackBar('Error: $e'); // Menampilkan SnackBar error
    } finally {
      setState(() {
        _isLoading = false;
      });
    }
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: const Text('REST API - Praktikum 14'),
      ),
      body: Padding(
        padding: const EdgeInsets.all(12),
        child: Column(
          crossAxisAlignment: CrossAxisAlignment.start,
          children: [
            // Indikator loading
            if (_isLoading)
              const Center(child: CircularProgressIndicator())
            // Pesan jika data kosong
            else if (_posts.isEmpty)
              const Text(
                "Tekan tombol GET untuk mengambil data",
                style: TextStyle(fontSize: 14),
              )
            // Menampilkan daftar data
            else
              Expanded(
                child: ListView.builder(
                  itemCount: _posts.length,
                  itemBuilder: (context, index) {
                    final post = _posts[index];
                    return Padding(
                      padding: const EdgeInsets.only(bottom:
12.0),
                      child: Card(
                        elevation: 4,
                        child: ListTile(
                          title: Text(
                            post['title'] ?? 'No Title',
                            style: const TextStyle(
                                fontWeight: FontWeight.bold,
fontSize: 14),
                          ),
                          subtitle: Text(
                            post['body'] ?? 'No Body',
                            style: const TextStyle(fontSize:
12),
                          ),
                          trailing: IconButton(
                            icon: const Icon(Icons.delete,
color: Colors.red),
                            onPressed: () =>
_handleApiOperation(
                              _apiService.deletePost(post['id']
),
                              'Data berhasil dihapus!',
                            ),
                          ),
                        ),
                      ),
                    );
                  },
                ),
              ),
            // Tombol GET
            ElevatedButton(
              onPressed: () => _handleApiOperation(
                  _apiService.fetchPosts(), 'Data berhasil
diambil!'),
              style: ElevatedButton.styleFrom(backgroundColor:
Colors.orange),
              child: const Text('GET'),
            ),
            // Tombol POST
            ElevatedButton(
              onPressed: () => _handleApiOperation(
                  _apiService.createPost(), 'Data berhasil
ditambahkan!'),
              style: ElevatedButton.styleFrom(backgroundColor:
Colors.green),
              child: const Text('POST'),
            ),
            // Tombol UPDATE
            ElevatedButton(
              onPressed: () => _handleApiOperation(
                _apiService.updatePost(1, 'Updated Title',
'Updated Body'),
                'Data berhasil diperbarui!',
              ),
              style: ElevatedButton.styleFrom(backgroundColor:
Colors.blue),
              child: const Text('UPDATE'),
            ),
          ],
        ),
      ),
      floatingActionButton: FloatingActionButton(
        onPressed: () => _handleApiOperation(
          _apiService.fetchPosts(), // Contoh pemanggilan API
          'Posts fetched successfully!',
        ),
        child: const Icon(Icons.refresh),
      ),
    );
  }
}
```

- api_service.dart

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

class ApiService {
  final String baseUrl = "https://jsonplaceholder.typicode.com";
  List<dynamic> posts = []; // Menyimpan data post yang diterima

  // Fungsi untuk GET data
  Future<void> fetchPosts() async {
    try {
      final response = await
http.get(Uri.parse('$baseUrl/posts'));
      if (response.statusCode == 200) {
        posts = json.decode(response.body);
      } else {
        throw Exception(
            'Failed to load posts. Status Code:
${response.statusCode}');
      }
    } catch (e) {
      throw Exception('Error fetching posts: $e');
    }
  }
  // Fungsi untuk POST data
  Future<void> createPost() async {
    try {
      final response = await http.post(
        Uri.parse('$baseUrl/posts'),
        headers: {'Content-Type': 'application/json'},
        body: json.encode({
          'title': 'Flutter Post',
          'body': 'Ini contoh POST.',
          'userId': 1,
        }),
      );

      if (response.statusCode == 201) {
        final newPost =
            json.decode(response.body); // Mengambil respons
baru dari server
        posts.add({
          'id': newPost['id'] ?? (posts.length + 1),
          'title': newPost['title'] ?? 'Flutter Post',
          'body': newPost['body'] ?? 'Ini contoh POST.',
        });
      } else {
        throw Exception(
            'Failed to create post. Status Code:
${response.statusCode}');
      }
    } catch (e) {
      throw Exception('Error creating post: $e');
    }
  }

  // Fungsi untuk UPDATE data
  Future<void> updatePost(int postId, String newTitle, String
newBody) async {
    try {
      final response = await http.put(
        Uri.parse('$baseUrl/posts/$postId'),
        headers: {'Content-Type': 'application/json'},
        body: json.encode({
          'title': newTitle,
          'body': newBody,
          'userId': 1,
        }),
      );

      if (response.statusCode == 200) {
        // Update post dalam list lokal
        final index = posts.indexWhere((post) => post['id'] ==
postId);
        if (index != -1) {
          posts[index]['title'] = newTitle;
          posts[index]['body'] = newBody;
        }
      } else {
        throw Exception(
            'Failed to update post. Status Code:
${response.statusCode}');
      }
    } catch (e) {
      throw Exception('Error updating post: $e');
    }
  }

  // Fungsi untuk DELETE data
  Future<void> deletePost(int postId) async {
    try {
      final response = await
http.delete(Uri.parse('$baseUrl/posts/$postId'));
      if (response.statusCode == 200) {
        // Menghapus post dari list lokal
        posts.removeWhere((post) => post['id'] == postId);
      } else {
        throw Exception(
            'Failed to delete post. Status Code:
${response.statusCode}');
      }
    } catch (e) {
      throw Exception('Error deleting post: $e');
    }
  }
}
```

Output



REST API - Praktikum 14

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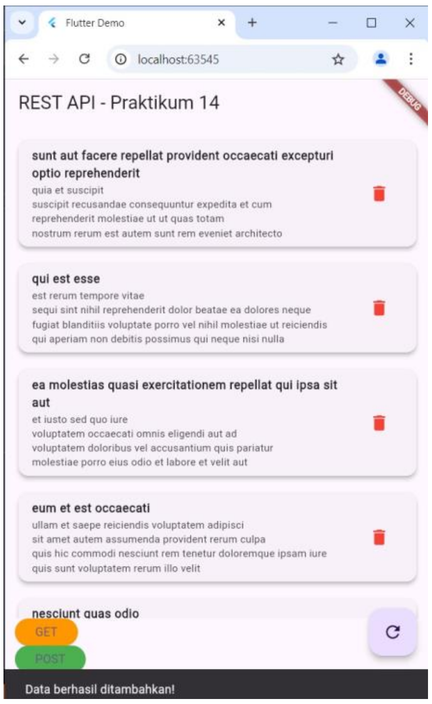

REST API - Praktikum 14

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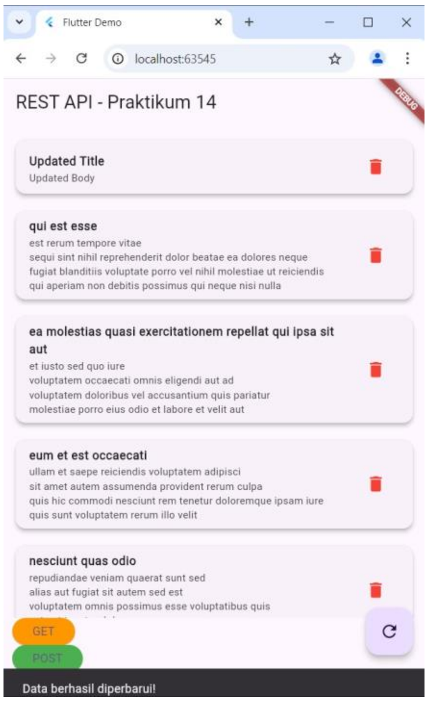
Data berhasil ditambahkan!



REST API - Praktikum 14

Updated Title
Updated Body

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Data berhasil diperbarui!

Deskripsi

Program ini adalah aplikasi Flutter yang menggunakan pendekatan stateful widget untuk mengelola operasi CRUD (Create, Read, Update, Delete) pada data post dari API publik JSONPlaceholder. Aplikasi ini menampilkan daftar post dalam antarmuka sederhana, di mana pengguna dapat mengambil, menambah, memperbarui, dan menghapus data. Logika pengelolaan state, seperti data post dan indikator loading, digabungkan langsung dalam kelas State dari widget layar utama. SnackBar digunakan untuk memberikan notifikasi kepada pengguna setelah operasi berhasil atau gagal. Meskipun fungsional, pendekatan ini cenderung membuat kode lebih sulit dikelola karena logika bisnis bercampur dengan UI.

2. UNGUIDED

Source Code

- main.dart

```dart
import 'package:flutter/material.dart';
import 'package:get/get.dart';
import 'package:praktikum_14/screen/home_screen.dart';

void main() {
  runApp(const MyApp());
}

class MyApp extends StatelessWidget {
  const MyApp({super.key});
  @override
  Widget build(BuildContext context) {
    return GetMaterialApp(
      title: 'Flutter Demo with GetX',
      theme: ThemeData(
        colorScheme: ColorScheme.fromSeed(seedColor:
Colors.deepPurple),
        useMaterial3: true,
      ),
      home: HomepageScreen(),
    );
  }
}
```

- home_screen.dart

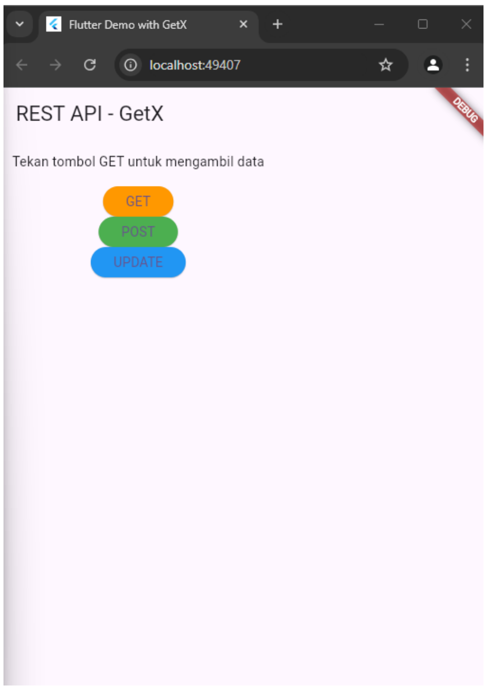
```
import 'package:flutter/material.dart';
import 'package:get/get.dart';
import 'package:praktikum_14/services/api_service.dart';

class HomepageScreen extends StatelessWidget {
  HomepageScreen({super.key});
  final _apiService = ApiService();
  final posts = <dynamic>[].obs;
  final isLoading = false.obs;

  // Logika untuk fetch data
  void fetchPosts() async {
    isLoading(true);
    try {
      await _apiService.fetchPosts();
      posts.value = _apiService.posts;
      Get.snackbar('Success', 'Data successfully fetched');
    } catch (e) {
      Get.snackbar('Error', e.toString());
    } finally {
      isLoading(false);
    }
  }

  // Logika untuk create post
  void createPost() async {
    isLoading(true);
    try {
      await _apiService.createPost();
      posts.value = _apiService.posts;
      Get.snackbar('Success', 'Data successfully added');
    } catch (e) {
      Get.snackbar('Error', e.toString());
    } finally {
      isLoading(false);
    }
  }
```

```dart
// Logika untuk update post
void updatePost(int id, String title, String body) async {
  isLoading(true);
  try {
    await _apiService.updatePost(id, title, body);
    posts.value = _apiService.posts;
    Get.snackbar('Success', 'Data successfully updated');
  } catch (e) {
    Get.snackbar('Error', e.toString());
  } finally {
    isLoading(false);
  }
}

// Logika untuk delete post
void deletePost(int id) async {
  isLoading(true);
  try {
    await _apiService.deletePost(id);
    posts.value = _apiService.posts;
    Get.snackbar('Success', 'Data successfully deleted');
  } catch (e) {
    Get.snackbar('Error', e.toString());
  } finally {
    isLoading(false);
  }
}

@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: const Text('REST API - GetX'),
    ),
    body: Padding(
      padding: const EdgeInsets.all(12),
      child: Column(
        children: [
          Obx(() {
            if (isLoading.value) {
              return const Center(child:
CircularProgressIndicator());
            }
            if (posts.isEmpty) {
              return const Text(
                "Tekan tombol GET untuk mengambil data",
                style: TextStyle(fontSize: 14),
              );
            }
            return Expanded(
              child: ListView.builder(
                itemCount: posts.length,
                  itemBuilder: (context, index) {
                    final post = posts[index];
                    return Card(
                      elevation: 4,
                      child: ListTile(
                        title: Text(
                          post['title'] ?? 'No Title',
                          style: const TextStyle(
                              fontWeight: FontWeight.bold,
fontSize: 14),
                        ),
                        subtitle: Text(
                          post['body'] ?? 'No Body',
                          style: const TextStyle(fontSize: 12),
                        ),
                        trailing: IconButton(
                          icon: const Icon(Icons.delete, color:
Colors.red),
                          onPressed: () =>
deletePost(post['id']),
                        ),
                      ),
                    );
                  },
                ),
              );
            }),
            const SizedBox(height: 16),
            ElevatedButton(
              onPressed: fetchPosts,
              style: ElevatedButton.styleFrom(backgroundColor:
Colors.orange),
              child: const Text('GET'),
            ),
            ElevatedButton(
              onPressed: createPost,
              style: ElevatedButton.styleFrom(backgroundColor:
Colors.green),
              child: const Text('POST'),
            ),
            ElevatedButton(
              onPressed: () => updatePost(1, 'Updated Title',
'Updated Body'),
              style: ElevatedButton.styleFrom(backgroundColor:
Colors.blue),
              child: const Text('UPDATE'),
            ),
          ],
        ),
      ),
    );
  }
}
```

- api_service.dart

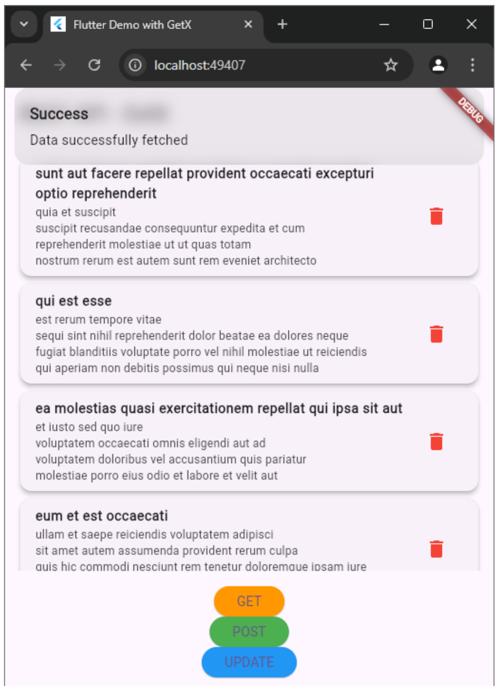
```dart
import 'dart:convert';
import 'package:http/http.dart' as http;

class ApiService {
  final String baseUrl =
"https://jsonplaceholder.typicode.com";
  List<dynamic> posts = [];

  Future<void> fetchPosts() async {
    try {
      final response = await
http.get(Uri.parse('$baseUrl/posts'));
      if (response.statusCode == 200) {
        posts = json.decode(response.body);
      } else {
        throw Exception('Failed to load posts. Status Code:
${response.statusCode}');
      }
    } catch (e) {
      throw Exception('Error fetching posts: $e');
    }
  }

  Future<void> createPost() async {
    try {
      final response = await http.post(
        Uri.parse('$baseUrl/posts'),
        headers: {'Content-Type': 'application/json'},
        body: json.encode({
          'title': 'Flutter Post',
          'body': 'Ini contoh POST.',
          'userId': 1,
        }),
      );

      if (response.statusCode == 201) {
        final newPost = json.decode(response.body);
        posts.add({
          'id': newPost['id'] ?? (posts.length + 1),
          'title': newPost['title'] ?? 'Flutter Post',
          'body': newPost['body'] ?? 'Ini contoh POST.',
        });
      } else {
        throw Exception('Failed to create post. Status Code:
${response.statusCode}');
      }
    } catch (e) {
      throw Exception('Error creating post: $e');
    }
  }
  Future<void> updatePost(int postId, String newTitle, String
newBody) async {
    try {
      final response = await http.put(
        Uri.parse('$baseUrl/posts/$postId'),
        headers: {'Content-Type': 'application/json'},
        body: json.encode({
          'title': newTitle,
          'body': newBody,
          'userId': 1,
        }),
      );

      if (response.statusCode == 200) {
        final index = posts.indexWhere((post) => post['id'] ==
postId);
        if (index != -1) {
          posts[index]['title'] = newTitle;
          posts[index]['body'] = newBody;
        }
      } else {
        throw Exception('Failed to update post. Status Code:
${response.statusCode}');
      }
    } catch (e) {
      throw Exception('Error updating post: $e');
    }
  }

  Future<void> deletePost(int postId) async {
    try {
      final response = await
http.delete(Uri.parse('$baseUrl/posts/$postId'));
      if (response.statusCode == 200) {
        posts.removeWhere((post) => post['id'] == postId);
      } else {
        throw Exception('Failed to delete post. Status Code:
${response.statusCode}');
      }
    } catch (e) {
      throw Exception('Error deleting post: $e');
    }
  }
}
```

Output



REST API - GetX

Tekan tombol GET untuk mengambil data



Success

Data successfully fetched

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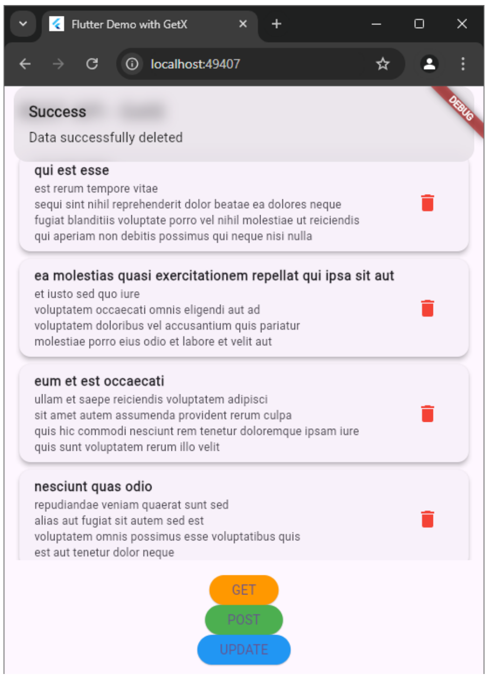

Success

Data successfully deleted

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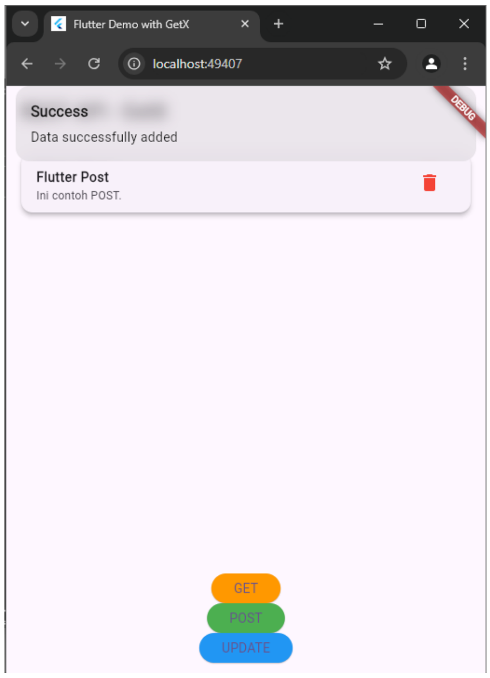
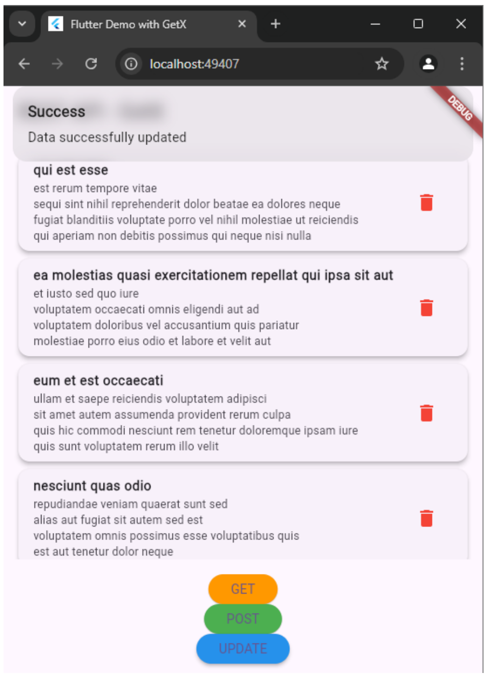


Success

Data successfully added

Flutter Post
Ini contoh POST.


Flutter Demo with GetX

localhost:49407

Success

Data successfully updated

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nesciunt quas odio
repudiandae veniam quaerat sunt sed
alias aut fugiat sit autem sed est
voluptatem omnis possimus esse voluptatibus quis
est aut tenetur dolor neque

Deskripsi

Program ini adalah aplikasi Flutter yang menggunakan GetX untuk mengelola state dalam melakukan operasi CRUD (Create, Read, Update, Delete) pada data post yang diambil dari API publik JSONPlaceholder. Aplikasi ini menampilkan daftar post dalam antarmuka sederhana, di mana pengguna dapat mengambil data, menambah, memperbarui, dan menghapus post. Dengan menggunakan GetX, aplikasi dapat secara otomatis memperbarui tampilan saat data berubah, serta menampilkan notifikasi berupa snackbar setelah setiap operasi berhasil, memberikan umpan balik langsung kepada pengguna. Program ini mengimplementasikan arsitektur yang bersih dengan pemisahan antara logika API dan pengelolaan state, memastikan efisiensi dan kemudahan dalam pengembangan serta pemeliharaan kode.