Université des Mascareignes

Faculty of Information and Communication Technology

Licence Technologique en Informatique Appliquée

3ème année

Semestre 5

PMH

TP3

Par : Ken Addison Chan Yin Shin **THIBAUD**

Destinataire : MR. S. Beehary

Date: 03/02/2024

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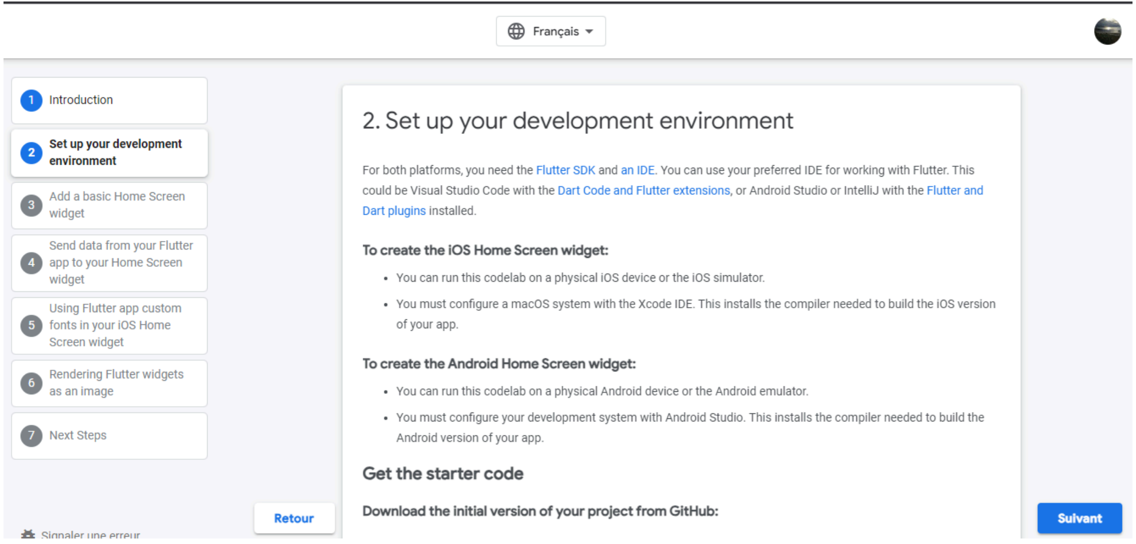
Task 1

Home widgets serve as a quick and efficient means to relay information on a phone screen. By adhering to the code lab examples and referencing the codes on GitHub, we will construct an app designed for demonstrating the capabilities of home widgets.


Français
1 Introduction
2 Set up your development environment
3 Add a basic Home Screen widget
4 Send data from your Flutter app to your Home Screen widget
5 Using Flutter app custom fonts in your iOS Home Screen widget
6 Rendering Flutter widgets as an image
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2. Set up your development environment

For both platforms, you need the Flutter SDK and an IDE. You can use your preferred IDE for working with Flutter. This could be Visual Studio Code with the Dart Code and Flutter extensions, or Android Studio or IntelliJ with the Flutter and Dart plugins installed.

To create the iOS Home Screen widget:

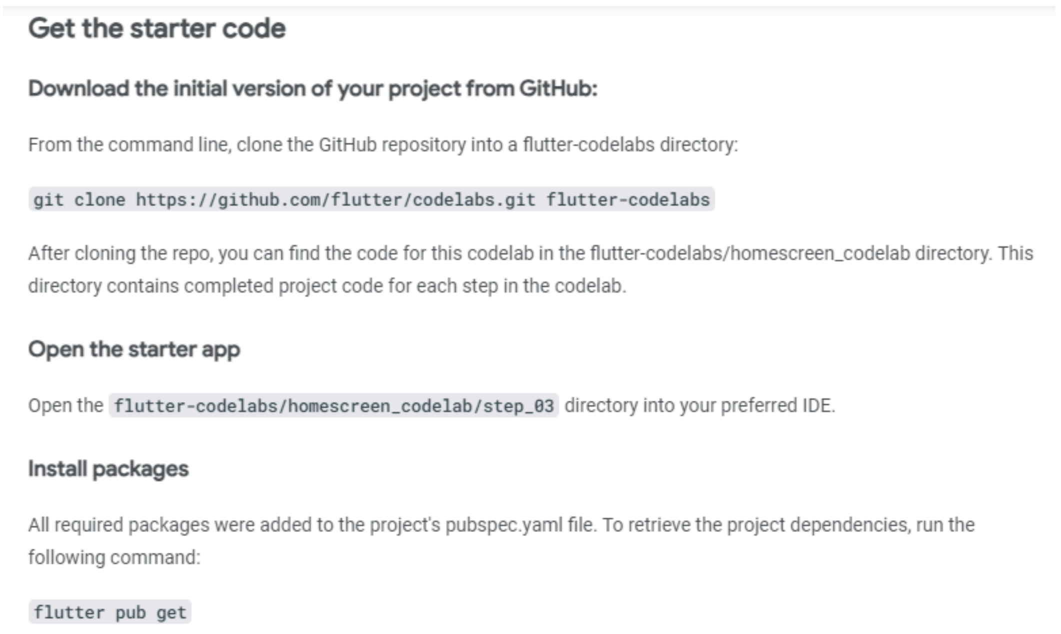
- You can run this codelab on a physical iOS device or the iOS simulator.
- You must configure a macOS system with the Xcode IDE. This installs the compiler needed to build the iOS version of your app.

To create the Android Home Screen widget:

- You can run this codelab on a physical Android device or the Android emulator.
- You must configure your development system with Android Studio. This installs the compiler needed to build the Android version of your app.

Get the starter code

Download the initial version of your project from GitHub:



Get the starter code

Download the initial version of your project from GitHub:

From the command line, clone the GitHub repository into a flutter-codelabs directory:

```
git clone https://github.com/flutter/codelabs.git flutter-codelabs
```

After cloning the repo, you can find the code for this codelab in the flutter-codelabs/homescreen_codelab directory. This directory contains completed project code for each step in the codelab.

Open the starter app

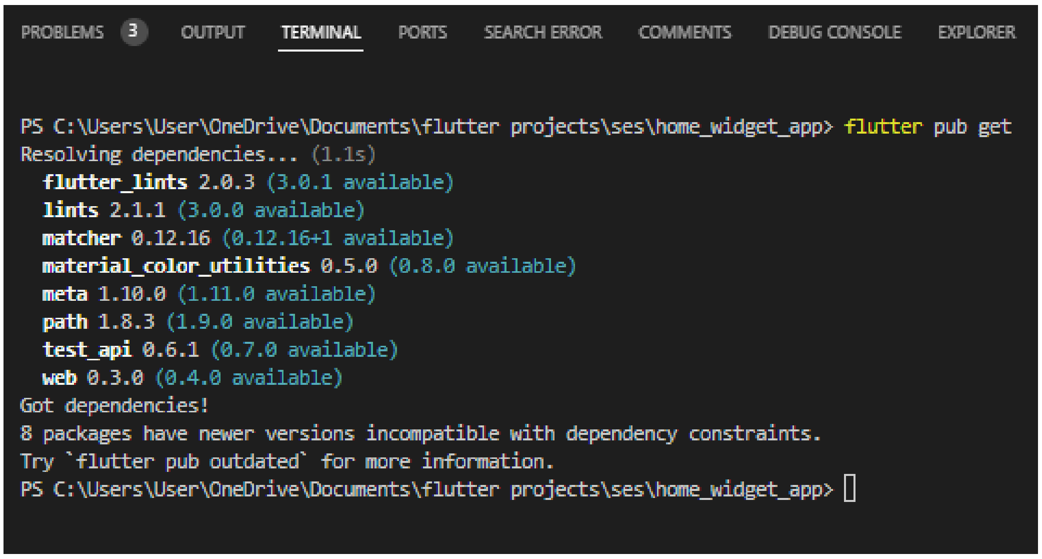
Open the `flutter-codelabs/homescreen_codelab/step_03` directory into your preferred IDE.

Install packages

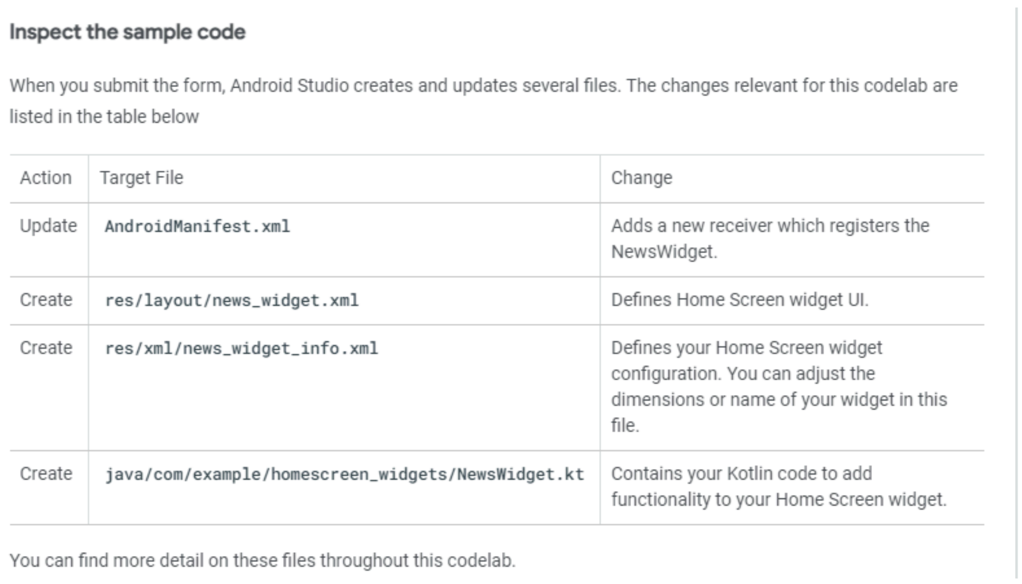
All required packages were added to the project's pubspec.yaml file. To retrieve the project dependencies, run the following command:

```
flutter pub get
```

Regrettably, the homescreen_codelab did not function as expected, and I encountered numerous issues with the Flutter codelabs' GitHub codes. Even attempting to clone the repository proved unsuccessful, leading me to manually replicate the process.



```
PS C:\Users\User\OneDrive\Documents\flutter projects\ses\home_widget_app> flutter pub get
Resolving dependencies... (1.1s)
  flutter_lints 2.0.3 (3.0.1 available)
  lints 2.1.1 (3.0.0 available)
  matcher 0.12.16 (0.12.16+1 available)
  material_color_utilities 0.5.0 (0.8.0 available)
  meta 1.10.0 (1.11.0 available)
  path 1.8.3 (1.9.0 available)
  test_api 0.6.1 (0.7.0 available)
  web 0.3.0 (0.4.0 available)
Got dependencies!
8 packages have newer versions incompatible with dependency constraints.
Try `flutter pub outdated` for more information.
PS C:\Users\User\OneDrive\Documents\flutter projects\ses\home_widget_app>
```



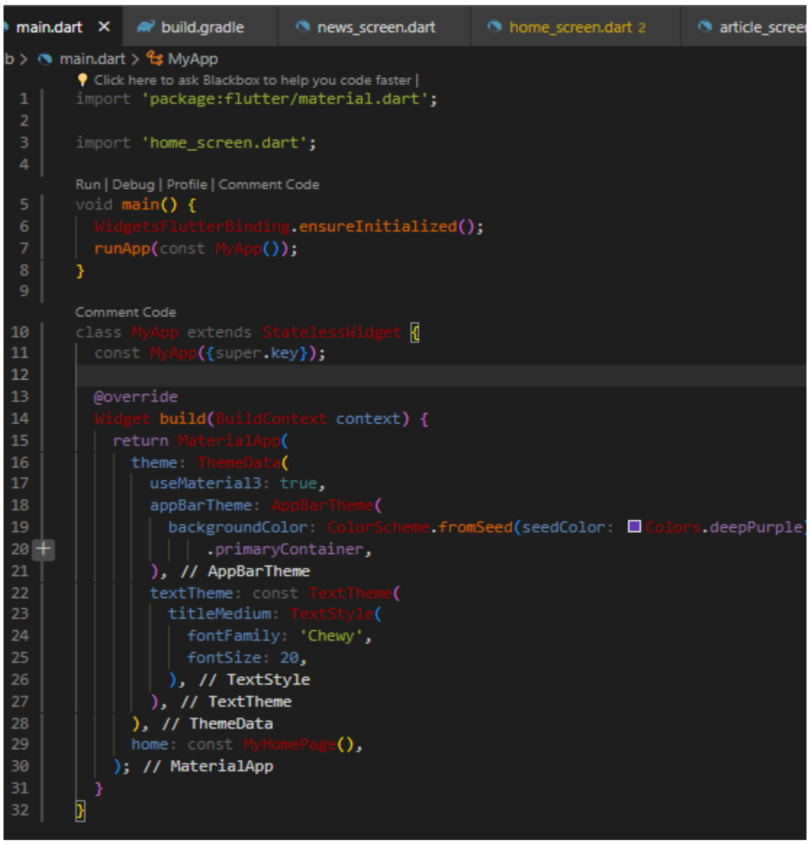
Inspect the sample code

When you submit the form, Android Studio creates and updates several files. The changes relevant for this codelab are listed in the table below

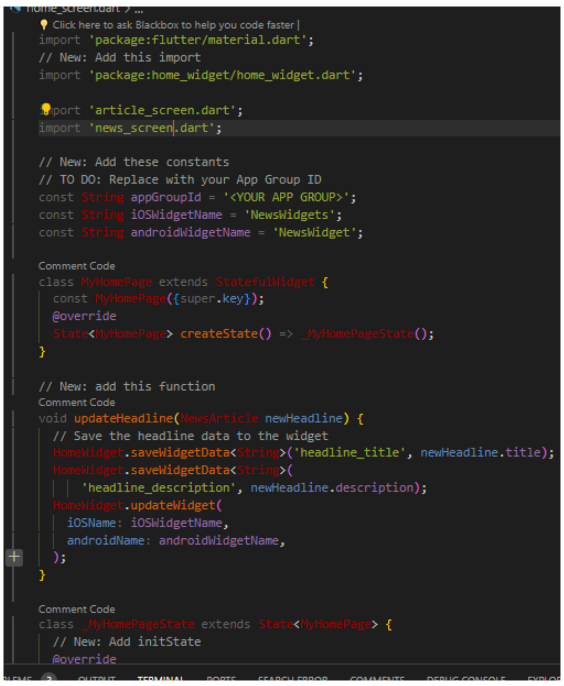
Action	Target File	Change
Update	`AndroidManifest.xml`	Adds a new receiver which registers the NewsWidget.
Create	`res/layout/news_widget.xml`	Defines Home Screen widget UI.
Create	`res/xml/news_widget_info.xml`	Defines your Home Screen widget configuration. You can adjust the dimensions or name of your widget in this file.
Create	`java/com/example/homescreen_widgets/NewsWidget.kt`	Contains your Kotlin code to add functionality to your Home Screen widget.

You can find more detail on these files throughout this codelab.

In the "lib" folder, four pages have been established: 1. main.dart, 2. Home_screen.dart, 3. Article_screen.dart, and 4. News_screen.dart. The widgets were designed to facilitate the viewing of news available on the News_screen.dart through a home widget displayed on the home screen of the emulator.



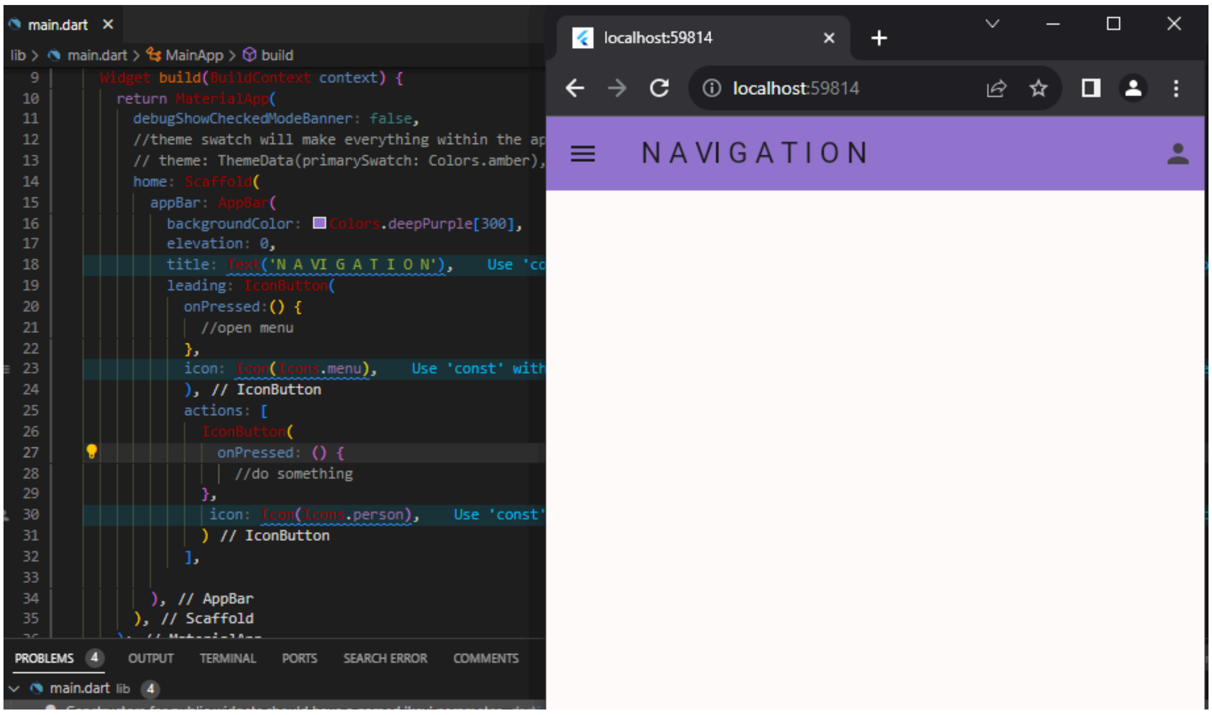
```
main.dart ×   build.gradle   news_screen.dart   home_screen.dart 2   article_scree
b > main.dart > MyApp
Click here to ask Blackbox to help you code faster |
import 'package:flutter/material.dart';

import 'home_screen.dart';

Run | Debug | Profile | Comment Code
void main() {
  WidgetsFlutterBinding.ensureInitialized();
  runApp(const MyApp());
}

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

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      theme: ThemeData(
        useMaterial3: true,
        appBarTheme: AppBarTheme(
          backgroundColor: ColorScheme.fromSeed(seedColor: Colors.deepPurple)
              .primaryContainer,
        ), // AppBarTheme
        textTheme: const TextTheme(
          titleMedium: TextStyle(
            fontFamily: 'Chewy',
            fontSize: 20,
          ), // TextStyle
        ), // TextTheme
      ), // ThemeData
      home: const MyHomePage(),
    ); // MaterialApp
  }
}
```



```
home_screen.dart > ...
Click here to ask Blackbox to help you code faster |
import 'package:flutter/material.dart';
// New: Add this import
import 'package:home_widget/home_widget.dart';

import 'article_screen.dart';
import 'news_screen.dart';

// New: Add these constants
// TO DO: Replace with your App Group ID
const String appGroupId = '<YOUR APP GROUP>';
const String iOSWidgetName = 'NewsWidgets';
const String androidWidgetName = 'NewsWidget';

Comment Code
class MyHomePage extends StatefulWidget {
  const MyHomePage({super.key});
  @override
  State<MyHomePage> createState() => _MyHomePageState();
}

// New: add this function
Comment Code
void updateHeadline(NewsArticle newHeadline) {
  // Save the headline data to the widget
  HomeWidget.saveWidgetData<String>('headline_title', newHeadline.title);
  HomeWidget.saveWidgetData<String>(
      'headline_description', newHeadline.description);
  HomeWidget.updateWidget(
    iOSName: iOSWidgetName,
    androidName: androidWidgetName,
  );
}

Comment Code
class _MyHomePageState extends State<MyHomePage> {
  // New: Add initState
  @override
```

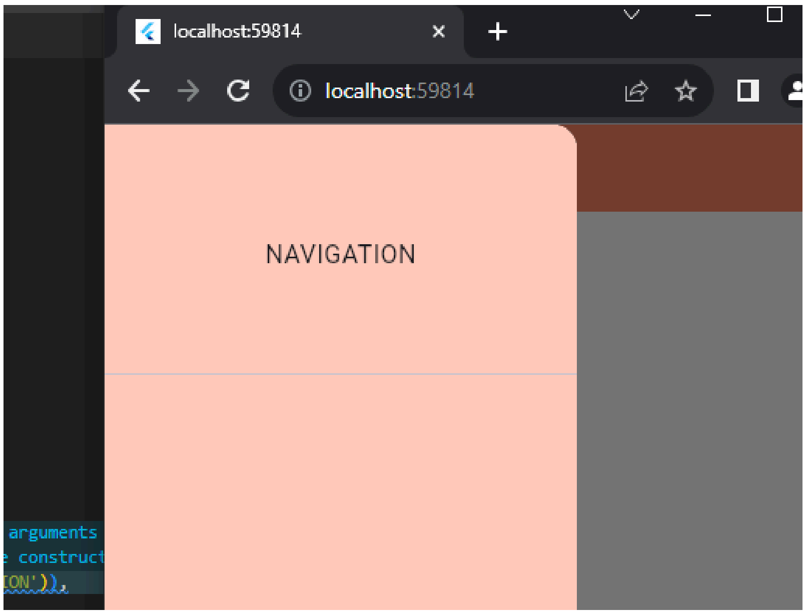
Task 2

First to build a multi screen app and to be able to navigate through them we will make an empty flutter app, which we will call navigation,
Create an app bar using the appbar widget and some text inside the scaffold widget

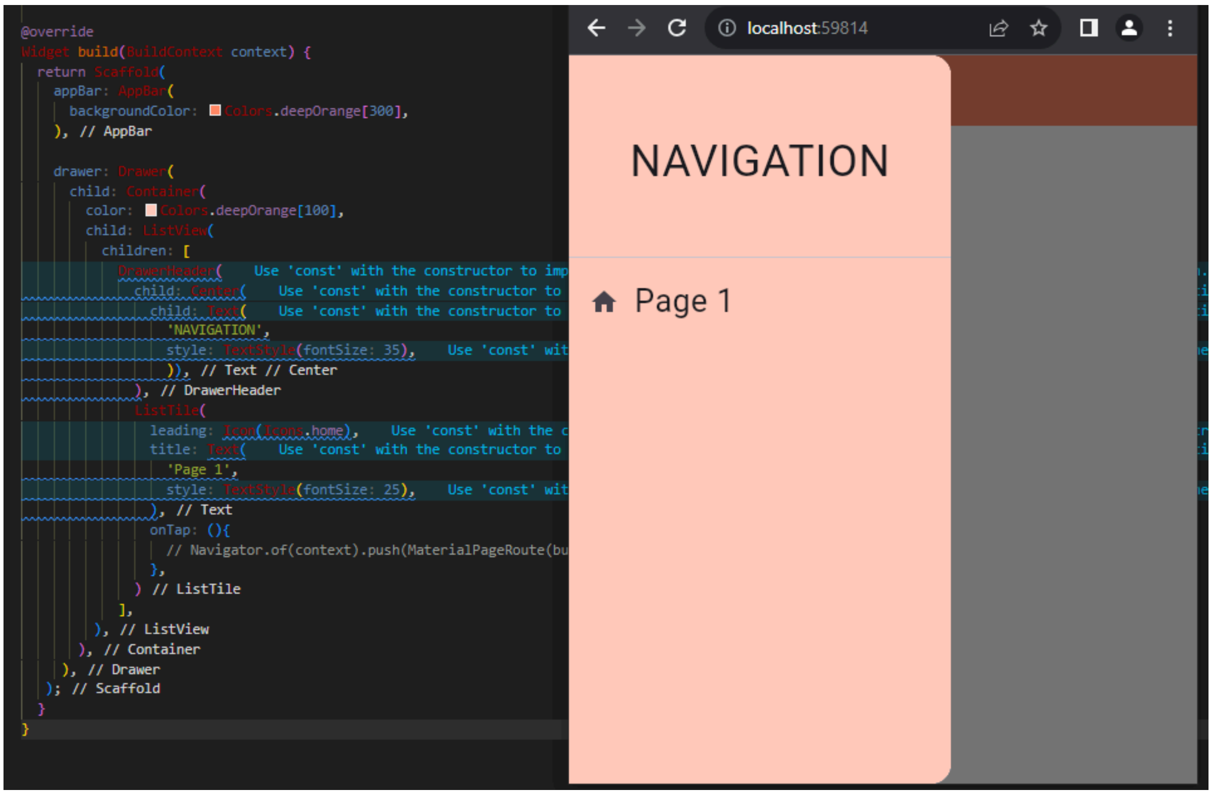


```
    Widget build(BuildContext context) {
      return MaterialApp(
        debugShowCheckedModeBanner: false,
        //theme swatch will make everything within the ap
        // theme: ThemeData(primarySwatch: Colors.amber),
        home: Scaffold(
          appBar: AppBar(
            backgroundColor: Colors.deepPurple[300],
            elevation: 0,
            title: Text('N A VI G A T I O N'),    Use 'co
            leading: IconButton(
              onPressed:() {
                //open menu
              },
              icon: Icon(Icons.menu),    Use 'const' with
            ), // IconButton
            actions: [
              IconButton(
                onPressed: () {
                  //do something
                },
                icon: Icon(Icons.person),    Use 'const'
              ) // IconButton
            ],

          ), // AppBar
        ), // Scaffold
```

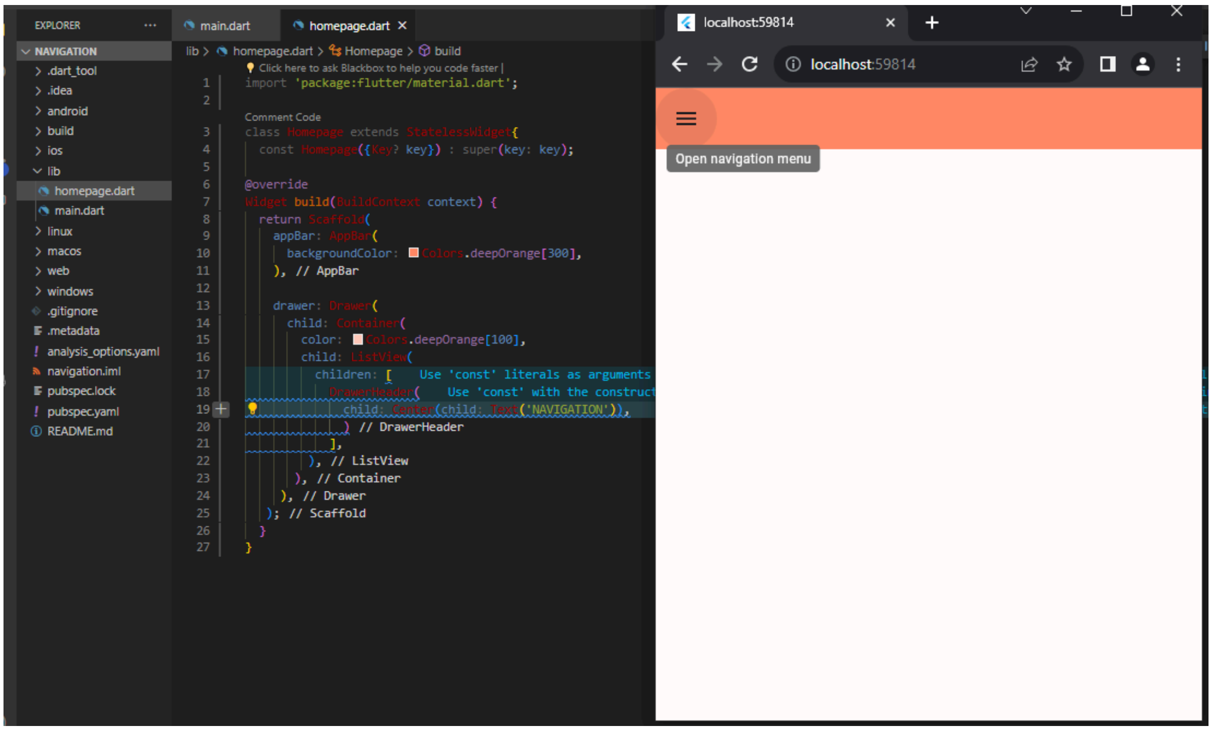
We are going to implement a menu icon with associated actions. When pressed, it will trigger the opening of a drawer widget.



Subsequently, we will introduce an additional page named "first_page.dart." Within the menu, we will incorporate the various pages, treating them as entries in a list.

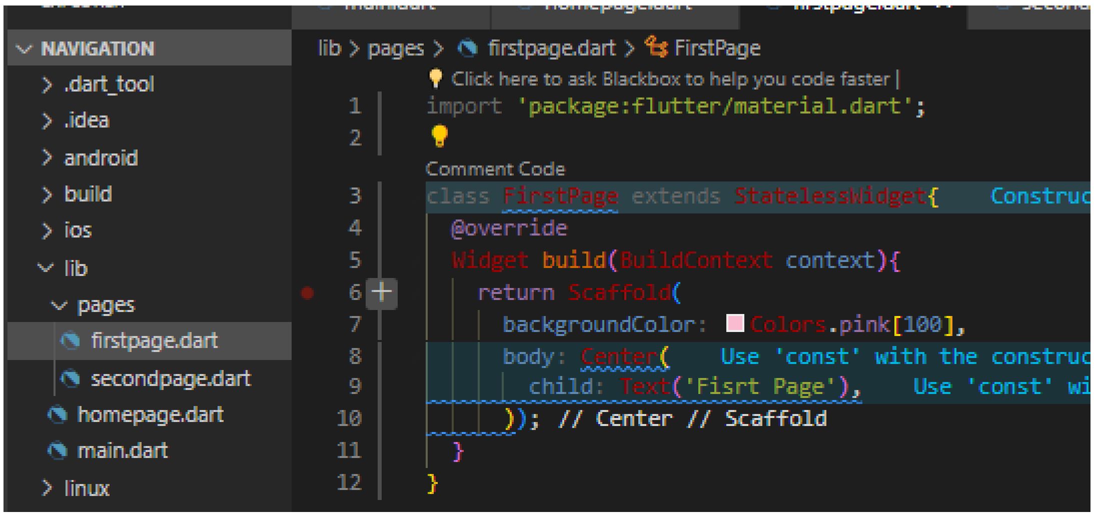


```
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      backgroundColor: Colors.deepOrange[300],
    ), // AppBar

    drawer: Drawer(
      child: Container(
        color: Colors.deepOrange[100],
        child: ListView(
          children: [
            DrawerHeader(    Use 'const' with the constructor to imp
              child: Center(    Use 'const' with the constructor to
                child: Text(    Use 'const' with the constructor to
                  'NAVIGATION',
                  style: TextStyle(fontSize: 35),    Use 'const' wit
                )), // Text // Center
              ), // DrawerHeader
              ListTile(
                leading: Icon(Icons.home),    Use 'const' with the c
                title: Text(    Use 'const' with the constructor to
                  'Page 1',
                  style: TextStyle(fontSize: 25),    Use 'const' wit
                ), // Text
                onTap: (){
                  // Navigator.of(context).push(MaterialPageRoute(bu
                },
              ) // ListTile
            ],
          ), // ListView
        ), // Container
      ), // Drawer
    ); // Scaffold
  }
}
```

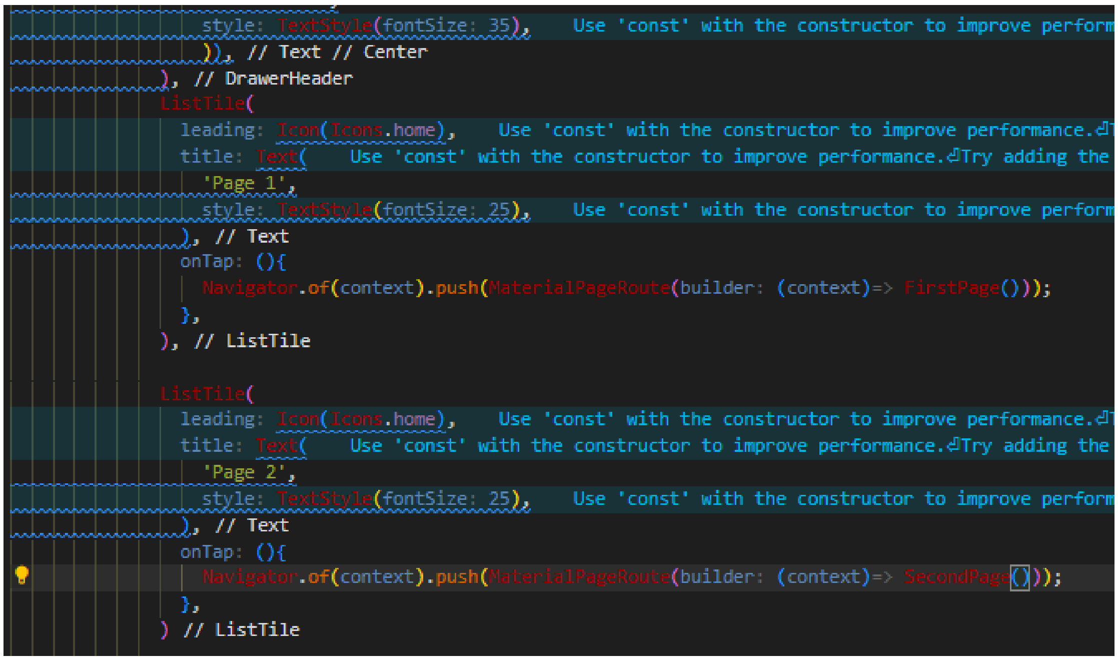


```
import 'package:flutter/material.dart';

class Homepage extends StatelessWidget{
  const Homepage({Key? key}) : super(key: key);

@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      backgroundColor: Colors.deepOrange[300],
    ), // AppBar

    drawer: Drawer(
      child: Container(
        color: Colors.deepOrange[100],
        child: ListView(
          children: [    Use 'const' literals as arguments
            DrawerHeader(    Use 'const' with the construct
              child: Center(child: Text('NAVIGATION')),
            ) // DrawerHeader
          ],
        ), // ListView
      ), // Container
    ), // Drawer
  ); // Scaffold
  }
}
```

Here is the code for the first page



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

class FirstPage extends StatelessWidget{    Construc
  @override
  Widget build(BuildContext context){
    return Scaffold(
      backgroundColor: Colors.pink[100],
      body: Center(    Use 'const' with the construc
        child: Text('Fisrt Page'),    Use 'const' wi
      )); // Center // Scaffold
  }
}
```



```
                style: TextStyle(fontSize: 35),    Use 'const' with the constructor to improve perform
              )), // Text // Center
          ), // DrawerHeader
          ListTile(
            leading: Icon(Icons.home),    Use 'const' with the constructor to improve performance.⏎T
            title: Text(    Use 'const' with the constructor to improve performance.⏎Try adding the
              'Page 1',
              style: TextStyle(fontSize: 25),    Use 'const' with the constructor to improve perform
            ), // Text
            onTap: (){
              Navigator.of(context).push(MaterialPageRoute(builder: (context)=> FirstPage()));
            },
          ), // ListTile

          ListTile(
            leading: Icon(Icons.home),    Use 'const' with the constructor to improve performance.⏎T
            title: Text(    Use 'const' with the constructor to improve performance.⏎Try adding the
              'Page 2',
              style: TextStyle(fontSize: 25),    Use 'const' with the constructor to improve perform
            ), // Text
            onTap: (){
              Navigator.of(context).push(MaterialPageRoute(builder: (context)=> SecondPage()));
            },
          ) // ListTile
```

Using the navigation method we will be able to navigate through the pages