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MPL Practical 03

Aim: To include icons, images, fonts in Flutter app.

Theory:

In Flutter, visual elements such as icons, images, and fonts play a crucial role in designing an interactive interface. These elements can be integrated as follows:

1. Icons:
 - Flutter provides a built-in Icons class that contains material design icons.
 - Custom icons can also be used by including external icon packs.
2. Images:
 - Images can be loaded from assets, network URLs, or user devices.
 - For asset images, the path must be defined in pubspec.yaml.
3. Fonts:
 - Custom fonts can be added by specifying the font family in pubspec.yaml.
 - The GoogleFonts package allows easy usage of Google Fonts in Flutter apps.

Implementation in Our Code:

In our Flutter project, we implemented these features as follows:

- Icons: Used material design icons like Icons.wb_sunny, Icons.eco, and Icons.house to represent different projects.
- Images: Stored project images in the assets/images/ directory and displayed them using Image.asset().
- Fonts: Used the GoogleFonts package to apply modern typography to project titles, descriptions, and buttons.

Code:

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

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

class GreenFundConnect extends StatelessWidget {
  const GreenFundConnect({Key? key}) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      title: 'GreenFund Connect',
      theme: ThemeData(
        primarySwatch: Colors.green,
```

```

primaryColor: const Color(0xFF2E7D32), // Dark green
secondaryHeaderColor: const Color(0xFF81C784), // Light green
fontFamily: GoogleFonts.poppins().fontFamily,
textTheme: TextTheme(
  headlineLarge: GoogleFonts.montserrat(
    fontWeight: FontWeight.bold,
    color: const Color(0xFF2E7D32),
  ),
  titleLarge: GoogleFonts.poppins(
    fontWeight: FontWeight.w600,
    color: Colors.black87,
  ),
  bodyLarge: GoogleFonts.poppins(
    color: Colors.black87,
  ),
  bodyMedium: GoogleFonts.poppins(
    color: Colors.black87,
  ),
),
elevatedButtonTheme: ElevatedButtonThemeData(
  style: ElevatedButton.styleFrom(
    backgroundColor: const Color(0xFF2E7D32),
    foregroundColor: Colors.white,
    shape: RoundedRectangleBorder(
      borderRadius: BorderRadius.circular(10),
    ),
    padding: const EdgeInsets.symmetric(horizontal: 20, vertical: 12),
  ),
),
home: const HomeScreen(),
);
}

```

```

class HomeScreen extends StatefulWidget {
  const HomeScreen({Key? key}) : super(key: key);

  @override
  _HomeScreenState createState() => _HomeScreenState();
}

```

```
class _HomeScreenState extends State<HomeScreen> {
  int _selectedIndex = 0;

  final List<Widget> _screens = [
    const ProjectsScreen(),
    const MyInvestmentsScreen(),
    const ProfileScreen(),
  ];

  void _onItemTapped(int index) {
    setState(() {
      _selectedIndex = index;
    });
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Row(
          children: [
            Image.asset(
              'assets/images/logo.png',
              height: 32,
            ),
            const SizedBox(width: 12),
            Text(
              'GreenFund Connect',
              style: GoogleFonts.montserrat(
                fontWeight: FontWeight.bold,
                color: Colors.green,
              ),
            ),
          ],
        ),
        actions: [
          IconButton(
            icon: const Icon(Icons.notifications_outlined),
            onPressed: () {
              // Notifications action
            },
          ),
        ],
      ),
    );
  }
}
```

```
IconButton(
  icon: const Icon(Icons.search),
  onPressed: () {
    // Search action
  },
),
],
),
body: _screens[_selectedIndex],
floatingActionButton: FloatingActionButton(
  backgroundColor: Theme.of(context).primaryColor,
  onPressed: () {
    // Add project action
  },
  child: const Icon(Icons.add),
  tooltip: 'Add new project',
),
bottomNavigationBar: BottomNavigationBar(
  currentIndex: _selectedIndex,
  onTap: _onItemTapped,
  selectedItemColor: Theme.of(context).primaryColor,
  unselectedItemColor: Colors.grey,
  items: const [
    BottomNavigationBarItem(
      icon: Icon(Icons.home_outlined),
      activeIcon: Icon(Icons.home),
      label: 'Projects',
    ),
    BottomNavigationBarItem(
      icon: Icon(Icons.account_balance_wallet_outlined),
      activeIcon: Icon(Icons.account_balance_wallet),
      label: 'My Investments',
    ),
    BottomNavigationBarItem(
      icon: Icon(Icons.person_outline),
      activeIcon: Icon(Icons.person),
      label: 'Profile',
    ),
  ],
),
);
}
```

 }

```

class ProjectsScreen extends StatelessWidget {
  const ProjectsScreen({Key? key}) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      children: [
        Padding(
          padding: const EdgeInsets.fromLTRB(16, 16, 16, 8),
          child: Text(
            'Featured Projects',
            style: Theme.of(context).textTheme.titleLarge,
          ),
        ),
        SizedBox(
          height: 250,
          child: ListView(
            scrollDirection: Axis.horizontal,
            padding: const EdgeInsets.symmetric(horizontal: 16),
            children: const [
              FeaturedProjectCard(
                title: 'Solar Village Initiative',
                location: 'Maharashtra, India',
                fundingPercentage: 75,
                imageAsset: 'assets/images/solar_village.png',
              ),
              FeaturedProjectCard(
                title: 'Wind Power Hub',
                location: 'Tamil Nadu, India',
                fundingPercentage: 45,
                imageAsset: 'assets/images/wind_power.png',
              ),
              FeaturedProjectCard(
                title: 'Community Hydro Plant',
                location: 'Himachal Pradesh, India',
                fundingPercentage: 60,
                imageAsset: 'assets/images/hydro_plant.png',
              ),
            ],
          ),
        ),
      ],
    );
  }
}

```

```

    ),
    ),
    Padding(
      padding: const EdgeInsets.fromLTRB(16, 24, 16, 8),
      child: Text(
        'All Projects',
        style: Theme.of(context).textTheme.titleLarge,
      ),
    ),
    Expanded(child: ProjectGrid()),
  ],
);
}
}

```

```

class FeaturedProjectCard extends StatelessWidget {
  final String title;
  final String location;
  final int fundingPercentage;
  final String imageAsset;

  const FeaturedProjectCard({
    Key? key,
    required this.title,
    required this.location,
    required this.fundingPercentage,
    required this.imageAsset,
  }) : super(key: key);

```

```

@override
Widget build(BuildContext context) {
  return Container(
    width: 280,
    margin: const EdgeInsets.only(right: 16),
    decoration: BoxDecoration(
      borderRadius: BorderRadius.circular(12),
      boxShadow: [
        BoxShadow(
          color: Colors.black.withOpacity(0.1),
          blurRadius: 8,
          offset: const Offset(0, 4),
        ),
      ],
    ),
  );
}

```

```

    ],
  ),
  child: ClipRRect(
    borderRadius: BorderRadius.circular(12),
    child: Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      children: [
        Stack(
          children: [
            Image.asset(
              imageAsset,
              height: 120,
              width: double.infinity,
              fit: BoxFit.cover,
            ),
            Positioned(
              top: 12,
              right: 12,
              child: Container(
                padding: const EdgeInsets.symmetric(horizontal: 8, vertical: 4),
                decoration: BoxDecoration(
                  color: Colors.black54,
                  borderRadius: BorderRadius.circular(12),
                ),
                child: Row(
                  children: [
                    const Icon(
                      Icons.bolt,
                      color: Colors.amber,
                      size: 16,
                    ),
                    const SizedBox(width: 4),
                    Text(
                      'Trending',
                      style: GoogleFonts.poppins(
                        color: Colors.white,
                        fontSize: 12,
                        fontWeight: FontWeight.w500,
                      ),
                    ),
                  ],
                ),
              ),
            ),
          ],
        ),
      ],
    ),
  ),

```

```

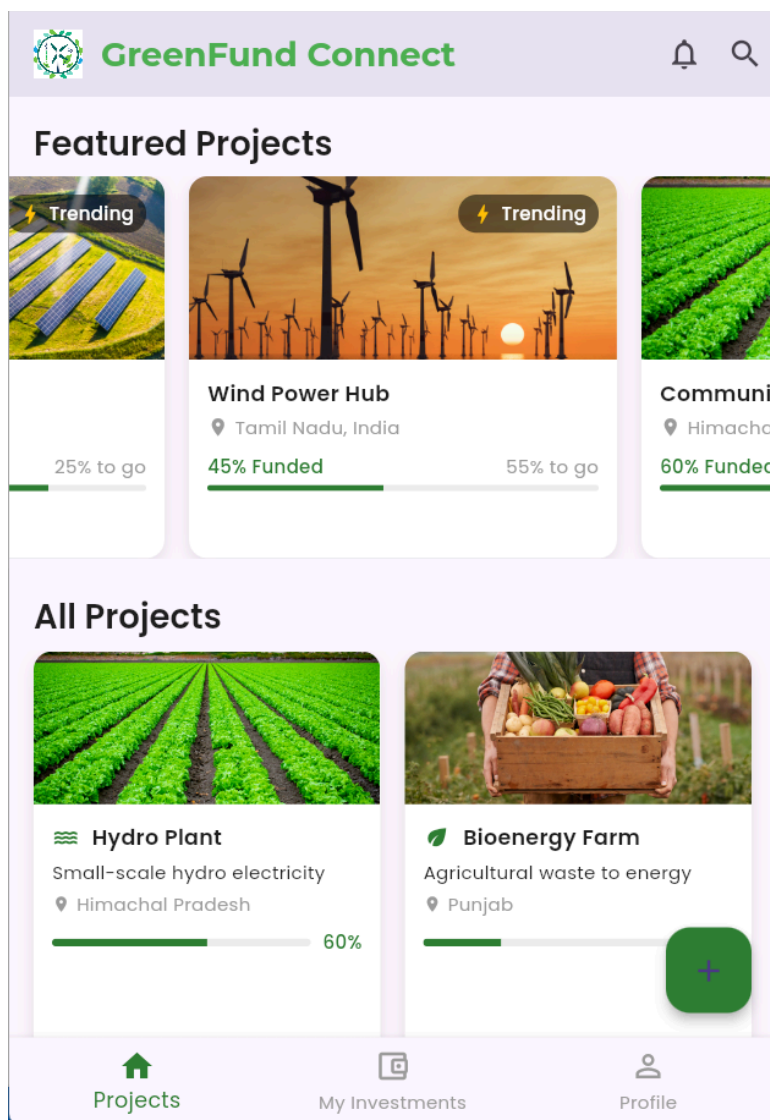
    ),
  ),
],
),
Expanded(
  child: Container(
    padding: const EdgeInsets.all(12),
    color: Colors.white,
    child: Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      children: [
        Text(
          title,
          style: GoogleFonts.poppins(
            fontWeight: FontWeight.w600,
            fontSize: 14,
          ),
        ),
        maxLines: 1,
        overflow: TextOverflow.ellipsis,
      ),
      const SizedBox(height: 4),
      Row(
        children: [
          const Icon(
            Icons.location_on,
            size: 14,
            color: Colors.grey,
          ),
          const SizedBox(width: 4),
          Text(
            location,
            style: GoogleFonts.poppins(
              fontSize: 12,
              color: Colors.grey,
            ),
          ),
        ],
      ),
      const SizedBox(height: 8),
      Column(
        crossAxisAlignment: CrossAxisAlignment.start,
        children: [

```

```

Row(
  mainAxisAlignment: MainAxisAlignment.spaceBetween,
  children: [
    Text(
      '$fundingPercentage% Funded',
      style: GoogleFonts.poppins(
        fontWeight: FontWeight.w500,
        fontSize: 12,
        color: Theme.of(context).primaryColor,
      ),
    ),
    Text(
      '${100 - fundingPercentage}% to go',
      style: GoogleFonts.poppins(
        fontSize: 12,
        color: Colors.grey,
      ),
    ),
  ],
),
const SizedBox(height: 4),
ClipRRect(
  borderRadius: BorderRadius.circular(10),
  child: LinearProgressIndicator(
    value: fundingPercentage / 100,
    backgroundColor: Colors.grey.shade200,
    valueColor: AlwaysStoppedAnimation<Color>(
      Theme.of(context).primaryColor,
    ),
  ),
),
],
),
],
),
),
],
),
),
);
}

```

Screenshot:**Conclusion**

In this experiment, we successfully implemented icons, images, and custom fonts to enhance the UI of our Flutter app. Initially, we faced issues like missing asset declarations in pubspec.yaml and incorrect image paths, but we resolved them by properly configuring assets, using hot reload, and checking error logs for debugging.