

# Introduction to Widgets

ทำความรู้จักกับ widget ใน flutter และทำความรู้จักกับ widget ประเภทต่างๆ





## About this section

- What is Widgets
- Basic Widgets
- Layout Widgets
- Scrolling Widgets



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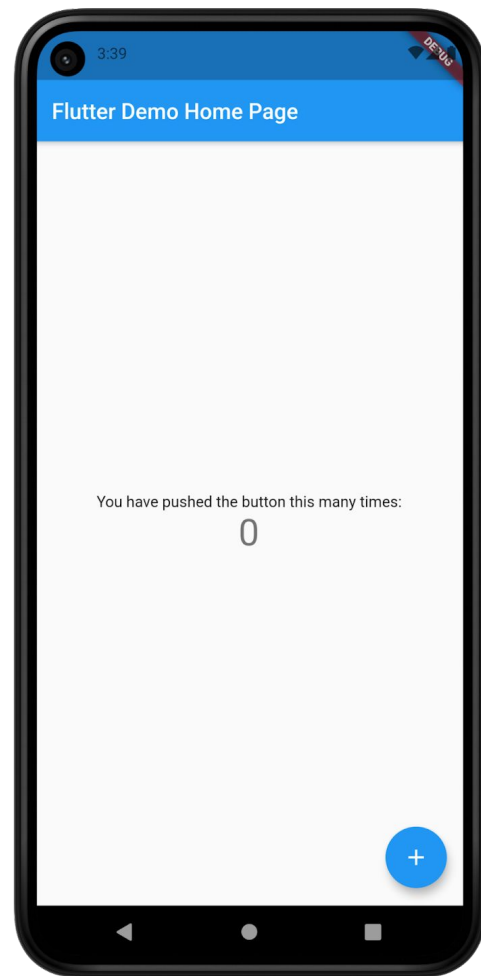
# What is widget?

- Smallest unit of UI component
- Can be composed by another widget
- *Almost* everything in Flutter is Widget



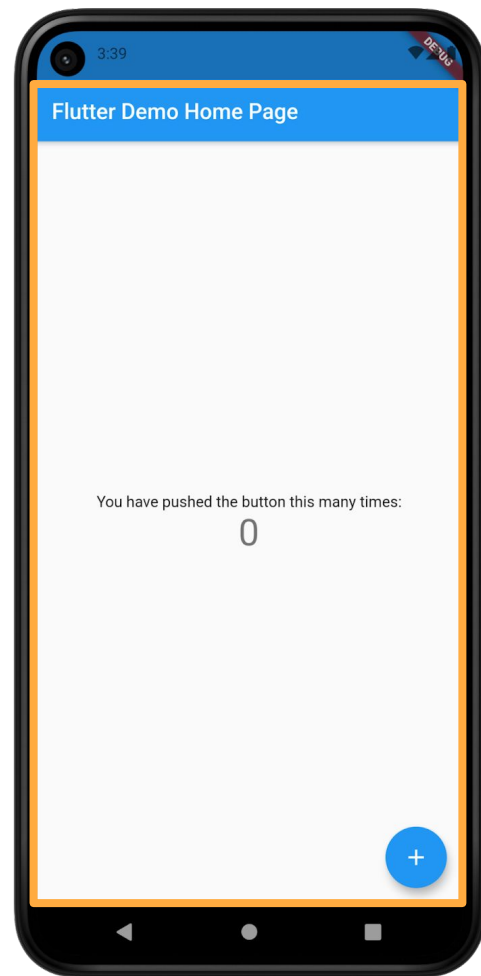
# Widgets

- Flutter application itself is a widget



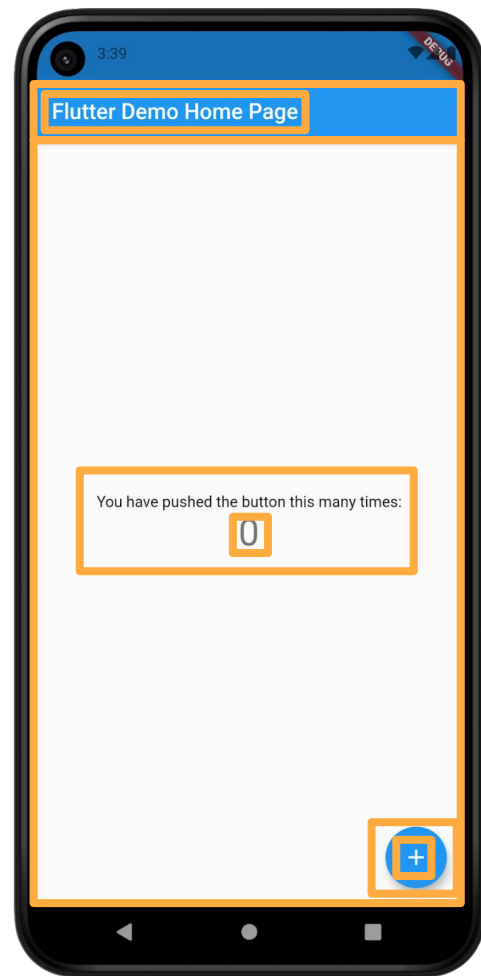
# Widgets

- Whole page is a widget



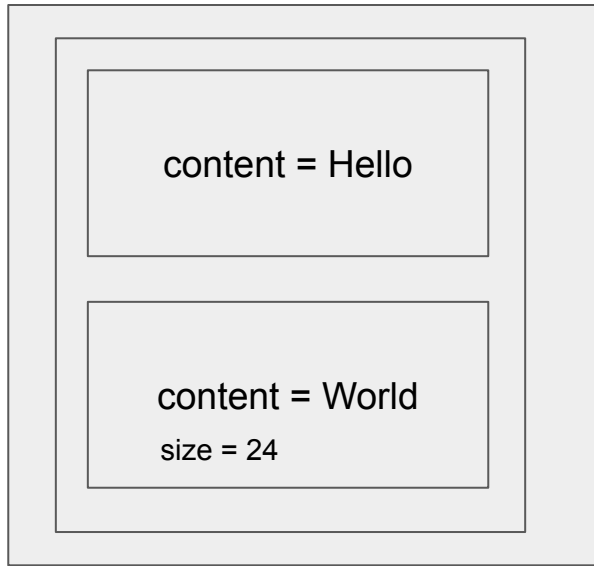
# Widgets

- Menu bar with text widget
- A Box of 2 text widget
- Button with plus icon



# Key concept

```
Container(  
  child: Column(  
    children: <Widget>[  
      Text(  
        'Hello',  
      ),  
      Text(  
        'World',  
        style: TextStyle(fontSize: 24)  
      ),  
    ],  
  ),  
)
```

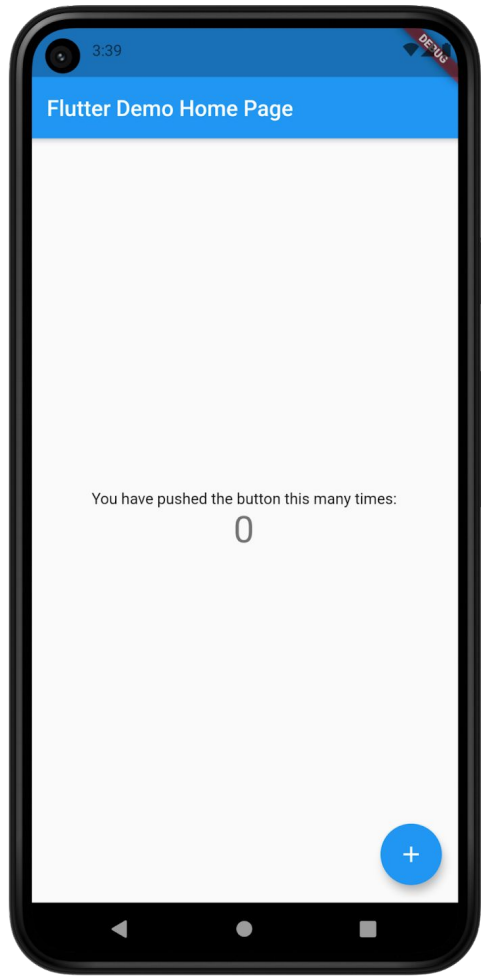


Child = 1 widget  
Children = multiple widgets



# How to create a Widget

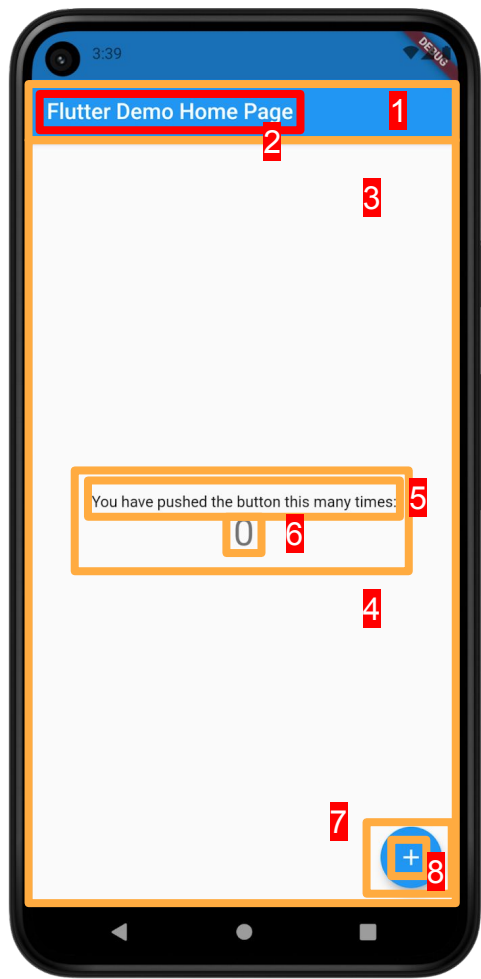
```
//Class HomePage
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text("Flutter Demo Home Page"),
    ),
    body: Center(
      child: Column(
        children: <Widget>[
          Text(
            'You have pushed the button this many times:',
          ),
          Text(
            '$_counter',
            style: TextStyle(fontSize: 16),
          ),
        ],
      ),
    ),
    floatingActionButton: FloatingActionButton(
      onPressed: _incrementCounter,
      tooltip: 'Increment',
      child: Icon(Icons.add),
    ), //
  );
}
```





# Breakdown

```
//Class HomePage
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar( // widget 1
      title: Text("Flutter Demo Home Page"), // widget 2
    ),
    body: Center( // widget 3
      child: Column( // widget 4
        children: <Widget>[
          Text(
            'You have pushed the button this many times:',
          ),// widget 5
          Text(
            '$_counter',
            style: TextStyle(fontSize: 16),
          ),// widget 6
        ],
      ),
    ),
    floatingActionButton: FloatingActionButton( // widget 7
      onPressed: _incrementCounter,
      tooltip: 'Increment',
      child: Icon(Icons.add),// widget 8
    ), //
  );
}
```



# Example

## Text

Hello *beautiful* world

## Button

TextButton

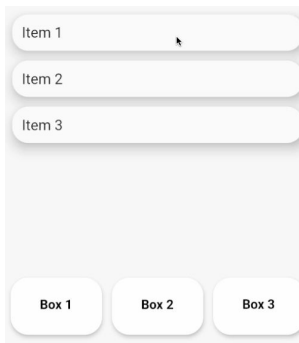
ElevatedButton

OutlinedButton

## Column



## Drag & Drop



# Text

```
//var name = "Ben";  
Text(  
  'Hello, $_name! How are you?',  
)
```

```
const Text.rich(  
  TextSpan(  
    text: 'Hello',  
    children: <TextSpan>[  
      TextSpan(text: ' beautiful ', style:  
TextStyle(fontStyle: FontStyle.italic)),  
      TextSpan(text: 'world', style:  
TextStyle(fontWeight: FontWeight.bold)),  
    ],  
  ),  
)
```

Hello, Ben! How are you?

Hello *beautiful* **world**

# Button

```
ElevatedButton(  
  onPressed: () {},  
  child: const Text('Button'),  
),
```



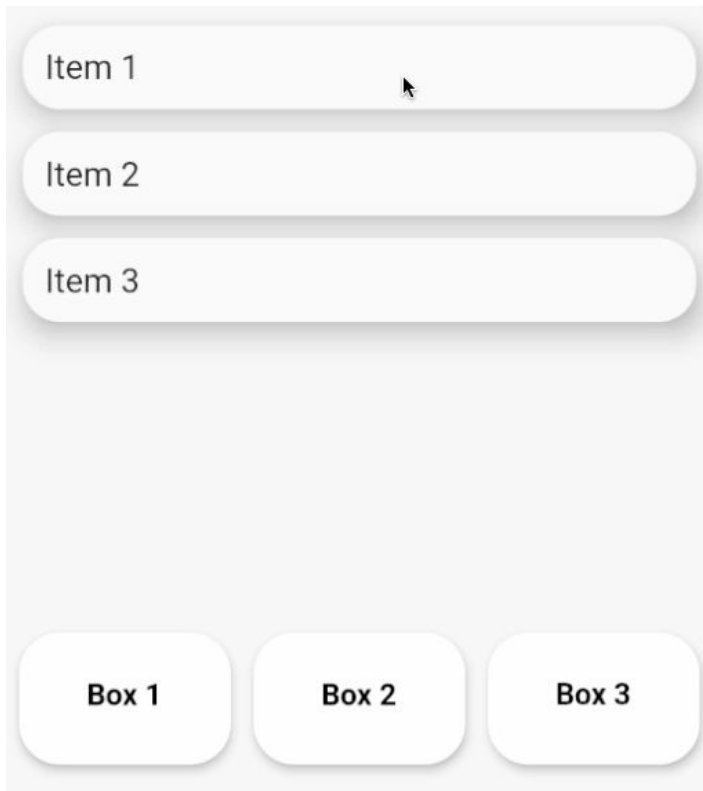
# Column

```
Column(  
  children: <Widget>[  
    Circle(),  
    Circle(),  
    Circle(),  
    Circle(),  
    Circle(),  
  ],  
)
```



# Drag & Drop

```
Draggable<Item>(  
  data: item,  
  dragAnchorStrategy: pointerDragAnchorStrategy,  
  feedback: DraggingListItem(  
    dragKey: _draggableKey,  
    text: item.name,  
  ),  
  child: MenuItem(  
    name: item.name,  
  ),  
)  
  
DragTarget<Item>(  
  builder: (context, candidateItems, rejectedItems) {  
    return Box(  
      hasItems: customer.items.isNotEmpty,  
      highlighted: candidateItems.isNotEmpty,  
      customer: customer,  
    );  
  },  
  onAccept: (item) {  
    _itemDroppedOnCustomerCart(  
      item: item,  
      customer: customer,  
    );  
  },  
)
```





# Basic Widgets

- Text
- Button
- Icon
- Image
- Row, Column
- Container
- AppBar
- Scaffold





# Text

Hello, Ben! How are you?

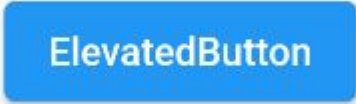
Hello *beautiful* **world**

```
//var name = "Ben";  
Text(  
  'Hello, $_name! How are you?',  
)  
  
const Text.rich(  
  TextSpan(  
    text: 'Hello',  
    children: <TextSpan>[  
      TextSpan(text: ' beautiful ', style: TextStyle(fontStyle:  
FontStyle.italic)),  
      TextSpan(text: 'world', style: TextStyle(fontWeight:  
FontWeight.bold)),  
    ],  
  ),  
)
```





# ElevatedButton



ElevatedButton

```
ElevatedButton(  
  onPressed: () {  
    print("Hello");  
  },  
  child: const Text('ElevatedButton'),  
)
```



# Icon



```
Column(  
  children: [  
    Icon(Icons.home),  
    Icon(Icons.alarm),  
    Icon(Icons.shopping_cart),  
    Icon(Icons.favorite)  
  ],  
)
```



# Image



```
Image.asset('images/owl-2.jpg')
```

```
Image.network('https://flutter.github.io/assets-for-api-docs/assets/widgets/owl-2.jpg')
```

```
Image.file(  
  File('/storage/emulated/0/Download/owl-2.jpg'),  
)
```



# Row, Column



```
Row(  
  children: [  
    Icon(Icons.home),  
    Icon(Icons.alarm),  
    Icon(Icons.shopping_cart),  
    Icon(Icons.favorite)  
  ],  
)
```

```
Column(  
  children: [  
    Icon(Icons.home),  
    Icon(Icons.alarm),  
    Icon(Icons.shopping_cart),  
    Icon(Icons.favorite)  
  ],  
)
```



# Container



```
Container(  
  decoration: BoxDecoration(  
    border: Border.all(color: Colors.black),  
    color: Colors.red),  
  padding: EdgeInsets.all(16),  
  child: Icon(Icons.home),  
)
```



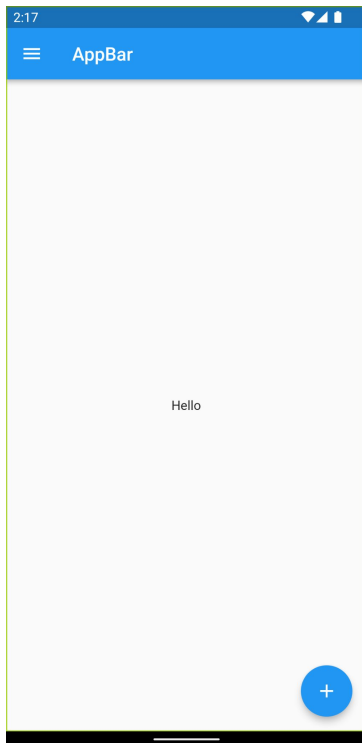
# AppBar



```
AppBar(  
  leading: Icon(Icons.menu),  
  title: Text("AppBar Widget"),  
  actions: [  
    IconButton(onPressed: () {}, icon: Icon(Icons.favorite)),  
    IconButton(onPressed: () {}, icon: Icon(Icons.search))  
  ],  
)
```



# Scaffold



```
Scaffold(  
  appBar: AppBar(  
    leading: Icon(Icons.menu),  
    title: Text("AppBar"),  
  ),  
  body: Center(  
    child: Text("Hello")  
  ),  
  floatingActionButton: FloatingActionButton(  
    onPressed: () {},  
    child: Icon(Icons.add),  
  )  
)
```





# Layout Widgets

- Single-child Layout Widgets
- Multi-child Layout Widgets







# Single-child Layout Widgets

- Container
- Center
- Align
- Padding
- SizedBox



# Container



```
Container(  
  decoration: BoxDecoration(  
    border: Border.all(color: Colors.black),  
    color: Colors.red),  
  child: Icon(Icons.home),  
)
```



# Center



```
Center(  
  child: ElevatedButton(  
    onPressed: () {},  
    child: Text("Skooldio"),  
  ),  
)
```



# Align



```
Container(  
  color: Colors.blue[50],  
  child: Align(  
    alignment: Alignment.topRight,  
    child: FlutterLogo(  
      size: 60,  
    ),  
  ),  
)
```



# Padding



```
Container(  
  color: Colors.blue,  
  child: Padding(  
    padding: EdgeInsets.all(16),  
    child: Text("Skooldio"),  
  )  
)
```



# SizedBox

Hello  
World

Hello World

```
Column(  
  children: [  
    Text("Hello"),  
    SizedBox(height: 16),  
    Text("World"),  
  ],  
)
```

```
Row(  
  children: [  
    Text("Hello"),  
    SizedBox(width: 16),  
    Text("World"),  
  ],  
)
```



# Example





# **Multi-child Layout Widgets**

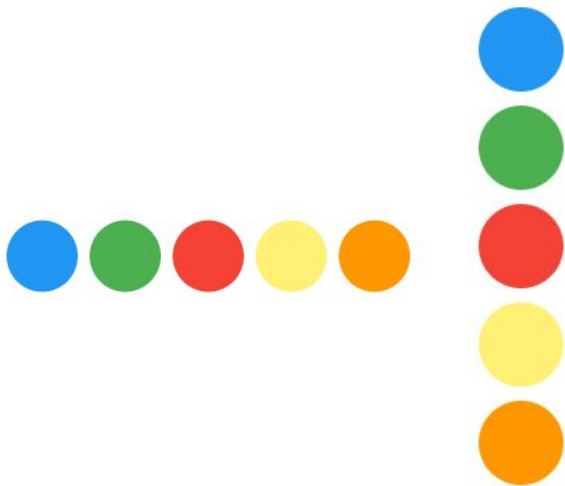
- Row & Column
- ListView
- GridView
- Stack







# Row & Column

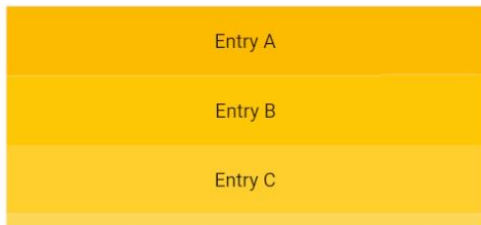


```
Row(  
  children: [  
    Circle(),  
    Circle(),  
    Circle(),  
    Circle(),  
    Circle(),  
  ],  
)
```

```
Column(  
  children: [  
    Circle(),  
    Circle(),  
    Circle(),  
    Circle(),  
    Circle(),  
  ],  
)
```



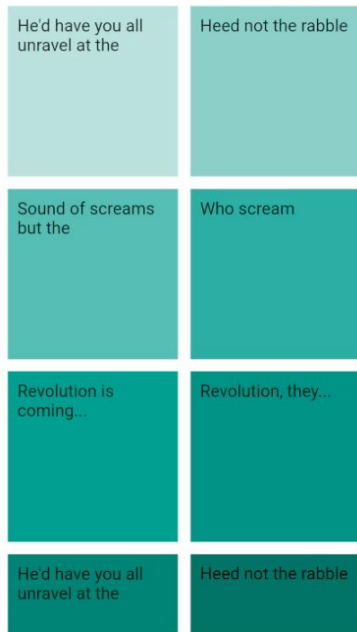
# ListView



```
ListView(  
  padding: const EdgeInsets.all(8),  
  children: <Widget>[  
    Container(  
      height: 50,  
      color: Colors.amber[600],  
      child: const Center(child: Text('Entry A')),  
    ),  
    Container(  
      height: 50,  
      color: Colors.amber[500],  
      child: const Center(child: Text('Entry B')),  
    ),  
    Container(  
      height: 50,  
      color: Colors.amber[400],  
      child: const Center(child: Text('Entry C')),  
    ),  
    Container(  
      height: 50,  
      color: Colors.amber[300],  
      child: const Center(child: Text('Entry D')),  
    ),  
    Container(  
      height: 50,  
      color: Colors.amber[200],  
      child: const Center(child: Text('Entry E')),  
    ),  
  ],  
)
```



# GridView



```
GridView.count(  
  padding: const EdgeInsets.all(20),  
  crossAxisSpacing: 10,  
  mainAxisSpacing: 10,  
  crossAxisCount: 2,  
  children: <Widget>[  
    Box(),  
    Box(),  
    Box(),  
    Box(),  
    Box(),  
    Box(),  
    Box(),  
  ],  
)
```



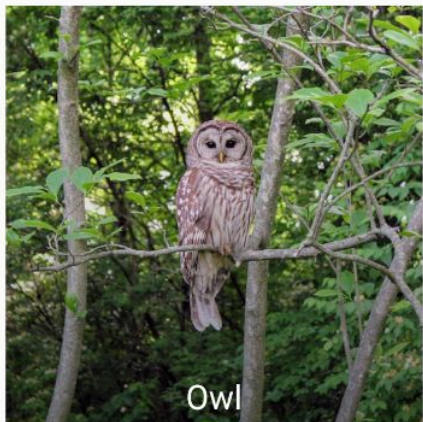
# Stack



```
Stack(  
  children: <Widget>[  
    Container(  
      width: 100,  
      height: 100,  
      color: Colors.red,  
    ),  
    Container(  
      width: 90,  
      height: 90,  
      color: Colors.green,  
    ),  
    Container(  
      width: 80,  
      height: 80,  
      color: Colors.blue,  
    ),  
  ],  
)
```



## Stack (cont.)



```
Stack(  
  children: <Widget>[  
    Container(  
      width: 250,  
      height: 250,  
      child:  
        Image.network("https://flutter.github.io/assets-for-a  
pi-docs/assets/widgets/owl-2.jpg"),  
    ),  
    Container(  
      padding: const EdgeInsets.all(5.0),  
      alignment: Alignment.bottomCenter,  
      decoration: BoxDecoration(...)  
      child: const Text('Owl')  
    ),  
  ],  
)
```



# Example





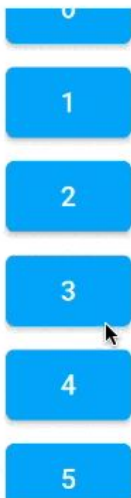
# Scrolling Widgets (Sliver)

- กล่องที่ใส่ของ แล้ว  
สามารถเลื่อน content  
ข้างในได้
- Widget ที่ตอบสนองต่อ  
การเลื่อนของ  
scrollview

- Scrollable Container
  - SingleChildScrollView
  - CustomScrollView
- Sliver Widget
  - SliverAppBar
  - SliverList
  - SliverGrid



# SingleChildScrollView

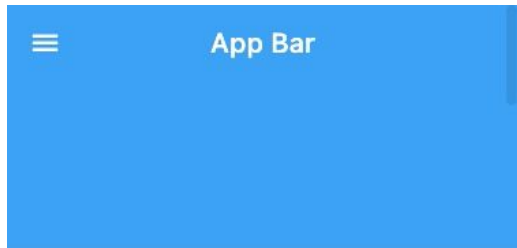


```
    SizedBox(  
      width: 250,  
      height: 250,  
      child: SingleChildScrollView(  
        child: Column(  
          children: List.generate(10, (index) => ElevatedButton(  
            onPressed: () {},  
            child: Text("$index"),  
          )  
        ),  
      ),  
    ),  
  ),  
)
```





# SliverAppBar



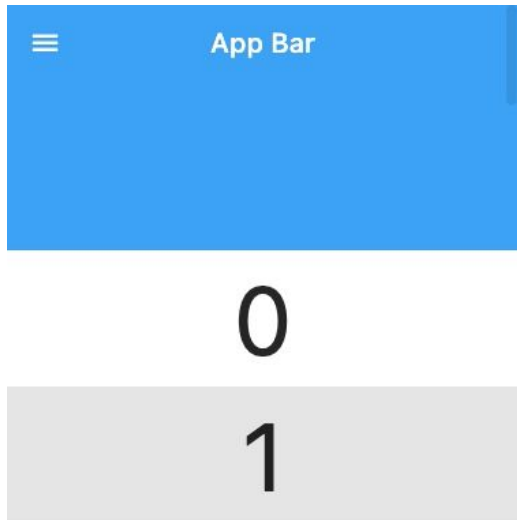
0

1

```
SliverAppBar(  
  pinned: true,  
  snap: true,  
  floating: true,  
  leading: Icon(Icons.menu),  
  expandedHeight: 160.0,  
  flexibleSpace: const FlexibleSpaceBar(  
    title: Text('App Bar'),  
  ),  
)
```




# SliverList



```
SliverList(  
  delegate: SliverChildBuilderDelegate(  
    (BuildContext context, int index) {  
      return Container(  
        color: index.isOdd ? Colors.white : Colors.black12,  
        height: 100.0,  
        child: Center(  
          child: Text('$index'),  
        ),  
      );  
    },  
    childCount: 20,  
  ),  
)
```



# SliverGrid

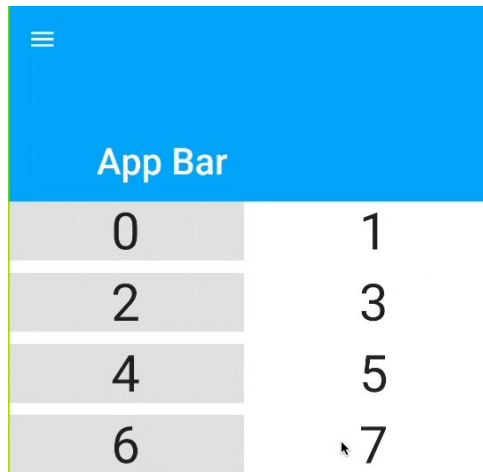


App Bar	
0	1
2	3
4	5
6	7

```
SliverGrid(  
  gridDelegate: SliverGridDelegateWithMaxCrossAxisExtent(  
    maxCrossAxisExtent: 200.0,  
    mainAxisSpacing: 10.0,  
    crossAxisSpacing: 10.0,  
    childAspectRatio: 4.0,  
  ),  
  delegate: SliverChildBuilderDelegate(...),  
)
```



# CustomScrollView



```
CustomScrollView(  
  slivers: <Widget>[  
    SliverAppBar(...),  
    SliverGrid(...),  
  ],  
)
```



# Exercise (1)

Build a simple application with Widgets



# Introduction to Widgets

