

JOBSHEET – APLIKASI OCR SEDERHANA DENGAN FLUTTER

1. IDENTITAS PRAKTIKAN

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2. TUJUAN PRAKTIKUM

Setelah menyelesaikan jobsheet ini, siswa/mahasiswa mampu:

1. Membuat aplikasi Flutter multi-halaman.
2. Menggunakan plugin kamera untuk mengambil gambar.
3. Mengintegrasikan **OCR (Optical Character Recognition)** menggunakan library `google_mlkit_text_recognition`.
4. Menampilkan hasil OCR di halaman terpisah.
5. Menerapkan navigasi dasar antar layar menggunakan Navigator.

3. ALAT DAN BAHAN

- Laptop/komputer dengan Flutter SDK terinstal
- VS Code atau Android Studio
- Emulator Android atau perangkat Android fisik
- Koneksi internet (untuk instalasi dependensi)

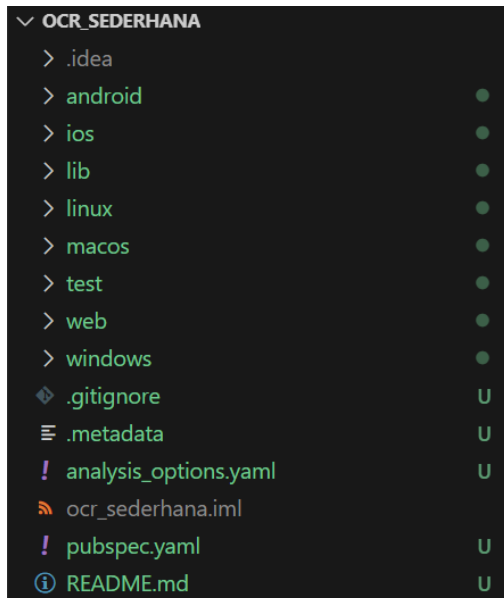
4. LANGKAH KERJA

4.1. Langkah 1: Buat Proyek Baru

Buka terminal, lalu jalankan:

```
1 flutter create ocr_sederhana
2 cd ocr_sederhana
```

Listing 1: Membuat proyek Flutter

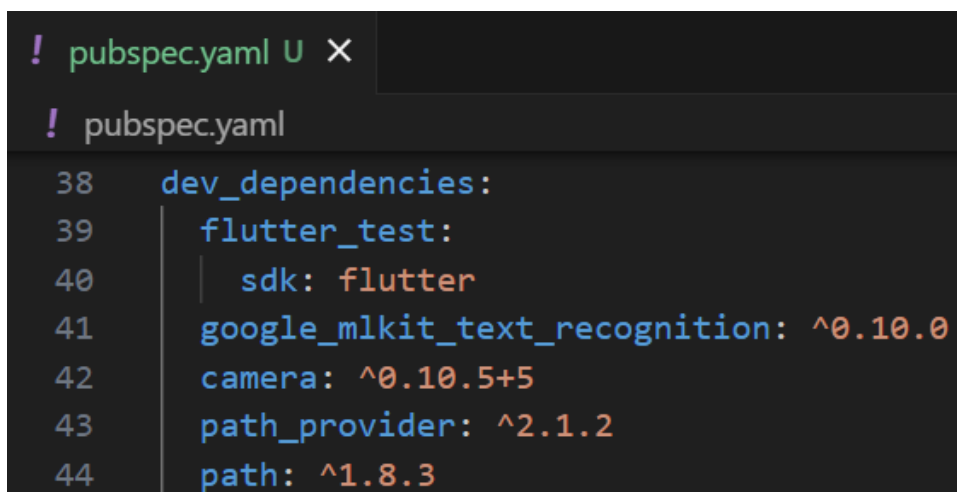


4.2. Langkah 2: Tambahkan Plugin

Buka file pubspec.yaml, lalu tambahkan dependensi berikut di bawah bagian dependencies:

```
1 dependencies:
2   flutter:
3     sdk : flutter
4   google_mlkit_text_recognition: ^0.10.0
5   camera: ^0.10.5+5
6   path_provider: ^2.1.2
7   path: ^1.8.3
```

Listing 2: pubspec.yaml - dependencies



Simpan file, lalu jalankan:

```
1 flutter pub get
```

```
D:\Flutter\pemograman-mobile\minggu_7\ocr_sederhana>flutter pub get
Resolving dependencies... (2.2s)
Downloading packages...
  characters 1.4.0 (1.4.1 available)
  flutter_lints 5.0.0 (6.0.0 available)
  lints 5.1.1 (6.0.0 available)
  material_color_utilities 0.11.1 (0.13.0 available)
  meta 1.16.0 (1.17.0 available)
  test_api 0.7.6 (0.7.7 available)
Got dependencies!
6 packages have newer versions incompatible with dependency constraints.
Try `flutter pub outdated` for more information.
```

4.3. Langkah 3: Tambahkan Izin Kamera (Android)

Buka file: android/app/src/main/AndroidManifest.xml

Tambahkan baris berikut di dalam tag <manifest>, sebelum <application>:

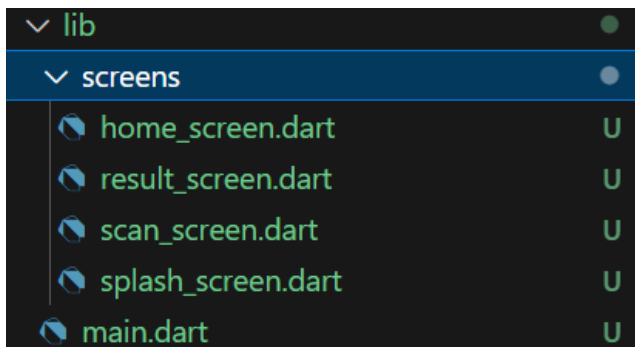
```
1 <uses-permission android:name="android.permission.CAMERA" />
```

```
android > app > src > main > AndroidManifest.xml
1  <manifest xmlns:android="http://schemas.android.com/apk/res/android">
2
3      <uses-permission android:name="android.permission.CAMERA" />
4
5      <application
6          android:label="ocr_sederhana"
```

4.4. Langkah 4: Buat Struktur Folder

Di dalam folder lib/, buat struktur berikut:

```
1 lib /
2     main.dart
3     screens/
4         splash_screen.dart
5         home_screen.dart
6         scan_screen.dart
7         result_screen.dart
```



5. KODE PROGRAM

5.1. File: lib/main.dart

```
1 import 'package:flutter/material.dart';
2 import 'screens/splash_screen.dart';
3
4 void main () {
5   runApp(const MyApp());
6 }
7
8 class MyApp extends StatelessWidget {
9   const MyApp({super.key});
10
11   @override
12   Widget build(BuildContext context) {
13     return MaterialApp(
14       title: 'OCR Sederhana',
15       theme: ThemeData(primarySwatch: Colors.blue),
16       home : const Splash Screen (),
17       debugShowCheckedModeBanner: false ,
18     );
19   }
20 }
```

Listing 3: main.dart

```

lib > main.dart > ...
1  import 'package:flutter/material.dart';
2  import 'screens/splash_screen.dart';
3
   Run | Debug | Profile
4  void main() {
5    runApp(const MyApp());
6  }
7
8  class MyApp extends StatelessWidget {
9    const MyApp({super.key});
10
11    @override
12    Widget build(BuildContext context) {
13      return MaterialApp(
14        title: 'OCR Sederhana',
15        theme: ThemeData(
16          primarySwatch: Colors.blue,
17        ), // ThemeData
18        home: const SplashScreen(),
19        debugShowCheckedModeBanner: false,
20      ); // MaterialApp
21    }
22  }

```

5.2. File: lib/screens/splash_screen.dart

```

1  import 'dart:async';
2  import 'package:flutter/material.dart';
3  import 'home_screen.dart';
4
5  class SplashScreen extends StatefulWidget {
6    const SplashScreen({super.key});
7
8    @override
9    State<SplashScreen> createState() => _SplashScreenState();
10 }
11
12 class _SplashScreenState extends State<SplashScreen> {
13   @override

```

```

14 void initState () {
15     super.initState ();
16     Timer(const Duration(seconds: 2), () {
17         Navigator.pushReplacement(
18             context ,
19             MaterialPageRoute(builder: (_) => const HomeScreen()),
20         );
21     });
22 }
23
24 @override
25 Widget build(BuildContext context) {
26     return Scaffold(
27         backgroundColor: Colors.blue,
28         body: Center(
29             child: Column(
30                 mainAxisAlignment: MainAxisAlignment.center,
31                 children: const [
32                     CircularProgressIndicator(color: Colors.white),
33                     SizedBox(height: 20),
34                     Text('OCR Scanner',
35                         style: TextStyle(color: Colors.white, fontSize:
36                             24)),
37                 ],
38             ),
39         );
40 }
41 }

```

Listing 4: splash.screen.dart

```

lib > screens > splash_screen.dart > ...
1  import 'dart:async';
2  import 'package:flutter/material.dart';
3  import 'home_screen.dart';
4
5  class SplashScreen extends StatefulWidget {
6    const SplashScreen({super.key});
7
8    @override
9    State<SplashScreen> createState() => _SplashScreenState();
10 }
11
12 class _SplashScreenState extends State<SplashScreen> {
13   @override
14   void initState() {
15     super.initState();
16     Timer(const Duration(seconds: 2), () {
17       Navigator.pushReplacement(
18         context,
19         MaterialPageRoute(builder: (_) => const HomeScreen()),
20       );
21     }); // Timer
22   }
23
24   @override
25   Widget build(BuildContext context) {
26     return Scaffold(
27       backgroundColor: Colors.blue,
28       body: Center(
29         child: Column(
30           mainAxisAlignment: MainAxisAlignment.center,
31           children: const [
32             CircularProgressIndicator(color: Colors.white),
33             SizedBox(height: 20),
34             Text(
35               'OCR Scanner',
36               style: TextStyle(color: Colors.white, fontSize: 24),
37             ), // Text
38           ],
39         ), // Column
40       ), // Center
41     ); // Scaffold
42   }
43 }

```

5.3. File: lib/screens/home screen.dart

```

1  import 'package:flutter/material.dart';
2  import 'scan_screen.dart';
3
4  class HomeScreen extends StatelessWidget {
5    const HomeScreen({super.key});
6
7    @override
8    Widget build(BuildContext context) {

```

```

9      return Scaffold(
10        appBar: AppBar(title: const Text('Menu Utama')),
11        body: Center(
12          child: ElevatedButton(
13            onPressed: () {
14              Navigator.push(
15                context,
16                MaterialPageRoute(builder: (_) => const ScanScreen
17              ),
18            ),
19            child: const Text('Mulai Scan Teks'),
20          ),
21        ),
22      );
23    }
24  }

```

Listing 5: home.screen.dart

```

lib > screens > home_screen.dart > ...
1  import 'package:flutter/material.dart';
2  import 'scan_screen.dart';
3
4  class HomeScreen extends StatelessWidget {
5    const HomeScreen({super.key});
6
7    @override
8    Widget build(BuildContext context) {
9      return Scaffold(
10        appBar: AppBar(
11          title: const Text('Menu Utama'),
12        ), // AppBar
13        body: Center(
14          child: ElevatedButton(
15            onPressed: () {
16              Navigator.push(
17                context,
18                MaterialPageRoute(builder: (_) => const ScanScreen()),
19              );
20            },
21            child: const Text('Mulai Scan Teks'),
22          ), // ElevatedButton
23        ), // Center
24      ); // Scaffold
25    }
26  }

```


5.4. File: lib/screens/scan_screen.dart

```
1 import 'dart:io';
2 import 'package:flutter/material.dart';
3 import 'package:camera/camera.dart';
4 import 'package:google_mlkit_text_recognition/google_mlkit_text_
   recognition.dart';
5 import 'package:path/path.dart' as path;
6 import 'package:path_provider/path_provider.dart';
7 import 'result_screen.dart';
8
9 late List<CameraDescription> cameras;
10
11 class ScanScreen extends StatefulWidget {
12   const ScanScreen({super.key});
13
14   @override
15   State<ScanScreen> createState() => _ScanScreenState();
16 }
17
18 class _ScanScreenState extends State<ScanScreen> {
19   late CameraController _controller;
```

```

20 late Future <void> _initializeControllerFuture;
21
22 @override
23 void initState () {
24     super.initState ();
25     _initCamera ();
26 }
27
28 void _initCamera () async {
29     cameras = await availableCameras ();
30     _controller = CameraController (cameras [0], ResolutionPreset.
medium);
31     _initializeControllerFuture = _controller.initialize ();
32     if (mounted) {
33         setState (() {});
34     }
35 }
36
37 @override
38 void dispose () {
39     _controller.dispose ();
40     super.dispose ();
41 }
42
43 Future <String> _ocrFromFile (File imageFile) async {
44     final inputImage = InputImage.fromFile (imageFile);
45     final textRecognizer = TextRecognizer (script:
TextRecognitionScript.latin);
46     final RecognizedText recognizedText = await textRecognizer.
processImage (inputImage);
47     textRecognizer.close ();
48     return recognizedText.text;
49 }
50
51 Future <void> _takePicture () async {
52     try {
53         await _initializeControllerFuture;
54
55         if (!mounted) return;
56         ScaffoldMessenger.of (context).showSnackBar(

```

```

57         const SnackBar(content: Text('Memproses OCR, mohon
tunggu...'), duration: Duration(seconds: 2)));
58
59         final XFile image = await _controller.takePicture();
60
61         final ocrText = await _ocrFromFile(File(image.path));
62
63         if (!mounted) return;
64         Navigator.push(
65             context,
66             MaterialPageRoute(builder: (_) => ResultScreen(ocrText:
ocrText)),
67         );
68     } catch (e) {
69         if (!mounted) return;
70         ScaffoldMessenger.of(context).showSnackBar(SnackBar(content
: Text('Error saat mengambil/memproses foto: $e')));
71     }
72 }
73
74 @override
75 Widget build(BuildContext context) {
76     if (!_controller.value.isInitialized) {
77         return const Scaffold(body: Center(child:
CircularProgressIndicator()));
78     }
79
80     return Scaffold(
81         appBar: AppBar(title: const Text('Kamera OCR')),
82         body: Column(
83             children: [
84                 Expanded(
85                     child: AspectRatio(
86                         aspectRatio: _controller.value.aspectRatio,
87                         child: CameraPreview(_controller),
88                     ),
89                 ),
90                 Padding(
91                     padding: const EdgeInsets.all(16.0),
92                     child: ElevatedButton.icon(
93                         onPressed: _takePicture,

```

```

94         icon: const Icon(Icons.camera),
95         label: const Text('Ambil Foto & Scan'),
96     ),
97 ),
98 ],
99 ),
100 );
101 }
102 }

```

Listing 6: scan_screen.dart

```

1  import 'dart:io';
2  import 'package:flutter/material.dart';
3  import 'package:camera/camera.dart';
4  import 'package:google_mlkit_text_recognition/google_mlkit_text_recognition.dart';
5  import 'package:path/path.dart' as path;
6  import 'package:path_provider/path_provider.dart';
7  import 'result_screen.dart';
8
9  late List<CameraDescription> cameras;
10
11  class ScanScreen extends StatefulWidget {
12    const ScanScreen({super.key});
13
14    @override
15    State<ScanScreen> createState() => _ScanScreenState();
16  }
17
18  class _ScanScreenState extends State<ScanScreen> {
19    late CameraController _controller;
20    late Future<void> _initializeControllerFuture;
21
22    @override
23    void initState() {
24      super.initState();
25      _initCamera();
26    }
27
28    void _initCamera() async {
29      cameras = await availableCameras();
30      _controller = CameraController(
31        cameras[0],
32        ResolutionPreset.medium,
33      );
34      _initializeControllerFuture = _controller.initialize();
35      if (mounted) {
36        setState(() {});
37      }
38    }
39
40    @override
41    void dispose() {
42      _controller.dispose();
43      super.dispose();
44    }
45

```

```

46 Future<String> _ocrFromFile(File imageFile) async {
47   final inputImage = InputImage.fromFile(imageFile);
48   final textRecognizer = TextRecognizer(script: TextRecognitionScript.latin)
49   final recognizedText = await textRecognizer.processImage(inputImage);
50   textRecognizer.close();
51   return recognizedText.text;
52 }
53
54 Future<void> _takePicture() async {
55   try {
56     await _initializeControllerFuture;
57
58     if (!mounted) return;
59     ScaffoldMessenger.of(context).showSnackBar(
60       const SnackBar(
61         content: Text('Memproses OCR, mohon tunggu...'),
62         duration: Duration(seconds: 2),
63       ),
64     );
65
66     final XFile image = await _controller.takePicture();
67     final ocrText = await _ocrFromFile(File(image.path));
68
69     if (!mounted) return;
70     Navigator.push(
71       context,
72       MaterialPageRoute(
73         builder: (_) => ResultScreen(ocrText: ocrText),
74       ),
75     );
76   } catch (e) {
77     if (!mounted) return;
78     ScaffoldMessenger.of(context).showSnackBar(
79       SnackBar(content: Text('Error saat mengambil / memproses foto: $e')),
80     );
81   }
82 }
83
84 @override
85 Widget build(BuildContext context) {
86   if (!_controller.value.isInitialized) {
87     return const Scaffold(
88       body: Center(child: CircularProgressIndicator()),
89     );
90   }
91
92   return Scaffold(
93     appBar: AppBar(title: const Text('Kamera OCR')),
94     body: Column(
95       children: [
96         Expanded(
97           child: AspectRatio(
98             aspectRatio: _controller.value.aspectRatio,
99             child: CameraPreview(_controller),
100           ),
101         ),
102         Padding(
103           padding: const EdgeInsets.all(16.0),
104           child: ElevatedButton.icon(
105             onPressed: _takePicture,
106             icon: const Icon(Icons.camera),
107             label: const Text('Ambil Foto & Scan'),
108           ),
109         ),
110       ],
111     ),
112   );
113 }
114 }

```

5.5. File: lib/screens/result_screen.dart

```
1 import 'package:flutter/material.dart';
2
3 class ResultScreen extends StatelessWidget {
4   final String ocrText;
5
6   const ResultScreen({super.key, required this.ocrText});
7
8   @override
9   Widget build(BuildContext context) {
10    return Scaffold(
11      appBar: AppBar(title: const Text('Hasil OCR')),
12      body: Padding(
13        padding: const EdgeInsets.all(16.0),
14        child: SingleChildScrollView(
15          child: SelectableText(
16            ocrText.isEmpty
17              ? 'Tidak ada teks ditemukan.'
18              : ocrText.replaceAll('\n', ' '),
19            style: const TextStyle(fontSize: 18),
20          ),
21        ),
22      ),
23    );
24  }
25 }
```

Listing 7: result.screen.dart

```
lib > screens > result_screen.dart > ...
1 import 'package:flutter/material.dart';
2
3 class ResultScreen extends StatelessWidget {
4   final String ocrText;
5
6   const ResultScreen({super.key, required this.ocrText});
7
8   @override
9   Widget build(BuildContext context) {
10    return Scaffold(
11      appBar: AppBar(title: const Text('Hasil OCR')),
12      body: Padding(
13        padding: const EdgeInsets.all(16.0),
14        child: SingleChildScrollView(
15          child: SelectableText(
16            ocrText.isEmpty
17              ? 'Tidak ada teks ditemukan.'
18              : ocrText.replaceAll('\n', ' '),
19            style: const TextStyle(fontSize: 18),
20          ), // SelectableText
21        ), // SingleChildScrollView
22      ), // Padding
23    ); // Scaffold
24  }
25 }
```

6. TUGAS PRAKTIKUM

1. Jalankan aplikasi di emulator atau HP.

```
PS D:\Flutter\pemograman-mobile\minggu_7\ocr_sederhana> flutter devices
Found 4 connected devices:
CPH2695 (mobile) • F69PWSGEQ4YX7HUK • android-arm64 • Android 15 (API 35)
Windows (desktop) • windows • windows-x64 • Microsoft Windows [Version 10.0.22631.6060]
Chrome (web) • chrome • web-javascript • Google Chrome 141.0.7390.66
Edge (web) • edge • web-javascript • Microsoft Edge 141.0.3537.71

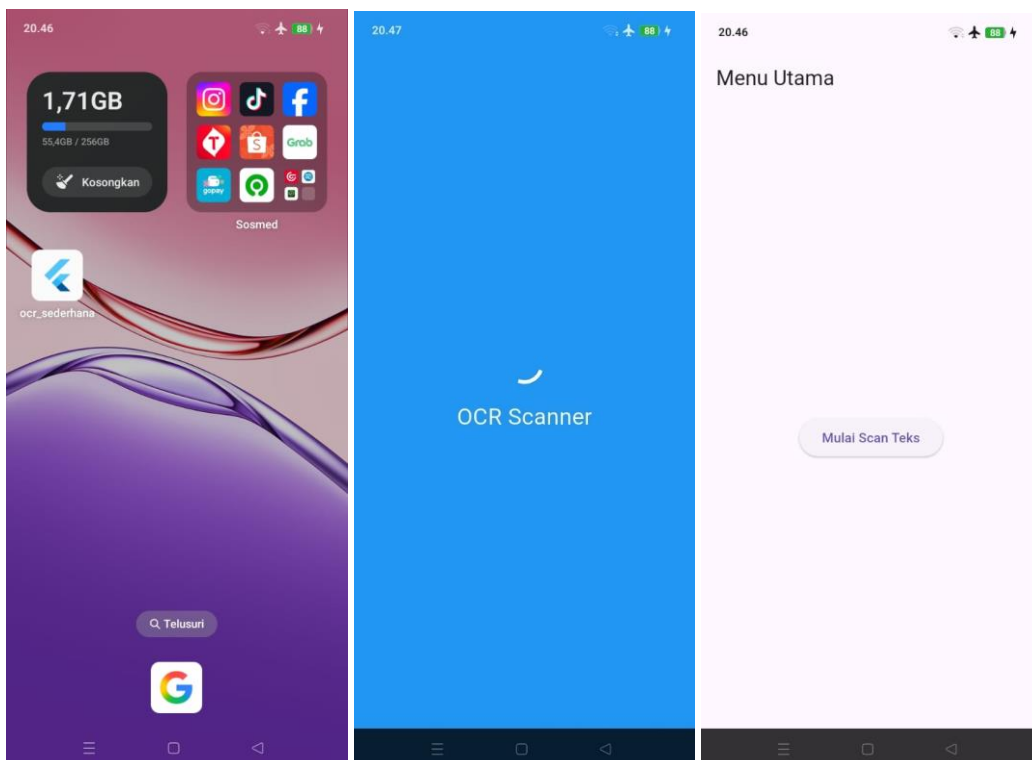
Run "flutter emulators" to list and start any available device emulators.

If you expected another device to be detected, please run "flutter doctor" to diagnose potential issues. You may also try increasing the time to wait for
connected devices with the "--device-timeout" flag. Visit https://flutter.dev/setup/ for troubleshooting tips.
```

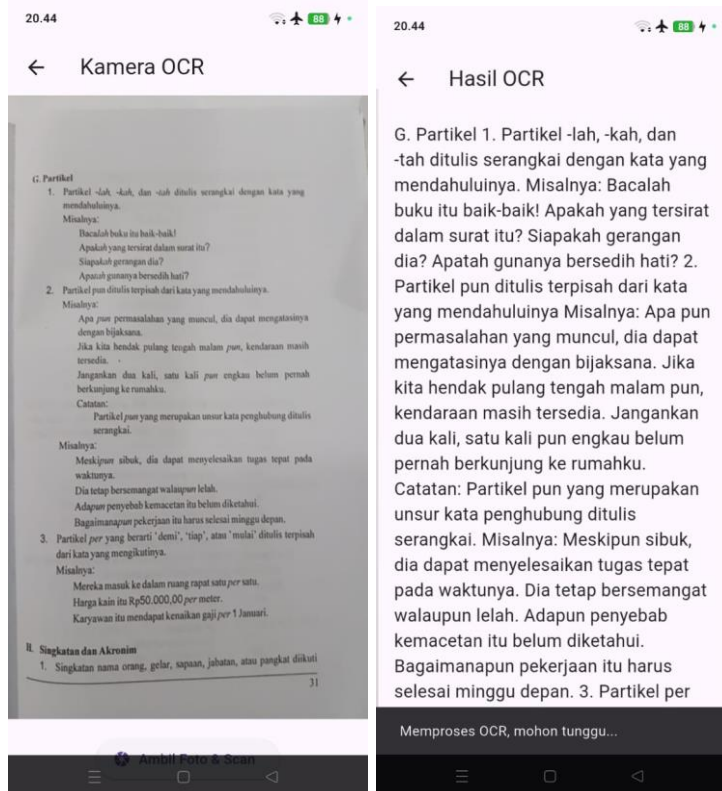
```
PS D:\Flutter\pemograman-mobile\minggu_7\ocr_sederhana> flutter run -d CPH2695
D:\OplusScrollToTopManager(10638): com.example.ocr_sederhana/com.example.ocr_sederhana.MainActivity, unregisterSystemUIBroadcastReceiver failed java.lang.IllegalA
rgumentException: Receiver not registered: android.view.OplusScrollToTopManager$2@5862b8f
W/WindowOnBackDispatcher(10638): sendCancelIfRunning: isInProgress=false callback=android.view.ViewRootImpl$$ExternalSyntheticLambda11@da1de1
D/HWUI (10638): RenderProxy::destroy: this=0xb4000076f8cf2100, mContext=0xb4000076f00f4f80
D/HWUI (10638): SkiaOpenGLPipeline::setSurface: this=0xb4000076f8d208c0, surface=NULL
D/WindowLayoutComponentImpl(10638): app removeWindowLayoutInfoListener consumer: androidx.window.layout.adapter.extensions.MulticastConsumer@719adb6
Lost connection to device.
PS D:\Flutter\pemograman-mobile\minggu_7\ocr_sederhana> flutter run -d CPH2695
Launching lib/main.dart on CPH2695 in debug mode...
Running Gradle task 'assembleDebug'... 18.9s
✓ Built build/app/outputs/flutter-apk/app-debug.apk
Installing build/app/outputs/flutter-apk/app-debug.apk... 6.0s
D/FlutterJNI(13054): Beginning load of flutter...
D/FlutterJNI(13054): flutter (null) was loaded normally!
I/flutter (13054): [IMPORTANT:flutter/shell/platform/android/android_context_vk_impeller.cc(62)] Using the Impeller rendering backend (Vulkan).
D/OplusScrollToTopManager(13054): com.example.ocr_sederhana/com.example.ocr_sederhana.MainActivity,This com.android.internal.policy.DecorView{b55820b V.E..... R
..... 0,0-720,1604 aid-0 alpha-1.0 viewInfo = }[MainActivity] change focus to true
W/WindowOnBackDispatcher(13054): OnBackInvokedCallback is not enabled for the application.
W/WindowOnBackDispatcher(13054): Set 'android:enableOnBackInvokedCallback="true"' in the application manifest.
Syncing files to device CPH2695... 341ms

Flutter run key commands.
r Hot reload.
R Hot restart.
h List all available interactive commands.
d Detach (terminate "flutter run" but leave application running).
c Clear the screen
q Quit (terminate the application on the device).

A Dart VM Service on CPH2695 is available at: http://127.0.0.1:64530/juGLUXxSAYU=/
The Flutter DevTools debugger and profiler on CPH2695 is available at: http://127.0.0.1:9101?uri=http://127.0.0.1:64530/juGLUXxSAYU=/
D/ProfileInstaller(13054): Installing profile for com.example.ocr_sederhana
I/e.ocr_sederhana(13054): Background concurrent mark compact GC freed 11MB AllocSpace bytes, 4(116KB) LOS objects, 66% free, 3093KB/9237KB, paused 328us,1.794ms
total 168.255ms
```



2. Lakukan scan terhadap teks cetak (misal: buku, koran, atau layar HP).



3. Amati hasil OCR yang muncul.

Hasil pengamatan: teks hasil OCR terbaca hampir seluruhnya dengan benar, tetapi ada sedikit perbedaan format dan tanda baca dibanding teks asli di buku (misalnya hilangnya pemisahan baris dan sedikit ketidaktepatan spasi atau huruf kapital).

4. Jawab pertanyaan berikut:

- a. Apakah semua teks terbaca dengan akurat? Mengapa?
Jawaban:

Tidak semua teks terbaca dengan akurat. Hal ini karena OCR (Optical Character Recognition) sangat bergantung pada kualitas gambar, seperti:

- pencahayaan saat pemotretan,
- ketajaman dan kontras teks,
- jenis dan ukuran huruf,
- posisi atau kemiringan teks.

Jika gambar sedikit buram, miring, atau cahaya terlalu terang/gelap, hasil OCR bisa kurang tepat (misalnya huruf “l” terbaca sebagai “1” atau spasi hilang).

- b. Apa kegunaan fitur OCR dalam kehidupan sehari-hari?

Jawaban:

Fitur OCR memiliki peran penting dalam membantu proses digitalisasi teks dari dokumen cetak menjadi teks digital. Dengan adanya OCR, pengguna tidak perlu mengetik ulang isi dokumen karena sistem secara otomatis mengonversi gambar teks menjadi bentuk tulisan yang dapat disalin, disimpan, dan diedit. Teknologi ini banyak digunakan dalam kegiatan administrasi, pendidikan, hingga dunia bisnis untuk efisiensi waktu dan tenaga.

c. Sebutkan 2 contoh aplikasi nyata yang menggunakan OCR!

Jawaban:

Beberapa aplikasi populer yang menerapkan teknologi OCR antara lain:

- Google Lens, yang dapat mengenali teks dari foto untuk disalin, diterjemahkan, atau dicari informasinya secara langsung.
- Adobe Scan atau CamScanner, yang berfungsi untuk memindai dokumen kertas menjadi file digital yang dapat diedit atau disimpan dalam format PDF.

7. CATATAN PENTING

- Pastikan kamera perangkat dalam kondisi baik dan pencahayaan cukup.
- Plugin google mlkit text recognition bekerja **offline** dan mendukung bahasa Latin (termasuk Indonesia).
- Jika muncul error saat pertama kali buka kamera, pastikan izin kamera sudah diizinkan di pengaturan HP.

8. PENILAIAN

Aspek	Skor (1–5)
Kelengkapan kode	
Aplikasi berjalan lancar	
Jawaban tugas	
Ketepatan waktu	
Total	

$$\text{Nilai Akhir} = \text{Total Skor} \times 5$$

Selamat mengerjakan!