# **Introduction**

### **Purpose of the Project**

The purpose of the e-learning application is to provide a user-friendly platform where users can explore, enroll, and participate in online courses, track their progress, access live or recorded sessions, and explore job opportunities related to their skills and completed courses. The app ensures seamless user experience through features like user authentication, course browsing, session reminders, and job postings, all managed through Firebase

### **Scope of the Project**

The project involves the development of a mobile application using Flutter, with Firebase used for user authentication, data storage, and push notifications. The app supports features like sign-in, course enrollment, session participation, job exploration, and real-time notifications

# **( Software Design Document (SDD Introduction**

The e-learning application provides an intuitive platform where users can browse courses, enroll, participate in sessions, and explore job opportunities. Firebase is used for user authentication, data storage, and notifications, while the Flutter framework provides a cross-platform user interface for smooth navigation and user interaction

### **System Overview**

The app is built using Flutter to offer a cross-platform experience, with Firebase handling authentication, data storage, and messaging services. The state management is achieved using the "Cubit" pattern, ensuring efficient and maintainable state transitions throughout the app.

### **System Architecture**

### **The system consists of the following core components**

User Authentication Module:

* Handles sign-up, sign-in, sign-out, and password reset functionality using Firebase Authentication

Course Catalog Module:

* Retrieves course information from Firebase, allowing users to browse and explore available courses by category, view detailed course descriptions, and enroll

Session Management Module:

* Supports live and recorded sessions for courses. Users can register for sessions, attend live classes, or access recordings

Job Exploration Module:

* Displays job postings related to users’ completed courses and skills, stored in Firebase

Notification Module:

* Sends timely notifications to users about upcoming sessions, new courses, job opportunities, and reminders using Firebase Cloud Messaging (FCM)

### **Data Design**

#### **Database Schema**

The following structure is used for data storage in Firebase:

* **Users:** Stores user information such as email, password, enrolled courses, and job application history.
* **Courses:** Contains course details, including titles, descriptions, syllabus, instructors, and user progress.
* **Sessions:** Stores information about live and recorded sessions, including session times, URLs for live or recorded content, and user enrollments.
* **Jobs:** Contains job postings, including company information, job descriptions, deadlines, and links for applications

#### **Data Access Layer**

* **Firebase: All data for courses, sessions, jobs, and user-specific information is stored and retrieved using Firebase Firestore. There is no external API involved.**
* **Search Data: The search functionality queries Firebase to provide results for courses, sessions, and job opportunities based on user input.**

### **User Interface Design**

**The user interface (UI) is implemented in Flutter, with data for courses, sessions, and jobs retrieved from Firebase. The UI components are designed for a seamless user experience and are responsive across devices. Key UI components include:**

* **Sign-Up/Login Page: Supports Firebase authentication with email, password, and Google sign-in.**
* **Course Catalog:**
  + **Course Listing Page: Displays available courses retrieved from Firebase, including course titles, descriptions, and instructor details.**
  + **Course Detail Page: Provides detailed information for each course, such as syllabus, instructor information, and enrollment options.**
* **Session Management:**
  + **Upcoming Sessions Page: Lists scheduled live or recorded sessions for enrolled courses, retrieved from Firebase.**
  + **Session Detail Page: Displays details like session times and access to live streams or recorded content.**
* **Job Listings:**
  + **Job Listings Page: Shows job opportunities related to the user’s completed courses and skills, retrieved from Firebase.**
  + **Job Detail Page: Provides detailed job descriptions, company information, and links to apply.**
* **Search Bar: A global search feature that allows users to search for courses, sessions, and job opportunities, with categorized results based on Firebase data.**

**Wireframe Reference: You can view the wireframe for the UI components** [**WIREFRAME**](https://miro.com/app/board/uXjVKiaCpR8=/)

### **Deployment**

The application is designed to be deployed on both Android and iOS devices. The deployment process includes:

* **Building the Flutter App:** Configured for both Android and iOS platforms.
* **App Distribution:** The app will be deployed via Google Play Store and Apple App Store for a cross-platform user experience.

# **Functional Requirements**

### **User Authentication**

* **Sign Up:**
  + Users can register using an email and password, with input validation for all fields.
* **Sign In:**
  + Users can log in using their registered credentials, and invalid credentials will trigger error messages.
* **Google Sign-In:**
  + Users can sign in using their Google account through Firebase integration.
* **Sign Out:**
  + Users can securely log out of their account at any time.
* **Password Reset:**
  + Users can request a password reset link, sent via email.

### **Course Exploration**

* **View Course Catalog:** Users can browse available courses, with data stored in Firebase.
* **Course Details:** Users can access detailed information, such as syllabus and enrollment options.
* **Enroll in Courses:** Users can enroll in courses, and their progress is tracked in Firebase.

### **Session Management**

* **View Sessions:** Users can view a list of upcoming live or recorded sessions.
* **Attend Live Sessions:** Users can join live sessions directly through the app.
* **Access Recorded Sessions:** Recorded sessions can be accessed through URLs stored in Firebase.

### **Job Exploration**

* **View Job Listings:** Users can browse job opportunities related to their skills.
* **Job Details:** Users can view job descriptions, deadlines, and application links, all stored in Firebase.

### **Notifications**

* **Course Notifications:** Users receive alerts for new courses and course updates.
* **Session Notifications:** Reminders are sent for upcoming sessions or webinars.
* **Job Notifications:** Users are notified of new job postings, application deadlines, and job status updates, via Firebase Cloud Messaging (FCM).

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