JOBSHEET – APLIKASI OCR SEDERHANA DENGAN FLUTTER

1. IDENTITAS PRAKTIKAN

Komponen	Isi
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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)

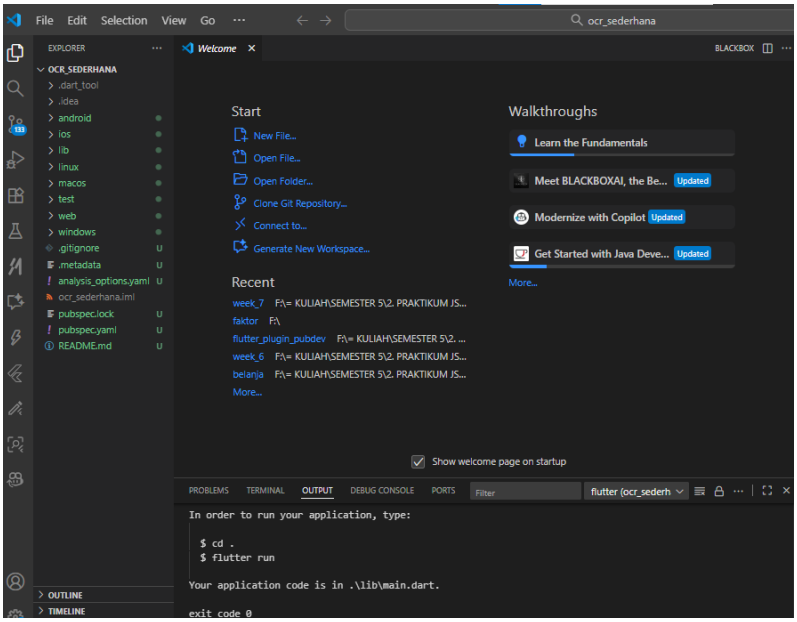
4. LANGKAH KERJA

4.1. Langkah 1: Buat Proyek Baru

Buka terminal, lalu jalankan:

```
flutter create ocr_sederhana
cd ocr_sederhana
```

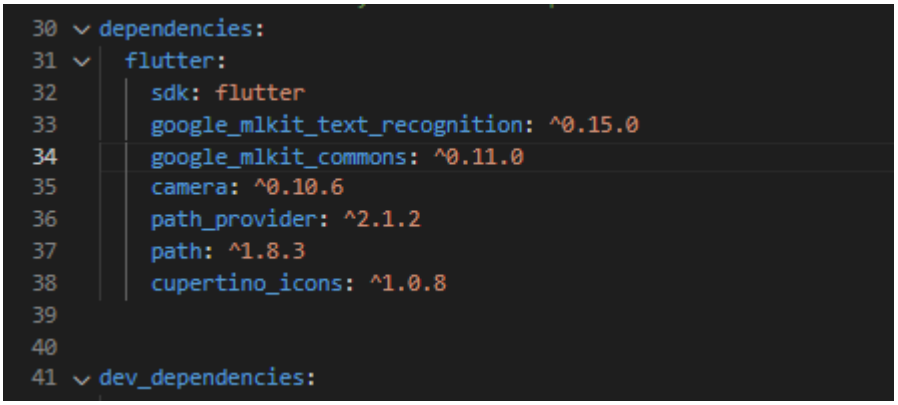
Listing 1: Membuat proyek Flutter



4.2. Langkah 2: Tambahkan Plugin

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

```
dependencies:
  flutter:
    sdk    :                    flutter
  google_mlkit_text_recognition: ^0.10.0
  camera: ^0.10.5+5
  path_provider: ^2.1.2
  path: ^1.8.3
```



Listing 2: pubspec.yaml - dependencies

Simpan file, lalu jalankan:

```
flutter pub get
```

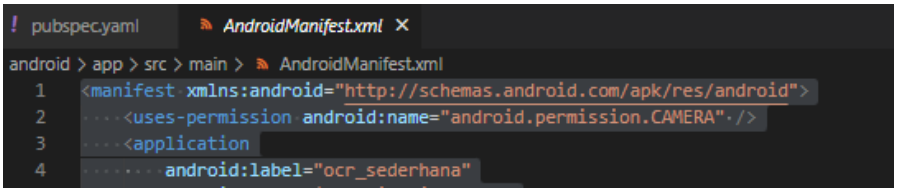
```
PS F:\= KULIAH\SEMESTER 5\2. PRAKTIKUM JS\PEMROGRAMAN MOBILE\github\pem_mobile\week_7\ocr_sederhana> flutter pub get
Resolving dependencies... (1.5s)
Downloading packages...
  camera 0.10.6 (0.11.2 available)
  characters 1.4.0 (1.4.1 available)
  flutter_lints 5.0.0 (6.0.0 available)
  google_mlkit_commons 0.5.0 (0.11.0 available)
  google_mlkit_text_recognition 0.10.0 (0.15.0 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!
9 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>:

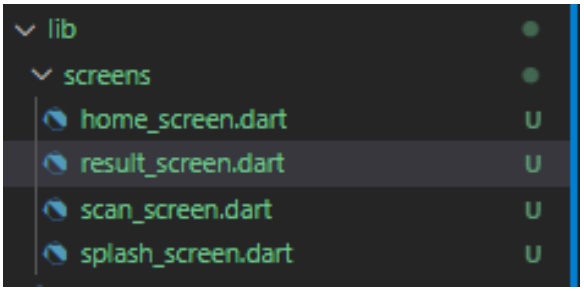
```
<uses-permission android:name="android.permission.CAMERA" />
```



4.4. Langkah 4: Buat Struktur Folder

Di dalam folder lib/, buat struktur berikut:

```
lib/
        main.dart
        screens/
            splash_screen.dart
            home_screen.dart
            scan_screen.dart
            result_screen.dart
```



5. KODE PROGRAM

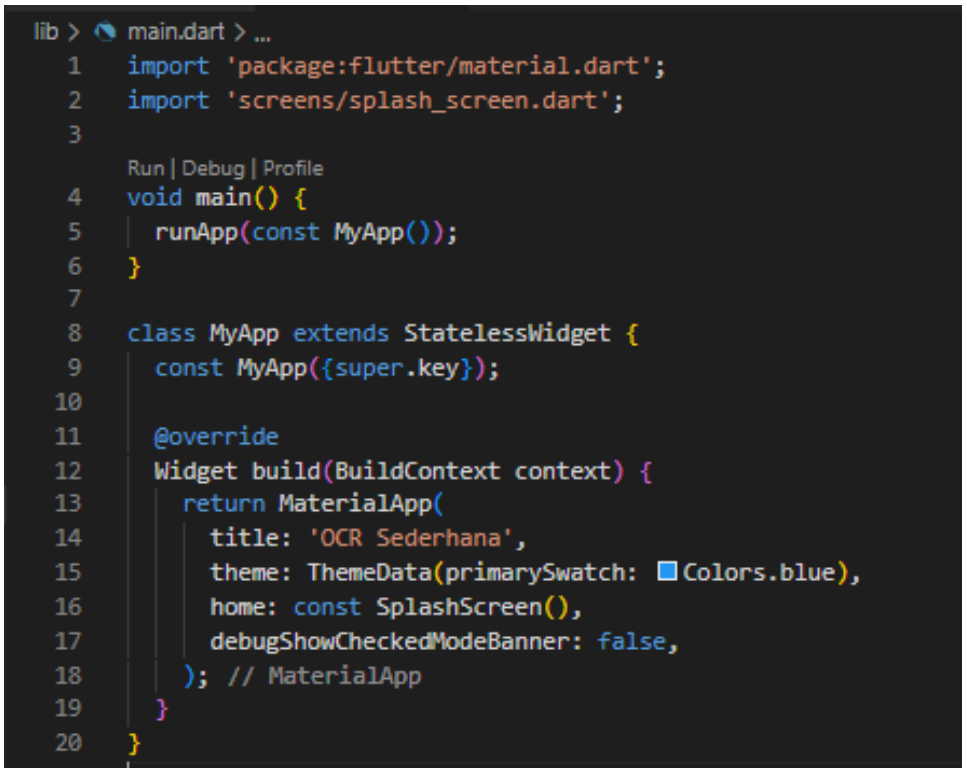
5.1. File: lib/main.dart

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

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

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

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'OCR Sederhana',
      theme: ThemeData(primarySwatch: Colors.blue),
      home: const SplashScreen(),
      debugShowCheckedModeBanner: false,
    );
  }
}
```



Listing 3: main.dart

5.2. File: lib/screens/splash_screen.dart

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

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

  @override
  State<SplashScreen> createState() => _SplashScreenState();
}

class _SplashScreenState extends State<SplashScreen> {
  @override
  void initState() {
    super.initState();
    Timer(const Duration(seconds: 2), () {
      Navigator.pushReplacement(
        context,
        MaterialPageRoute(builder: (_) => const HomeScreen()),
      );
    });
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.blue,
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: const [
            CircularProgressIndicator(color: Colors.white),
            SizedBox(height: 20),
            Text('OCR Scanner',
                style: TextStyle(color: Colors.white, fontSize:
 24)),
          ],
        ),
      ),
    );
  }
}
```

lib > screens > splash_screen.dart > _SplashScreenState

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

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

  @override
  State<SplashScreen> createState() => _SplashScreenState();
}

class _SplashScreenState extends State<SplashScreen> {
  @override
  void initState() {
    super.initState();
    Timer(const Duration(seconds: 2), () {
      Navigator.pushReplacement(
        context,
        MaterialPageRoute(builder: (_) => const HomeScreen()),
      );
    }); // Timer
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.blue,
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: const [
            CircularProgressIndicator(color: Colors.white),
            SizedBox(height: 20),
            Text(
              'OCR Scanner',
              style: TextStyle(color: Colors.white, fontSize: 24),
            ), // Text
          ],
        ), // Column
      ), // Center
    ); // Scaffold
  }
}
```

Listing 4: splash_screen.dart

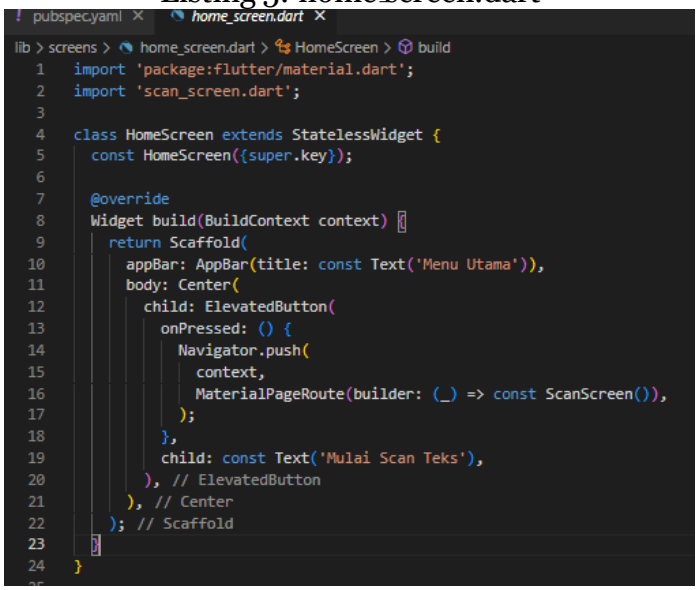
5.3. File: lib/screens/home_screen.dart

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

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

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: const Text('Menu Utama')),
      body: Center(
        child: ElevatedButton(
          onPressed: () {
            Navigator.push(
              context,
              MaterialPageRoute(builder: (_) => const ScanScreen
  ()),
            );
          },
          child: const Text('Mulai Scan Teks'),
        ),
      ),
    );
  }
}
```

Listing 5: home_screen.dart



5.4 File: lib/screens/scan_screen.dart

lib > screens > scan_screen.dart > _ScanScreenState

```dart
import 'dart:io';
import 'package:flutter/material.dart';
import 'package:camera/camera.dart';
import 'package:google_mlkit_text_recognition/google_mlkit_text_recognition.dart';
import 'package:path_provider/path_provider.dart';
import 'result_screen.dart';

late List<CameraDescription> cameras;

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

  @override
  State<ScanScreen> createState() => _ScanScreenState();
}

class _ScanScreenState extends State<ScanScreen> {
  CameraController? _controller;
  late Future<void> _initializeControllerFuture;

  @override
  void initState() {
    super.initState();
    _initCamera();
  }

  void _initCamera() async {
    try {
      cameras = await availableCameras();
      _controller = CameraController(cameras.first, ResolutionPreset.medium);

      _initializeControllerFuture = _controller!.initialize();
      await _initializeControllerFuture;

      if (mounted) {
        setState(() {});
      }
    } catch (e) {
      debugPrint('Error initializing camera: $e');
    }
  }

  @override
  void dispose() {
    _controller?.dispose();
    super.dispose();
  }

Future<String> _ocrFromFile(File imageFile) async {
  final inputImage = InputImage.fromFile(imageFile);
  final textRecognizer = TextRecognizer(script: TextRecognitionScript.latin);
  final RecognizedText recognizedText = await textRecognizer.processImage(
    inputImage,
  );
  textRecognizer.close();
  return recognizedText.text;
}

Future<void> _takePicture() async {
  if (_controller == null) return;

  try {
    await _initializeControllerFuture;

    if (!mounted) return;

    ScaffoldMessenger.of(context).showSnackBar(
      const SnackBar(
        content: Text('Memproses OCR, mohon tunggu...'),
        duration: Duration(seconds: 2),
      ), // SnackBar
    );

    final XFile image = await _controller!.takePicture();
    final ocrText = await _ocrFromFile(File(image.path));

```

```
      if (!mounted) return;
      Navigator.push(
        context,
        MaterialPageRoute(builder: (_) => ResultScreen(ocrText: ocrText)),
      );
    } catch (e) {
      if (!mounted) return;
      ScaffoldMessenger.of(
        context,
      ).showSnackBar(SnackBar(content: Text('Error: $e')));
    }
  }

  @override
  Widget build(BuildContext context) {
    if (_controller == null || !_controller!.value.isInitialized) {
      return const Scaffold(body: Center(child: CircularProgressIndicator()));
    }

    return Scaffold(
      appBar: AppBar(
        title: const Text('Kamera OCR'),
        centerTitle: true,
        backgroundColor: Colors.deepPurple,
      ), // AppBar
      body: Column(
        children: [
          Expanded(
            child: AspectRatio(
              aspectRatio: _controller!.value.aspectRatio,
              child: CameraPreview(_controller!),
            ), // AspectRatio
          ), // Expanded
          Padding(
            padding: const EdgeInsets.all(16.0),
            child: ElevatedButton.icon(
              style: ElevatedButton.styleFrom(
                backgroundColor: Colors.deepPurple,
                padding: const EdgeInsets.symmetric(
                  horizontal: 24,
                  vertical: 12,
                ), // EdgeInsets.symmetric
                shape: RoundedRectangleBorder(
                  borderRadius: BorderRadius.circular(12),
                ), // RoundedRectangleBorder
              ),
              onPressed: _takePicture,
              icon: const Icon(Icons.camera_alt, color: Colors.white),
              label: const Text(
                'Ambil Foto & Scan',
                style: TextStyle(color: Colors.white),
              ), // Text
            ), // ElevatedButton.icon
          ), // Padding
        ],
      ), // Column
    ); // Scaffold
  }
}
```

Listing 6: scan screen.dart

5.5 File: lib/screens/result_screen.dart

lib > screens > result_screen.dart > ResultScreen > build

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

class ResultScreen extends StatelessWidget {
  final String ocrText;

  const ResultScreen({super.key, required this.ocrText});

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: const Text('Hasil OCR')),
      body: Padding(
        padding: const EdgeInsets.all(16.0),
        child: SingleChildScrollView(
          child: SelectableText(
            ocrText.isEmpty
                ? 'Tidak ada teks ditemukan.'
                : ocrText.replaceAll('\n', ' '),
            style: const TextStyle(fontSize: 18),
          ), // SelectableText
        ), // SingleChildScrollView
      ), // Padding
    ); // Scaffold
  }
}
```

Listing 7: result_screen.dart

6 TUGAS PRAKTIKUM

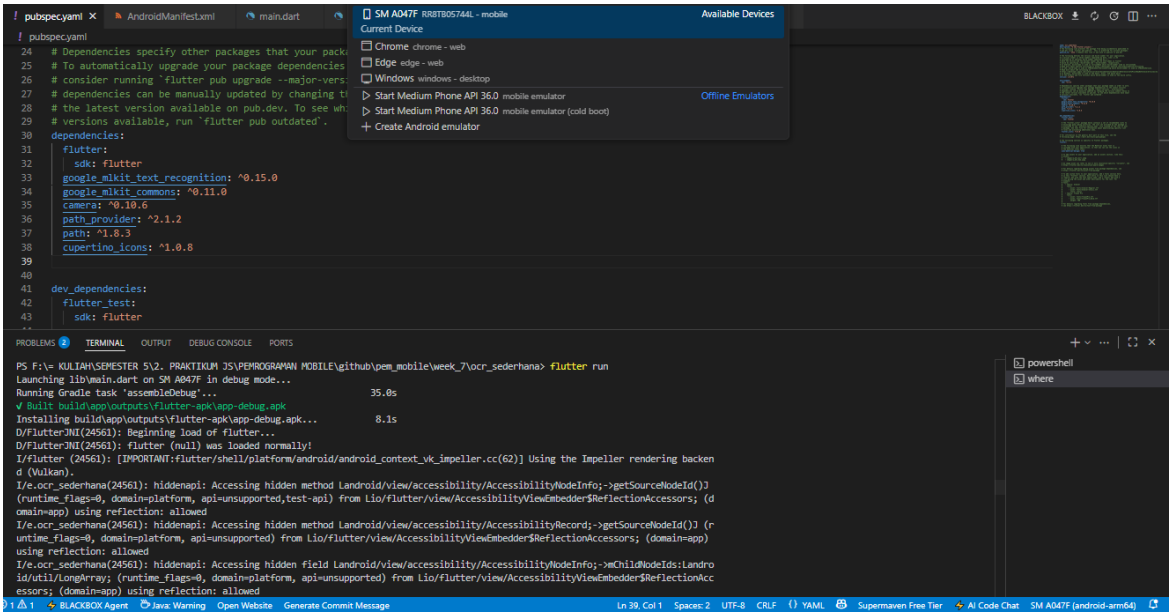
1. Jalankan aplikasi di emulator atau HP.

   Pada praktikum kali ini saya menggunakan device handphone android dan USB untuk menjalankan kode program.

   Catatan :

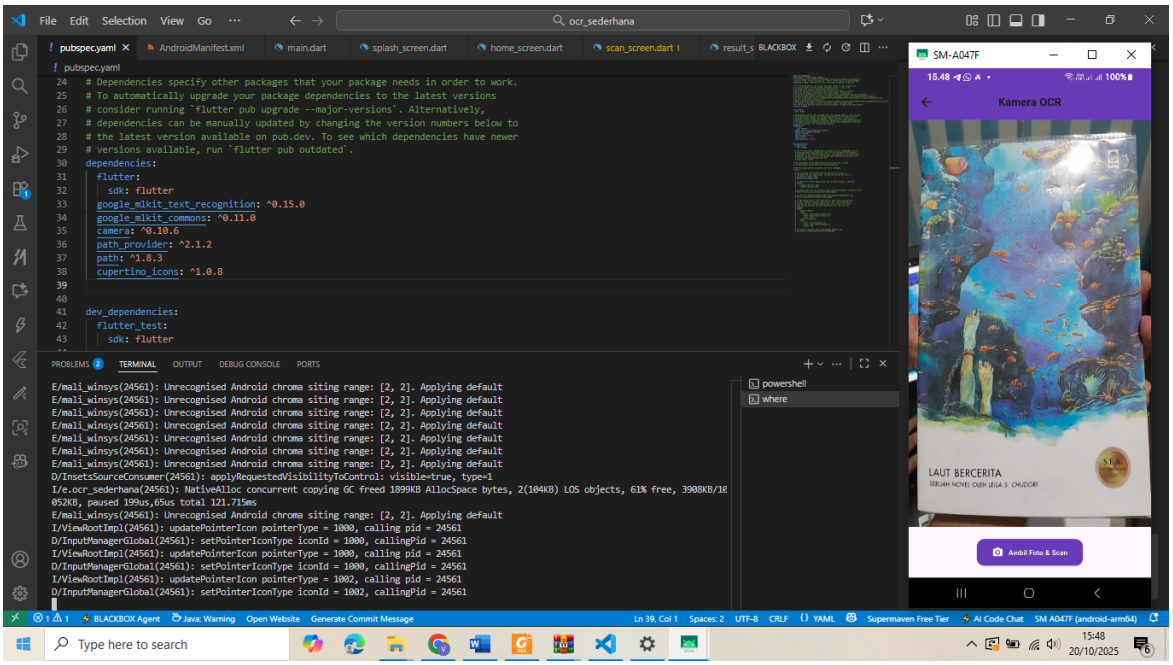
   - *Sebelum menjalankan kode progran pastikan komputer/PC dan device yang digunakan telah mengaktifkan developer mode (mode pengembang).*

   - *Setelah developer mode aktif, jalankan perintah flutter run.*



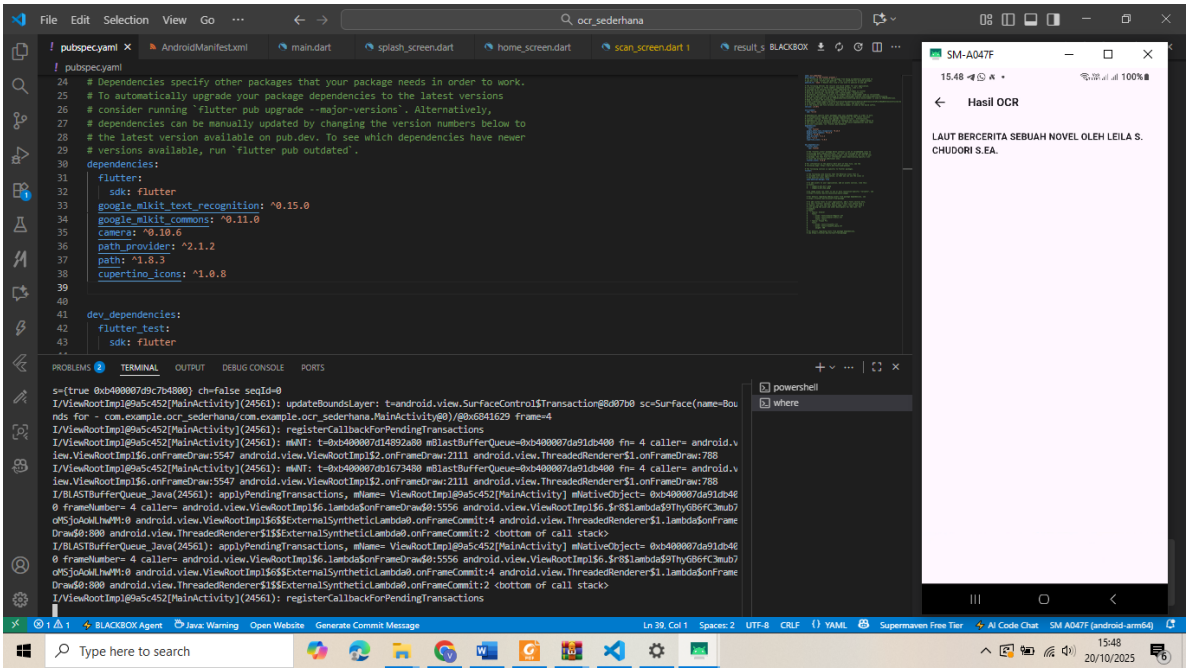
2. Lakukan scan terhadap teks cetak (misal: buku, koran, atau layar HP).

   Jawab:



3. Amati hasil OCR yang muncul.

Jawab:



4. Jawab pertanyaan berikut:

a. Apakah semua teks terbaca dengan akurat? Mengapa?

Jawab:

Pada percobaan di atas teks akurat. Tetapi perlu terkadang OCR juga menghasilkan teks yang tidak akurat karena dipengaruhi oleh kualitas gambar, pencahayaan, ukuran dan jenis font, serta noise atau bayangan. Sehingga seringkali teks yang buram, terlalu kecil, atau miring sering sulit terbaca dengan benar.

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

Jawab

OCR berguna untuk **mengubah teks dari gambar atau dokumen fisik menjadi teks digital**. Contohnya memindai dokumen, membaca struk belanja atau faktur secara otomatis, membantu penyandang disabilitas membaca teks melalui aplikasi pembaca layar

c. Sebutkan 2 contoh aplikasi nyata yang menggunakan OCR!

Jawab:

Contoh aplikasi nyata yang menggunakan OCR:

- **Google Lens** membaca teks dari foto, menerjemahkan, atau menyalin teks.
- **M-banking** yang membaca Dokumen misal nya untuk pembukaan Rekening, nasabah hanya perlu Mengambil gambar KTP maka kolom data diri terisi otomatis
- **ETLE** - Sistem ETLE yang diterapkan oleh Korlantas Polri secara nasional di seluruh Indonesia yang menggunakan sistem OCR untuk membaca nomor plat kendaraan

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	

Nilai Akhir = Total Skor × 5

Selamat mengerjakan!