INSTITUTO TECNOLÓGICO JOSÉ MARIO MOLINA PASQUEL Y HENRÍQUEZUNIDAD ACADÉMICA ZAPOTLANEJO

INSTITUTO TECNOLÓGICO
JOSÉ MARIO MOLINA
PASQUEL Y HENRÍQUEZ

ZAPOTLANEJO

"Manual"

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Desarrollo de Aplicaciones Móviles

Contenido

```dart
            ],
          ), // Column
        ), // Expanded
        Expanded(
          flex: 3,
          child: Row(
            children: [
              Image.network(
                'https://th.bing.com/th/id/OIP.MJwYGgEWTGrCIytPbrrYywAAAA?w=148&h=150&c=7&r=
              ), // Image.network
              Image.network(
                'https://th.bing.com/th/id/OIP.03B1QG_R4Nfw8Hb3BVtpFgAAAA?w=143&h=150&c=7&r=
              ), // Image.network
              Image.network(
                'https://th.bing.com/th/id/OIP.83LeWPkLuU18j7y_qcCwxgAAAA?w=146&h=150&c=7&r=
              ), // Image.network
              Image.network(
                'https://th.bing.com/th/id/OIP.TeJS0gW5HnKHD1biW4k0lQAAAA?w=124&h=150&c=7&r=
              ), // Image.network
            ],
          ), // Row
        ), // Expanded
      ],
    ), // Column
  ), // Padding
); // Scaffold
  }
}
```

Programas

Programa 1

```
main.dart 5 ●

lib > main.dart > MyApp
1   import 'package:flutter/material.dart';
2   import 'package:flutter_application_1/widget/Pagina1.dart';
3   import 'package:flutter_application_1/widget/Pagina2.dart';
4   import 'package:flutter_application_1/widget/Pagina3.dart';
5   import 'package:flutter_application_1/widget/Pagina4.dart';
6   import 'package:flutter_application_1/widget/Pagina5.dart';
7   import 'package:flutter_application_1/widget/Pagina6.dart';
8
9   void main() {
10    runApp(const MyApp());
11  }
12
13  class MyApp extends StatelessWidget {
14  const MyApp({super.key});
15    @override
16    Widget build(BuildContext context) {
17      return MaterialApp(home: Pagina5());
18    }
19  }
20
```

```dart
1   import 'package:flutter/material.dart';
2   import 'package:flutter/widgets.dart';
3
4   class Pagina1 extends StatelessWidget {
5     const Pagina1({super.key});
6
7     @override
8     Widget build(BuildContext context) {
9       //return Text('Hola mundo');
10
11      return Scaffold(
12        appBar: AppBar(
13          title: Text(
14            'Practica 1',
15            style: TextStyle(
16              color: const Color.fromARGB(255, 255, 255, 255),
17              fontSize: 24,
18              fontFamily: 'Times new Roman',
19            ), // TextStyle
20          ), // Text
21          backgroundColor: const Color.fromARGB(255, 153, 89, 255),
22        ), // AppBar
23        body: Column(
24          children: [
25            Text(
26              'Hola Mundo',
27              style: TextStyle(
28                color: Colors.blue,
29                fontSize: 22,
30                fontWeight: FontWeight.bold,
31              ), // TextStyle
32            ), // Text
33            SizedBox(height: 20), // Espacio entre el texto y el botón
34            ElevatedButton(
35              onPressed: () {
36                // Aquí va la acción del botón
37                print('Botón Aceptar presionado');
38              },
39              child: Text('Aceptar'),
40            ), // ElevatedButton
41          ],
42        ), // Column
43      ); // Scaffold
44    }
45  }
```

Pagina 2

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

class Pagina2 extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text('Pagina2'), backgroundColor: Colors.cyan),
      body: Column(
        children: [
          Container(
            width: double.infinity,
            color: Colors.cyanAccent,
            padding: EdgeInsets.all(25),
            child: Text(
              'Hola Mundo',
              textAlign: TextAlign.center,
              style: TextStyle(fontSize: 30, color: Colors.white),
            ), // Text
          ), // Container
          Container(
            width: double.infinity,
            color: Colors.cyanAccent,
            padding: EdgeInsets.all(25),
            child: Text(
              'Hola Mundo',
              textAlign: TextAlign.center,
              style: TextStyle(fontSize: 30, color: Colors.white),
            ), // Text
          ), // Container
          Expanded(
            child: Container(
              width: double.infinity,
              color: Colors.cyanAccent,
              padding: EdgeInsets.all(25),
              child: Text(
                'Notas',
                textAlign: TextAlign.center,
                style: TextStyle(fontSize: 30, color: Colors.white),
              ), // Text
            ), // Container
          ), // Expanded
        ],
      ), // Column
    ); // Scaffold
  }
}
```

Pagina 3

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

class Pagina3 extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text('Pagina2'), backgroundColor: Colors.cyan),
      body: Column(
        children: [
          Container(
            width: double.infinity,
            color: Colors.cyanAccent,
            padding: EdgeInsets.all(25),
            child: Text(
              'Hola Mundo',
              textAlign: TextAlign.center,
              style: TextStyle(fontSize: 30, color: Colors.white),
            ), // Text
          ), // Container
          Container(
            width: double.infinity,
            color: Colors.cyanAccent,
            padding: EdgeInsets.all(25),
            child: Text(
              'Hola Mundo',
              textAlign: TextAlign.center,
              style: TextStyle(fontSize: 30, color: Colors.white),
            ), // Text
          ), // Container
          Expanded(
            child: Container(
              width: double.infinity,
              color: Colors.cyanAccent,
              padding: EdgeInsets.all(25),
              child: Text(
                'Notas',
                textAlign: TextAlign.center,
                style: TextStyle(fontSize: 30, color: Colors.white),
              ), // Text
            ), // Container
          ), // Expanded
        ],
      ), // Column
    ); // Scaffold
  }
}
```

Pagina 4

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

class Pagina4 extends StatelessWidget {
  void acccion() {
    print('Hola Mundo');
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text('Login'), backgroundColor: Colors.blueGrey),
      body: Column(
        children: [
          Expanded(
            flex: 5,
            child: Container(
              width: double.infinity,
              color: Colors.amberAccent,
              child: Container(
                padding: EdgeInsets.all(25),
                child: Column(
                  mainAxisAlignment: MainAxisAlignment.center,
                  children: [
                    TextField(
                      keyboardType: TextInputType.text,
                      decoration: InputDecoration(labelText: 'Usuario'),
                    ), // TextField
                    TextField(
                      keyboardType: TextInputType.number,
                      decoration: InputDecoration(labelText: 'Password'),
                    ), // TextField
                    SizedBox(height: 15),
                  ],
```

```dart
          Expanded(
            flex: 1,
            child: Container(
              padding: EdgeInsets.only(left: 5, right: 5, top: 25, bottom: 25),
              width: double.infinity,
              child: ElevatedButton(onPressed: acccion, child: Text('Aceptar')),
            ), // Container
          ), // Expanded
        ],
      ), // Column
    ); // Scaffold
  }
}
```

Pagina 5

```dart
lib > widget > ⬡ Pagina5.dart > ...
 1    import 'package:flutter/material.dart';
 2    import 'package:flutter_application_1/widget/Pagina6.dart';
 3
 4    class Pagina5 extends StatefulWidget {
 5      @override
 6      State<StatefulWidget> createState() {
 7        return Disenio();
 8      }
 9    }
10
11    class Disenio extends State<Pagina5> {
12      String res = "Sin accion";
13      final TextEditingController usuario = TextEditingController();
14      final TextEditingController password = TextEditingController();
15      void acccion() {
16        final String us = usuario.text;
17        //  final pass = password.text;
18        final int pass = int.tryParse(password.text) ?? 0;
19
20        setState(() {
21          if (us == "admin" && pass == "123") {
22            res = "usuario y password correctos";
23            Navigator.push(
24              context,
25              MaterialPageRoute(builder: (context) => Pagina6(nombre: us)),
26            );
28            // res = "usuario y password incorrectos";
29            showDialog(
30              context: context,
31              builder: (context) {
32                return AlertDialog(
33                  title: Text('Error de acceso'),
34                  content: Text('Usuario y/o password incorrecto'),
35                  actions: [
36                    TextButton(
37                      onPressed: () {
38                        Navigator.pop(context);
39                      },
40                      child: Text('Aceptar'),
41                    ), // TextButton
42                  ],
43                ); // AlertDialog
44              },
45            );
46            res = "Otro mensaje";
47          }
48        });
49      }
```
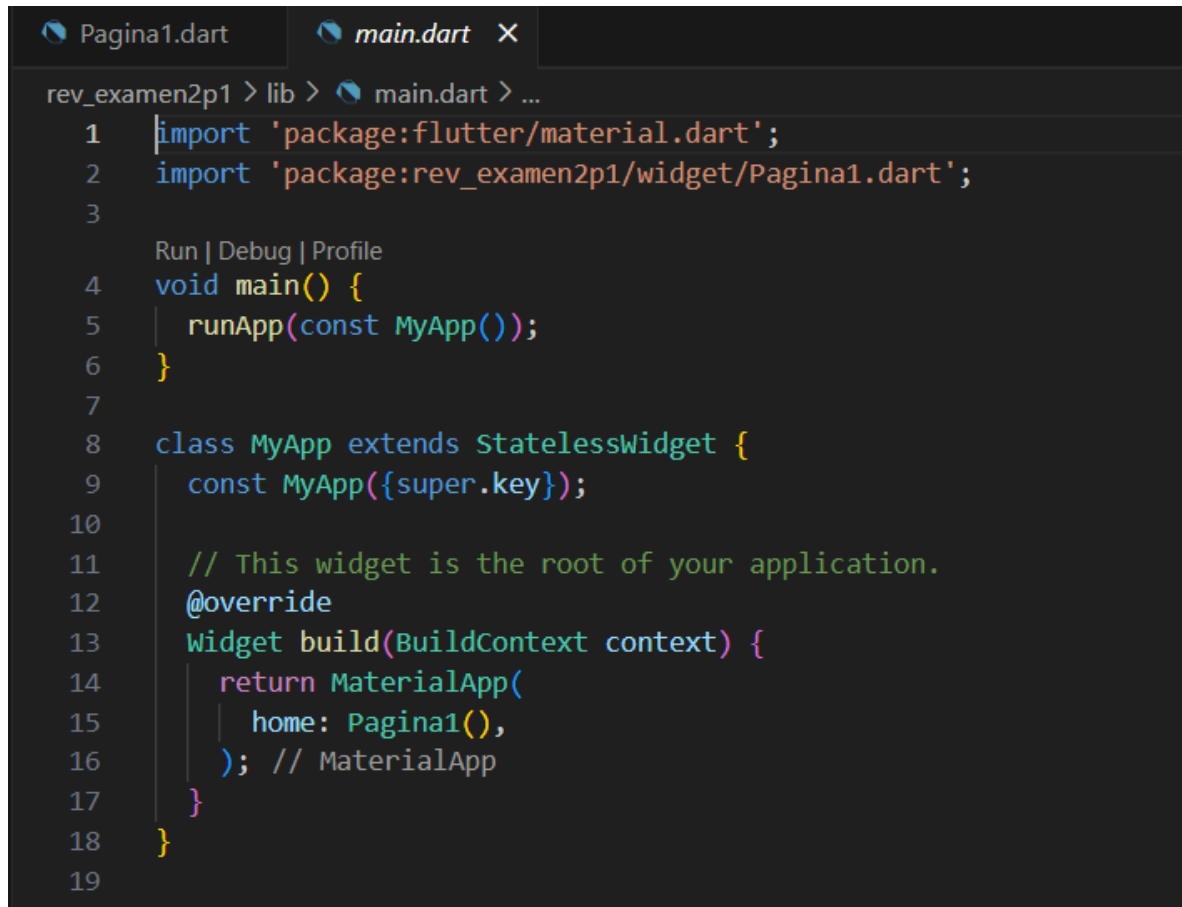
```dart
    @override
    Widget build(BuildContext context) {
      return Scaffold(
        appBar: AppBar(title: Text('Login'), backgroundColor: Colors.blueGrey),
        body: Column(
          children: [
            Expanded(
              flex: 5,
              child: Container(
                width: double.infinity,
                color: Colors.amberAccent,
                child: Container(
                  padding: EdgeInsets.all(25),
                  child: Column(
                    mainAxisAlignment: MainAxisAlignment.center,
                    children: [
                      TextField(
                        controller: usuario,
                        keyboardType: TextInputType.text,
                        decoration: InputDecoration(labelText: 'Usuario'),
                      ), // TextField
                      TextField(
                        controller: password,
                        keyboardType: TextInputType.number,
                        decoration: InputDecoration(labelText: 'Password'),
                      ), // TextField
                      SizedBox(height: 15),
                      Text('$res'),
                    ],
                  ), // Column
                ), // Container
              ), // Container
            ), // Expanded
            Expanded(
              flex: 1,
              child: Container(
                padding: EdgeInsets.only(left: 5, right: 5, top: 25, bottom: 25),
                width: double.infinity,
                child: ElevatedButton(onPressed: acccion, child: Text('Aceptar')),
              ), // Container
            ), // Expanded
          ],
        ), // Column
      ); // Scaffold
    }
  }
```

Pagina 6

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

class Pagina6 extends StatefulWidget {
  final String nombre;
  Pagina6({required this.nombre});

  @override
  State<StatefulWidget> createState() {
    return Disenio();
  }
}

class Disenio extends State<Pagina6> {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text('Login'), backgroundColor: Colors.blueGrey),
      body: Center(child: Text('data')),
    ); // Scaffold
  }
}
```

Revisión examen

```
Pagina1.dart          main.dart  ×

rev_examen2p1 > lib >    main.dart > ...
  1    import 'package:flutter/material.dart';
  2    import 'package:rev_examen2p1/widget/Pagina1.dart';
  3
       Run | Debug | Profile
  4    void main() {
  5      runApp(const MyApp());
  6    }
  7
  8    class MyApp extends StatelessWidget {
  9      const MyApp({super.key});
 10
 11      // This widget is the root of your application.
 12      @override
 13      Widget build(BuildContext context) {
 14        return MaterialApp(
 15          home: Pagina1(),
 16        ); // MaterialApp
 17      }
 18    }
 19
```

Pagina 1

```dart
import 'package:flutter/material.dart';
import 'package:rev_examen2p1/widget/Pagina2.dart';

class Pagina1 extends StatefulWidget {
  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Disenio();
  }
}

class Disenio extends State<Pagina1> {
  TextEditingController nun1 = TextEditingController();
  TextEditingController nun2 = TextEditingController();
  TextEditingController nun3 = TextEditingController();
  TextEditingController nun4 = TextEditingController();

  void enviar() {
    final double c1 = double.tryParse(nun1.text) ?? 0; //double permite numeros
    final double c2 =
        double.tryParse(nun1.text) ?? 0; //tryparse intenta convertir los datos
    final double c3 =
        double.tryParse(nun1.text) ??
        0; // el parametro "??" permite que si hay un error lo convierta en 0
    final double c4 =
        double.tryParse(nun1.text) ??
        0; // tambien "??" permite que si no se asigna un valor le asigne un 0
```
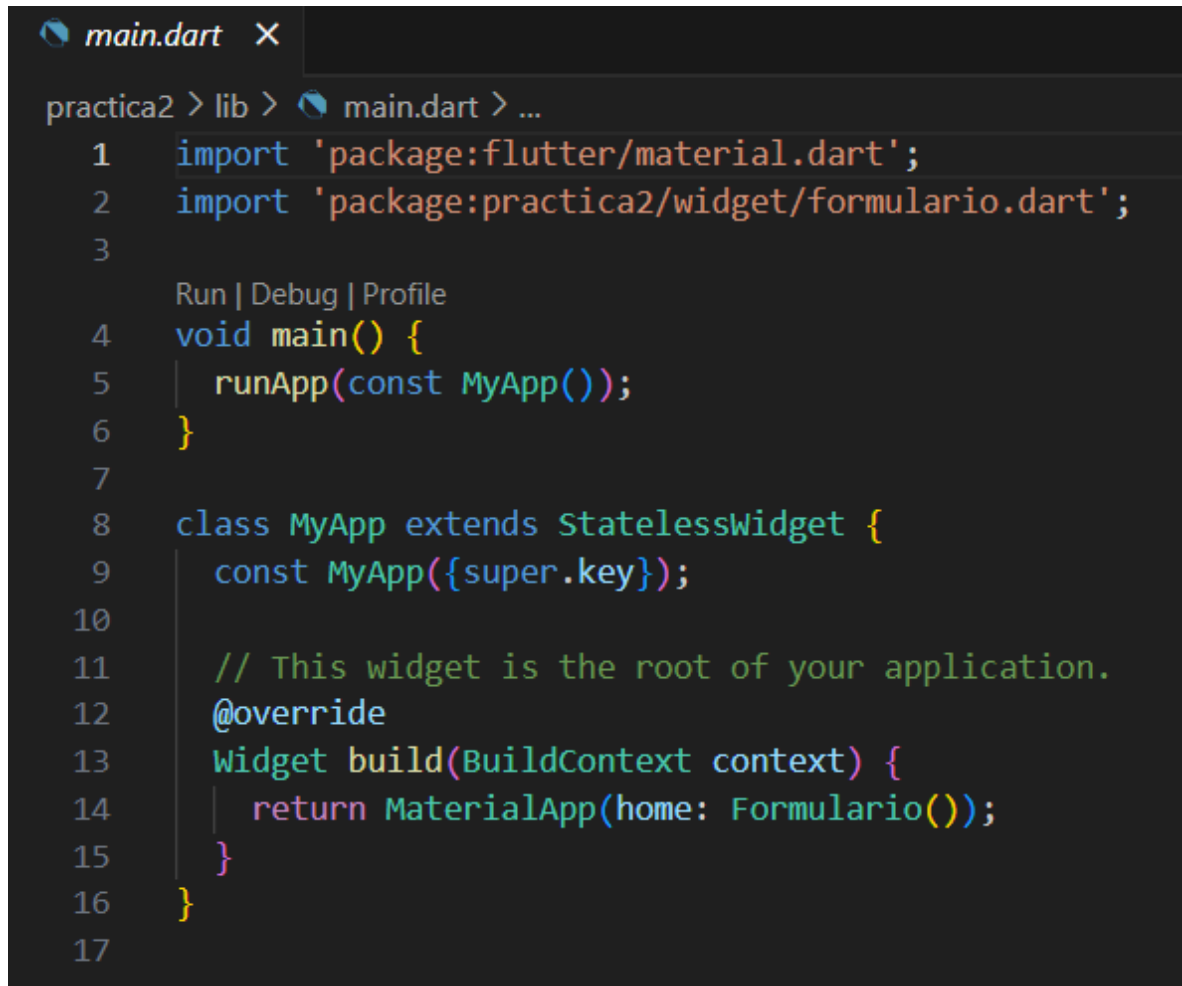
```dart
      Navigator.push(
        context,
        MaterialPageRoute(
          //genera una ruta hacia la pagina indicada
          builder: (context) => Pagina2(
            //ruta indicada a pagina2
            c1: c1,
            c2: c2,
            c3: c3,
            c4: c4,
          ), // Pagina2
        ), // MaterialPageRoute
      );
    }

    @override
    Widget build(BuildContext context) {
      // TODO: implement build
      return Scaffold(
        appBar: AppBar(title: Text('Pagina 1'), backgroundColor: Colors.blueGrey),
        body: Column(
          children: [
            Expanded(
              flex: 2,
              child: Container(
                width: double.infinity,
                color: Colors.red,
                child: Center(child: Text('Examen')),
              ), // Container
            ), // Expanded
            Expanded(
              flex: 1,
              child: Container(
                color: Colors.green,
                width: double.infinity,
                child: Padding(
                  padding: const EdgeInsets.all(18.0),
                  child: ElevatedButton(onPressed: () {}, child: Text('enviar')),
                ), // Padding
              ), // Container
            ), // Expanded
            Expanded(
              flex: 3,
              child: Container(
                color: Colors.yellow,
                child: Center(
                  child: Padding(
                    padding: const EdgeInsets.all(8.0),
                    child: Column(
                      children: [
                        TextField(
                          controller: nun1,
                          decoration: InputDecoration(
                            labelText: 'Escribe un numero',
                          ), // InputDecoration
                        ), // TextField
```

```dart
                            ), // TextField
                            TextField(
                              keyboardType: TextInputType.number,
                              controller: nun2,
                              decoration: InputDecoration(
                                labelText: 'Escribe un numero',
                              ), // InputDecoration
                            ), // TextField
                            TextField(
                              controller: nun3,
                              keyboardType: TextInputType.number,
                              decoration: InputDecoration(
                                labelText: 'Escribe un numero',
                              ), // InputDecoration
                            ), // TextField
                            TextField(
                              keyboardType: TextInputType.number,
                              controller: nun4,
                              decoration: InputDecoration(
                                labelText: 'Escribe un numero',
                              ), // InputDecoration
                            ), // TextField
                          ],
                        ), // Column
                      ), // Padding
                    ), // Center
                  ), // Container
                ), // Expanded
              ],
            ), // Column
          ); // Scaffold
        }
      }
```

Pagina 2

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

class Pagina2 extends StatefulWidget {
  final double c1;
  final double c2;
  final double c3;
  final double c4;

  const Pagina2({
    super.key,
    required this.c1,
    required this.c2,
    required this.c3,
    required this.c4,
  });

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Disenio();
  }
}

class Disenio extends State<Pagina2> {
  double promedio = 0.0;

  void initState() {
    super
        .initState(); //Super hace que se corra primero el constructor y despues este
    calcular(); //se manda a llamar el metodo calcular
  }
```

```dart
class Disenio extends State<Pagina2> {
  double promedio = 0.0;

  void initState() {
    super
        .initState(); //Super hace que se corra primero el constructor y despues este
    calcular(); //se manda a llamar el metodo calcular
  }

  void calcular() {
    promedio = (widget.c1 + widget.c2 + widget.c3 + widget.c4) / 4;
  }

  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Scaffold(
      appBar: AppBar(
        title: Text('Pagina 2'),
        backgroundColor: Color.fromARGB(255, 142, 3, 216),
      ), // AppBar
      body: Center(child: Text('Promedio: $promedio')),
    ); // Scaffold
  }
}
```

Programa 2

```dart
main.dart  ✕

practica2 > lib > main.dart > ...
1    import 'package:flutter/material.dart';
2    import 'package:practica2/widget/formulario.dart';
3
     Run | Debug | Profile
4    void main() {
5      runApp(const MyApp());
6    }
7
8    class MyApp extends StatelessWidget {
9      const MyApp({super.key});
10
11     // This widget is the root of your application.
12     @override
13     Widget build(BuildContext context) {
14       return MaterialApp(home: Formulario());
15     }
16   }
17
```

Formulario

```dart
import 'dart:ui';

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Disenio();
  }
}

class Disenio extends State<Formulario> {
  final TextEditingController num1 = TextEditingController();
  final TextEditingController num2 = TextEditingController();
  final _formkey = GlobalKey<FormState>(); //Deteta acciones al querer validar

  String? aplicarValidacion(String? valor) {
    if (valor == null || valor.isEmpty) {
      return 'Ingresa un dato';
    }
    final exp = RegExp(r'^[a-z, A-Z ]*$');
    if (!exp.hasMatch(valor)) {
      return 'Ingresa solo letras';
    }
    return null;
  }
```

```dart
  void validarDatos() {
    if (_formkey.currentState?.validate() ?? false) {
      ScaffoldMessenger.of(
        context,
      ).showSnackBar(SnackBar(content: Text('Dato correcto')));
    } else {
      ScaffoldMessenger.of(
        context,
      ).showSnackBar(SnackBar(content: Text('Error')));
    }
  }
```

```dart
    @override
    Widget build(BuildContext context) {
      // TODO: implement build
      return Scaffold(
        appBar: AppBar(title: Text('Formulario'), backgroundColor: Colors.amber)
        body: Padding(
          padding: EdgeInsetsGeometry.all(20),
          child: Form(
            key: _formkey, //detecta la llave
            child: Column(
              mainAxisAlignment: MainAxisAlignment.center,
              children: [
                TextField(
                  inputFormatters: [
                    FilteringTextInputFormatter.allow(RegExp(r'^[a-z, A-Z ]*$'),
                    ), // FilteringTextInputFormatter.allow
                  ],
                  controller: num1,
                  keyboardType: TextInputType.text,
                  decoration: InputDecoration(labelText: 'Escribe un nombre'),
                ), // TextField
                TextFormField(
                  controller: num2,
                  keyboardType: TextInputType.text,
                  decoration: InputDecoration(
                    labelText: 'Escribe otro nombre',
                    border: OutlineInputBorder(),
                  ), // InputDecoration
                  validator: aplicarValidacion,
                ), // TextFormField
                SizedBox(height: 10),
                SizedBox(
                  child: ElevatedButton.icon(
                    onPressed: validarDatos,
                    label: Text('Validar'),
                    icon: Icon(Icons.window),
                  ), // ElevatedButton.icon
                ), // SizedBox
              ],
            ), // Column
          ), // Form
        ), // Padding
      ); // Scaffold
    }
}
```

Programa 3

```dart
import 'package:flutter/material.dart';
import 'package:practica_3/widget/Pagina.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(home: Pagina());
  }
}
```

Centro

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Body();
  }
}

class Body extends State<Centro> {
  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Center(child: Text('Centro'));
  }
}
```

Derecho

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Body();
  }
}

class Body extends State<Derecho> {
  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Center(child: Text('Derecho'));
  }
}
```

Izquierdo

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Body();
  }
}

class Body extends State<Izquierdo> {
  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Center(child: Text('Izquierdo'));
  }
}
```

Pagina

```dart
import 'package:flutter/material.dart';
import 'package:practica_3/widget/derecho.dart';
import 'package:practica_3/widget/izquierdo.dart';
import 'package:practica_3/widget/centro.dart';

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Disenio();
  }
}

class Disenio extends State<Pagina> {
  int _index = 0;

  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Scaffold(
      appBar: AppBar(
        title: Text(
          'ButtonNavigatiorBar',
          style: TextStyle(color: Colors.white),
        ), // Text
        backgroundColor: Colors.blueGrey,
      ), // AppBar
      body: _index == 0 ? Izquierdo() : (_index == 1 ? Centro() : Derecho()),
      bottomNavigationBar: BottomNavigationBar(
        type: BottomNavigationBarType.fixed,
        backgroundColor: Colors.purpleAccent,
        items: [
          BottomNavigationBarItem(
            icon: Icon(Icons.airlines),
            label: 'Izquierdo',
          ), // BottomNavigationBarItem
          BottomNavigationBarItem(icon: Icon(Icons.add_call), label: 'Centro'),
          BottomNavigationBarItem(icon: Icon(Icons.zoom_out), label: 'Derecho'),
        ],
        currentIndex: _index,
        selectedItemColor: Colors.deepOrangeAccent,
        onTap: (index) {
          setState(() {
            _index = index;
          });
        },
      ), // BottomNavigationBar
    ); // Scaffold
  }
}
```

Tarea 1

```dart
import 'package:flutter/material.dart';
import 'package:tarea1/widget/Pagina.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(home: Pagina());
  }
}
```

Pagina

```dart
import 'package:flutter/material.dart';
import 'package:tarea1/widget/Division.dart';
import 'package:tarea1/widget/Multi.dart';
import 'package:tarea1/widget/Suma.dart';
import 'package:tarea1/widget/Resta.dart';

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Disenio();
  }
}
```

```dart
class Disenio extends State<Pagina> {
  int _index = 0;

  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Scaffold(
      appBar: AppBar(
        title: Text('Tarea', style: TextStyle(color: Colors.white)),
        backgroundColor: Color.fromARGB(255, 101, 3, 93),
      ), // AppBar
      body: _index == 0
          ? Suma()
          : (_index == 1
              ? Resta()
              : (_index == 2 ? Multiplicacion() : Division())),
      bottomNavigationBar: BottomNavigationBar(
        type: BottomNavigationBarType.fixed,
        backgroundColor: Colors.blueGrey,
        items: [
          BottomNavigationBarItem(icon: Icon(Icons.add_circle), label: "Suma"),
          BottomNavigationBarItem(icon: Icon(Icons.remove), label: "Resta"),
          BottomNavigationBarItem(
            icon: Icon(Icons.snowing),
            label: "Multiplicacion",
          ), // BottomNavigationBarItem
          BottomNavigationBarItem(
            icon: Icon(Icons.multiple_stop),
            label: "Division",
          ), // BottomNavigationBarItem
        ],
        currentIndex: _index,
        selectedItemColor: Colors.lightBlueAccent,
        onTap: (index) {
          setState(() {
            _index = index;
          });
        },
      ), // BottomNavigationBar
    ); // Scaffold
  }
}
```

Suma

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Body();
  }
}

class Body extends State<Suma> {
  //varibales
  final TextEditingController variable1 = TextEditingController();
  final TextEditingController variable2 = TextEditingController();
  double resultado = 0;

  bool validacion(String validar) {
    return RegExp(r'^-\d+$').hasMatch(validar);
  }

  //funcion
  void sumar() {
    final double num1 = double.tryParse(variable1.text) ?? 0;
    final double num2 = double.tryParse(variable2.text) ?? 0;

    if (validacion(variable1.text) && validacion(variable2.text)) {
      sumar();
    } else {
      showDialog(
        context: context,
        builder: (context) {
          return AlertDialog(
            title: Text('Entrada invalida'),
            content: Text('Ingresa solamente numeros '),
          ); // AlertDialog
        },
      );
    }
    setState(() {
      resultado = num1 + num2;
    });
  }
```

```dart
      @override
      Widget build(BuildContext context) {
        // TODO: implement build
        return Padding(
          padding: const EdgeInsets.all(10.0),
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center,
            children: [
              TextField(
                controller: variable1,
                keyboardType: TextInputType.number,
                decoration: InputDecoration(labelText: 'Numero1'),
              ), // TextField
              SizedBox(height: 10),
              TextField(
                controller: variable2,
                keyboardType: TextInputType.number,
                decoration: InputDecoration(labelText: 'Numero2'),
              ), // TextField
              SizedBox(height: 20),
              ElevatedButton(onPressed: sumar, child: Text('Sumar')),
              SizedBox(height: 20),
              Text('Resultado: $resultado'),
            ],
          ), // Column
        ); // Padding
      }
    }
```

Resta

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Body();
  }
}

class Body extends State<Resta> {
  //varibales
  final TextEditingController variable1 = TextEditingController();
  final TextEditingController variable2 = TextEditingController();
  double resultado = 0;

  bool validacion(String validar) {
    return RegExp(r'^-\d+$').hasMatch(validar);
  }

  //funcion
  void restar() {
    final double num1 = double.tryParse(variable1.text) ?? 0;
    final double num2 = double.tryParse(variable2.text) ?? 0;
```

```dart
      setState(() {
        resultado = num1 - num2;
      });
    }
```

```dart
      @override
      Widget build(BuildContext context) {
        // TODO: implement build
        return Padding(
          padding: const EdgeInsets.all(10.0),
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center,
            children: [
              TextField(
                controller: variable1,
                keyboardType: TextInputType.number,
                decoration: InputDecoration(labelText: 'Numero1'),
              ), // TextField
              SizedBox(height: 10),
              TextField(
                controller: variable2,
                keyboardType: TextInputType.number,
                decoration: InputDecoration(labelText: 'Numero2'),
              ), // TextField
              SizedBox(height: 20),
              ElevatedButton(onPressed: restar, child: Text('Restar')),
              SizedBox(height: 20),
              Text('Resultado: $resultado'),
            ],
          ), // Column
        ); // Padding
      }
    }
```

Multiplicacion

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Body();
  }
}

class Body extends State<Multiplicacion> {
  //varibales
  final TextEditingController variable1 = TextEditingController();
  final TextEditingController variable2 = TextEditingController();
  double resultado = 0;

  bool validacion(String validar) {
    return RegExp(r'^-\d+$').hasMatch(validar);
  }

  //funcion
  void multi() {
    final double num1 = double.tryParse(variable1.text) ?? 0;
    final double num2 = double.tryParse(variable2.text) ?? 0;
      setState(() {
        resultado = num1 * num2;
      });
    }
```

```dart
    @override
    Widget build(BuildContext context) {
      // TODO: implement build
      return Padding(
        padding: const EdgeInsets.all(10.0),
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: [
            TextField(
              controller: variable1,
              keyboardType: TextInputType.number,
              decoration: InputDecoration(labelText: 'Numero1'),
            ), // TextField
            SizedBox(height: 10),
            TextField(
              controller: variable2,
              keyboardType: TextInputType.number,
              decoration: InputDecoration(labelText: 'Numero2'),
            ), // TextField
            SizedBox(height: 20),
            ElevatedButton(onPressed: multi, child: Text('Multiplicar')),
            SizedBox(height: 20),
            Text('Resultado: $resultado'),
          ],
        ), // Column
      ); // Padding
    }
  }
```
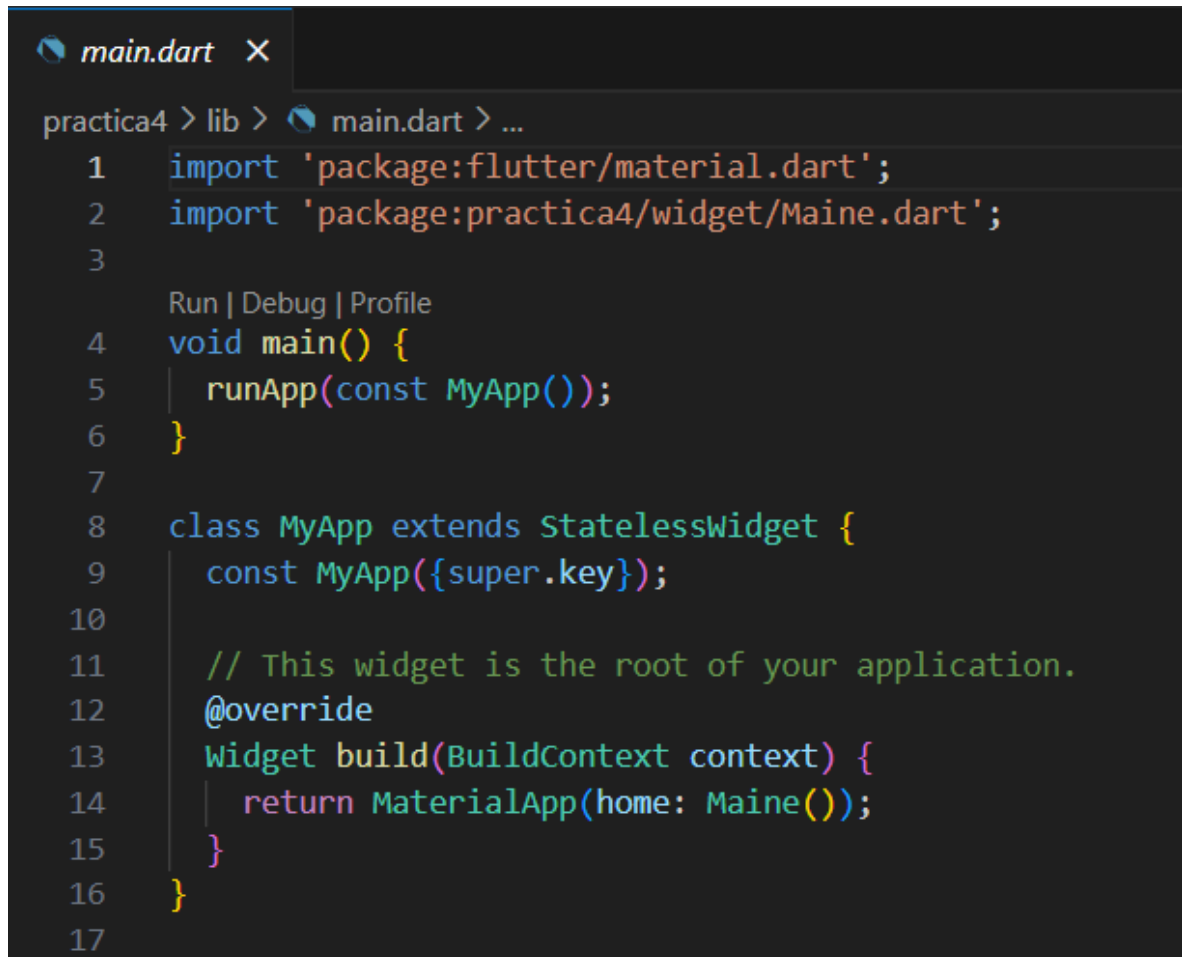
Division

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Body();
  }
}

class Body extends State<Division> {
  //varibales
  final TextEditingController variable1 = TextEditingController();
  final TextEditingController variable2 = TextEditingController();
  double resultado = 0;

  bool validacion(String validar) {
    return RegExp(r'^-\d+$').hasMatch(validar);
  }

  //funcion
  void dividir() {
    final double num1 = double.tryParse(variable1.text) ?? 0;
    final double num2 = double.tryParse(variable2.text) ?? 0;
```

```dart
        setState(() {
          resultado = num1 / num2;
        });
      }

      @override
      Widget build(BuildContext context) {
        // TODO: implement build
        return Padding(
          padding: const EdgeInsets.all(10.0),
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center,
            children: [
              TextField(
                controller: variable1,
                keyboardType: TextInputType.number,
                decoration: InputDecoration(labelText: 'Numero1'),
              ), // TextField
              SizedBox(height: 10),
              TextField(
                controller: variable2,
                keyboardType: TextInputType.number,
                decoration: InputDecoration(labelText: 'Numero2'),
              ), // TextField
              SizedBox(height: 20),
              ElevatedButton(onPressed: dividir, child: Text('Dividir')),
              SizedBox(height: 20),
              Text('Resultado: $resultado'),
            ],
          ), // Column
        ); // Padding
      }
    }
```

Programa 4

```dart
main.dart  ✕

practica4 > lib >  main.dart > ...
  1    import 'package:flutter/material.dart';
  2    import 'package:practica4/widget/Maine.dart';
  3
       Run | Debug | Profile
  4    void main() {
  5      runApp(const MyApp());
  6    }
  7
  8    class MyApp extends StatelessWidget {
  9      const MyApp({super.key});
 10
 11      // This widget is the root of your application.
 12      @override
 13      Widget build(BuildContext context) {
 14        return MaterialApp(home: Maine());
 15      }
 16    }
 17
```

Maine

```dart
import 'package:flutter/material.dart';
import 'package:practica4/paginas/datos.dart';
import 'package:practica4/paginas/home.dart';
import 'package:practica4/paginas/lista.dart';

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Base();
  }
}

class Base extends State<Maine> {
  int _index = 0;

  final List<Widget> _paginas = [Home(), Lista(), Datos()];

  void _clicIndex(int i) {
    //i representa el parametro a recibir
    setState(() {
      _index = i;
    });
  }
```

```dart
    @override
    Widget build(BuildContext context) {
      // TODO: implement build
      return Scaffold(
        appBar: AppBar(
          title: Text('Navigation Drawer', style: TextStyle(color: Colors.white)),
          backgroundColor: Colors.amber,
        ), // AppBar
        drawer: Drawer(
          child: ListView(
            padding: EdgeInsets.all(20),
            children: [
              DrawerHeader(
                decoration: BoxDecoration(color: Colors.amberAccent),
                child: Row(
                  children: [
                    CircleAvatar(
                      radius: 30,
                      backgroundImage: AssetImage('assets/home.png'),
                    ), // CircleAvatar
                    Padding(
                      padding: const EdgeInsets.only(left: 1, right: 20),
                      child: Column(
                        mainAxisAlignment: MainAxisAlignment.center,
                        children: [
                          Text(
                            'Aplicacion',
                            style: TextStyle(
                              fontSize: 18,
                              fontFamily: "Times New Roman",
                              fontStyle: FontStyle.italic,
                            ), // TextStyle
                          ), // Text
                          Text('oli de prueba'),
                          Text(
                            'oli de prueba por mi',
                            style: TextStyle(
                              fontSize: 12,
                              fontFamily: "Arial Arrow",
                              fontStyle: FontStyle.italic,
                            ), // TextStyle
                          ), // Text
                        ],
```

```dart
                    ), // Column
                  ), // Padding
                ],
              ), // Row
            ), // DrawerHeader
            ListTile(
              leading: Icon(Icons.snowing),
              title: Text('ola nevoso home'),
              onTap: () {
                _clicIndex(0);
                Navigator.pop(context);
              },
            ), // ListTile
            ListTile(
              leading: Icon(Icons.star),
              title: Text('ola estrelloso lista'),
              onTap: () {
                _clicIndex(1);
                Navigator.pop(context);
              },
            ), // ListTile
            ListTile(
              leading: Icon(Icons.sunny),
              title: Text('ola soleado datos'),
              onTap: () {
                _clicIndex(2);
                Navigator.pop(context);
              },
            ), // ListTile
          ],
        ), // ListView
      ), // Drawer
      body:
          _paginas[_index], //indica que el body cambie segun lo que indique la v
    ); // Scaffold
  }
}
```

Datos

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Disenio();
  }
}

class Disenio extends State<Datos> {
  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Scaffold(body: Center(child: Text('Pagina principal')));
  }
}
```

Home

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Disenio();
  }
}

class Disenio extends State<Home> {
  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Scaffold(
      body: Padding(
        padding: const EdgeInsets.all(8.0),
        child: Column(
          children: [
            Expanded(flex: 1, child: Center(child: Text('Pagina principal'))),
            Expanded(
              flex: 3,
              child: Column(
                mainAxisAlignment: MainAxisAlignment.center,
                children: [
                  Text('Mi novia'),
                  Image.network(
                    'https://th.bing.com/th/id/OIP.rw1NFVk4mVbTqgFJNKx_iwHaEK?w=310&h=180&c=7&r=
                  ), // Image.network
```

```dart
            ],
          ), // Column
        ), // Expanded
        Expanded(
          flex: 3,
          child: Row(
            children: [
              Image.network(
                'https://th.bing.com/th/id/OIP.MJwYGgEWTGrCIytPbrrYywAAAA?w=148&h=150&c=7&r=
              ), // Image.network
              Image.network(
                'https://th.bing.com/th/id/OIP.03B1QG_R4Nfw8Hb3BVtpFgAAAA?w=143&h=150&c=7&r=
              ), // Image.network
              Image.network(
                'https://th.bing.com/th/id/OIP.83LeWPkLuU18j7y_qcCwxgAAAA?w=146&h=150&c=7&r=
              ), // Image.network
              Image.network(
                'https://th.bing.com/th/id/OIP.TeJS0gW5HnKHD1biW4k0lQAAAA?w=124&h=150&c=7&r=
              ), // Image.network
            ],
          ), // Row
        ), // Expanded
      ],
    ), // Column
  ), // Padding
); // Scaffold
}
}
```

Lista

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

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

  @override
  State<StatefulWidget> createState() {
    // TODO: implement createState
    return Disenio();
  }
}

class Disenio extends State<Lista> {
  @override
  Widget build(BuildContext context) {
    // TODO: implement build
    return Scaffold(
      body: Center(
        child: ListView(
          scrollDirection: Axis.vertical,
          children: [
            Image.asset('assets/k1.png'),
            //Image.asset(name),
            //Image.asset(name),
            //Image.asset(name),
          ],
        ), // ListView
      ), // Center
    ); // Scaffold
  }
}
```