LAPORAN PRAKTIKUM
Modul 07
"NAVIGASI DAN NOTIFIKASI"

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PURWOKERTO
2024

Tujuan

1. Mahasiswa mampu memahami konsep layout pada Flutter.
2. Mahasiswa dapat mengimplementasikan desain user interface pada Flutter.

Landasan Teori

1. **Model Class**

   Model class digunakan untuk menyusun struktur data yang diterima atau dikirim oleh aplikasi agar lebih terorganisir dan konsisten, terutama dalam penanganan data JSON. Penggunaan model juga memudahkan pemeliharaan kode.

```
 {
  "user_id": 1,
  "id": 13,
  "title": "Bedroom Pop"
}
```

   Untuk memodelkan data ini dalam Flutter, buat file user.dart pada folder models dan definisikan class User seperti berikut:

```
class User {
  final int userId;
  final int id;
  final String title;

  const User({
    required this.userId,
    required this.id,
    required this.title,
  });

  factory User.fromJson(Map<String, dynamic> json) {
    return User(
      userId: json['user_id'],
      id: json['id'],
      title: json['title'],
    );
  }
}
```

   Penggunaan model ini membantu strukturisasi data yang akan diproses di aplikasi, memastikan keteraturan dan efisiensi.

2. **Navigasi (Navigation)**

   Navigasi adalah fitur untuk berpindah antar halaman dalam aplikasi. Di Flutter, navigasi menggunakan widget Navigator dan setiap halaman dianggap sebagai route.

   a. **Navigasi Sederhana**

      Navigasi sederhana dapat dilakukan dengan Navigator.push untuk berpindah ke halaman lain dan Navigator.pop untuk kembali ke halaman sebelumnya.

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

b. Navigasi dengan Data

Untuk mengirim data antar halaman, tambahkan parameter di halaman tujuan.

```
 class DetailScreen extends StatelessWidget {
   final String title;
   const DetailScreen({Key? key, required this.title}) : super(key:
     key);

   @override
   Widget build(BuildContext context) {
     return Scaffold(
       appBar: AppBar(
         title: Text(title),
       ),
     );
   }
}
```

Kemudian, kirim data dari halaman awal:

```
 Navigator.push(
  context,
  MaterialPageRoute(builder: (context) => DetailScreen(title: "Detail
     User")),
);
```

3. Notifikasi (Notifications)\

Notifikasi lokal dapat diimplementasikan menggunakan package flutter_local_notifications. Notifikasi ini bermanfaat untuk mengingatkan pengguna akan informasi penting dalam aplikasi, seperti pesan baru atau update status.

a. Instalasi dan Konfigurasi

Tambahkan package pada pubspec.yaml dan lakukan konfigurasi pada file build.gradle dan Info.plist untuk Android dan iOS.

b. Menampilkan Notifikasi

Buat objek FlutterLocalNotificationsPlugin di dalam file utama:

```
FlutterLocalNotificationsPlugin flutterLocalNotificationsPlugin =
FlutterLocalNotificationsPlugin();
```

Contoh Implementasi Notifikasi:

```
 showNotification() async {
   var android = AndroidNotificationDetails(
     'id', 'channel ', 'description',
     priority: Priority.high, importance: Importance.max,
   );
   var iOS = IOSNotificationDetails();
   var platform = NotificationDetails(android: android, iOS: iOS);

   await flutterLocalNotificationsPlugin.show(
     0, 'Judul Notifikasi', 'Isi Notifikasi', platform,
     payload: 'Informasi tambahan',
   );
}
```

c. Mengatur Tindakan Saat Notifikasi Dipilih

Tambahkan method onSelectNotification untuk menangani tindakan saat notifikasi diklik.

```
 Future onSelectNotification(String? payload) async {
   Navigator.of(context).push(MaterialPageRoute(builder: (_) {
     return NewScreen(payload: payload);
   }));
}
```

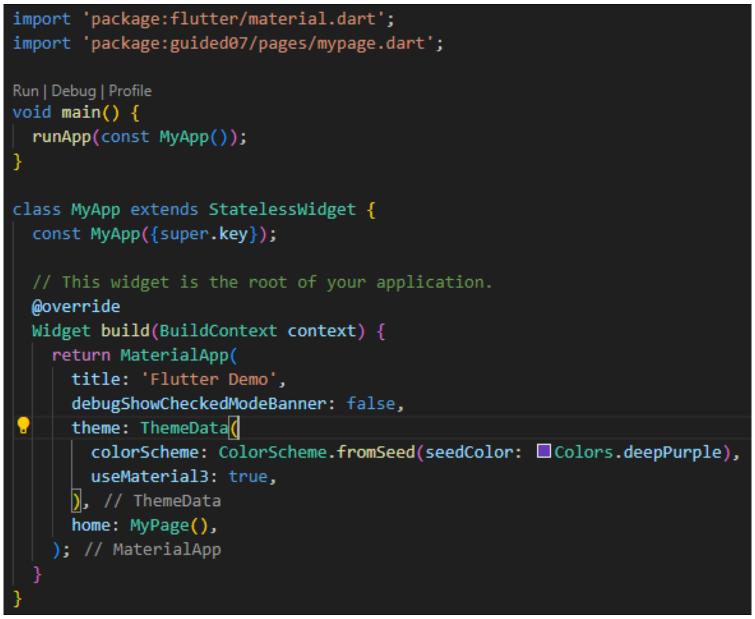
Contoh Tampilan Layar Baru dari Notifikasi:

```
 class NewScreen extends StatelessWidget {
   final String? payload;
   NewScreen({this.payload});

   @override
   Widget build(BuildContext context) {
     return Scaffold(
       appBar: AppBar(
         title: Text(payload ?? "No Payload"),
       ),
     );
   }
}
```

Guided

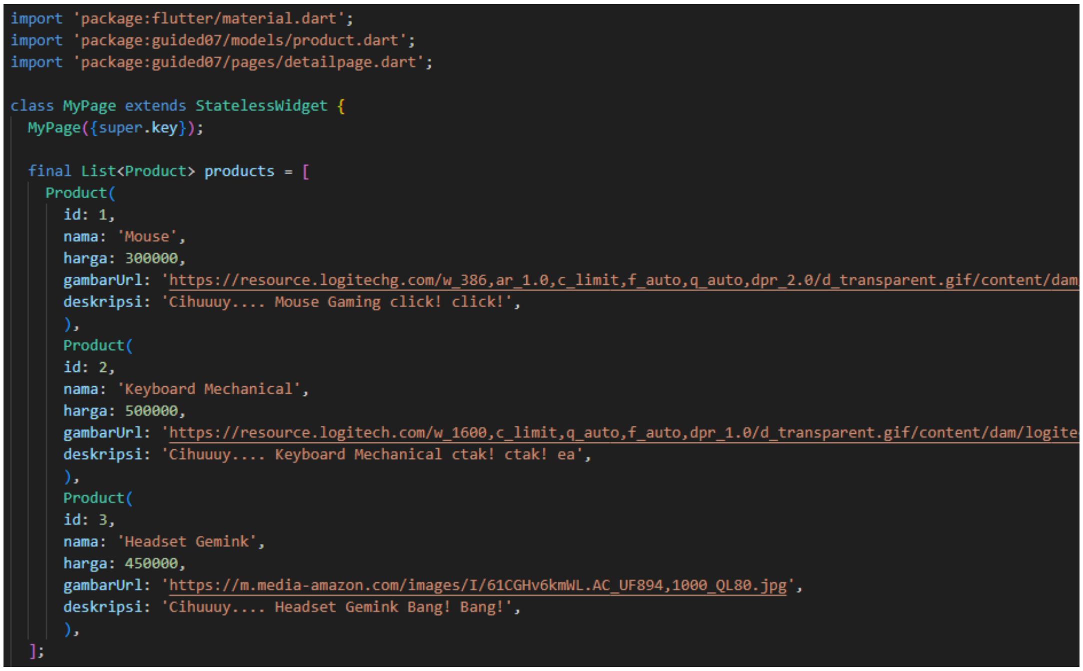
1. Navigation

- Lib/Main.dart

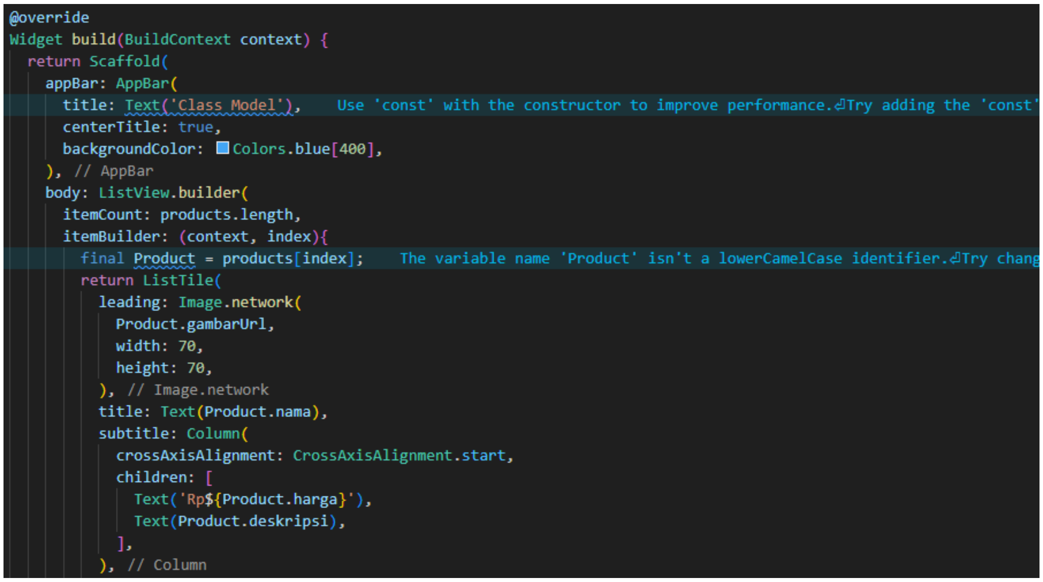


```
import 'package:flutter/material.dart';
import 'package:guided07/pages/mypage.dart';

Run | Debug | Profile
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',
      debugShowCheckedModeBanner: false,
      theme: ThemeData(
        colorScheme: ColorScheme.fromSeed(seedColor: Colors.deepPurple),
        useMaterial3: true,
      ), // ThemeData
      home: MyPage(),
    ); // MaterialApp
  }
}
```

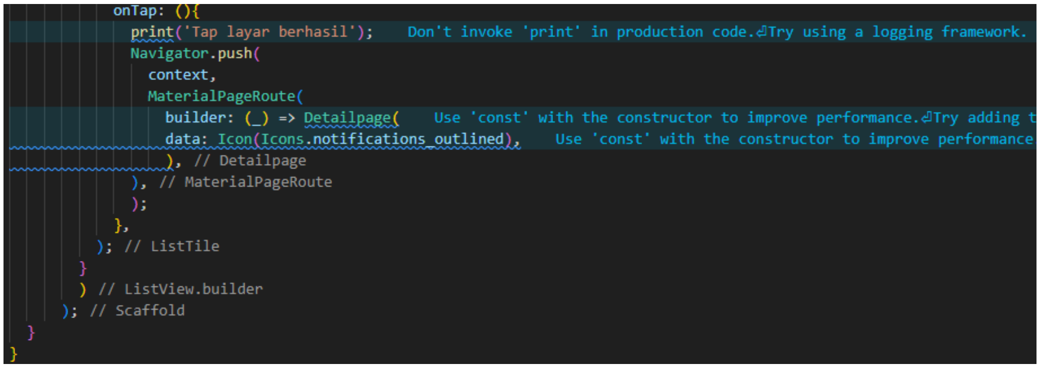
- Lib/pages/mypage.dart



```
import 'package:flutter/material.dart';
import 'package:guided07/models/product.dart';
import 'package:guided07/pages/detailpage.dart';

class MyPage extends StatelessWidget {
  MyPage({super.key});

  final List<Product> products = [
    Product(
      id: 1,
      nama: 'Mouse',
      harga: 300000,
      gambarUrl: 'https://resource.logitechg.com/w_386,ar_1.0,c_limit,f_auto,q_auto,dpr_2.0/d_transparent.gif/content/dam
      deskripsi: 'Cihuuuy.... Mouse Gaming click! click!',
      ),
      Product(
      id: 2,
      nama: 'Keyboard Mechanical',
      harga: 500000,
      gambarUrl: 'https://resource.logitech.com/w_1600,c_limit,q_auto,f_auto,dpr_1.0/d_transparent.gif/content/dam/logite
      deskripsi: 'Cihuuuy.... Keyboard Mechanical ctak! ctak! ea',
      ),
      Product(
      id: 3,
      nama: 'Headset Gemink',
      harga: 450000,
      gambarUrl: 'https://m.media-amazon.com/images/I/61CGHv6kmWL.AC_UF894,1000_QL80.jpg',
      deskripsi: 'Cihuuuy.... Headset Gemink Bang! Bang!',
      ),
  ];
```

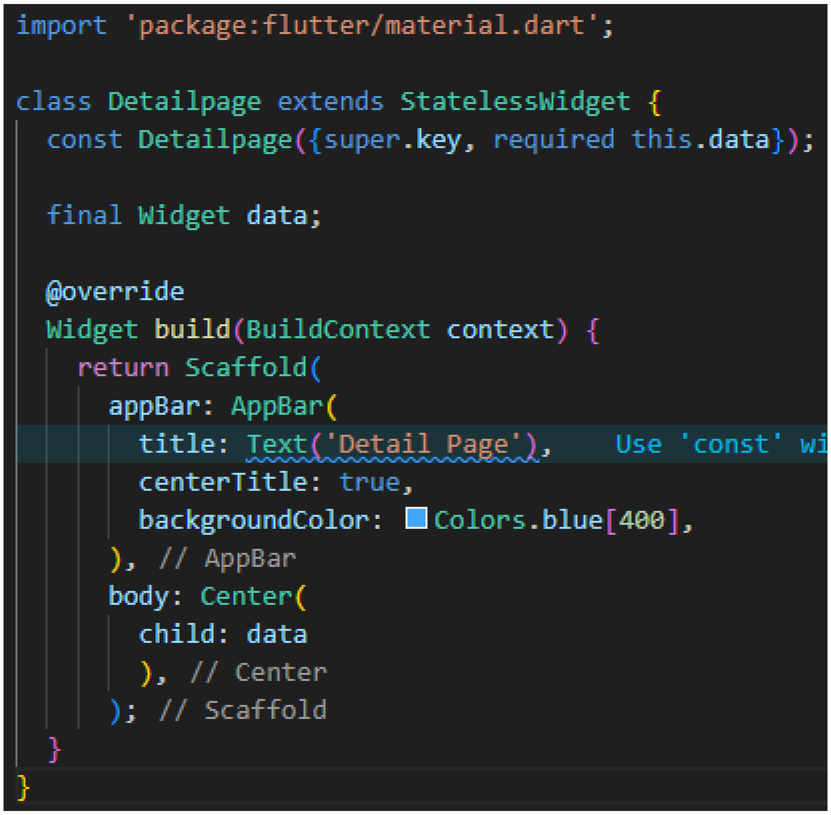


```
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text('Class Model'),    Use 'const' with the constructor to improve performance.⏎Try adding the 'const'
      centerTitle: true,
      backgroundColor: Colors.blue[400],
    ), // AppBar
    body: ListView.builder(
      itemCount: products.length,
      itemBuilder: (context, index){
        final Product = products[index];    The variable name 'Product' isn't a lowerCamelCase identifier.⏎Try chang
        return ListTile(
          leading: Image.network(
            Product.gambarUrl,
            width: 70,
            height: 70,
          ), // Image.network
          title: Text(Product.nama),
          subtitle: Column(
            crossAxisAlignment: CrossAxisAlignment.start,
            children: [
              Text('Rp${Product.harga}'),
              Text(Product.deskripsi),
            ],
          ), // Column
```



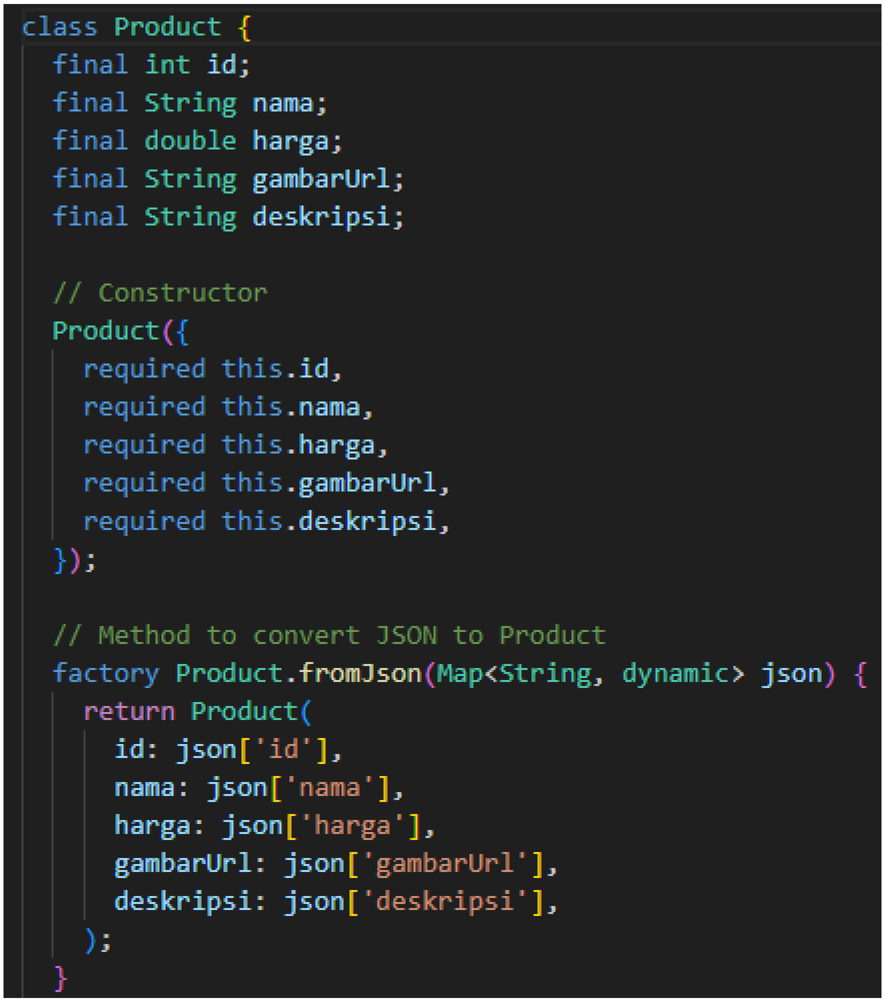
```
            onTap: (){
              print('Tap layar berhasil');    Don't invoke 'print' in production code.⏎Try using a logging framework.
              Navigator.push(
                context,
                MaterialPageRoute(
                  builder: (_) => Detailpage(    Use 'const' with the constructor to improve performance.⏎Try adding t
                  data: Icon(Icons.notifications_outlined),    Use 'const' with the constructor to improve performance
                  ), // Detailpage
              ), // MaterialPageRoute
              );
            },
          ); // ListTile
        }
        ) // ListView.builder
      ); // Scaffold
  }
}
```

- Lib/pages/datailpage.dart

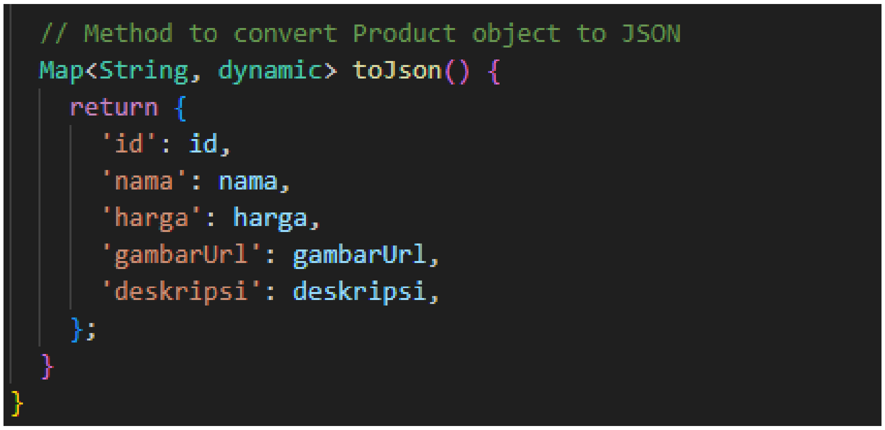


```
import 'package:flutter/material.dart';

class Detailpage extends StatelessWidget {
  const Detailpage({super.key, required this.data});

  final Widget data;

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Detail Page'),    Use 'const' wi
        centerTitle: true,
        backgroundColor: Colors.blue[400],
      ), // AppBar
      body: Center(
        child: data
        ), // Center
      ); // Scaffold
  }
}
```

- Lib/models/product.dart

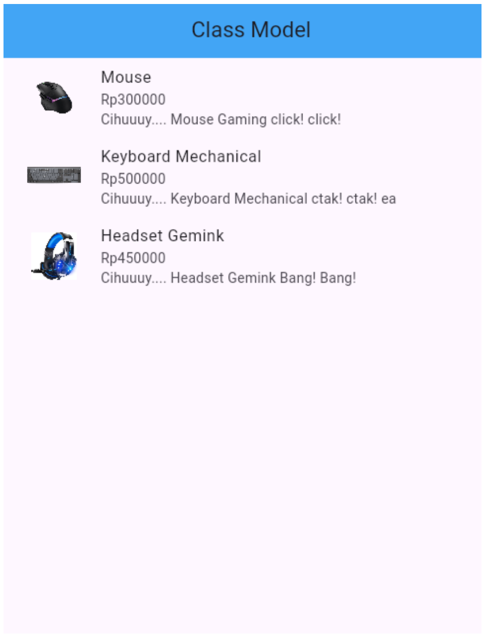


```dart
class Product {
  final int id;
  final String nama;
  final double harga;
  final String gambarUrl;
  final String deskripsi;

  // Constructor
  Product({
    required this.id,
    required this.nama,
    required this.harga,
    required this.gambarUrl,
    required this.deskripsi,
  });

  // Method to convert JSON to Product
  factory Product.fromJson(Map<String, dynamic> json) {
    return Product(
      id: json['id'],
      nama: json['nama'],
      harga: json['harga'],
      gambarUrl: json['gambarUrl'],
      deskripsi: json['deskripsi'],
    );
  }
```



```dart
  // Method to convert Product object to JSON
  Map<String, dynamic> toJson() {
    return {
      'id': id,
      'nama': nama,
      'harga': harga,
      'gambarUrl': gambarUrl,
      'deskripsi': deskripsi,
    };
  }
}
```

Output :

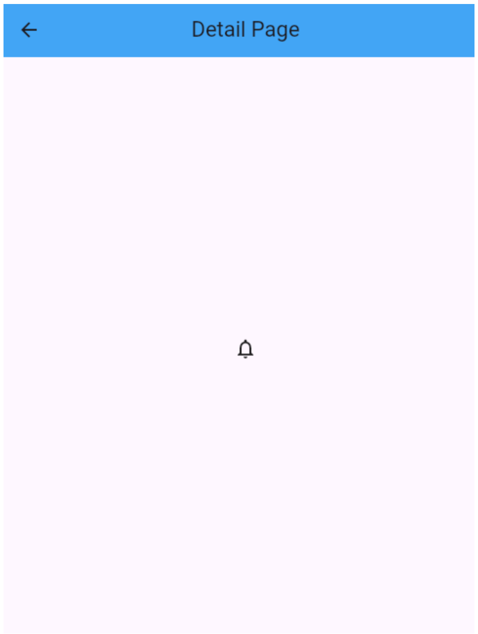


Class Model

Mouse
Rp300000
Cihuuuy.... Mouse Gaming click! click!

Keyboard Mechanical
Rp500000
Cihuuuy.... Keyboard Mechanical ctak! ctak! ea

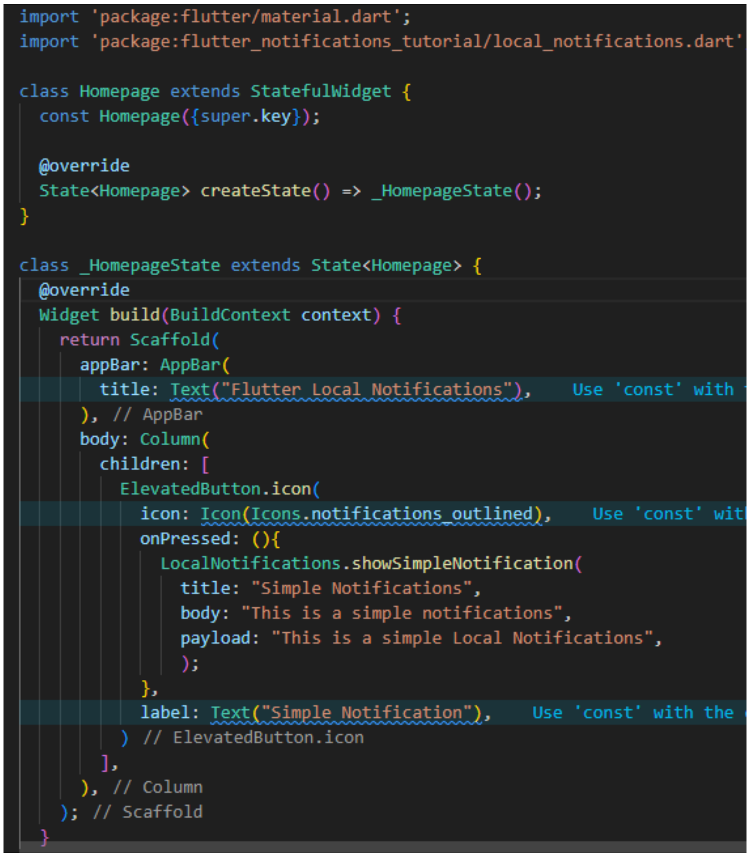
Headset Gemink
Rp450000
Cihuuuy.... Headset Gemink Bang! Bang!



Detail Page

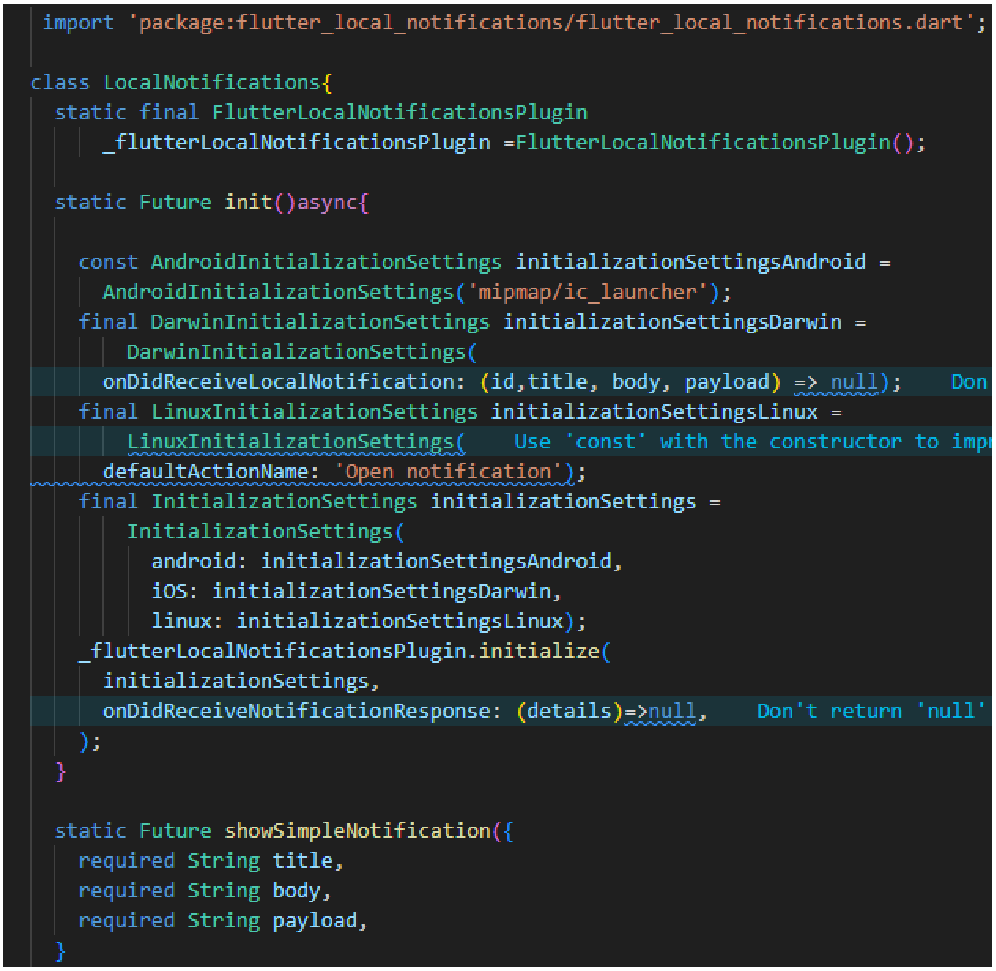
2. Notification

- home.dart

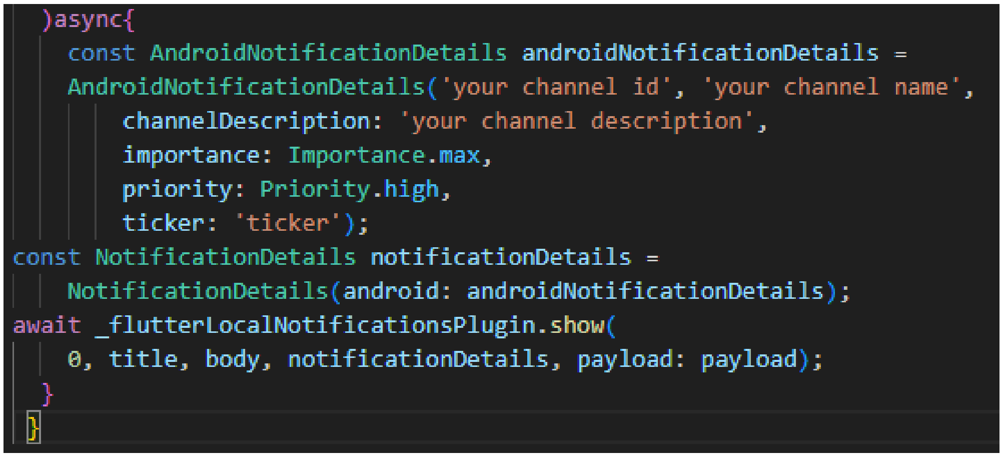


```
import 'package:flutter/material.dart';
import 'package:flutter_notifications_tutorial/local_notifications.dart'

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

  @override
  State<Homepage> createState() => _HomepageState();
}

class _HomepageState extends State<Homepage> {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text("Flutter Local Notifications"),    Use 'const' with
      ), // AppBar
      body: Column(
        children: [
          ElevatedButton.icon(
            icon: Icon(Icons.notifications_outlined),    Use 'const' wit
            onPressed: (){
              LocalNotifications.showSimpleNotification(
                title: "Simple Notifications",
                body: "This is a simple notifications",
                payload: "This is a simple Local Notifications",
                );
            },
            label: Text("Simple Notification"),    Use 'const' with the
          ) // ElevatedButton.icon
        ],
      ), // Column
    ); // Scaffold
  }
```

- local_notification.dart

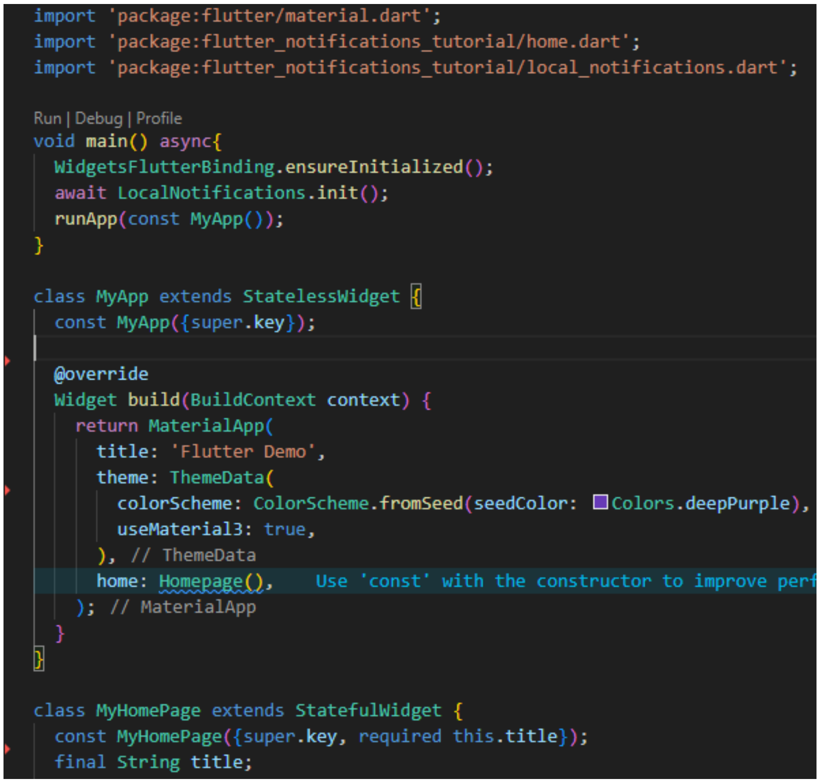


```
 import 'package:flutter_local_notifications/flutter_local_notifications.dart';

class LocalNotifications{
  static final FlutterLocalNotificationsPlugin
      _flutterLocalNotificationsPlugin =FlutterLocalNotificationsPlugin();

  static Future init()async{

    const AndroidInitializationSettings initializationSettingsAndroid =
      AndroidInitializationSettings('mipmap/ic_launcher');
    final DarwinInitializationSettings initializationSettingsDarwin =
        DarwinInitializationSettings(
      onDidReceiveLocalNotification: (id,title, body, payload) => null);    Don
    final LinuxInitializationSettings initializationSettingsLinux =
        LinuxInitializationSettings(    Use 'const' with the constructor to impr
      defaultActionName: 'Open notification');
    final InitializationSettings initializationSettings =
        InitializationSettings(
          android: initializationSettingsAndroid,
          iOS: initializationSettingsDarwin,
          linux: initializationSettingsLinux);
    _flutterLocalNotificationsPlugin.initialize(
      initializationSettings,
      onDidReceiveNotificationResponse: (details)=>null,    Don't return 'null'
    );
  }

  static Future showSimpleNotification({
    required String title,
    required String body,
    required String payload,
  }
```

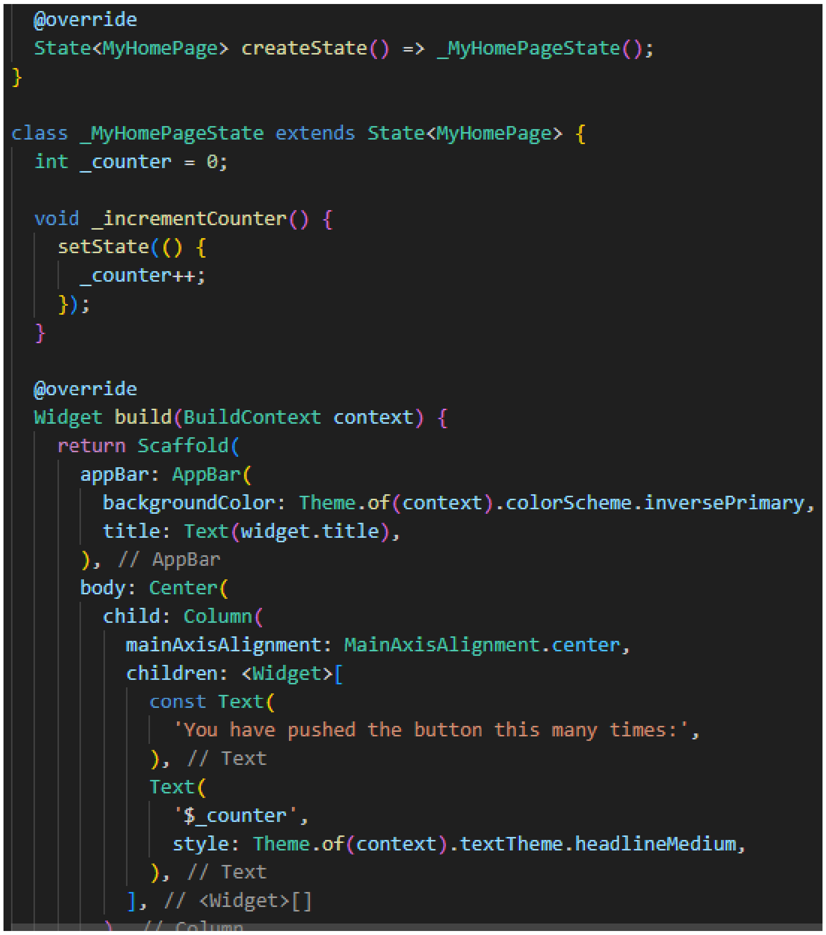


```
  )async{
    const AndroidNotificationDetails androidNotificationDetails =
    AndroidNotificationDetails('your channel id', 'your channel name',
        channelDescription: 'your channel description',
        importance: Importance.max,
        priority: Priority.high,
        ticker: 'ticker');
const NotificationDetails notificationDetails =
    NotificationDetails(android: androidNotificationDetails);
await _flutterLocalNotificationsPlugin.show(
    0, title, body, notificationDetails, payload: payload);
  }
}
```

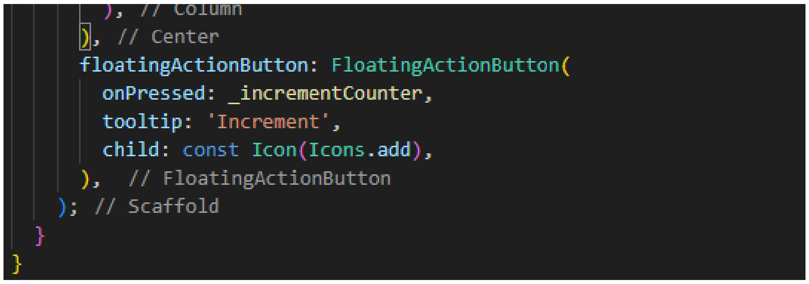
- main.dart



```
import 'package:flutter/material.dart';
import 'package:flutter_notifications_tutorial/home.dart';
import 'package:flutter_notifications_tutorial/local_notifications.dart';

Run | Debug | Profile
void main() async{
  WidgetsFlutterBinding.ensureInitialized();
  await LocalNotifications.init();
  runApp(const MyApp());
}

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

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Demo',
      theme: ThemeData(
        colorScheme: ColorScheme.fromSeed(seedColor: ■Colors.deepPurple),
        useMaterial3: true,
      ), // ThemeData
      home: Homepage(),    Use 'const' with the constructor to improve perf
    ); // MaterialApp
  }
}

class MyHomePage extends StatefulWidget {
  const MyHomePage({super.key, required this.title});
  final String title;
```

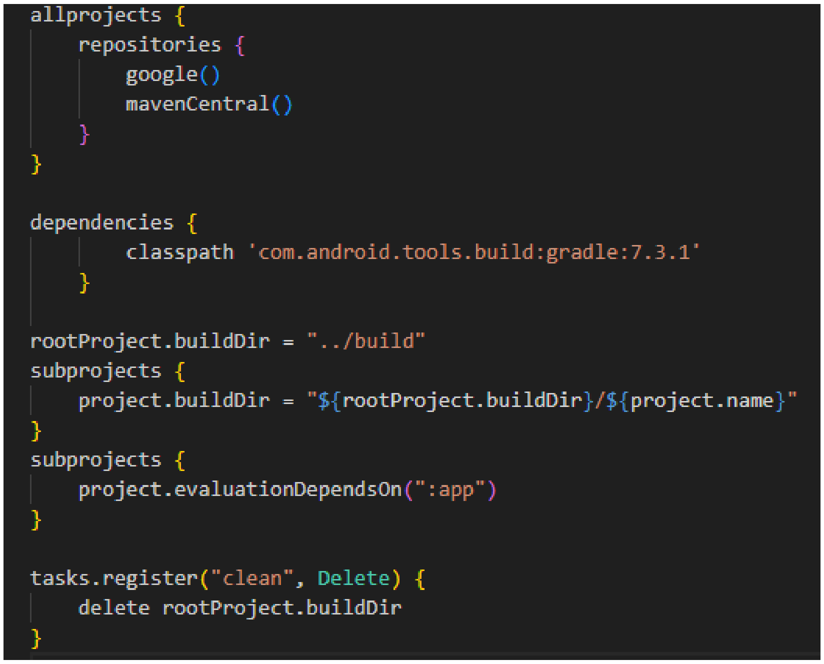


```
  @override
  State<MyHomePage> createState() => _MyHomePageState();
}

class _MyHomePageState extends State<MyHomePage> {
  int _counter = 0;

  void _incrementCounter() {
    setState(() {
      _counter++;
    });
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        backgroundColor: Theme.of(context).colorScheme.inversePrimary,
        title: Text(widget.title),
      ), // AppBar
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: <Widget>[
            const Text(
              'You have pushed the button this many times:',
            ), // Text
            Text(
              '$_counter',
              style: Theme.of(context).textTheme.headlineMedium,
            ), // Text
          ], // <Widget>[]
        ), // Column
```



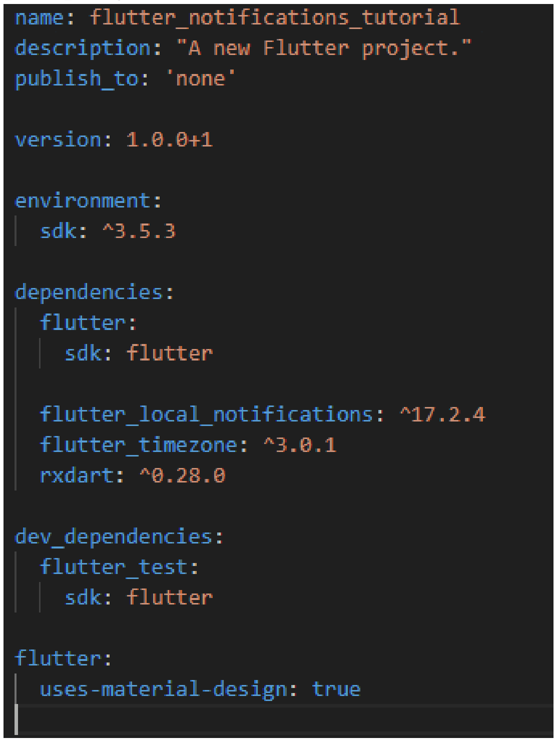
```
        ), // Column
      ), // Center
      floatingActionButton: FloatingActionButton(
        onPressed: _incrementCounter,
        tooltip: 'Increment',
        child: const Icon(Icons.add),
      ),  // FloatingActionButton
    ); // Scaffold
  }
}
```

- android/build.gradle



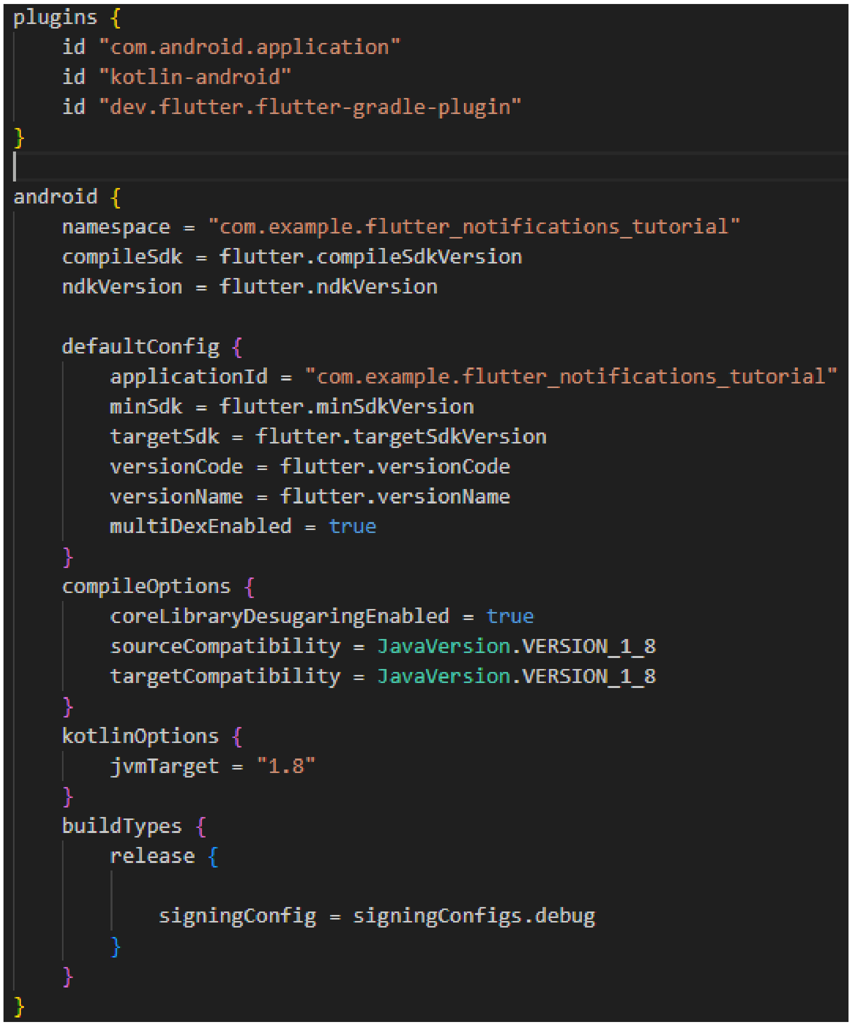
```
allprojects {
    repositories {
        google()
        mavenCentral()
    }
}

dependencies {
        classpath 'com.android.tools.build:gradle:7.3.1'
    }

rootProject.buildDir = "../build"
subprojects {
    project.buildDir = "${rootProject.buildDir}/${project.name}"
}
subprojects {
    project.evaluationDependsOn(":app")
}

tasks.register("clean", Delete) {
    delete rootProject.buildDir
}
```

- pubspec.yaml

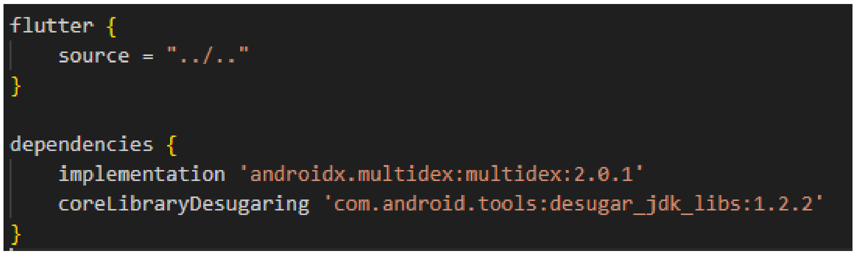


```
name: flutter_notifications_tutorial
description: "A new Flutter project."
publish_to: 'none'

version: 1.0.0+1

environment:
  sdk: ^3.5.3

dependencies:
  flutter:
    sdk: flutter

  flutter_local_notifications: ^17.2.4
  flutter_timezone: ^3.0.1
  rxdart: ^0.28.0

dev_dependencies:
  flutter_test:
    sdk: flutter

flutter:
  uses-material-design: true
```

- anroid/app/build.gradle

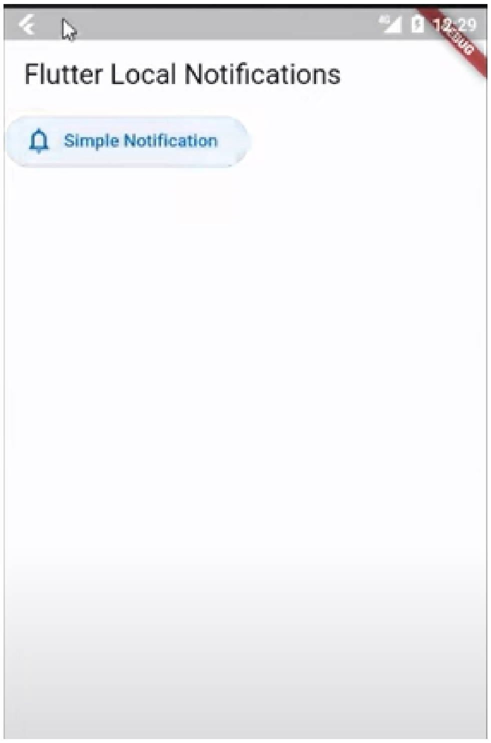


```
plugins {
    id "com.android.application"
    id "kotlin-android"
    id "dev.flutter.flutter-gradle-plugin"
}

android {
    namespace = "com.example.flutter_notifications_tutorial"
    compileSdk = flutter.compileSdkVersion
    ndkVersion = flutter.ndkVersion

    defaultConfig {
        applicationId = "com.example.flutter_notifications_tutorial"
        minSdk = flutter.minSdkVersion
        targetSdk = flutter.targetSdkVersion
        versionCode = flutter.versionCode
        versionName = flutter.versionName
        multiDexEnabled = true
    }
    compileOptions {
        coreLibraryDesugaringEnabled = true
        sourceCompatibility = JavaVersion.VERSION_1_8
        targetCompatibility = JavaVersion.VERSION_1_8
    }
    kotlinOptions {
        jvmTarget = "1.8"
    }
    buildTypes {
        release {

            signingConfig = signingConfigs.debug
        }
    }
}
```

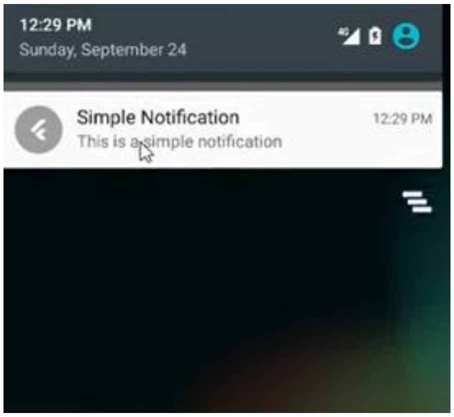


```
flutter {
    source = "../.."
}

dependencies {
    implementation 'androidx.multidex:multidex:2.0.1'
    coreLibraryDesugaring 'com.android.tools:desugar_jdk_libs:1.2.2'
}
```

Output :



Flutter Local Notifications



12:29 PM
Sunday, September 24

Simple Notification 12:29 PM
This is a simple notification

Unguided

1. Buatlah satu project untuk menampilkan beberapa produk dan halaman e-commerce dengan menerapkan class model serta navigasi halaman

Input :

```
//Main.dart

 import 'package:flutter/material.dart';
 import 'screens/product_list_screen.dart';

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

 class MyApp extends StatelessWidget {
   @override
   Widget build(BuildContext context) {
     return MaterialApp(
       title: 'E-commerce App',
       debugShowCheckedModeBanner: false,
       theme: ThemeData(
         primarySwatch: Colors.blue,
       ),
       home: ProductListScreen(),
     );
   }
 }
```

```
//product.dart
```

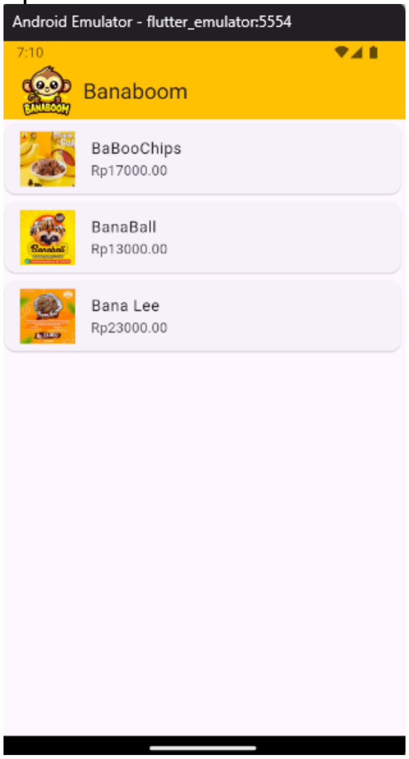
```
class Product {
  final int id;
  final String name;
  final String description;
  final double price;
  final String imageUrl;

  Product({
    required this.id,
    required this.name,
    required this.description,
    required this.price,
    required this.imageUrl,
  });
}
```

```
//product_list_screen.dart

import 'package:flutter/material.dart';
import '../models/product.dart';
import 'product_detail_screen.dart';

class ProductListScreen extends StatelessWidget {
  final List<Product> products = [
    Product(
      id: 1,
      name: "BaBooChips",
      description: "Keripik pisang lezat manis berbagai rasa....",
      price: 17000,
      imageUrl:
"https://img.lazcdn.com/g/p/b98fa845b6f6d57cc6af15bcea984ec3.jpg_720x720q80.jpg",
    ),
    Product(
      id: 2,
      name: "BanaBall",
      description: "Bola-bola pisang olahan dengan isi kejutan yang lumer di
mulut...",
      price: 13000,
      imageUrl: "https://encrypted-
tbn0.gstatic.com/images?q=tbn:ANd9GcSg71gMBU62Ifbg_mOOfM8_gI0xfbJuIaTbsQ&s",
    ),
    Product(
      id: 3,
      name: "Bana Lee",
      description: "Sale pisang creamy yang lezaat jadi teman nyemil kamu...",
      price: 23000,
      imageUrl: "https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQ-
ijRrgbLqI_niGeB2vjxrkmpOPcPBq_XY7Q&s0",
    ),
  ];

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        backgroundColor: Colors.amber,
        title: Row(
          children: [
          Image.asset(
          'assets/logo.png',
            height: 60,
      ),
            SizedBox(width: 8),
            Text("Banaboom"),
    ],
  ),
),
      body: ListView.builder(
        itemCount: products.length,
        itemBuilder: (context, index) {
          final product = products[index];
          return Card(
            child: ListTile(
              leading: Image.network(product.imageUrl),
              title: Text(product.name),
              subtitle: Text("\Rp${product.price.toStringAsFixed(2)}"),
              onTap: () {
                Navigator.push(
                  context,
                  MaterialPageRoute(
                    builder: (context) => ProductDetailScreen(product: product),
                  ),
                );
              },
            ),
          );
        },
      ),
    );
  }
}
```

```
//product_detail_screen.dart

import 'package:flutter/material.dart';
import '../models/product.dart';

class ProductDetailScreen extends StatelessWidget {
  final Product product;

  const ProductDetailScreen({Key? key, required this.product}) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        backgroundColor: Colors.amber,
        title: Row(
          children: [
            Image.asset(
              'assets/logo.png',
              height: 60,
            ),
            SizedBox(width: 8),
            Text("Banaboom"),
          ],
        ),
      ),
      body: Padding(
        padding: const EdgeInsets.all(16.0),
        child: Column(
          crossAxisAlignment: CrossAxisAlignment.start,
          children: [
            Center(child: Image.network(product.imageUrl, height: 150)),
            SizedBox(height: 16),
            Text(
              product.name,
              style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold),
            ),
            SizedBox(height: 8),
            Text(
              "\Rp${product.price.toStringAsFixed(2)}",
              style: TextStyle(fontSize: 20, color: Colors.grey[600]),
            ),
            SizedBox(height: 16),
            Text(
              product.description,
              style: TextStyle(fontSize: 16),
            ),
            Spacer(),
            Row(
              mainAxisAlignment: MainAxisAlignment.spaceEvenly,
              children: [
                Expanded(
                  child: ElevatedButton(
                    onPressed: () {},
                    style: ElevatedButton.styleFrom(
                      backgroundColor: Colors.orange,
                      padding: EdgeInsets.symmetric(vertical: 12),
                    ),
                    child: Text(
                      "Beli",
                      style: TextStyle(fontSize: 16, color: const
Color.fromARGB(255, 0, 0, 0)),
                    ),
                  ),
                ),
                SizedBox(width: 16),
                Expanded(
                  child: ElevatedButton(
                    onPressed: () {},
                    style: ElevatedButton.styleFrom(
                      backgroundColor: Colors.amber,
                      padding: EdgeInsets.symmetric(vertical: 12),
                    ),
                    child: Text(
                      "Keranjang",
                      style: TextStyle(fontSize: 16, color: const
Color.fromARGB(255, 0, 0, 0)),
                    ),
                  ),
                ),
              ],
            ),
          ],
        ),
      ),
    );
  }
}
```

```
//pubspec.yaml

flutter :
  assets:
    - assets/logo.png
```

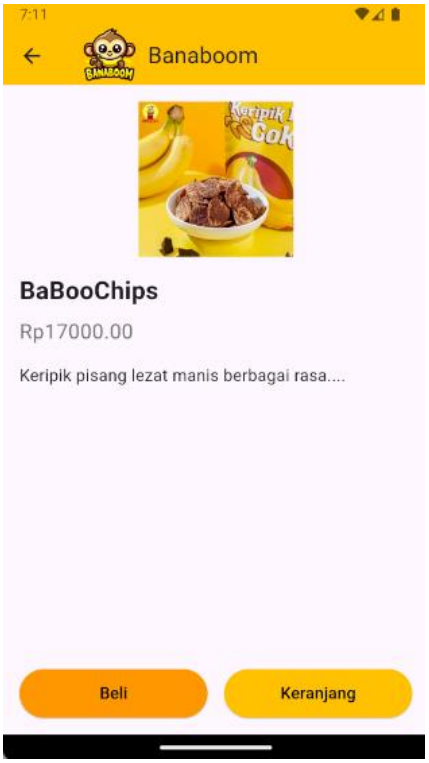
Output :


Android Emulator - flutter_emulator:5554

BaBooChips
Rp17000.00

BanaBall
Rp13000.00

Bana Lee
Rp23000.00



BaBooChips
Rp17000.00

Keripik pisang lezat manis berbagai rasa....

Struktur Folder :

1. **models/product.dart** - Menyimpan model Product, yang mewakili data produk, seperti ID, nama, deskripsi, harga, dan URL gambar.
2. **screens/product_list_screen.dart** - Menampilkan daftar produk. Setiap item pada daftar dapat diketuk untuk membuka halaman detail produk.
3. **screens/product_detail_screen.dart** - Menampilkan detail produk yang dipilih, dengan tombol “Beli” dan “Masukkan Keranjang”.

Deskripsi kode :

- **Product Class** - Digunakan untuk menyimpan informasi produk. Setiap produk memiliki properti id, name, description, price, dan imageUrl.
- **ProductListScreen** - Menampilkan daftar produk dalam bentuk ListView.
- **AppBar** - Berisi judul aplikasi dan menggunakan warna latar amber.
- **ListView.builder** - Membuat tampilan dinamis untuk setiap produk.
- **ListTile** - Setiap produk ditampilkan sebagai Card dengan gambar, nama, harga, dan bisa ditekan untuk membuka ProductDetailScreen.
- **ProductDetailScreen** - Menampilkan detail produk yang dipilih.
- **AppBar** - Menampilkan logo dan nama aplikasi di bagian atas halaman.
- **Column** - Menampilkan gambar, nama, harga, dan deskripsi produk secara berurutan.
- **Spacer** - Mendorong tombol ke bagian bawah halaman.
- **Row** - Mengatur tombol “Beli” dan “Masukkan Keranjang” berdampingan. Kedua tombol ini hanya untuk tampilan dan belum memiliki fungsi

Kesimpulan

Penggunaan **Model**, **Navigasi**, dan **Notifikasi** di Flutter membantu pengelolaan data, perpindahan antar halaman, dan interaksi dengan pengguna secara efektif. Model memberikan struktur pada data yang diproses aplikasi, navigasi memudahkan pengguna berpindah halaman, dan notifikasi memberikan informasi penting secara real-time kepada pengguna.