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MPL Practical 5

Aim:

To implement navigation, routing, and gesture detection in a Flutter application, ensuring smooth transitions between screens and interactive user interactions.

Theory:

Flutter provides built-in navigation and gesture detection capabilities that enable seamless user experiences in mobile applications.

1. **Navigation in Flutter:**
    - Navigation allows users to move between different screens (routes) in an application.
    - The `Navigator` widget manages a stack-based approach for screen transitions using `push()` and `pop()`.
    - Named routes (`Navigator.pushNamed()`) provide better management and reusability of navigation logic.
2. **Gesture Detection in Flutter:**
    - Gesture detection enhances user interactivity by responding to touch inputs such as taps, swipes, and drags.
    - The `ElevatedButton`'s `onPressed` function is commonly used for button interactions.
    - The `GestureDetector` widget allows custom touch detection (e.g., double taps, long presses).
3. **Routing Methods:**
    - **Direct Routing:** Using `Navigator.push()` to navigate to new screens dynamically.

    - **Named Routing:** Pre-defining routes in `MaterialApp` and using `Navigator.pushNamed()` for structured navigation.

Steps to Apply Navigation, Routing, and Gestures in a Flutter App

1. Set Up the Flutter Project

- Create a new Flutter project or use an existing one.
- Ensure all necessary dependencies are available in `pubspec.yaml`.

2. Create the Required Screens

- Design a `LoginScreen` with input fields and a login button.
- Create a `HomeScreen` where users will be navigated after login.

3. Implement Navigation (Route Handling)

- Use `Navigator.push()` for navigating from the login screen to the home screen.
- Ensure navigation occurs only when form validation is successful.

4. Add Gesture Detection

- Implement button clicks (`ElevatedButton` onPressed) for navigation.
- Use `GestureDetector` for handling custom touch interactions if needed.

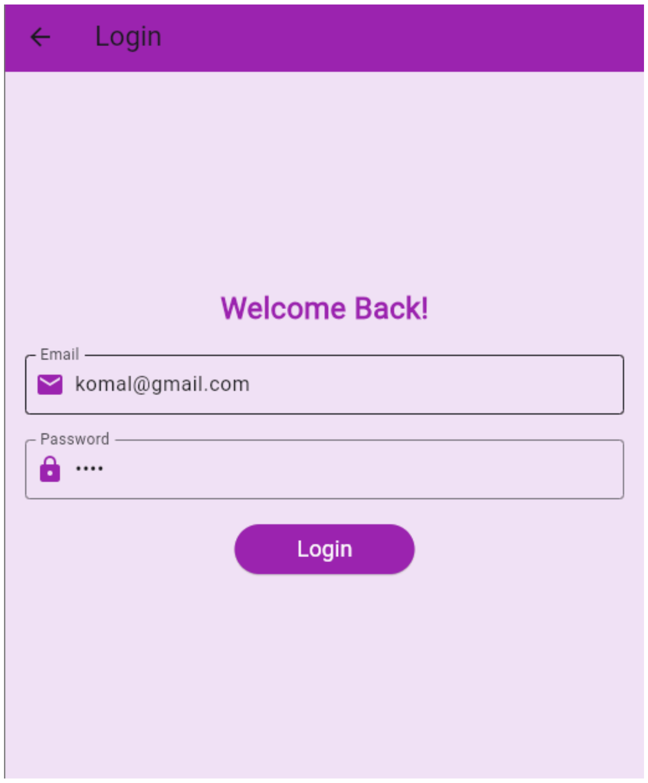
5. Define Named Routes (Optional for Better Management)

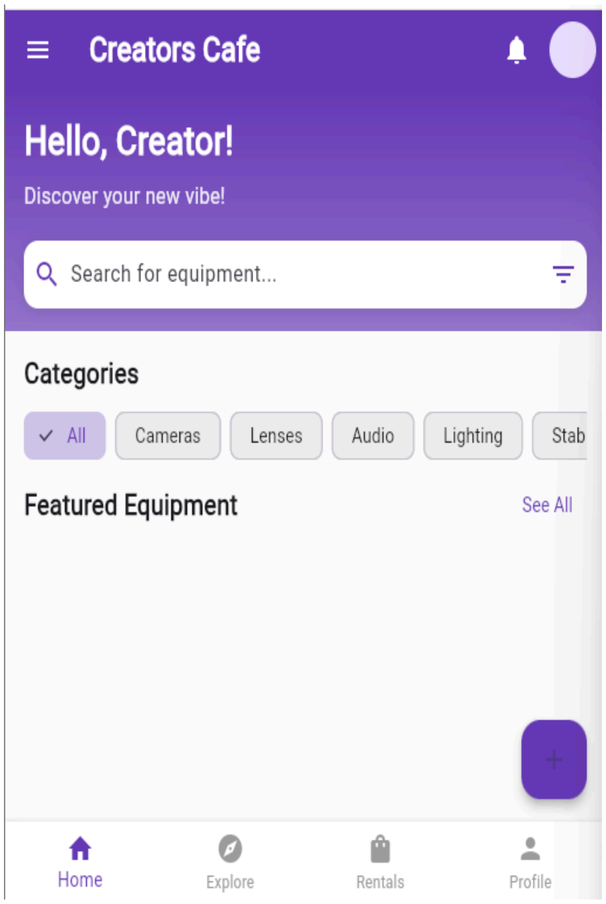
- Set up named routes in the `MaterialApp` widget.
- Navigate using `Navigator.pushNamed()` instead of defining routes inline.

6. Test the Navigation and Gestures

- Run the app and ensure tapping the login button successfully navigates to the home screen.
- Validate that gestures (e.g., button press) are working correctly.

Output:


Login
Welcome Back!
Email
komal@gmail.com
Password
••••
Login


Creators Cafe
Hello, Creator!
Discover your new vibe!
Search for equipment...
Categories
All
Cameras
Lenses
Audio
Lighting
Stab
Featured Equipment
See All
Home
Explore
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Conclusion:

By implementing navigation, routing, and gesture detection, a Flutter app can provide a smooth and interactive user experience. Proper screen transitions, form validations before navigation, and handling gestures improve usability and responsiveness, making the app more user-friendly and intuitive.