
UJIAN TENGAH SEMESTER (UTS) - PRAKTIKUM

Mata Kuliah: Pemrograman Mobile - Aplikasi OCR

Semester: Ganjil Tahun Akademik: 2025/2026

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Komponen	Keterangan
Waktu Ujian	120 menit
Sifat Ujian	Praktikum (Open Book / Open Code)
Proyek Dasar	Aplikasi OCR (dari Jobsheet 7)
Bobot Nilai	100 Poin

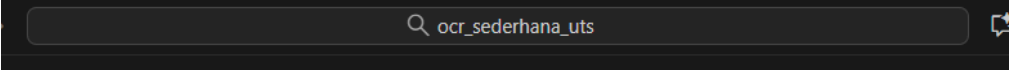
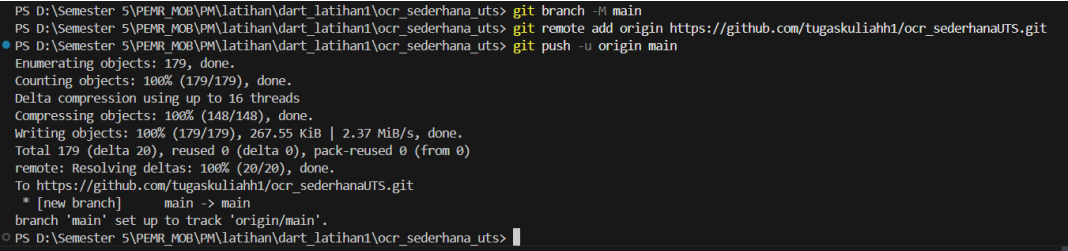
Instruksi Umum

1. Mahasiswa wajib menggunakan proyek Flutter ocr_sederhana yang telah dibuat sebelumnya.
2. Setiap penyelesaian tugas pada setiap Soal (**Soal 1, Soal 2, dan Soal 3**) harus diikuti dengan perintah Git commit dan push ke repositori GitHub masing-masing.
3. **Pesan Commit Wajib** harus diikuti dengan tepat. Kelalaian dalam melakukan commit dan push akan mengurangi poin penilaian.

Instruksi Awal (SETUP) - Wajib

1. Pastikan proyek ocr_sederhana sudah diinisialisasi sebagai repositori Git dan terhubung ke akun GitHub Anda.
2. Lakukan commit awal untuk memastikan *branch* main Anda bersih.

```
git add .  
git commit -m "UTS: Basis awal proyek OCR Sederhana"  
git push origin main
```

No	Langkah - Langkah
1.	Gunakan Proyek ocr_sederhana yang sudah di buat pada JS sebelumnya 
2.	Lakukan Commit awal 

Soal 1: Modifikasi Struktur Navigasi dan Aliran (30 Poin)

Tujuan: Menyederhanakan alur navigasi dan meningkatkan pengalaman pengguna di HomeScreen.

1. Pengubahan Navigasi Home (15 Poin):

- Ubah ElevatedButton di HomeScreen (lib/screens/home_screen.dart) menjadi `*widget* **ListTile**`.
- Atur ListTile: `leading: Icon(Icons.camera_alt, color: Colors.blue); title: Text('Mulai Pindai Teks Baru')`.
- Fungsi `onTap` harus menggunakan `Navigator.push()` untuk ke ScanScreen.

2. Teks Utuh dan Navigasi Balik (15 Poin):

- Di ResultScreen (lib/screens/result_screen.dart), hapus fungsi `ocrText.replaceAll` agar hasil teks ditampilkan dengan baris baru (`\n`) yang utuh.
- Tambahkan `FloatingActionButton` dengan ikon `Icons.home`.
- Ketika tombol ditekan, navigasi harus kembali langsung ke HomeScreen menggunakan `**Navigator.pushAndRemoveUntil()**` (atau metode yang setara) untuk *menghapus semua halaman di atasnya dari stack navigasi*.

Perintah Commit Wajib (Soal 1)

Setelah Soal 1 selesai, lakukan commit dan push dengan pesan:

```
git add lib/screens/home_screen.dart lib/screens/result_screen.dart
git commit -m "UTS: Selesai Soal 1 - ListTile dan Navigasi Balik"
git push origin main
```

No	Langkah - Langkah
1.	<p>Ubah Kode pada class home_screen men- jadi *widget* **ListTile**.</p> <pre>lib > screens > home_screen.dart > HomeScreen 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 style: ElevatedButton.styleFrom(20 backgroundColor: Colors.deepPurple, 21 padding: const EdgeInsets.symmetric(horizontal: 24, vertical: 12), 22), 23 child: const Text(24 'Mulai Scan Teks', 25 style: TextStyle(color: Colors.white), 26), // Text 27), // ElevatedButton 28), // Center 29); // Scaffold 30 } 31 }</pre>
2.	<p>Di ResultScreen (lib/screens/result_screen.dart), hapus fungsi ocrText.replaceAll agar hasil teks ditampilkan dengan baris baru (\n) yang utuh.</p> <pre>lib > screens > result_screen.dart > ResultScreen 1 import 'package:flutter/material.dart'; 2 import 'package:ocr_sederhana_uts/screens/home_screen.dart'; 3 4 class ResultScreen extends StatelessWidget { 5 final String ocrText; 6 7 const ResultScreen({super.key, required this.ocrText}); 8 9 @override 10 Widget build(BuildContext context) { 11 return Scaffold(12 appBar: AppBar(title: const Text('Hasil OCR')), 13 body: Padding(14 padding: const EdgeInsets.all(16.0), 15 child: SingleChildScrollView(16 child: SelectableText(17 ocrText.isEmpty 18 ? 'Tidak ada teks ditemukan.' 19 : ocrText, // tidak dihapus '\n' 20 style: const TextStyle(fontSize: 18), 21), // SelectableText 22), // SingleChildScrollView 23), // Padding 24 floatingActionButton: FloatingActionButton(25 onPressed: () { 26 Navigator.pushAndRemoveUntil(27 context, 28 MaterialPageRoute(builder: (context) => const HomeScreen()), 29 (route) => false, 30); 31 }, 32 child: const Icon(Icons.home), 33), // FloatingActionButton 34); // Scaffold 35 } 36 }</pre>

3. Lakukan commit

```
PS D:\Semester 5\PEMR MOB\PM\latihan\dart_latihan1\ocr_sederhana uts> git add lib/screens/home_screen.dart lib/screens/result_screen.dart
PS D:\Semester 5\PEMR MOB\PM\latihan\dart_latihan1\ocr_sederhana uts> git commit -m "UTS: Selesai Soal 1 - ListTile dan Navigasi Balik"
[main f1ca31d] UTS: Selesai Soal 1 - ListTile dan Navigasi Balik
2 files changed, 49 insertions(+)
create mode 100644 lib/screens/home_screen.dart
create mode 100644 lib/screens/result_screen.dart
PS D:\Semester 5\PEMR MOB\PM\latihan\dart_latihan1\ocr_sederhana uts> git push origin main
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 16 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 1.12 KiB | 384.00 KiB/s, done.
Total 6 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/tugaskuliah1/ocr_sederhanaUTS.git
83faecc..f1ca31d main -> main
PS D:\Semester 5\PEMR MOB\PM\latihan\dart_latihan1\ocr_sederhana uts>
```



Soal 2: Penyesuaian Tampilan dan Penanganan State/Error (40 Poin)

Tujuan: Memperbaiki tampilan *loading* dan memberikan *feedback* error yang lebih jelas.

1. Custom Loading Screen di ScanScreen (20 Poin):

- Di ScanScreen (lib/screens/scan_screen.dart), modifikasi tampilan *loading* yang muncul sebelum kamera siap (if (!controller.value.isInitialized)) :
- Latar Belakang: Scaffold(backgroundColor: Colors.grey[900]).
- Isi: Di dalam Center, tampilkan Column berisi CircularProgressIndicator(color: Colors.yellow).
- Di bawah indikator, tambahkan Text('Memuat Kamera... Harap tunggu.', style: TextStyle(color: Colors.white, fontSize: 18)).

2. Spesifikasi Pesan Error (20 Poin):

- Di fungsi _takePicture() pada ScanScreen, modifikasi blok catch (e) untuk mengubah pesan *error* pada Snackbar.
- Pesan Snackbar harus berbunyi: **"Pemindaian Gagal! Periksa Izin Kamera atau coba lagi."** (Hilangkan variabel *error* (\$e)).

Perintah Commit Wajib (Soal 2)

Setelah Soal 2 selesai, lakukan commit dan push dengan pesan:

```
git add lib/screens/scan_screen.dart
```

```
git commit -m "UTS: Selesai Soal 2 - Tampilan Loading dan Error"
```

```
git push origin main
```

No	Langkah - Langkah
1.	<p>Di ScanScreen (lib/screens/scan_screen.dart), modifikasi tampilan*loading* yang muncul sebelum kamera siap (if (!_controller.value.isInitialized))</p> <div><pre>lib > screens > scan_screen.dart > ScanScreenState 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:ocr_sederhana_uts/screens/result_screen.dart'; 6 import 'package:permission_handler/permission_handler.dart'; 7 8 class ScanScreen extends StatefulWidget { 9 const ScanScreen({super.key}); 10 11 @override 12 State<ScanScreen> createState() => _ScanScreenState(); 13 } 14 15 class _ScanScreenState extends State<ScanScreen> { 16 CameraController? _controller; 17 late Future<void> _initializeControllerFuture; 18 19 @override 20 void initState() { 21 super.initState(); 22 _checkPermissionAndInit(); 23 } 24 25 /// Cek & minta izin kamera sebelum inisialisasi 26 Future<void> _checkPermissionAndInit() async { 27 var status = await Permission.camera.status; 28 if (!status.isGranted) { 29 await Permission.camera.request(); 30 } 31 32 // Pastikan user sudah kasih izin 33 if (await Permission.camera.isGranted) { 34 _initializeControllerFuture = _initCamera(); 35 setState(() {}); // refresh UI 36 } else { 37 ScaffoldMessenger.of(context).showSnackBar(38 const SnackBar(39 content: Text("Izin kamera dibutuhkan untuk menggunakan fitur ini."), 40 // SnackBar 41), 42); 43 } 44 } 45 46 Future<void> _initCamera() async { 47 try { 48 final cameras = await availableCameras(); 49 50 if (cameras.isEmpty) { 51 debugPrint("Tidak ada kamera tersedia"); 52 return; 53 } 54 55 final backCamera = cameras.firstWhere(56 (camera) => camera.lensDirection == CameraLensDirection.back, 57 orElse: () => cameras.first, 58); 59 60 _controller = CameraController(backCamera, ResolutionPreset.medium); 61 await _controller!.initialize(); 62 63 if (mounted) { 64 setState(() {}); 65 } 66 } catch (e) { 67 debugPrint("Gagal inisialisasi kamera: \$e"); 68 } 69 } 70 71 @override 72 void dispose() { 73 _controller?.dispose(); 74 super.dispose(); 75 } 76 77 Future<String> _ocrFromFile(File imageFile) async { 78 final inputImage = InputImage.fromFile(imageFile); 79 final textRecognizer = TextRecognizer(script: TextRecognitionScript.latin); 80 final recognizedText = await textRecognizer.processImage(inputImage); 81 textRecognizer.close(); 82 return recognizedText.text; 83 } 84 85 Future<void> _takePicture() async { 86 try { 87 await _initializeControllerFuture; 88 89 if (_controller == null !_controller!.value.isInitialized) { 90 ScaffoldMessenger.of(context).showSnackBar(91 const SnackBar(92 content: Text("Kamera belum siap, tunggu sebentar..."), 93 // SnackBar 94), 95); 96 } 97 98 final XFile image = await _controller!.takePicture(); 99 debugPrint("Foto disimpan di: \${image.path}"); 100 101 final ocrText = await _ocrFromFile(File(image.path)); 102 103 if (!mounted) return; 104 105 Navigator.push(106 context, 107 MaterialPageRoute(builder: (_) => ResultScreen(ocrText: ocrText)), 108); 109 } catch (e) { 110 debugPrint("Error saat scan: \$e"); 111 ScaffoldMessenger.of(context).showSnackBar(112 const SnackBar(113 content: Text(114 "Pemindaian Gagal! Periksa izin kamera atau coba lagi.", 115 // Text 116), 117 // SnackBar 118), 119); 120 } 121 } 122 123 Widget build(BuildContext context) { 124 return Scaffold(125 appBar: AppBar(title: const Text("Kamera OCR")), 126 body: FutureBuilder<void>{ 127 future: _controller == null ? null : _initializeControllerFuture, 128 builder: (context, snapshot) { 129 if (_controller == null) { 130 // belum inisialisasi 131 return const Center(132 child: Text(133 "Menunggu izin kamera...", 134 style: TextStyle(fontSize: 16), 135), // Text 136); // Center 137 } 138 139 if (snapshot.connectionState == ConnectionState.waiting) { 140 return Scaffold(141 backgroundColor: Colors.grey[900], 142 body: const Center(143 child: Column(144 mainAxisAlignment: MainAxisAlignment.center, 145 children: [146 CircularProgressIndicator(color: Colors.yellow, 147 size: 20), 148 Text(149 "Memuat Kamera... Harap tunggu.", 150 style: TextStyle(color: Colors.white, fontSize: 18), 151), // Text 152], // Column 153), // Center 154); // Scaffold 155 } else if (!_controller!.value.isInitialized snapshot.hasError) { 156 return const Center(157 child: Text(158 "Gagal menginisialisasi kamera", 159 style: TextStyle(color: Colors.red), 160), // Text 161); // Center 162 } 163 }, 164), 165); 166 } 167 }</pre></div>

	<pre> 159), // Text 160); // Center 161 } else { 162 return Column(163 children: [164 Expanded(165 child: AspectRatio(166 aspectRatio: _controller!.value.aspectRatio, 167 child: CameraPreview(_controller!), 168), // AspectRatio 169), // Expanded 170 Padding(171 padding: const EdgeInsets.all(16.0), 172 child: FloatingActionButton(173 onPressed: _takePicture, 174 backgroundColor: Colors.deepPurple, 175 child: const Icon(Icons.camera_alt), 176), // FloatingActionButton 177), // Padding 178], 179); // Column 180 } 181 }, 182), // FutureBuilder 183); // Scaffold 184 } 185 } 186 </pre>
2.	<p>Lakukan commit</p> <pre> PS D:\Semester 5\PEMR_MOB\PM\latihan\ocr_sederhana_uts> git add lib/screens/scan_screen.dart PS D:\Semester 5\PEMR_MOB\PM\latihan\ocr_sederhana_uts> git commit -m "UTS: Selesai Soal 2 - Tampilan Loading dan Error" [main 8aeb90] UTS: Selesai Soal 2 - Tampilan Loading dan Error 1 file changed, 153 insertions(+) create mode 100644 lib/screens/scan_screen.dart PS D:\Semester 5\PEMR_MOB\PM\latihan\ocr_sederhana_uts> git push origin main Enumerating objects: 8, done. Counting objects: 100% (8/8), done. Delta compression using up to 16 threads Compressing objects: 100% (5/5), done. Writing objects: 100% (5/5), 1.93 KiB 658.00 KiB/s, done. Total 5 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0) remote: Resolving deltas: 100% (1/1), completed with 1 local object. To https://github.com/tugaskuliah1/ocr_sederhanaUTS.git f1ca31d..8aeb90 main -> main PS D:\Semester 5\PEMR_MOB\PM\latihan\ocr_sederhana_uts> </pre> <div> <div>scan_screen.dart</div> <div>UTS: Selesai Soal 2 - Tampilan Loading dan Error</div> <div>1 minute ago</div> </div>

Soal 3: Implementasi Plugin Text-to-Speech (TTS) (30 Poin)

Tujuan: Mengintegrasikan fitur membaca teks secara lisan menggunakan *plugin* flutter_tts.

1. Instalasi Plugin (5 Poin):

- Tambahkan *plugin* flutter_tts ke dalam file pubspec.yaml (gunakan versi terbaru yang kompatibel).
- Jalankan flutter pub get.

2. Konversi Widget dan Inisialisasi (10 Poin):

- Ubah ResultScreen dari StatelessWidget menjadi **StatefulWidget**.
- Di initState(), inisialisasi FlutterTts dan atur bahasa pembacaan menjadi Bahasa Indonesia.
- Implementasikan dispose() untuk menghentikan mesin TTS saat halaman ditutup.

3. Fungsionalitas Pembacaan (15 Poin):

- Tambahkan FloatingActionButton kedua di ResultScreen (atau ganti AppBar dengan action button) dengan ikon Icons.volume_up.
- Ketika tombol ditekan, panggil fungsi speak() pada FlutterTts untuk membacakan seluruh isi ocrText.

Perintah Commit Wajib (Soal 3)

Setelah Soal 3 selesai, lakukan commit dan push terakhir dengan pesan:

```
git add pubspec.yaml lib/screens/result_screen.dart
git commit -m "UTS: Selesai Soal 3 - Implementasi Flutter TTS"
git push origin main
```

No	Langkah - Langkah
1.	<p>Tambahkan *plugin* flutter_tts ke dalam file pubspec.yaml (gunakan versi terbaru yang kompatibel).</p> <pre>dependencies: flutter: sdk: flutter # The following adds the Cupertino Icons font to your application. # Use with the CupertinoIcons class for iOS style icons. cupertino_icons: ^1.0.8 camera: ^0.10.5+2 google_mlkit_text_recognition: ^0.13.0 path_provider: ^2.1.2 flutter_tts: ^4.0.0</pre>
2.	<p>Lakukan perintah flutter pub get</p> <pre>PS D:\Semester 5\PEMR_MOB\PM\latihan\dart_latihan1\ocr_sederhana_uts> flutter pub get Resolving dependencies... 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. PS D:\Semester 5\PEMR_MOB\PM\latihan\dart_latihan1\ocr_sederhana_uts> </pre>

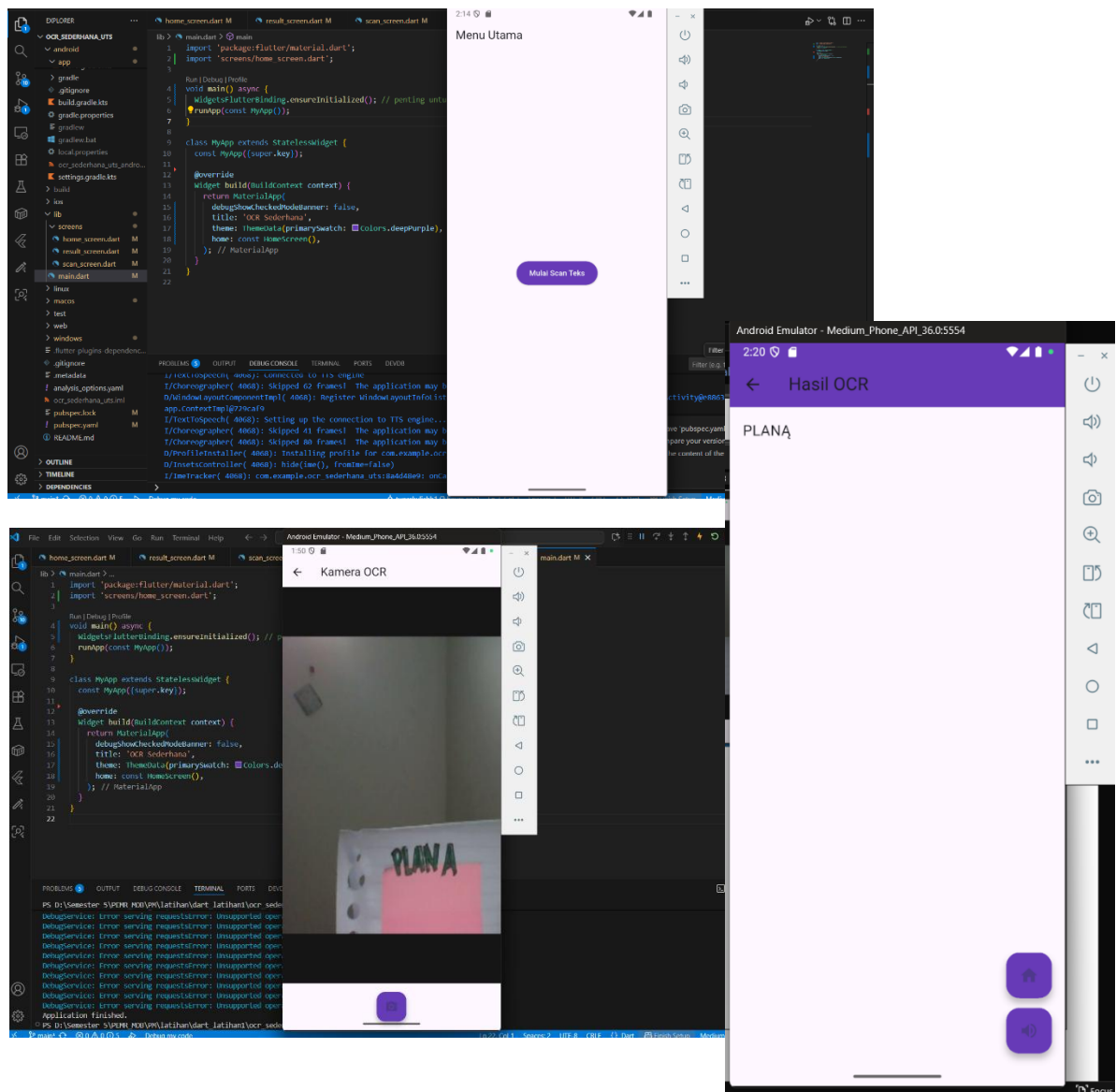
3. Modifikasi result_screen.dart

```
lib > screens > result_screen.dart > _ResultScreenState
1 import 'package:flutter/material.dart';
2 import 'package:flutter_tts/flutter_tts.dart';
3 import 'home_screen.dart';
4
5 class ResultScreen extends StatefulWidget {
6   final String ocrText;
7
8   const ResultScreen({super.key, required this.ocrText});
9
10  @override
11  _ResultScreenState createState() => _ResultScreenState();
12 }
13
14 class _ResultScreenState extends State<ResultScreen> {
15   late final FlutterTts _flutterTts;
16   bool _isSpeaking = false;
17
18   @override
19   void initState() {
20     super.initState();
21     _flutterTts = FlutterTts();
22     _setupTts();
23     flutterTts.setStartHandler() {
24       setState(() => _isSpeaking = true);
25     };
26     flutterTts.setCompletionHandler() {
27       setState(() => _isSpeaking = false);
28     };
29     flutterTts.setErrorHandler((err) {
30       setState(() => _isSpeaking = false);
31     });
32   }
33
34   Future<void> _setupTts() async {
35     try {
36       // set bahasa ke Bahasa Indonesia
37       await _flutterTts.setLanguage("id-ID");
38       // optional: atur rate & pitch bila perlu
39       await _flutterTts.setSpeechRate(0.45);
40       await _flutterTts.setPitch(1.0);
41     } catch (_) {}
42   }
43 }
```

```
44 @override
45 void dispose() {
46   _flutterTts.stop();
47   super.dispose();
48 }
49
50 Future<void> _speak() async {
51   final text = widget.ocrText.trim();
52   if (text.isEmpty) return;
53
54   // Jika sedang berbicara, hentikan; tekan lagi untuk memulai ulang
55   if (_isSpeaking) {
56     await _flutterTts.stop();
57     return;
58   }
59
60   await _flutterTts.speak(text);
61 }
62
63 void _goHomeAndClearStack() {
64   Navigator.pushAndRemoveUntil(
65     context,
66     MaterialPageRoute(builder: (context) => const HomeScreen()),
67     (Route<dynamic> route) => false,
68   );
69 }
70
71 @override
72 Widget build(BuildContext context) {
73   final displayText = widget.ocrText.isEmpty
74     ? 'Tidak ada teks ditemukan.'
75     : widget.ocrText;
76
77   return Scaffold(
78     appBar: AppBar(
79       title: const Text('Hasil OCR'),
80       backgroundColor: Colors.deepPurple,
81     ), // AppBar
82     body: Padding(
```

```
83 padding: const EdgeInsets.all(16.0),
84 child: SingleChildScrollView(
85   child: SelectableText(
86     displayText, // tampil utuh, termasuk baris baru \n
87     style: const TextStyle(fontSize: 18),
88   ), // SelectableText
89 ), // SingleChildScrollView
90 ), // Padding
91 floatingActionButton: Column(
92   mainAxisAlignment: MainAxisAlignment.min,
93   children: [
94     // Tombol Home (pushAndRemoveUntil)
95     FloatingActionButton(
96       heroTag: 'home_fab',
97       onPressed: _goHomeAndClearStack,
98       tooltip: 'Kembali ke Home',
99       child: const Icon(Icons.home),
100      backgroundColor: Colors.deepPurple,
101    ), // FloatingActionButton
102    const SizedBox(height: 12),
103    // Tombol TTS
104    FloatingActionButton(
105      heroTag: 'tts_fab',
106      onPressed: _speak,
107      tooltip: _isSpeaking ? 'Berhenti membacakan' : 'Bacakan Teks',
108      child: _isSpeaking
109        ? const Icon(Icons.stop) // tunjukkan stop jika sedang berbicara
110        : const Icon(Icons.volume_up),
111      backgroundColor: Colors.deepPurple,
112    ), // FloatingActionButton
113  ],
114 ), // Column
115 ); // Scaffold
116 }
117 }
```


3. Hasil di run



4. Lakukan Commit

```
PS D:\Semester 5\PEMR MOB\PM\latihan\dart_latihan\ocr_sederhana uts> git add pubspec.yaml lib/screens/result_screen.dart
PS D:\Semester 5\PEMR MOB\PM\latihan\dart_latihan\ocr_sederhana uts> git commit -m "UTS: Selesai Soal 3 - Implementasi Flutter TTS"
[master 21c43a8] UTS: Selesai Soal 3 - Implementasi Flutter TTS
 2 files changed, 102 insertions(+), 6 deletions(-)
PS D:\Semester 5\PEMR MOB\PM\latihan\dart_latihan\ocr_sederhana uts> git push origin main
Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Delta compression using up to 16 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 1.80 KiB | 459.00 KiB/s, done.
Total 6 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/tugaskuliah1/ocr_sederhanaUTS.git
   21c43a8..21c43a8 main -> main
PS D:\Semester 5\PEMR MOB\PM\latihan\dart_latihan\ocr_sederhana uts>
```

ocr_sederhanaUTS / lib / screens /			Add file +	...
tugaskuliah1: UTS: Selesai Soal 3 - Implementasi Flutter TTS				
21c43a8 2 minutes ago History				
Name	Last commit message	Last commit date		
...				
home_screen.dart	UTS: Selesai Soal 1 - ListTile dan Navigasi Balik	2 hours ago		
result_screen.dart	UTS: Selesai Soal 3 - Implementasi Flutter TTS	2 minutes ago		
scan_screen.dart	UTS: Selesai Soal 2 - Tampilan Loading dan Error	1 hour ago		

5. Link repo github: https://github.com/tugaskuliah1/ocr_sederhanaUTS.git