Google Developers

Experts

Unidirectional Data Flow Rocks!

Introducing Redux, Cubits and Blocs.

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Flutter & Dart GDE
@jfkdev

State Management

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- Becomes a problem when the app and scope grows.
- We need some state management design pattern.

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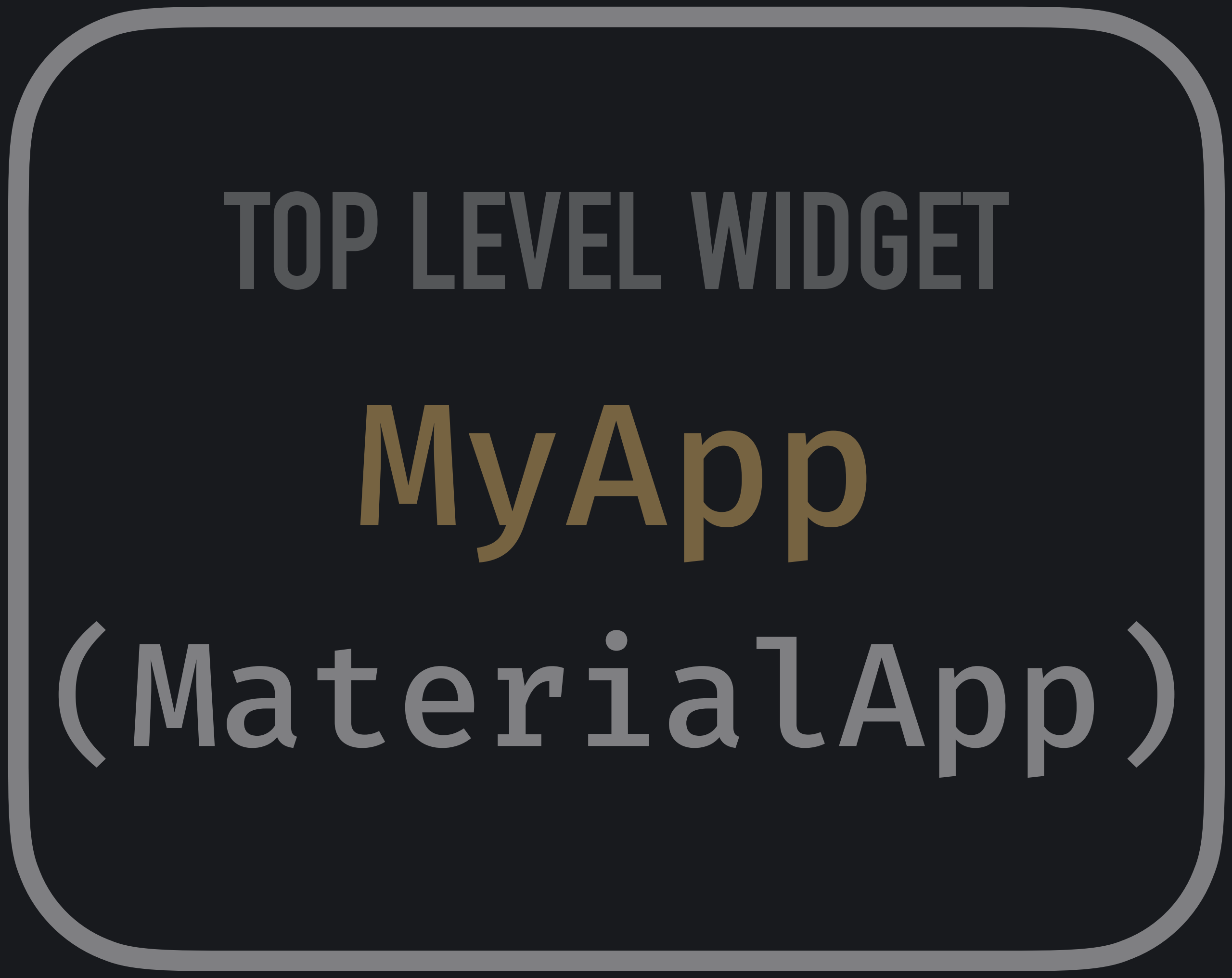
- A design pattern for state management.
- Makes the flow of data structured, consistent, predictable and testable.
- Helps separate views from business logic.
- Works well with declarative programming.

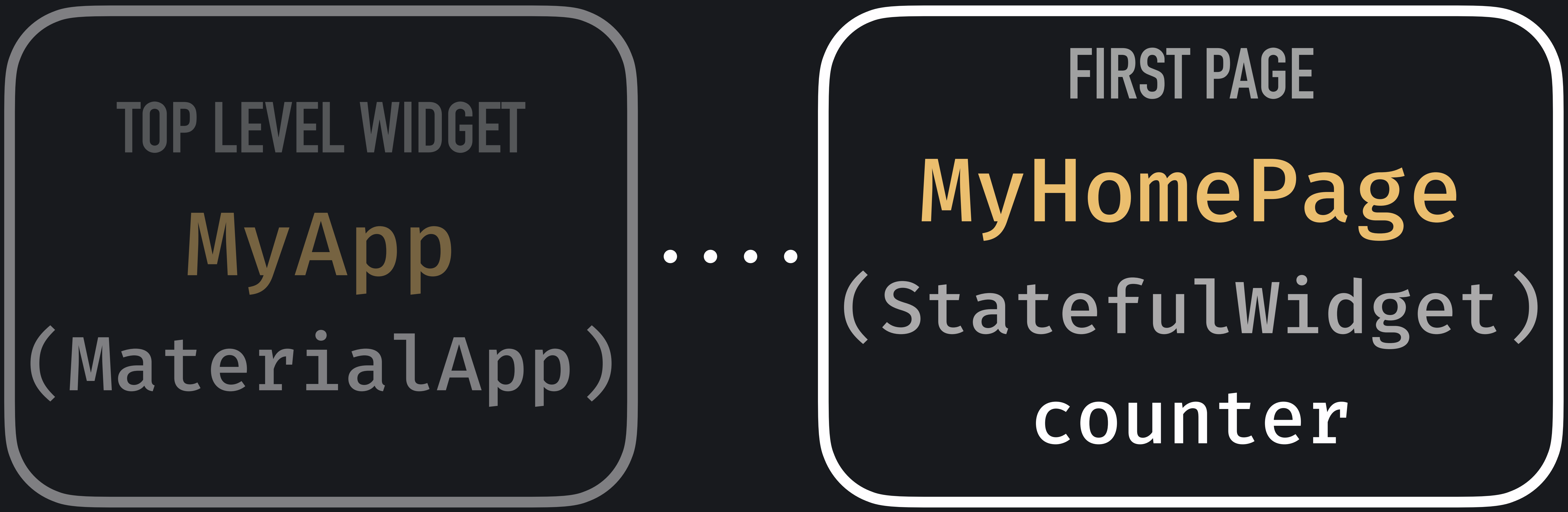
Example

Example

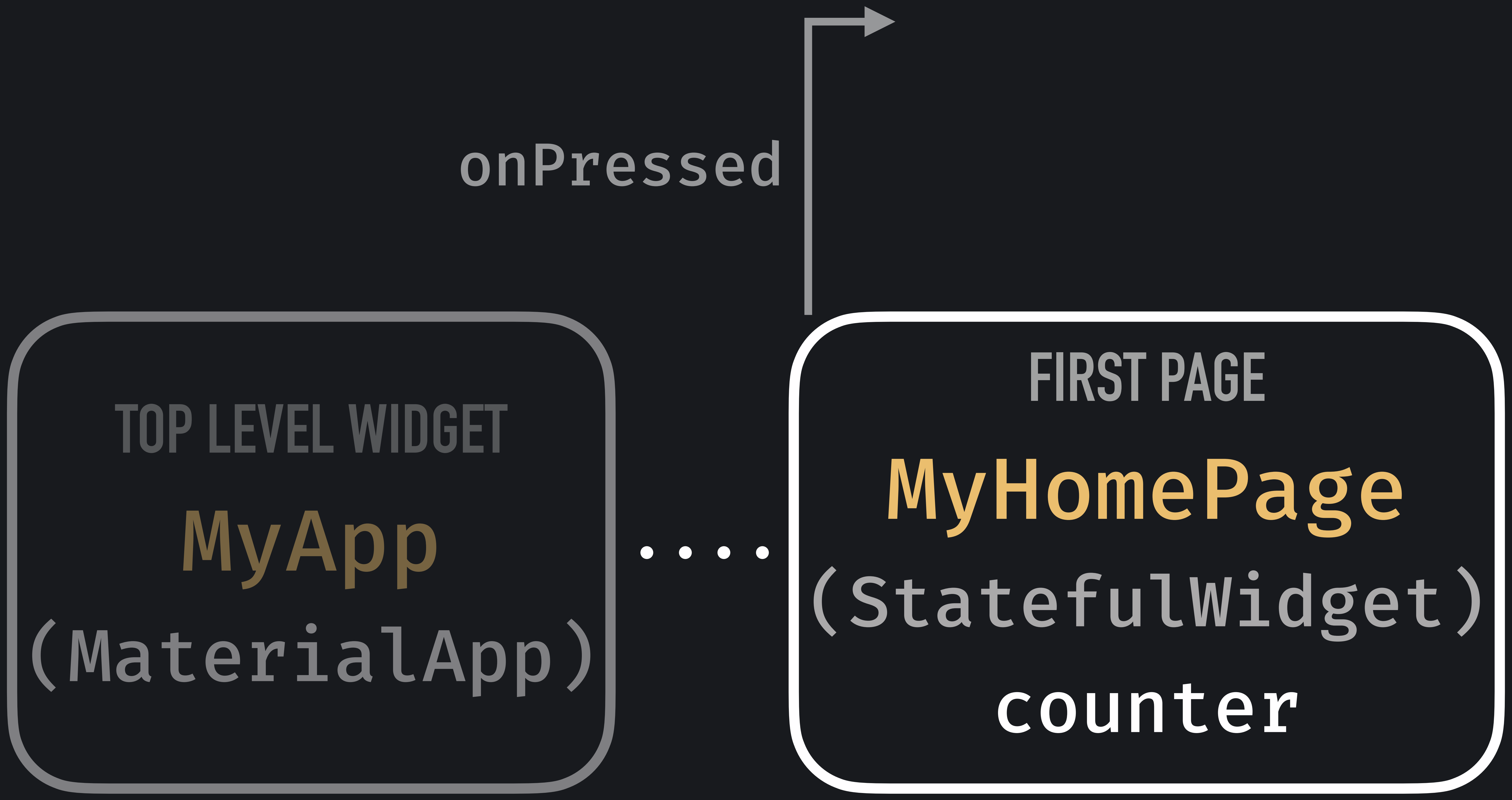
Example



Example


TOP LEVEL WIDGET
MyApp
(MaterialApp)
FIRST PAGE
MyHomePage
(StatefulWidget)
counter

Example


onPressed
TOP LEVEL WIDGET
MyApp
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FIRST PAGE
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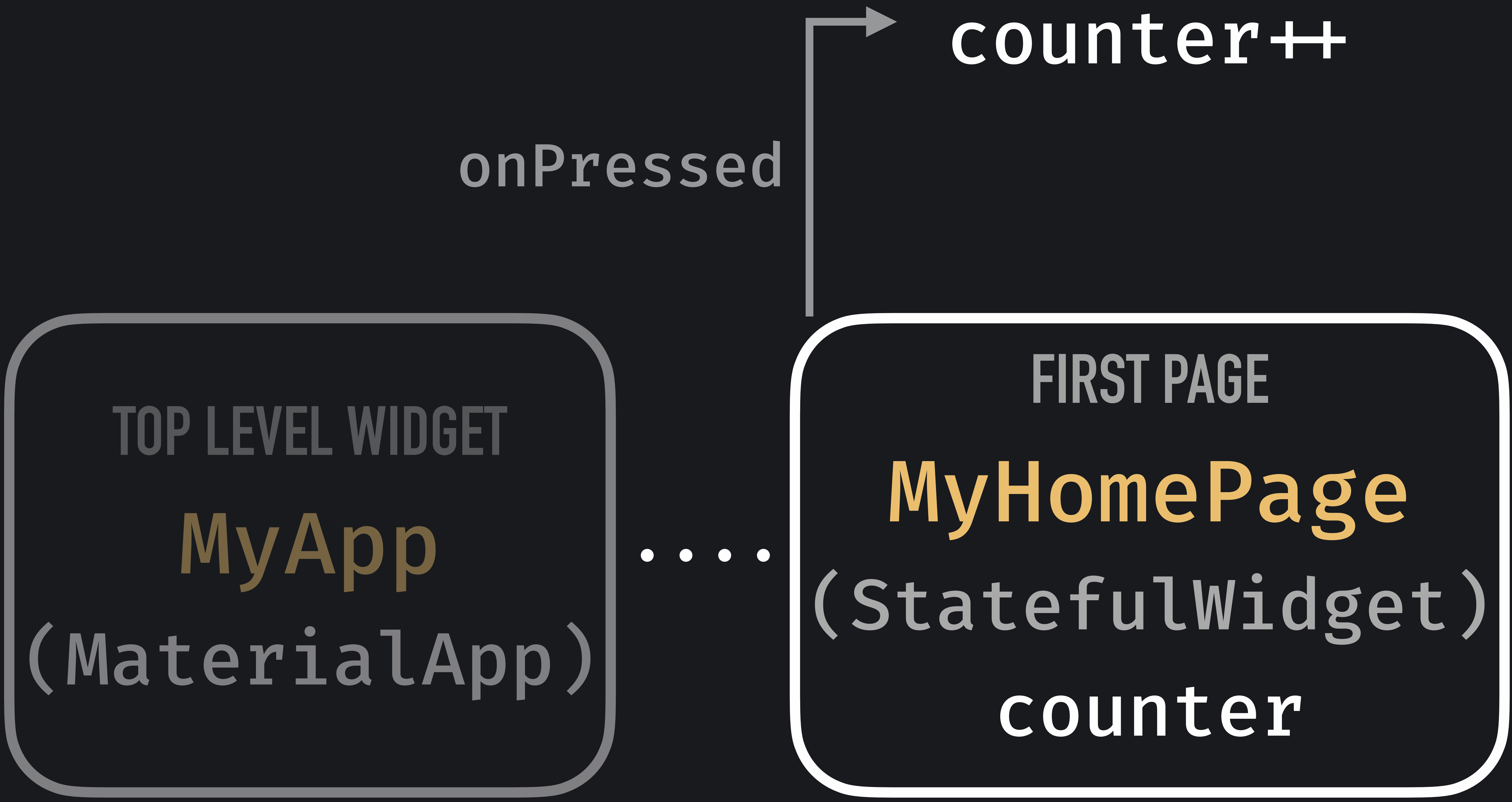
Example



counter++
onPressed
TOP LEVEL WIDGET
MyApp
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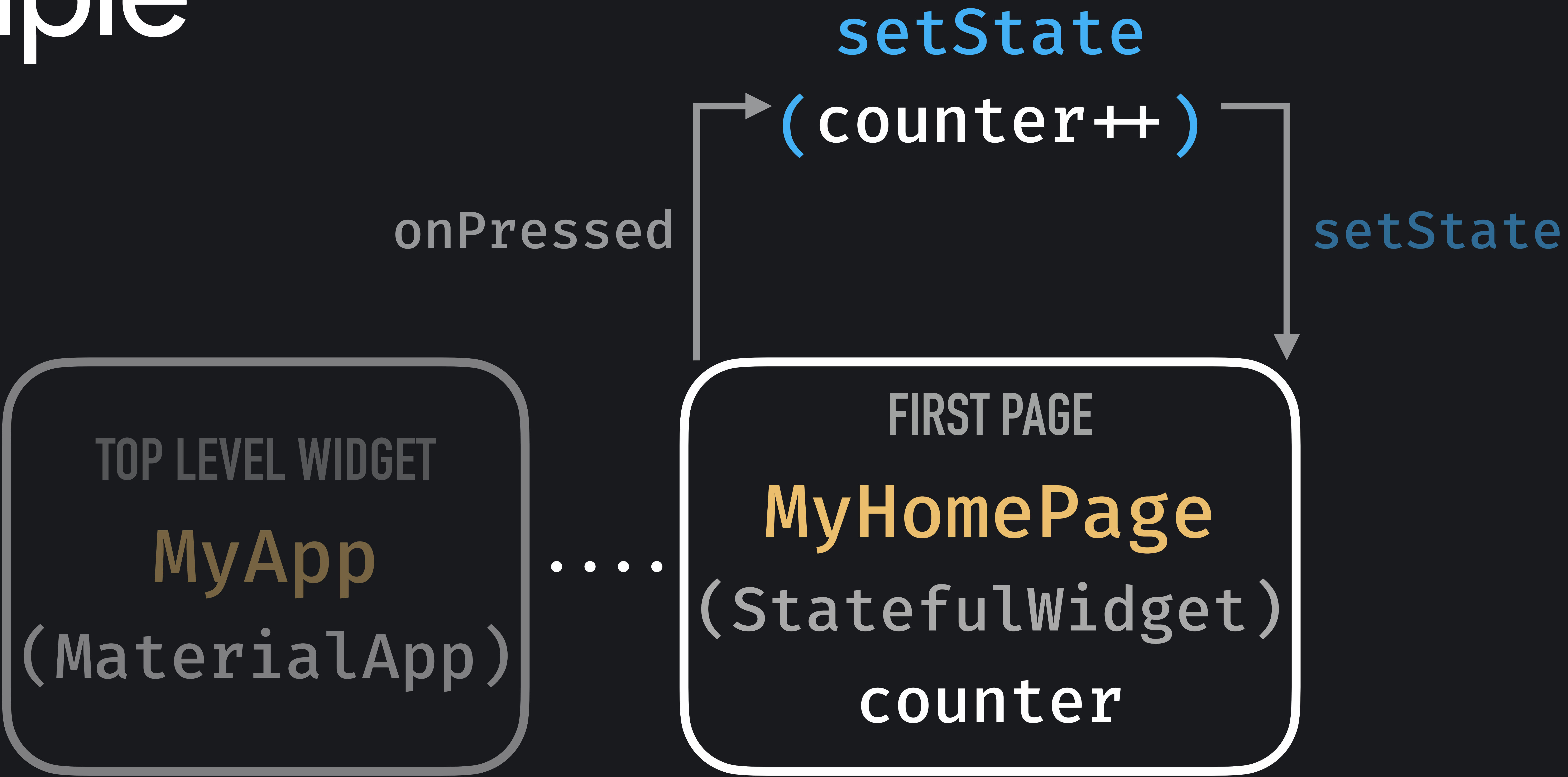
Example


setState
(counter++)
onPressed
setState
TOP LEVEL WIDGET
MyApp
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FIRST PAGE
MyHomePage
(StatefulWidget)
counter

SOME CODE

SOME CODE

```
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return new MaterialApp(
      title: 'Flutter Demo',
      theme: new ThemeData(
        primarySwatch: Colors.blue,
      ),
      home: new MyHomePage(title: 'Flutter Demo Home Page'),
    );
  }
}
```

```
class MyHomePage extends StatefulWidget {
  MyHomePage({Key key, this.title}) : super(key: key);

  final String title;

  @override
  _MyHomePageState createState() => new _MyHomePageState();
}
```

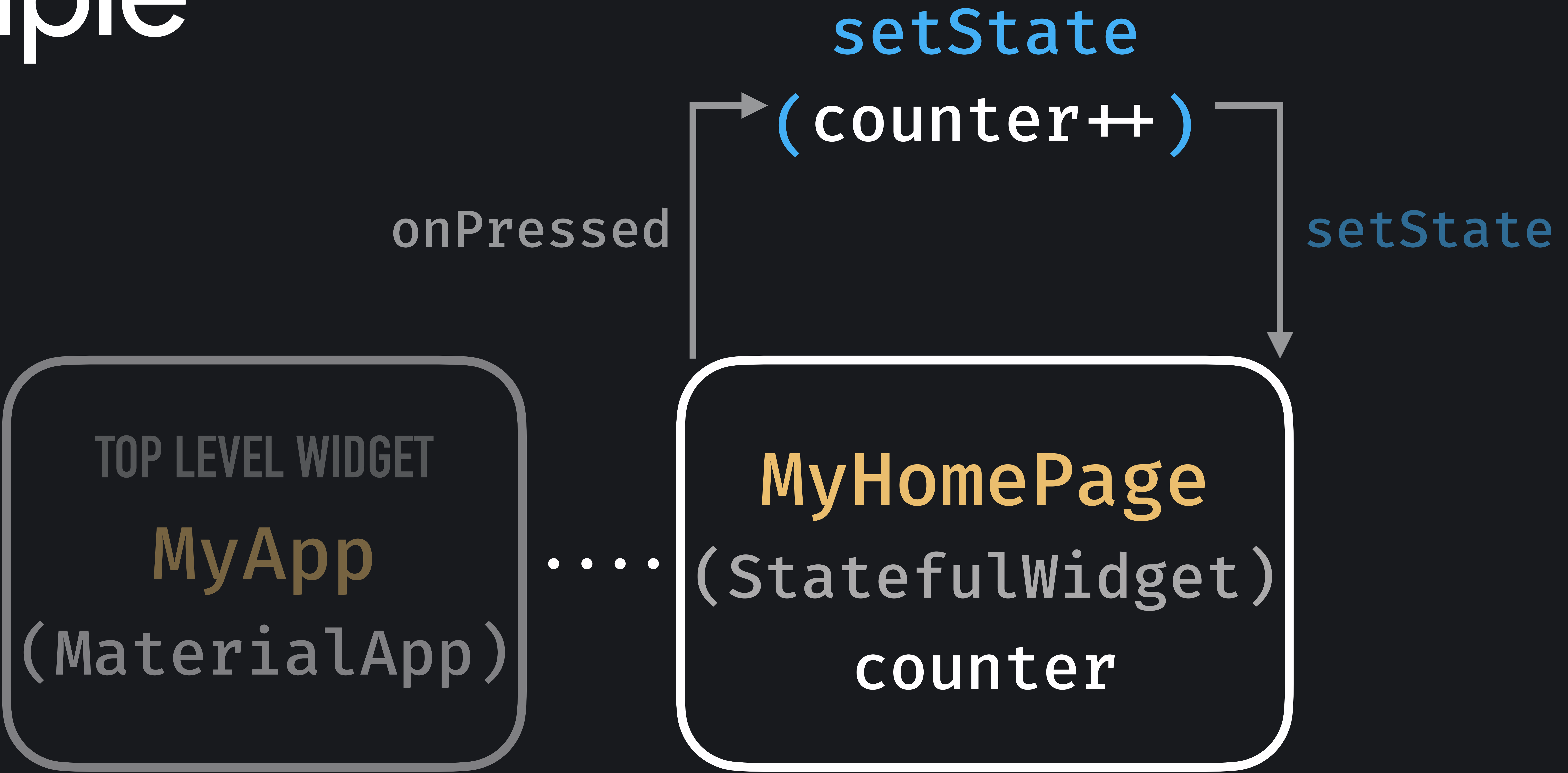
```
class _MyHomePageState extends State<MyHomePage> {
  int _counter = 0;

  void _incrementCounter() {
    setState(() {
      _counter++;
    });
  }
  ...
    floatingActionButton: new FloatingActionButton(
      onPressed: _incrementCounter,
      tooltip: 'Increment',
  ...
```

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

  void _incrementCounter() {
    setState(() {
      _counter++;
    });
  }
  ...
    floatingActionButton: new FloatingActionButton(
      onPressed: _incrementCounter,
      tooltip: 'Increment',
  ...
```

Example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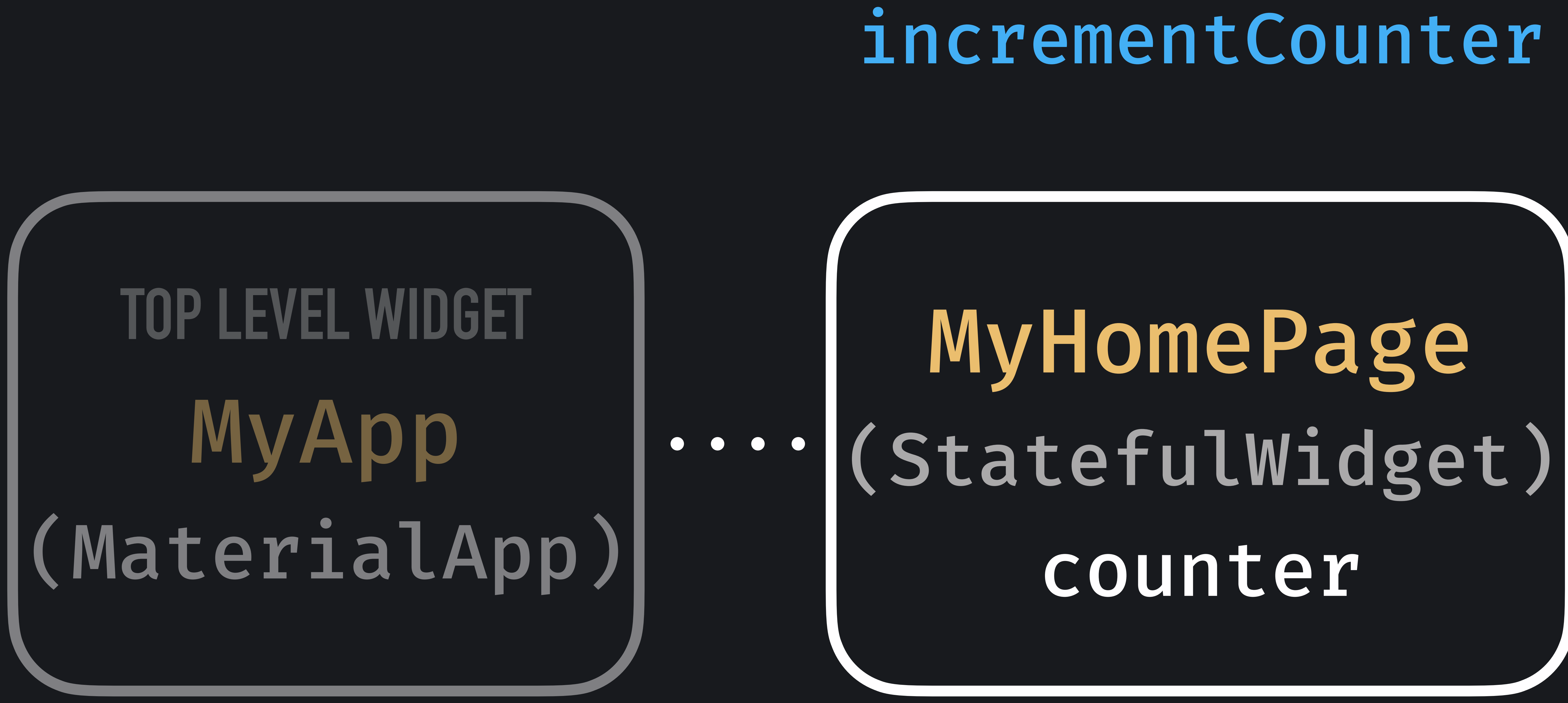
incrementCounter
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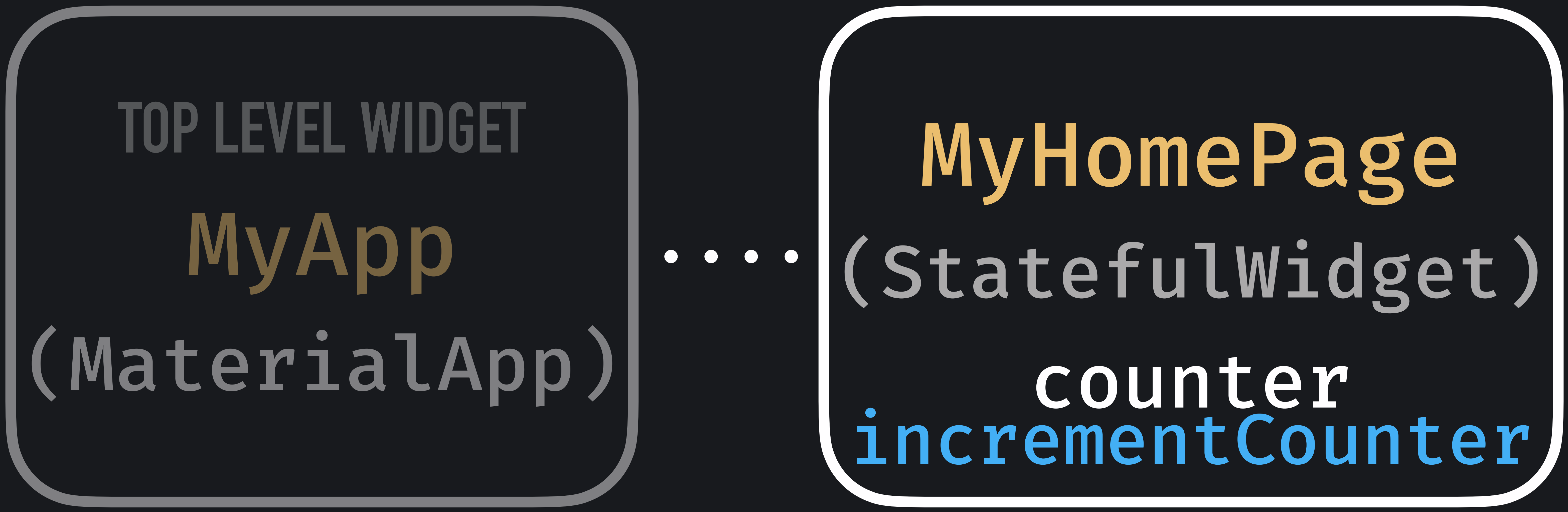
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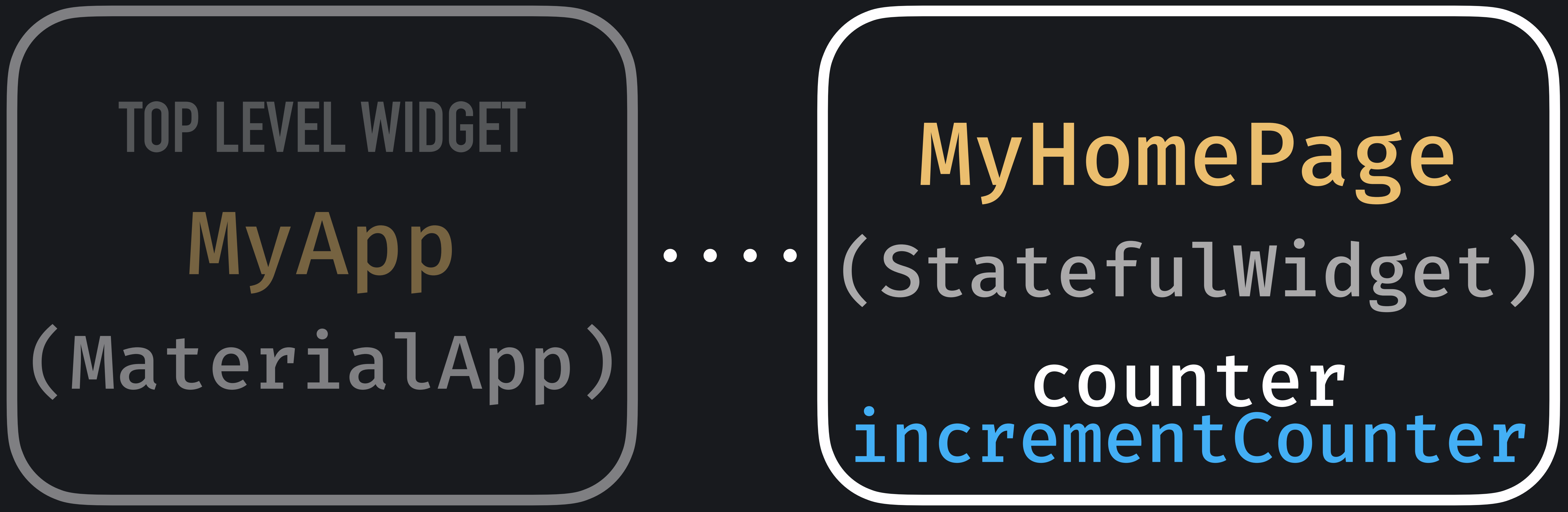
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MyApp
(MaterialApp)
MyHomePage
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counter
incrementCounter

Example

TOP LEVEL WIDGET
MyApp
(MaterialApp)
MyHomePage
(StatefulWidget)
counter
incrementCounter
MySecondPage
(StatefulWidget)

Example

TOP LEVEL WIDGET
MyApp
(MaterialApp)
MyHomePage
(StatefulWidget)
counter
incrementCounter
MySecondPage
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Example

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MyApp
(MaterialApp)
MyHomePage
(StatefulWidget)
counter
incrementCounter
MySecondPage
(StatefulWidget)
counter
incrementCounter

```
new MySecondPage(
  counter: _counter,
  incrementCounter: _incrementCounter,
)
```

Example

TOP LEVEL WIDGET
MyApp
(MaterialApp)
MyHomePage
(StatefulWidget)
counter
incrementCounter
MySecondPage
(StatefulWidget)
counter
incrementCounter

```
new MySecondPage(
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```

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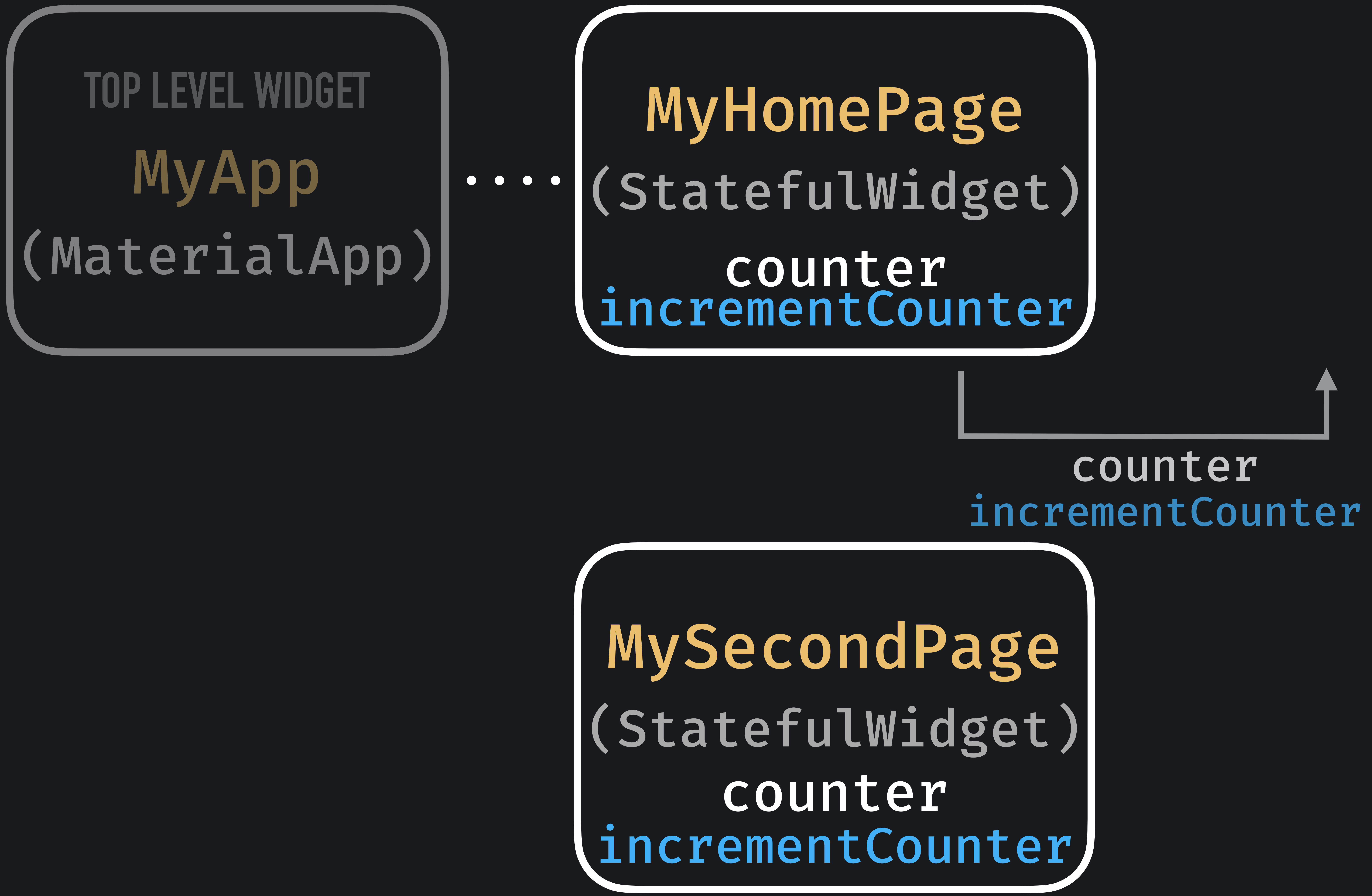
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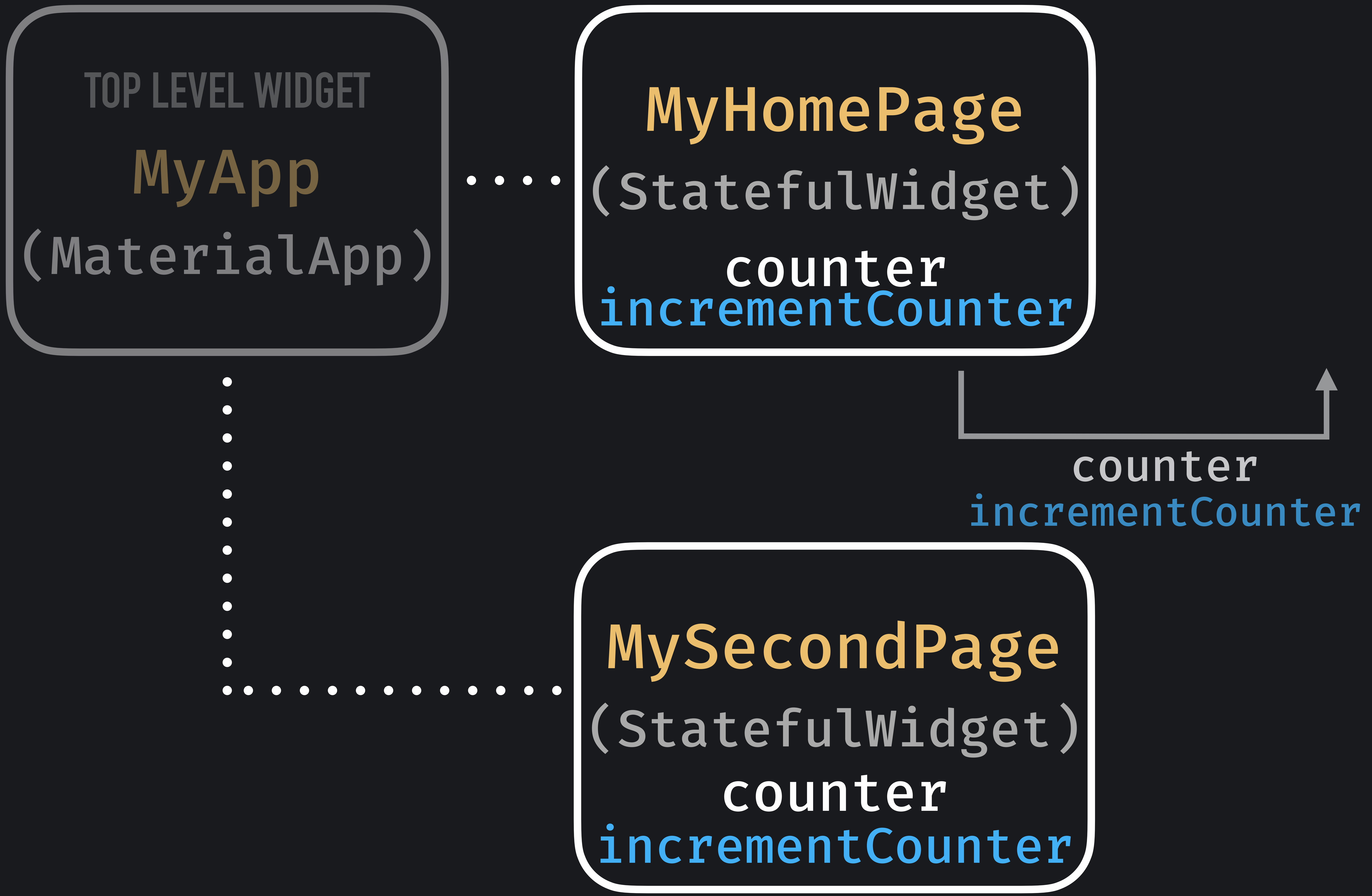
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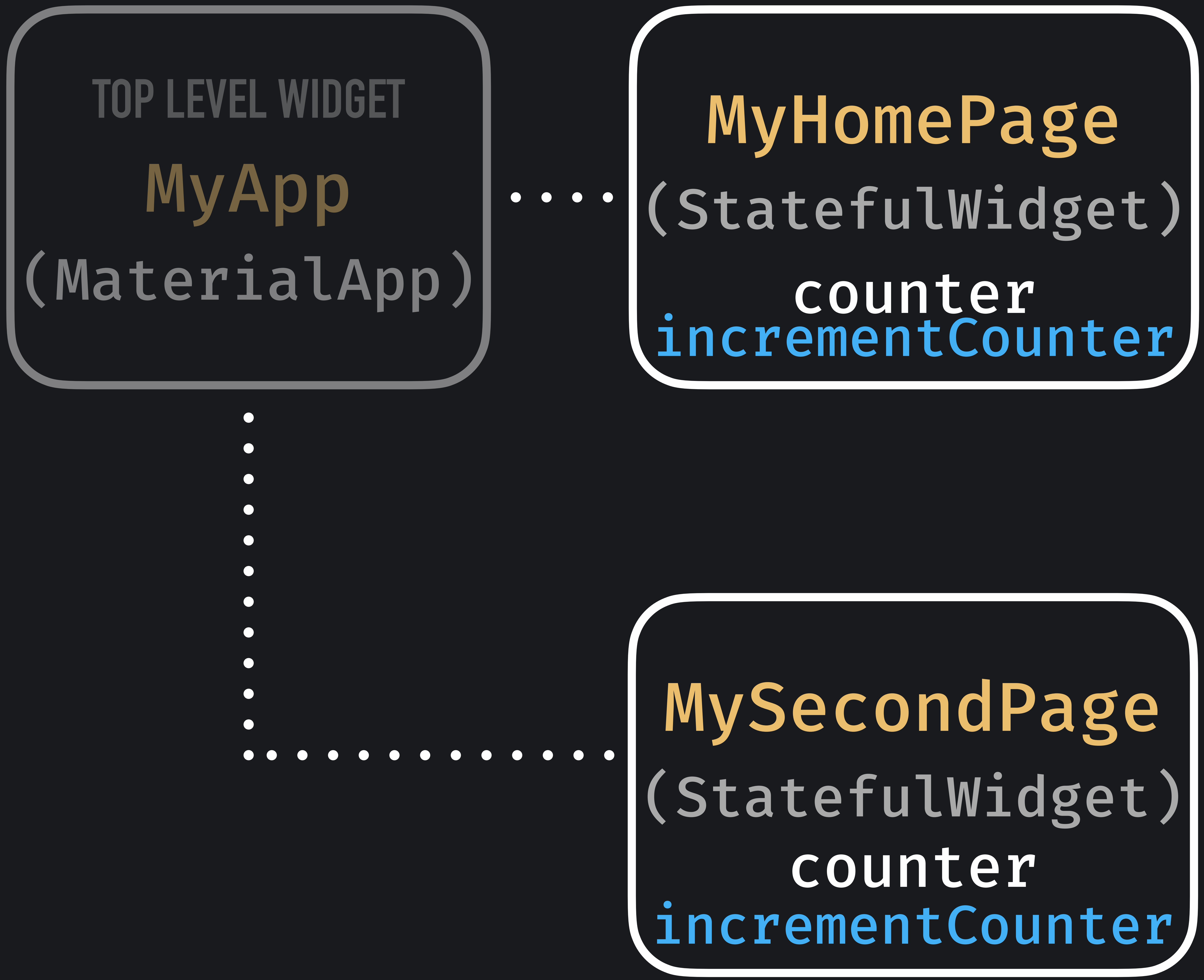
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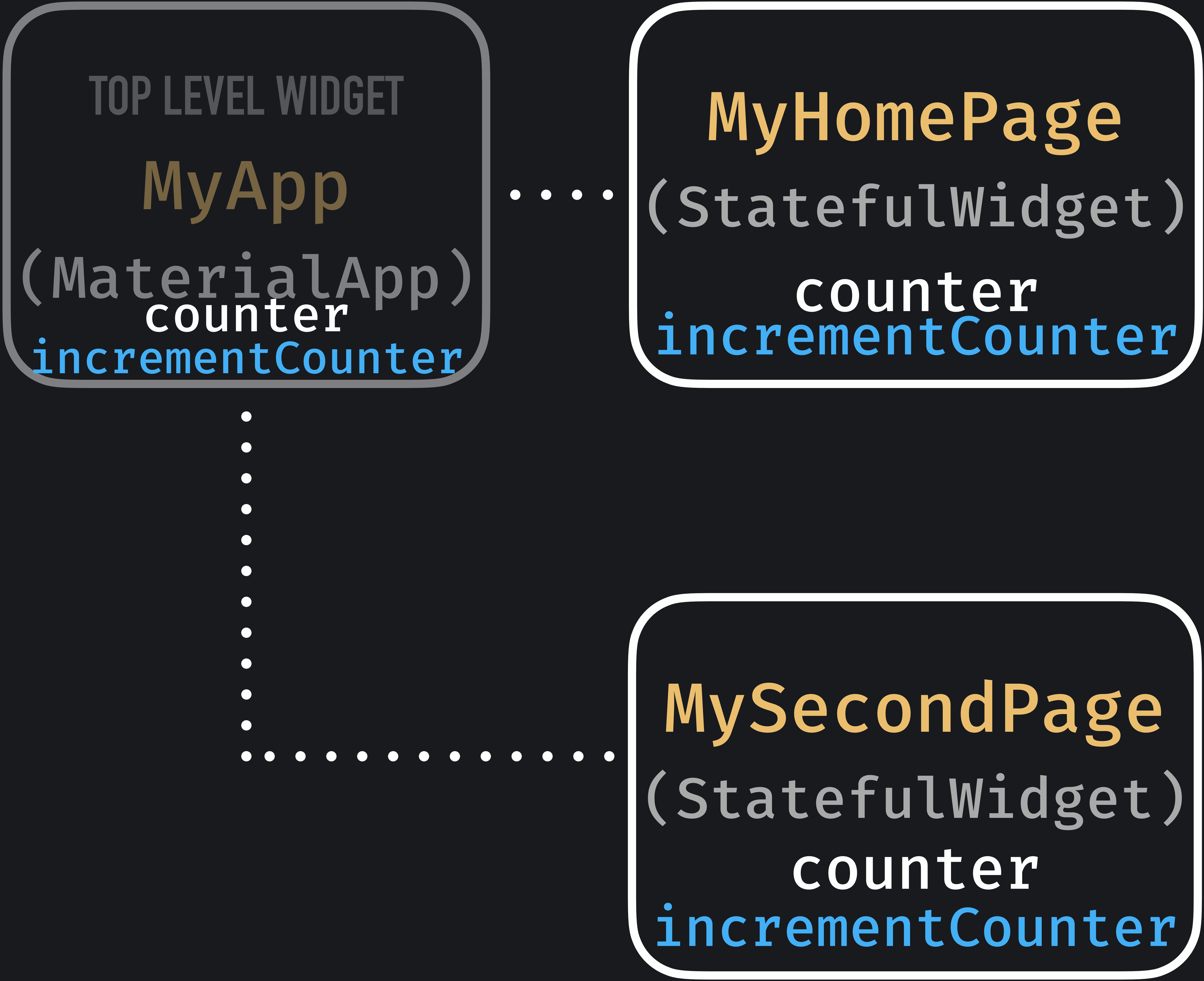
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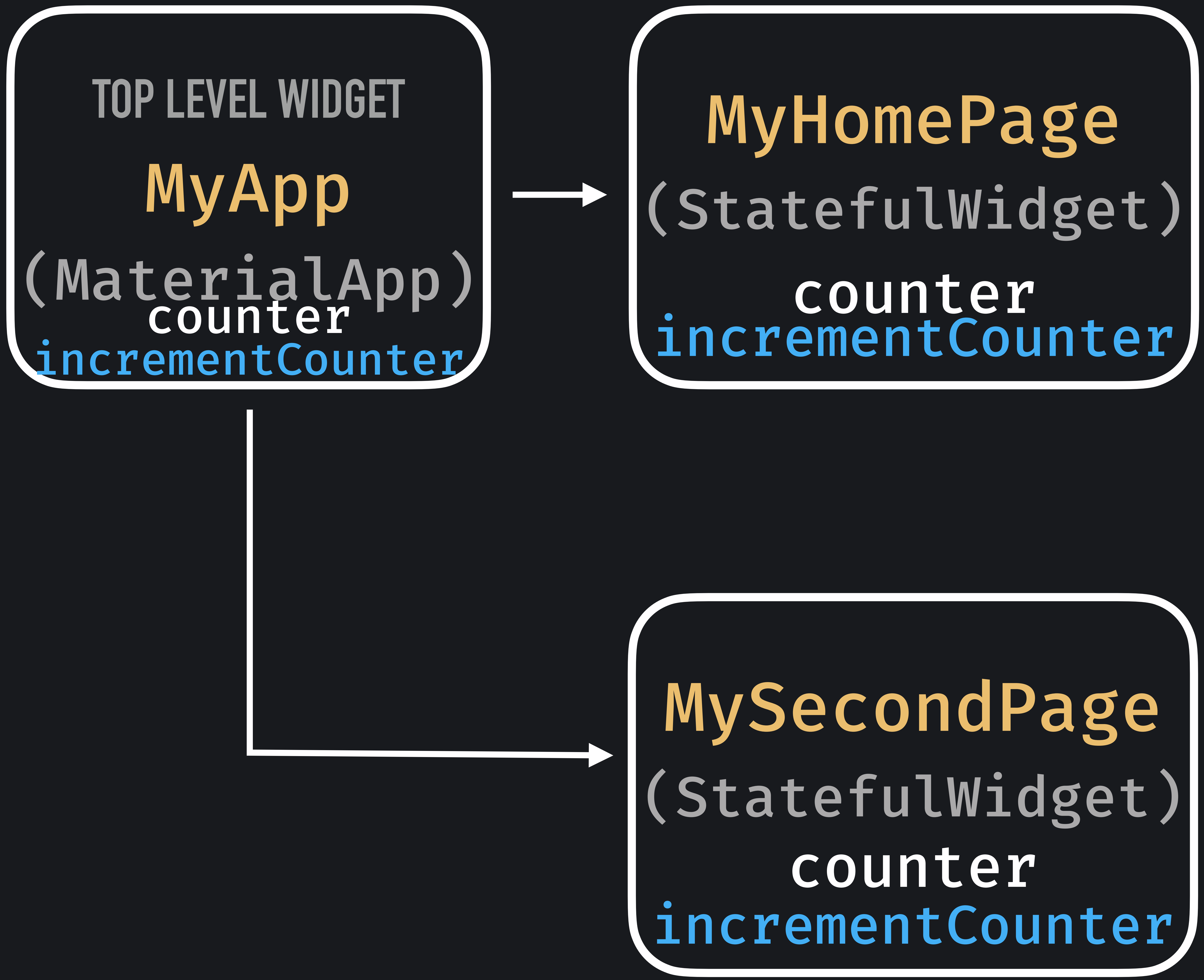
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MyApp
(MaterialApp)
counter
incrementCounter
MyHomePage
(StatefulWidget)
counter
incrementCounter
MySecondPage
(StatefulWidget)
counter
incrementCounter
AnotherPage
AnotherPage
AnotherPage
AnotherPage
AnotherPage
This is
Really?
Stop

Unidirectional Data Flow

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- An immutable **state** that represents (a part of) your app.

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Unidirectional Data Flow

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- A collection of **events** that represent actions.
- A **reducer/pure function** that takes a **state** and an **event** and produces a new state.

Unidirectional Data Flow

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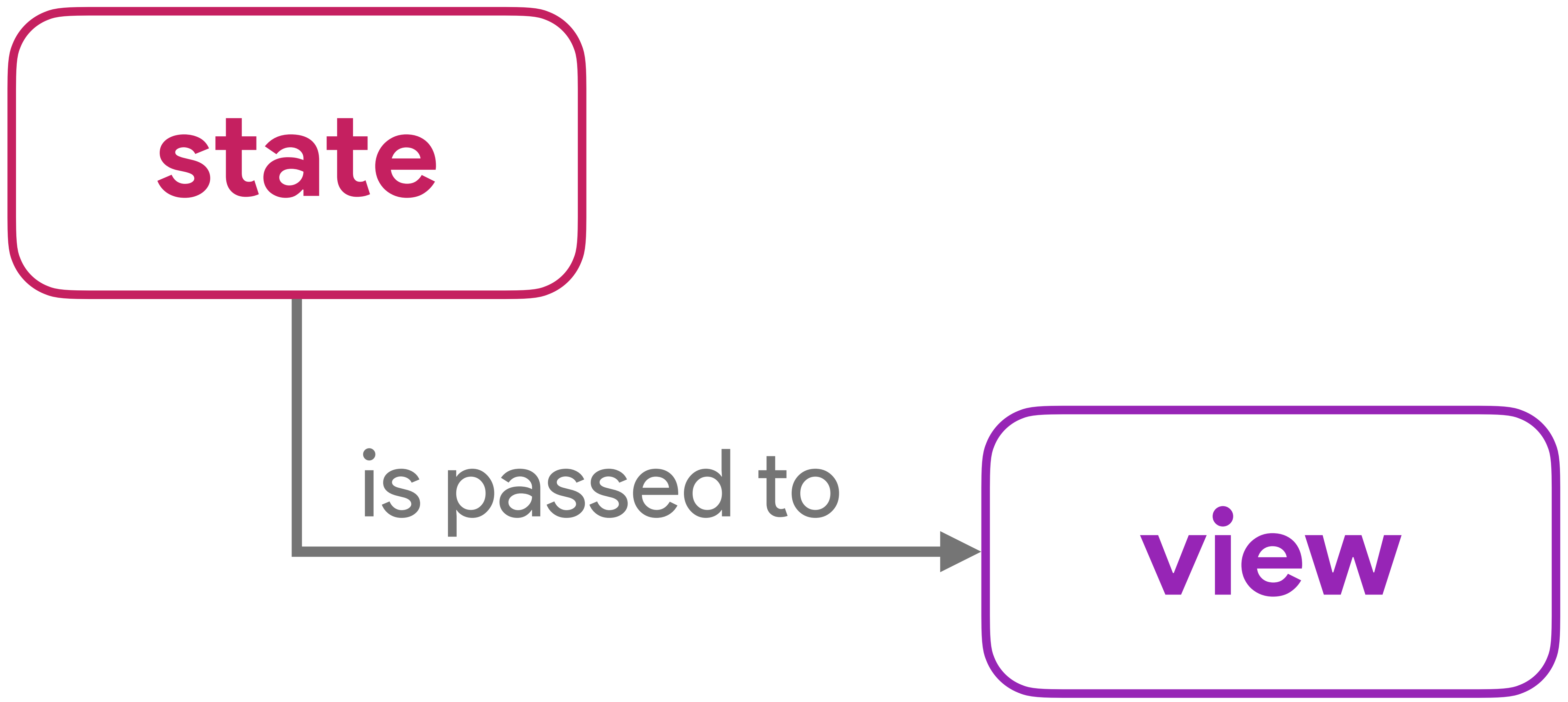
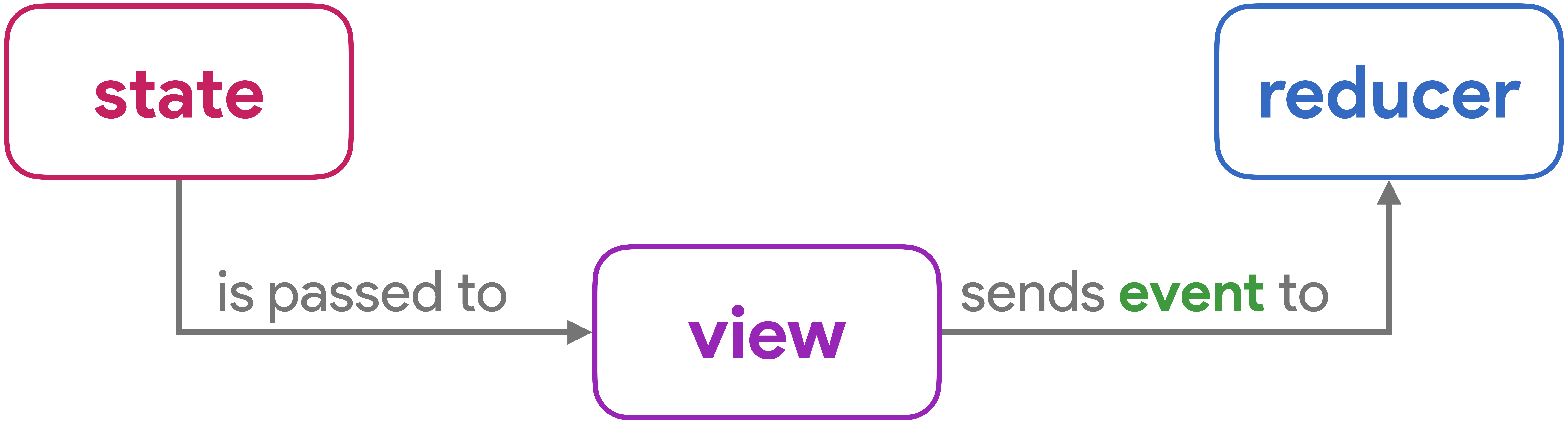
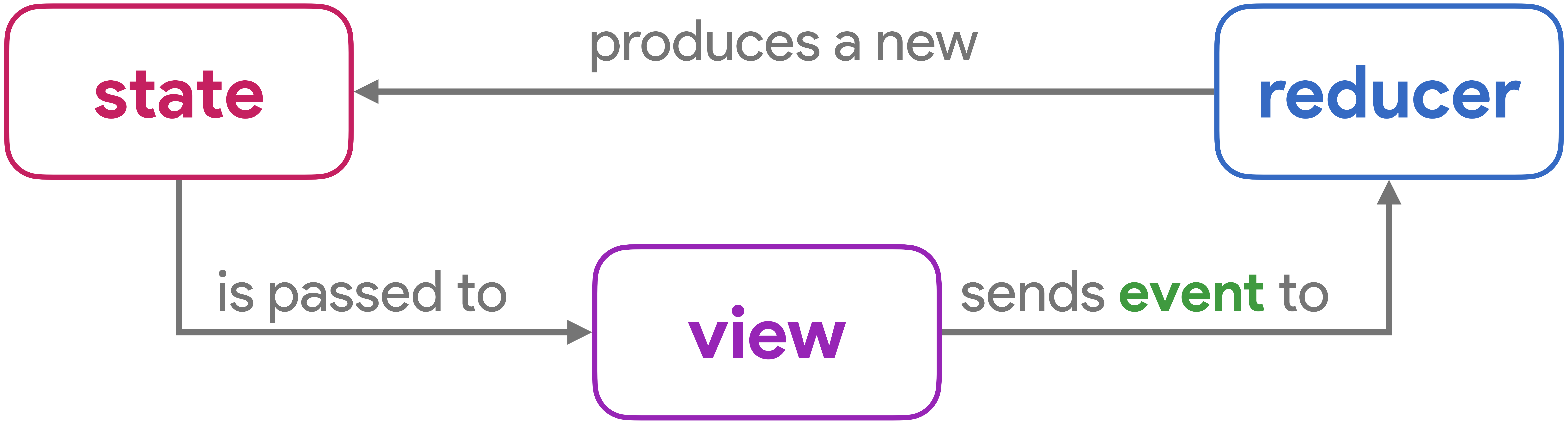


Unidirectional Data Flow



Unidirectional Data Flow



Unidirectional Data Flow

Unidirectional Data Flow

Redux

Unidirectional Data Flow

Redux

Bloc

Unidirectional Data Flow

Redux

Bloc

Cubit

Bloc

Bloc

Business logic component

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- A class containing a **state** and **reducers**.

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- Uses the `Streams` API.
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```
import 'package:bloc/bloc.dart';
```

Bloc

Business logic component

- A class containing a **state** and **reducers**.
- Uses the `Streams` API.
- Manages and produces new **states** internally.
- Consumes **events** in the form of classes.

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

class CounterBloc extends
  Bloc<CounterEvent, CounterState>
```

Bloc

Bloc

- Are usually created per feature or screen.

Bloc

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- Can be passed using `BlocProviders` with `package:flutter_bloc`.

Bloc

Bloc

Example

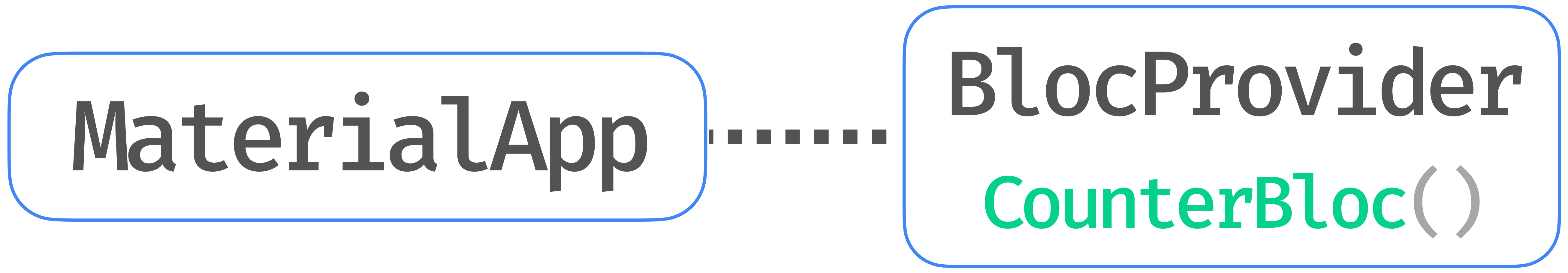
Bloc

Example

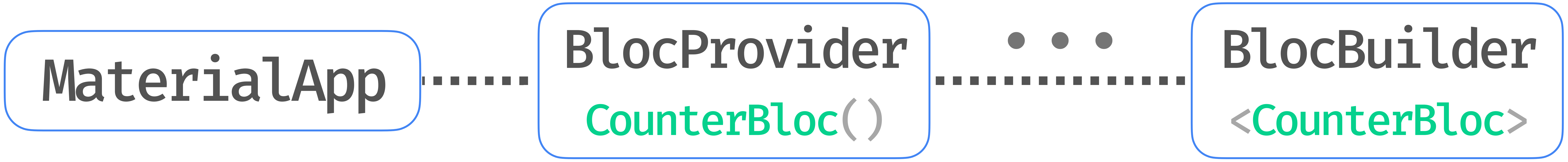
```
MaterialApp
```

Bloc

Example



Bloc
Example



Bloc

Example

MaterialApp
BlocProvider
CounterBloc()
BlocBuilder
<CounterBloc>

Cubit

Cubit

Bloc’s little brother

Cubit

Bloc’s little brother

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- Same concepts, different execution.

Cubit

Bloc’s little brother

- A smaller, simpler form of Bloc.
- All Blocs are actually cubits.
- Same concepts, different execution.
- Uses public methods instead of classes to convey **events**.

Cubit

Cubit in action

Google Developers

Experts

Thank You!

Slides and code available at https://cutt.ly/jfktalks

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