EXERCISE FLUTTER

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| //<details>  //<summary>Answer</summary>  import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp( home:  Scaffold( body: Center(  child: Text('Hello, World!'),  ), //  ), //  )); //  }  //</details> |

exercise 1

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Exercise 2

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| //<details>  //<summary>Answer</summary>  import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: Scaffold(  body: Center(  // Wrap the Column with Center widget  child: Column(  mainAxisAlignment: MainAxisAlignment.center,  children: <Widget>[  Text('First Text'),  Text('Second Text'),  ],  ),  ),  ),  ));  }  //</details> |

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Exercise 3

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| //vh<details>  //<summary>Answer</summary>  import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: Scaffold(  appBar: AppBar(title: Text('Button and Snackbar')),  body: Center(  child: Builder(  builder: (context) => ElevatedButton(  onPressed: () {  ScaffoldMessenger.of(context).showSnackBar(  SnackBar(content: Text('Hello Snackbar!')),  );  },  child: Text('Show Snackbar'),  ),  ),  ),  ),  ));  }  //</details> |

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Exercise 4

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| import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: FirstScreen(),  ));  }  class FirstScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('First Screen')),  body: Center(  child: ElevatedButton(  child: Text('Go to Second Screen'),  onPressed: () {  Navigator.push(  context,  MaterialPageRoute(builder: (context) => SecondScreen()),  );  },  ),  ),  );  }  }  class SecondScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('Second Screen')),  body: Center(  child: Text('Welcome to the second screen!'),  ),  );  }  } |

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Exercise 5

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| //<details>  //<summary>Answer</summary>  import  'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: ListScreen(),  ));  }  class ListScreen extends StatelessWidget { final List<String> items =  List<String>.generate(10, (i) => "Item ${i + 1}");  @override  Widget build(BuildContext context) { return  Scaffold( appBar: AppBar(title: Text('List View Example')), body: ListView.builder(  itemCount: items.length, itemBuilder:  (context, index) { return ListTile( title:  Text(items[index]),  );  },  ),  );  }  }  //</details> |

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Exercise 6

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| //<details>  //<summary>Answer</summary>  import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: GridScreen(),  ));  }  class GridScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('Grid View Example')),  body: GridView.count(  crossAxisCount: 2,  children: List.generate(8, (index) {  return Center(  child: Text(  'Item $index',  style: Theme.of(context).textTheme.headlineSmall,  ),  );  }),  ),  );  }  }  //</details> |

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Exercise 7

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| import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: TabBarDemo(),  ));  }  class TabBarDemo extends StatelessWidget {  @override  Widget build(BuildContext context) {  return DefaultTabController(  length: 3,  child: Scaffold(  appBar: AppBar(  title: Text('Tabs Demo'),  bottom: TabBar(  tabs: [  Tab(icon: Icon(Icons.directions\_car)),  Tab(icon: Icon(Icons.directions\_transit)),  Tab(icon: Icon(Icons.directions\_bike)),  ],  ),  ),  body: TabBarView(  children: [  CarScreen(),  TransitScreen(),  BikeScreen(),  ],  ),  ),  );  }  }  class CarScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Center(  child: Text('Car Screen'),  );  }  }  class TransitScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Center(  child: Text('Transit Screen'),  );  }  }  class BikeScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Center(  child: Text('Bike Screen'),  );  }  } |

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Exercise 8

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| import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: CustomFontScreen(),  ));  }  class CustomFontScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('Custom Font Example')),  body: Center(  child: Text(  'This is a custom font!',  style: TextStyle(fontFamily: 'YourCustomFont', fontSize: 24),  ),  ),  );  }  } |

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Exercise 9

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| import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: ImageScreen(),  ));  }  class ImageScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('Network Image')),  body: Center(  child: Image.network(  'https://images.pexels.com/photos/3579460/pexels-photo-3579460.jpeg?auto=compress&cs=tinysrgb&w=1260&h=750&dpr=1',  ),  ),  );  }  } |



Exercise 10

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| --- |
| import 'package:flutter/material.dart';  void main() {  runApp(MaterialApp(  home: TextFieldScreen(),  ));  }  class TextFieldScreen extends StatefulWidget {  @override  \_TextFieldScreenState createState() => \_TextFieldScreenState();  }  class \_TextFieldScreenState extends State<TextFieldScreen> {  final TextEditingController \_controller = TextEditingController();  @override  void dispose() {  \_controller.dispose();  super.dispose();  }  void \_showValue() {  showDialog(  context: context,  builder: (context) {  return AlertDialog(  content: Text(\_controller.text),  );  },  );  }  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('TextField Example')),  body: Padding(  padding: const EdgeInsets.all(16.0),  child: Column(  children: <Widget>[  TextField(  controller: \_controller,  decoration: InputDecoration(labelText: 'Enter something'),  ),  ElevatedButton(  onPressed: \_showValue,  child: Text('Show Value'),  ),  ],  ),  ),  );  }  } |

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Exercise 16

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| import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: Scaffold(  appBar: AppBar(title: Text('ListView with Divider')),  body: ListView.separated(  itemCount: 10,  itemBuilder: (context, index) =>  ListTile(title: Text('Item ${index + 1}')),  separatorBuilder: (context, index) => Divider(),  ),  ),  );  }  } |

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Exercise 18

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| import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  initialRoute: '/',  routes: {  '/': (context) => FirstScreen(),  '/second': (context) => SecondScreen(),  },  );  }  }  class FirstScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('First Screen')),  body: Center(  child: ElevatedButton(  onPressed: () {  Navigator.pushNamed(context, '/second');  },  child: Text('Go to Second Screen'),  ),  ),  );  }  }  class SecondScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('Second Screen')),  body: Center(  child: ElevatedButton(  onPressed: () {  Navigator.pop(context);  },  child: Text('Go Back'),  ),  ),  );  }  } |

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Exercise 19

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| //Exercise 19: Create a form with a TextFormField and validate the input.  //Solution:  import'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: MyForm(),  );  }  }  class MyForm extends StatefulWidget {  @override  MyFormState createState() {  return MyFormState();  }  }  class MyFormState extends State<MyForm> {  final \_formKey = GlobalKey<FormState>();  @override  Widget build(BuildContext context) { return Scaffold( appBar:  AppBar(title: Text('Form Validation')),  body: Form( key: \_formKey,  child: Column( crossAxisAlignment:  CrossAxisAlignment.start,  children: <Widget>[  TextFormField( decoration: InputDecoration(labelText: 'Enter your username'),  validator: (value) {  if (value == null  || value.isEmpty) {  return 'Please enter some text';  }  return null;  },  ),  Padding( padding: const  EdgeInsets.symmetric(vertical: 16.0),  child: ElevatedButton( onPressed: () {  if (\_formKey.currentState!.validate()) {  ScaffoldMessenger.of(context).showSnackBar(  SnackBar(  content: Text('Processing Data')),  );  }  },  child: Text('Submit'),  ),  ),  ],  ),  ),  );  }  } |

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Exercise 21

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| //Exercise 21: Create a StatelessWidget that displays a simple text message.  //Solution:  import 'package:flutter/material.dart';  void main()  => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: Scaffold(  appBar: AppBar(  title: Text('Stateless Widget Example')),  body: Center(  child: SimpleTextWidget(),  ),  ),  );  }  }  class SimpleTextWidget extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Text('Hello, this is a stateless widget!');  }  } |

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Exercise 22

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| //Exercise 22: Display a GridView with 20 items where each item is a Container with a unique color.  //Solution:  import'package:flutter/material.dart';  import'dart:math';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: Scaffold(  appBar: AppBar(  title: Text('GridView Example')),  body: GridView.builder( gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(  crossAxisCount: 4,  ),  itemCount: 20,  itemBuilder: (context, index) {  return Container(  color: Colors.primaries[Random().nextInt(Colors.primaries.length)],  );  },  ),  ),  );  }  } |

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Exercise 23

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| //Exercise 23: Create a custom widget named ColoredBox that takes a color and a child widget and displays the child in a container with the specified color.  //Solution: dart  import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: Scaffold(  appBar: AppBar(  title: Text('Custom Widget Example')),  body: Center(  child: ColoredBox( color: Colors.blue,  child: Text('This is inside a custom widget'),  ),  ),  ),  );  }  }  class ColoredBox extends StatelessWidget {  final Color color; final Widget child;  const ColoredBox({required this.color, required this.child});  @override  Widget build(BuildContext context) {  return Container( color: color,  child: child,  );  }  } |

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Exercise 24

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| import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  theme: ThemeData(  primarySwatch: Colors.blue,  visualDensity: VisualDensity.adaptivePlatformDensity,  ),  home: MyHomePage(),  );  }  }  class MyHomePage extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('Themed App')),  body: Center(  child: Text('This app uses a global theme.'),  ),  );  }  } |

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Exercise 25

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| import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: Scaffold(  appBar: AppBar(title: Text('Custom Painter Example')),  body: Center(  child: CustomPaint(  size: Size(100, 100),  painter: CirclePainter(),  ),  ),  ),  );  }  }  class CirclePainter extends CustomPainter {  @override  void paint(Canvas canvas, Size size) {  var paint = Paint()  ..color = Colors.blue  ..strokeWidth = 5;  canvas.drawCircle(Offset(size.width / 2, size.height / 2), 40, paint);  }  @override  bool shouldRepaint(CirclePainter oldDelegate) => false;  } |

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Exercise 26

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| import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: Scaffold(  appBar: AppBar(title: Text('Gesture Detector Example')),  A blue square with white text  Description automatically generated body: Center(  child: GestureDetector(  onTap: () {  print('Box tapped!');  },  child: Container(  width: 100,  height: 100,  color: Colors.blue,  child: Center(  child: Text(  'Tap Me',  style: TextStyle(  color: Colors  .white), // Optional: Add text color for better visibility  ),  ),  ),  ),  ),  ),  );  }  } |

Exercise 27

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| import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: AnimationDemo(),  );  }  }  class AnimationDemo extends StatefulWidget {  @override  \_AnimationDemoState createState() => \_AnimationDemoState();  }  class \_AnimationDemoState extends State<AnimationDemo>  with SingleTickerProviderStateMixin {  late AnimationController \_controller;  @override  void initState() {  super.initState();  \_controller = AnimationController(  duration: const Duration(seconds: 2),  vsync: this,  )..repeat(reverse: true);  }  @override  void dispose() {  \_controller.dispose();  super.dispose();  }  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('Animation Controller')),  body: Center(  child: FadeTransition(  opacity: \_controller,  child: Container(  width: 100,  height: 100,  color: Colors.blue,  ),  ),  ),  );  }  } |

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Exercise 29

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| import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: Scaffold(  appBar: AppBar(  title: Text('GridView Example'),  ),  body: GridView.builder(  gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(  crossAxisCount: 3,  mainAxisSpacing: 10.0, // spacing between rows  crossAxisSpacing: 10.0, // spacing between columns  childAspectRatio: 1.0, // aspect ratio for each grid item (square)  ),  itemCount: 20,  itemBuilder: (BuildContext context, int index) {  return Card(  child: Center(  child: Text(  'Item $index',  style: TextStyle(fontSize: 20.0), //  optional text style  ),  ),  );  },  ),  ),  );  }  } |

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Exercise 30

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| import 'package:flutter/material.dart';  void main() {  runApp(MyApp());  }  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: TabBarExample(),  );  }  }  class TabBarExample extends StatelessWidget {  @override  Widget build(BuildContext context) {  return DefaultTabController(  length: 3,  child: Scaffold(  appBar: AppBar(  title: Text('Tabs Demo'),  bottom: TabBar(  tabs: [  Tab(icon: Icon(Icons.directions\_car)),  Tab(icon: Icon(Icons.directions\_transit)),  Tab(icon: Icon(Icons.directions\_bike)),  ],  ),  ),  body: TabBarView(  children: [  Icon(Icons.directions\_car),  Icon(Icons.directions\_transit),  Icon(Icons.directions\_bike),  ],  ),  ),  );  }  } |

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Exercise 31

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| //lab 31    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: InfiniteListViewExample(),  );  }  }    class InfiniteListViewExample extends  StatefulWidget {  @override  \_InfiniteListViewExampleState createState()  => \_InfiniteListViewExampleState();  }    class \_InfiniteListViewExampleState extends  State<InfiniteListViewExample> {  List<int> items = List.generate(20, (index) => index);  bool isLoading = false;    void \_loadMore() async { if (isLoading) return;  setState(() => isLoading = true);    // Simulate network delay  await Future.delayed(Duration(seconds: 2));    setState(() {  items.addAll(List.generate(20, (index) => items.length + index));  isLoading = false;  });  }    @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text('Infinite Scrolling ListView'),  ),  body:  NotificationListener<ScrollNotification>( onNotification: (ScrollNotification scrollInfo) {  if (!isLoading && scrollInfo.metrics.pixels  == scrollInfo.metrics.maxScrollExtent) {  \_loadMore();  }  return true;  },  child: ListView.builder(  itemCount: items.length + (isLoading ? 1  : 0),  itemBuilder: (context, index) {  if (index == items.length) {    return Center(child:  CircularProgressIndicator());  }  return ListTile(title: Text('Item ${items[index]}'));  },  ),  ),  );  }  } |

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Exercise 32

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| import 'package:flutter/material.dart';  class CustomScrollViewExample extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(  title: Text('Custom ScrollView'),  ),  body: CustomScrollView(  slivers: <Widget>[  SliverAppBar(  expandedHeight: 200.0,  floating: false,  pinned: true,  flexibleSpace: FlexibleSpaceBar(  title: Text('SliverAppBar'),  background: Image.network(  'https://example.com/image.jpg',  fit: BoxFit.cover,  ),  ),  ),  SliverList(  delegate: SliverChildBuilderDelegate(  (BuildContext context, int index) {  return ListTile(  title: Text('List item $index'),  );  },  childCount: 20,  ),  ),  SliverGrid(  gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(  crossAxisCount: 2,  mainAxisSpacing: 10.0,  crossAxisSpacing: 10.0,  childAspectRatio: 4.0,  ),  delegate: SliverChildBuilderDelegate(  (BuildContext context, int index) {  return Container(  alignment: Alignment.center,  color: Colors.teal[100 \* (index % 9)],  child: Text('Grid Item $index'),  );  },  childCount: 20,  ),  ),  ],  ),  );  }  }  void main() {  runApp(MaterialApp(  home: CustomScrollViewExample(),  ));  } |

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Exercise 33

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| //lab 33    import 'package:flutter/material.dart';    class HeroAnimationExample extends  StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text('Hero Animation'),  ),  body: GestureDetector( onTap: () {  Navigator.push( context,    MaterialPageRoute(builder: (context)  => HeroDetailPage()),  );  },  child: Hero( tag: 'hero-tag', child: Container( height: 200.0, width: 200.0,  color: Colors.blue,  ),  ),  ),  );  }  }    class HeroDetailPage extends StatelessWidget  {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text('Hero Detail'),  ),  body: Center( child: Hero( tag: 'hero-tag', child: Container( height: 400.0, width: 400.0,  color: Colors.blue,  ),  ),  ),  );  }  }    void main() => runApp(MaterialApp(home: HeroAnimationExample())); |

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Exercise 34

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| //lab 34    import 'package:flutter/material.dart';    class BottomSheetExample extends StatelessWidget {  void \_showBottomSheet(BuildContext context) {  showModalBottomSheet(  context: context,  A screenshot of a computer  Description automatically generated builder: (BuildContext context) { return Container( height: 200, color: Colors.amber,  child: Center(  child: Text('Hello Bottom Sheet'),  ),  );  },  );  }    @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text('Bottom Sheet Example'),  ),  body: Center( child: ElevatedButton( onPressed: () =>  \_showBottomSheet(context),  child: Text('Show Bottom Sheet'),  ),  ),  );  }  }    void main() => runApp(MaterialApp(home: BottomSheetExample())); |

Exercise 35

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| --- |
| import 'package:flutter/material.dart';  class DatePickerExample extends StatefulWidget {  @override  \_DatePickerExampleState createState() => \_DatePickerExampleState();  }  class \_DatePickerExampleState extends State<DatePickerExample> {  DateTime selectedDate = DateTime.now();  Future<void> \_selectDate(BuildContext context) async {  final DateTime? picked = await showDatePicker(  context: context,  initialDate: selectedDate,  firstDate: DateTime(2000),  lastDate: DateTime(2025),  );  if (picked != null && picked != selectedDate) {  setState(() {  selectedDate = picked;  });  }  }  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(  title: Text('DatePicker Example'),  ),  body: Center(  child: Column(  mainAxisSize: MainAxisSize.min,  children: <Widget>[  Text(  "Selected Date: ${selectedDate.toLocal()}".split(' ')[0],  style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold),  ),  SizedBox(height: 20.0),  ElevatedButton(  onPressed: () => \_selectDate(context),  child: Text('Select date'),  ),  ],  ),  ),  );  }  }  void main() => runApp(MaterialApp(home: DatePickerExample())); |

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Exercise 36

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| A white rectangular object with a purple text  Description automatically generated//lab 36    import 'package:flutter/material.dart';    class SnackBarExample extends  StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text('SnackBar Example'),  ),  body: Center(  child: ElevatedButton(  onPressed: () {  final snackBar = SnackBar( content: Text('Hello SnackBar!'), action: SnackBarAction(  label: 'Undo', onPressed: () {  // Some code to undo the change.  },  ),  );    ScaffoldMessenger.of(context).showSnackBar( snackBar);  },  child: Text('Show SnackBar'),  ),  ),  );  }  }    void main() => runApp(MaterialApp(home: SnackBarExample())); |

Exercise 37

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| --- |
| //lab 37    import 'package:flutter/material.dart';    class CustomPaintExample extends  StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text('Custom Paint Example'),  ),  body: Center( child: CustomPaint( size: Size(200, 200),  painter: MyCustomPainter(),  ),  ),  );  }  }    class MyCustomPainter extends  CustomPainter { @override  void paint(Canvas canvas, Size size) {  var paint = Paint() ..color = Colors.blue  ..strokeWidth = 5  ..style = PaintingStyle.stroke; canvas.drawCircle(Offset(size.width / 2, size.height / 2), size.width / 2, paint);  }    @override  bool shouldRepaint(CustomPainter  oldDelegate) => false;  }    void main() => runApp(MaterialApp(home: CustomPaintExample())); |

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Exercise 38

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| --- |
| //lab 38    import 'package:flutter/material.dart';    class DrawerExample extends StatelessWidget  {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text('Drawer Example'),  ),  drawer: Drawer( child: ListView(  padding: EdgeInsets.zero, children: <Widget>[ DrawerHeader(  decoration: BoxDecoration(  color: Colors.blue,  ),  child: Text(  'Drawer Header', style: TextStyle( color: Colors.white,  fontSize: 24,  A screenshot of a computer  Description automatically generated ),  ),  ),  ListTile(  title: Text('Item 1'), onTap: () {  // Update the state of the app.  Navigator.pop(context);  },  ),  ListTile(  title: Text('Item 2'), onTap: () {  // Update the state of the app.  Navigator.pop(context);  },  ),  ],  ),  ),  body: Center(  child: Text('Swipe right to open the drawer.'),  ),  );  }  }  void main() => runApp(MaterialApp(home:  DrawerExample())); |

Exercise 40

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| --- |
| import 'package:flutter/material.dart';  import 'dart:async';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: StreamBuilderExample(),  );  }  }  class StreamBuilderExample extends StatefulWidget {  @override  \_StreamBuilderExampleState createState() => \_StreamBuilderExampleState();  }  class \_StreamBuilderExampleState extends State<StreamBuilderExample> {  final StreamController<int> \_streamController = StreamController<int>();  int \_counter = 0;  @override  void initState() {  super.initState();  Timer.periodic(Duration(seconds: 1), (Timer t) {  \_streamController.sink.add(\_counter++);  });  }  @override  void dispose() {  \_streamController.close();  super.dispose();  }  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text("StreamBuilder Example")),  body: Center(  child: StreamBuilder<int>(  stream: \_streamController.stream,  builder: (BuildContext context, AsyncSnapshot<int> snapshot) {  if (snapshot.hasError) return Text('Error: ${snapshot.error}');  switch (snapshot.connectionState) {  case ConnectionState.none:  return Text('Select a lot');  case ConnectionState.waiting:  return Text('Awaiting bids...');  case ConnectionState.active:  return Text('Current Count: ${snapshot.data}');  case ConnectionState.done:  return Text('Stream closed');  default:  return Text('Unknown state');  }  },  ),  ),  );  }  } |

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Exercise 41

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| import 'package:flutter/material.dart';  void main() => runApp(MyApp());  class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  home: FutureBuilderExample(),  );  }  }  class FutureBuilderExample extends StatelessWidget {  final Future<String> \_calculation = Future<String>.delayed(  Duration(seconds: 2),  () => 'Data Loaded',  );  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text("FutureBuilder Example")),  body: FutureBuilder<String>(  future: \_calculation,  builder: (BuildContext context, AsyncSnapshot<String> snapshot) {  List<Widget> children;  if (snapshot.connectionState == ConnectionState.done) {  if (snapshot.hasError) {  children = <Widget>[  Icon(Icons.error\_outline, color: Colors.red, size: 60),  Padding(  padding: const EdgeInsets.only(top: 16),  child: Text('Error: ${snapshot.error}'),  ),  ];  } else {  children = <Widget>[  Icon(Icons.check\_circle\_outline, color: Colors.green, size: 60),  Padding(  padding: const EdgeInsets.only(top: 16),  child: Text('Result: ${snapshot.data}'),  ),  ];  }  } else {  children = <Widget>[  SizedBox(  child: CircularProgressIndicator(),  width: 60,  height: 60,  ),  const Padding(  padding: EdgeInsets.only(top: 16),  child: Text('Awaiting result...'),  )  ];  }  return Center(  child: Column(  mainAxisAlignment: MainAxisAlignment.center,  crossAxisAlignment: CrossAxisAlignment.center,  children: children,  ),  );  },  ),  );  }  } |

A screenshot of a phone

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A screenshot of a cellphone

Description automatically generatedExercise 42

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| //lab 42    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: GridViewExample(),  );  }  }    class GridViewExample extends  StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text("GridView Example"),  ),  body: GridView.builder( gridDelegate:  SliverGridDelegateWithFixedCrossAxisCount( crossAxisCount: 3,  ),  itemCount: 20,  itemBuilder: (BuildContext context, int index) {  return Card( child: Center(  child: Text('Item $index'),  ),  );  },  ),  );  }  } |

Exercise 43

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| --- |
| //lab 43    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: ClipperExample(),  );  }  }    class ClipperExample extends StatelessWidget  {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text("Custom Clipper Example"),  ),  body: Center( child: ClipPath(  clipper: MyCustomClipper(), child: Image.network(    'https://picsum.photos/id/117/310/200', width: 300, height: 200,  fit: BoxFit.cover,  ),  ),  ),  );  }  }    class MyCustomClipper extends  CustomClipper<Path> {  @override  Path getClip(Size size) { var path = Path(); path.lineTo(0, size.height); path.lineTo(size.width, size.height); path.lineTo(size.width, 0); path.close();  return path;  }      @override  bool shouldReclip(CustomClipper<Path> oldClipper) {  return false;  }  } |



Exercise 44

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| //lab 44    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: PainterExample(),  );  }  }    class PainterExample extends StatelessWidget  {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text("Custom Painter Example"),  ),  body: Center( child: CustomPaint( size: Size(200, 200),  painter: MyCustomPainter(),  ),  ),  );  }  }    class MyCustomPainter extends  CustomPainter { @override  void paint(Canvas canvas, Size size) {  var paint = Paint() ..color = Colors.blue  ..strokeWidth = 4  ..style = PaintingStyle.stroke;      var center = Offset(size.width / 2, size.height  / 2);  canvas.drawCircle(center, 50, paint);  }    @override  bool shouldRepaint(CustomPainter  oldDelegate) {  return false;  }  } |

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A screenshot of a list

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| //lab 45    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: ExpansionTileExample(),  );  }  }    class ExpansionTileExample extends  StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text("ExpansionTile Example"),  ),  body: ListView.builder( itemCount: 5,  itemBuilder: (BuildContext context, int index) { return ExpansionTile( title: Text('Item $index'), children: <Widget>[  ListTile(title: Text('Sub item 1')),  ListTile(title: Text('Sub item 2')),  ],  );  },  ),  );  }  } |

Exercise 46

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| --- |
| //lab 46    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: BottomNavigationBarExample(),  );  }  }    class BottomNavigationBarExample extends  StatefulWidget {  @override  \_BottomNavigationBarExampleState createState() =>  \_BottomNavigationBarExampleState();  }    class \_BottomNavigationBarExampleState extends State<BottomNavigationBarExample>  {  int \_selectedIndex = 0;    static const List<Widget> \_widgetOptions =  <Widget>[  Text('Home Page', style: TextStyle(fontSize:  35, fontWeight: FontWeight.bold)),  Text('Search Page', style: TextStyle(fontSize:  35, fontWeight: FontWeight.bold)),  Text('Profile Page', style: TextStyle(fontSize:  35, fontWeight: FontWeight.bold)),  ];    void \_onItemTapped(int index) { setState(() {  \_selectedIndex = index;  });  }    @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text("BottomNavigationBar Example"),    ),  body: Center( child:  \_widgetOptions.elementAt(\_selectedIndex),  ),  bottomNavigationBar: BottomNavigationBar(  items: const <BottomNavigationBarItem>[  BottomNavigationBarItem( icon: Icon(Icons.home),  label: 'Home',  ),  BottomNavigationBarItem( icon: Icon(Icons.search),  label: 'Search',  ),  BottomNavigationBarItem( icon: Icon(Icons.person),  label: 'Profile',  ),  ],  currentIndex: \_selectedIndex, selectedItemColor: Colors.amber[800], onTap: \_onItemTapped,  ),  );  }  } |

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Description automatically generated

Exercise 47

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| //lab 47    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: TabBarExample(),  );  }  }    class TabBarExample extends StatefulWidget {  @override  \_TabBarExampleState createState() =>  \_TabBarExampleState();  }      class \_TabBarExampleState extends State<TabBarExample>  with SingleTickerProviderStateMixin { late TabController \_tabController;    @override  void initState() { super.initState();  \_tabController = TabController(length: 3, vsync: this);  }    @override void dispose() {  \_tabController.dispose(); super.dispose();  }    @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(  title: Text("TabBar Example"), bottom: TabBar(  controller: \_tabController, tabs: [  Tab(icon: Icon(Icons.home), text:  "Home"),  Tab(icon: Icon(Icons.search), text:  "Search"),  Tab(icon: Icon(Icons.person), text:  "Profile"),  ],  ),  ),  body: TabBarView( controller: \_tabController,  children: [  Center(child: Text("Home Tab")),  Center(child: Text("Search Tab")),  Center(child: Text("Profile Tab")),  ],  ),  );  }  } |

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Exercise 48

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| //lab 48    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: AlertDialogExample(),  );  }  }    class AlertDialogExample extends StatelessWidget {  void \_showDialog(BuildContext context) { showDialog( context: context,  builder: (BuildContext context) { return AlertDialog( title: Text("Alert Dialog"),  content: Text("This is an alert dialog."),  actions: <Widget>[ TextButton(  child: Text("Close"), onPressed: () {  Navigator.of(context).pop();  },  ),  ],  );  },  );  }    @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text("AlertDialog Example")), body: Center(  child: ElevatedButton(  onPressed: () => \_showDialog(context), child: Text("Show AlertDialog"),  ),  ),  );  }  } |

A screenshot of a phone

Description automatically generated

A screenshot of a phone

Description automatically generatedExercise 49

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| --- |
| //lab 49    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: SliverAppBarExample(),  );  }  }  class SliverAppBarExample extends  StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  body: CustomScrollView( slivers: <Widget>[ SliverAppBar(  expandedHeight: 200.0, floating: false, pinned: true, flexibleSpace: FlexibleSpaceBar( title: Text("SliverAppBar Example"), background: Image.network(  "https://picsum.photos/805/400", //  Example image URL  fit: BoxFit.cover,  ),  ),  ),  SliverList(  delegate: SliverChildBuilderDelegate( (BuildContext context, int index) { return ListTile(  title: Text("List item $index"),  );  },  childCount: 100,  ),  ),  ],  ),  );  }  } |

Exercise 50

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| --- |
| //lab 50    import 'package:flutter/material.dart';    void main() => runApp(MyApp());    class MyApp extends StatelessWidget {  @override  Widget build(BuildContext context) { return MaterialApp(  home: SingleChildScrollViewExample(),  );  }  }    class SingleChildScrollViewExample extends  StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold( appBar: AppBar(title:  Text("SingleChildScrollView Example")),  body: SingleChildScrollView( child: Column(  children: List.generate(  50,  (index) => ListTile(title: Text('Item $index')),  ),  ),  ),  );  }  } |

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