

### **// Without SafeArea :**

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

//This example explains view of scattered App without using SafeArea
void main() => runApp(MyApp());

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        body: Text(
          'This is an example explaining use of SafeArea',
          style: TextStyle(color: Colors.green, fontSize: 20),
        ),
      ),
    );
  }
}
```

### **// With SafeArea :**

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

//This example explains effect of SafeArea widget on view of App
void main() => runApp(MyApp());

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: SafeArea(
        top: true,
        child: Scaffold(
          body: Text(
            'This is an example explaining use of SafeArea',
            style: TextStyle(color: Colors.green, fontSize: 20),
          ),
        ),
      ),
    );
  }
}
```

## **// Use AppBar Widget in flutter App development**

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

void main() {
  runApp(MaterialApp(
    home: Scaffold(
      appBar: AppBar(
        title: Text('FAMT'),
      ), //AppBar

      body: const Center(
        child: Text(
          'IT Department',
          style: TextStyle(fontSize: 24),
        ), //Text
      ), // center
    ), //Scaffold

    debugShowCheckedModeBanner: false, //Removing Debug Banner
  )); //MaterialApp
}
```

## **// Use Row Widget in flutter App development**

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Row Widget with Text Example',
      home: Scaffold(
        appBar: AppBar(
          title: Text('Row Widget with Text Example'),
```

```

),
body: Center(
  child: Row(
    mainAxisAlignment: MainAxisAlignment.center,
    children: <Widget>[
      Container(
        width: 100,
        height: 100,
        color: Colors.red,
        margin: EdgeInsets.all(5),
        child: Center(
          child: Text(
            'MAD',
            style: TextStyle(
              color: Colors.white,
              fontSize: 20,
              fontWeight: FontWeight.bold,
            ),
          ),
        ),
      ),
    ],
  ),
  // copyabove as it is
),
);
}
}

```

## // Use Column Widget in flutter App development

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Column Widget with Text Example',
      home: Scaffold(
        appBar: AppBar(
          title: Text('Column Widget with Text Example'),
        ),
        body: Center(
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center,
            children: <Widget>[
              Container(
                width: 100,
                height: 100,
                color: Colors.red,
                margin: EdgeInsets.all(5),
                child: Center(
                  child: Text(
                    'Hello',
                    style: TextStyle(
                      color: Colors.white,
                      fontSize: 20,
                      fontWeight: FontWeight.bold,
                    ),
                  ),
                ),
              ),
              Container(
                width: 100,
                height: 100,
                color: Colors.green,
                margin: EdgeInsets.all(5),
```

```

        child: Center(
          child: Text(
            'EveryOne',
            style: TextStyle(
              color: Colors.white,
              fontSize: 20,
              fontWeight: FontWeight.bold,
            ),
          ),
        ),
      ),
    ),
  ),
  Container(
    width: 100,
    height: 100,
    color: Colors.blue,
    margin: EdgeInsets.all(5),
    child: Center(
      child: Text(
        'Good Morning',
        style: TextStyle(
          color: Colors.white,
          fontSize: 20,
          fontWeight: FontWeight.bold,
        ),
      ),
    ),
  ),
),
],
),
),
),
);
}
}

```

### **// image in flutter app**

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

```
void main() => runApp(MyApp());
```

```
class MyApp extends StatelessWidget {
```

```
  // This widget is the root
```

```
  // of your application
```

```
  @override
```

```
  Widget build(BuildContext context) {
```

```
    return MaterialApp(
```

```
      home: Scaffold(
```

```
        appBar: AppBar(
```

```
          title: Text('Insert Image Demo'),
```

```
        ),
```

```
        body: Center(
```

```
          child: Column(
```

```
            children: <Widget>[
```

```
              // Image.asset('assets/images/download.jpeg'),
```

```
              Image.asset('assets/images/download.jpeg'),
```

```
            ],
```

```
          ),
```

```
        ),
```

```
      ),
```

```
    );
```

```
  }
```

```
}
```

## //Icon in Flutter App

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

void main() => runApp(MyApp());

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

class MyIconPage extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Flutter Icon Tutorial'),
      ),
      body: Row(
        mainAxisAlignment: MainAxisAlignment.center,
        children: <Widget>[
          Icon(Icons.camera_enhance),
          Icon(Icons.camera_front),
          Icon(Icons.camera_rear),
          Icon(Icons.star),
        ],
      ),
    );
  }
}
```

## Navigation And Routing

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

void main() => runApp(MaterialApp(
  title: 'Flutter Navigation',
  theme: ThemeData(primarySwatch: Colors.green),
  home: FirstRoute(),
));

class FirstRoute extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text('First Screen')),
      body: Center(
        child: ElevatedButton(
          child: Text('Click Here'),
          onPressed: () {
            Navigator.push(
              context,
              MaterialPageRoute(builder: (context) => SecondRoute()),
            );
          },
        ),
      ),
    );
  }
}
```



```
}  
  
class SecondRoute extends StatelessWidget {  
  @override  
  Widget build(BuildContext context) {  
    return Scaffold(  
      appBar: AppBar(title: Text("Second Screen")),  
      body: Center(  
        child: ElevatedButton(  
          onPressed: () {  
            Navigator.pop(context);  
          },  
          child: Text('Go back'),  
        ),  
      ),  
    );  
  }  
}
```

## // Gesture implement in flutter

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: "Navigation App",
      home: FirstRoute(),
    );
  }
}

class FirstRoute extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text("First Page")),
      body: GestureDetector(
        child: Container(
          child: Center(child: Text("Double click here")),
          height: 120.0,
          width: double.infinity,
          color: Colors.amber),
        onTap: () {
          Navigator.push(
            context, MaterialPageRoute(builder: (context) =>
SecondRoute()));
        },
      ),
    );
  }
}

class SecondRoute extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
```

```
        title: Text("Second Page"),
      ),
      body: GestureDetector(
        child: Container(
          child: Center(child: Text("Double click here")),
          height: 120.0,
          width: double.infinity,
          color: Colors.green[200],
        ),
        onTap: () {
          Navigator.pop(context);
        },
      ),
    );
  }
}
```

## Container\_properties transform

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

void main() => runApp(MyApp());

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(
          title: Text("Container"),
          backgroundColor: Colors.lightGreen,
        ),
        body: Container(
          child: Text(
            "This is a Container",
            style: TextStyle(fontSize: 20),
          ),
          // color: Colors.orangeAccent,
          height: 200,
          width: double.infinity,
          margin: EdgeInsets.all(20),
          padding: EdgeInsets.all(50),
          alignment: Alignment.bottomCenter,
          decoration: BoxDecoration(
            border: Border.all(color: Colors.purple, width: 4.0),
            color: Colors.orangeAccent, // Either decoration or color property
          ),
          transform: Matrix4.rotationZ(0.1),
        ),
      ),
      debugShowCheckedModeBanner: false,
    );
  }
}
```

## Container view

```
// container view
import 'package:flutter/material.dart';

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Container Widget Example',
      debugShowCheckedModeBanner: false,
      home: Scaffold(
        appBar: AppBar(
          title: Text('Container Widget Example'),
        ),
        body: Center(
          child: Container(
            width: 200,
            height: 200,
            color: Colors.blue,
            child: Center(
              child: Text(
                'Hello, Flutter!',
                style: TextStyle(
                  color: Colors.white,
                  fontSize: 20,
                ),
              ),
            ),
          ),
        ),
      ),
    );
  }
}
```

## Grid view

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'GridView Widget Example',
      debugShowCheckedModeBanner: false,
      home: Scaffold(
        appBar: AppBar(
          title: Text('GridView Widget Example'),
        ),
        body: GridView.count(
          crossAxisCount: 3, // Number of columns in the grid
          children: List.generate(9, (index) {
            return Center(
              child: Container(
                width: 100.0,
                height: 100.0,
                color: Color.fromARGB(255, 255, 166, 0),
              ),
            );
          })),
      ),
    );
  }
}
```

## List view

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

void main() {
  runApp(MyApp());
}
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'ListView Widget Example',
      debugShowCheckedModeBanner: false,
      home: Scaffold(
        appBar: AppBar(
          title: Text('ListView Widget Example'),
        ),
        body: ListView(
          children: <Widget>[
            ListTile(
              leading: Icon(Icons.map),
              title: Text('Map'),
            ),
            ListTile(
              leading: Icon(Icons.photo),
              title: Text('Album'),
            ),
            ListTile(
              leading: Icon(Icons.phone),
              title: Text('Phone'),
            ),
            ListTile(
              leading: Icon(Icons.message),
              title: Text('Message'),
            ),
            ListTile(
              leading: Icon(Icons.email),
              title: Text('Email'),
            ),
          ],
        ),
      ),
    );
  }
}
```

## Stack View

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Stack Widget Example',
      debugShowCheckedModeBanner: false,
      home: Scaffold(
        appBar: AppBar(
          title: Text('Stack Widget Example'),
        ),
        body: Center(
          child: Stack(
            alignment: Alignment.center,
            children: <Widget>[
              Container(
                width: 200,
                height: 200,
                color: Color.fromARGB(255, 233, 161, 255),
              ),
              Container(
                width: 150,
                height: 150,
                color: Color.fromARGB(255, 240, 23, 255),
              ),
              Container(
                width: 100,
                height: 100,
                color: Color.fromARGB(255, 194, 0, 247),
              ),
            ],
          ),
        ),
      ),
    );
  }
}
```



## Card View

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Card Widget Example',
      debugShowCheckedModeBanner: false,
      home: Scaffold(
        appBar: AppBar(
          title: Text('Card Widget Example'),
        ),
        body: Center(
          child: Card(
            elevation: 5,
            child: Container(
              width: 200,
              height: 100,
              padding: EdgeInsets.all(16),
              child: Text(
                'Hello student',
                style: TextStyle(
                  fontSize: 18,
                  fontWeight: FontWeight.bold,
                ),
              ),
            ),
          ),
        ),
      ),
    );
  }
}
```

## ListTile view

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'ListTile Widget Example',
      debugShowCheckedModeBanner: false,
      home: Scaffold(
        appBar: AppBar(
          title: Text('Finolex Departmets'),
        ),
        body: ListView(
          children: <Widget>[
            ListTile(
              title: Text('IT'),
              subtitle: Text('Information Technology'),
              trailing: Icon(Icons.arrow_forward),
              onTap: () {
                print('Tapped on dep');
              },
            ),
            ListTile(
              title: Text('CSE'),
              subtitle: Text('Computer Science'),
              trailing: Icon(Icons.arrow_forward),
              onTap: () {
                print('Tapped on dep');
              },
            ),
            // Add more ListTiles as needed
          ],
        ),
      ),
    );
  }
}
```

## Form

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: MyForm(),
    );
  }
}

class MyForm extends StatelessWidget {
  final _key = GlobalKey<FormState>();
  final _userNameController = TextEditingController();
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      body: Container(
        padding: EdgeInsets.all(32),
        child: Form(
          key: _key,
          child: Column(
            children: [
              TextFormField(
                controller: _userNameController,
                validator: (value) {
                  if (value!.isEmpty) {
                    return "User Name cannot be empty";
                  } else if (value.length <= 5) {
                    return "Username should be greater than 5";
                  } else {
                    return null;
                  }
                },
              ),
              SizedBox(height: 20), // Added for spacing
              ElevatedButton(
                onPressed: () {
                  if (_key.currentState!.validate()) {
                    // Add your logic here
                  }
                },
              ),
            ],
          ),
        ),
      ),
    );
  }
}
```

```
        print("Your data is submitted");
    }
},
child: Text("Submit"),
),
],
),
),
),
);
}
```

## **Raised button /elevated button-**

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(
          title: Text('Flutter - Elevated Button'),
        ),
        body: Container(
          child: Center(
            child: ElevatedButton(
              onPressed: () {},
              style: ElevatedButton.styleFrom(
                backgroundColor: Colors.red,
                foregroundColor: Colors.white,
                shadowColor: Colors.green,
                padding: EdgeInsets.all(8.0),
                elevation: 5,
                shape: RoundedRectangleBorder(
                  borderRadius: BorderRadius.circular(10),
                ),
              ),
              child: Text('Click me'), // Static text
            ),
          ),
        ),
      ),
    );
  }
}
```

## Floating action button

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

//This example explains Floating Action Button Widget
void main() {
  runApp(MyApp());
}

class MyApp extends StatefulWidget {
  @override
  _MyAppState createState() => _MyAppState();
}

class _MyAppState extends State<MyApp> {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(
          title: Text("Flutter Floating Action Button"),
          backgroundColor: Colors.blue,
        ),
        // floatingActionButton: FloatingActionButton(
        //   child: Icon(Icons.share),
        //   backgroundColor: Colors.blueAccent,
        //   foregroundColor: Colors.white,
        //   onPressed: () => {},
        // ),
        floatingActionButton: FloatingActionButton.extended(
          onPressed: () {},
          icon: Icon(Icons.account_circle),
          label: Text("Profile"),
        ),
      ),
    );
  }
}
```

## Drop Down Button

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

void main() => runApp(MyApp());

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(
          title: Text("Container"),
          backgroundColor: Colors.lightGreen,
        ),
        body: Container(
          child: SimpleDropdownButton(
            items: ['Item 1', 'Item 2', 'Item 3'],
            selectedItem: 'Item 1',
          ),
        ),
      ),
      debugShowCheckedModeBanner: false,
    );
  }
}

class SimpleDropdownButton extends StatelessWidget {
  final List<String> items;
  final String selectedItem;
  const SimpleDropdownButton({
    Key? key,
    required this.items,
    required this.selectedItem,
  }) : super(key: key);
  @override
  Widget build(BuildContext context) {
    return DropdownButton<String>(
      value: selectedItem,
      onChanged: (_) {}, // Placeholder function
      items: items.map<DropdownMenuItem<String>>((String value) {
        return DropdownMenuItem<String>(
          value: value,
          child: Text(value),
        );
      }).toList(),
    );
  }
}
```

```

    );
  }).toList(),
);
}
}

```

## Icon BUTTON

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

```
void main() => runApp(MyApp());
```

```

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(
          title: Text("Flutter - Icon Button"),
        ),
        body: Center(
          child: MyStatefulWidget(),
        ),
      ),
    );
  }
}

```

```
double _speakervolume = 0.0;
```

```

class MyStatefulWidget extends StatefulWidget {
  @override
  _MyStatefulWidgetState createState() => _MyStatefulWidgetState();
}

```

```

class _MyStatefulWidgetState extends State<MyStatefulWidget> {
  Widget build(BuildContext context) {
    return Column(
      mainAxisAlignment: MainAxisAlignment.min,
      children: <Widget>[
        IconButton(
          icon: Icon(Icons.volume_up),
          iconSize: 50,
          color: Colors.brown,

```



```

        tooltip: 'Increase volume by 5',
        onPressed: () {
          setState(() {
            _speakervolume += 5;
          });
        },
      ),
      Text('Speaker Volume: $_speakervolume')
    ],
  );
}
}

```

## RichText Button

```

import 'package:flutter/material.dart';

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        appBar: AppBar(
          title: Text('RichText Example'),
        ),
        body: RichText(
          text: TextSpan(
            text: 'Hello world!',
            style: TextStyle(
              fontWeight: FontWeight.bold,
              color: Colors.blue,
            ),
          ),
        ),
      ),
    );
  }
}

```

## PWA SW

### EXP 7

MANIFEST.JSON

```
{
  "name": "Food Ninja",
  "short_name": "FoodNinja",
  "start_url": "/index.html",
  "display": "standalone",
  "background_color": "#FFE9D2",
  "theme_color": "#FFE1C4",
  "orientation": "portrait-primary",
  "icons": [
    {
      "src": "/img/icons/icon-72x72.png",
      "type": "image/png",
      "sizes": "72x72"
    },
    {
      "src": "/img/icons/icon-96x96.png",
      "type": "image/png",
      "sizes": "96x96"
    },
    {
      "src": "/img/icons/icon-128x128.png",
      "type": "image/png",
      "sizes": "128x128"
    },
    {
      "src": "/img/icons/icon-144x144.png",
      "type": "image/png",
      "sizes": "144x144"
    },
    {
      "src": "/img/icons/icon-152x152.png",
      "type": "image/png",
      "sizes": "152x152"
    },
    {
      "src": "/img/icons/icon-192x192.png",
      "type": "image/png",
      "sizes": "192x192"
    },
    {

```

```

    "src": "/img/icons/icon-384x384.png",
    "type": "image/png",
    "sizes": "384x384"
  },
  {
    "src": "/img/icons/icon-512x512.png",
    "type": "image/png",
    "sizes": "512x512"
  }
]
}

```

## Exp-08

\*\*\*\*\*app.js\*\*\*\*\*

```

if('serviceWorker' in navigator){
  navigator.serviceWorker.register('/sw.js')
    .then(reg => console.log('service worker registered'))
    .catch(err => console.log('service worker not registered', err));
}

```

<script src="/js/app.js"></script>

\*\*\*\*\*in body tag(at the end) of each html file\*\*\*\*\*

\*\*\*\*\*sw.js\*\*\*\*\*

```

// install event
self.addEventListener('install', evt => {
  console.log('service worker installed');
});

// activate event
self.addEventListener('activate', evt => {
  console.log('service worker activated');
});

// fetch event
self.addEventListener('fetch', evt => {
  console.log('fetch event', evt);
});

```

## Exp 09--Static

sw.js

```

const staticCacheName = 'site-static';
const assets = [
  '/',
  '/index.html',
  '/js/app.js',
  '/js/ui.js',
  '/js/materialize.min.js',
  '/css/styles.css',
  '/css/materialize.min.css',
  '/img/dish.png',
  'https://fonts.googleapis.com/icon?family=Material+Icons',
  'https://fonts.gstatic.com/s/materialicons/v47/flUhRq6tzZclQEJ-Vdg-
IuiaDsNcIhQ8tQ.woff2'
];

// install event
self.addEventListener('install', evt => {
  //console.log('service worker installed');
  evt.waitUntil(
    caches.open(staticCacheName).then((cache) => {
      console.log('caching shell assets');
      cache.addAll(assets);
    })
  );
});

// activate event
self.addEventListener('activate', evt => {
  //console.log('service worker activated');
});

// fetch event
self.addEventListener('fetch', evt => {
  //console.log('fetch event', evt);
  evt.respondWith(
    caches.match(evt.request).then(cacheRes => {
      return cacheRes || fetch(evt.request);
    })
  );
});

```

## Exp 10-

## **sw.js**

```
const dynamicCacheName = 'site-dynamic-v1';
// install event
self.addEventListener('install', evt => {
  console.log('service worker installed');
});

// activate event
self.addEventListener('activate', evt => {
  console.log('service worker activated');
});

// fetch event
self.addEventListener('fetch', evt => {
  //console.log('fetch event', evt);
  evt.respondWith(
    caches.match(evt.request).then(cacheRes => {
      return cacheRes || fetch(evt.request).then(fetchRes => {
        return caches.open(dynamicCacheName).then(cache => {
          cache.put(evt.request.url, fetchRes.clone());
          return fetchRes;
        });
      });
    })
  );
});
```