LAPORAN PRAKTIKUM
MATA KULIAH PEMROGRAMAN MOBILE

U N I V E R S I T A S
AMIKOM PURWOKERTO

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PRAKTIKUM 5 MAP COLLECTION, GRID/LIST
BUILDER DAN EXTRACTED WIDGET

Pada praktikum kelima ini fokus utamanya adalah mengimplementasikan map collection untuk membuat kode menjadi clean code dan *Don't Repeat Yourself* (DRY) dimana map collection ini dapat diimplementasikan untuk data list, map, set dan list of map. kemudian dengan konsep yang sama pula untuk membuat kode tidak repetitif digunakan juga grid dan list builder. Pada hasil implementasinya berupa halaman dosen, mahasiswa, dan item bottom navigation bar yang dibuat map collection, grid/list builder, dan extracted widget

1. Kode map list of widget bottom item

```dart
import 'package:flutter/material.dart';
import 'package:praktikum_5/dosen.dart';
import 'package:praktikum_5/dosen2.dart';
import 'package:praktikum_5/mahasiswa.dart';
import 'package:praktikum_5/matakuliah.dart';
import 'package:praktikum_5/nilai.dart';

void main(List<String> args) {
  runApp(MyApp());
}

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

  @override
  Widget build(BuildContext context) {
    return MaterialApp(home: HomePage(), debugShowCheckedModeBanner: false);
  }
}

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

  @override
  State<HomePage> createState() => _HomePageState();
}

class _HomePageState extends State<HomePage> {
  List<Map<String, dynamic>> navBar = [
    {'widget': Icons.home, 'title': 'Home'},
    {'widget': Icons.person, 'title': 'Dosen'},
    {'widget': Icons.person, 'title': 'Dosen2'},
    {'widget': Icons.people, 'title': 'Mahasiswa'},
    {'widget': Icons.subject, 'title': 'Matakuliah'},
    {'widget': Icons.score, 'title': 'Nilai Akhir'},
  ];
  int _currentIndex = 0;
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: const Text(
          "BottomNavigation bar dan Navigation",
          style: TextStyle(fontSize: 20),
        ),
      ),
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.spaceEvenly,
          children: [
            const Text("oleh: Fajar Ramadhan"),
            Image.asset("assets/img/logo-amikom.png"),
          ],
        ),
      ),
      bottomNavigationBar: BottomNavigationBar(
        onTap: (value) {
          setState(() {
            _currentIndex = value;
          });
          panggilHalaman(value);
        },
        currentIndex: _currentIndex,
        selectedItemColor: Colors.white70,
        unselectedItemColor: Colors.white,
        backgroundColor: Colors.deepPurple,
        type: BottomNavigationBarType.fixed,
        items:
            navBar
                .map(
                  (e) => BottomNavigationBarItem(
                    icon: Icon(e['widget']),
                    label: e['title'],
                  ),
                )
                .toList(),
      ),
    );
  }

  void panggilHalaman(int index) {
    if (index == 1) {
      Navigator.push(
        context,
        MaterialPageRoute(builder: (context) => const DosenPage2()),
      );
    } else if (index == 2) {
      Navigator.push(
        context,
        MaterialPageRoute(builder: (context) => const DosenPage()),
      );
    } else if (index == 3) {
      Navigator.push(
        context,
        MaterialPageRoute(builder: (context) => const MahasiswaPage()),
      );
    } else if (index == 4) {
      Navigator.push(
        context,
        MaterialPageRoute(builder: (context) => const MataKuliahPage()),
      );
    } else if (index == 5) {
      Navigator.push(
        context,
        MaterialPageRoute(builder: (context) => const NilaiPage()),
      );
    }
  }
}
```

2. Kode map dan extracted method pada halaman dosen2

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

class DosenPage2 extends StatefulWidget {
  const DosenPage2({super.key});

  @override
  State<DosenPage2> createState() => _DosenPage2State();
}

class _DosenPage2State extends State<DosenPage2> {
  List<Map<String, dynamic>> dosenList = [
    {
      "nama": "CZ",
      "email": "cz@gmail.com",
      "img":
          "https://th.bing.com/th/id/OIP.rKjUTCis-Rki-TMGhyQfGAHaEK?rs=1&pid=ImgDetMain",
    },
    {
      "nama": "Justin Sun",
      "email": "justin@gmail.com",
      "img":
          "https://th.bing.com/th/id/OIP.K1VLazPXHZaBMvUJuyCkUAHaE8?rs=1&pid=ImgDetMain",
    },
    {
      "nama": "Keanu Reves",
      "email": "keanu@gmail.com",
      "img":
          "https://images.hellomagazine.com/horizon/square/821036cf20cd-keanu-reeves.jpg",
    },.........
  ];
  String alamatGambar =
      "https://th.bing.com/th/id/OIP.rKjUTCis-Rki-TMGhyQfGAHaEK?rs=1&pid=ImgDetMain";
  String namaDosen = "CZ";
  String emailDosen = "cz@gmail.com";
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text("Praktikum 5 Mapping")),
      body: Column(
        crossAxisAlignment: CrossAxisAlignment.start,
        children: [
          Container(
            width: MediaQuery.of(context).size.width,
            height: MediaQuery.of(context).size.width,
            decoration: BoxDecoration(
              color: Colors.grey,
              image: DecorationImage(
                image: NetworkImage(alamatGambar),
                fit: BoxFit.cover,
              ),
            ),
            child: Column(
              crossAxisAlignment: CrossAxisAlignment.center,
              mainAxisAlignment: MainAxisAlignment.end,
              children: [
                Container(
                  color: Colors.green,
                  child: Text(namaDosen, style: TextStyle(fontSize: 20)),
                ),
                Container(
                  color: Colors.green,
                  child: Text(emailDosen, style: TextStyle(fontSize: 20)),
                ),
              ],
            ),
          ),
          Expanded(
            child: GridView(
              gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(
                crossAxisCount: 3,
              ),
              children:
                  dosenList
                      .map(
                        (e) => GestureDetector(
                          onTap: () {
                            setState(() {
                              namaDosen = e["nama"];
                              emailDosen = e["email"];
                              alamatGambar = e["img"];
                            });
                          },
                          child: KotakDosen(
                            nama: e["nama"],
                            email: e["email"],
                            foto: e["img"],
                          ),
                        ),
                      )
                      .toList(),
            ),
          ),
        ],
      ),
    );
  }
}

class KotakDosen extends StatelessWidget {
  final String nama;
  final String email;
  final String foto;
  const KotakDosen({
    super.key,
    required this.nama,
    required this.email,
    required this.foto,
  });

  @override
  Widget build(BuildContext context) {
    return Container(
      margin: const EdgeInsets.all(2),
      height: 100,
      width: 100,
      decoration: BoxDecoration(
        image: DecorationImage(image: NetworkImage(foto), fit: BoxFit.cover),
      ),
      child: Column(
        crossAxisAlignment: CrossAxisAlignment.center,
        mainAxisAlignment: MainAxisAlignment.end,
        children: [
          Text(
            nama,
            style: TextStyle(
              fontSize: 8,
              color: Colors.amber,
              backgroundColor: Colors.grey,
            ),
          ),
          Text(
            email,
            style: TextStyle(
              fontSize: 8,
              color: Colors.amber,
              backgroundColor: Colors.grey,
            ),
          ),
        ],
      ),
    );
  }
}
```

3. Kode grid builder pada halaman dosen

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

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

  @override
  State<DosenPage> createState() => _DosenPageState();
}

class _DosenPageState extends State<DosenPage> {
  String imgUrl =
      "https://th.bing.com/th/id/OIP.dTOz82Vu78PkuZ-t5GJ41gHaJ4?w=135&h=180&c=7&r=0&o=5&dpr=1.3&pid=1.7";

  List<String> images = [
    "https://th.bing.com/th/id/OIP.dTOz82Vu78PkuZ-t5GJ41gHaJ4?w=135&h=180&c=7&r=0&o=5&dpr=1.3&pid=1.7",
    "https://images.hellomagazine.com/horizon/square/821036cf20cd-keanu-reeves.jpg",
    "https://th.bing.com/th/id/R.7f74cdafb3416c87fcf605e66f4c12fd?rik=20zeF75LZuhQ7Q&riu=http://www.thefamouspeople.com/profiles/images/elon-musk-1.jpg&ehk=bGWEbcsdoxqEEwaNuveQSXmdQ1++OFWRbnwdiGtgLoM=&risl=&pid=ImgRaw&r=0"
  ];
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text("Dosen")),
      body: Column(
        children: [
          Container(
            width: MediaQuery.of(context).size.width,
            height: MediaQuery.of(context).size.width,
            decoration: BoxDecoration(
              color: Colors.grey,
              image: DecorationImage(
                image: NetworkImage(imgUrl),
                fit: BoxFit.cover,
              ),
            ),
          ),
          Expanded(
            child: GridView.builder(
              itemCount: images.length,
              gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(
                crossAxisCount: 3,
              ),
              itemBuilder: (context, index) {
                return GestureDetector(
                  onTap: () {
                    setState(() {
                      imgUrl = images[index];
                    });
                  },
                  child: Container(
                    margin: EdgeInsets.all(2),
                    height: 100,
                    width: 100,
                    decoration: BoxDecoration(
                      image: DecorationImage(
                        image: NetworkImage(images[index]),
                        fit: BoxFit.cover,
                      ),
                      color: Colors.grey,
                    ),
                  ),
                );
              },
            ),
          ),
        ],
      ),
    );
  }
}
```

4. Kode listview builder pada halaman mahasiswa

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

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

  @override
  State<MahasiswaPage> createState() => _MahasiswaPageState();
}

class _MahasiswaPageState extends State<MahasiswaPage> {
  List<Map<String, dynamic>> mahasiswa = [
    {
      "nim": "001",
      "nama": "CZ",
      "alamat": "Jln. Raya",
      "email": "cz@gmail.com",
      "img":
          "https://th.bing.com/th/id/OIP.rKjUTCis-Rki-TM6hyQfGAHaEK?rs=1&pid=ImgDetMain",
    },
    {
      "nim": "002",
      "nama": "Justin Sun",
      "alamat": "Jln. Raya",
      "email": "justin@gmail.com",
      "img":
          "https://th.bing.com/th/id/OIP.K1VLazPXHZaBMvUJuyCkUAHaE8?rs=1&pid=ImgDetMain",
    },
    {
      "nim": "003",
      "nama": "Keanu Reves",
      "alamat": "Jln. Raya",
      "email": "keanu@gmail.com",
      "img":
          "https://images.hellomagazine.com/horizon/square/821036cf20cd-keanu-reeves.jpg",
    },
    .............
  ];
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text("Mahasiswa")),
      body: ListView.builder(
        itemCount: mahasiswa.length,
        itemBuilder:
            (context, index) => ListTile(
              leading: Container(
                height: 60,
                width: 60,
                decoration: BoxDecoration(
                  color: Colors.grey,
                  borderRadius: BorderRadius.circular(30),
                  image: DecorationImage(
                    image: NetworkImage(mahasiswa[index]["img"]),
                    fit: BoxFit.cover,
                  ),
                ),
              ),
              title: Text(mahasiswa[index]["nama"]),
              subtitle: Column(
                crossAxisAlignment: CrossAxisAlignment.start,
                children: [
                  Text(mahasiswa[index]["nim"]),
                  Text(mahasiswa[index]["alamat"]),
                  Text(mahasiswa[index]["email"]),
                ],
              ),
            ),
      ),
    );
  }
}
```

5. Hasil dari masing masing halaman