Department of Computer Engineering

University of Peradeniya

CO528 Applied Software Architecture

Mini Project: Department Engagement & Career Platform (DECP)

(15 Marks)

1.1 Objective:

Build a real world inspired department engagement platform for current and past students (alumni) of your department. The platform should allow students to connect, share posts, apply for jobs/internships, collaborate on research, and participate in events, with web and mobile clients.

The focus is on architectural design, modularity, and integration, not full feature completeness.

Focus on:

- Architecture design
- Modular services
- Integration
- Cloud deployment
- Web + mobile clients
- Quality attribute justification

Instructions:

- ➢ Form a group of 4–5 members
- ➢ Assign the following roles to your group members: Assigned Roles
- Enterprise Architect
- Solution Architect
- Application Architect
- Security Architect
- DevOps Architect

➢ **Project Demonstration:**

• One member from the group will present and demonstrate the project.

• Maximum demonstration time: 3 minutes.

• Demonstration is scheduled after 4 weeks from the project start.

➢ **Documentation Requirements (per group):**

• **Architecture Diagrams:** SOA, enterprise, product modularity, deployment.

• **Implementation Details:** Features implemented, client integration, and module communication.

• **Cloud Deployment Details:** Backend/database setup, scalability considerations.

• **Research Findings:** Summary of analysis on similar platforms (e.g., Facebook, LinkedIn), missing features, and improvements proposed.

• **Justifications:** Explain design decisions, modularity choices, and quality attribute considerations.

• **Additional:** Screenshots, demo links, README, GitHub repository with code.

1.2 Project Requirements

1. **User Management**
   o Register/login, edit profile, roles (student, alumni, admin)
   o Authentication & authorization for web/mobile

2. **Feed & Media Posts**
   o Post text updates; upload images/videos
   o Like/comment/share functionality.

3. **Jobs & Internships**
   o Post jobs/internships
   o Apply for opportunities via web/mobile clients

4. **Events & Announcements**

   o Department events, workshops, RSVP system

   o Notifications

5. **Research Collaboration** – Create projects, share documents, invite collaborators.
6. **Messaging** – Direct messaging between users or group chat.
7. **Advanced Notifications** – Event driven, push notifications.
8. **Analytics Dashboard** – Show active users, popular posts, job applications

You are required to research real world platforms such as Facebook, LinkedIn, and similar social networks to understand the architecture they use. Based on this research, each group should identify any missing features or areas for improvement and present these findings along with their proposed design decisions in their project documentation and presentation.

1.3 Architecture Requirements

Students must demonstrate **all relevant software architecture concepts**:

o **SOA -**Each module is a separate service with well defined APIs.
o **Web Oriented Architecture -** Web client consumes backend APIs.
o **Mobile Architecture -** Mobile client consumes same backend APIs.
o **Cloud Architecture -** Backend + database deployed in cloud (AWS/GCP/Azure).
o **Enterprise Architecture-** High level diagram showing module integration, user roles, and departmental workflow.
o **Product Architecture -** Modular design: core modules + optional features, reusable components, maintainability plan.

1.4 Deliverables (ext. Documentation)

1. **Architecture Diagrams**
   o SOA diagrams (service interactions, API endpoints)
   o Enterprise architecture (roles, modules, integration)
   o Product modularity diagram (core + optional features)
   o Deployment diagram (cloud, database, media storage)
2. **Functional Web & Mobile Clients**
   o working features for core modules.
   o Optional bonus features implemented if possible.
3. **Cloud Deployment**
   o Backend and database live on cloud

1.5 Evaluation criteria

- **Architecture Design :**correctness and clarity of SOA, enterprise, and product modular diagrams, including cloud deployment.
- **Implementation and Functionality :**whether core services work, web and mobile clients are integrated, and modules communicate properly.
- **Cloud Deployment and Scalability :**will check for a live backend and database on the cloud, with consideration for scalability.
- **Documentation and Presentation :** whether it covers clear explanations, deployment steps, and a professional demo.