

#### 4a)Implement different layout structures using Stack Widget.

##### Stack Widget:

```
import 'package:flutter/material.dart';
void main() {
runApp(MaterialApp(
  home: Scaffold(
    appBar: AppBar(
      title: Text('GeeksforGeeks'),
      backgroundColor: Colors.greenAccent[400],
    ), //AppBar
    body: Center(
      child: SizedBox(
        width: 300,
        height: 300,
        child: Center(
          child: Stack(
            children: <Widget>[
              Container(
                width: 300,
                height: 300,
                color: Colors.red,
              ), //Container
              Container(
                width: 250,
                height: 250,
                color: Colors.black,
              ), //Container
              Container(
                height: 200,
                width: 200,
                color: Colors.purple,
              ), //Container
            ], //<Widget>[]
          ), //Stack
        ), //Center
      ), //SizedBox
    ), //Center
  ) //Scaffold
) //MaterialApp
);
}
```

#### 4b)Set up navigation between different screens using Navigator.

```
import 'package:flutter/material.dart';
void main() => runApp(MyApp());
```

```

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

class HomeScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: const Text('Home Screen')),
      body: Center(
        child: ElevatedButton(
          child: const Text(
            'Navigate to a new screen >>',
            style: TextStyle(fontSize: 24.0),
          ),
          onPressed: () {
            _navigateToNextScreen(context);
          },
        ),
      ),
    );
  }

  void _navigateToNextScreen(BuildContext context) {
    Navigator.of(context).push(MaterialPageRoute(builder: (context) => NewScreen()));
  }
}

class NewScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: const Text('New Screen')),
      body: const Center(
        child: Text(
          'This is a new screen',
          style: TextStyle(fontSize: 24.0),
        ),
      ),
    );
  }
}

```

**5a) Implement navigation with named routes.**

```
import 'package:flutter/material.dart';
void main() {
  runApp(MyApp());
}
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Named Routes Navigation Example',
      initialRoute: '/',
      routes: {
        '/': (context) => HomeScreen(),
        '/about': (context) => AboutScreen(),
      },
    );
  }
}
class HomeScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Home Screen'),
      ),
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: <Widget>[
            Text(
              'Welcome to the Home Screen.',
            ),
            SizedBox(height: 20),
            ElevatedButton(
              onPressed: () {
                Navigator.pushNamed(context, '/about');
              },
              child: Text('Go to About'),
            ),
          ],
        ),
      ),
    );
  }
}
class AboutScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
```

```

title: Text('About Screen'),
),
body: Center(
  child: Column(
    mainAxisAlignment: MainAxisAlignment.center,
    children: <Widget>[
      Text(
        'This is the About Screen.',
      ),
      SizedBox(height: 20),
      ElevatedButton(
        onPressed: () {
          Navigator.pop(context);
        },
        child: Text('Go back to Home'),
      ),
    ],
  ),
),
);
}
}

```

### 5b) Learn about stateful and stateless widgets.

```

import 'package:flutter/material.dart';
void main() {
  runApp(MyApp());
}
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Stateful and Stateless Example',
      theme: ThemeData(
        primarySwatch: Colors.blue,
      ),
      home: MyHomePage(),
    );
  }
}
class MyHomePage extends StatefulWidget {
  @override
  _MyHomePageState createState() => _MyHomePageState();
}
class _MyHomePageState extends State<MyHomePage> {
  int counter = 0;
  void incrementCounter() {
    setState() {
      counter++;
    }
  }
}

```

```

    });
}
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text('Stateful and Stateless Example'),
    ),
    body: Column(
      mainAxisAlignment: MainAxisAlignment.center,
      children: <Widget>[
        CounterDisplay(counter),
        SizedBox(height: 20),
        CounterButton(incrementCounter),
      ],
    ),
  );
}

class CounterDisplay extends StatelessWidget {
  final int count;
  CounterDisplay(this.count);
  @override
  Widget build(BuildContext context) {
    return Text(
      'Counter Value: $count',
      style: TextStyle(fontSize: 20),
    );
  }
}

class CounterButton extends StatelessWidget {
  final VoidCallback onPressed;
  CounterButton(this.onPressed);
  @override
  Widget build(BuildContext context) {
    return ElevatedButton(
      onPressed: onPressed,
      child: Text('Increment Counter'),
    );
  }
}

```