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Experiment	6
Aim	Create an app for children where children can learn numbers and alphabets
Objective	• To Create App of children • To use Upper Tabs in navigation bar • To implement Splash Screen in Flutter
Name	Atharva Angre
UCID	2024510001
Class	FYMCA
Batch	A
Date of Submission	09.03.25

Technology used	**Flutter, Android Studio**
Task	Children should be able to even recognize the numbers and alphabets by quiz form. Create 4 upper Tabs with Splash Screen at the start: 1) Practice/Lessons 2) Quiz 3) Leader Board 4) Profile
Code with proper label	Main.dart

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

import 'Screens/splashScreen.dart';


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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return GetMaterialApp(
      debugShowCheckedModeBanner: false,
      title: 'Kids Learning App',
      theme: ThemeData(
        primaryColor: Color(0xFF4A90E2),
        colorScheme: ColorScheme.fromSwatch().copyWith(
          secondary: Color(0xFFFFA726),
          background: Color(0xFFF5F5F5)
        ),
        fontFamily: 'ComicSans'
      ),
      home: SplashScreen(),
    );
  }
}
```

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

import 'homeScreen.dart';

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

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

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

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```
            "assets/images/spit.jpeg",
            width: 150,
            height: 150,
            fit: BoxFit.cover,
          ),
        ),
      ),
    ),
  );
 }
}


homeScreen.dart
import 'package:flutter/material.dart';
import 'package:get/get.dart';
import 'practice_screen.dart';
import 'quiz_screen.dart';
import 'leaderboard_screen.dart';
import 'profile_screen.dart';

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

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

class _HomeScreenState extends State<HomeScreen> {
  @override
  Widget build(BuildContext context) {
    return DefaultTabController(
      length: 4,
      child: Scaffold(
        appBar: AppBar(
          backgroundColor: Color(0xFF4A90E2),
          title: const Text('Kids Learning App', style: TextStyle(color: Colors.white,
fontSize: 20)),
          bottom: const TabBar(
            labelColor: Colors.white,
            indicatorColor: Colors.orange,
            tabs: [
              Tab(icon: Icon(Icons.school), text: 'Practice'),
              Tab(icon: Icon(Icons.quiz), text: 'Quiz'),
              Tab(icon: Icon(Icons.leaderboard), text: 'Leaderboard'),
              Tab(icon: Icon(Icons.person), text: 'Profile'),
            ],
          ),
        ),
        body: const TabBarView(
          children: [
            PracticeScreen(),
            QuizScreen(),
            LeaderboardScreen(),
            ProfileScreen(),
          ],
        ),
      ),
```

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```
    );
  }
}


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

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

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

class _PracticeScreenState extends State<PracticeScreen> {
  List<String> _numbers = List.generate(11, (index) => index.toString());
  List<String> _alphabets = List.generate(26, (index) =>
String.fromCharCode(65 + index));
  List<String> _currentList = [];
  String _selectedCategory = '';

  void _loadNumbers() {
    setState(() {
      _currentList = _numbers;
      _selectedCategory = 'Numbers';
    });
  }

  void _loadAlphabets() {
    setState(() {
      _currentList = _alphabets;
      _selectedCategory = 'Alphabets';
    });
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.blue.shade100,
      body: Center(
        child: Padding(
          padding: const EdgeInsets.all(20.0),
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center,
            children: [
              if (_selectedCategory.isEmpty) ...[
                Text(
                  'Practice Numbers & Alphabets',
                  style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold, color:
Colors.black87),
                  textAlign: TextAlign.center,
                ),
                SizedBox(height: 20),
                ElevatedButton(
                  onPressed: _loadNumbers,
                  style: ElevatedButton.styleFrom(
                    backgroundColor: Colors.orange,
                    padding: EdgeInsets.symmetric(horizontal: 30, vertical: 15),
```

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```
                shape: RoundedRectangleBorder(borderRadius:
BorderRadius.circular(10)),
                ),
                child: Text('Practice Numbers', style: TextStyle(fontSize: 18, color:
Colors.white)),
              ),
              SizedBox(height: 10),
              ElevatedButton(
                onPressed: _loadAlphabets,
                style: ElevatedButton.styleFrom(
                  backgroundColor: Colors.orange,
                  padding: EdgeInsets.symmetric(horizontal: 30, vertical: 15),
                  shape: RoundedRectangleBorder(borderRadius:
BorderRadius.circular(10)),
                ),
                child: Text('Practice Alphabets', style: TextStyle(fontSize: 18, color:
Colors.white)),
              ),
            ] else ...[
              Text(
                'Practicing $_selectedCategory',
                style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold, color:
Colors.black87),
                textAlign: TextAlign.center,
              ),
              SizedBox(height: 20),
              Expanded(
                child: GridView.builder(
                  gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(
                    crossAxisCount: 3,
                    crossAxisSpacing: 10,
                    mainAxisSpacing: 10,
                  ),
                  itemCount: _currentList.length,
                  itemBuilder: (context, index) {
                    return Container(
                      decoration: BoxDecoration(
                        color: Colors.orange,
                        borderRadius: BorderRadius.circular(10),
                      ),
                      child: Center(
                        child: Text(
                          _currentList[index],
                          style: TextStyle(fontSize: 32, fontWeight: FontWeight.bold,
color: Colors.white),
                        ),
                      ),
                    );
                  },
                ),
              ),
              SizedBox(height: 20),
              ElevatedButton(
                onPressed: () {
                  setState(() {
                    _selectedCategory = '';
                    _currentList = [];
                  });
                },
```

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```dart
              style: ElevatedButton.styleFrom(
                backgroundColor: Colors.redAccent,
                padding: EdgeInsets.symmetric(horizontal: 30, vertical: 15),
                shape: RoundedRectangleBorder(borderRadius:
BorderRadius.circular(10)),
              ),
              child: Text('Back', style: TextStyle(fontSize: 18, color: Colors.white)),
            ),
          ],
        ],
      ),
    ),
  ),
 );
 }
}


quizScreen.dart
import 'package:flutter/material.dart';
import 'package:lottie/lottie.dart';

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

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

class _QuizScreenState extends State<QuizScreen> {
  int _currentQuestionIndex = 0;
  int _score = 0;
  List<Map<String, dynamic>> _questions = [
    {
      'question': 'What is the number after 2?',
      'options': ['1', '2', '3', '4'],
      'answer': '3'
    },
    {
      'question': 'Which letter comes after A?',
      'options': ['C', 'B', 'D', 'E'],
      'answer': 'B'
    },
    {
      'question': 'How many legs does a cat have?',
      'options': ['2', '3', '4', '5'],
      'answer': '4'
    },
    {
      'question': 'What color is the sky?',
      'options': ['Green', 'Blue', 'Red', 'Yellow'],
      'answer': 'Blue'
    },
    {
      'question': 'Which fruit is yellow and curved?',
      'options': ['Apple', 'Banana', 'Grapes', 'Strawberry'],
      'answer': 'Banana'
    }
  ];
```

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```dart
void _checkAnswer(String selectedOption) {
 if (selectedOption == _questions[_currentQuestionIndex]['answer']) {
  _score++;
 }
 _nextQuestion();
}

void _nextQuestion() {
 setState(() {
  if (_currentQuestionIndex < _questions.length - 1) {
   _currentQuestionIndex++;
  } else {
   _showResult();
  }
 });
}

void _showResult() {
 showDialog(
  context: context,
  barrierDismissible: false,
  builder: (context) => AlertDialog(
   title: Text("Quiz Completed!"),
   content: Column(
    mainAxisSize: MainAxisSize.min,
    children: [
     Lottie.asset('assets/success.json', width: 200, height: 200),
     SizedBox(height: 10),
     Text("Your Score: $_score / ${_questions.length}", style:
TextStyle(fontSize: 18, fontWeight: FontWeight.bold)),
    ],
   ),
   actions: [
    TextButton(
     onPressed: () {
      setState(() {
       _currentQuestionIndex = 0;
       _score = 0;
      });
      Navigator.pop(context);
     },
     child: Text("Play Again"),
    )
   ],
  ),
 );
}

@override
Widget build(BuildContext context) {
 return Scaffold(
  backgroundColor: Colors.blue.shade100,
  body: Padding(
   padding: const EdgeInsets.all(20.0),
   child: Column(
    mainAxisAlignment: MainAxisAlignment.center,
    crossAxisAlignment: CrossAxisAlignment.center,
    children: [
```

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```
        Text(
         _questions[_currentQuestionIndex]['question'],
         textAlign: TextAlign.center,
         style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold, color:
Colors.black87),
        ),
        SizedBox(height: 20),
        GridView.builder(
         shrinkWrap: true,
         gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(
           crossAxisCount: 2,
           childAspectRatio: 2.5,
           crossAxisSpacing: 10,
           mainAxisSpacing: 10,
         ),
         itemCount: _questions[_currentQuestionIndex]['options'].length,
         itemBuilder: (context, index) {
           String option = _questions[_currentQuestionIndex]['options'][index];
           return ElevatedButton(
            onPressed: () => _checkAnswer(option),
            style: ElevatedButton.styleFrom(
              backgroundColor: Colors.orange,
              padding: EdgeInsets.symmetric(horizontal: 30, vertical: 15),
              shape: RoundedRectangleBorder(borderRadius:
BorderRadius.circular(10)),
            ),
            child: Text(
              option,
              style: TextStyle(fontSize: 18, color: Colors.white),
            ),
           );
         },
        ),
       ],
      ),
     ),
    );
  }
}


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

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

 final List<Map<String, dynamic>> _leaderboard = const [
  {'name': 'Atharva', 'score': 100},
  {'name': 'Abhishek', 'score': 90},
  {'name': 'Abhijeet', 'score': 85},
  {'name': 'Adam', 'score': 80},
  {'name': 'Vineet', 'score': 75},
  {'name': 'Darshan', 'score': 70},
  {'name': 'Kiran', 'score': 65},
  {'name': 'Ram', 'score': 60},
 ];

 @override
```

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```dart
Widget build(BuildContext context) {
  return Scaffold(
    backgroundColor: Colors.blue.shade100,
    appBar: AppBar(
      title: Text('Leaderboard'),
      backgroundColor: Color(0xFFFFA726),
      centerTitle: true,
    ),
    body: Padding(
      padding: const EdgeInsets.all(20.0),
      child: Column(
        children: [
          Text(
            'Top Performers',
            style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold, color:
Colors.black87),
          ),
          SizedBox(height: 10),
          Expanded(
            child: ListView.builder(
              itemCount: _leaderboard.length,
              itemBuilder: (context, index) {
                return Card(
                  elevation: 3,
                  margin: EdgeInsets.symmetric(vertical: 8),
                  shape: RoundedRectangleBorder(borderRadius:
BorderRadius.circular(10)),
                  child: ListTile(
                    leading: CircleAvatar(
                      backgroundColor: Colors.orange,
                      child: Text(
                        '${index + 1}',
                        style: TextStyle(color: Colors.white, fontWeight:
FontWeight.bold),
                      ),
                    ),
                    title: Text(
                      _leaderboard[index]['name'],
                      style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold),
                    ),
                    trailing: Text(
                      '${_leaderboard[index]['score']} pts',
                      style: TextStyle(fontSize: 16, fontWeight: FontWeight.w500,
color: Colors.black54),
                    ),
                  ),
                );
              },
            ),
          ),
        ],
      ),
    ),
  );
}
}
```

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profileScreen.dart

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

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

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.blue.shade100,
      body: Center(
        child: Padding(
          padding: const EdgeInsets.all(20.0),
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center,
            crossAxisAlignment: CrossAxisAlignment.center,
            children: [
              CircleAvatar(
                radius: 60,
                backgroundImage: AssetImage('assets/images/profileImage.png'),
              ),
              SizedBox(height: 20),
              Text(
                'Atharva Angre',
                style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold, color:
Colors.black87),
              ),
              SizedBox(height: 10),
              Text(
                'angreatharva08@example.com',
                style: TextStyle(fontSize: 16, color: Colors.grey[700]),
              ),
              SizedBox(height: 30),
              ElevatedButton(
                onPressed: () {},
                style: ElevatedButton.styleFrom(
                  backgroundColor: Colors.orange,
                  padding: EdgeInsets.symmetric(horizontal: 40, vertical: 12),
                  shape: RoundedRectangleBorder(borderRadius:
BorderRadius.circular(10)),
                ),
                child: Text(
                  'Edit Profile',
                  style: TextStyle(fontSize: 18, color: Colors.white),
                ),
              ),
            ],
          ),
        ),
      ),
    );
  }
}
```
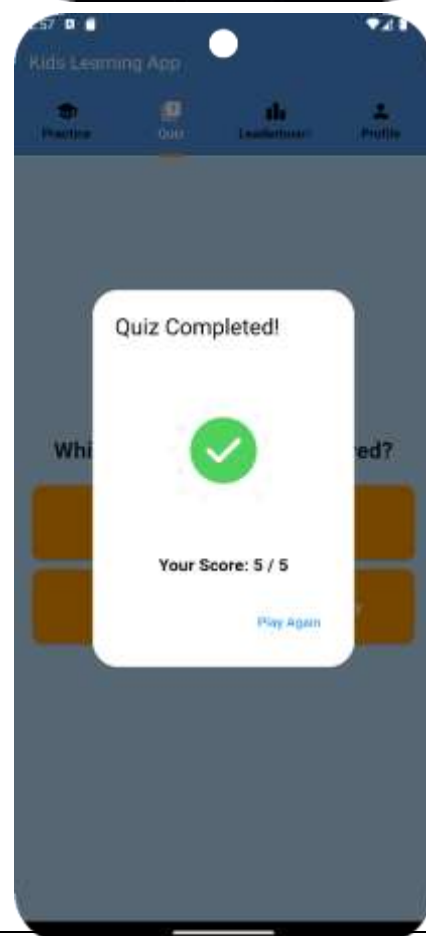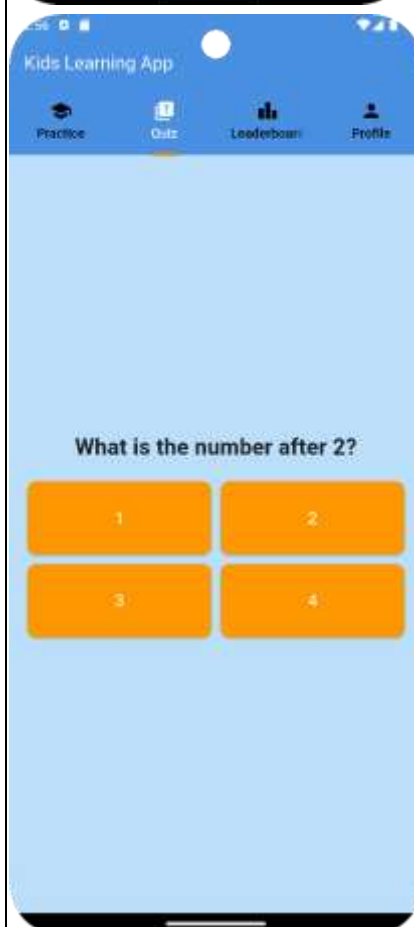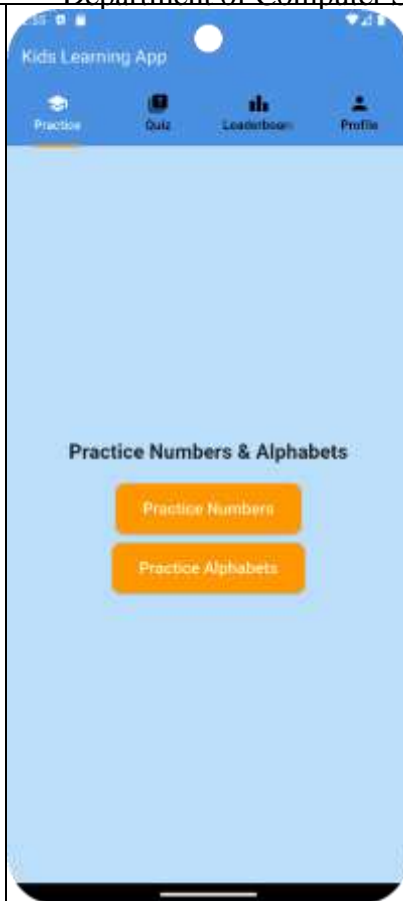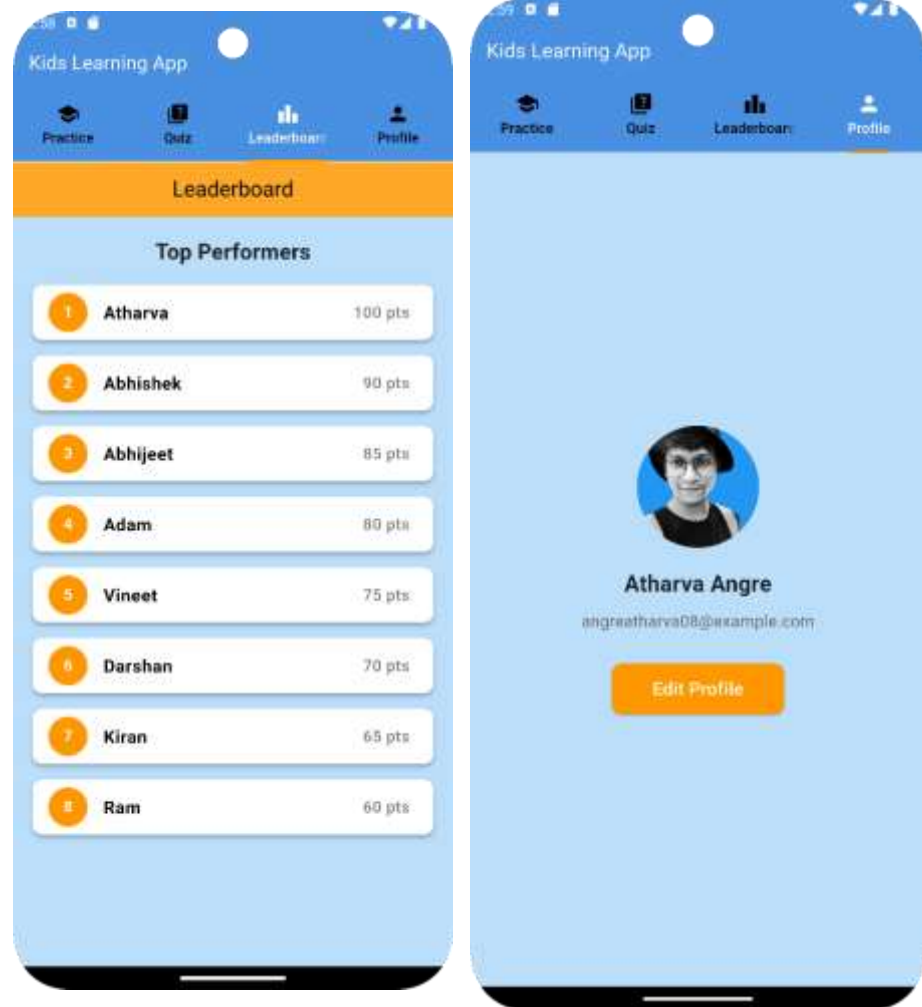
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Screenshots

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Question and Answers	Answer the following Questions: 1. How to create Upper Tabs in Flutter? Upper tabs in Flutter can be created using the TabBar widget inside an AppBar, along with a TabBarView wrapped in a DefaultTabController to handle switching between tab content. 2. How did you use 60-30-10 rule in your application? The 60-30-10 rule was applied by using a primary color (60%) for the background, a secondary color (30%) for interactive elements like buttons, and an accent color (10%) for highlights or text emphasis. 3. Which new elements did you use for creating UI components? New UI elements include GridView for option selection, Lottie animations for feedback, and AlertDialog for displaying quiz results in a more engaging way.

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	4. In pubspec.yaml file, what dependencies need to be there? get for state management lottie for animations 5. What is the use of Splash Screen? A Splash Screen is used to show a loading screen when the app starts, improving user experience by displaying branding, animations, or preloading essential data before navigating to the main screen.
Conclusion	Through this session, I learned how to implement upper tabs using TabBar and TabBarView, effectively structure a quiz and practice module, and design a leaderboard with an engaging UI. I also understood the importance of the 60-30-10 rule in UI design, explored new UI elements like GridView and Lottie, and identified key dependencies required in pubspec.yaml. Additionally, I reinforced my understanding of the Splash Screen and its role in enhancing user experience.