Task Guide A03

Introduction and setup project

1. Objective
   Student learn how to make Instagram's home screen story list
2. Requirement
   Hardware:
   - 4 GB RAM minimum, 8 GB RAM recommended
   - 15 GB of available disk space minimum (2 GB for Flutter SDK, 8 GB for Android Studio, 4 GB for AVD, and 1 GB for project's size)
   - 1280 x 800 minimum screen resolution
   - Intel processor with support for Intel VT-x, Intel EM64T (Intel 64), and Execute Disable (XD) Bit functionality

   Software:
   - Microsoft Windows 7/8/10/11 (64-bit)
   - JDK 8
   - Android Studio IDE
   - Git
3. Resource
   Starter project code : chrisdionisius/clone-instagram-login at Refactoring (github.com)
4. Task Description
   In this task, student will be implementing a clone of Instagram's home page story list using Flutter and various widgets such as StatefulWidget, Scaffold, Column, Container, and more. This exercise will help student understand how to structure a Flutter application, utilize different widgets, and build a user interface resembling Instagram's home page story list.

Specification

1) Clone project from https://github.com/chrisdionisius/clone-instagram-login/tree/Refactoring (make sure clone it from starter branch) or using the manual setup if you encounter error during cloning project, refer to Guide A.01

2) Run flutter pub get in the terminal or if you are using Microsoft Visual Studio Code you could click on **Get Package** button.

3) Using this specification make a list of some widgets below :

1. Open home_page.dart file under lib\app\modules\home folder make sure it is extended from StatefulWidget

```dart
import 'package:flutter/material.dart';
import '../../../core/theme/colors.dart';

class HomePage extends StatefulWidget {
  const HomePage({
    super.key,
  });

  @override
  HomePageState createState() => HomePageState();
}

class HomePageState extends State<HomePage> {
  @override
  Widget build(BuildContext context) {
    throw UnimplementedError();
  }
}
```

2. Add this media query to HomePage class :

```
final List posts;
final List stories;
final Map<String, dynamic> profileData;
const HomePage({
        super.key,
        required this.posts,
        required this.stories,
        required this.profileData});
```

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

class HomePage extends StatefulWidget {
  const HomePage({
    super.key,
    required this.posts,
    required this.stories,
    required this.profileData,
  });
  final List posts;
  final List stories;
  final Map<String, dynamic> profileData;

  @override
  HomePageState createState() => HomePageState();
}

class HomePageState extends State<HomePage> {
  @override
  Widget build(BuildContext context) {
    throw UnimplementedError();
  }
}
```

3. Add this import so that Profile object would be accessible from HomePage

```dart
import '../../data/models/profile.dart';
```

4. Add this line of code inside HomePageState's Widget build to convert the parameter into Profile instance.

```dart
final Profile profile = Profile.fromJson(widget.profileData);
```

```
import 'package:flutter/material.dart';
import '../../data/models/profile.dart';

class HomePage extends StatefulWidget {
  const HomePage({
    super.key,
    required this.posts,
    required this.stories,
    required this.profileData,
  });
  final List posts;
  final List stories;
  final Map<String, dynamic> profileData;

  @override
  HomePageState createState() => HomePageState();
}

class HomePageState extends State<HomePage> {
  @override
  Widget build(BuildContext context) {
    final Profile profile = Profile.fromJson(widget.profileData);
    throw UnimplementedError();
  }
}
```

5. Add Scaffold Widget as return following this specifications

No	Widget	Property	Value
1	Scaffold	key	Key('home_page_scaffold')
		backgroundColor	Colors.black
		appBar	AppBar(key: const Key("home_page_appbar")
		body	SingleChildScrollView(key: const Key('home_page_single_child_scroll_view'))
AppBar(key: const Key("home_page_appbar") properties :			
2	AppBar	key	Key("app_bar_home")
		backgroundColor	Colors.black

		leading	Icon(
			  key: Key('home_page_camera_icon'),
			  Icons.camera_alt)

		title	const Center(
			    key: Key('home_page_title_center'),
			    child: Text(
			      key: Key('home_page_title_text'),
			      "Instagram",
			      style: TextStyle(fontFamily: 'Billabong',
			fontSize: 35))),

		Action	const <Widget>[
			    Icon(
			      key: Key('home_page_send_icon'),
			      Icons.send),

			],
SingleChildScrollView(key: const Key('home_page_single_child_scroll_view'))			
properties :			
3	SingleChild ScrollView	key	Key('home_page_single_child_scroll_view')
		child	Column(key: const Key('home_page_column')
Column(key: const Key('home_page_column') properties			
4	Column	key	Key('home_page_column')
		children	[]

```dart
return Scaffold(
    key: const Key('home_page_scaffold'),
    backgroundColor: Colors.black,
    appBar: AppBar(
      key: const Key("home_page_appbar"),
      backgroundColor: Colors.black,
      leading: const Icon(
        key: Key('home_page_camera_icon'),
        Icons.camera_alt,
      ),
      title: const Center(
        key: Key('home_page_title_center'),
        child: Text(
          key: Key('home_page_title_text'),
          "Instagram",
          style: TextStyle(fontFamily: 'Billabong', fontSize: 35),
        ),
      ),
      actions: const <Widget>[
        Icon(key: Key('home_page_send_icon'), Icons.send),
      ],
    ),
    body: SingleChildScrollView(
      key: const Key('home_page_single_child_scroll_view'),
      child: Column(
        key: const Key('home_page_column'),
        children: [],
      ),
    ),
  );
```

6. Move to user_story.dart file under directory lib\app\modules\home\components\user_story.dart make sure it's extended from StatelessWidget

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

class UserStory extends StatelessWidget {
  const UserStory({super.key});

  @override
  Widget build(BuildContext context) {
    throw UnimplementedError();
  }
}
```

7. Add this import so UserStory class will be able to access user profile data and color constants

```dart
import 'package:example_widget_testing/core/theme/colors.dart';
import
'package:example_widget_testing/core/values/constant/story_json.dart';
```

8. Add Padding widget as return following this specifications:

No	Widget	Property	Value
5	Padding	key	Key('user_story_padding')
		padding	EdgeInsets.only(right: 20, left: 15, bottom: 10)
		child	Column(key: const Key('user_story_column')
Column(key: const Key('user_story_column') properties :			
5.1	Column	key	Key('user_story_column')
		children	SizedBox(key: const Key('user_story_sized_box'), SizedBox(height:8), SizedBox(key: const Key('user_story_sized_box_name')
SizedBox(key: const Key('user_story_sized_box') properties :			
5.1.1	SizedBox	key	Key('user_story_sized_box')
		width	65
		height	65
		child	Stack(key: const Key('user_story_stack')
Stack(key: const Key('user_story_stack') properties :			
5.1.1.1	Stack	key	Key('user_story_stack')
		children	Container(key: const Key('user_story_container'), Positioned(key: const Key('user_story_positioned')),
Container(key: const Key('user_story_container') properties :			
5.1.1.1.1	Container	key	Key('user_story_container')
		width	65
		height	65

		decoration	BoxDecoration(
			        shape: BoxShape.circle,
			        image: DecorationImage(
			          image: NetworkImage(profile),

			fit: BoxFit.cover,),)
Positioned(key: const Key('user_story_positioned')) properties :			
5.1.1.1.2	Positioned	key	Key('user_story_positioned')
		bottom	0
		right	0
		child	Container(key: const Key('user_story_outline_container')
Container(key: const Key('user_story_outline_container') properties :			
5.1.1.1.1.2.1	Container	key	Key('user_story_outline_container')
		width	19
		height	19
		decoration	BoxDecoration(shape: BoxShape.circle, color: Colors.white)
		child	Icon(key: Key('user_story_add_circle_icon')
Icon(key: Key('user_story_add_circle_icon') properties :			
5.1.1.1.1.2.1.1	Icon	key	Key('user_story_add_circle_icon')
		value	Icons.add_circle
		color	buttonFollowColor
		size	19
SizedBox(key: const Key('user_story_sized_box_name') properties :			
5.1.2	SizedBox	key	Key('user_story_sized_box_name')
		width	70
		child	Text(key: const Key('user_story_text_name')
5.1.2.1	Text	key	Key('user_story_text_name')
		value	name
		overflow	TextOverflow.ellipsis
		style	TextStyle(color: Colors.white)

```dart
return Padding(
    key: const Key('user_story_padding'),
    padding: const EdgeInsets.only(right: 20, left: 15, bottom: 10),
    child: Column(
      key: const Key('user_story_column'),
      children: <Widget>[
        SizedBox(
          key: const Key('user_story_sized_box'),
          width: 65,
          height: 65,
          child: Stack(
            key: const Key('user_story_stack'),
            children: <Widget>[
              Container(
                key: const Key('user_story_container'),
```

```
                    width: 65,
                    height: 65,
                    decoration: BoxDecoration(
                      shape: BoxShape.circle,
                      image: DecorationImage(
                        image: NetworkImage(profile),
                        fit: BoxFit.cover,
                      ),
                    ),
                  ),
                Positioned(
                  key: const Key('user_story_positioned'),
                  bottom: 0,
                  right: 0,
                  child: Container(
                    key: const Key('user_story_outline_container'),
                    width: 19,
                    height: 19,
                    decoration: const BoxDecoration(
                      shape: BoxShape.circle,
                      color: Colors.white,
                    ),
                    child: const Icon(
                      key: Key('user_story_add_circle_icon'),
                      Icons.add_circle,
                      color: buttonFollowColor,
                      size: 19,
                    ),
                  ),
                )
              ],
            ),
          ),
          const SizedBox(
            key: Key('user_story_sized_box_spacer'),
            height: 8,
          ),
          SizedBox(
            key: const Key('user_story_sized_box_name'),
            width: 70,
            child: Text(
              key: const Key('user_story_text_name'),
              name,
              overflow: TextOverflow.ellipsis,
              style: const TextStyle(color: Colors.white),
            ),
          )
        ],
```

```
    ),
  );
```

9. Back to home_page.dart file add this import so that UserStory widget would be accessible from HomePage.

```
import
'package:example_widget_testing/app/modules/home/components/user_story
.dart';
```

10. Move to Column Widget with key home_page_column, on children properties add SingleChildScrollView widget following this specifications:

No	Widget	Property	Value
6	SingleChildScrollView	key	Key('stories_scroll_view')
		scrollDirection	Axis.horizontal
		child	Row(key: const Key('stories_row')
Row(key: const Key('stories_row') properties :			
7	Row	key	const Key('stories_row')
		children	const UserStory(key: Key('user_story'))

```
Column(
      key: const Key('home_page_column'),
      children: <Widget>[
        SingleChildScrollView(
          key: const Key('stories_scroll_view'),
          scrollDirection: Axis.horizontal,
          child: Row(
            key: const Key('stories_row'),
            children: <Widget>[
              const UserStory(key: Key('user_story')),
            ],
          ),
        ),
      ],
    ),
```

11. Move to story_item.dart file under directory \lib\app\modules\home\components\story_item.dart and make sure it's extended from StatelessWidget

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

class StoryItem extends StatelessWidget {
  const StoryItem({
    super.key,
  });

  @override
  Widget build(BuildContext context) {
    throw UnimplementedError();
  }
}
```

12. Add this import so that StoryItem be able to use Color constants

```dart
import 'package:example_widget_testing/core/theme/colors.dart';
```

13. Add this parameters to StoryItem class

```dart
class StoryItem extends StatelessWidget {
  final String img;
  final String name;

  const StoryItem({
    super.key,
    required this.img,
    required this.name,
  });
```

14. Add Padding widget as a return for StoryItem class following this specification

No	Widget	Property	Value
1	Padding	key	Key('story_item_padding')
		padding	EdgeInsets.only(right: 20, bottom: 10)
		child	Column(key: const Key('story_item_column')
2	Column	key	Key('story_item_column')
		children	Container(key: const Key('story_item_container')), SizedBox(key : const Key('story_item_username_sizedbox'))
Container(key: const Key('story_item_container')) property :			
3	Container	key	Key('story_item_container')
		width	68
		height	68
		margin	EdgeInsets.only(bottom: 8)
		decoration	BoxDecoration(shape: BoxShape.circle, gradient: LinearGradient(begin: Alignment.topCenter, end: Alignment.bottomCenter, colors: storyBorderColor))
		child	Container(

			key: const Key('story_item_image_container')
Container(key: const Key('story_item_image_container') properties :			
4	Container	key	Key('story_item_image_container')
		margin	EdgeInsets.all(3)
		width	65
		height	65

		decoration	BoxDecoration(
			    border: Border.all(color: black, width: 2),
			    shape: BoxShape.circle,
			    image: DecorationImage(
			     image: NetworkImage(img),
			     fit: BoxFit.cover,
			    ),
			    )

SizedBox(key : const Key('story_item_username_sizedbox')) properties :			
5	SizedBox	key	Key('story_item_username_sizedbox')
		width	70
		child	Text(key: const Key('story_item_username_text')
Text(key: const Key('story_item_username_text') properties :			
6	Text	value	name
		key	Key('story_item_username_text')
		overflow	TextOverflow.ellipsis
		style	TextStyle(color: white)

15. Back to home_page.dart file and add this import so that StoryItem widget will be accessible from this page :

```
import
'package:example_widget_testing/app/modules/home/components/story_item.
dart';
```

16. Move to Row widget with key `stories_row` and add another row as children following this specification

No	Widget	Property	Value
1	Row	key	Key('following_stories_row')

		children	List.generate(
			  widget.stories.length,
			  (index) {
			    return StoryItem(
			     key: Key('story_item_$index'),
			     img: widget.stories[index]['img'],
			     name: widget.stories[index]['name'],
			    );
			  },
			  )

```
Row(
  key: const Key('stories_row'),
  children: <Widget>[
    ...
    Row(
      key: const Key('following_stories_row'),
      children: List.generate(
        widget.stories.length,
        (index) {
          return StoryItem(
            key: Key('story_item_$index'),
            img: widget.stories[index]['img'],
            name: widget.stories[index]['name'],
          );
        },
      ),
    ),
  ],
);
```

17. Still on the home_page.dart file find Column widget with key `home_page_column` and add Divider widget as children following this specifications

No	Widget	Property	Value
1	Divider	key	Key('home_page_divider')
		color	white.withOpacity(0.3)

```
Column(
  key: const Key('home_page_column'),
  children: <Widget>[
    ...
    Divider(
      key: const Key('home_page_divider'),
      color: white.withOpacity(0.3),
    )
  ],
)
```

18. Move to main.dart file under directory lib\main.dart
19. Add this import so HomePage would be registered at main.dart

```
import 'package:example_widget_testing/app/modules/home/home_page.dart';
```

20. Add this code to register HomePage into routes

```
routes: {
    '/home': (context) =>
        HomePage(posts: posts, stories: stories, profileData: profileJson),
```

```
        },
```

```
Run | Debug | Profile
void main() {
  runApp(const MyApp());
}

class MyApp extends StatelessWidget {
  const MyApp({super.key});

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      title: 'Flutter Demo',
      theme: ThemeData(
        primarySwatch: Colors.blue,
      ), // ThemeData
      home: const LoginPage(),
      routes: {
        '/home': (context) =>
            HomePage(posts: posts, stories: stories, profileData: profileJson),
      },
    ); // MaterialApp
  }
}
```
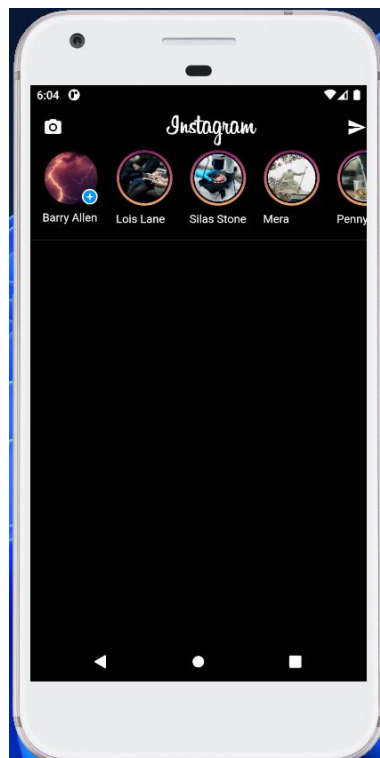
21. Move to login_page.dart, find openHomePage() method and modify it into like this

```
void openHomePage() {
  inputTextNotNull ? Navigator.pushNamed(context, '/home') : null;
}
```

22. Run the project by login first then hit Login button. If there's no error it will shows home page similar like this.

Testing

1) Open home_page_test.dart file under test folder
2) Find main method it will look similar like this

```
24
        Run | Debug
25      void main() {
          Run | Debug
26        testWidgets('Check if home page is present', (WidgetTester tester) async {
27          FlutterError.onError = ignoreOverflowErrors;
28
29          await mockNetworkImagesFor(
30            () => tester.pumpWidget(
31              MaterialApp(
32                home: HomePage(
33                  posts: posts, profileData: profileJson, stories: stories), // HomePage
34              ), // MaterialApp
```

3) Click Run
4) If there's an error while running the test, especially around line 312 onward simply press close to remove the warning

```
311          💡
          Run | Debug
312 >    testWidgets(    'package:flutter_test/src/binding.dart': Failed assertion: line 903 pos 14: '_pendin

'package:flutter_test/src/binding.dart': Failed assertion: line 903 pos 14: '_pendingExceptionDetails != null': A...  Check if P...  ↑ ↓ ⟳ | 🗑 ⬀ ×
      'package:flutter_test/src/binding.dart': Failed assertion: line 903 pos 14: '_pendingExceptionDetails
      != null': A test overrode FlutterError.onError but either failed to return it to its original state,
      or had unexpected additional errors that it could not handle. Typically, this is caused by using expect
      () before restoring FlutterError.onError.
      dart:core                                           _AssertionError._throwNew
      package:flutter_test/src/binding.dart 903:14        TestWidgetsFlutterBinding._runTest.
      handleUncaughtError
      package:flutter_test/src/binding.dart 908:9         TestWidgetsFlutterBinding._runTest.<fn>
      dart:async                                          _CustomZone.runUnary
      package:fake_async/fake_async.dart 197:32           FakeAsync.flushMicrotasks
      package:flutter_test/src/binding.dart 1415:17       AutomatedTestWidgetsFlutterBinding.runTest.<fn>
      ===== asynchronous gap ===========================

PROBLEMS  5    OUTPUT    TERMINAL    TEST RESULTS    DEBUG CONSOLE        Filter (e.g. text, !exclude)    Dart (Pixel XL API 30)  ∨  ≡
```

5) At the moment not all test are passed sine we've not finished implementing home page, just make sure these 5 test are passed

```
✓ Check if home page is present
✓ Check if Home page Appbar is present
✓ Check if Story is present
✓ Check if StoryItem rendered correctly
✓ Check if divider is present
```

6) If there is an error try to check the message and fix the error usually It's because of wrong key name or missing property of specific widget