Experiment No. 2

AIM : To design Flutter UI by including common widgets

Theory:

In Flutter, designing UIs involves combining various widgets to build interactive and visually appealing applications. Here's a more detailed overview of key concepts:

1. **Widgets in Flutter**: Everything in Flutter is a widget. Widgets are the building blocks of the UI. There are two main types:
   - **Stateless Widgets**: These are immutable and don't change over time. They are responsible for displaying UI based on fixed data or input.
   - **Stateful Widgets**: These can change their state over time. They are dynamic and are used when the UI needs to update in response to user interaction or other factors.

2. **Layout Widgets**: The layout of your UI is primarily constructed using widgets like:
   - **Container**: A versatile widget used to hold other widgets and apply styling such as padding, margin, colors, and shapes.
   - **Column**: A widget that arranges its children vertically. It's useful for stacking widgets in a vertical list.
   - **Row**: A widget that arranges its children horizontally. It's useful for placing widgets side by side.
   - **Expanded**: A widget that can be used inside a Column, Row, or Flex to make child widgets flexible and fill available space.

3. **Text and Icons**:
   - **Text**: The Text widget is used to display static or dynamic text. It can be styled with custom fonts, sizes, colors, and more.
   - **Icon**: Flutter provides a large set of material design icons, and the Icon widget lets you display them in various sizes and colors.

4. **Buttons and User Interactions**:

   - Flutter provides multiple button widgets like **ElevatedButton**, **TextButton**, and **IconButton** to handle user interaction. These widgets can trigger actions when tapped.
   - **TextField**: Used for user input. You can configure it to accept different types of text, such as email or password.

- **Checkbox**, **Radio**, and **Switch**: Used for boolean selections, allowing users to choose options in forms or settings.

5. **Navigation**:
   - Flutter's **Navigator** widget is responsible for managing routes or screens. You use Navigator.push to navigate to a new screen, and Navigator.pop to return to the previous one.
   - **Routes** define the pages of an app, and you can pass data between them using arguments.

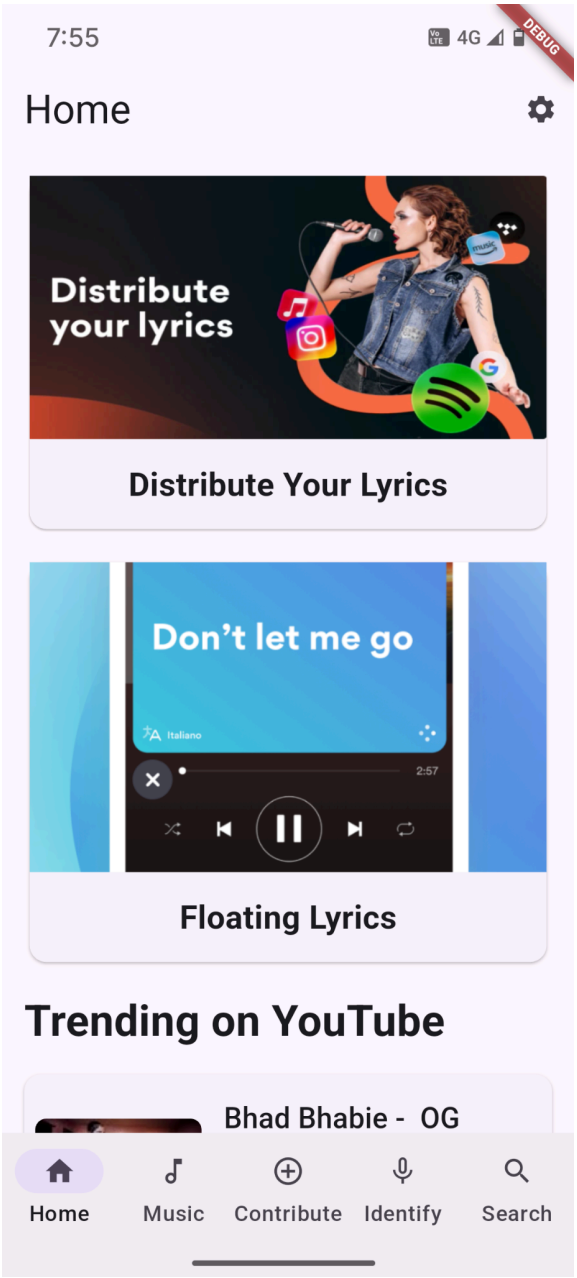
6. **Displaying Lists and Grids**:
   - **ListView**: The ListView widget is used to display a list of items that can scroll. It's perfect for long lists that need to be dynamically generated.
   - **GridView**: This widget allows you to display items in a grid format, with configurable row and column layouts.

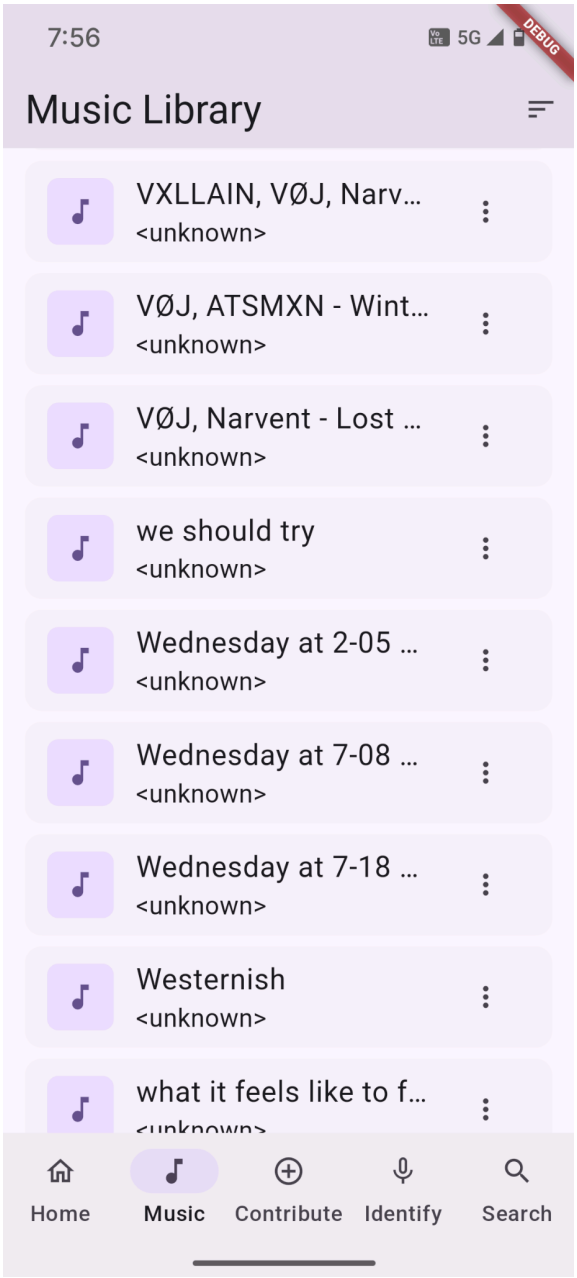
7. **State Management**:
   - Flutter provides a variety of ways to manage state. The simplest approach is using setState() to update the UI. For more complex apps, you can use state management solutions like **Provider**, **Riverpod**, or **Bloc** to separate business logic from UI code.
   - Proper state management ensures your UI stays in sync with the underlying data, especially in interactive or dynamic applications.

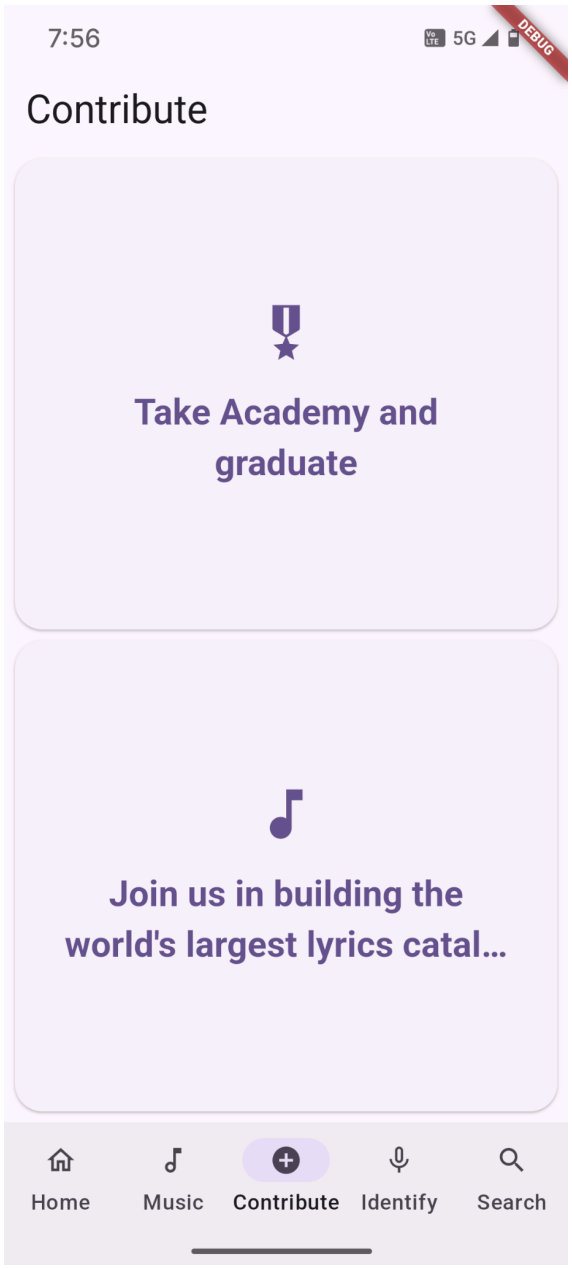
8. **Theming and Styling**:
   - Flutter allows you to define a global **Theme** for your app using ThemeData, which ensures consistent styling across the entire app. You can customize colors, typography, and button styles.

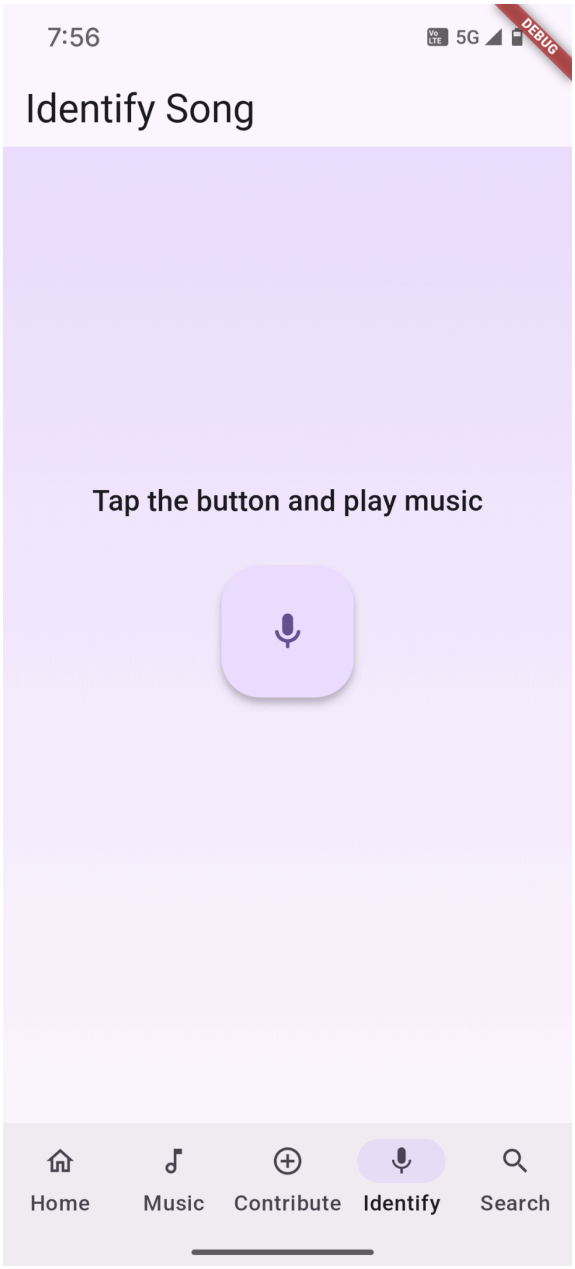
9. **Animations and Transitions**:
   - Flutter provides powerful animation support to create smooth and visually appealing transitions between UI states.
   - **AnimatedContainer**: A widget that animates changes in properties like width, height, or color over a given duration.
   - You can also create custom animations using **AnimationController** and **Tween**.

Screenshots:

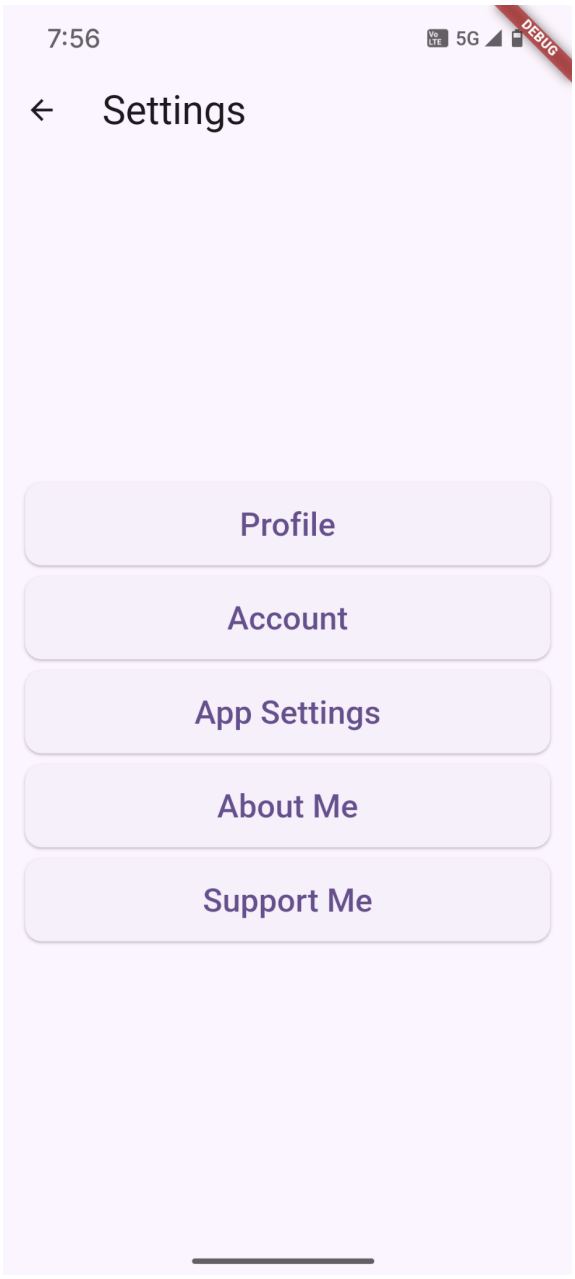


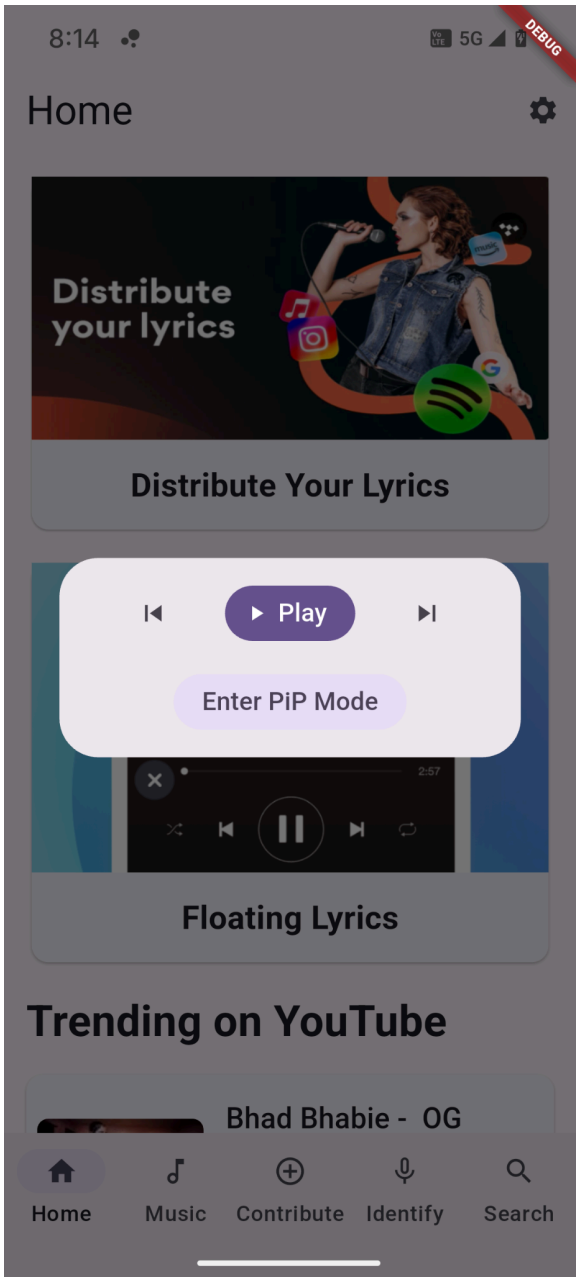


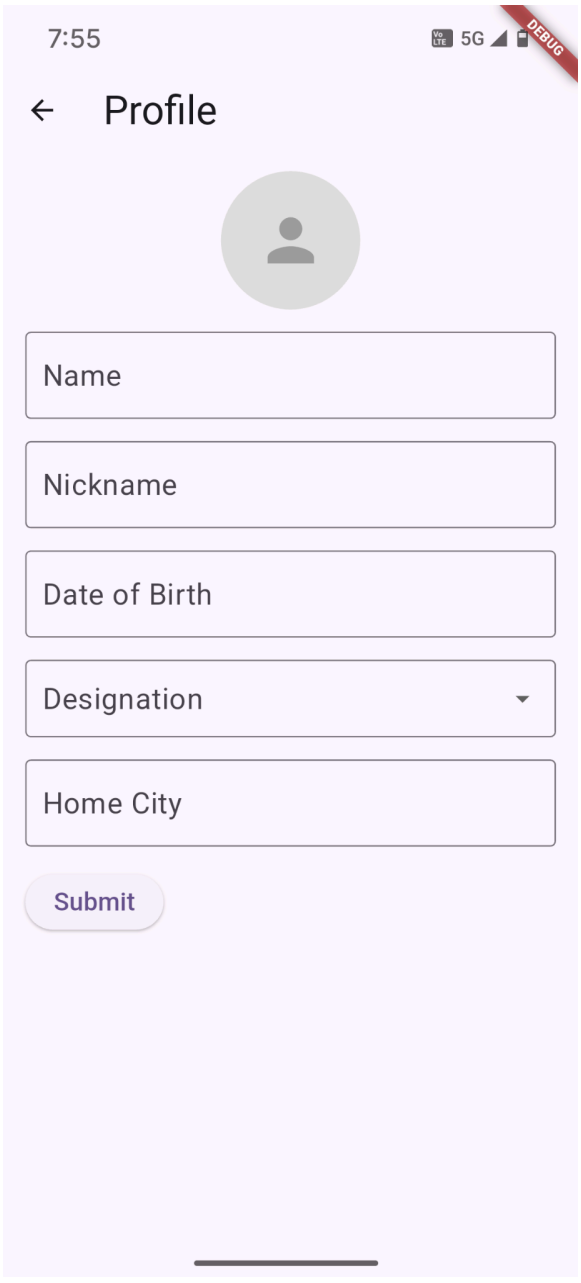

7:56
5G
DEBUG
Contribute
Take Academy and graduate
Join us in building the world's largest lyrics catal...
Home
Music
Contribute
Identify
Search


7:56
5G
DEBUG
Identify Song
Tap the button and play music
Home
Music
Contribute
Identify
Search


7:57
5G
DEBUG
Search
Search...
Home
Music
Contribute
Identify
Search


7:56
5G
DEBUG
Settings
Profile
Account
App Settings
About Me
Support Me


8:14
5G
DEBUG
Home
Distribute your lyrics
Distribute Your Lyrics
Play
Enter PiP Mode
Floating Lyrics
Trending on YouTube
Bhad Bhabie - OG
Home
Music
Contribute
Identify
Search


7:55
5G
DEBUG
Profile
Name
Nickname
Date of Birth
Designation
Home City
Submit

Code Snippets:

Container :

```
Container(
  width: 200.0,
  height: 100.0,
  color: Colors.blue,
  child: Center(
    child: Text(
      'Hello, Flutter!',
      style: TextStyle(
        color: Colors.white,
        fontSize: 20.0,
      ),
    ),
  ),
)
```

Column :

```
Column(
  mainAxisAlignment: MainAxisAlignment.center,
  children: <Widget>[
    Text('Item 1'),
    Text('Item 2'),
    Text('Item 3'),
  ],
)
```

Row :

```
Row(
  mainAxisAlignment: MainAxisAlignment.spaceBetween,
  children: <Widget>[
    Icon(Icons.home),
    Icon(Icons.search),
    Icon(Icons.settings),
  ],
)
```

Text :

```
Text(
  'Flutter is awesome!',
  style: TextStyle(
    color: Colors.blue,
    fontSize: 24.0,
    fontWeight: FontWeight.bold,
  ),
)
```

Image :

```
Image.asset(
  'assets/images/flutter_logo.png',
  width: 100.0,
  height: 100.0,
)

Image.network(
  'https://www.example.com/flutter_logo.png',
  width: 100.0,
  height: 100.0,
)
```

ElevatedButton :

```
ElevatedButton(
  onPressed: () {
    print('ElevatedButton pressed');
  },
  child: Text('Click Me'),
  style: ElevatedButton.styleFrom(
    primary: Colors.blue,
    onPrimary: Colors.white,
  ),
)
```