

Project Report
On
Interactive Quiz Application

Submitted in partial fulfilment of the requirements for the award of

BACHELOR OF TECHNOLOGY
in
COMPUTER SCIENCE & ENGINEERING
(Artificial Intelligence & Machine Learning)
by

Ms.D.Meghana (22WH1A6603)

Ms. K.Vijaya Rajasree (22WH1A6648)

Ms. B.Anusha(22WH1A6655)

Ms. K.Pavani Reddy (22WH1A6664)

Under the esteemed guidance of
Ms. S Annapoorna
Assistant Professor, CSE(AI&ML)



Department of Computer Science & Engineering
(Artificial Intelligence & Machine Learning)

BVRIT HYDERABAD COLLEGE OF ENGINEERING FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with A Grade

Bachupally, Hyderabad – 500090

2023-24

Department of Computer Science & Engineering

(Artificial Intelligence & Machine Learning)

BVRIT HYDERABAD COLLEGE OF ENGINEERING FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with A Grade

Bachupally, Hyderabad – 500090

2023-24



CERTIFICATE

This is to certify that the major project entitled "**Interactive Quiz Application**" is a bonafide work carried out by **Ms. D.Meghana(22WH1A6603)**, **Ms. K.Vijaya Rajasree (22WH1A6648)**, **Ms. B.Anusha (22WH1A6655)**, **Ms. K.Pavani Reddy (22WH1A6664)** in partial fulfilment for the award of B. Tech degree in **Computer Science & Engineering (AI&ML)**, **BVRIT HYDERABAD College of Engineering for Women, Bachupally, Hyderabad**, affiliated to Jawaharlal Nehru Technological University Hyderabad, Hyderabad under my guidance and supervision. The results embodied in the project work have not been submitted to any other University or Institute for the award of any degree or diploma.

Supervisor

Ms. S Annapoorna
Assistant Professor
Dept of CSE(AI&ML)

Head of the Department

Dr. B. Lakshmi Praveena
HOD & Professor
Dept of CSE(AI&ML)

External Examiner

DECLARATION

We hereby declare that the work presented in this project entitled "**Interactive Quiz Application**" submitted towards completion of Project work in III Year of B.Tech of CSE(AI&ML) at **BVRIT HYDERABAD College of Engineering for Women**, Hyderabad is an authentic record of our original work carried out under the guidance of **Ms. S Annapoorna, Assistant Professor, Department of CSE(AI&ML)**.

Sign with Date:

D.Meghana

(22WH1A6603)

Sign with Date:

K.Vijaya Rajasree

(22WH1A6648)

Sign with Date:

B.Anusha

(22WH1A6655)

Sign with Date:

K.Pavani Reddy

(22WH1A6664)

ACKNOWLEDGEMENT

We would like to express our sincere thanks to **Dr. K. V. N. Sunitha, Principal, BVRIT HYDERABAD College of Engineering for Women**, for her support by providing the working facilities in the college.

Our sincere thanks and gratitude to **Dr. B. Lakshmi Praveena, Head of the Department, Department of CSE(AI&ML), BVRIT HYDERABAD College of Engineering for Women**, for all timely support and valuable suggestions during the period of our project.

We are extremely thankful to our Internal Guide, **Ms. S Annapoorna , Assistant Professor, CSE(AI&ML), BVRIT HYDERABAD College of Engineering for Women**, for her constant guidance and encouragement throughout the project.

Finally, we would like to thank our Major Project Coordinator, all Faculty and Staff of CSE(AI&ML) department who helped us directly or indirectly. Last but not least, we wish to acknowledge our **Parents and Friends** for giving moral strength and constant encouragement.

D.Meghana (22WH1A6603)

K.Rajasree(22WH1A6648)

B. Anusha(22WH1A6655)

K.Pavani Reddy(22WH1A6664)

ABSTRACT:

The **Interactive Quiz App** is a cutting-edge mobile application that offers an engaging and interactive platform for learning through multiple-choice quizzes across various topics. Built using **Flutter and Dart**, the app ensures a seamless and responsive experience across both Android and iOS devices, catering to a wide range of users, including students, professionals, and casual learners. With its user-friendly interface, the app allows users to easily select quizzes based on their preferred topics, creating a personalized learning journey. The inclusion of a dynamic scoring system not only tracks user progress but also motivates them to challenge themselves further and achieve new milestones. By integrating gamified elements such as levels, achievements, and rewards, the app makes learning entertaining and encourages regular participation. Designed to work efficiently on both mobile phones and tablets, it combines educational content with an intuitive and visually appealing layout, ensuring accessibility for users of all ages. Additionally, the app offers offline access, enabling users to download quizzes and learn on the go without relying on constant internet connectivity. Blending education with entertainment, the Interactive Quiz App serves as a powerful tool for knowledge enhancement and skill development.

Problem Statement:

In the modern era, traditional learning methods often struggle to keep users engaged, and the lack of interactivity can hinder effective knowledge retention. Learners seek platforms that are not only educational but also entertaining, making the learning process enjoyable and motivating. Additionally, users face challenges in accessing diverse educational resources across multiple topics in a single, convenient platform. There is also a growing demand for tools that work seamlessly across different devices, including mobile phones and tablets, to accommodate learning on the go.

The problem lies in creating a mobile application that addresses these needs by providing a dynamic, user-friendly, and engaging learning experience. It should allow users to test and expand their knowledge interactively through customizable quizzes, track their progress effectively, and remain accessible even without an active internet connection. The solution must ensure compatibility across platforms and offer a gamified environment to keep users motivated and entertained while learning.

STRUCTURE OF FOLDER :

```
quiz_app/
    ├── android/                      # Android-specific files
    ├── build/                         # Build output files
    ├── ios/                           # iOS-specific files
    └── lib/
        ├── main.dart                  # Entry point application
        ├── quiz_page.dart            # Contains quiz page ,UI
        ├── notification_service.dart # Handles notifications
        └── timer.dart                 # Timer logic for quiz
    ├── test/                          # Unit tests for the app
    ├── pubspec.yaml                  # Project configurations
    └── README.md                     # Project description and setup instructions
```

CODE :

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

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

class QuizApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Quiz App',
      theme: ThemeData(
        primarySwatch: Colors.blue,
        visualDensity: VisualDensity.adaptivePlatformDensity,
      ),
      home: LoginScreen(),
    );
  }
}

class LoginScreen extends StatefulWidget {
  @override
  _LoginScreenState createState() => _LoginScreenState();
}

class _LoginScreenState extends State<LoginScreen> {
  UserRole? _selectedRole;
  final TextEditingController _usernameController = TextEditingController();
  final TextEditingController _passwordController = TextEditingController();

  final String _adminUsername = "admin";
  final String _adminPassword = "admin123";
  final String _studentUsername = "student";
  final String _studentPassword = "student123";

  bool _validateCredentials(UserRole role) {
    if (role == UserRole.admin) {
      return _usernameController.text == _adminUsername &&
```

```
        _passwordController.text == _adminPassword;
    } else if (role == UserRole.student) {
        return _usernameController.text == _studentUsername &&
            _passwordController.text == _studentPassword;
    }
    return false;
}

void _navigateToSubjectScreen(UserRole role) {
    if (_validateCredentials(role)) {
        Navigator.push(
            context,
            MaterialPageRoute(builder: (context) => SubjectScreen(role: role)),
        );
    } else {
        showDialog(
            context: context,
            builder: (context) => AlertDialog(
                title: Text('Login Failed'),
                content: Text('Incorrect username or password.'),
                actions: [
                    TextButton(
                        onPressed: () => Navigator.pop(context),
                        child: Text('OK'),
                    ),
                ],
            ),
        );
    }
}

@Override
Widget build(BuildContext context) {
    return Scaffold(
        appBar: AppBar(title: Text('Login')),
        body: Container(
            decoration: BoxDecoration(
                gradient: LinearGradient(
                    colors: [Colors.blue, Colors.purple],
                    begin: Alignment.topLeft,
                )
            )
        )
    );
}
```



```

),
),
SizedBox(height: 10),
ElevatedButton(
 onPressed: () {
 setState(() {
 _selectedRole = UserRole.admin;
 });
 _navigateToSubjectScreen(UserRole.admin);
 },
child: Text('Login as Admin'),
style: ElevatedButton.styleFrom(
 minimumSize: Size(double.infinity, 50),
 backgroundColor: Colors.purpleAccent,
),
),
],
),
),
),
),
),
),
),
),
);
}
}

```

```

class SubjectScreen extends StatelessWidget {
final UserRole role;

SubjectScreen({required this.role});

final Map<String, List<Map<String, Object>>> _subjectQuizzes = {
'Computer Networks': [
{'question': "What is an OS?", 'options': ["System Software", "Application", "Hardware", "Device"], 'answer': "System Software"},

{'question': "Which of the following is NOT a type of network topology?", 'options': ["Star", "Ring", "Bus", "Packet"], 'answer': "Packet"},

{'question': "What is the port number of PoP?", 'options': ["35", "43", "110", "25"], 'answer': "110"}];
}

```

{'question': "The full form of OSI is?", 'options': ["Operating System Interface", "Optical System Interconnection", "Operating System Internet", "Open System Interconnection"], 'answer': "Open System Interconnection"},

{'question': "What is a HUB?", 'options': ["Software", "Connecting Device", "Network Device", "Calculating Device"], 'answer': "Network Device"},

],

'Business Economics Financial Analysis': [

{'question': "What is BEFA?", 'options': ["Business Economics", "Basic Economics", "Business Analysis", "Finance"], 'answer': "Business Economics"},

{'question': "Which of the following is a liquidity ratio?", 'options': ["Debt-to-equity ratio", "Current ratio", "Return on assets", "Gross margin"], 'answer': "Current ratio"},

{'question': "The term GDP in economics stands for:", 'options': ["Gross Domestic Product", "General Domestic Pricing", "Gross Discount Pricing", "General Development Program"], 'answer': "Gross Domestic Product"},

{'question': "Which of the following is considered a fixed cost?", 'options': ["Raw material costs", "Sales commission", "Rent", "Direct labor"], 'answer': "Rent"},

{'question': "The process of spreading the cost of a tangible asset over its useful life is called:", 'options': ["Amortization", "Depletion", "Depreciation", "Capitalization"], 'answer': "Depreciation"},

],

'Introduction to Data Science': [

{'question': "What is an IDS?", 'options': ["Intrusion Detection System", "Information Detection Service", "Intelligent Data System", "Interactive Design Service"], 'answer': "Intrusion Detection System"},

{'question': "Which of the following is NOT typically used in data science?", 'options': ["Python", "SQL", "HTML", "R"], 'answer': "HTML"},

{'question': "In data science, what is a dataset?", 'options': ["A collection of related files", "A single file with data", "A structured collection of data organized for analysis", "A programming language for handling data"], 'answer': "A structured collection of data organized for analysis"},

{'question': "Which step in the data science process involves cleaning and transforming raw data into a format suitable for analysis?", 'options': ["Data Collection", "Data Cleaning", "Data Visualization", "Model Evaluation"], 'answer': "Data Cleaning"},

```
{"question": "What is the purpose of exploratory data analysis (EDA)?",  
"options": ["To test machine learning models", "To make predictions on new  
data", "To understand the main characteristics of the data", "To clean and  
preprocess data"], "answer": "To understand the main characteristics of the  
data"},  
],  
'Machine Learning': [  
{'question': "What does ML stand for?", 'options': ["Machine Learning", "Molecular  
Learning", "Massive Learning", "Manual Learning"], 'answer': "Machine Learning"},  
 {'question': "Which algorithm is commonly used in supervised learning?", 'options':  
 ["Linear Regression", "K-means", "PCA", "KNN"], 'answer': "Linear Regression"},  
 {'question': "What is the purpose of overfitting in machine learning?", 'options': ["To  
generalize better", "To reduce error", "To create a model that works well on training data",  
 "To increase model complexity"], 'answer': "To create a model that works well on training  
data"},  
 {'question': "Which library is commonly used for machine learning in Python?",  
 'options': ["Pandas", "Matplotlib", "TensorFlow", "BeautifulSoup"], 'answer':  
 "TensorFlow"},  
 {'question': "What does supervised learning require?", 'options': ["Unlabeled data",  
 "Labeled data", "Random data", "Unstructured data"], 'answer': "Labeled data"},  
 ],  
'Design Analysis Algorithm': [  
 {"question": "What is DAA?", 'options': ["Design and Analysis of Algorithms", "Data  
Analysis Application", "Digital Analysis Algorithm", "Distributed Application  
Architecture"], 'answer': "Design and Analysis of Algorithms"},  
 {"question": "What is the primary goal of algorithm analysis?", 'options': ["To determine  
the best possible solution", "To optimize memory usage", "To evaluate the efficiency of  
algorithms", "To make algorithms easier to write"], 'answer': "To evaluate the efficiency of  
algorithms"},  
 {"question": "Which of the following is a divide and conquer algorithm?", 'options':  
 ["Quick Sort", "Insertion Sort", "Bubble Sort", "Selection Sort"], 'answer': "Quick Sort"},  
 {"question": "Which notation is used to describe the time complexity of an algorithm?",  
 'options': ["Big O", "Lambda", "Pi", "Sigma"], 'answer': "Big O"},  
 {"question": "What is the primary disadvantage of the brute-force approach?", 'options':  
 ["It is too simple", "It requires too much memory", "It is computationally expensive", "It  
guarantees the best solution"], 'answer': "It is computationally expensive"},  
 ],  
};
```

```
static List<Map<String, String>> leaderboard = [];
```

```
void _startQuiz(BuildContext context, String subject) {
  Navigator.push(
    context,
    MaterialPageRoute(
      builder: (context) => QuizPage(
        subject: subject,
        questions: _subjectQuizzes[subject]!,
      ),
    ),
  );
}

void _viewLeaderboard(BuildContext context) {
  showDialog(
    context: context,
    builder: (context) => AlertDialog(
      title: Text('Leaderboard'),
      content: leaderboard.isEmpty
        ? Text('NO STUDENT HAS ATTEMPTED THE QUIZ')
        : SingleChildScrollView(
            child: Column(
              children: leaderboard
                .map((entry) => ListTile(
                  title: Text(entry['name']!),
                  trailing: Text('Score: ${entry['score']}'),
                ))
                .toList(),
            ),
          ),
      actions: [
        TextButton(
          onPressed: () => Navigator.pop(context),
          child: Text('OK'),
        ),
      ],
    ),
  );
}
```

```
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(title: Text('Select Subject')),
    body: ListView(
      padding: const EdgeInsets.all(8.0),
      children: [
        for (var subject in _subjectQuizzes.keys)
          ListTile(
            title: Text(subject),
            onTap: () => _startQuiz(context, subject),
          ),
        if (role == UserRole.admin) ...[
          SizedBox(height: 20),
          ElevatedButton(
            onPressed: () => _viewLeaderboard(context),
            child: Text('View Leaderboard'),
          ),
        ],
      ],
    ),
  );
}

class QuizPage extends StatefulWidget {
  final String subject;
  final List<Map<String, Object>> questions;

  QuizPage({required this.subject, required this.questions});

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

class _QuizPageState extends State<QuizPage> {
  int _currentQuestionIndex = 0;
  int _score = 0;
  bool _showScore = false;
  final TextEditingController _nameController = TextEditingController();
```

```
void _handleAnswer(String selectedOption) {
    if (selectedOption == widget.questions[_currentQuestionIndex]['answer']) {
        setState(() {
            _score++;
        });
        ScaffoldMessenger.of(context).showSnackBar(
            SnackBar(content: Text('Correct Answer! 🎉')),
        );
    } else {
        ScaffoldMessenger.of(context).showSnackBar(
            SnackBar(content: Text('Incorrect Answer! 😞')),
        );
    }
    _nextQuestion();
}

void _nextQuestion() {
    setState(() {
        if (_currentQuestionIndex + 1 < widget.questions.length) {
            _currentQuestionIndex++;
        } else {
            _showScore = true;
        }
    });
}

void _submitQuiz() {
    if (_nameController.text.isNotEmpty) {
        setState(() {
            SubjectScreen.leaderboard.add({
                'name': _nameController.text,
                'score': _score.toString(),
            });
        });
    }
    Navigator.pop(context);
}
```

```
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(title: Text('${widget.subject} Quiz')),
    body: _showScore
      ? Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: [
            Text(
              'Your Score: ${_score} / ${widget.questions.length}',
              style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold),
            ),
            SizedBox(height: 20),
            TextField(
              controller: _nameController,
              decoration: InputDecoration(labelText: 'Enter Your Name'),
            ),
            SizedBox(height: 20),
            ElevatedButton(
              onPressed: _submitQuiz,
              child: Text('Submit Quiz'),
            ),
          ],
        ),
      )
    : Padding(
      padding: EdgeInsets.all(16.0),
      child: Column(
        crossAxisAlignment: CrossAxisAlignment.stretch,
        children: [
          Text(
            'Question ${_currentQuestionIndex + 1}/${widget.questions.length}',
            style: TextStyle(fontSize: 22),
          ),
          SizedBox(height: 12),
          Text(
            widget.questions[_currentQuestionIndex]['question']
              .toString(),
            style: TextStyle(fontSize: 18),
          ),
        ],
      ),
    ),
  );
}
```

```
        ),
        Container(
            padding: EdgeInsets.all(12.0),
            decoration: BoxDecoration(
                color: Colors.blue[50],
                borderRadius: BorderRadius.circular(12),
                boxShadow: [
                    BoxShadow(
                        color: Colors.grey.withOpacity(0.5),
                        spreadRadius: 2,
                        blurRadius: 5,
                        offset: Offset(0, 3),
                    ),
                ],
            ),
            child: Column(
                mainAxisAlignment: MainAxisAlignment.spaceEvenly,
                children: (widget.questions[_currentQuestionIndex]
                    ['options'] as List<String>)
                    .map(
                        (option) => Padding(
                            padding: const EdgeInsets.symmetric(vertical: 8.0),
                            child: ElevatedButton(
                                onPressed: () => _handleAnswer(option),
                                style: ElevatedButton.styleFrom(
                                    backgroundColor: Colors.white,
                                    foregroundColor: Colors.black,
                                    shape: RoundedRectangleBorder(
                                        borderRadius: BorderRadius.circular(8.0),
                                    ),
                                ),
                            ),
                            child: Text(option),
                        ),
                    )
                    .toList(),
            ],
        ),
    }

}

enum UserRole { admin, student }
```

OUTPUT :

Login

Username
student

Password

Login as Student

Login as Admin

← Select Subject

Computer Networks

Business Economics Financial Analysis

Introduction to Data Science

Machine Learning

Design Analysis Algorithm



Question 2/5

Which of the following is a liquidity ratio?

Debt-to-equity ratio

Current ratio

Return on assets

Gross margin

Your Score: 4 / 5

Enter Your Name
rajasree|

Submit Quiz

[← Select Subject](#)

Computer Networks

Business Economics Financial Analysis

Introduction to Data Science

Machine Learning

Design Analysis Algorithm

[View Leaderboard](#)

Leaderboard

rajasree Score: 4

pavani Score: 3

megana Score: 4

anusha Score: 2

[OK](#)

