

LAB-8

SMART DEVICE PROGRAMMING



Name: Shrey K. Naik

Roll No.: CE073

Batch: A4

ID: 20CEUOG036

GIT REPO:

https://github.com/naikshrey2308/CE073_SDP_Labs

TUTORIAL – 1

Padding Widget:

- It has padding property which use EdgeInsets widget which we can use to give either same or separate padding in all 4 directions.
Padding widget in flutter does exactly what its name says, it adds padding or empty space around a widget or a bunch of widgets.
- We can apply padding around any widget by placing it as the child of the Padding widget.
- The size of the child widget inside padding is constrained by how much space is remaining after adding empty space around.

The Padding widget adds empty space around any widget by using the abstract EdgeInsetsGeometry class.

Code Test 1:

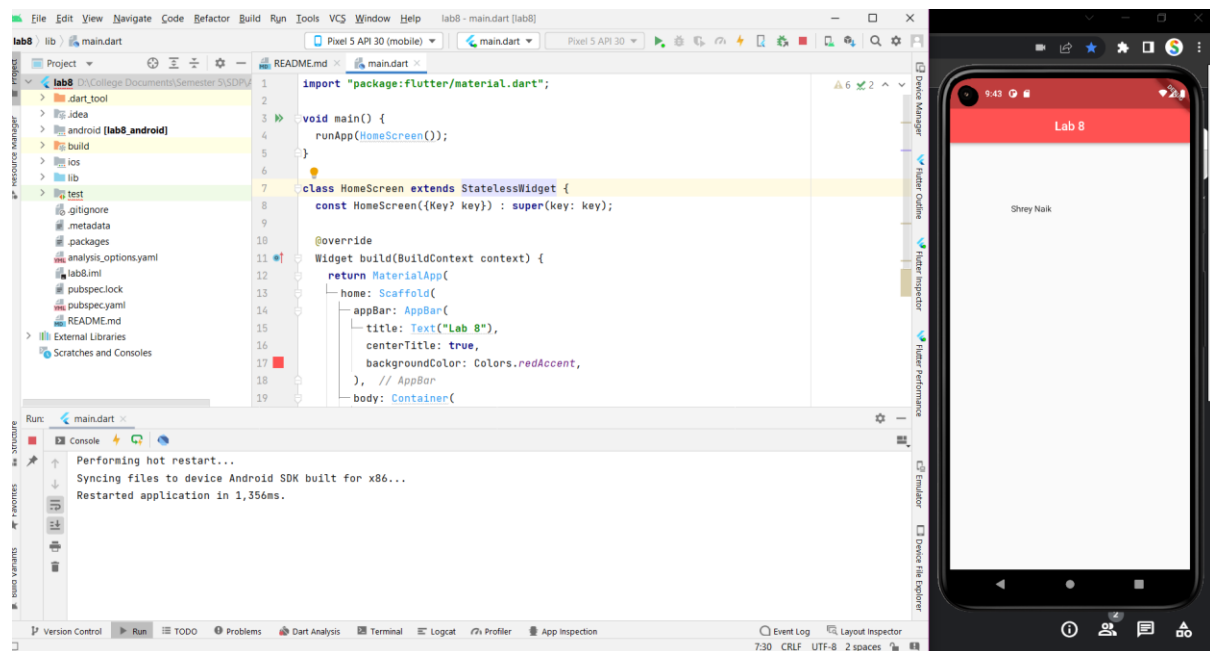
The Padding Class

```
import "package:flutter/material.dart";

void main() {
  runApp(HomeScreen());
}

class HomeScreen extends StatelessWidget {
  const HomeScreen({Key? key}) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(
          title: Text("Lab 8"),
          centerTitle: true,
          backgroundColor: Colors.redAccent,
        ),
        body: Container(
          child: Padding(
            padding: EdgeInsets.all(100),
            child: Text("Shrey Naik"),
          ),
        ),
      ),
    );
  }
}
```



Code Test 2:

The Row Widget

We have children property to the row widget where we can use set of widgets to place them in single row.

Here height of the row is equal to maximum height (all widgets inside row)

- It creates a horizontal array of children.
- **Alignment Properties:**
 - o We can align content as per our choice by using `mainAxisAlignment` and `crossAxisAlignment`.

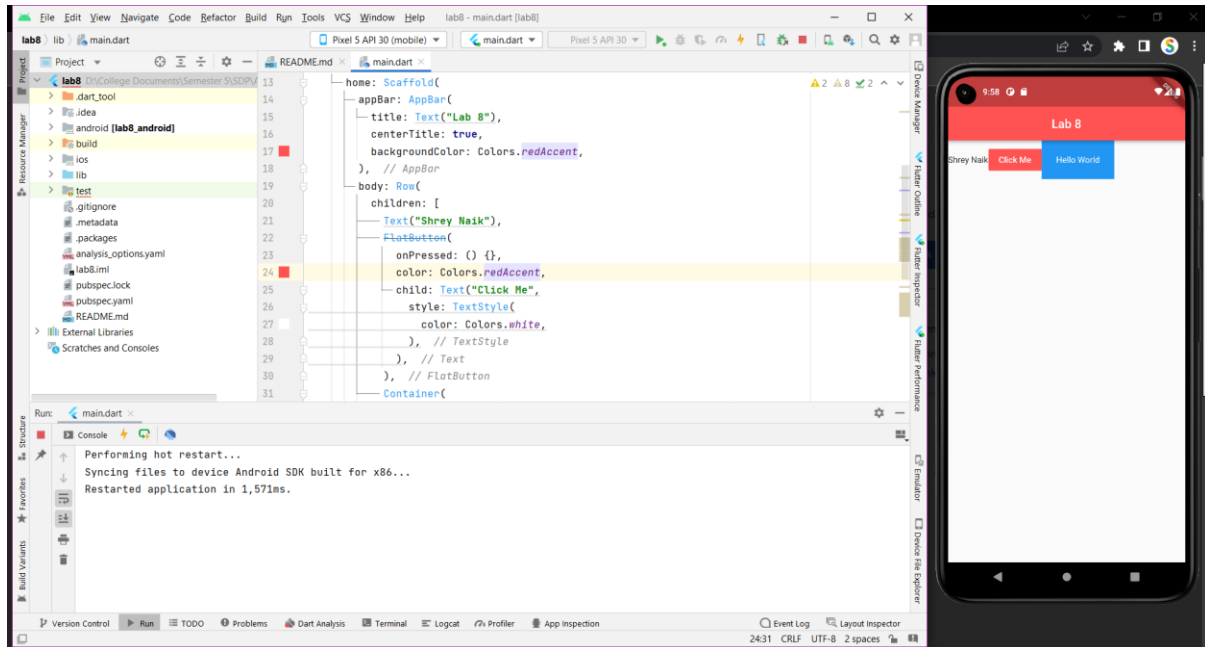
Row's `mainAxis` is horizontal and cross Axis to Row's main Axis is vertical. We can align children horizontally using `MainAxisAlignment` and vertically using `CrossAxisAlignment` in that row.

```
body: Row(
  children: [
    Text("Shrey Naik"),
    FlatButton(
      onPressed: () {},
      color: Colors.redAccent,
      child: Text("Click Me",
        style: TextStyle(
          color: Colors.white,
        ),
      ),
    ),
  ],
  Container(
    color: Colors.blue,
    padding: EdgeInsets.all(24),
    child: Text("Hello World",
      style: TextStyle(
        color: Colors.white,
```

```

),
),
)
]
),

```

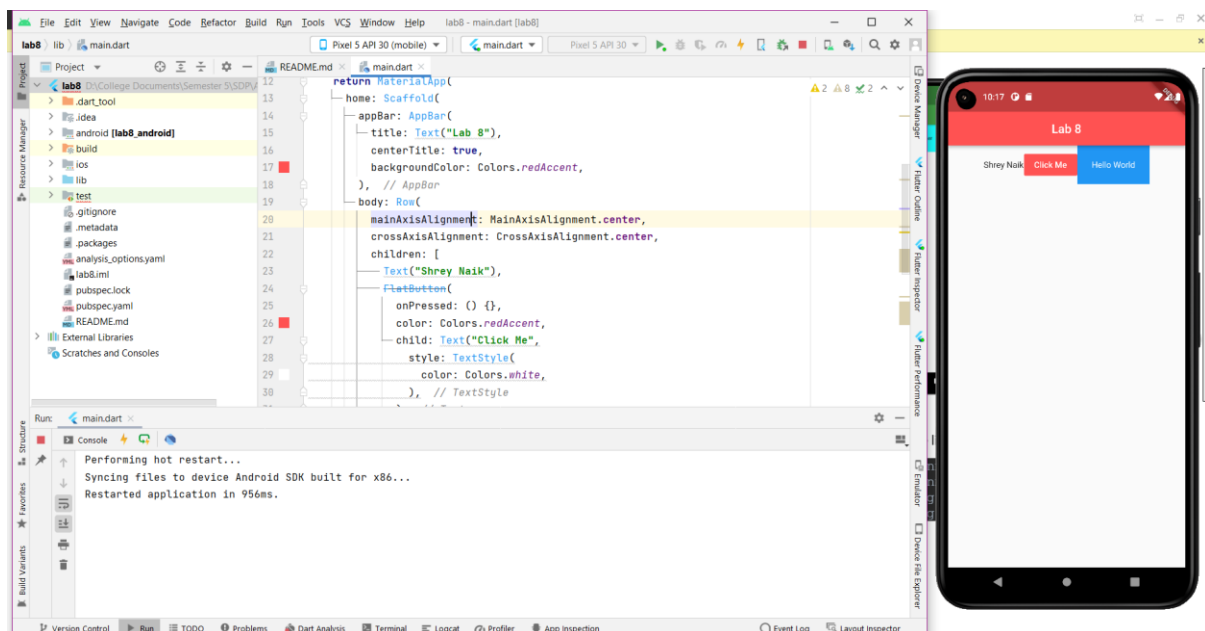


Alignment of Row

```

body: Row(
  mainAxisAlignment: MainAxisAlignment.center,
  crossAxisAlignment: CrossAxisAlignment.center,
  children: [

```

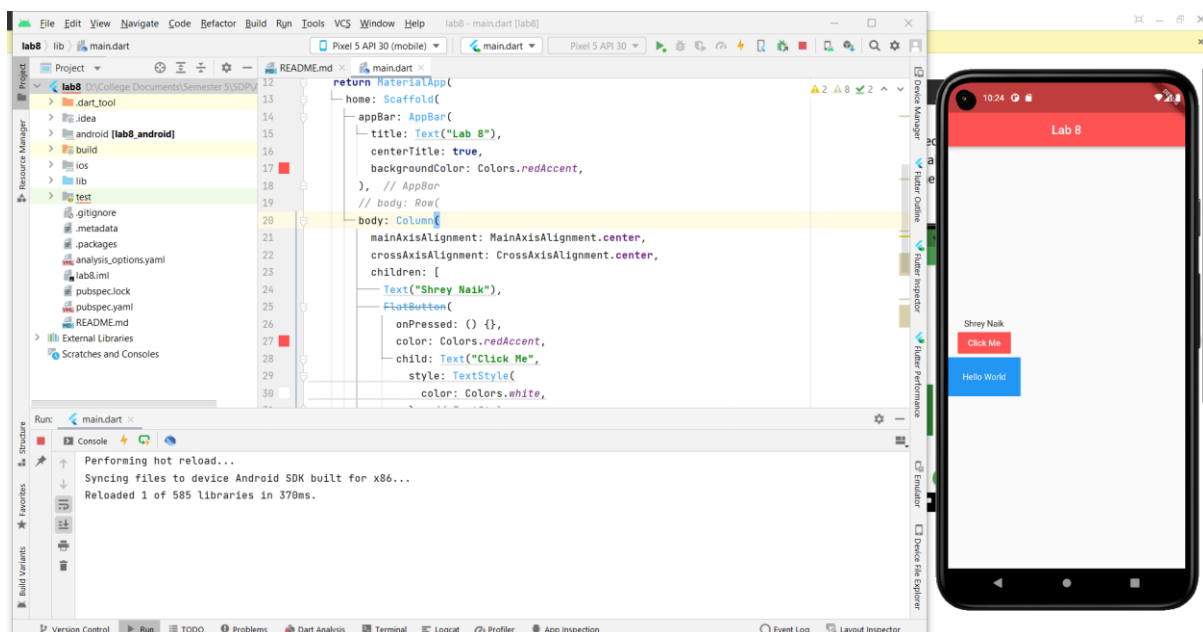


The Column Widget

Here Width of the column is equal to maximum (Width of all components)

- It creates a vertical array of children.
- **Alignment Properties:**
 - o In this also we have `mainAxisAlignment` and `crossAxisAlignment`. In column, children are aligned from top to bottom.
 - o Main Axis is vertical and the Cross Axis is horizontal.
 - o `MainAxisAlignment` aligns its children vertically and `CrossAxisAlignment` aligns horizontally in that Column.

```
body: Column(
  mainAxisAlignment: MainAxisAlignment.center,
  crossAxisAlignment: CrossAxisAlignment.center,
  children: [
```



Fixing the alignment

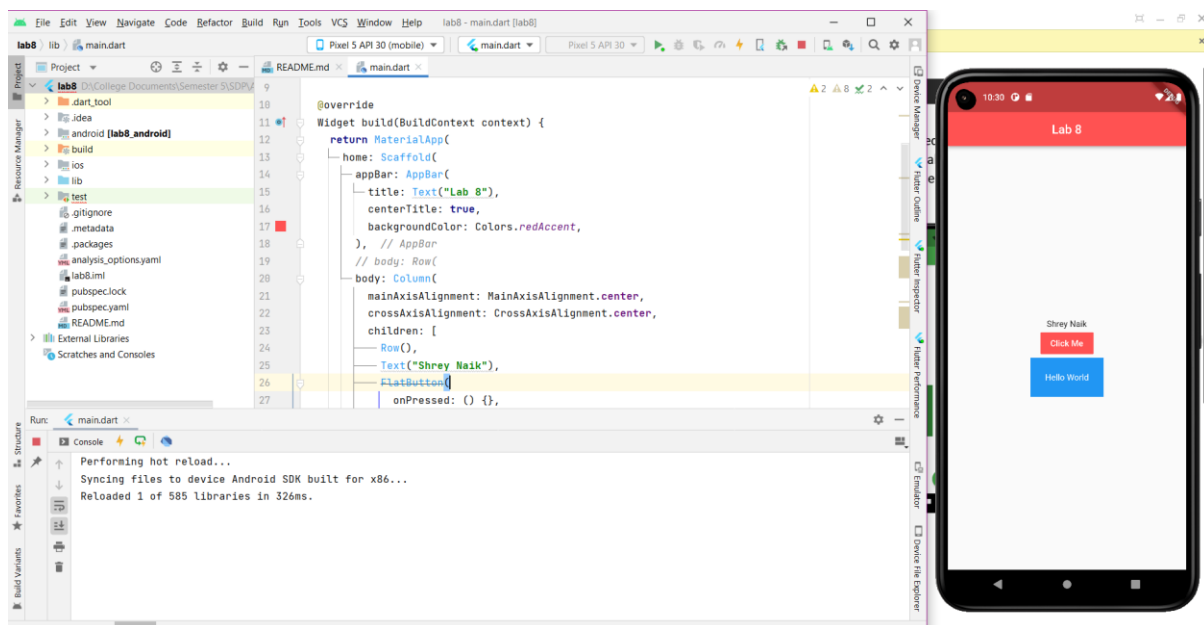
Here, we added one extra child `Row()`, the height of row is zero here but its width is 100%. Hence, as the width of the column is equal to the width of its widest child, the width of the column will become 100% and will fix the alignment issue.

```
body: Column(
  mainAxisAlignment: MainAxisAlignment.center,
  crossAxisAlignment: CrossAxisAlignment.center,
  children: [
    Row(),
    Text("Shrey Naik"),
    FlatButton(
      onPressed: () {},
      color: Colors.redAccent,
      child: Text("Click Me",
        style: TextStyle(
```

```

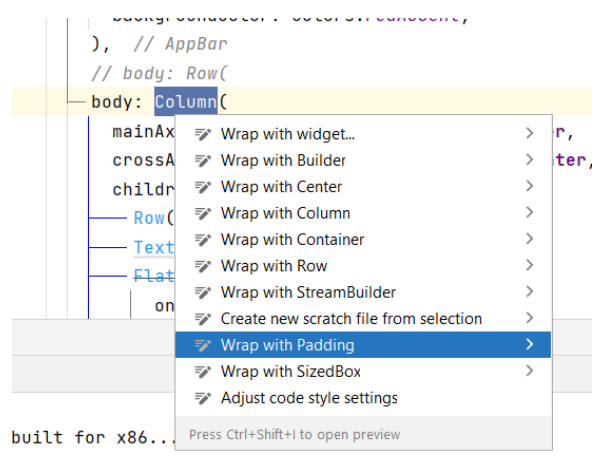
        color: Colors.white,
      ),
    ),
  ),
  Container(
    color: Colors.blue,
    padding: EdgeInsets.all(24),
    child: Text("Hello World",
      style: TextStyle(
        color: Colors.white,
      ),
    ),
  ),
)
]
),

```



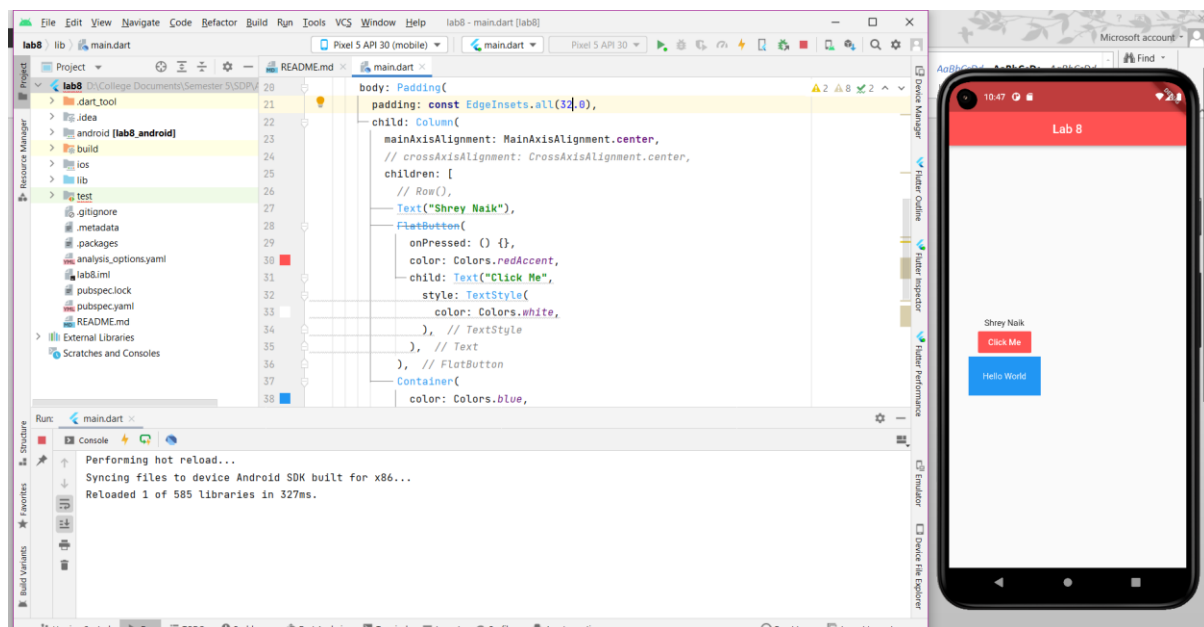
Some Tips

Wrap an element instantly by right click > show context actions.

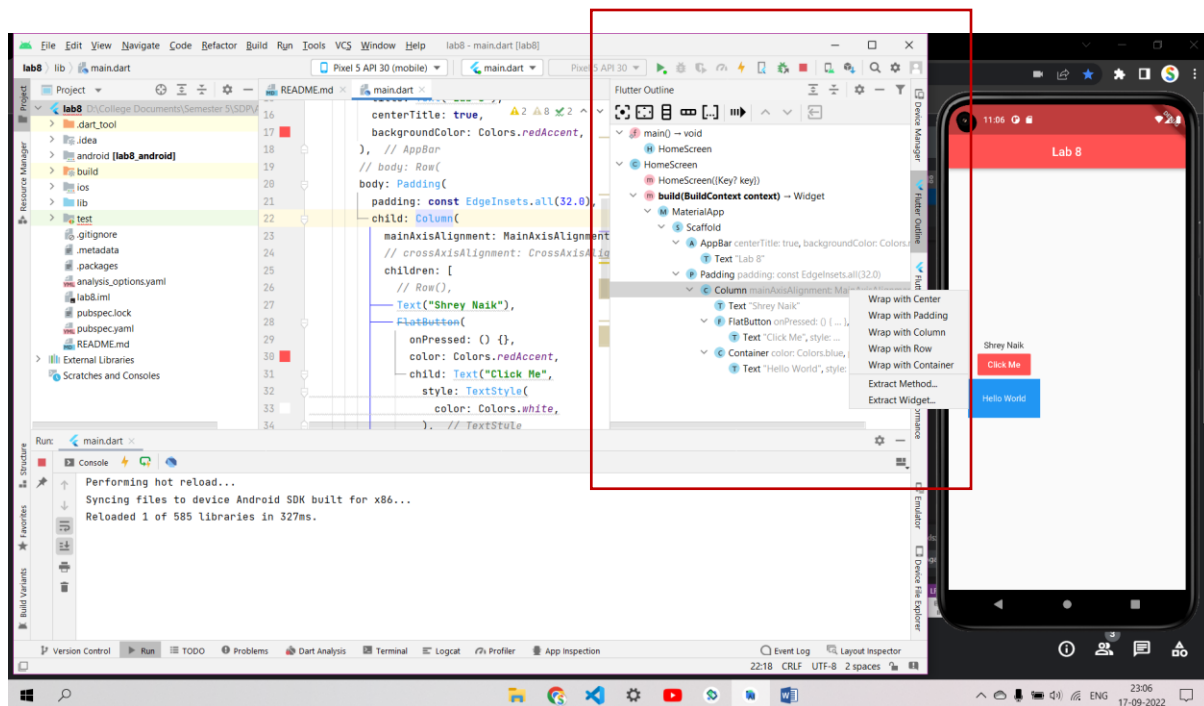


After clicking “Wrap with Padding”,

```
body: Padding(
  padding: const EdgeInsets.all(8.0),
  child: Column(
    mainAxisAlignment: MainAxisAlignment.center,
    crossAxisAlignment: CrossAxisAlignment.center,
    children: [
      // Row(),
      Text("Shrey Naik"),
      FlatButton(
        onPressed: () {},
        color: Colors.redAccent,
        child: Text("Click Me",
          style: TextStyle(
            color: Colors.white,
          ),
        ),
      ),
    ],
  ),
  Container(
    color: Colors.blue,
    padding: EdgeInsets.all(24),
    child: Text("Hello World",
      style: TextStyle(
        color: Colors.white,
      ),
    ),
  ),
),
],
),
),
```



The Flutter Outline



We can achieve the same outcome by the flutter outline.

Expanded and Flex widget:

- Expanded widget : Creates a widget that expands a child of a Row, Column, or Flex so that the child fills the available space along the flex widget's main axis.
- Flex widget : Flexible is a built-in widget in flutter which controls how a child of base flex widgets that are Row, Column, and Flex will fill the space available to it.

Expanded widget will take fix place while flex will take place as per its size.

Custom Design:

```
body: Padding(
  padding: const EdgeInsets.fromLTRB(10,20,10,20),
  child: Container(
    child: Column(
      children: [
        Row(
          children: [
            Expanded(
              child: Container(
                color: Colors.redAccent,
                child: Text(
                  'Expanded',
                  style: TextStyle(fontSize: 25),
                ),
              ),
            ),
            Flexible(child: Container(
              color: Colors.cyan[200],
              child: Text(
                'Flexible',

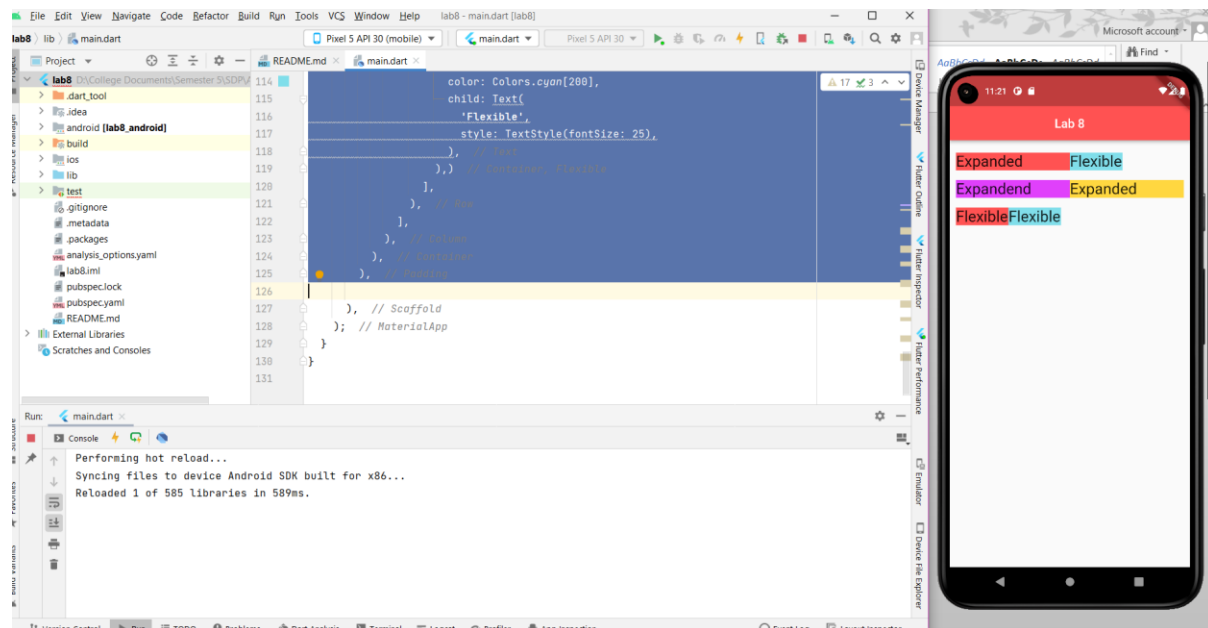
```



```

        style: TextStyle(fontSize: 25),
      ),
    ),
  ],
),
PreferredSize(
  height: 16.0,
),
Row(
  children: [
    Expanded(
      child: Container(
        color: Colors.purpleAccent,
        child: Text(
          'Expandend',
          style: TextStyle(fontSize: 25),
        ),
      ),
    ),
  ],
),
Expanded(
  child: Container(
    color: Colors.amberAccent,
    child: Text(
      'Expanded',
      style: TextStyle(fontSize: 25),
    ),
  ),
),
],
),
PreferredSize(
  height: 16.0,
),
Row(
  children: [
    Flexible(
      child: Container(
        color: Colors.redAccent,
        child: Text(
          'Flexible',
          style: TextStyle(fontSize: 25),
        ),
      ),
    ),
    Flexible(child: Container(
      color: Colors.cyan[200],
      child: Text(
        'Flexible',
        style: TextStyle(fontSize: 25),
      ),
    )),
  ],
),
],
),
),
),
),
),

```



TUTORIAL-2

Stateful Widgets:

```

/// TUTORIAL 2
import "package:flutter/material.dart";

void main() {
  runApp(HomeScreen2());
}

class HomeScreen2 extends StatefulWidget {
  const HomeScreen2({Key? key}) : super(key: key);

  @override
  State<HomeScreen2> createState() => _HomeScreen2State();
}

class _HomeScreen2State extends State<HomeScreen2> {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(
          title: Text("Stateful Widgets"),
          centerTitle: true,
          backgroundColor: Colors.redAccent,
        ),
        body: ProfilePage(),
      ),
    );
  }
}

class ProfilePage extends StatefulWidget {
  const ProfilePage({Key? key}) : super(key: key);

```

```

    @override
    State<ProfilePage> createState() => _ProfilePageState();
}

class _ProfilePageState extends State<ProfilePage> {

  num age = 20;

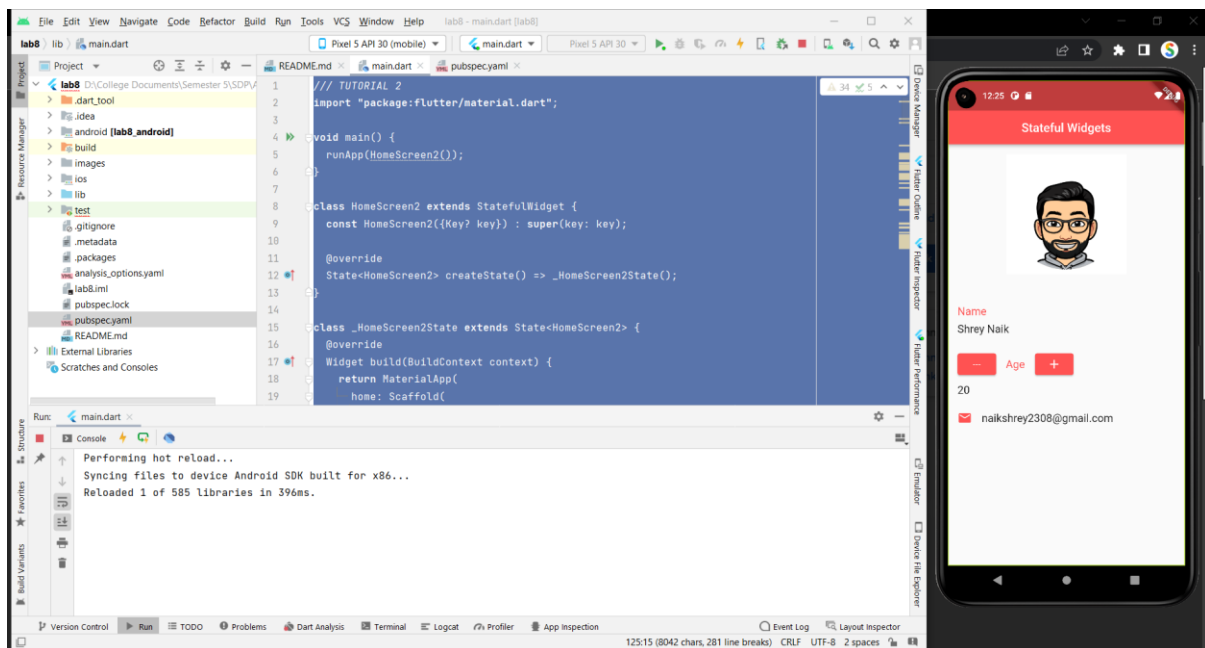
  @override
  Widget build(BuildContext context) {
    return Container(
      padding: EdgeInsets.all(16.0),
      child: Column(
        // crossAxisAlignment: CrossAxisAlignment.center,
        crossAxisAlignment: CrossAxisAlignment.start,
        children: [
          Row(
            mainAxisAlignment: MainAxisAlignment.center,
            children: [
              Flexible(
                child: Image(
                  image: AssetImage("images/snapshot.png"),
                  width: 200,
                ),
              ),
            ],
          ),
          SizedBox(height: 50.0),
          Container(
            child: Text(
              "Name",
              style: TextStyle(
                fontSize: 18,
                color: Colors.redAccent,
              ),
            ),
          ),
          SizedBox(height: 8.0),
          Container(
            child: Text(
              "Shrey Naik",
              style: TextStyle(
                fontSize: 18.0,
              ),
            ),
          ),
          SizedBox(height: 24.0),
          Row(
            children: [
              ElevatedButton(
                child: Text("----"),
                onPressed: () {
                  setState(() {
                    age -= 1;
                  });
                },
                style: ElevatedButton.styleFrom(
                  primary: Colors.redAccent,
                ),
              ),
            ],
          ),
        ],
      ),
    );
  }
}

```

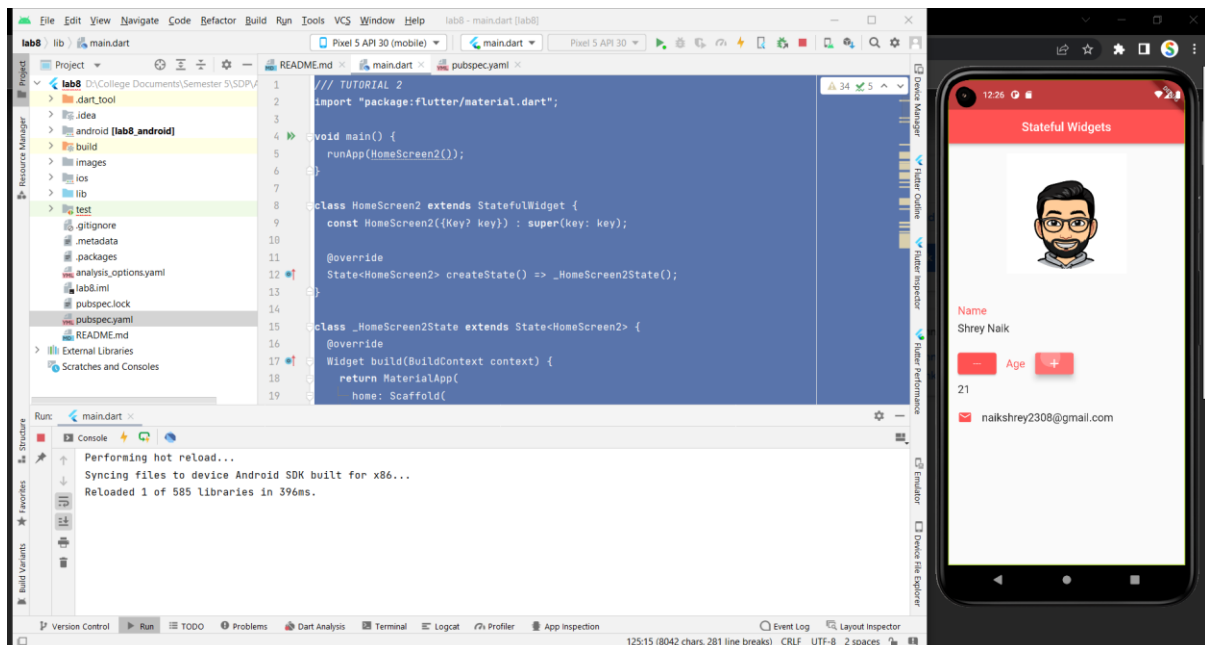
```

        Container(
          padding: EdgeInsets.fromLTRB(16, 0, 16, 0),
          child: Text(
            "Age",
            style: TextStyle(
              fontSize: 18.0,
              color: Colors.redAccent,
            ),
          ),
        ),
        ElevatedButton(
          child: Icon(Icons.add),
          onPressed: () {
            setState(() {
              age += 1;
            });
          },
          style: ElevatedButton.styleFrom(
            primary: Colors.redAccent,
          ),
        ),
      ],
    ),
    SizedBox(height: 8.0),
    Container(
      child: Text(
        age.toString(),
        style: TextStyle(
          fontSize: 18.0,
        ),
      ),
    ),
    SizedBox(height: 24.0),
    Row(
      children: [
        Icon(
          Icons.mail,
          color: Colors.redAccent,
        ),
        Padding(
          padding: EdgeInsets.fromLTRB(16.0, 0, 0, 0),
          child: Text(
            "naikshrey2308@gmail.com",
            style: TextStyle(
              fontSize: 18.0,
            ),
          ),
        ),
      ],
    ),
  ],
),
);
}
}

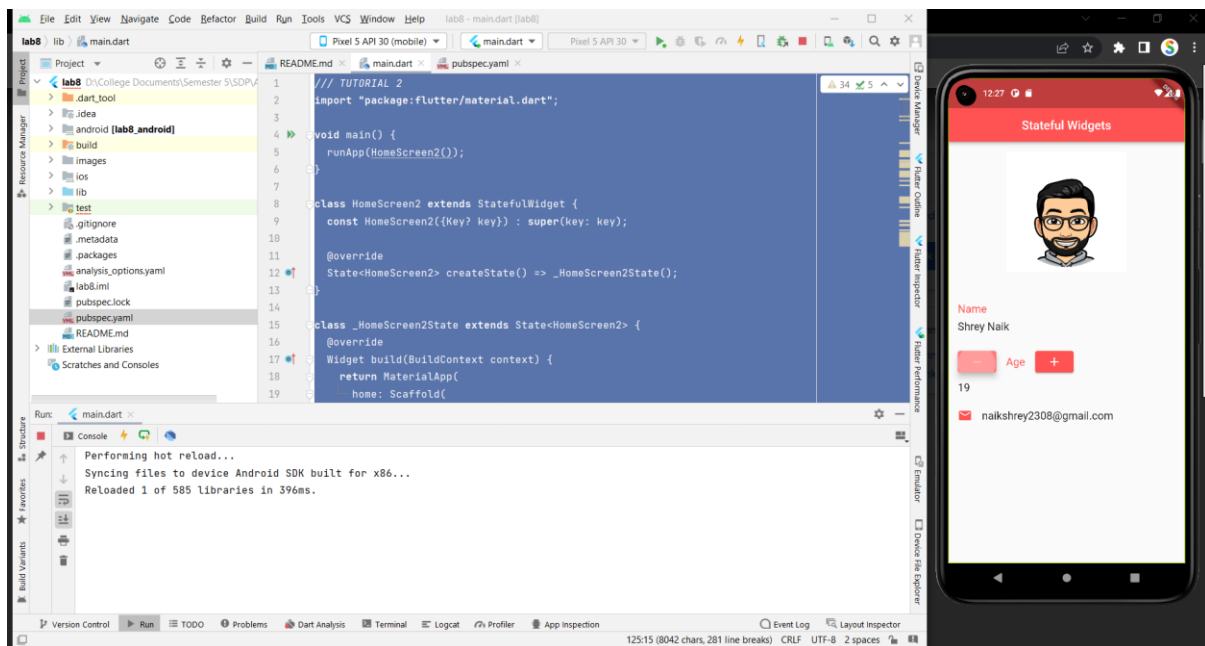
```



Here, when we click on the (+) button, it calls the `setState()` method and hence the counter gets increased by 1. As this is a stateful widget, its state gets changed and so is the change in the value reflected on the screen.



Here, when we click on the (-) button, it calls the `setState()` method and hence the counter gets decreased by 1. As this is a stateful widget, its state gets changed and so is the change in the value reflected on the screen.



Quotes Application:

main.dart

```

import "package:flutter/material.dart";

import "package:lab8/quote.dart";

class QuotesMain extends StatefulWidget {

  const QuotesMain({Key? key}) : super(key: key);

  @override
  State<QuotesMain> createState() => _QuotesMainState();
}

class _QuotesMainState extends State<QuotesMain> {

  @override
  Widget build(BuildContext context) {

```

```
    return Scaffold(  
      appBar: AppBar(  
        title: Text("Quotes App"),  
        centerTitle: true,  
      ),  
      body: QuotesList(),  
    );  
  }  
}
```

```
class QuotesList extends StatefulWidget {  
  const QuotesList({Key? key}) : super(key: key);  
  
  @override  
  State<QuotesList> createState() => _QuotesListState();  
}
```

```
class _QuotesListState extends State<QuotesList> {  
  
  List<Quote> quotes = [  
    Quote(author: "Shrey Naik", text: "Eat. Sleep. Code. Repeat."),  
    Quote(author: "Krish Makadia", text: "Justice shall be served, thy the  
heavens should fall."),  
    Quote(author: "Tyler", text: "It is when you lose everything that you  
are free to do anything."),  
  ];  
  
  Widget QuoteCard(Quote quote) {  
    return Card(  
      borderOnForeground: true,  
    );  
  }  
}
```

```
elevation: 0,

child: Padding(
  padding: const EdgeInsets.fromLTRB(16.0, 20.0, 16.0, 20.0),
  child: Column(
    crossAxisAlignment: CrossAxisAlignment.stretch,
    children: [
      Text(quote.text,
        style: const TextStyle(
          fontSize: 20.0,
        ),
      ),
      SizedBox(height: 8.0),
      Text("- " + quote.author,
        textAlign: TextAlign.end,
        style: const TextStyle(
          fontSize: 18.0,
          color: Colors.grey,
        ),
      ),
      SizedBox(height: 16.0),
      ElevatedButton(
        onPressed: () {
          print("${quote.text} quote pressed!");
        },
        style: ElevatedButton.styleFrom(
          primary: Colors.green,
          onPrimary: Colors.white70,
        ),
        child: Text("View Quote"),
      )
    ]
  )
)
```



```
        ],
      ),
    ),
  );
}

@override
Widget build(BuildContext context) {
  return Container(
    color: Colors.black87,
    padding: EdgeInsets.all(16.0),
    child: Row(
      children: [
        Expanded(
          child: Column(
            children: quotes.map((quote) => QuoteCard(quote)).toList(),
          ),
        ),
      ],
    ),
  );
}
```

quote.dart

```
class Quote {
  Quote({this.text = '', this.author = ''});
  String text;
  String author;
}
```

