

PRACTICAL: 4

AIM:

Create an application using flutter layouts. (List, Grid, Scrolling, Adaptive Design).

THEORY:

Scroll Physics: Flutter allows fine-tuning of scroll behavior using customizable physics. Developers can adjust parameters like friction and spring constants to achieve the desired scrolling experience.

Infinite Scrolling: With Flutter, implementing infinite scrolling is straightforward. By dynamically loading more data as the user reaches the end of the list, developers can create a seamless browsing experience.

ListView: ListView is a versatile widget for displaying a scrollable list of widgets. It efficiently handles large datasets by only loading the items that are currently visible on the screen.

CODE:

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

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

class ThoughtsApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Good Thoughts',
      theme: ThemeData(
        primarySwatch: Colors.blue,
      ),
      home: ThoughtsScreen(),
    );
  }
}

class ThoughtsScreen extends StatefulWidget {
  @override
  _ThoughtsScreenState createState() => _ThoughtsScreenState();
}
```

```
}  
  
class _ThoughtsScreenState extends State<ThoughtsScreen> {  
  final List<String> thoughts = [  
    'The only way to do great work is to love what you do.',  
    'In three words I can sum up everything I\'ve learned about  
life: it goes on.',  
    'The future belongs to those who prepare for it today.',  
    'Your work is going to fill a large part of your life, and the  
only way to be truly satisfied is to do what you believe is great  
work.',  
    'Don\'t count the days, make the days count.',  
    'Believe you can and you\'re halfway there.',  
    'It does not matter how slowly you go, as long as you do not  
stop.',  
    'Strive not to be a success, but rather to be of value.',  
    'Life is really simple, but we insist on making it  
complicated.',  
    'Success is not the key to happiness. Happiness is the key to  
success. If you love what you are doing, you will be successful.',  
    'Do not wait to strike till the iron is hot, but make it hot by  
striking.',  
    'It is not what you do for your children, but what you have  
taught them to do for themselves, that will make them successful  
human beings.',  
    'Success is stumbling from failure to failure with no loss of  
enthusiasm.',  
    'The only place where success comes before work is in the  
dictionary.',  
    'Don\'t watch the clock; do what it does. Keep going.',  
    'Do not wait; the time will never be \'just right.\' Start  
where you stand, and work with whatever tools you may have at your  
command, and better tools will be found as you go along.',  
    'You miss 100% of the shots you don\'t take.',  
    'Your time is limited, don\'t waste it living someone else\'s  
life.',  
    'Life is what happens when you\'re busy making other plans.',
```

```
'The future belongs to those who believe in the beauty of their
dreams.',
'It always seems impossible until it\'s done.',
'The purpose of our lives is to be happy.',
'Success is not final, failure is not fatal: It is the courage
to continue that counts.',
];
Set<String> likedThoughts = Set();
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text('Good Thoughts'),
    ),
    body: Column(
      children: [
        Expanded(
          child: ListView.builder(
            itemCount: thoughts.length,
            itemBuilder: (context, index) {
              return ListTile(
                title: Text(thoughts[index]),
                trailing: IconButton(
                  icon: Icon(
                    likedThoughts.contains(thoughts[index])
                      ? Icons.favorite
                      : Icons.favorite_border,
                    color:
likedThoughts.contains(thoughts[index])
                      ? Colors.red
                      : null,
                  ),
                  onPressed: () {
                    setState(() {
                      if
(likedThoughts.contains(thoughts[index])) {
                        likedThoughts.remove(thoughts[index]);
                      } else {
```

```
        likedThoughts.add(thoughts[index]);
    }
    });
    },
    ),
    );
    },
    ),
    Divider(),
    Text(
        'Liked Thoughts',
        style: TextStyle(fontSize: 18.0, fontWeight:
FontWeight.bold),
    ),
    Expanded(
        child: ListView.builder(
            itemCount: likedThoughts.length,
            itemBuilder: (context, index) {
                return ListTile(
                    title: Text(likedThoughts.elementAt(index)),
                    trailing: Icon(
                        Icons.favorite,
                        color: Colors.red,
                    ),
                ),
            );
        ),
    ),
    ),
    ],
    ),
    );
}
```

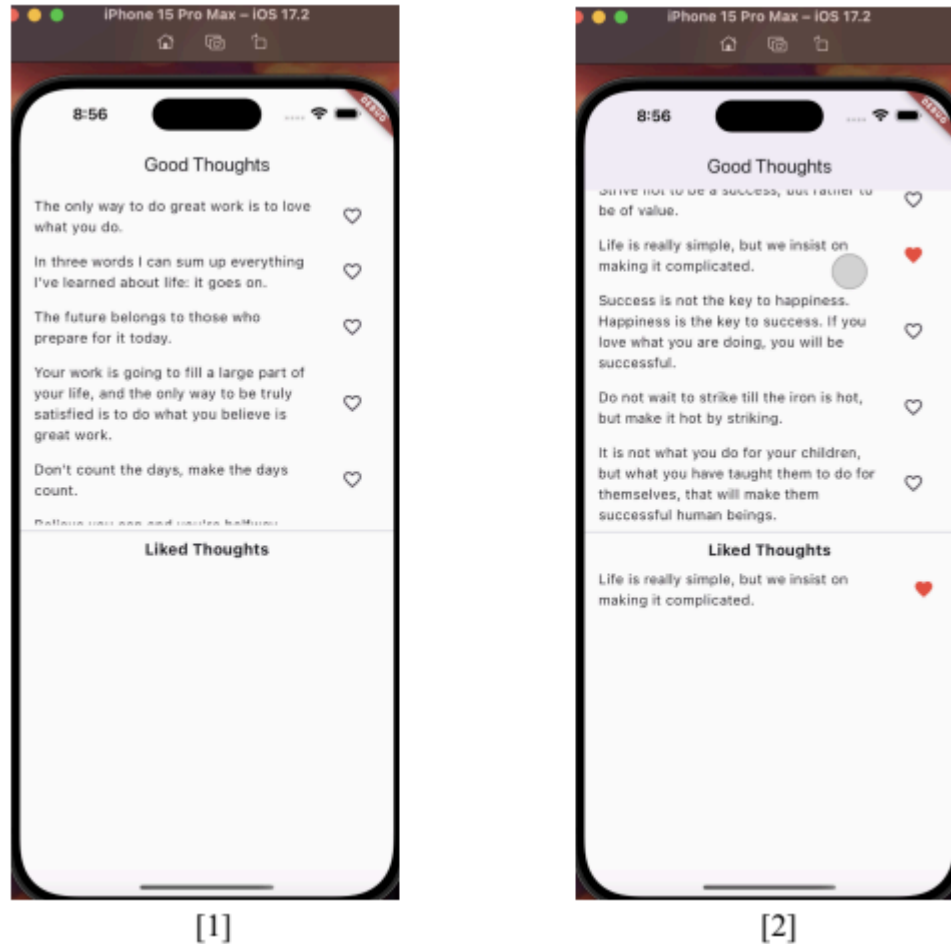
OUTPUT:

Fig. 1 Here is a list of good thoughts.

Fig. 2 We can like it to see it later and it will be added to Liked Thoughts.

LATEST APPLICATIONS:

1. Shopping app
2. Pinterest
3. Instagram

LEARNING OUTCOME:

Recognition and utilization of various scrollable widgets for different scenarios.

Customization of scroll physics to achieve desired scrolling behaviors.

Proficiency in implementing lists using ListView and ListTile, including advanced features like separators and infinite scrolling.

Competence in creating two-dimensional, scrollable grids with GridView and advanced layouts with SliverGrid.

Understanding how to design responsive grids that adapt to different screen sizes. Knowledge of best practices for efficient data loading and widget recycling. Ability to customize the appearance of lists and grids for a unique and branded user interface.

REFERENCES:

1. <https://docs.flutter.dev/ui/layout/tutorial>