Basics

- App boilerplate
  - Basic structure

```
// importing widgets from flutter package
import 'package:flutter/material.dart';

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

// class that wraps widgets in our app
class MyApp extends StatelessWidget {
  const MyApp({super.key});

  @override
  Widget build(BuildContext context) {
    return const MaterialApp(home: Text('hello flutter (^
  }
}
```

  - required named constructor

```
class Student {
    String? name;
  int? age;

  Student({@required this.name, @required this.age});

}

void main() {
  var p1 = Student(name: "bes", age: 21);
  print(p1.name);
```

```
  print(p1.age);
}
```

- widget tree

```
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}

// class that wraps widgets in our app
class MyApp extends StatelessWidget {
  const MyApp({super.key});

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
            home: Scaffold(
                appBar: AppBar(title: Text('Demo'),),
                body:  Text('hello flutter (^ - ^)')
            ),
    );
  }
}
```
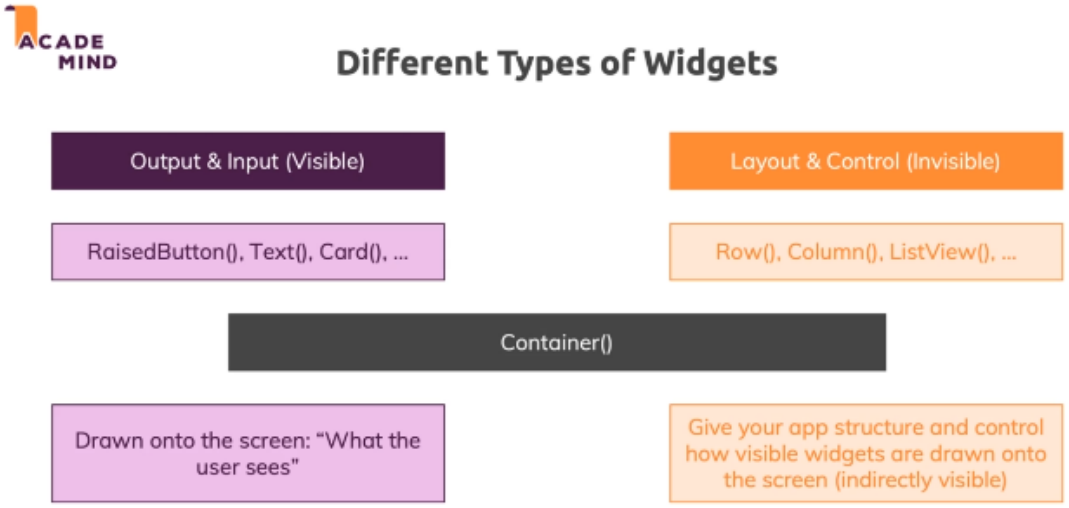

- Types of widgets



- Output and input widgets (visible widgets)
  - Text

```
Text(
    'txt',
    style: TextStyle(
        fontSize: 16
  ),
  textAlign: TextAlign.center
)
```

  - Button
    - ElevatedButton

```
void click() {
    print('clicked');
}

ElevatedButton(
    child: Text('Click me'),
  onPressed: click or () => {
      print('clicked');
  },
)
```

- Layout and control widgets (invisible widgets)
  - Container

```
Container(
  width: double.infinity,
  margin: EdgeInsets.all(10),
  child: Text('yay')
)
```

  -
  - Row

```
// importing widgets from flutter package
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// main function
void main() {
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}

// class that wraps widgets in our app
class MyApp extends StatelessWidget {
  const MyApp({super.key});

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
            home: Scaffold(
                appBar: AppBar(title: Text('Demo'),)
                body:  Row(
                    children: <Widget>[]
                )
            ),
    );
  }
}
```

- Column

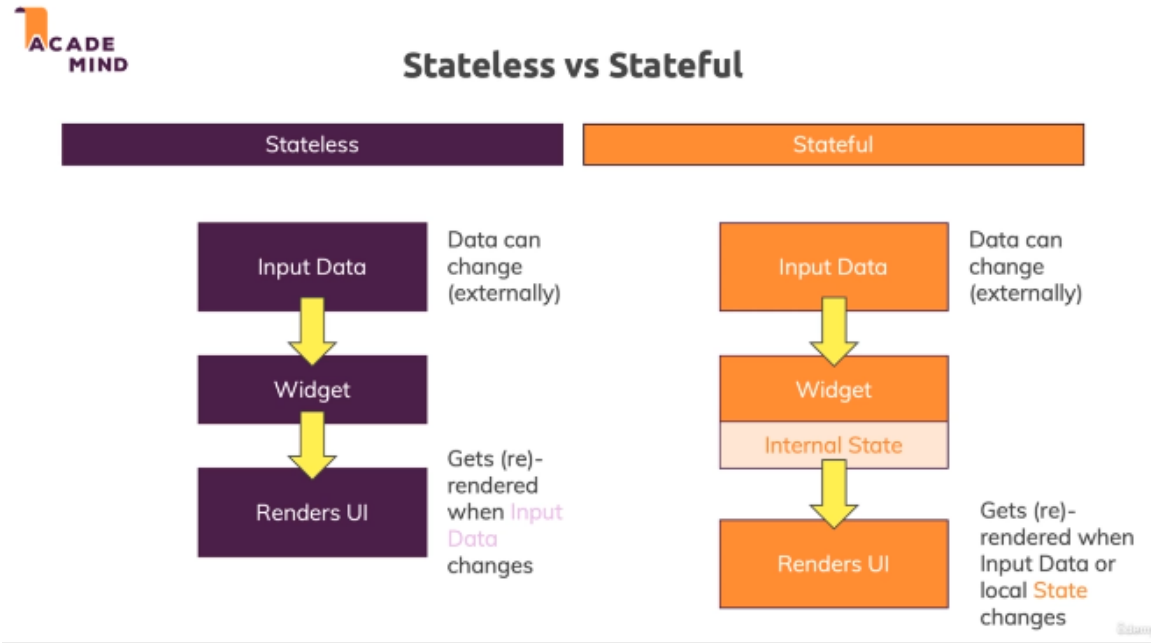
```
// importing widgets from flutter package
import 'package:flutter/material.dart';

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

// class that wraps widgets in our app
class MyApp extends StatelessWidget {
  const MyApp({super.key});

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
            home: Scaffold(
                appBar: AppBar(title: Text('Demo'),)
                body:  Column(
                    children: <Widget>[]
                )
            ),
    );
  }
}
```

- Statefull vs Stateless widgets



- Stateless widget

```
// importing widgets from flutter package
import 'package:flutter/material.dart';

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

// class that wraps widgets in our app
class MyApp extends StatelessWidget {
  MyApp({super.key});

  var text = 'waiting';
  void click() {
    text = 'clicked';
    print(text);
  }

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
        home: Scaffold(
```

```
      appBar: AppBar(
        title: Text('Demo'),
      ),
      body: Column(children: [
        Text(text),
        ElevatedButton(
          child: Text('Click me'),
          onPressed: click,
        )
      ]),
    ));
  }
}
```

- Statefull widget

```
// importing widgets from flutter package
import 'package:flutter/material.dart';

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

// class that wraps widgets in our app
class MyApp extends StatefulWidget {
  MyApp({super.key});

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

class MyAppState extends State<MyApp> {
  var text = 'waiting';
  void click() {
    setState(() {
```

```
      text = 'clicked';
    });
    print(text);
  }

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
        home: Scaffold(
      appBar: AppBar(
        title: Text('Demo'),
      ),
      body: Column(children: [
        Text(text),
        ElevatedButton(
          child: Text('Click me'),
          onPressed: click,
        )
      ]),
    ));
  }
}
```

- Custom widgets

```
/* mytext.dart */

import 'package:flutter/material.dart';

class MyText extends StatelessWidget {
  final String text;

  MyText({required this.text});

  @override
  Widget build(BuildContext context) {
    return Text(
      text,
```

```
      selectionColor: Color.fromRGBO(58, 102, 81, 1),
    );
  }
}

/* mybutton.dart */

import 'package:flutter/material.dart';

class MyButton extends StatelessWidget {
  final VoidCallback callBackHandler;
  final String text;

  MyButton({this.callBackHandler, this.text});

  ButtonStyle style = ElevatedButton.styleFrom(
      backgroundColor: Color.fromARGB(255, 85, 108, 128));

  @override
  Widget build(BuildContext context) {
    return Container(
      width: double.infinity,
      margin: EdgeInsets.all(10),
      child: ElevatedButton(
        child: Text('Click me'),
        style: style,
        onPressed: callBackHandler,
      ),
    );
  }
}


/* main.dart */

// importing widgets from flutter package
import 'package:flutter/material.dart';
```

```
// importing custom widget
import './mytext.dart';
import './mybutton.dart';

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

// class that wraps widgets in our app
class MyApp extends StatefulWidget {
  MyApp({super.key});

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

class MyAppState extends State<MyApp> {
  var text = 'waiting';
  void click() {
    setState(() {
      text = 'clicked';
    });
    print(text);
  }

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
        home: Scaffold(
      appBar: AppBar(
        title: Text('Demo'),
      ),
      body: Column(children: [
        MyText(text: text),
        MyButton(
```

```
                    callbackHandler: click,
                    text: 'click me'
                )
      ]),
    ));
  }
}
```

- Iterative rendering

```
// importing widgets from flutter package
import 'package:flutter/material.dart';

// importing custom widget
import './mytext.dart';
import './mybutton.dart';

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

// class that wraps widgets in our app
class MyApp extends StatefulWidget {
  MyApp({super.key});

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

class MyAppState extends State<MyApp> {
  var index = 0;

  var datas = [
    {
      'text': 'waiting',
```

```
      'buttonText': ['click me', 'nope']
    },
    {
      'text': 'terms and policies',
      'buttonText': ['accept', 'decline']
    },
  ];

  void click() {
    setState(() {
      index++;
    });
    print(index);
  }

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
        home: Scaffold(
      appBar: AppBar(
        title: Text('Demo'),
      ),
      body: Column(children: [
        MyText(text: (datas[index]['text'] as String)),
        ...(datas[index]['buttonText'] as List<String>).ma
          print(txt);
          return MyButton(callBackHandler: click, text: tx
        }).toList()
      ]),
    ));
  }
}
```

- conditional rendering

```
// importing widgets from flutter package
import 'package:flutter/material.dart';
```

```
// importing custom widget
import './mytext.dart';
import './mybutton.dart';

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

// class that wraps widgets in our app
class MyApp extends StatefulWidget {
  MyApp({super.key});

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

class MyAppState extends State<MyApp> {
  var index = 0;
  var isAccepted = false;

  var datas = [
    {
      'text': 'terms and policies',
      'buttonText': ['accept']
    },
  ];

  void click() {
    setState(() {
      isAccepted = true;
    });
  }

  @override
  Widget build(BuildContext context) {
```

```
    return MaterialApp(
        home: Scaffold(
      appBar: AppBar(
        title: Text('Demo'),
      ),
      body: isAccepted
          ? (Center(
              child: Text('Welcome'),
            ))
          : (Column(children: [
              MyText(text: (datas[index]['text'] as String
              ...(datas[index]['buttonText'] as List<Strin
                return MyButton(callBackHandler: click, te
              }).toList()
            ])),
    ));
  }
}
```

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