Bharatiya Vidya Bhavan's
SARDAR PATEL INSTITUTE OF TECHNOLOGY
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Munshi Nagar, Andheri (W), Mumbai – 400 058.
Department of Computer Science and Engineering

Experiment	5
Aim	Create an app for MCA department using side and tabs navigation
Objective	• To Create MCA App using UI Component • To Develop SideDrawer and Tabs Navigation in one application • To Use 60-30-10 rule • To Use Webview concept • To Use Expandable Card View Concept
Name	Atharva Vasant Angre
UCID	202451001
Class	FYMCA
Batch	A
Date of Submission	09.03.25

Technology used	**Flutter, Android Studio**
Task	Create an app for MCA department using side and tabs navigation consisting of the following: 1) Faculty information with Expandable Card view 2) Department Vision and Mission with expandable Card view 3) Notification of any upcoming event (links to the website). 4) WebView 5) Feedback form along with rating

Code with proper label	commonDrawer.dart
	`import 'dart:io';`
	
	`import 'package:flutter/material.dart';`
	`import 'package:flutter/services.dart';`
	`import 'package:get/get.dart';`
	
	`import '../Screens/events.dart';`
	`import '../Screens/feedback.dart';`
	`import '../Screens/webView.dart';`
	
	`class CommonDrawer extends StatefulWidget {`
	`  @override`
	`  State<CommonDrawer> createState() => _CommonDrawerState();`
	`}`
	
	`class _CommonDrawerState extends State<CommonDrawer> {`
	`  @override`
	`  Widget build(BuildContext context) {`
	`   return Drawer(`
	`    child: ListView(`
	`      padding: EdgeInsets.zero,`
	`      children: [`
	`       UserAccountsDrawerHeader(`
	`        accountName: Text(`
	`         "Hello,\nAtharva Angre",`
	`         style: TextStyle(color: Colors.white),`
	`        ),`

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```dart
                    accountEmail: Text(
                      "angreatharva08@gmail.com",
                      style: TextStyle(color: Colors.white),
                    ),
                    decoration: BoxDecoration(
                      color: Colors.amber
                    ),
                  ),
                ListTile(
                  leading: Icon(Icons.event_note_rounded),
                  title: Text("Events"),
                  onTap: () {
                    Get.back();
                    Get.to(EventsPage());
                  }),
                ListTile(
                  leading: Icon(Icons.phonelink_outlined),
                  title: Text("Go to Web"),
                  onTap: () {
                    Get.back();
                    Get.to(WebViewPage());
                  }),
                ListTile(
                  leading: Icon(Icons.feed_outlined),
                  title: Text("Feedback"),
                  onTap: () {
                    Get.back();
                    Get.to(FeedBackPage());
                  }),
                Divider(),
                ListTile(
                  leading: Icon(Icons.logout),
                  title: Text("Exit App"),
                  onTap: () {
                    SystemNavigator.pop();
                  },
                ),
              ],
            ),
          );
        }
      }


      events.dart
      import 'package:flutter/material.dart';
      import 'package:url_launcher/url_launcher.dart';

      class EventsPage extends StatefulWidget {
        @override
        State<EventsPage> createState() => _EventsPageState();
      }

      class _EventsPageState extends State<EventsPage> {
        final List<Map<String, String>> events = [
          {
            "title": "Tech Conference 2025",
            "date": "March 20, 2025",
            "url": "https://mca.spit.ac.in/index.php/notifications/"
```

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```dart
    },
    {
      "title": "Flutter Summit",
      "date": "April 15, 2025",
      "url": "https://mca.spit.ac.in/index.php/notifications/"
    },
    {
      "title": "AI Expo",
      "date": "May 10, 2025",
      "url": "https://mca.spit.ac.in/index.php/notifications/"
    },
  ];

  Future<void> _launchURL(String urlString) async {
    final Uri url = Uri.parse(urlString);
    try {
      if (!await launchUrl(url)) {
        ScaffoldMessenger.of(context).showSnackBar(
          SnackBar(content: Text('Could not launch $urlString')),
        );
      }
    } catch (e) {
      debugPrint('Error launching $urlString: $e');
      ScaffoldMessenger.of(context).showSnackBar(
        SnackBar(content: Text('Failed to open $urlString')),
      );
    }
  }


  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        backgroundColor: Colors.amber,
        title: Text("Upcoming Events"),
      ),
      body: ListView.builder(
        padding: EdgeInsets.all(16),
        itemCount: events.length,
        itemBuilder: (context, index) {
          final event = events[index];
          return Card(
            elevation: 3,
            margin: EdgeInsets.symmetric(vertical: 8),
            child: ListTile(
              title: Text(event["title"]!, style: TextStyle(fontWeight:
FontWeight.bold)),
              subtitle: Text("Date: ${event["date"]}"),
              trailing: Icon(Icons.link, color: Colors.blue),
              onTap: () => _launchURL(event["url"]!),
            ),
          );
        },
      ),
    );
  }
}
```

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


class FacultyInformation extends StatefulWidget {
  @override
  State<FacultyInformation> createState() => _FacultyInformationState();
}

class _FacultyInformationState extends State<FacultyInformation> {
  final List<Map<String, String>> facultyList = [
    {
      'name': 'Prof. Dr. Dhananjay Kalbande',
      'position': 'Head Of Department',
      'image': 'assets/images/dhananjay.jpg',
      'linkedinUrl': 'https://www.linkedin.com/in/dhananjay-kalbande-77349923',
      "header":"Professor S.P.I.T. | Founder AiM4u | AutoBuddys | Ai4Climate |
Ex-Skinzy | TechForSocial.com",
      'education': 'Tata Institute of Social Sciences | Post-Doctorate
Fellowship(PDF),Senior Research Fellow(SRF)\n'
          'Mumbai University Mumbai | PhD, Technology\n'
          'Priyadarshini College of Engineering College, Nagpur | B.E. (Computer),
Computer Engineering\n'
          'Vivekanand Education Society Institute Of Technology | M.E. [
Information Technology], Information Technology',
    },
    {
      'name': 'Prof. Dr. Aarti Karande',
      'position': 'Assistant Professor',
      'image': 'assets/images/aarti_mam.png',
      'linkedinUrl': 'https://www.linkedin.com/in/aartimkarande/',
      "header":"PH.D (Comp), M.Tech, B.E | Assistant Professor@S.P.I.T. |
Enterprise SA, CA, SME in DS",
      'education': 'Bhartiya Vidya Bhavans Sardar Patel Institute of Technology
Munshi Nagar Andheri Mumbai | Doctor of Philosophy - PH.D , Computer
Engineering\n'
          'Veermata Jijabai Technological Institute (VJTI) | M.Tech (Computer),
Computer Engineering\n'
          'Shah And Anchor Kutchhi Engineering College | Bachelor of Engineering
(B.Eng.), Computer Engineering\n'
          'CDAC Mumbai | Post Doctral Research Internship ',

    },
    {
      'name': 'Prof. Harshil Kanakia',
      'position': 'Assistant Professor',
      'image': 'assets/images/harshil_sir.png',
      'linkedinUrl': 'https://www.linkedin.com/in/harshil-kanakia-b477246a/',
      "header":"Certified Data Generalist | Certified DevOps Engineer | Assistant
Professor at Computer Science and Engineering Department at Sardar Patel
Institute of Technology",
      'education': 'Bhartiya Vidya Bhavans Sardar Patel Institute of Technology
Munshi Nagar Andheri Mumbai | Doctor of Philosophy - PhD, Computer
EngineeringDoctor of Philosophy - PhD, Computer Engineering\n'
          'International Institute of Information Technology Bangalore | PG in Data
Science\n'
          'Bhartiya Vidya Bhavans Sardar Patel Institute of Technology Munshi
Nagar Andheri Mumbai | Masters degree, Computer Engineering\n'
```

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```
        'Bhartiya Vidya Bhavans Sardar Patel Institute of Technology Munshi
Nagar Andheri Mumbai | Bachelors degree, Computer Engineering',

    },
    {
     'name': 'Prof. Nikhita Mangaonkar',
     'position': 'Assistant Professor',
     'image': 'assets/images/nikhita_mam.jpg',
     'linkedinUrl': 'https://www.linkedin.com/in/nikhita-mangaonkar-5268b4191/',
     "header":"Assistant Professor at Sardar Patel Institute of Technology,
M.C.A",
     'education': 'Shreemati Nathibai Damodar Thackersey Womens University |
Bachelor of Computer Applications\n'
        'University of Mumbai | Masters of Computer Applications, Computer
Programming, Specific Applications\n'

    },
    {
     'name': 'Prof. Sakina Shaikh',
     'position': 'Assistant Professor',
     'image': 'assets/images/sakina_mam.png',
     'linkedinUrl': 'https://www.linkedin.com/in/sakina-salmani-1283a1a2/',
     "header":"Assistant Professor at Sardar Patel Institute of Technology",
     'education': 'Dwarkadas J. Sanghvi College of Engineering | Master of
Technology - MTech, Computer Engineering\n'
        'Bhartiya Vidya Bhavans Sardar Patel Institute of Technology Munshi
Nagar Andheri Mumbai | Doctor of Philosophy - PhD, Computer Engineering\n'
        'Rizvi College of Engineering\n'
    },
    {
     'name': 'Prof. Pallavi Thakur',
     'position': 'Assistant Professor',
     'image': 'assets/images/pallavi_mam.png',
     'linkedinUrl': 'https://www.linkedin.com/in/pallavi-thakur-8a7a271ba/',
     "header":"Assistant Professor at Bhartiya Vidya Bhavans Sardar Patel
Institute of Technology Munshi Nagar Andheri Mumbai",
     'education': ""
    },
  ];
  // List to track expansion state
  late List<bool> isExpandedList;

  @override
  void initState() {
   super.initState();
   isExpandedList = List.generate(facultyList.length, (index) => false);
  }

  @override
  Widget build(BuildContext context) {
   return Scaffold(
    backgroundColor: Colors.white,
    body: ListView.builder(
     padding: const EdgeInsets.all(10),
     itemCount: facultyList.length,
     itemBuilder: (context, index) {
      return _buildFacultyCard(index);
     },
    ),
```

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```dart
  );
}

Widget _buildFacultyCard(int index) {
  return Container(
    margin: const EdgeInsets.symmetric(vertical: 8),
    padding: const EdgeInsets.all(10),
    decoration: BoxDecoration(
      borderRadius: BorderRadius.circular(10),
      border: Border.all(color: Colors.black, width: 2),
    ),
    child: Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      children: [
        const SizedBox(height: 8),

        // Faculty Info Row
        Row(
          children: [
            _buildImage(facultyList[index]['image'] ?? ''),
            const SizedBox(width: 10),
            Expanded(
              child: Column(
                crossAxisAlignment: CrossAxisAlignment.start,
                children: [
                  Text(
                    facultyList[index]['name'] ?? 'Name',
                    style: const TextStyle(fontWeight: FontWeight.bold, fontSize: 14),
                    maxLines: 2,
                    overflow: TextOverflow.ellipsis,
                  ),
                  const SizedBox(height: 2),
                  Text(
                    facultyList[index]['position'] ?? 'Position',
                    style: TextStyle(fontSize: 12, color: Colors.grey[700]),
                    maxLines: 1,
                    overflow: TextOverflow.ellipsis,
                  ),
                ],
              ),
            ),
            GestureDetector(
              onTap: () {
                setState(() {
                  isExpandedList[index] = !isExpandedList[index];
                });
              },
              child: Icon(
                isExpandedList[index] ? Icons.keyboard_arrow_up_rounded :
Icons.keyboard_arrow_down_rounded,
              ),
            ),
          ],
        ),

        // Expanded Details
        AnimatedCrossFade(
          duration: const Duration(milliseconds: 200),
          firstChild: Container(),
```

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```dart
          secondChild: Column(
            crossAxisAlignment: CrossAxisAlignment.start,
            children: [
              const SizedBox(height: 8),
              Text(
                facultyList[index]['header']! ?? '',
                style: TextStyle(fontSize: 12, color: Colors.black),
              ),
              const SizedBox(height: 8),
              Text(
                facultyList[index]['education'] ?? '',
                style: TextStyle(fontSize: 12, color: Colors.black),
              ),
            ],
          ),
          crossFadeState: isExpandedList[index] ? CrossFadeState.showSecond : CrossFadeState.showFirst,
        ),
      ],
    ),
  );
}

  Widget _buildImage(String imageUrl) {
    return ClipRRect(
      borderRadius: BorderRadius.circular(8),
      child: Image.asset(
        imageUrl,
        width: 60,
        height: 60,
        fit: BoxFit.cover,
        errorBuilder: (context, error, stackTrace) {
          return Container(
            width: 60,
            height: 60,
            color: Colors.grey[300],
            child: const Icon(Icons.error, color: Colors.red),
          );
        },
      ),
    );
  }

}


feedback.dart
import 'package:flutter/material.dart';
import 'package:get/get.dart';

class FeedbackController extends GetxController {
  final nameController = TextEditingController();
  final ucidController = TextEditingController();
  final emailController = TextEditingController();
  final suggestionController = TextEditingController();

  final formKey = GlobalKey<FormState>();

  void submitFeedback() {
```

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```dart
      if (formKey.currentState!.validate()) {
        Get.snackbar(
          "Success",
          "Feedback submitted successfully!",
          snackPosition: SnackPosition.BOTTOM,
          backgroundColor: Colors.green,
          colorText: Colors.white,
          duration: Duration(seconds: 2),
        );
      }
    }

    void clearFields() {
      nameController.clear();
      ucidController.clear();
      emailController.clear();
      suggestionController.clear();
    }
  }

  class FeedBackPage extends StatelessWidget {
    final FeedbackController controller = Get.put(FeedbackController());

    @override
    Widget build(BuildContext context) {
      return WillPopScope(
        onWillPop: () async {
          controller.clearFields();
          return true;
        },
        child: Scaffold(
          appBar: AppBar(
            backgroundColor: Colors.amber,
            title: Text("Feedback"),
          ),
          body: Padding(
            padding: EdgeInsets.all(16.0),
            child: Form(
              key: controller.formKey,
              child: Column(
                children: [
                  TextFormField(
                    controller: controller.nameController,
                    decoration: InputDecoration(labelText: "Name"),
                    validator: (value) {
                      if (value == null || value.isEmpty) {
                        return "Please enter your name";
                      }
                      return null;
                    },
                  ),
                  SizedBox(height: 10),
                  TextFormField(
                    controller: controller.ucidController,
                    decoration: InputDecoration(labelText: "UCID"),
                    validator: (value) {
                      if (value == null || value.isEmpty) {
                        return "Please enter your UCID";
                      }
```

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```dart
                return null;
              },
            ),
            SizedBox(height: 10),
            TextFormField(
              controller: controller.emailController,
              decoration: InputDecoration(labelText: "Email"),
              keyboardType: TextInputType.emailAddress,
              validator: (value) {
               if (value == null || value.isEmpty) {
                 return "Please enter your email";
               } else if (!GetUtils.isEmail(value)) {
                 return "Enter a valid email";
               }
               return null;
              },
            ),
            SizedBox(height: 10),
            TextFormField(
              controller: controller.suggestionController,
              decoration: InputDecoration(labelText: "Suggestions"),
              maxLines: 3,
              validator: (value) {
               if (value == null || value.isEmpty) {
                 return "Please enter your suggestions";
               }
               return null;
              },
            ),
            SizedBox(height: 20),
            ElevatedButton(
              onPressed: controller.submitFeedback,
              child: Text("Submit"),
            ),
          ],
        ),
       ),
      ),
     ),
    );
  }
}


homeScreen.dart
import 'package:flutter/material.dart';
import 'package:get/get.dart';
import 'package:lab5/Screens/visionAndMission.dart';
import 'package:lab5/Screens/webView.dart';
import 'package:lab5/commonWidgets/commonDrawer.dart';

import 'facultyInfo.dart';

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

 @override
 State<HomeScreen> createState() => _HomeScreenState();
}
```

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```dart
class _HomeScreenState extends State<HomeScreen> {
  @override
  Widget build(BuildContext context) {
    return DefaultTabController(
      initialIndex: 0,
      length: 2,
      child: Scaffold(
        appBar: AppBar(
          backgroundColor:Colors.amber,
          title: const Text('MCA Dept.'),
          leading: Builder(
            builder: (context) {
              return Hero(
                tag: 'SPIT_LOGO',
                child: IconButton(
                  icon: Image.asset('assets/images/spit.jpeg'),
                  onPressed: () {
                    Scaffold.of(context).openDrawer();
                  },
                ),
              );
            }
          ),
          bottom:  TabBar(
            tabs: [
              Tab(text: 'Faculty info',),
              Tab(text: 'Vision and Mission',),
            ],
          ),
        ),
        body: TabBarView(
          children: [
            Center(child: FacultyInformation(),),
            const Center(child: VisionAndMission()),
          ],
        ),
        drawer: CommonDrawer(),

      ),
    );
  }
}


splashScreen.dart
import 'package:flutter/material.dart';
import 'package:get/get.dart';
import 'package:lab5/Screens/homeScreen.dart';

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

  @override
  State<SplashScreen> createState() => _SplashScreenState();
}

class _SplashScreenState extends State<SplashScreen>
    with SingleTickerProviderStateMixin {
```

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```dart
late AnimationController _controller;
late Animation<double> _scaleAnimation;

@override
void initState() {
  super.initState();

  // Initialize animation controller
  _controller = AnimationController(
    duration: const Duration(seconds: 2),
    vsync: this,
  );

  // Scale animation from 0.5x to 1.0x
  _scaleAnimation = Tween<double>(begin: 0.5, end: 1.0).animate(
    CurvedAnimation(parent: _controller, curve: Curves.easeInOut),
  );

  // Start animation
  _controller.forward();

  // Navigate to HomeScreen after animation completes
  Future.delayed(const Duration(seconds: 3), () {
    Get.off(() => const HomeScreen());
  });
}

@override
void dispose() {
  _controller.dispose();
  super.dispose();
}

@override
Widget build(BuildContext context) {
  return Scaffold(
    body: Center(
      child: ScaleTransition(
        scale: _scaleAnimation,
        child: Hero(
          tag: 'SPIT_LOGO',
          child: ClipRRect(
            borderRadius: BorderRadius.circular(8), // Ensure same shape
            child: Image.asset(
              "assets/images/spit.jpeg",
              width: 150,
              height: 150,
              fit: BoxFit.cover,
            ),
          ),
        ),
      ),
    ),
  );
}
}
```

visionAndMission.dart

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

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

  @override
  State<VisionAndMission> createState() => _VisionAndMissionState();
}

class _VisionAndMissionState extends State<VisionAndMission> {
  final List<Map<String, String>> sections = [
    {
      "title": "DEPARTMENT VISION\n(Effective from 2024-25)",
      "content":
      "To develop globally competent and ethical professionals in Computer Science and Engineering and enable them to contribute to society."
    },
    {
      "title": "DEPARTMENT VISION",
      "content":
      "To create a center of excellence which will produce cutting-edge technologies to cater needs of Business and Society."
    },
    {
      "title": "DEPARTMENT MISSION\n(Effective from 2024-25)",
      "content":
      "M1: To provide rigorous, high-standard, multidisciplinary curriculum and innovative T-L-E-A processes and ensure a stimulating academic environment.\n\n"
          "M2: To promote research and innovations through collaborations.\n\n"
          "M3: To develop requisite attitudes and skills, besides providing a strong knowledge foundation.\n\n"
          "M4: To foster ethics and social responsibility among stakeholders and imbibe a sense of contribution."
    },
    {
      "title": "DEPARTMENT MISSION",
      "content":
      "1. To provide high quality education.\n\n"
          "2. To train the students to excel in cutting-edge technologies that makes them industry ready.\n\n"
          "3. To inculcate ethical and professional values in students for betterment of society.\n\n"
          "4. To inculcate Entrepreneurial mindset in students to make them job creators."
    }
  ];

  @override
  Widget build(BuildContext context) {
    return Container(
      margin: const EdgeInsets.symmetric(vertical: 10),
      child: SingleChildScrollView(
        child: Column(
          children: List.generate(sections.length, (index) {
            return Container(
              margin: const EdgeInsets.symmetric(horizontal: 10, vertical: 10),
              decoration: BoxDecoration(
                border: Border.all(color: Colors.black, width: 2),
```

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```
                 borderRadius: BorderRadius.circular(10),
                 color: Colors.amber.shade300,
               ),
               child: ExpansionTile(
                title: Text(
                  sections[index]["title"]!,
                  style: const TextStyle(fontSize: 22, fontWeight: FontWeight.w800),
                  textAlign: TextAlign.center,
                ),
                children: [
                  Padding(
                    padding: const EdgeInsets.symmetric(vertical: 10, horizontal: 20),
                    child: Text(
                      sections[index]["content"]!,
                      style: const TextStyle(fontSize: 20),
                      textAlign: TextAlign.start,
                    ),
                  ),
                ],
               ),
             );
           }),
         ),
       ),
     );
   }
}


WebView.dart
import 'package:flutter/material.dart';
import 'package:webview_flutter/webview_flutter.dart';

class WebViewPage extends StatefulWidget {
  @override
  _WebViewPageState createState() => _WebViewPageState();
}

class _WebViewPageState extends State<WebViewPage> {
  late WebViewController controller;

  @override
  void initState() {
    super.initState();
    controller = WebViewController()
      ..setJavaScriptMode(JavaScriptMode.unrestricted)
      ..loadRequest(Uri.parse('https://www.spit.ac.in/'));
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('WebView Example'),
      ),
      body: WebViewWidget(controller: controller),
    );
  }
}
```

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```
main.dart
import 'package:flutter/material.dart';
import 'package:get/get_navigation/src/root/get_material_app.dart';
import 'package:lab5/Screens/splashScreen.dart';

import 'Screens/homeScreen.dart';

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

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

  // This widget is the root of your application.
  @override
  Widget build(BuildContext context) {
    return GetMaterialApp(
      debugShowCheckedModeBanner: false,
      title: 'Flutter Demo',
      theme: ThemeData(
        colorScheme: ColorScheme.fromSeed(seedColor: Colors.deepPurple),
        useMaterial3: true,
      ),
      home: SplashScreen(),
    );
  }
}
```
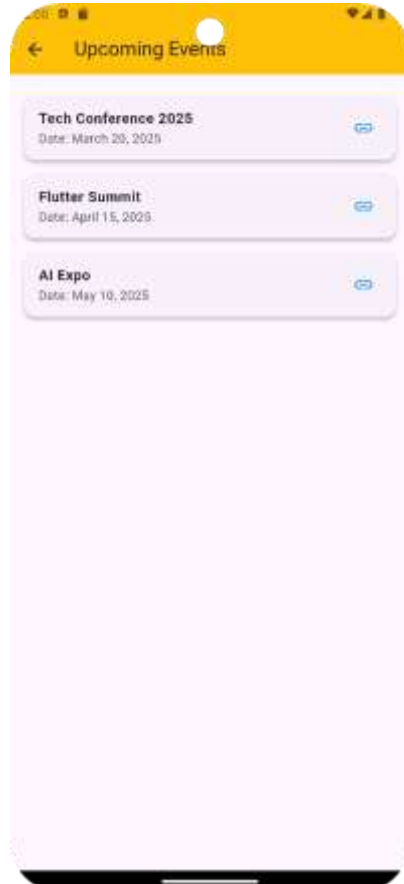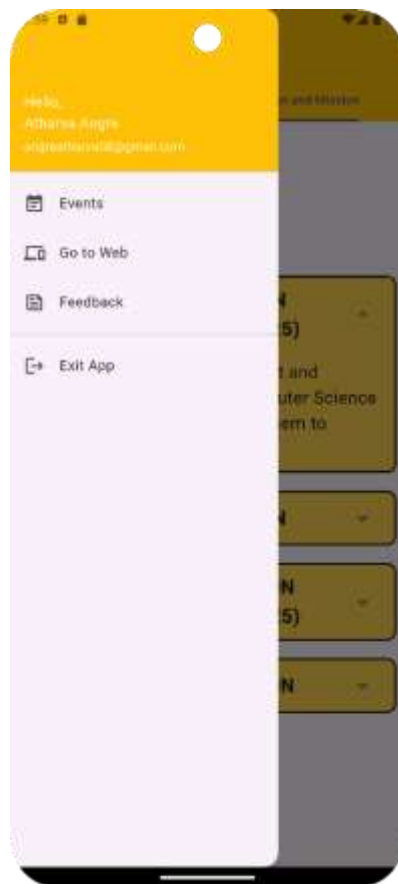
Screenshots

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Question and Answers	Answer the following Questions:
	
	1. How to create SideDrawer and Tabs Navigation both?
	
	   Used DefaultTabController for tab navigation and Scaffold's drawer property for the side drawer. The AppBar includes a TabBar, and the body contains a TabBarView to switch between screens.
	
	2. How did you use 60-30-10 rule in your application?
	
	   The app follows the 60-30-10 rule by using amber (primary, 60%) for the app theme, black and grey (secondary, 30%) for text and borders, and white (accent, 10%) for contrast in UI elements.
	
	3. Which new elements did you use for creating UI components?
	
	   Implemented Hero animation, AnimatedCrossFade for expandable views, WebViewWidget for web content, and GestureDetector for toggle actions.
	
	4. In pubspec.yaml file, what dependencies need to be there?
	
	   get for state management
	
	   webview_flutter for web views
	
	   url_launcher for opening external links
	
	5. How to create Expandable view?
	
	   Use a Column with a Row containing an IconButton. Toggle visibility using AnimatedCrossFade and maintain state in a List<bool> to track expanded items.
	
	6. How to create Webview?
	
	   Use WebViewController to set JavaScript mode and load URLs. Wrap it in a WebViewWidget inside a Scaffold to display the web content within an app screen.

Conclusion	From this session, I learned how to implement both SideDrawer and Tab Navigation together in a Flutter app. I explored UI components like expandable cards and WebView integration. Additionally, I gained insights into managing dependencies in pubspec.yaml and using animations like AnimatedCrossFade for smooth UI interactions. This helped improve my understanding of Flutter's state management and navigation concepts.