TUGAS UNGUIDED
PEMROGRAMAN PERANGKAT BERGERAK

Final Week 16
COTS

Disusun Oleh :
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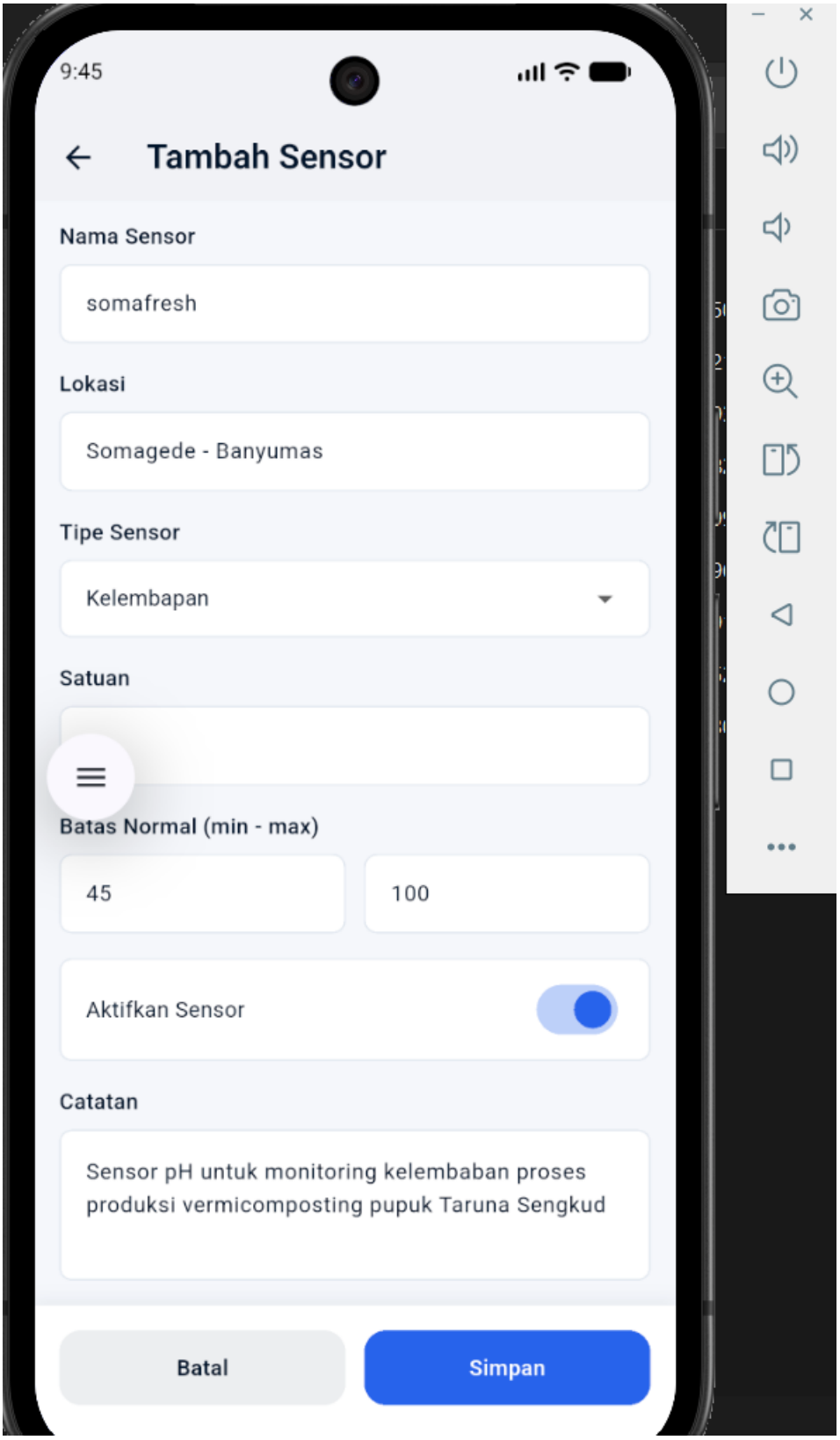
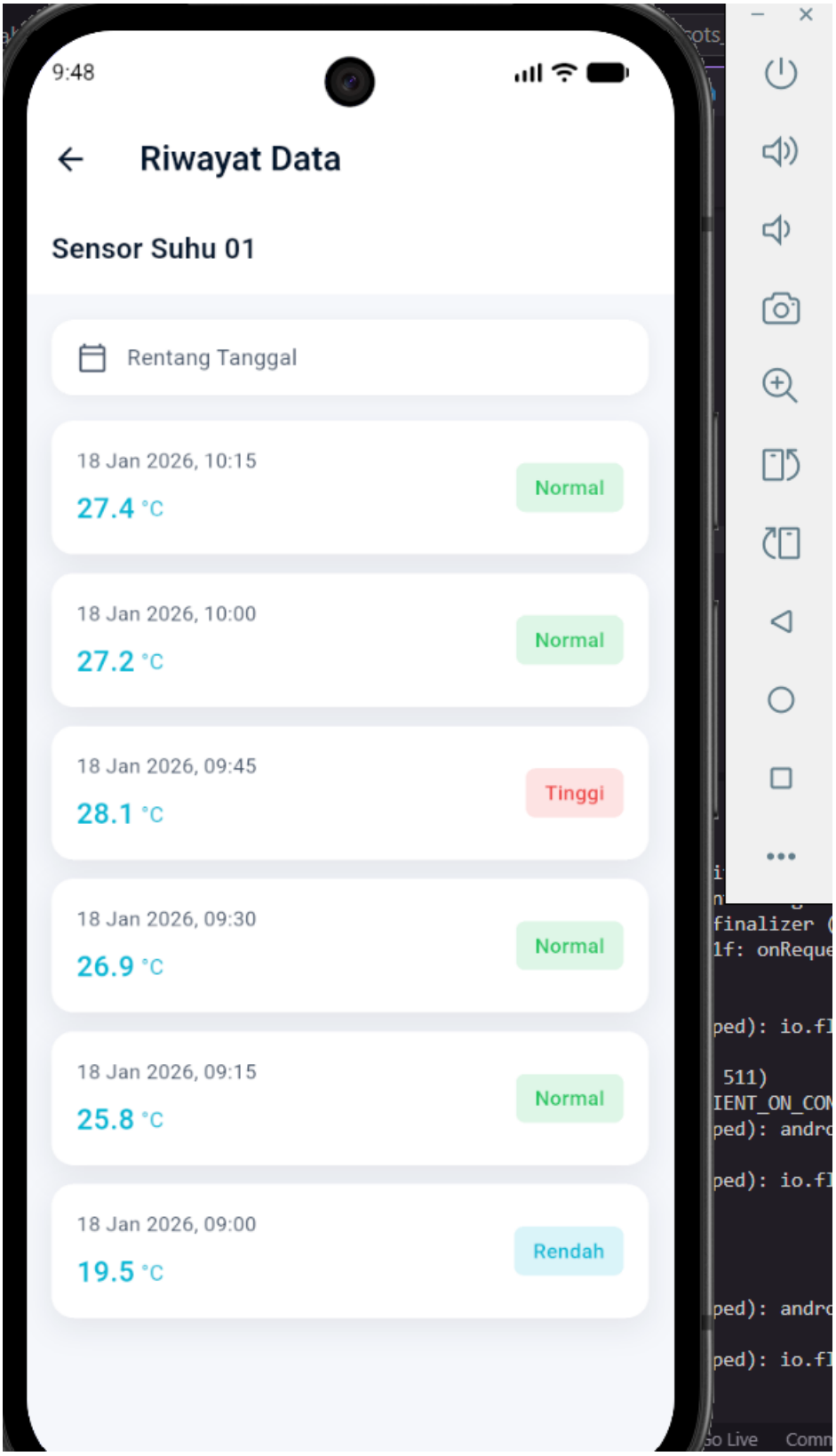
Yudha Islami Sulistya, S.Kom., M.Cs.

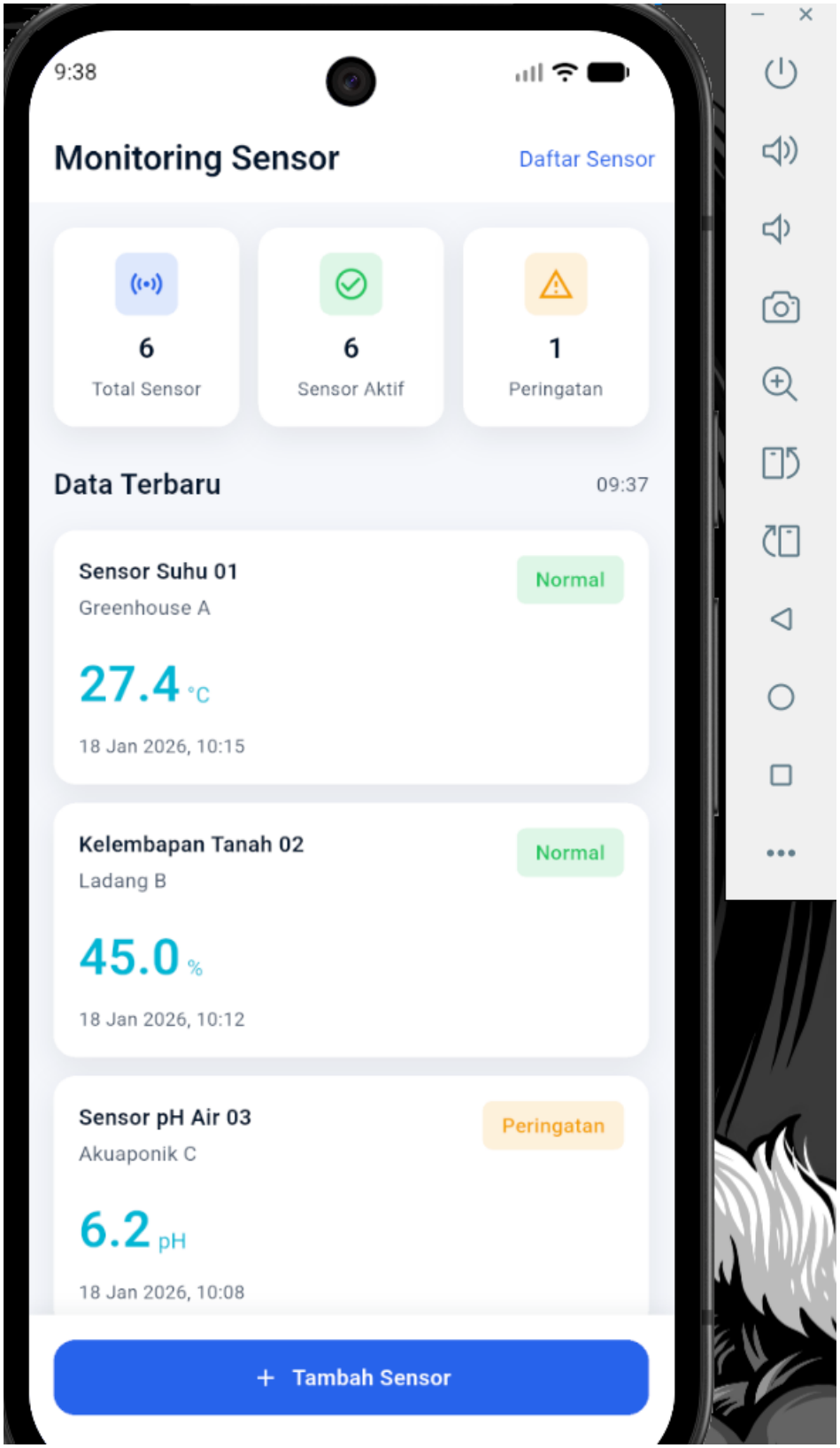
PROGRAM STUDI S1 SOFTWARE ENGINEERING FAKULTAS INFORMATIKA
TELKOM UNIVERSITY PURWOKERTO 202

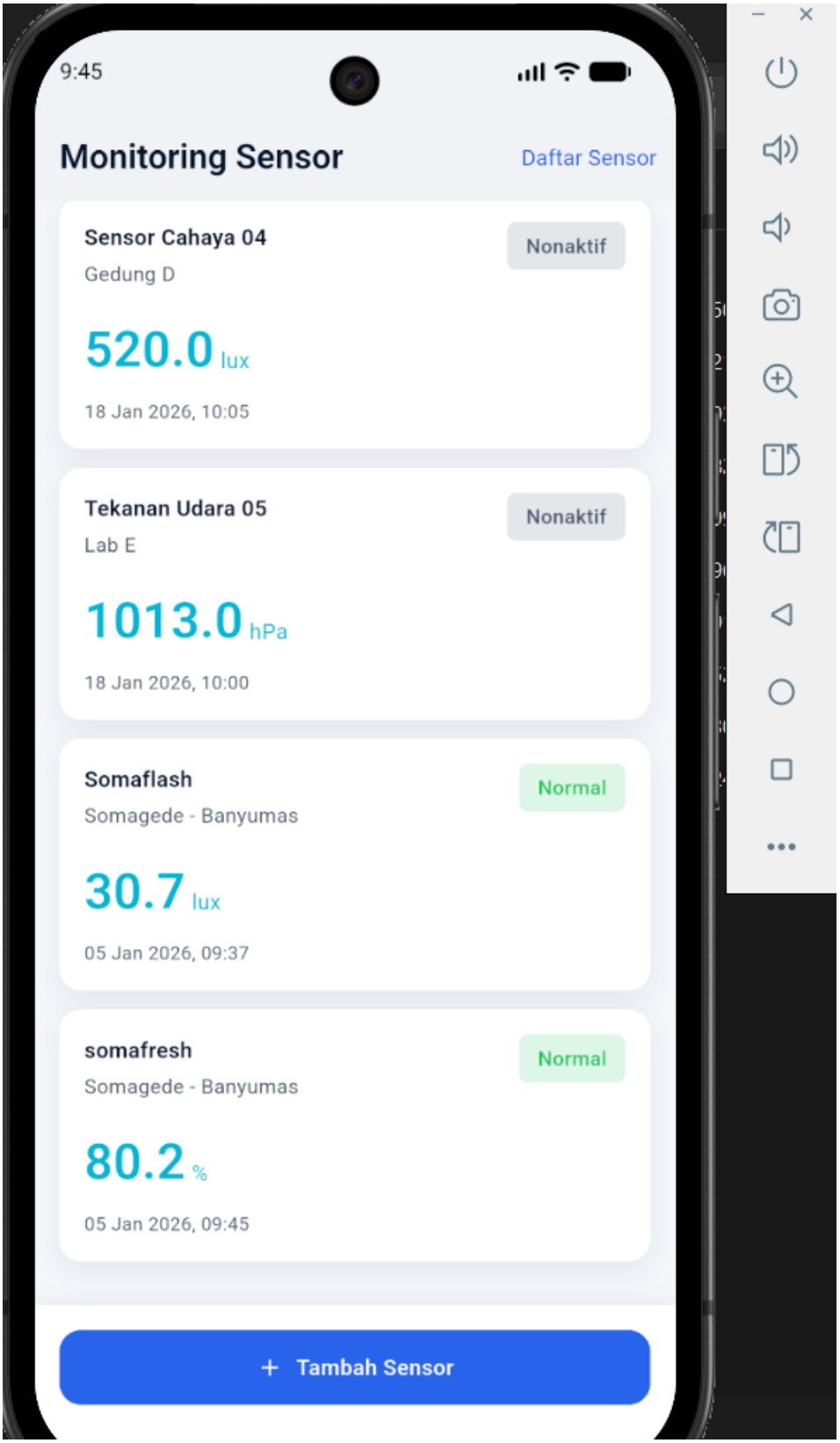
Screenshot Output

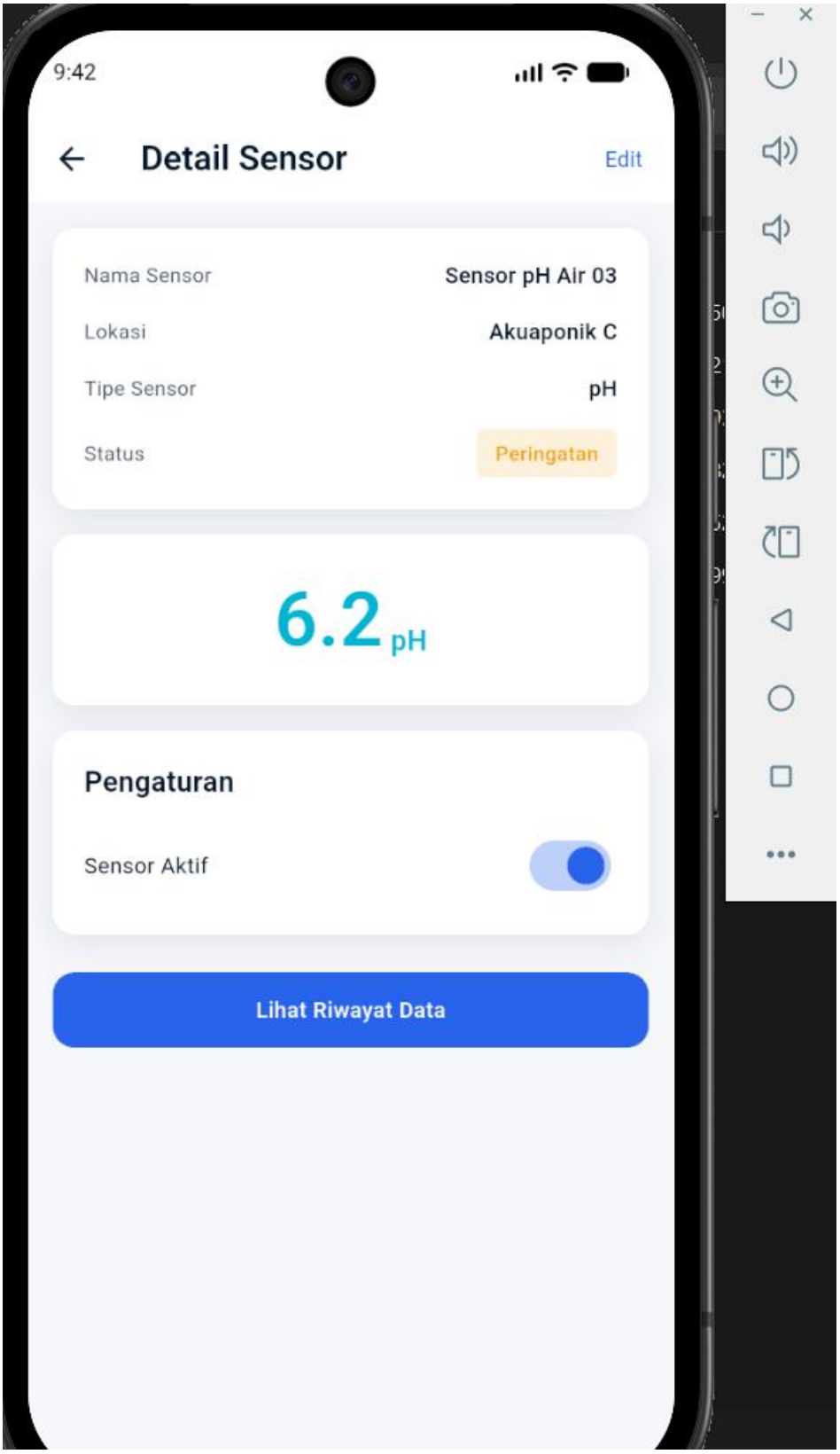
1.) UI

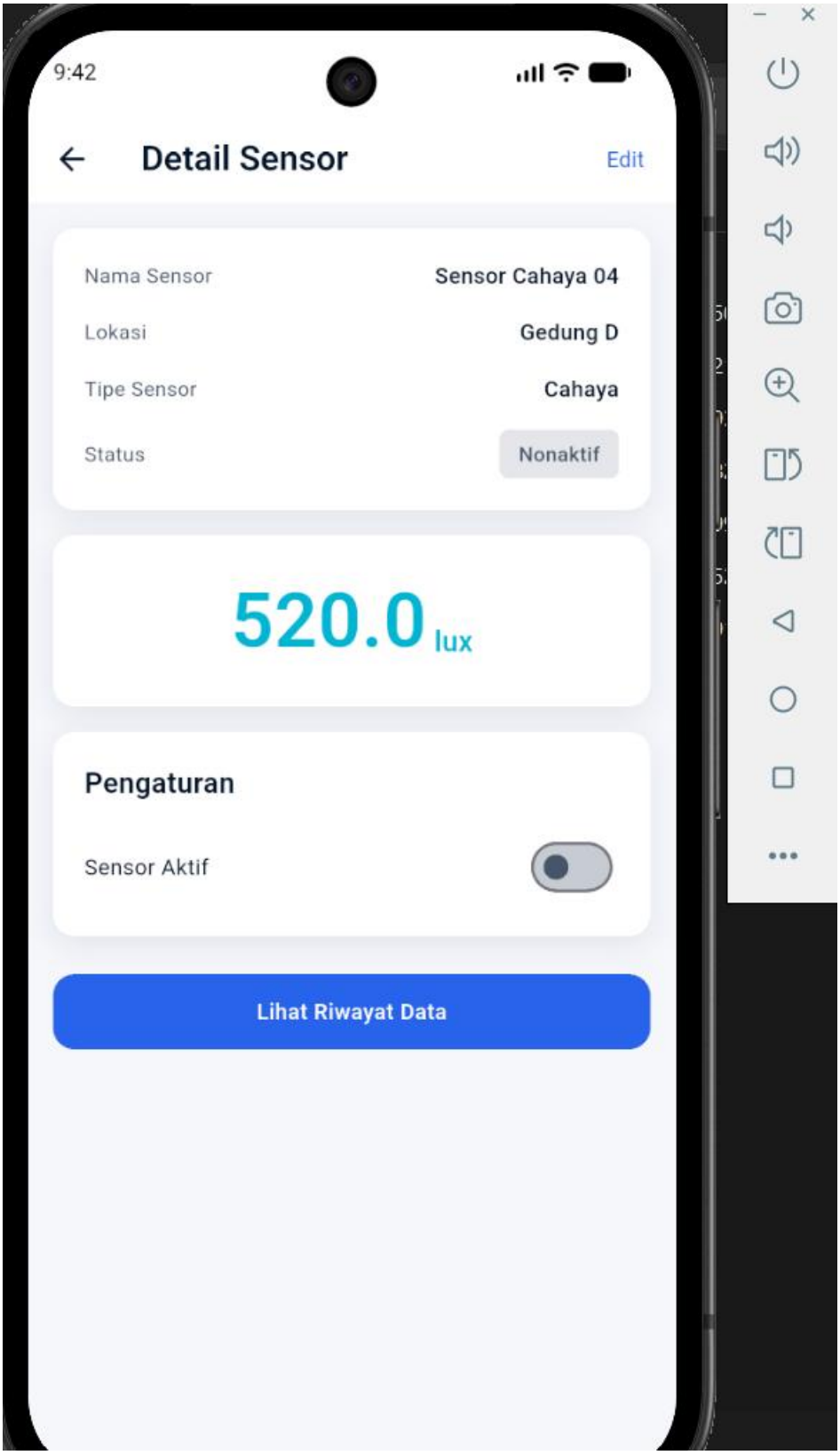


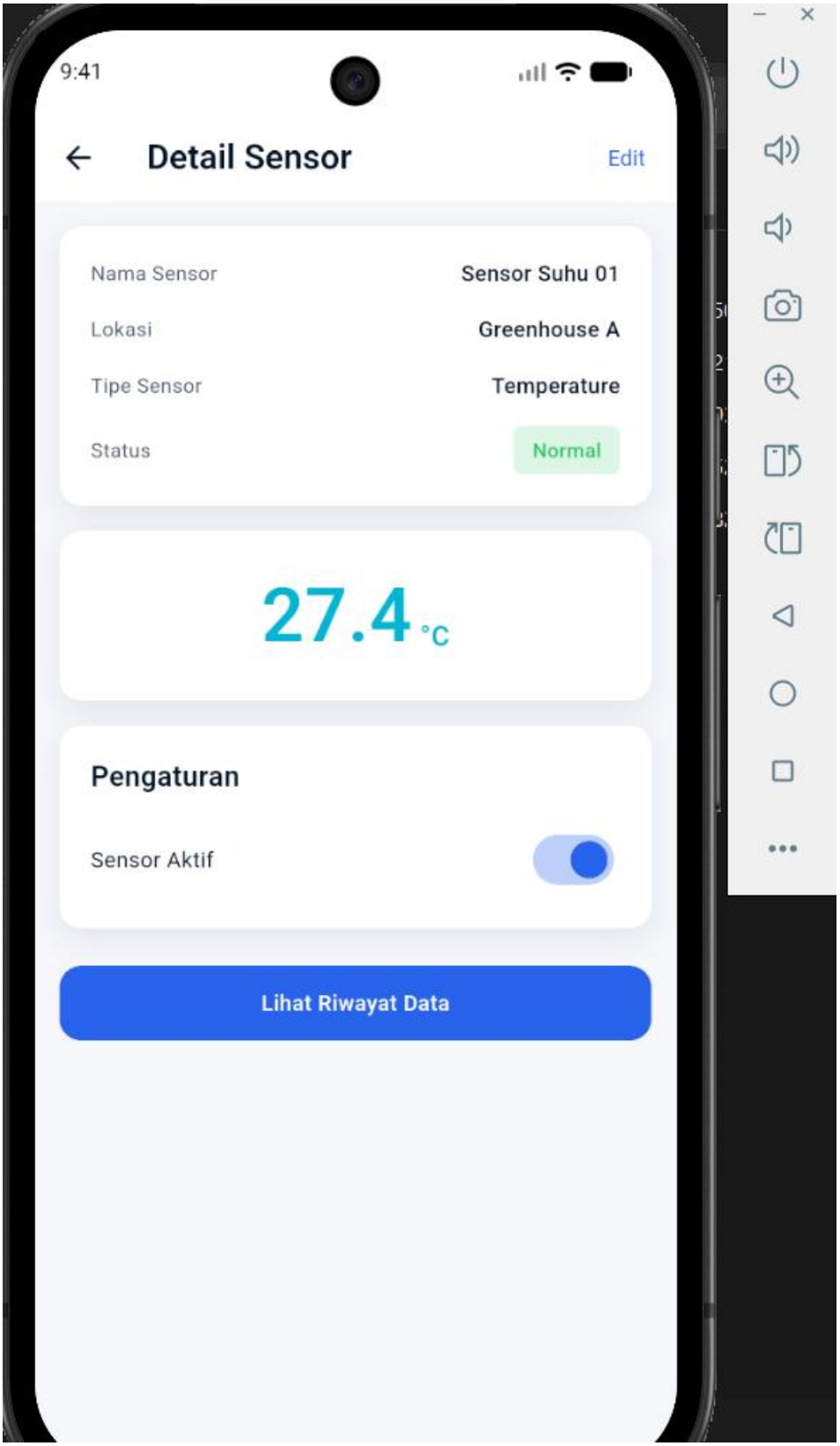

9:48
Riwayat Data
Sensor Suhu 01
Rentang Tanggal
18 Jan 2026, 10:15
27.4 °C
Normal
18 Jan 2026, 10:00
27.2 °C
Normal
18 Jan 2026, 09:45
28.1 °C
Tinggi
18 Jan 2026, 09:30
26.9 °C
Normal
18 Jan 2026, 09:15
25.8 °C
Normal
18 Jan 2026, 09:00
19.5 °C
Rendah

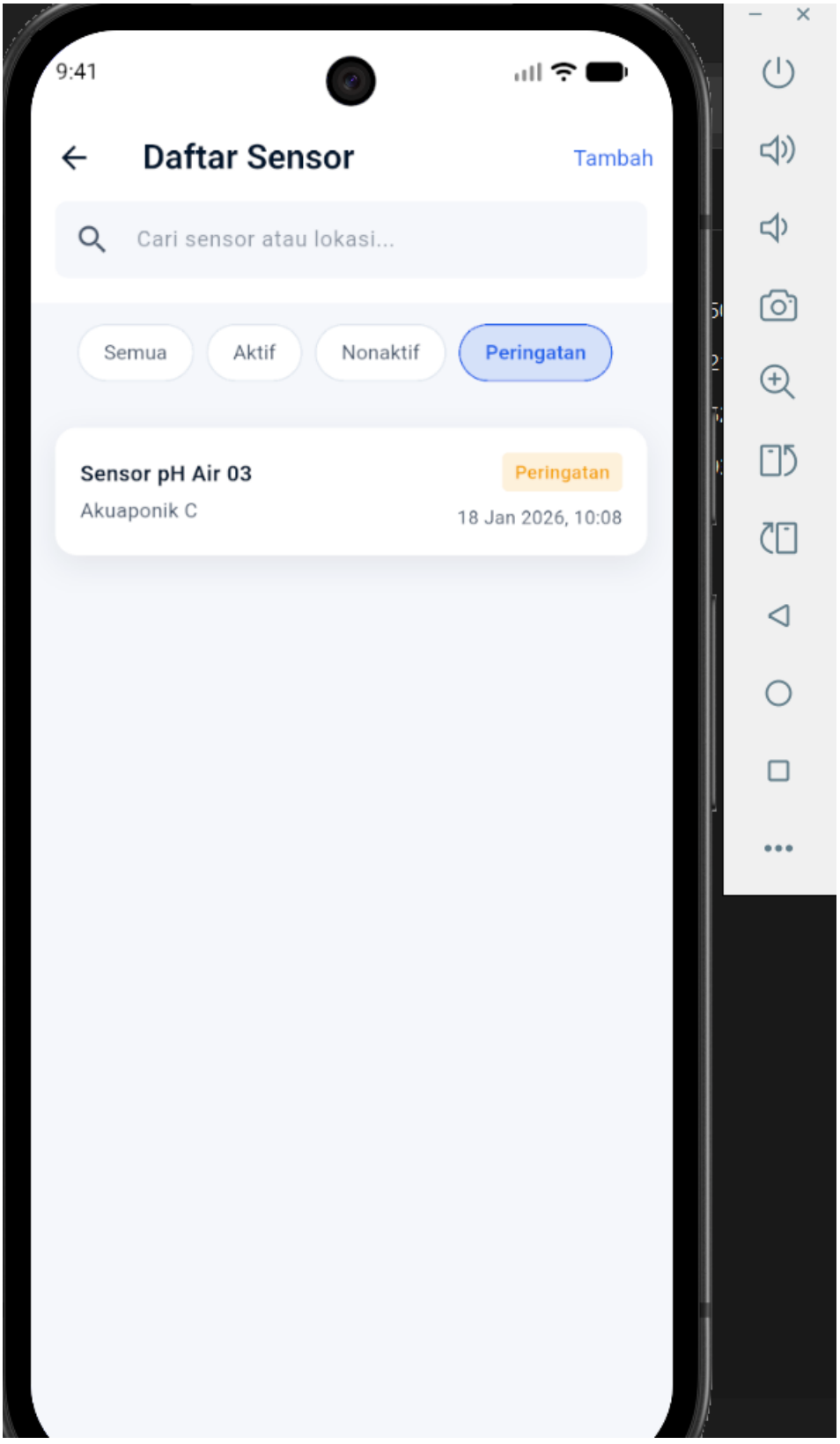

9:38
Monitoring Sensor
Daftar Sensor
6
Total Sensor
6
Sensor Aktif
1
Peringatan
Data Terbaru
09:37
Sensor Suhu 01
Greenhouse A
Normal
27.4 °C
18 Jan 2026, 10:15
Kelembapan Tanah 02
Ladang B
Normal
45.0 %
18 Jan 2026, 10:12
Sensor pH Air 03
Akuaponik C
Peringatan
6.2 pH
18 Jan 2026, 10:08
+ Tambah Sensor

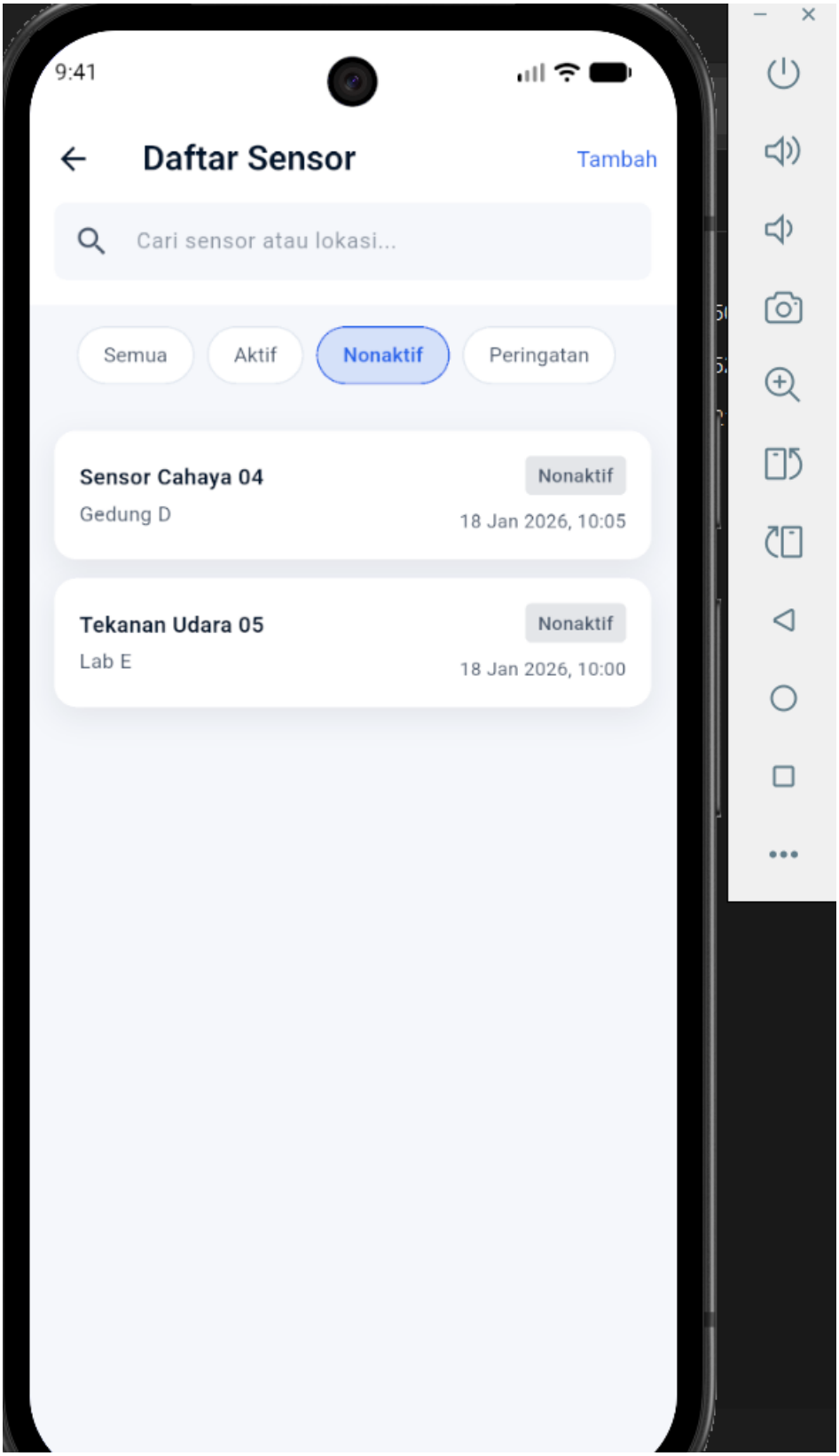

9:45
Monitoring Sensor
Daftar Sensor
Sensor Cahaya 04
Gedung D
Nonaktif
520.0 lux
18 Jan 2026, 10:05
Tekanan Udara 05
Lab E
Nonaktif
1013.0 hPa
18 Jan 2026, 10:00
Somaflash
Somagede - Banyumas
Normal
30.7 lux
05 Jan 2026, 09:37
somafresh
Somagede - Banyumas
Normal
80.2 %
05 Jan 2026, 09:45
+ Tambah Sensor

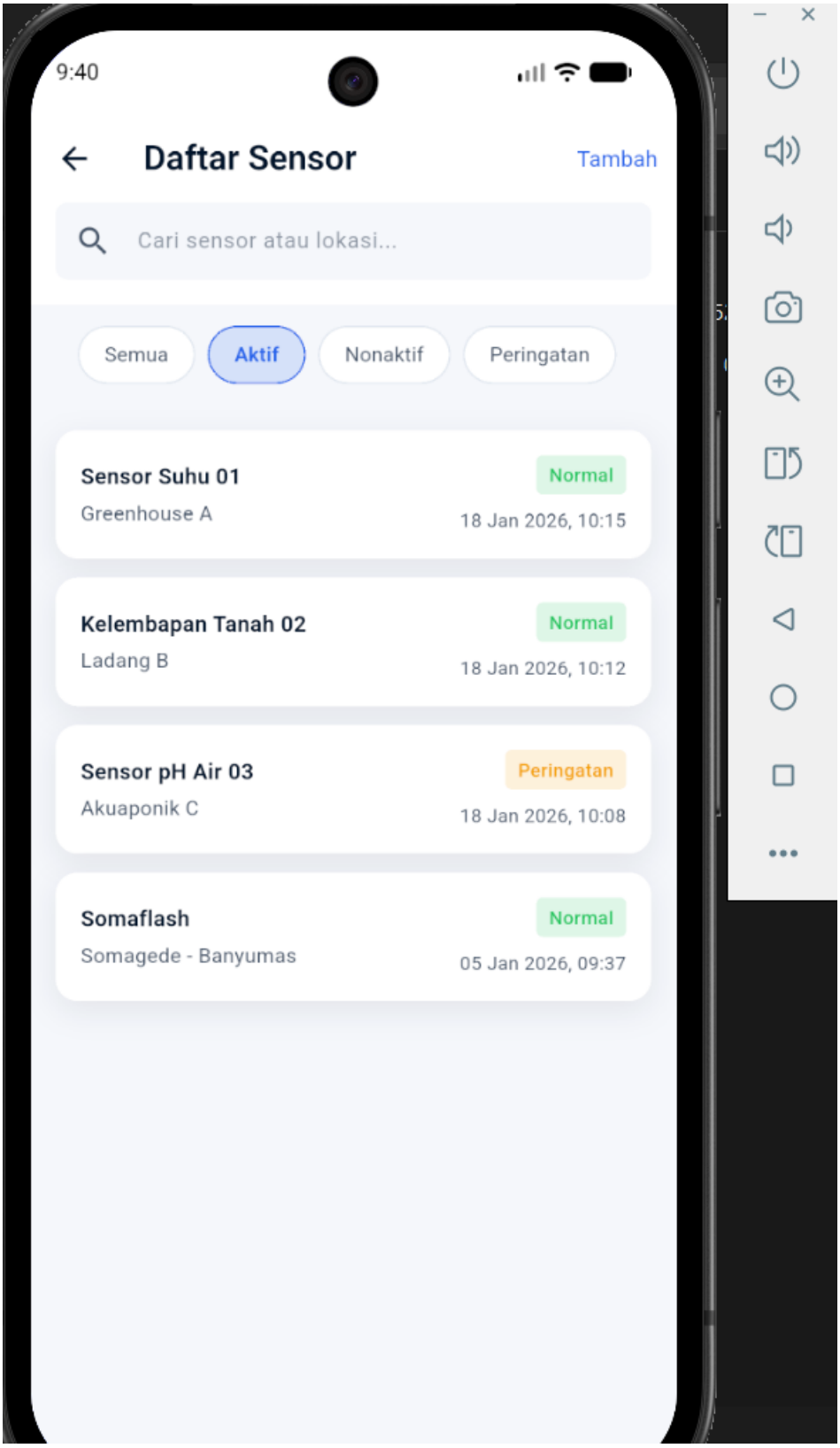

9:42
Detail Sensor
Edit
Nama Sensor
Sensor pH Air 03
Lokasi
Akuaponik C
Tipe Sensor
pH
Status
Peringatan
6.2 pH
Pengaturan
Sensor Aktif
Lihat Riwayat Data

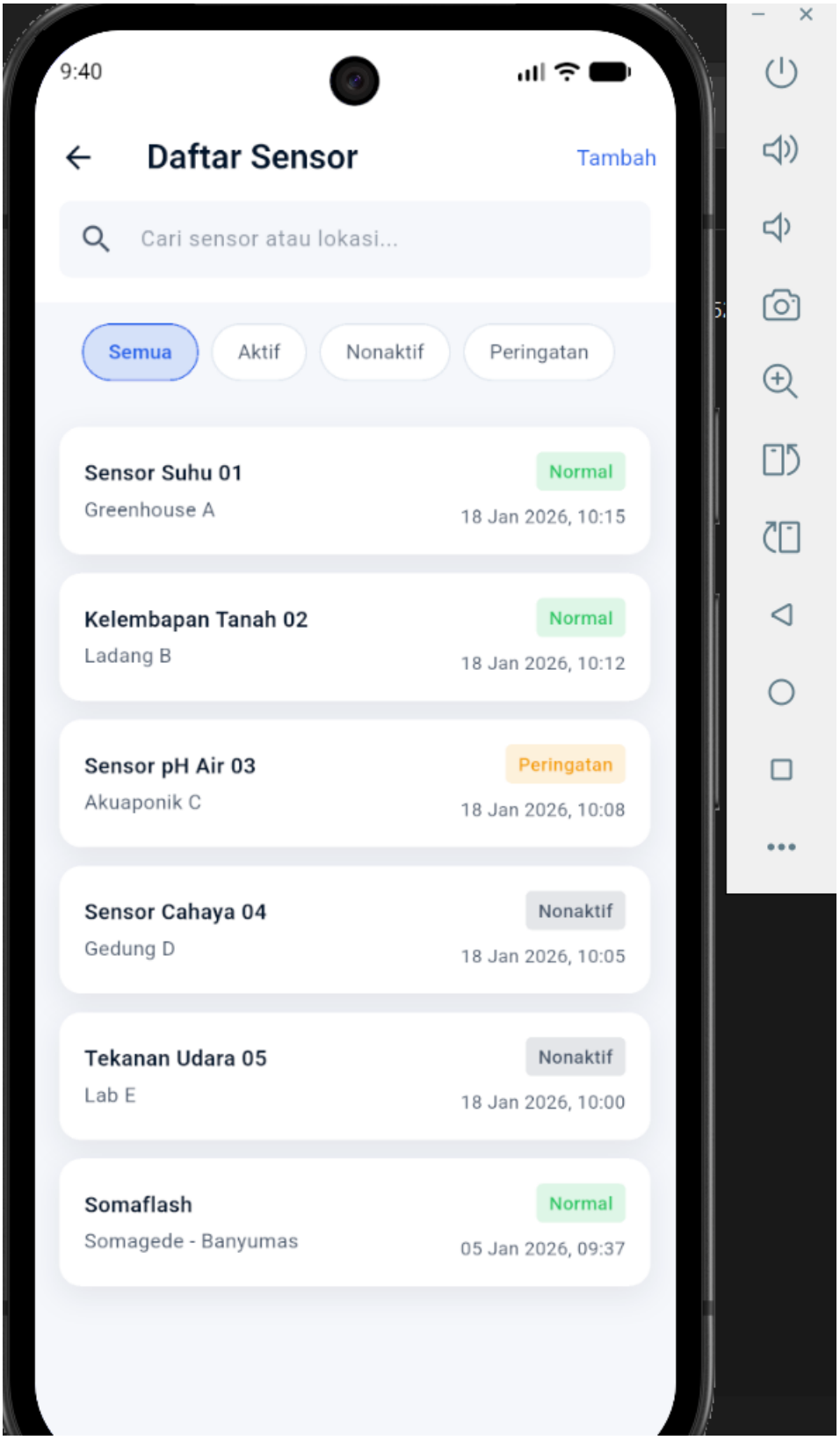

9:42
Detail Sensor
Edit
Nama Sensor
Sensor Cahaya 04
Lokasi
Gedung D
Tipe Sensor
Cahaya
Status
Nonaktif
520.0 lux
Pengaturan
Sensor Aktif
Lihat Riwayat Data


9:41
Detail Sensor
Edit
Nama Sensor
Sensor Suhu 01
Lokasi
Greenhouse A
Tipe Sensor
Temperature
Status
Normal
27.4 °C
Pengaturan
Sensor Aktif
Lihat Riwayat Data

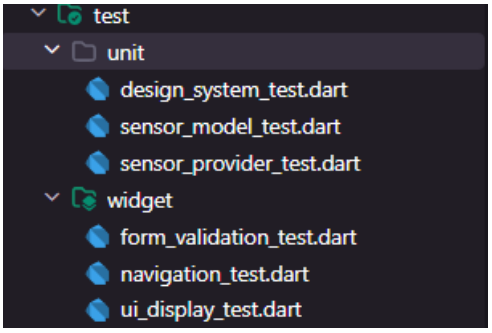

9:41
Daftar Sensor
Tambah
Cari sensor atau lokasi...
Semua
Aktif
Nonaktif
Peringatan
Sensor pH Air 03
Peringatan
Akuaponik C
18 Jan 2026, 10:08


9:41
Daftar Sensor
Tambah
Cari sensor atau lokasi...
Semua
Aktif
Nonaktif
Peringatan
Sensor Cahaya 04
Gedung D
Nonaktif
18 Jan 2026, 10:05
Tekanan Udara 05
Lab E
Nonaktif
18 Jan 2026, 10:00


9:40
Daftar Sensor
Tambah
Cari sensor atau lokasi...
Semua
Aktif
Nonaktif
Peringatan
Sensor Suhu 01
Greenhouse A
Normal
18 Jan 2026, 10:15
Kelembapan Tanah 02
Ladang B
Normal
18 Jan 2026, 10:12
Sensor pH Air 03
Akuaponik C
Peringatan
18 Jan 2026, 10:08
Somaflash
Somagede - Banyumas
Normal
05 Jan 2026, 09:37


9:40
Daftar Sensor
Tambah
Cari sensor atau lokasi...
Semua
Aktif
Nonaktif
Peringatan
Sensor Suhu 01
Greenhouse A
Normal
18 Jan 2026, 10:15
Kelembapan Tanah 02
Ladang B
Normal
18 Jan 2026, 10:12
Sensor pH Air 03
Akuaponik C
Peringatan
18 Jan 2026, 10:08
Sensor Cahaya 04
Gedung D
Nonaktif
18 Jan 2026, 10:05
Tekanan Udara 05
Lab E
Nonaktif
18 Jan 2026, 10:00
Somaflash
Somagede - Banyumas
Normal
05 Jan 2026, 09:37

2.) Unit Tests



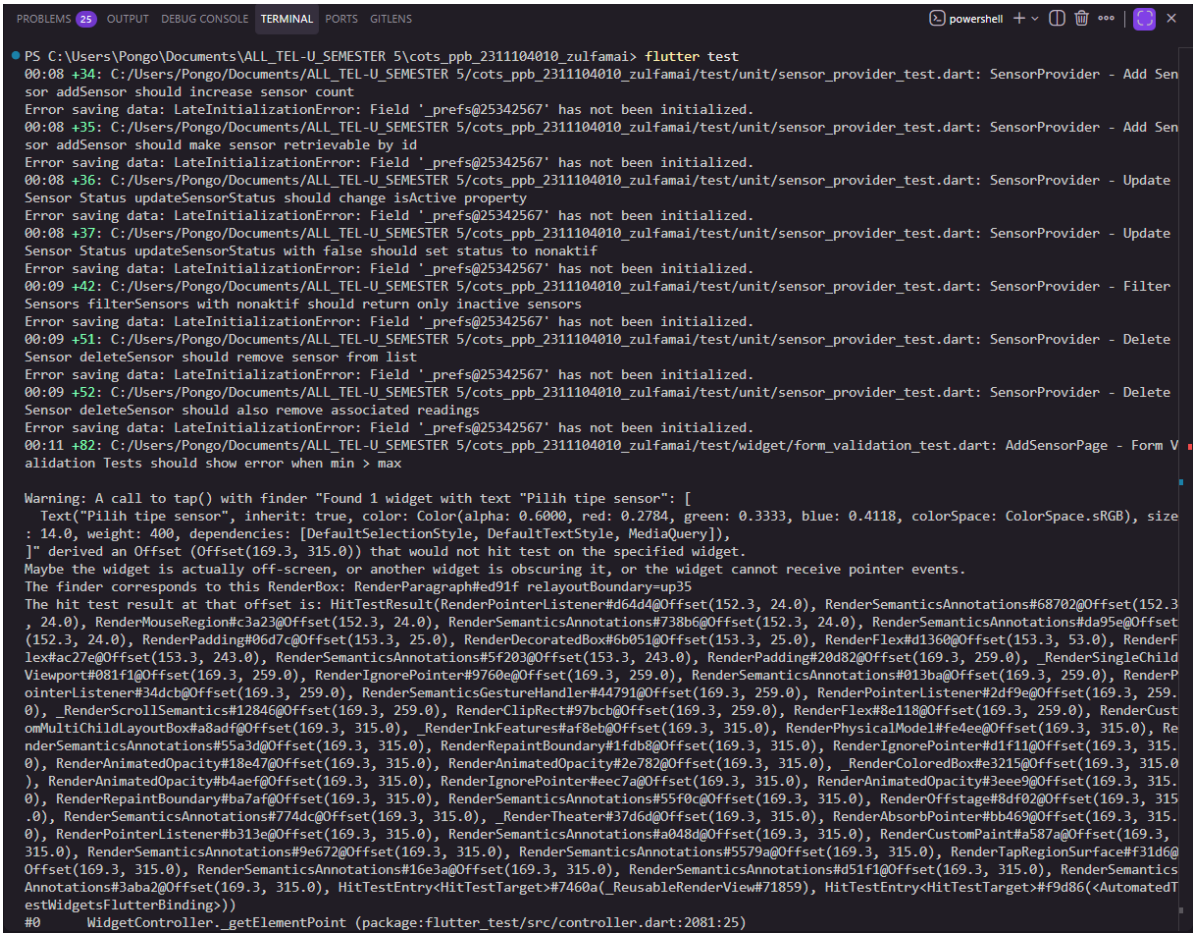
PROBLEMS 25 OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS powershell

```
<asynchronous suspension>
To silence this warning, pass "warnIfMissed: false" to "tap()".
To make this warning fatal, set WidgetController.hitTestWarningShouldBeFatal to true.

00:11 +87: C:/Users/Pongo/Documents/ALL_TEL-U_SEMESTER 5/cots_ppb_2311104010_zulfamai/test/widget/form_validation_test.dart: AddSensorPage - Form V
alidation Tests should successfully add sensor with valid data

Warning: A call to tap() with finder "Found 1 widget with text "Pilih tipe sensor": [
  Text("Pilih tipe sensor", inherit: true, color: Color(alpha: 0.6000, red: 0.2784, green: 0.3333, blue: 0.4118, colorSpace: ColorSpace.sRGB), size
: 14.0, weight: 400, dependencies: [DefaultSelectionStyle, DefaultTextStyle, MediaQuery]),
]" derived an Offset (Offset(169.3, 315.0)) that would not hit test on the specified widget.
Maybe the widget is actually off-screen, or another widget is obscuring it, or the widget cannot receive pointer events.
The finder corresponds to this RenderBox: RenderParagraph#292cd relayoutBoundary=up35
The hit test result at that offset is: HitTestResult(RenderPointerListener#3f8fb@Offset(152.3, 24.0), RenderSemanticsAnnotations#ce559@Offset(152.3
, 24.0), RenderMouseRegion#b879d@Offset(152.3, 24.0), RenderSemanticsAnnotations#9d697@Offset(152.3, 24.0), RenderSemanticsAnnotations#b6cbe@Offset
(152.3, 24.0), RenderPadding#9d38b@Offset(153.3, 25.0), RenderDecoratedBox#ddb07@Offset(153.3, 25.0), RenderFlex#6bc0a@Offset(153.3, 53.0), RenderF
lex#18559@Offset(153.3, 243.0), RenderSemanticsAnnotations#66abc@Offset(153.3, 243.0), RenderPadding#efd7e@Offset(169.3, 259.0), _RenderSingleChild
Viewport#ec023@Offset(169.3, 259.0), RenderIgnorePointer#084b2@Offset(169.3, 259.0), RenderSemanticsAnnotations#e828e@Offset(169.3, 259.0), RenderP
ointerListener#eda6c@Offset(169.3, 259.0), RenderSemanticsGestureHandler#33ccc@Offset(169.3, 259.0), RenderPointerListener#2854e@Offset(169.3, 259.
0), _RenderScrollSemantics#d1db1@Offset(169.3, 259.0), RenderClipRect#e06de@Offset(169.3, 259.0), RenderFlex#6acd4@Offset(169.3, 259.0), RenderCust
omMultiChildLayoutBox#e11b7@Offset(169.3, 315.0), _RenderInkFeatures#18974@Offset(169.3, 315.0), RenderPhysicalModel#bcdd0@Offset(169.3, 315.0), Re
nderSemanticsAnnotations#d8444@Offset(169.3, 315.0), RenderRepaintBoundary#8c604@Offset(169.3, 315.0), RenderIgnorePointer#bdd56@Offset(169.3, 315.
0), RenderAnimatedOpacity#37f84@Offset(169.3, 315.0), RenderAnimatedOpacity#5ae3a@Offset(169.3, 315.0), _RenderColoredBox#cdbb6@Offset(169.3, 315.0
), RenderAnimatedOpacity#46ce0@Offset(169.3, 315.0), RenderIgnorePointer#dfef9@Offset(169.3, 315.0), RenderAnimatedOpacity#20490@Offset(169.3, 315.
0), RenderRepaintBoundary#162bb@Offset(169.3, 315.0), RenderSemanticsAnnotations#c8731@Offset(169.3, 315.0), RenderOffstage#f5170@Offset(169.3, 315
.0), RenderSemanticsAnnotations#5c101@Offset(169.3, 315.0), _RenderTheater#3a5e9@Offset(169.3, 315.0), RenderAbsorbPointer#09635@Offset(169.3, 315.
0), RenderPointerListener#09b54@Offset(169.3, 315.0), RenderSemanticsAnnotations#cd9df@Offset(169.3, 315.0), RenderCustomPaint#a7c81@Offset(169.3,
315.0), RenderSemanticsAnnotations#7fc48@Offset(169.3, 315.0), RenderSemanticsAnnotations#0b112@Offset(169.3, 315.0), RenderTapRegionSurface#24a1c@
Offset(169.3, 315.0), RenderSemanticsAnnotations#e962d@Offset(169.3, 315.0), RenderSemanticsAnnotations#e6a02@Offset(169.3, 315.0), RenderSemantics
Annotations#85111@Offset(169.3, 315.0), HitTestEntry<HitTestTarget>#c76a8(_ReusableRenderView#71859), HitTestEntry<HitTestTarget>#43870(<AutomatedT
estWidgetsFlutterBinding>))
#0      WidgetController._getElementPoint (package:flutter_test/src/controller.dart:2081:25)
#1      WidgetController.getCenter (package:flutter_test/src/controller.dart:1865:12)
#2      WidgetController.tap (package:flutter_test/src/controller.dart:1045:7)
#3      main.<anonymous closure>.<anonymous closure> (file:///C:/Users/Pongo/Documents/ALL_TEL-U_SEMESTER%205/cots_ppb_2311104010_zulfamai/test/wid
get/form_validation_test.dart:142:20)
<asynchronous suspension>
#4      testWidgets.<anonymous closure>.<anonymous closure> (package:flutter_test/src/widget_tester.dart:192:15)
<asynchronous suspension>
#5      TestWidgetsFlutterBinding._runTestBody (package:flutter_test/src/binding.dart:1059:5)
<asynchronous suspension>
#6      StackZoneSpecification._registerCallback.<anonymous closure> (package:stack_trace/src/stack_zone_specification.dart:114:42)
<asynchronous suspension>
To silence this warning, pass "warnIfMissed: false" to "tap()".
To make this warning fatal, set WidgetController.hitTestWarningShouldBeFatal to true.

Error saving data: LateInitializationError: Field '_prefs@27342567' has not been initialized.
00:12 +92: All tests passed!
PS C:\Users\Pongo\Documents\ALL_TEL-U_SEMESTER 5\cots_ppb_2311104010_zulfamai>
```



 # DOKUMENTASI APLIKASI SENSOR MONITORING

Tugas Pemrograman Perangkat Bergerak (PPB)
Nama: Zulfa Mai | NIM: 2311104010

1. DESKRIPSI APLIKASI

Aplikasi Sensor Monitoring adalah aplikasi mobile berbasis Flutter yang dirancang untuk memantau berbagai jenis sensor secara real-time. Aplikasi ini memungkinkan pengguna untuk mengelola sensor, melihat data pembacaan terkini, menganalisis riwayat data, serta menambahkan sensor baru ke dalam sistem monitoring.

Tujuan Aplikasi

- Menyediakan dashboard terpusat untuk monitoring seluruh sensor
- Memudahkan pengelolaan status sensor (aktif/nonaktif)
- Memberikan informasi status sensor dengan indikator visual (Normal, Peringatan, Tinggi, Rendah)

- Menyimpan dan menampilkan riwayat pembacaan sensor

2. FITUR UTAMA

1.) Dashboard Monitoring : Menampilkan ringkasan total sensor, sensor aktif, dan sensor dalam status peringatan. Dilengkapi dengan data pembacaan terbaru dari semua sensor.

2.) Daftar Sensor : Menampilkan seluruh sensor dengan fitur pencarian berdasarkan nama/lokasi dan filter berdasarkan status (Semua, Aktif, Nonaktif, Peringatan).

3.) Detail Sensor : Menampilkan informasi lengkap sensor meliputi nama, lokasi, tipe, nilai pembacaan saat ini, serta pengaturan untuk mengaktifkan/menonaktifkan sensor.

4.) Riwayat Data : Menampilkan histori pembacaan sensor dengan informasi timestamp, nilai, dan status pada setiap pembacaan. Mendukung filter berdasarkan rentang tanggal.

5.) Tambah Sensor : Form untuk menambahkan sensor baru dengan input nama, lokasi, tipe sensor, satuan, batas normal (min-max), dan catatan opsional.

3. ARSITEKTUR & STRUKTUR PROJECT

Aplikasi menggunakan arsitektur yang terorganisir dengan pemisahan concern yang jelas:

```
lib/
├── main.dart                # Entry point & konfigurasi Provider
├── config/
│   └── routes.dart          # Konstanta nama route navigasi
├── controllers/
│   └── sensor_provider.dart     # State management menggunakan Provider
├── design_system/
│   ├── colors.dart          # Palet warna (Primary, Success, Warning, dll)
│   ├── typography.dart      # Style teks (Title, Body, Caption, dll)
```

```
│   └── spacing.dart            # Spacing, radius, dan shadow
├── models/
│   ├── sensor_model.dart       # Model data sensor & enum SensorType/Status
│   └── sensor_reading_model.dart  # Model data pembacaan sensor
├── presentation/
│   ├── pages/                  # 5 halaman utama aplikasi
│   │   ├── monitoring_page.dart   # Halaman dashboard
│   │   ├── sensor_list_page.dart  # Halaman daftar sensor
│   │   ├── sensor_detail_page.dart# Halaman detail sensor
│   │   ├── data_history_page.dart # Halaman riwayat data
│   │   └── add_sensor_page.dart   # Halaman tambah sensor
│   └── widgets/                # Komponen UI reusable
│       ├── sensor_card.dart      # Card untuk menampilkan info sensor
│       ├── summary_card.dart     # Card ringkasan di dashboard
│       ├── status_badge.dart     # Badge status sensor
│       ├── custom_button.dart    # Tombol dengan variant primary/secondary
│       ├── custom_input.dart     # Input field dengan label & validasi
│       └── custom_toggle.dart    # Toggle switch untuk pengaturan
└── services/                   # Layer untuk service eksternal (future)
```

4. TEKNOLOGI & DESIGN SYSTEM

Tech Stack

- Framework: Flutter (Dart)
- State Management: Provider (ChangeNotifier)
- Target Platform: Android, iOS, Web, Desktop

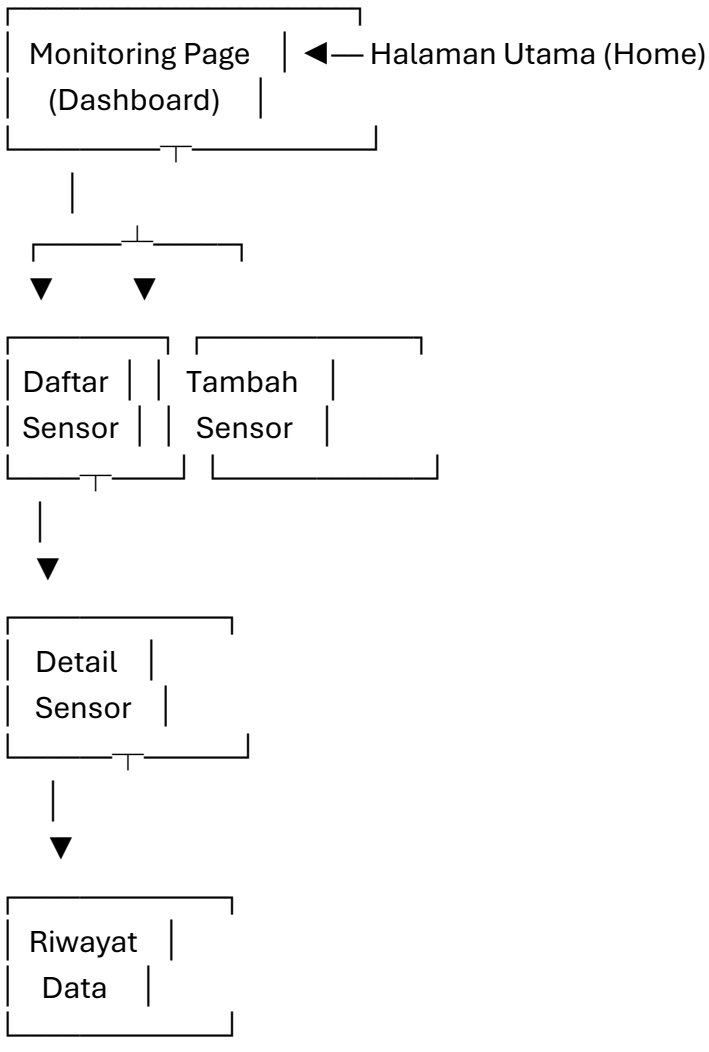
Design System

Komponen	Spesifikasi
Warna Utama	Primary (#2563EB), Secondary (#06B6D4)
Status Colors	Success (#22C55E), Warning (#F59E0B), Danger (#EF4444)
Typography	Title (22 SemiBold), Section (18 SemiBold), Body (14 Regular)
Spacing	8pt grid system, Border Radius 14px, Card Padding 16-20px

Tipe Sensor yang Didukung

- Suhu (°C)
- Kelembapan (%)
- pH
- Cahaya (lux)
- Tekanan Udara (hPa)

5. ALUR NAVIGASI



6. VALIDASI & STATE MANAGEMENT

Validasi Form Tambah Sensor

- Nama Sensor: Wajib diisi
- Lokasi: Wajib diisi
- Tipe Sensor: Wajib dipilih
- Batas Normal: Min harus lebih kecil dari Max

State Management dengan Provider

- Menyimpan daftar sensor dan pembacaan
- Mendukung operasi: tambah sensor, update status, filter, dan pencarian
- State tersinkronisasi di seluruh halaman aplikasi

Dibuat oleh:
Zulfa M.A.I (2311104010)