Lebanese University
Faculty of Engineering-II
Department of Electrical Engineering

Mobile Programming
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Coding Learning App

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Introduction

With rapid growth of mobile learning platforms, educational applications have become important for interactive land accessible learning. They allow students to learn at their pace, while benefiting from structured content.

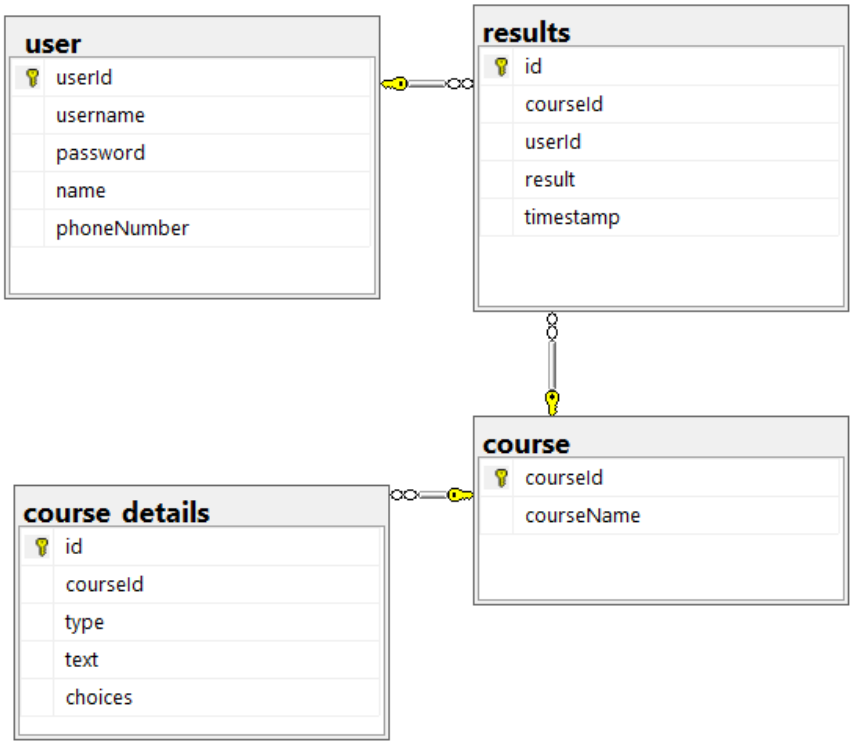
This project is on the design and implementation of a mobile learning application that enables users to learn programming languages through reading and quiz. It uses Flutter frontend with PHP and MySQL backend.

To access, enter the GitHub link: https://github.com/bob-Nasr/Project-CodeQuest

Database

Database is done on Wamp server where we created tables for user info and course details.

We use it to get and store information dynamically.

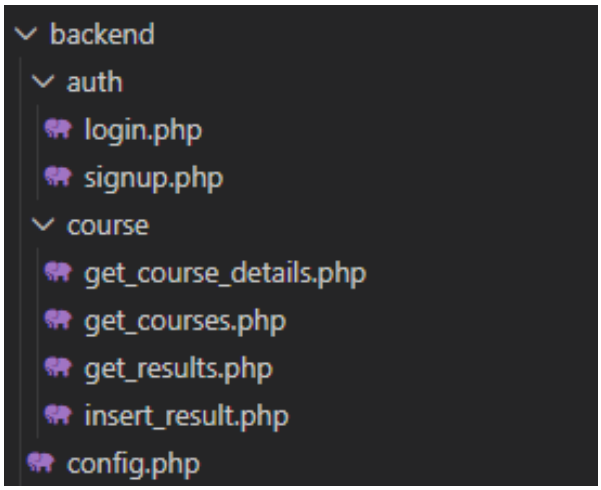


- user: contains all user information
- course: has all course IDs and names
- course_details: has all information needed for courses. it references coursed to show which details belong to which courses
  Attribute type shows if detail is objective, reading text, or multiple-choice question.
- results: has timestamped results of each quiz that user takes

Backend

Backend is developed using PHP. It would be used to communicate information between the database and the frontend Flutter.

It has authentication scripts (login.php and signup.php) and course information getters and setters (get_courses.php, get_results.php, insert_result.php).



To access it, we launch an internal server using

```
php -S 127.0.0.1:8000
```

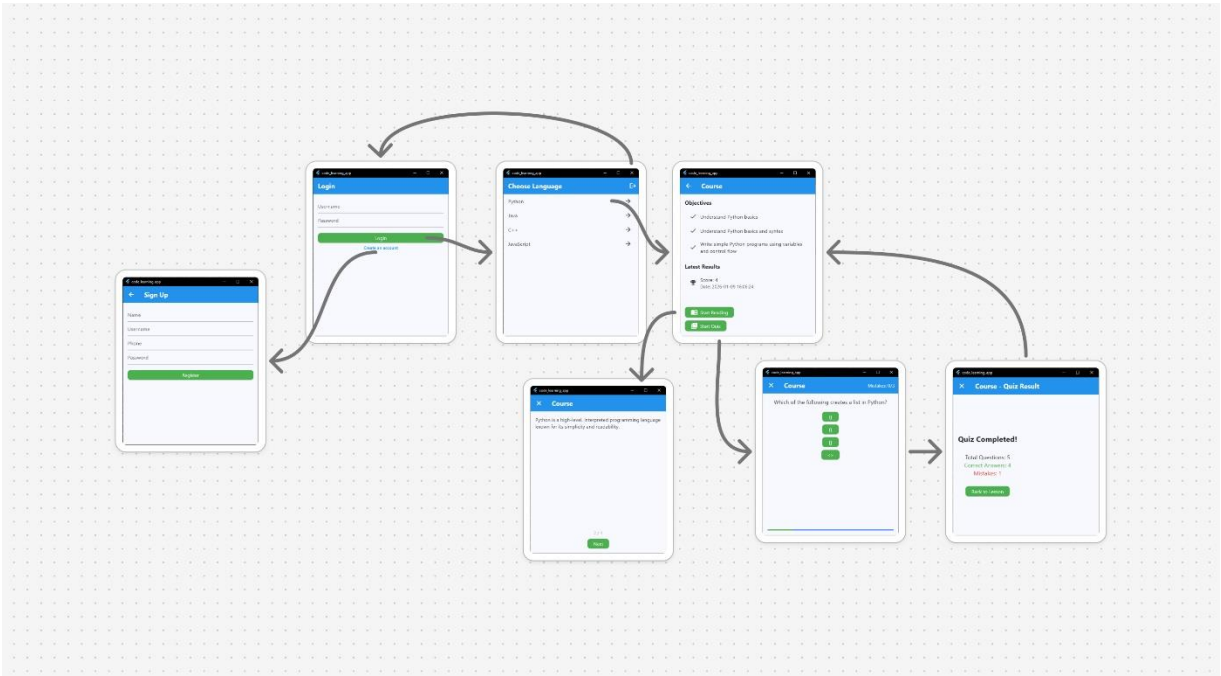
All later requests from Flutter are made through this IP.

Flutter

The frontend is made of 7 screens.

- auth\login_page.dart
- auth\signup_page.dart
- home\main_menu_page.dart

- lessons\lesson_menu_page.dart
- quiz\quiz_page.dart
- quiz\result_page.dart
- reading\reading_page.dart



UserID is stored on login with Shared Preferences.

```
import 'package:shared_preferences/shared_preferences.dart';
...
        final prefs = await SharedPreferences.getInstance();

        await prefs.clear();
        await prefs.setInt(
          'userId',
          int.parse(data['userId'].toString()),
        );
        await prefs.setString(
          'username',
          usernameController.text.trim(),
        );
```

This is accessed at any time by any screen.

To call backend we use parsing. Below is example of login.

```
    final url = Uri.parse('http://127.0.0.1:8000/auth/login.php');
    try {
      final response = await http.post(
        url,
        headers: {'Content-Type': 'application/json'},
        body: jsonEncode({
          'username': usernameController.text.trim(),
          'password': passwordController.text.trim(),
        }),
      );

      final data = jsonDecode(response.body);
```

Theme is global, set in main.dart under ThemeData

```
        // Global colors
        primaryColor: Colors.blue,
        colorScheme: ColorScheme.fromSeed(
          seedColor: Colors.blue,
          primary: Colors.blue,
          secondary: Colors.green,
        ),

        // AppBar theme
        ...
        // Button theme
        ...
        // Floating button
        ...
        // Progress indicators
        ...
        // Text theme
        ...
```