

Week 11 : Layouts and Stateful Widgets

ผศ. ดร. เกื้อแก้ว ธเนศวร

kejkaew.tha@mail.kmutt.ac.th

ครั้งที่	วันที่	หัวข้อ
6	21/2/2566	Flutter – Basics of Dart Programming
7	28/2/2566	Article: Methodology + submit background
8	7/3/2566	Flutter – OOP and AppBar Widget
9	14/3/2566	Flutter – More Widgets and Layouts
10	21/3/2566	Article: Experiment and results + submit methodology
12	28/3/2566	Flutter – Layouts and Stateful Widget
11	4/4/2566	Article: Conclusions and future work + submit experiment and results
13	11/4/2566	ไม่มีเรียน (GDM443/DMT443)
14	18/4/2566	No class
15	25/4/2566	Article: Abstract
16	2/5/2566	Flutter - Data Storage and Management
17	9/5/2566	Flutter – Project example
18	16/5/2566	No class
19	23/5/2566	Flutter - ส่งโปรเจค

Last week

ListView

DrawerHeader widget

UserAccountsDrawerHeader

GestureDetector

Text widget

Layout widgets

Assets and Images

Today outline

Refactoring widgets

Navigator

Stateful widget

Textfield

Layout: Gridview

Layout: Gridview builder

Layout: Stack

Refactoring widgets

It is very useful in every programming to break up your code into sub-parts for reusability of code, maybe you've created a button and you want to use the same button overall the app so you may refactor it into a separate file.

Example:

We have: in lib folder

week11.dart

widgets folder

- widgets.dart

- inputscreen.dart

- gridbuilder.dart

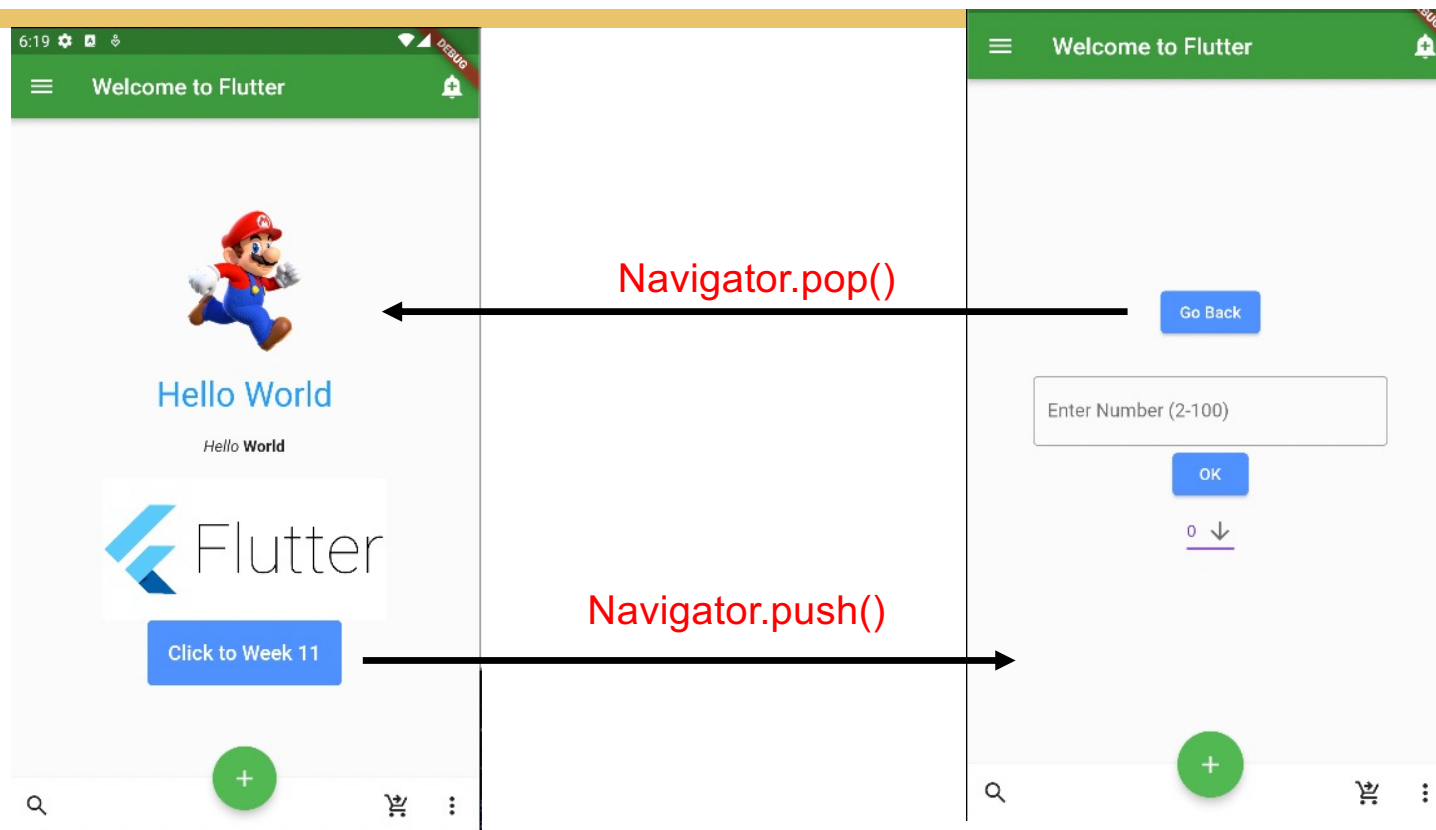
- grid.dart

Navigate to a new screen (route)

Navigate the new route using `Navigator.push()`

Return to the first route using `Navigator.pop()`

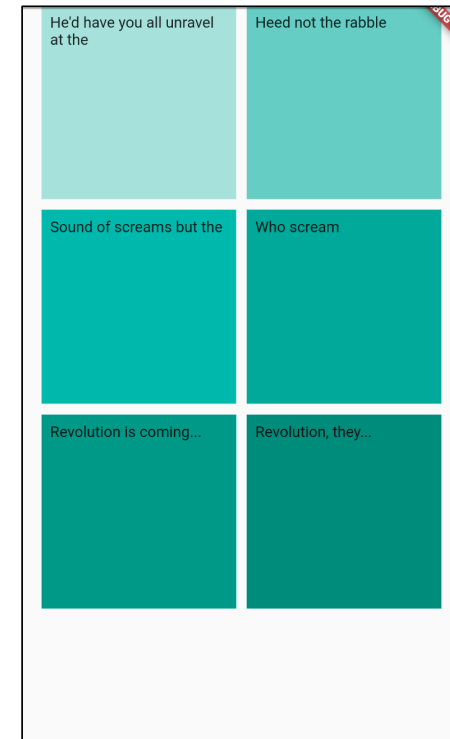
Example



Activity 1: add new route to gridRoute()

เมื่อกดปุ่มจะได้ดังตัวอย่าง

class gridRoute อยู่ใน grid.dart นะ



Stateful widget

A **stateful** widget is dynamic.

For example, it can change its appearance in response to events triggered by user interactions or when it receives data.

Checkbox, Radio, Slider, InkWell, Form, and TextField are examples of stateful widgets.

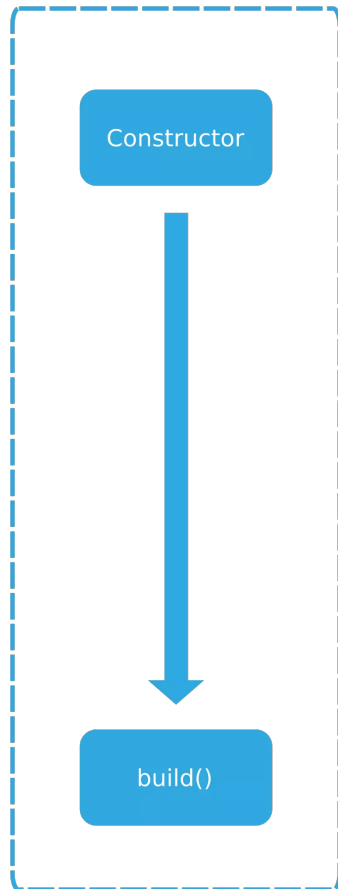
Stateful widgets subclass **StatefulWidget**.

Stateful widget

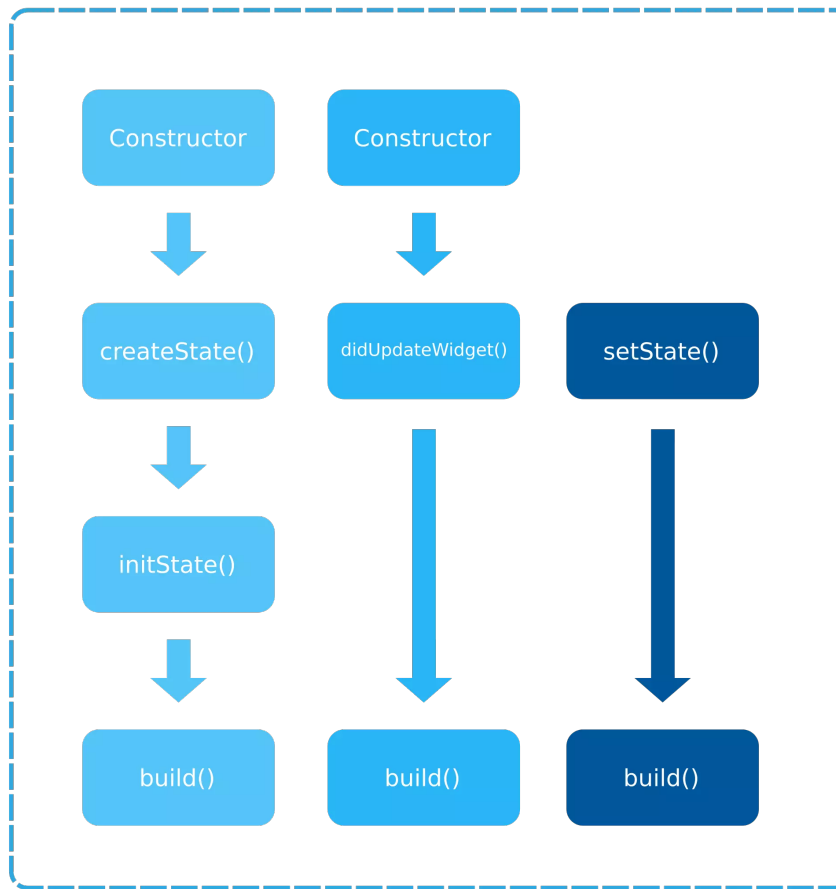
A StatelessWidget will never rebuild by itself, but it has the ability to do so from external.

A StatefulWidget can trigger the rebuild by itself (e. g. by calling `setState()`).

Stateless



Stateful



Textfield

A TextField is an input element which holds the alphanumeric data, such as name, password, address, etc.

TextField in Flutter is the most commonly used text input widget that allows users to collect inputs from the keyboard into an app.

Some of the most common attributes (TextField)

decoration: It is used to show the decoration around TextField.

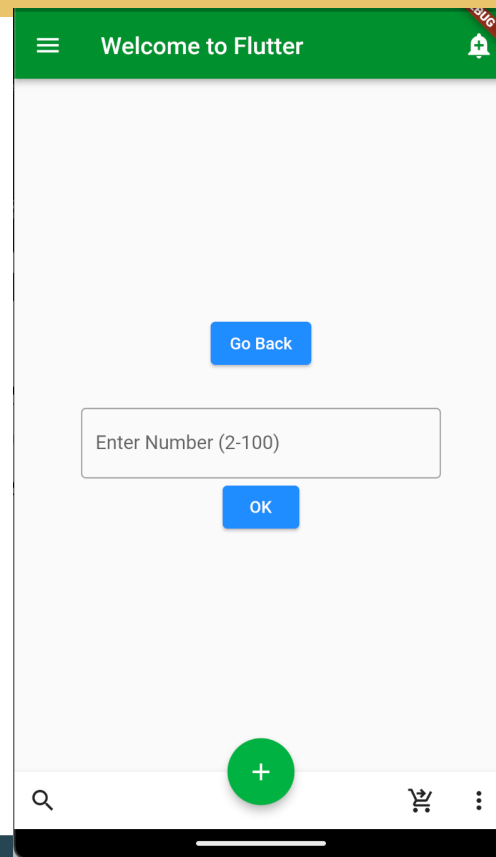
border: It is used to create a default rounded rectangle border around TextField.

labelText: It is used to show the label text on the selection of TextField.

hintText: It is used to show the hint text inside TextField.

icon: It is used to add icons directly to the TextField.

Example: Textfield



Activity 2: Dropdown

DropdownButton() จะมีส่วนที่ required อยู่ 4 ตัวด้วยกันคือ

items (List<DropdownMenuItem<String>>): โดยจะรับค่า

เป็น List<DropdownMenuItem<String>>

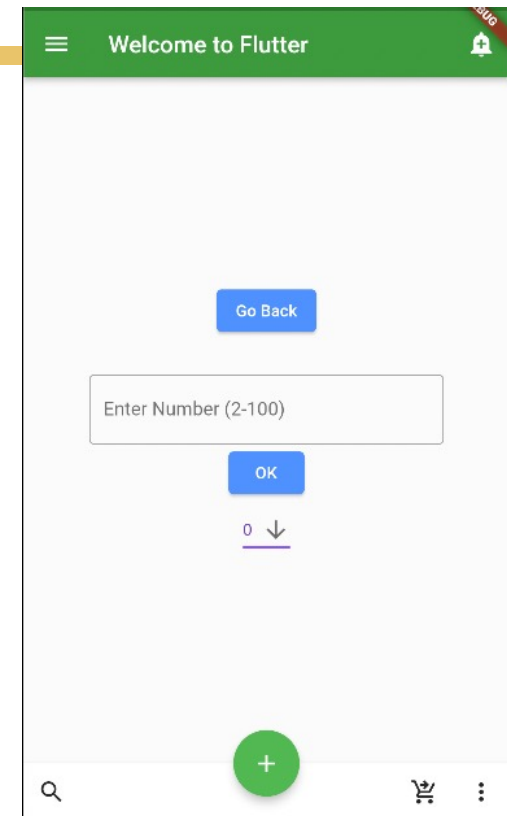
onChanged (void Function(String)): สำหรับ implement ต่อว่าเมื่อ selected
แล้วจะให้ทำอะไรต่อ ซึ่งอย่างแรกเลยคือ update UI.

hint (Widget): Widget ที่ต้องการแสดงเมื่อสถานะ idle

value (String): String ที่จะแสดงหลังจากที่มีการเลือกแล้ว

Activity 2: Dropdown

ทำการ navigator route ไปที่หน้าที่แสดง
gridbuilder.dart เหมือนกับการกดปุ่ม OK
โดยจะทำการเปลี่ยน route ก็ต่อเมื่อมีการเลือก
ตัวเลขใน dropdown
มี class DropdownButtonExample ให้มาแล้ว



Other Multiple Child Widgets

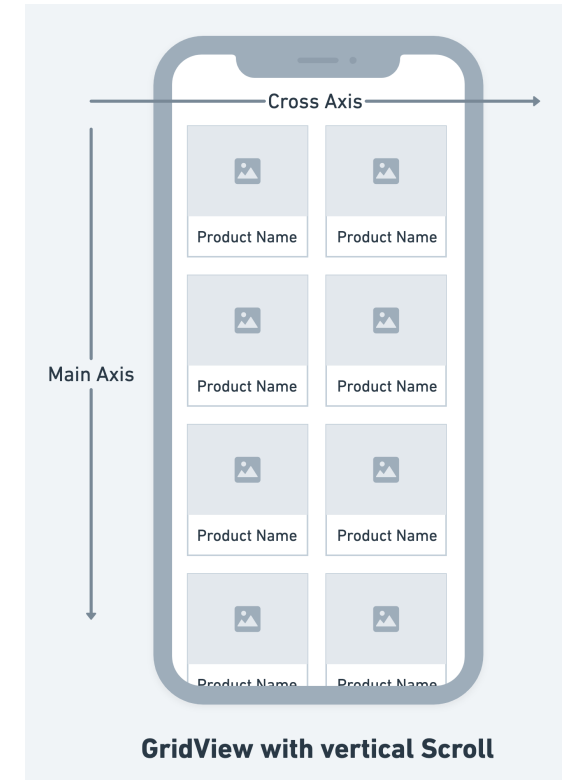
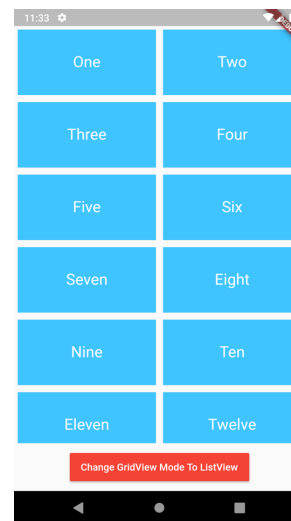
GridView – Allows to arrange its children as gallery.

Attribute:

crossAxisCount: It is used to specify the number of columns in a grid view.

crossAxisSpacing: It is used to specify the number of pixels between each child widget listed in the cross axis.

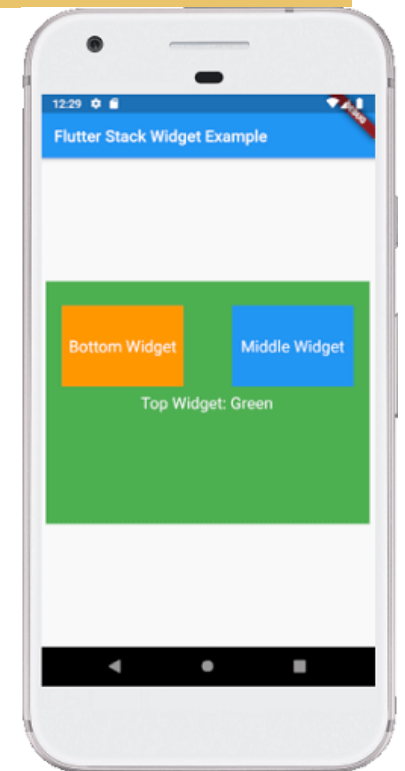
- **mainAxisSpacing**: It is used to specify the number of pixels between each child widget listed in the main axis.
- **childAspectRatio**: ratio of width and height
- **maxCrossAxisExtent**: max width



Other Multiple Child Widgets

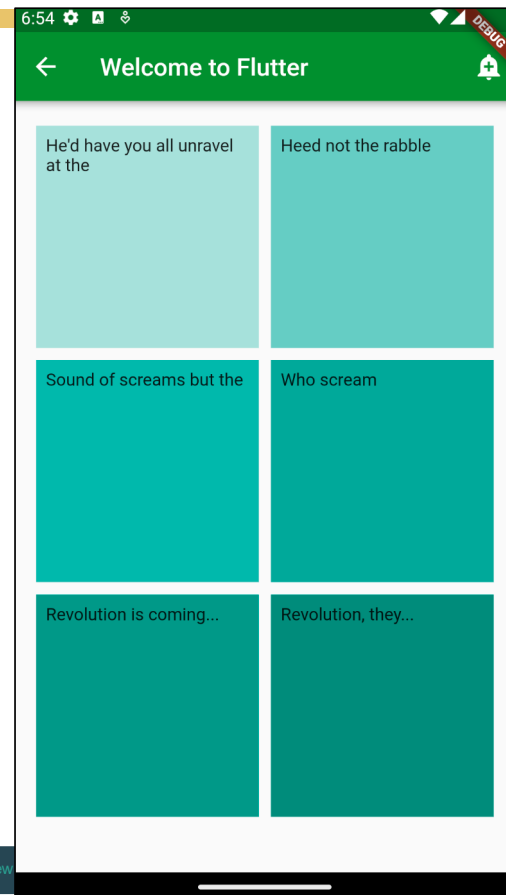
Stack - Stack based widget

This class is useful if you want to overlap several children in a simple way, for example having some text and an image, overlaid with a gradient and a button attached to the bottom.



Example: GridView

grid.dart



Gridview builder

If your Flutter app needs to display a grid view of a large or infinite number of items (a list of products fetched from API, for instance) then **you should use `GridView.builder()` instead of `GridView()`.**

The `builder()` is called only for those items that are actually visible so your app performance will be improved.

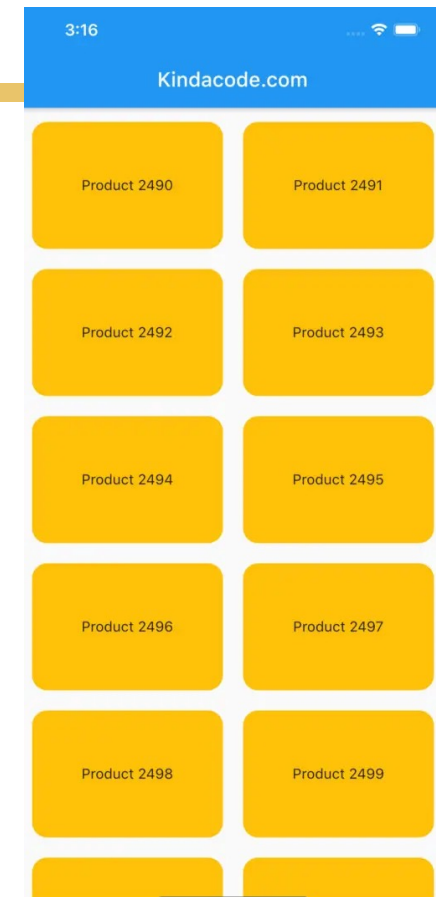
Example

We will create:

```
final List<Map> myProducts = List.generate(100,  
  (index) => {"id": index, "name": "Product  
$index"}) .toList();
```

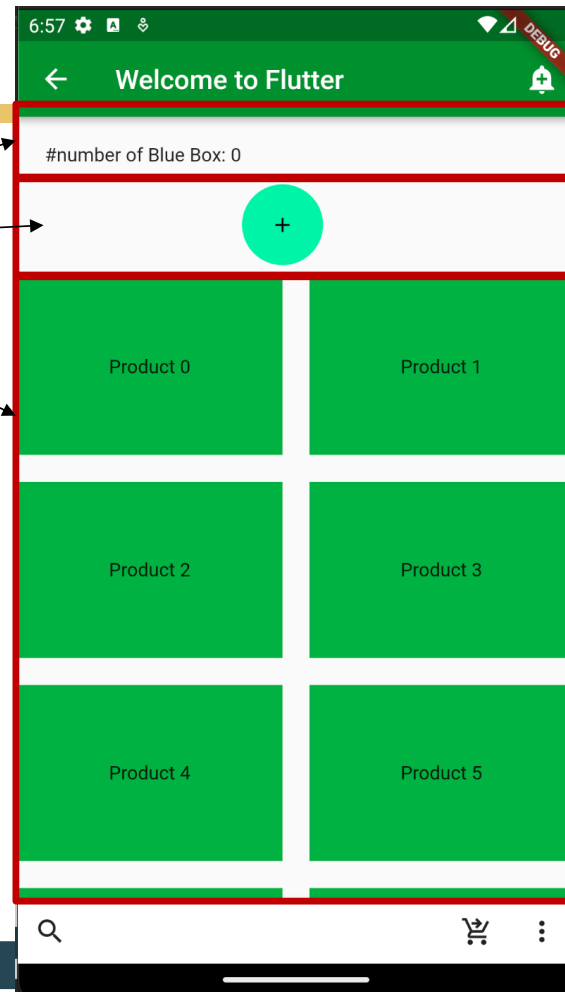
Example 1 : GridView builder

```
GridView.builder(  
  gridDelegate: const SliverGridDelegateWithMaxCrossAxisExtent(  
    maxCrossAxisExtent: 200,  
    childAspectRatio: 3 / 2,  
    crossAxisSpacing: 20,  
    mainAxisSpacing: 20),  
  itemCount: myProducts.length,  
  itemBuilder: (BuildContext ctx, index) {  
    return Container(  
      alignment: Alignment.center,  
      decoration: BoxDecoration(  
        color: Colors.amber,  
        borderRadius: BorderRadius.circular(15)),  
      child: Text(myProducts[index]["name"]),  
    );  
  }  
),
```

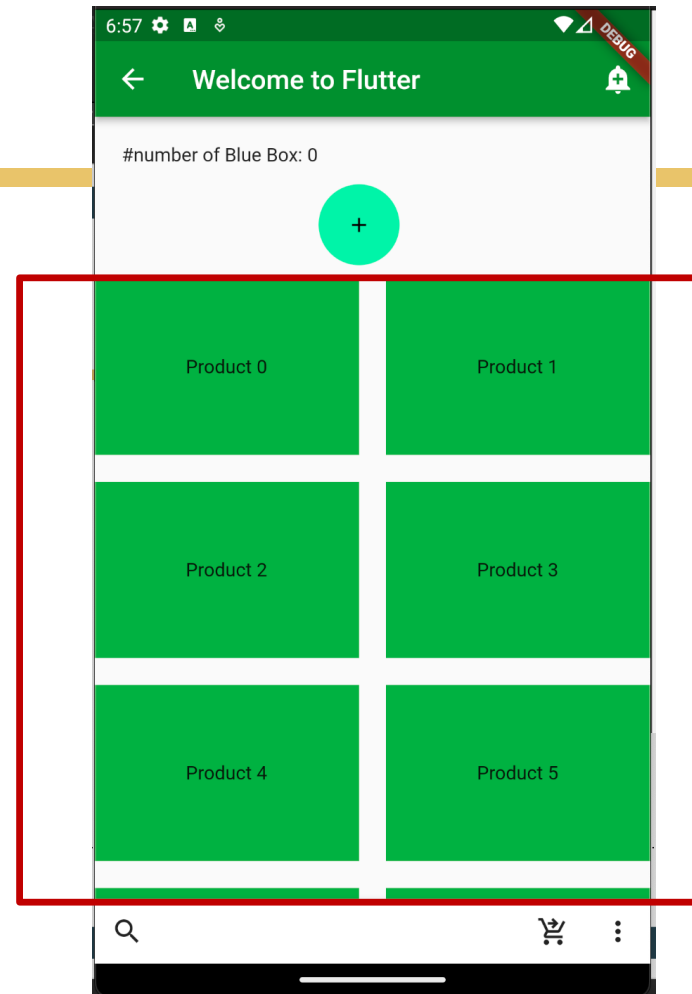


Example 2: Stack

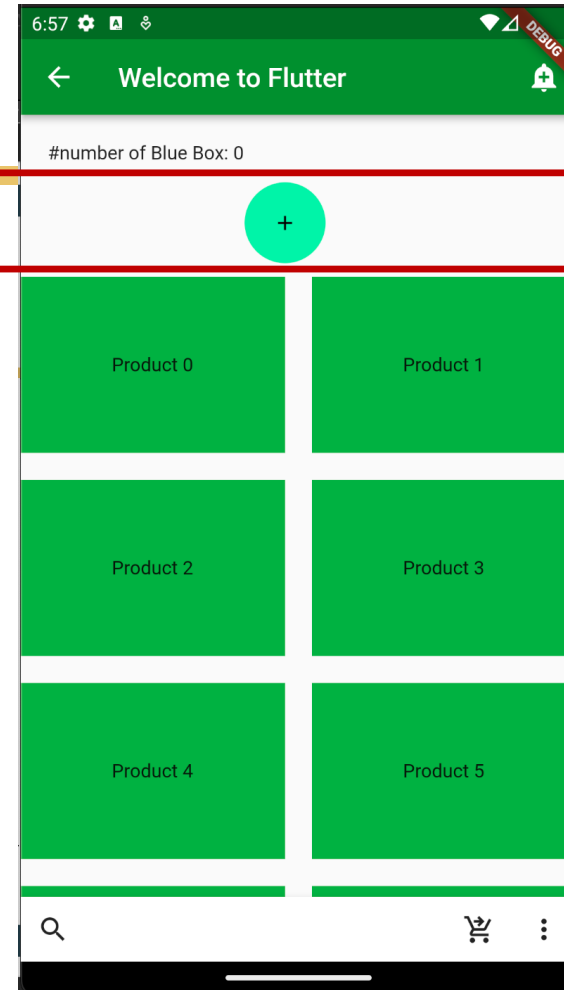
Stack



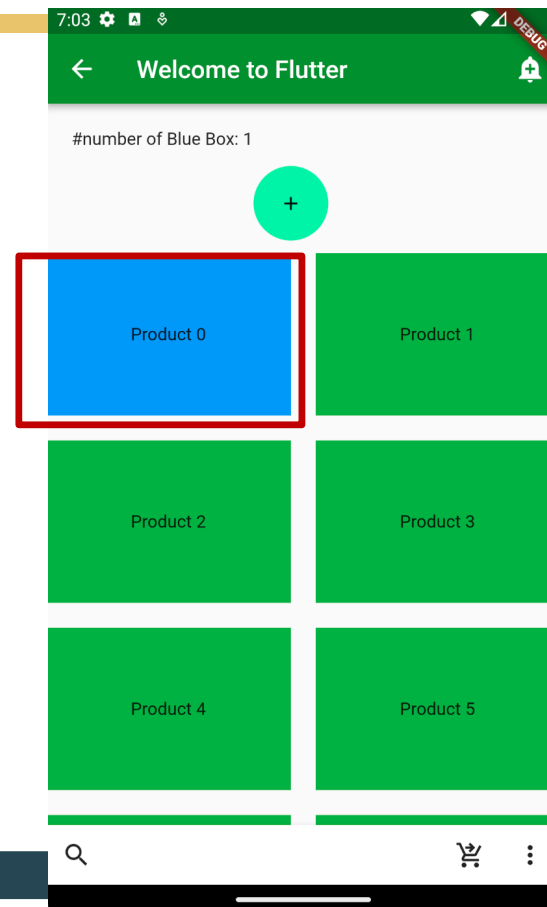
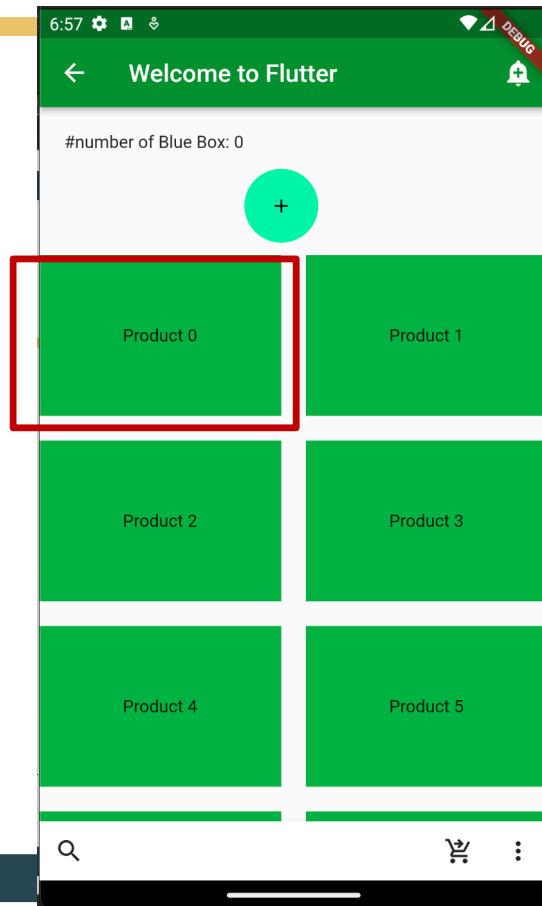
Example 3: GridView builder



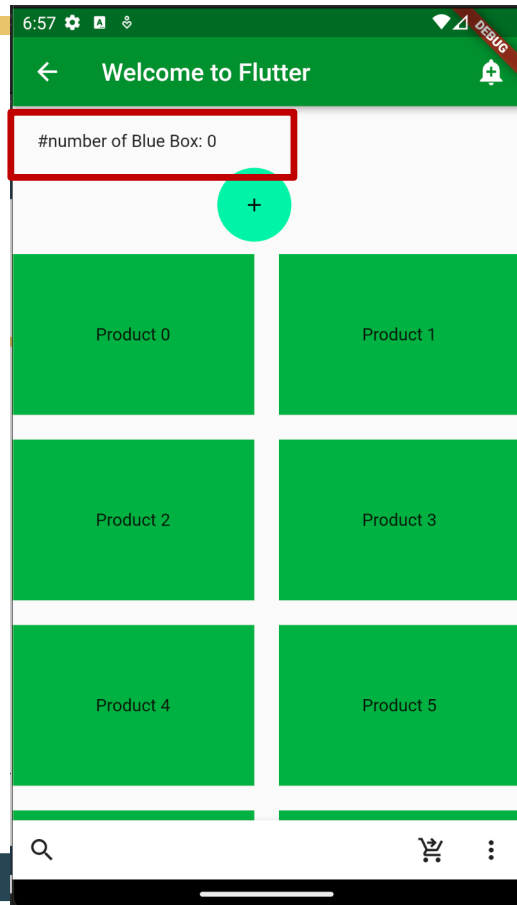
Example 4: add gridview child



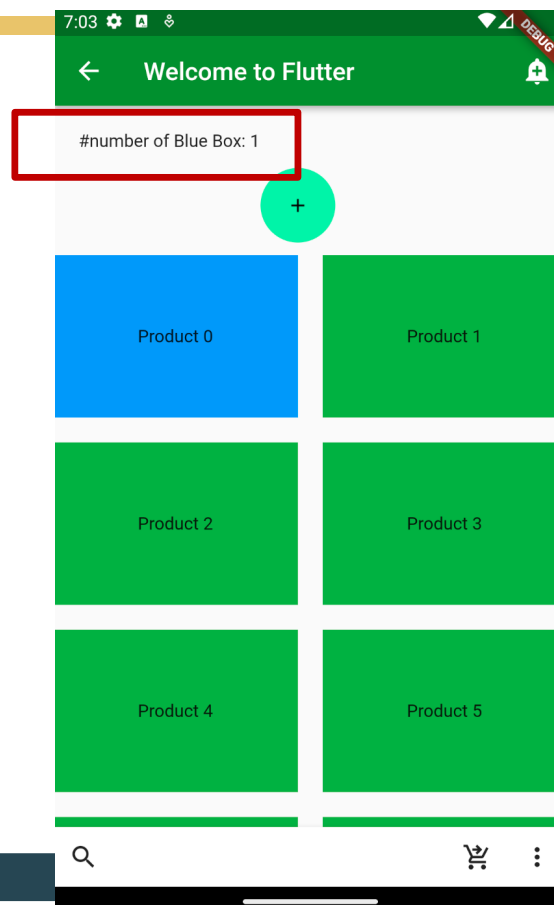
Example 5: change colors in gridview child



Example 6: change text



3/27/23

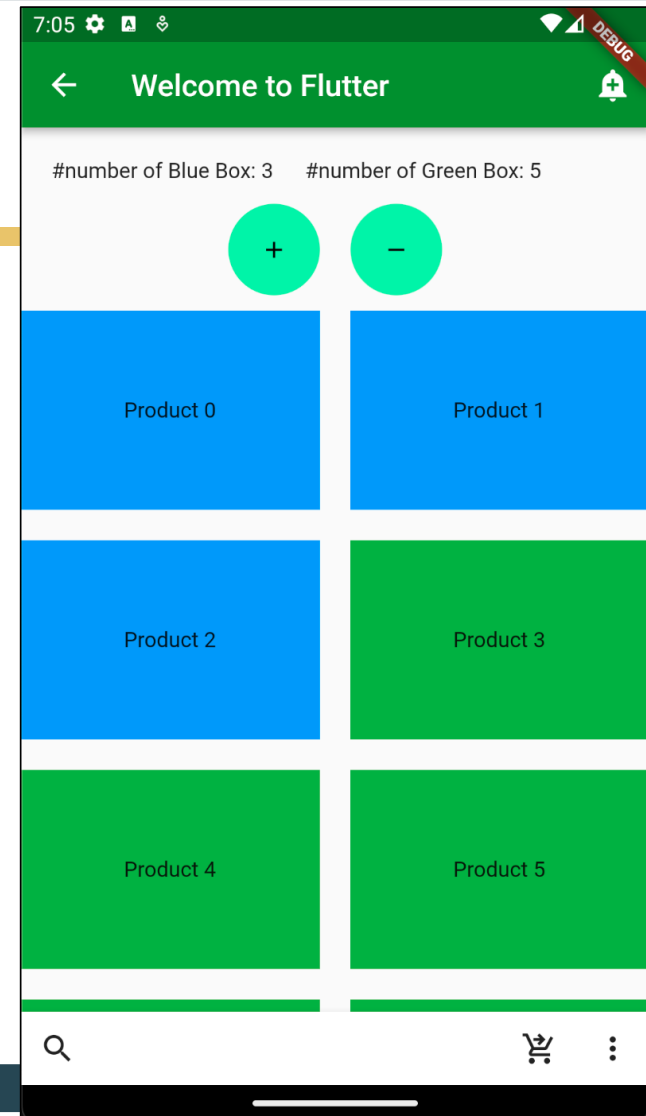


Kejkaew Thanasuan

Activity 3

เพิ่มปุ่มลดจำนวน child ใน gridView
(อาจจะต้องใช้ removeLast
method ในการลดจำนวนสมาชิกใน
List)

แสดงข้อความจำนวน child ของสี
เหลืองและสีฟ้า แบบตัวอย่าง



Week 11: Classroom game

ตอบคำถามตาม link นี้เลย...

<https://forms.gle/UWNrQSVG2rGXbWEA8>

Reference

<https://dart-tutorial.com/introduction-and-basics/>

[https://www.tutorialspoint.com/flutter/flutter_introduction_to_widgets
.htm](https://www.tutorialspoint.com/flutter/flutter_introduction_to_widgets.htm)

<https://docs.flutter.dev/development/ui/widgets-intro>