### **Step 1: Project Setup**

1. **Install Required Tools**:
   * Install Python (if not already installed).
   * Install Flask: pip install flask.
   * Install SQLite (usually comes pre-installed with Python).
2. **Create Project Structure**:
   * Create the following folder structure:
   * /quiz\_master  
      /templates  
      /static  
      /css  
      /images  
      /controllers  
      /models  
      app.py
3. **Initialize Flask App**:
   * In app.py, set up the basic Flask application:
   * from flask import Flask  
       
     app = Flask(\_\_name\_\_)  
       
     @app.route('/')  
     def home():  
      return "Welcome to Quiz Master!"  
       
     if \_\_name\_\_ == '\_\_main\_\_':  
      app.run(debug=True)

### **Step 2: Database Setup**

1. **Define Database Models**:
   * Use SQLite for the database. Create models for User, Subject, Chapter, Quiz, Question, and Score.
   * Example for User model:
   * from flask\_sqlalchemy import SQLAlchemy  
       
     db = SQLAlchemy(app)  
       
     class User(db.Model):  
      id = db.Column(db.Integer, primary\_key=True)  
      username = db.Column(db.String(80), unique=True, nullable=False)  
      password = db.Column(db.String(120), nullable=False)  
      full\_name = db.Column(db.String(120), nullable=False)  
      qualification = db.Column(db.String(120))  
      dob = db.Column(db.String(10))
2. **Create Database**:
   * Run the following commands to create the database:
   * with app.app\_context():  
      db.create\_all()

### **Step 3: Admin and User Authentication**

1. **Admin Login**:
   * Create a pre-existing admin account in the database.
   * Example:
   * admin = User(username='admin', password='admin123', full\_name='Admin', qualification='Admin', dob='01/01/2000')  
     db.session.add(admin)  
     db.session.commit()
2. **User Registration and Login**:
   * Create routes for user registration and login.
   * Example for registration:
   * @app.route('/register', methods=['GET', 'POST'])  
     def register():  
      if request.method == 'POST':  
      username = request.form['username']  
      password = request.form['password']  
      full\_name = request.form['full\_name']  
      qualification = request.form['qualification']  
      dob = request.form['dob']  
      new\_user = User(username=username, password=password, full\_name=full\_name, qualification=qualification, dob=dob)  
      db.session.add(new\_user)  
      db.session.commit()  
      return redirect('/login')  
      return render\_template('register.html')

### **Step 4: Admin Dashboard**

1. **Subject Management**:
   * Create routes for adding, editing, and deleting subjects.
   * Example for adding a subject:
   * @app.route('/add\_subject', methods=['GET', 'POST'])  
     def add\_subject():  
      if request.method == 'POST':  
      name = request.form['name']  
      description = request.form['description']  
      new\_subject = Subject(name=name, description=description)  
      db.session.add(new\_subject)  
      db.session.commit()  
      return redirect('/admin\_dashboard')  
      return render\_template('add\_subject.html')
2. **Chapter and Quiz Management**:
   * Similarly, create routes for managing chapters and quizzes.

### **Step 5: User Dashboard**

1. **Quiz Attempt**:
   * Allow users to select a subject and chapter, then attempt the quiz.
   * Example for quiz attempt:
   * @app.route('/attempt\_quiz/<int:quiz\_id>', methods=['GET', 'POST'])  
     def attempt\_quiz(quiz\_id):  
      quiz = Quiz.query.get(quiz\_id)  
      if request.method == 'POST':  
      # Calculate score and save to database  
      return redirect('/user\_dashboard')  
      return render\_template('attempt\_quiz.html', quiz=quiz)
2. **View Scores**:
   * Display the user's quiz scores and previous attempts.

### **Step 6: Frontend Design**

1. **HTML Templates**:
   * Create HTML templates for all pages (e.g., login.html, register.html, admin\_dashboard.html, user\_dashboard.html).
   * Use Bootstrap for styling.
2. **CSS and JavaScript**:
   * Add custom CSS in the /static/css folder.
   * Use JavaScript for frontend validation and interactivity.

### **Step 7: API Integration (Optional)**

1. **Create API Endpoints**:
   * Use Flask to create API endpoints for subjects, chapters, and quizzes.
   * Example:
   * @app.route('/api/subjects', methods=['GET'])  
     def get\_subjects():  
      subjects = Subject.query.all()  
      return jsonify([{'id': s.id, 'name': s.name} for s in subjects])
2. **Use External Libraries**:
   * Integrate Chart.js for displaying summary charts.

### **Step 8: Testing and Debugging**

1. **Test All Functionalities**:
   * Ensure that all features (admin dashboard, user dashboard, quiz attempt, etc.) work as expected.
   * Debug any issues.
2. **Validation**:
   * Implement both frontend (HTML5/JavaScript) and backend (Flask) validation.

### **Step 9: Project Submission**

1. **Prepare Project Report**:
   * Include student details, project approach, frameworks used, ER diagram, and API endpoints (if any).
2. **Create Video Presentation**:
   * Record a 5-10 minute video explaining the project, key features, and any additional functionalities.
3. **Submit Project**:
   * Zip the project folder and submit it on the portal.

### **Additional Tips**

* Use Flask extensions like flask\_login for a more secure login system.
* Add error handling and user-friendly messages.
* Ensure the application is responsive and works well on different devices.

### **Folder Structure**

/quiz\_master  
 /templates  
 login.html  
 register.html  
 admin\_dashboard.html  
 user\_dashboard.html  
 attempt\_quiz.html  
 /static  
 /css  
 styles.css  
 app.py

### **1. Login Page (login.html)**

<!DOCTYPE html>  
<html lang="en">  
<head>  
 <meta charset="UTF-8">  
 <meta name="viewport" content="width=device-width, initial-scale=1.0">  
 <title>Login - Quiz Master</title>  
 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">  
 <link rel="stylesheet" href="{{ url\_for('static', filename='css/styles.css') }}">  
</head>  
<body>  
 <div class="container mt-5">  
 <div class="row justify-content-center">  
 <div class="col-md-6">  
 <h2 class="text-center mb-4">Login to Quiz Master</h2>  
 <form action="/login" method="POST">  
 <div class="mb-3">  
 <label for="username" class="form-label">Username</label>  
 <input type="text" class="form-control" id="username" name="username" required>  
 </div>  
 <div class="mb-3">  
 <label for="password" class="form-label">Password</label>  
 <input type="password" class="form-control" id="password" name="password" required>  
 </div>  
 <button type="submit" class="btn btn-primary w-100">Login</button>  
 </form>  
 <p class="mt-3 text-center">Don't have an account? <a href="/register">Register here</a></p>  
 </div>  
 </div>  
 </div>  
</body>  
</html>

### **2. Registration Page (register.html)**

<!DOCTYPE html>  
<html lang="en">  
<head>  
 <meta charset="UTF-8">  
 <meta name="viewport" content="width=device-width, initial-scale=1.0">  
 <title>Register - Quiz Master</title>  
 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">  
 <link rel="stylesheet" href="{{ url\_for('static', filename='css/styles.css') }}">  
</head>  
<body>  
 <div class="container mt-5">  
 <div class="row justify-content-center">  
 <div class="col-md-6">  
 <h2 class="text-center mb-4">Register for Quiz Master</h2>  
 <form action="/register" method="POST">  
 <div class="mb-3">  
 <label for="username" class="form-label">Username</label>  
 <input type="text" class="form-control" id="username" name="username" required>  
 </div>  
 <div class="mb-3">  
 <label for="password" class="form-label">Password</label>  
 <input type="password" class="form-control" id="password" name="password" required>  
 </div>  
 <div class="mb-3">  
 <label for="full\_name" class="form-label">Full Name</label>  
 <input type="text" class="form-control" id="full\_name" name="full\_name" required>  
 </div>  
 <div class="mb-3">  
 <label for="qualification" class="form-label">Qualification</label>  
 <input type="text" class="form-control" id="qualification" name="qualification">  
 </div>  
 <div class="mb-3">  
 <label for="dob" class="form-label">Date of Birth</label>  
 <input type="date" class="form-control" id="dob" name="dob">  
 </div>  
 <button type="submit" class="btn btn-primary w-100">Register</button>  
 </form>  
 <p class="mt-3 text-center">Already have an account? <a href="/login">Login here</a></p>  
 </div>  
 </div>  
 </div>  
</body>  
</html>

### **3. Admin Dashboard (admin\_dashboard.html)**

<!DOCTYPE html>  
<html lang="en">  
<head>  
 <meta charset="UTF-8">  
 <meta name="viewport" content="width=device-width, initial-scale=1.0">  
 <title>Admin Dashboard - Quiz Master</title>  
 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">  
 <link rel="stylesheet" href="{{ url\_for('static', filename='css/styles.css') }}">  
</head>  
<body>  
 <div class="container mt-5">  
 <h2 class="text-center mb-4">Admin Dashboard</h2>  
 <div class="row">  
 <div class="col-md-3">  
 <div class="list-group">  
 <a href="/admin\_dashboard" class="list-group-item list-group-item-action active">Dashboard</a>  
 <a href="/add\_subject" class="list-group-item list-group-item-action">Add Subject</a>  
 <a href="/manage\_users" class="list-group-item list-group-item-action">Manage Users</a>  
 <a href="/logout" class="list-group-item list-group-item-action">Logout</a>  
 </div>  
 </div>  
 <div class="col-md-9">  
 <h4>Welcome, Admin!</h4>  
 <p>Here you can manage subjects, chapters, quizzes, and users.</p>  
 </div>  
 </div>  
 </div>  
</body>  
</html>

### **4. User Dashboard (user\_dashboard.html)**

<!DOCTYPE html>  
<html lang="en">  
<head>  
 <meta charset="UTF-8">  
 <meta name="viewport" content="width=device-width, initial-scale=1.0">  
 <title>User Dashboard - Quiz Master</title>  
 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">  
 <link rel="stylesheet" href="{{ url\_for('static', filename='css/styles.css') }}">  
</head>  
<body>  
 <div class="container mt-5">  
 <h2 class="text-center mb-4">User Dashboard</h2>  
 <div class="row">  
 <div class="col-md-3">  
 <div class="list-group">  
 <a href="/user\_dashboard" class="list-group-item list-group-item-action active">Dashboard</a>  
 <a href="/attempt\_quiz" class="list-group-item list-group-item-action">Attempt Quiz</a>  
 <a href="/view\_scores" class="list-group-item list-group-item-action">View Scores</a>  
 <a href="/logout" class="list-group-item list-group-item-action">Logout</a>  
 </div>  
 </div>  
 <div class="col-md-9">  
 <h4>Welcome, User!</h4>  
 <p>Choose a subject and chapter to start your quiz.</p>  
 </div>  
 </div>  
 </div>  
</body>  
</html>

### **5. Basic CSS (styles.css)**

body {  
 background-color: #f8f9fa;  
}  
  
.container {  
 margin-top: 50px;  
}  
  
.list-group-item.active {  
 background-color: #0d6efd;  
 border-color: #0d6efd;  
}  
  
.btn-primary {  
 background-color: #0d6efd;  
 border-color: #0d6efd;  
}  
  
.btn-primary:hover {  
 background-color: #0b5ed7;  
 border-color: #0a58ca;  
}

### **6. Attempt Quiz Page (attempt\_quiz.html)**

<!DOCTYPE html>  
<html lang="en">  
<head>  
 <meta charset="UTF-8">  
 <meta name="viewport" content="width=device-width, initial-scale=1.0">  
 <title>Attempt Quiz - Quiz Master</title>  
 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">  
 <link rel="stylesheet" href="{{ url\_for('static', filename='css/styles.css') }}">  
</head>  
<body>  
 <div class="container mt-5">  
 <h2 class="text-center mb-4">Attempt Quiz</h2>  
 <div class="card">  
 <div class="card-body">  
 <h5 class="card-title">Quiz: {{ quiz.name }}</h5>  
 <form action="/submit\_quiz/{{ quiz.id }}" method="POST">  
 {% for question in quiz.questions %}  
 <div class="mb-3">  
 <p>{{ question.question\_statement }}</p>  
 {% for option in question.options %}  
 <div class="form-check">  
 <input class="form-check-input" type="radio" name="question\_{{ question.id }}" value="{{ option }}">  
 <label class="form-check-label">{{ option }}</label>  
 </div>  
 {% endfor %}  
 </div>  
 {% endfor %}  
 <button type="submit" class="btn btn-primary">Submit Quiz</button>  
 </form>  
 </div>  
 </div>  
 </div>  
</body>  
</html>

### **How to Use**

1. Place the HTML files in the /templates folder.
2. Place the CSS file in the /static/css folder.
3. Use Flask to render these templates in your routes.

This frontend code provides a basic structure for the **Quiz Master - V1** project. You can further enhance it by adding more features, improving the design, and integrating it with the backend.