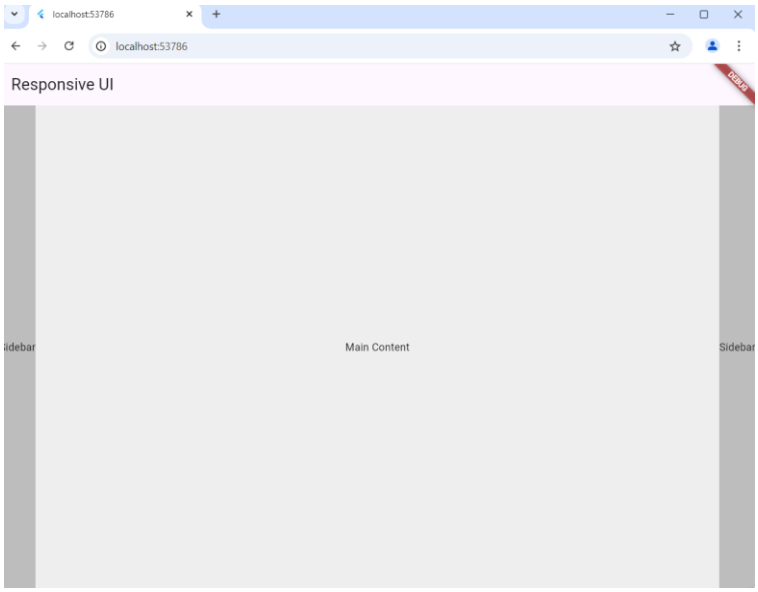
3.a) Design a responsive UI that adapts to different screen sizes.

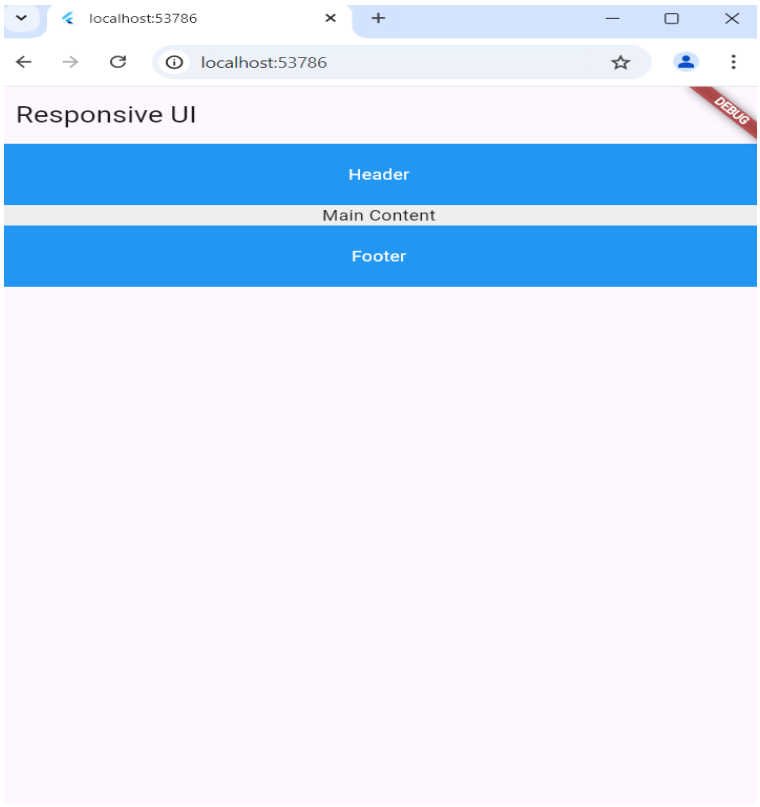
```
import 'package:flutter/material.dart';
void main()
{
  runApp(const MyApp());
}
class MyApp extends StatelessWidget {
  const MyApp({Key? key}) : super(key: key);
@override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(title: Text('Responsive UI')),
        body: LayoutBuilder(
          builder: (context, constraints) {
            if (constraints.maxWidth < 768) {
              return MobileLayout();
            } else {
              return DesktopLayout();
            }
          },
        ),
      ),
    );
  }
}
class MobileLayout extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Column(
```

```
      children: [
        Header(),
        MainContent(),
        Footer(),
      ],
    );
  }
}
class DesktopLayout extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Row(
      children: [
        Sidebar(),
        Expanded(child: MainContent()),
        Sidebar(),
      ],
    );
  }
}
class Header extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Container(
      height: 60,
      color: Colors.blue,
      child:
          Center(child: Text('Header', style: TextStyle(color: Colors.white))),
    );
  }
```

```
}
class MainContent extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Container(
      color: Colors.grey[200],
      child: Center(child: Text('Main Content')),
    );
  }
}
class Sidebar extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Container(
      color: Colors.grey[400],
      child: Center(child: Text('Sidebar')),
    );
  }
}
class Footer extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Container(
      height: 60,
      color: Colors.blue,
      child:
          Center(child: Text('Footer', style: TextStyle(color: Colors.white))),
    );
  }
}
```

Output:





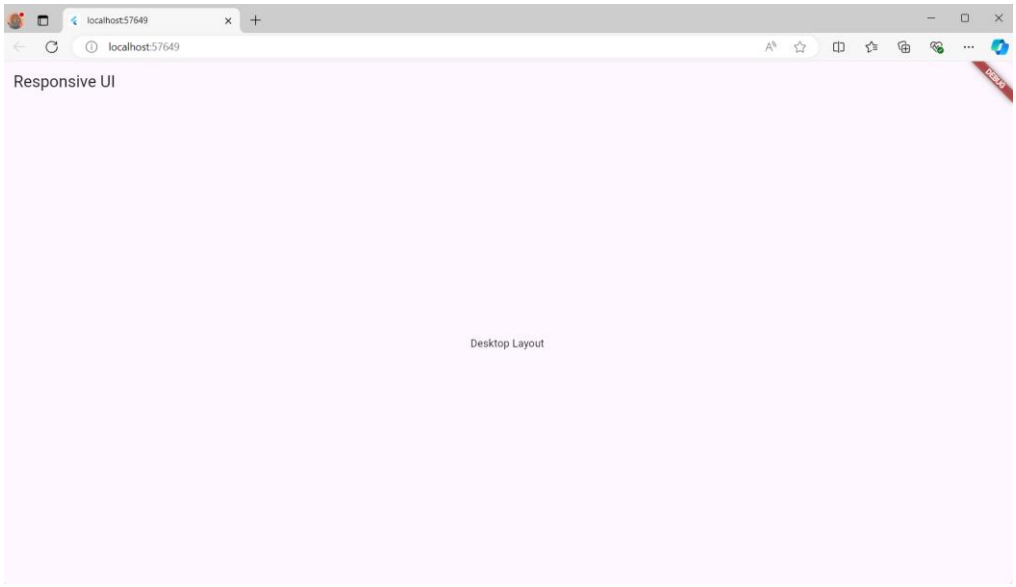
3.b) Implement media queries and breakpoints for responsiveness.

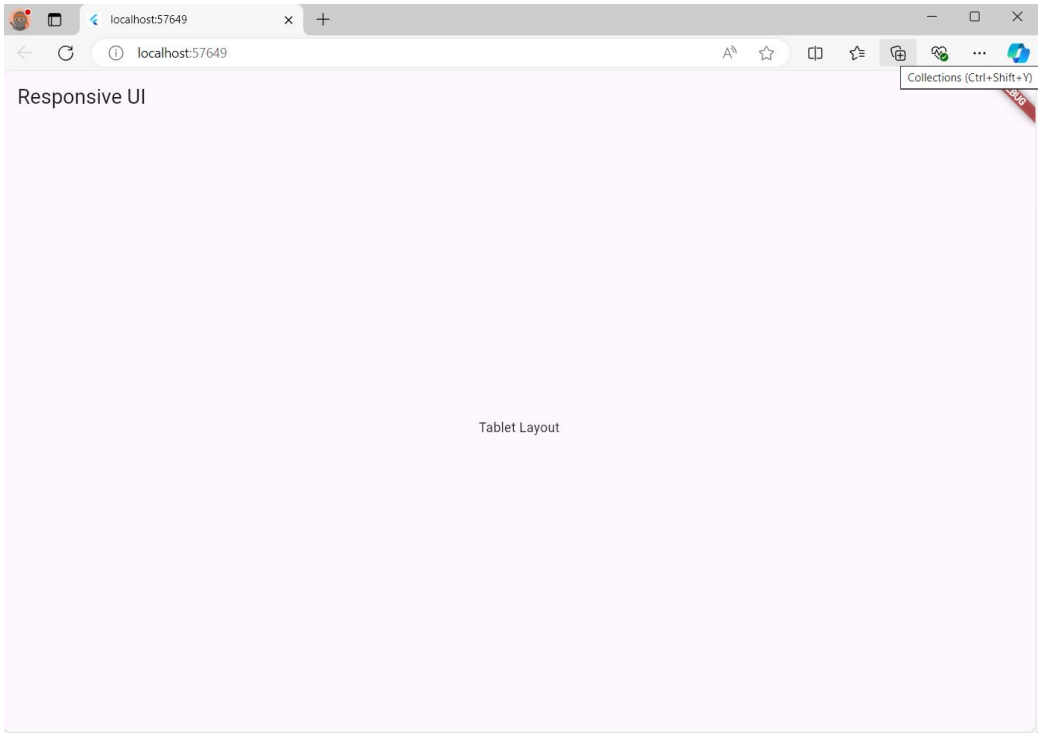
import 'package:flutter/material.dart';

```
void main() {
  runApp(const MyApp());
}
class MyApp extends StatelessWidget {
  const MyApp({Key? key}) : super(key: key);
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: const ResponsiveUI(),
    );
  }
}
class ResponsiveUI extends StatelessWidget {
  const ResponsiveUI({Key? key}) : super(key: key);
 @override
  Widget build(BuildContext context) {
    final screenWidth = MediaQuery.of(context).size.width;
  return Scaffold(
      appBar: AppBar(
        title: const Text('Responsive UI'),
      ),
      body: screenWidth < 600
          ? MobileLayout()
          : screenWidth < 1200
              ? TabletLayout()
              : DesktopLayout(),
    );
  }
}
```

```
class MobileLayout extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Center(
      child: Text('Mobile Layout'),
    );
  }
}
class TabletLayout extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Center(
      child: Text('Tablet Layout'),
    );
  }
}
class DesktopLayout extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Center(
      child: Text('Desktop Layout'),
    );
  }
}
```

Output:


localhost:57649
localhost:57649
Responsive UI
DEBUG
Desktop Layout


localhost:57649
localhost:57649
Collections (Ctrl+Shift+Y)
Responsive UI
DEBUG
Tablet Layout


localhost:57649
localhost:57649
Responsive UI
DEBUG
Mobile Layout