



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

<b>Experiment</b>	5
<b>Aim</b>	Create an app for children where children can learn numbers and alphabets
<b>Objective</b>	<ul style="list-style-type: none"><li>• To Create App of children</li><li>• To use Upper Tabs in navigation bar</li><li>• To implement Splash Screen in Flutter</li></ul>
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<b>Class</b>	FYMCA
<b>Batch</b>	B
<b>Date of Submission</b>	23/4/25

<b>Technology used</b>	<b>VS CODE</b>
<b>Task</b>	<p>. Children should be able to even recognize the numbers and alphabets by quiz form.</p> <p>Create 4 upper Tabs with Splash Screen at the start:</p> <ol style="list-style-type: none"><li>1) Practice/Lessons</li><li>2) Quiz</li><li>3) Leader Board</li><li>4) Profile</li></ol>
<b>Code with proper label</b>	<pre><b>Leaderboard_screen.dart</b> import 'package:flutter/material.dart'; import '../widgets/leaderboard_item.dart';  class LeaderboardScreen extends StatelessWidget { LeaderboardScreen({super.key});    final List&lt;Map&lt;String, dynamic&gt;&gt; _leaderboardData = [     {'name': 'Emma', 'points': 450, 'avatarIndex': 0, 'rank': 1},     {'name': 'Noah', 'points': 380, 'avatarIndex': 1, 'rank': 2},     {'name': 'Olivia', 'points': 350, 'avatarIndex': 2, 'rank': 3},     {'name': 'Liam', 'points': 320, 'avatarIndex': 3, 'rank': 4},     {'name': 'Ava', 'points': 290, 'avatarIndex': 4, 'rank': 5},     {'name': 'William', 'points': 260, 'avatarIndex': 5, 'rank': 6},     {'name': 'Sophia', 'points': 230, 'avatarIndex': 6, 'rank': 7},     {'name': 'James', 'points': 200, 'avatarIndex': 7, 'rank': 8},     {'name': 'Isabella', 'points': 180, 'avatarIndex': 8, 'rank': 9},     {'name': 'Benjamin', 'points': 150, 'avatarIndex': 9, 'rank': 10},   ];    @override   Widget build(BuildContext context)   { return Scaffold(     backgroundColor: Colors.purple.shade50,     body: Column(       children: [         // Top 3 podium         Container(           padding: const EdgeInsets.symmetric(vertical: 24),           decoration: BoxDecoration(             gradient: LinearGradient(</pre>



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```
begin: Alignment.topCenter,
end: Alignment.bottomCenter,
colors: [Colors.purple.shade300, Colors.purple.shade100],
),
borderRadius: const
BorderRadius.only( bottomLeft:
Radius.circular(30), bottomRight:
Radius.circular(30),
),
),
child:
Column( chil
dren: [ const
Text(
"Leaderboard",
style:
TextStyle( fontS
ize: 24,
fontWeight: FontWeight.bold,
color: Colors.white,
),
),
const SizedBox(height: 24),
Row(
mainAxisAlignment: MainAxisAlignment.center,
crossAxisAlignment: CrossAxisAlignment.end,
children: [
// 2nd place
_buildPodiumItem(
_leaderboardData[1]['name'],
_leaderboardData[1]['points'],
_leaderboardData[1]['avatarIndex'],
2,
Colors.grey.shade300,
120,
),
const SizedBox(width: 16),
// 1st place
_buildPodiumItem(
_leaderboardData[0]['name'],
_leaderboardData[0]['points'],
_leaderboardData[0]['avatarIndex'],
1,
Colors.amber.shade300,
150,
),
const SizedBox(width: 16),
// 3rd place
_buildPodiumItem(
_leaderboardData[2]['name'],
_leaderboardData[2]['points'],
_leaderboardData[2]['avatarIndex'],
3,
Colors.brown.shade300,
100,
),
],
),
],
),
),
),
```



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```
// Tabs for different leaderboards
Padding(
  padding: const EdgeInsets.all(16),
  child: Row(
    children: [
      _buildLeaderboardTab("All Time", true),
      const SizedBox(width: 16),
      _buildLeaderboardTab("This Week", false),
      const SizedBox(width: 16),
      _buildLeaderboardTab("Friends", false),
    ],
  ),
),

// Leaderboard list
Expanded(
  child: ListView.builder(
    padding: const EdgeInsets.symmetric(horizontal: 16),
    itemCount: _leaderboardData.length - 3, // Skip top 3
    itemBuilder: (context, index) {
      final dataIndex = index + 3; // Skip top 3
      return LeaderboardItem(
        name: _leaderboardData[dataIndex]['name'],
        points: _leaderboardData[dataIndex]['points'],
        avatarIndex: _leaderboardData[dataIndex]['avatarIndex'],
        rank: _leaderboardData[dataIndex]['rank'],
      );
    },
  ),
),
],
);
}

Widget
_buildPodiumItem( String
name,
int points,
int avatarIndex,
int rank,
Color color,
double height,
) {
  return
  Column( chil
dren: [
    // Avatar
    Container( w
idth: 70,
    height: 70,
    decoration:
      BoxDecoration( color:
Colors.white, shape:
BoxShape.circle,
border: Border.all(color: color, width: 3),
boxShadow: [
      BoxShadow(
        color: Colors.black.withOpacity(0.1),
```



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```
],
),
child:
  Center( chil
    d: Text(
      name.substring(0, 1),
      style:
        TextStyle( fontSize:
          32,
          fontWeight: FontWeight.bold,
          color: Colors.purple.shade700,
        ),
      ),
    ),
  ),
const SizedBox(height: 8),
// Name
Text( n
ame,
style: const
  TextStyle( fontSize: 16,
    fontWeight: FontWeight.bold,
    color: Colors.white,
  ),
),
const SizedBox(height: 4),
// Points
Text(
  "$points pts",
  style: const TextStyle(fontSize: 14, color: Colors.white),
),
const SizedBox(height: 8),
// Podium
Container( wid
th: 80, height:
height,
decoration:
  BoxDecoration( color:
    color,
    borderRadius: const
      BorderRadius.only( topLeft:
        Radius.circular(10),
        topRight: Radius.circular(10),
      ),
    boxShadow:
      [ BoxShadow(
        color: Colors.black.withOpacity(0.1),
        blurRadius: 8,
        offset: const Offset(0, 4),
      ),
    ],
  ),
child:
  Center( child:
    Text( "#$rank",
      style: const
        TextStyle( fontSize: 24,
          fontWeight: FontWeight.bold,
          color: Colors.white,
```



```
    ],  
  );  
}
```

Widget \_buildLeaderboardTab(String title, bool isActive)

```
{ return Expanded(  
  child: Container(  
    padding: const EdgeInsets.symmetric(vertical: 12),  
    decoration: BoxDecoration(  
      color: isActive ? Colors.purple : Colors.white,  
      borderRadius: BorderRadius.circular(30),  
      border: Border.all(color: Colors.purple, width: 2),  
    ),  
    child:  
      Text( title,  
        style:  
          TextStyle( font  
            Size: 16,  
            fontWeight: FontWeight.bold,  
            color: isActive ? Colors.white : Colors.purple,  
          ),  
        textAlign: TextAlign.center,  
      ),  
    ),  
  );  
}
```

#### **lessons\_screen.dart**

```
import 'package:flutter/material.dart';  
import '../widgets/alphabet_card.dart';  
import '../widgets/number_card.dart';  
  
class LessonsScreen extends StatelessWidget  
{ LessonsScreen({super.key});  
  
  final List<Map<String, dynamic>> _lessonCategories = [  
    {  
      'title': 'Alphabet Lessons',  
      'icon': Icons.text_fields,  
      'color': Colors.blue,  
      'type': 'alphabet',  
    },  
    {  
      'title': 'Number Lessons',  
      'icon': Icons.numbers,  
      'color': Colors.green,  
      'type': 'number',  
    },  
    {  
      'title': 'Fun Activities',  
      'icon': Icons.extension,  
      'color': Colors.orange,  
      'type': 'activity',  
    },  
  ],  
);  
  
@override  
Widget build(BuildContext context)  
{ return Scaffold(  
  // . . . . .
```



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```
body:
SingleChildScrollView( padding:
const EdgeInsets.all(16), child:
Column(
crossAxisAlignment: CrossAxisAlignment.start,
children: [
const Text(
  "Let's Learn Together!",
  style:
TextStyle( fontSize: 24,
fontWeight: FontWeight.bold,
color: Colors.purple,
),
),
const SizedBox(height: 8),
Text(
  "Choose a category to start learning",
  style: TextStyle(fontSize: 16, color: Colors.grey.shade700),
),
const SizedBox(height: 20),

// Categories
GridView.builder( shri
  nkWrap: true,
  physics: const NeverScrollableScrollPhysics(),
  gridDelegate: const
    SliverGridDelegateWithFixedCrossAxisCount( crossAxisCount: 2,
    childAspectRatio: 1.1,
    crossAxisSpacing: 16,
    mainAxisSpacing: 16,
  ),
  itemCount: _lessonCategories.length,
  itemBuilder: (context, index) {
    return
      _buildCategoryCard( context,
        _lessonCategories[index]['title'],
        _lessonCategories[index]['icon'],
        _lessonCategories[index]['color'],
        _lessonCategories[index]['type'],
      );
  },
),

const SizedBox(height: 30),
const Text(
  "Recently Viewed",
  style:
TextStyle( fontSize
: 20,
fontWeight: FontWeight.bold,
color: Colors.purple,
),
),
const SizedBox(height: 16),

// Recently viewed lessons
SizedBox(
  height: 150,
  child: ListView(
```



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```
_buildRecentLessonCard(  
  "Letter A",  
  "Alphabet",  
  Colors.blue.shade100,  
  Icons.text_fields,  
)  
_buildRecentLessonCard(  
  "Number 5",  
  "Numbers",  
  Colors.green.shade100,  
  Icons.numbers,  
)  
_buildRecentLessonCard(  
  "Letter B",  
  "Alphabet",  
  Colors.blue.shade100,  
  Icons.text_fields,  
)  
],  
)  
)  
  
const SizedBox(height: 30),  
const Text(  
  "Your Progress",  
  style:  
    TextStyle( fontS  
      ize: 20,  
      fontWeight: FontWeight.bold,  
      color: Colors.purple,  
    ),  
)  
const SizedBox(height: 16),  
  
// Progress cards  
Card(  
  elevation: 3,  
  shape:  
    RoundedRectangleBorder( borderRadius:  
      BorderRadius.circular(16),  
    ),  
  child: Padding(  
    padding: const EdgeInsets.all(16),  
    child: Column(  
      crossAxisAlignment: CrossAxisAlignment.start,  
      children: [  
        const Text(  
          "Alphabet Progress",  
          style:  
            TextStyle( fontSize:  
              18,  
              fontWeight: FontWeight.bold,  
              color: Colors.blue,  
            ),  
        ),  
        const SizedBox(height: 8),  
        LinearProgressIndicator( val  
          ue: 0.4,  
          backgroundColor: Colors.blue.shade100,
```



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```
),
const SizedBox(height: 8),
const Text("10/26 letters completed"),
],
),
),
),
const SizedBox(height: 16),
Card(
  elevation: 3,
  shape:
    RoundedRectangleBorder( borderRadius:
      BorderRadius.circular(16),
    ),
  child: Padding(
    padding: const EdgeInsets.all(16),
    child: Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      children: [
        const Text(
          "Numbers Progress",
          style:
            TextStyle( fontSize:
              18,
              fontWeight: FontWeight.bold,
              color: Colors.green,
            ),
        ),
        const SizedBox(height: 8),
        LinearProgressIndicator( value: 0.6,
          backgroundColor: Colors.green.shade100,
          valueColor: AlwaysStoppedAnimation<Color>(Colors.green),
          borderRadius: BorderRadius.circular(10),
          minHeight: 10,
        ),
        const SizedBox(height: 8),
        const Text("6/10 numbers completed"),
      ],
    ),
  ),
),
);
}
```

```
Widget
buildCategoryCard( Build
Context context, String
title,
IconData icon,
Color color,
String type,
) {
return
Card( elevatio
n: 5,
```





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```
if (type == 'alphabet')
{ Navigator.push( context
ext,
MaterialPageRoute(builder: (context) => _AlphabetLessonsScreen()),
);
} else if (type == 'number')
{ Navigator.push(
context,
MaterialPageRoute(builder: (context) => _NumberLessonsScreen()),
);
} else {
// Activities screen
ScaffoldMessenger.of(context).showSnackBar(
const SnackBar(
content: Text("Coming soon!"),
behavior: SnackBarBehavior.floating,
),
);
}
},
borderRadius: BorderRadius.circular(20),
child: Padding(
padding: const EdgeInsets.all(16),
child: Column(
mainAxisAlignment: MainAxisAlignment.center,
children: [
Icon(icon, size: 48, color: color),
const SizedBox(height: 12),
Text(
title,
style: const
TextStyle( fontSize: 16,
fontWeight: FontWeight.bold,
),
textAlign: TextAlign.center,
),
],
),
),
),
);
}
```

```
Widget
_buildRecentLessonCard( String
title,
String subtitle,
Color color,
IconData icon,
) {
return
Container( width
h: 150,
margin: const EdgeInsets.only(right: 16),
child: Card(
color: color,
elevation: 3,
shape: RoundedRectangleBorder(borderRadius: BorderRadius.circular(16)),
child: Padding(
```

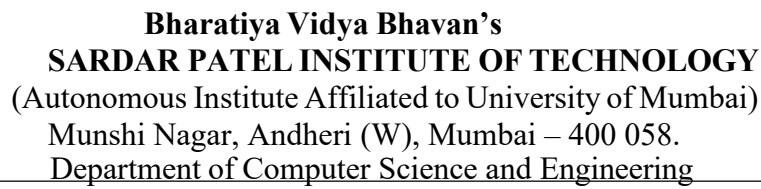


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```
crossAxisAlignment: CrossAxisAlignment.start,
children: [
  Icon(icon, size: 32, color: Colors.black87),
  const Spacer(),
  Text(

    title,
    style: const
      TextStyle( fontSize: 18,
        fontWeight: FontWeight.bold,
      ),
  ),
  Text( sub
    title,
    style: TextStyle(fontSize: 14, color: Colors.grey.shade700),
  ),
],
),
),
),
);
}
}

class _AlphabetLessonsScreen extends StatelessWidget
{ @override
Widget build(BuildContext context)
{ return Scaffold(
  appBar: AppBar(
    title: const Text("Alphabet Lessons"),
    backgroundColor: Colors.blue,
  ),
  backgroundColor: Colors.blue.shade50,
  body: GridView.builder(
    padding: const EdgeInsets.all(16),
    gridDelegate: const
      SliverGridDelegateWithFixedCrossAxisCount( crossAxisCount: 3,
        childAspectRatio: 0.8,
        crossAxisSpacing: 16,
        mainAxisSpacing: 16,
      ),
    itemCount: 26,
    itemBuilder: (context, index) {
      final letter = String.fromCharCode(65 + index);
      return AlphabetCard(
        letter: letter,
        onTap: ()
        { Navigator.push(
          context,
          MaterialPageRoute(
            builder: (context) => _AlphabetDetailScreen(letter: letter),
          ),
        );
      },
    );
  },
);
}
```



```
class _AlphabetDetailScreen extends StatelessWidget {
  final String letter;

  const _AlphabetDetailScreen({required this.letter});

  @override
  Widget build(BuildContext context) {
    { final exampleWords = {
      'A': ['Apple', 'Ant', 'Airplane'],
      'B': ['Ball', 'Banana', 'Butterfly'],
      'C': ['Cat', 'Car', 'Cake'],
      // Add more for other letters
    };

    final words =
      exampleWords[letter] ?? ['Example 1', 'Example 2', 'Example 3'];

    return
      Scaffold( appBar
        : AppBar(
            title: Text("Letter $letter"),
            backgroundColor: Colors.blue,
```



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```
backgroundcolor: Colors.blue.shade50,
body:
SingleChildScrollView( padding:
const EdgeInsets.all(24), child:
Column(
  children: [
    // Letter display
    Container(
      width: double.infinity,
      height: 200,
      decoration:
        BoxDecoration( color:
          Colors.white,
          borderRadius: BorderRadius.circular(20),
          boxShadow: [
            BoxShadow(
              color: Colors.blue.withOpacity(0.3),
              blurRadius: 10,
              offset: const Offset(0, 5),
            ),
          ],
        ),
    child:
      Center( chil
d:
      Text( letter,
        style:
          TextStyle( font
            Size: 120,
            fontWeight: FontWeight.bold,
            color: Colors.blue.shade700,
          ),
        ),
      ),
    ),
    const SizedBox(height: 30),

    // Pronunciation
    Container(
      padding: const EdgeInsets.all(16),
      decoration:
        BoxDecoration( color:
          Colors.white,
          borderRadius: BorderRadius.circular(16),
        ),
    child:
      Row( chil
dren: [
        Icon(Icons.volume_up, size: 36, color: Colors.blue.shade700),
        const SizedBox(width: 16),
        Column(
          crossAxisAlignment: CrossAxisAlignment.start,
          children: [
            const
              Text( "Pronunciati
on", style:
                TextStyle( fontSi
                  ze: 18,
                  fontWeight: FontWeight.bold,
```



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```
),
const Spacer(),
ElevatedButton(
  onPressed: () {
    // Play sound
  },
  style:
    ElevatedButton.styleFrom( shape:
      const CircleBorder(), padding:
        const EdgeInsets.all(12),
    ),
  child: const Icon(Icons.play_arrow),
),
],
),
),
const SizedBox(height: 30),

// Example words
const
Text( "Example
Words", style:
TextStyle(
  fontSize: 22,
  fontWeight: FontWeight.bold,
  color: Colors.blue,
),
),
const SizedBox(height: 16),

// Word cards
...words.map((word) => _buildWordCard(word, letter)).toList(),

const SizedBox(height: 30),

// Practice button
SizedBox(
  width: double.infinity,
  child:
    ElevatedButton.icon( onPr
      essed: () {
        // Navigate to practice
        ScaffoldMessenger.of(context).showSnackBar( co
          nst SnackBar(
            content: Text("Practice mode coming soon!"),
            behavior: SnackBarBehavior.floating,
          ),
        );
      },
      icon: const Icon(Icons.edit),
      label: const Text("Practice Writing"),
      style:
        ElevatedButton.styleFrom( backgroun
          dColor: Colors.blue, foregroundColor:
            Colors.white,
          padding: const EdgeInsets.symmetric(vertical: 16),
        ),
    ),
  ),
),
```



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```
onPressed: () {  
  // Navigate to quiz  
  Navigator.pop(context);  
  Navigator.pop(context);  
  // This would ideally navigate to the quiz tab  
},  
icon: const Icon(Icons.quiz),  
label: const Text("Take a Quiz"),  
style: ElevatedButton.styleFrom(  
  backgroundColor: Colors.orange,  
  foregroundColor: Colors.white,  
  padding: const EdgeInsets.symmetric(vertical: 16),  
),  
),  
),  
],  
),  
),  
);  
}  
  
Widget _buildWordCard(String word, String highlightLetter)  
{  
  return Container(  
    margin: const EdgeInsets.only(bottom: 16),  
    padding: const EdgeInsets.all(16),  
    decoration: BoxDecoration(  
      color: Colors.white,  
      borderRadius: BorderRadius.circular(16),  
      border: Border.all(color: Colors.blue.shade200),  
    ),  
    child:  
      Row( children:  
        n:  
          [ Container(  
            width: 60,  
            height: 60,  
            decoration:  
              BoxDecoration( color:  
                Colors.blue.shade100,  
                shape: BoxShape.circle,  
              ),  
            child: Center(  
              child: Icon(Icons.image, size: 30, color: Colors.blue.shade700),  
            ),  
          ),  
          const SizedBox(width: 16),  
          Text(  
            word,  
            style:  
              TextStyle( font  
                Size: 20,  
                fontWeight: FontWeight.bold,  
                color: Colors.blue.shade800,  
              ),  
            ),  
          const Spacer(),  
          ElevatedButton(  
            onPressed: () {  
              // Play word sound
```



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```

padding: const EdgeInsets.all(8),
backgroundColor: Colors.blue.shade50,
foregroundColor: Colors.blue.shade700,
),
child: const Icon(Icons.volume_up),
),
],
),
);
}
}

```

```
class _NumberDetailScreen extends StatelessWidget {
  final int number;

  const _NumberDetailScreen({required this.number});

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text("Number $number"),
        backgroundColor: Colors.green,
      ),
      backgroundColor: Colors.green.shade50,
      body: SingleChildScrollView(
        padding: const EdgeInsets.all(24),
        child: Column(
          children: [
            // Number display
            Container(
              width: double.infinity,
              height: 200,
              decoration:
                BoxDecoration( color:
                  Colors.white,
                  borderRadius: BorderRadius.circular(20),
                  boxShadow: [
                    BoxShadow(
                      color: Colors.green.withOpacity(0.3),
                      blurRadius: 10,
                      offset: const Offset(0, 5),
                    ),
                  ],
            ),
            child:
              Center( chil
                d: Text(
                  number.toString(),
                  style:
                    TextStyle( fontSiz
                      e: 120,
                      fontWeight: FontWeight.bold,
                      color: Colors.green.shade700,
                    ),
                ),
            ),
          ),
        const SizedBox(height: 30),
      ),
    );
  }
}
```



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```
padding: const EdgeInsets.all(16),
decoration:
BoxDecoration( color:
Colors.white,
borderRadius: BorderRadius.circular(16),
),
child:
Row( chil
dren: [
Icon(Icons.volume_up, size: 36, color: Colors.green.shade700),
const SizedBox(width: 16),
Column(
crossAxisAlignment: CrossAxisAlignment.start,
children: [
const
Text( "Pronunciati
on", style:
TextStyle( fontSi
ze: 18,
fontWeight: FontWeight.bold,
),
),
Text(
_getNumberWord(number),
style: const TextStyle(fontSize: 16),
),
],
),
const Spacer(),
ElevatedButton(
onPressed: () {
// Play sound
},
style:
ElevatedButton.styleFrom( shape:
const CircleBorder(), padding:
const EdgeInsets.all(12),
backgroundColor: Colors.green,
),
child: const Icon(Icons.play_arrow),
),
],
),
),
const SizedBox(height: 30),

// Counting visualization
const Text(
"Count with Me",
style:
TextStyle( fontSize:
22,
fontWeight: FontWeight.bold,
color: Colors.green,
),
),
const SizedBox(height: 16),

// Objects to count
```





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```
),
child:
  Wrap( spacing:
    16,
    runSpacing: 16,
    children: List.generate(
      number == 0 ? 1 : number,
      (index) =>
        Container( width: 50,
          height: 50,
          decoration:
            BoxDecoration( color:
              Colors.green.shade100,
              shape: BoxShape.circle,
            ),
          child: Center(
            child: Icon(Icons.apple, color: Colors.green.shade700),
          ),
        ),
      ),
    ),
  ),
),
const SizedBox(height: 30),

// Number facts
Container(
  padding: const EdgeInsets.all(16),
  decoration:
    BoxDecoration( color:
      Colors.white,
      borderRadius: BorderRadius.circular(16),
      border: Border.all(color: Colors.green.shade200),
    ),
  child: Column(
    crossAxisAlignment: CrossAxisAlignment.start,
    children: [
      Text(
        "Fun Facts About $number",
        style: const
          TextStyle( fontSize: 18,
            fontWeight: FontWeight.bold,
            color: Colors.green,
          ),
      ),
      const SizedBox(height: 8),
      Text(_getNumberFact(number)),
    ],
  ),
),
const SizedBox(height: 30),

// Practice buttons
SizedBox(
  width: double.infinity,
  child:
    ElevatedButton.icon( onPressed: () {
      // Navigate to practice
      ScaffoldMessenger.of(context).showSnackBar( co
```



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```
);
},
icon: const Icon(Icons.edit),
label: const Text("Practice Writing"),
style:
ElevatedButton.styleFrom( background
dColor: Colors.green,
foregroundColor: Colors.white,
padding: const EdgeInsets.symmetric(vertical: 16),
),
),
),
const SizedBox(height: 16),
SizedBox(
width: double.infinity,
child:
ElevatedButton.icon( onPressed: () {
// Navigate to quiz
Navigator.pop(context);
Navigator.pop(context);
// This would ideally navigate to the quiz tab
},
icon: const Icon(Icons.quiz),
label: const Text("Take a Quiz"),
style: ElevatedButton.styleFrom(
backgroundColor: Colors.orange,
foregroundColor: Colors.white,
padding: const EdgeInsets.symmetric(vertical: 16),
),
),
),
),
],
),
);
}
```

```
String _getNumberWord(int num)
{ final words = [
"Zero",
"One",
"Two",
"Three",
"Four",
"Five",
"Six",
"Seven",
"Eight",
"Nine",
];
return words[num];
}
```

```
String _getNumberFact(int num)
{ final facts = [
"Zero is the only number that can't be represented in Roman numerals.",
"One is the first odd number and is neither prime nor composite.",
"Two is the only even prime number.",
```



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```
"Five is the number of fingers on a human hand.",
"Six is the number of sides on a cube.",
"Seven is considered a lucky number in many cultures.",
"Eight is the number of legs a spider has.",
"Nine is the highest single-digit number.",
];
return facts[num];
}
}
```

**numbers\_tab.dart**

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

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

  @override
  Widget build(BuildContext context)
  { return Scaffold(
    backgroundColor: Colors.green[50],
    body: GridView.builder(
      padding: const EdgeInsets.all(16),
      gridDelegate: const
        SliverGridDelegateWithFixedCrossAxisCount( crossAxisCount: 3,
        childAspectRatio: 1,
        crossAxisSpacing: 16,
        mainAxisSpacing: 16,
      ),
      itemCount: 10,
      itemBuilder: (context, index)
      { return
        _buildNumberCard(index);
      },
    ),
  );
}
```

**Widget \_buildNumberCard(int number)**

```
{ return Card(
  elevation: 4,
  shape: RoundedRectangleBorder(borderRadius: BorderRadius.circular(16)),
  color: Colors.white,
  child:
    InkWell( onTap: () {
      // Play sound or show animation in a real app
    },
    borderRadius: BorderRadius.circular(16),
    child: Center(
      child: Column(
        mainAxisAlignment: MainAxisAlignment.center,
        children: [
          Text( number.toString(
            ), style: const
              TextStyle( fontSize:
                48,
                fontWeight: FontWeight.bold,
                color: Colors.green,
            ),
        ),
      ],
    ),
  ),
);
}
```



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```
Row(  
  mainAxisAlignment: MainAxisAlignment.center,  
  children: List.generate(  
    number == 0 ? 1 : number,  
    (index) =>  
      const Icon(Icons.star, color: Colors.amber, size: 16),  
  ),  
),  
],  
),  
),  
),  
);  
}  
}
```

**Profile\_screen.dart**

```
import 'package:flutter/material.dart';  
import '../models/user_profile.dart';  
  
class ProfileScreen extends StatelessWidget  
{ final UserProfile userProfile;  
  
  const ProfileScreen({super.key, required this.userProfile});  
  
  @override  
  Widget build(BuildContext context)  
  { return Scaffold(  
    backgroundColor: Colors.teal.shade50,  
    body:  
      SingleChildScrollView( padding:  
        const EdgeInsets.all(16), child:  
          Column(  
            crossAxisAlignment: CrossAxisAlignment.start,  
            children: [  
              // Profile header  
              Row(  
                children:  
                [ Container( wi  
                  dth: 100,  
                  height: 100,  
                  decoration:  
                    BoxDecoration( color:  
                      Colors.teal.shade100,  
                      shape: BoxShape.circle,  
                      border: Border.all(color: Colors.teal, width: 3),  
                    ),  
                child:  
                  Center( chil  
                    d: Text(  
                      userProfile.name.substring(0, 1),  
                      style: TextStyle(  
                        fontSize: 48,  
                        fontWeight: FontWeight.bold,  
                        color: Colors.teal.shade700,  
                      ),  
                    ),  
                ),  
              ),  
            ],  
          ),  
        ),  
      ),  
    ),  
  );
```



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```
crossAxisAlignment: CrossAxisAlignment.start,
children: [
  Text( userProfile.name,
    style: const
      TextStyle( fontSize: 24,
        fontWeight: FontWeight.bold,
      ),
    ),
  Text(
    "Age: ${userProfile.age}",
    style: TextStyle(
      fontSize: 16,
      color: Colors.grey.shade700,
    ),
  ),
  const SizedBox(height: 8),
  Container(
    padding: const
      EdgeInsets.symmetric( horizontal: 12,
        vertical: 6,
      ),
    decoration:
      BoxDecoration( color:
        Colors.teal,
        borderRadius: BorderRadius.circular(20),
      ),
    child:
      Text( "${userProfile.points}
        Points", style: const
          TextStyle( fontSize: 14,
            fontWeight: FontWeight.bold,
            color: Colors.white,
          ),
        ),
  ),
  ],
),
),
IconButton( onPressed: () {
  // Edit profile
  ScaffoldMessenger.of(context).showSnackBar( const SnackBar(
    content: Text("Edit profile coming soon!"),
    behavior: SnackBarBehavior.floating,
  ),
);
},
icon: const Icon(Icons.edit),
color: Colors.teal,
),
],
),
const SizedBox(height: 30),

// Stats
const Text(
  "Your Learning Stats",
```



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```
fontSize: 20,  
fontWeight: FontWeight.bold,  
color: Colors.teal,  
),  
),  
const SizedBox(height: 16),  
Row(  
  children: [  
    _buildStatCard( "Lessons\nCom  
pleted",  
      userProfile.completedLessons.toString(),  
      Icons.school,  
      Colors.blue,  
    ),  
    const SizedBox(width: 16),  
    _buildStatCard( "Quizzes\nTake  
n",  
      userProfile.quizzesTaken.toString(),  
      Icons.quiz,  
      Colors.orange,  
    ),  
    const SizedBox(width: 16),  
    _buildStatCard( "Total\nPoints  
",  
      userProfile.points.toString(),  
      Icons.stars,  
      Colors.purple,  
    ),  
  ],  
),  
const SizedBox(height: 30),  
  
// Achievements  
const Text(  
  "Your Achievements",  
  style:  
    TextStyle( fontSize:  
      20,  
      fontWeight: FontWeight.bold,  
      color: Colors.teal,  
    ),  
),  
const SizedBox(height: 16),  
...userProfile.badges  
  .map((badge) => _buildAchievementCard(badge))  
  .toList(),  
  
const SizedBox(height: 30),  
  
// Settings  
const  
Text( "Setti  
ngs",  
  style:  
    TextStyle( font  
      Size: 20,  
      fontWeight: FontWeight.bold,  
      color: Colors.teal,  
    ),  
),
```



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```
"Notifications",
"Receive learning reminders",
Icons.notifications,
true,
),
buildSettingsCard( "
Sound Effects",
"Play sounds during lessons and quizzes",
Icons.volume_up,
true,
),
buildSettingsCard(
"Dark Mode",
"Use dark theme",
Icons.dark_mode,
false,
),

const SizedBox(height: 30),

// Parent controls
Container(
width: double.infinity,
padding: const EdgeInsets.all(16),
decoration:
BoxDecoration( color:
Colors.white,
borderRadius: BorderRadius.circular(16),
border: Border.all(color: Colors.teal.shade200),
),
child: Column(
crossAxisAlignment: CrossAxisAlignment.start,
children: [
Row( child
ren:
[ Icon(
Icons.family_restroom,
size: 24,
color: Colors.teal.shade700,
),
const SizedBox(width: 8),
const Text(
"Parent Controls",
style:
TextStyle( fontSize:
18,
fontWeight: FontWeight.bold,
color: Colors.teal,
),
),
],
),
const SizedBox(height: 12),
const Text(
"Set screen time limits, monitor progress, and customize learning
content.",
style: TextStyle(fontSize: 14),
),
const SizedBox(height: 12),
```



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```
child:
  ElevatedButton( onPressed: () {
    // Parent controls
    ScaffoldMessenger.of(context).showSnackBar( const SnackBar(
      content: Text("Parent controls coming soon!"),
      behavior: SnackBarBehavior.floating,
    ),
  );
},
style: ElevatedButton.styleFrom( backgroundColor: Colors.teal,
  foregroundColor: Colors.white,
),
child: const Text("Access Parent Dashboard"),
),
],
),
),
const SizedBox(height: 30),

// Logout button
SizedBox(
  width: double.infinity,
  child: ElevatedButton.icon( onPressed: () {
    // Logout
    ScaffoldMessenger.of(context).showSnackBar( const SnackBar(
      content: Text("Logout functionality coming soon!"),
      behavior: SnackBarBehavior.floating,
    ),
  );
},
  icon: const Icon(Icons.logout),
  label: const Text("Logout"),
  style: ElevatedButton.styleFrom(
    backgroundColor: Colors.red.shade400,
    foregroundColor: Colors.white,
  ),
),
),
],
),
);
}

Widget
buildStatCard( String
title,
String value,
IconData icon,
Color color,
```





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```
decoration:
  BoxDecoration( color:
    Colors.white,
    borderRadius: BorderRadius.circular(16),
    border: Border.all(color: color.withOpacity(0.3)),
  ),
child:
  Column( chil
dren: [
    Icon(icon, size: 32, color: color),
    const SizedBox(height: 8),
    Text( v
      alue,
      style:
        TextStyle( font
          Size: 24,
          fontWeight: FontWeight.bold,
          color: color,
        ),
      ),
    const SizedBox(height: 4),
    Text(
      title,
      style: const TextStyle(fontSize: 12, color: Colors.grey),
      textAlign: TextAlign.center,
    ),
  ],
),
);
}

Widget _buildAchievementCard(AchievementBadge badge)
{ return Container(
  margin: const EdgeInsets.only(bottom: 16),
  padding: const EdgeInsets.all(16),
  decoration: BoxDecoration(
    color: Colors.white,
    borderRadius: BorderRadius.circular(16),
    border: Border.all(
      color:
        badge.isUnlocked ? Colors.amber.shade300 : Colors.grey.shade300,
    ),
  ),
  child:
    Row( childre
n:
    [ Container(
      width: 60,
      height: 60,
      decoration:
        BoxDecoration( color:
          badge.isUnlocked
            ? Colors.amber.shade100
            : Colors.grey.shade100,
          shape: BoxShape.circle,
        ),
      child:
        Center( chil
```



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```
? Colors.amber.shade700
: Colors.grey.shade500,

),
),
),
const SizedBox(width: 16),
Expanded(
  child: Column(
    crossAxisAlignment: CrossAxisAlignment.start,
    children: [
      Text( badge.nam
        e, style:
          TextStyle( fontS
            ize: 18,
              fontWeight: FontWeight.bold,
              color:
                badge.isUnlocked
                  ? Colors.amber.shade800
                  : Colors.grey.shade700,
            ),
          ),
      Text( badge.descrip
        tion,
        style: TextStyle(fontSize: 14, color: Colors.grey.shade600),
      ),
    ],
  ),
),
],
),
);
}
```

```
Widget
buildSettingsCard( String
title,
String subtitle,
IconData icon,
bool value,
) {
  return Container(
    margin: const EdgeInsets.only(bottom: 16),
    padding: const EdgeInsets.all(16),
    decoration: BoxDecoration(
      color: Colors.white,
      borderRadius: BorderRadius.circular(16),
    ),
    child:
      Row( chil
        dren: [
          Icon(icon, size: 24, color: Colors.teal),
          const SizedBox(width: 16),
          Expanded(
            child: Column(
              crossAxisAlignment: CrossAxisAlignment.start,
              children: [
                Text(

                  title,
                  style: const
                    TextStyle( fontSize:
                      16,
                      fontWeight: FontWeight.bold,
```



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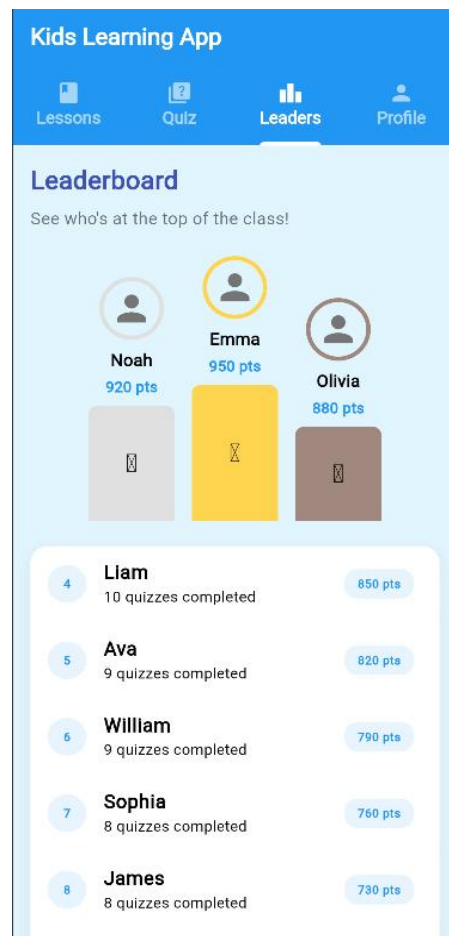
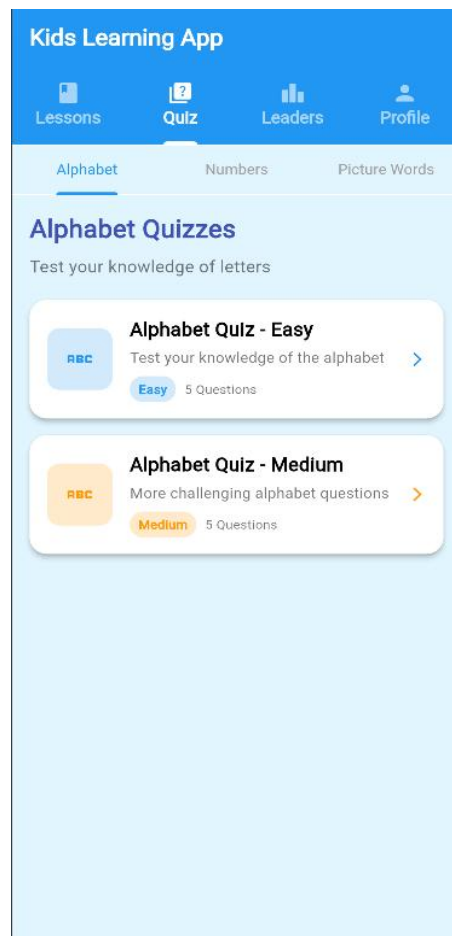
```
),  
,  
Text( subt  
itle,  
style: TextStyle(fontSize: 14, color: Colors.grey.shade600),  
,  
],  
,  
,  
Switch( valu  
e: value,  
onChanged: (newValue) {},  
activeColor: Colors.teal,  
,  
],  
,  
);  
}  
}
```

**Screenshots**





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### Kids Learning App

Lessons

Quiz

Leaders

Profile

**Alex**

7 years old

0

Points

0

Quizzes

0

Lessons

#### My Badges

Alphabet Master

Number Genius

Quiz Champion

Fast Learner

#### Achievements


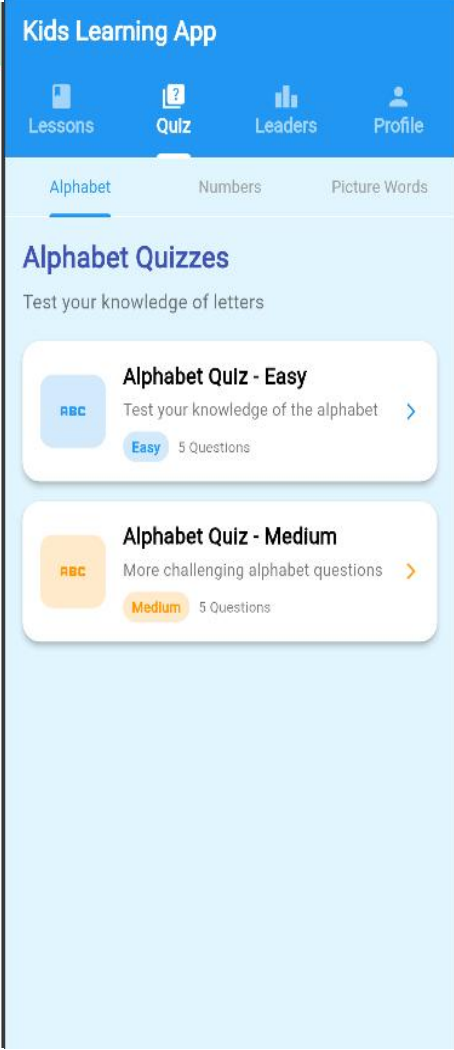
Complete 5 Alphabet Lessons

Complete 5 Number Lessons

Score 100% on any quiz



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<b>Question and Answers</b>	<p><b>Answer the following Questions:</b></p> <p><b>1. How to create Upper Tabs in Flutter?</b></p> <p>Upper tabs in Flutter are created using the combination of DefaultTabController, TabBar, and TabBarView. These widgets help</p>



	<p>display tabs at the top of the screen and switch between different views or screens.</p> <p><b>2. How did you use 60-30-10 rule in your application?</b></p> <p>I used the 60-30-10 rule by assigning 60% of the screen to a primary background color, 30% to a secondary accent color for buttons and highlights, and 10% to a vibrant color used for animations, icons, and playful elements to make the app more appealing to children.</p> <p><b>3. Which new elements did you use for creating UI components?</b></p> <p>I used animated containers, custom fonts, colorful cards, interactive buttons, sound effects, profile avatars, and fun illustrations to create a child-friendly and engaging user interface.</p> <p><b>4. In pubspec.yaml file, what dependencies need to be there?</b></p> <p>The required dependencies include:</p> <ul style="list-style-type: none"><li>• audioplayers for sound feedback</li><li>• shared_preferences for saving user progress</li><li>• google_fonts for custom typography</li><li>• flutter_launcher_icons for customizing app icons</li></ul> <p><b>5. What is the use of Splash Screen?</b></p> <p>A Splash Screen is used to display the app logo or name briefly when the app starts. It gives a good first impression, loads resources in the background, and transitions smoothly into the main content of the app.</p>
<b>Conclusion</b>	<p><b>Your Learning from the session.</b></p> <p>From this session, I learned how to design and develop a Flutter application specifically for children. I understood the importance of using upper tab navigation for a smooth user experience, and how visual design principles like the 60-30-10 rule enhance UI appeal. I also explored new Flutter widgets and UI elements to make the app interactive and engaging. Implementing a splash screen taught me how to create a strong first impression for users. Overall, this experiment helped me gain hands-on experience in building a complete Flutter app with both functionality and user-centered design.</p>