

EEET2582/ISYS3461

# Software Requirements Specification

Version 1.1

DEVision - Job Applicant Subsystem

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## Introduction

Vietnamese tradition emphasizes the proverb '**Settled and Flourished**' (*An Cư Lạc Nghiệp*), highlighting the necessity of establishing a solid and fulfilling career as the foundation for prosperity and personal happiness. **DEVision** was created to embody this principle by **bridging job applicants** in the Computer Science fields with their potential employers. Our primary goal is to empower applicants to find roles that align with their technical skills and career aspirations, while simultaneously assisting companies in attracting top talents that match their specific technical demands and long-term vision. To achieve this dual mission, DEVision is architected into two core components: the **Job Applicant subsystem** and the **Job Manager subsystem**.

The **Job Applicant subsystem** is designed to provide comprehensive tools for career advancement. It handles core functions like registration, secure authentication, job search, and job application submission. Applicants benefit from the system's ability to help them find ideal roles quickly. By paying a monthly subscription, Applicants gain access to a powerful premium feature: **real-time notifications** of new job posts. This feature alerts applicants when a job appears that matches their predefined criteria, including desired technical background, employment status, salary range, location, and job titles.

The **Job Manager subsystem** provides a dedicated platform for companies to manage their recruitment needs efficiently. This subsystem facilitates company registration, secure authentication, detailed company profile creation, job post creation, application processing, and the ability to proactively search the applicant database. Companies can also benefit from a **premium monthly subscription**. This feature provides **real-time notifications** when new job applicants register or update their profiles, matching the company's specific headhunting criteria for technical skills, desired salary, location, and educational background. This feature helps companies to identify talents as soon as they appear.

This document details the required specifications for the Job Applicants subsystem, covering Architecture, Data Model, Functional, Project Management, and Contribution aspects. To facilitate staged development and complexity scaling, the Architecture and Functional requirements are categorized into three difficulty levels: **Simplex** (Basic), **Medium**, and **Ultimo** (Advanced).

You are highly recommended to analyze the requirements of all three difficulties to decide the target complexity, capability, flexibility, and goals of your system architecture and application.

## Contribution Requirements

**Every team member is expected to contribute to ALL the following tasks** by producing recognizable deliverables or providing substantial feedback:

1. Design Data Model
2. Design System Architecture
3. UX/UI Design of ALL Requirements
4. Technical Report
5. Specialized in Front-end OR Back-end OR Full Stack Development

For development tasks, each member is expected to contribute either to individual or pair programming. The amount of fair contribution is determined by the complexity of the supported features and average workload of the entire team. **Final contribution assessment and weight distribution of grades for group assignments will be made at the discretion of the course coordinator**

If there has been a problem with group members not completing their allocated tasks, inform your Course Coordinator as soon as possible so staff can intervene before the problem escalates.

## Software Development Methodology Requirements

This section specifies the compulsory methodological framework and teamwork standards required for the execution and delivery of the DEVision project.

**Collaborative Development:** All teams are required to adopt an **iterative development** approach, such as SCRUM or Kanban board, to enable periodic collaboration and advance the project requirements incrementally.

To ensure transparency and traceability, every team must utilize a **digital project management tool** (e.g., Jira, Trello, GitHub Board) to rigorously track all project tasks. This board must document individual tasks, track team commitment, progress, and verify the completion status of all work items.

Each development Team or Squad must include the **lecturer** as a participant on their digital project board to enable real-time monitoring and support.

**Communication and Review Cycle:** A formal, recurring review cycle is mandatory to maintain alignment and quality. **Every two weeks**, each team is required to schedule and conduct a combined **Sprint Review and Retrospective Meetings** with the lecturer. These sessions serve as critical milestones where the team must formally present recent progress, discuss lessons learned and experiences gained, and proactively identify and raise any significant project impediments or risks.

**Professionalism:** Teamwork performance will be comprehensively evaluated based on three core dimensions: **Contribution to Development** (code quality and feature implementation), **Management Adherence** (quality of board updates and task tracking), and **Involvement** (active participation in all meetings and discussions).

**Meeting Attendance Policy:** Punctuality and presence at scheduled review meetings are **paramount**. Should any team member be unable to attend a meeting with the lecturer, they are required to provide notification **as soon as possible or at least 24 hours in advance** with a **valid reason and supporting evidence**.

Any absence without prior notification AND valid justification will automatically result in a substantial penalty applied to the individual's teamwork assessment criteria.

# Milestone 1 Requirements

**Due Date: 18:00 on 28 November 2025**

In this section, every team is required to document the design decisions and justifications on the **Data Model and System Architecture** in a **30-page report**. The page count does NOT include your cover page and table of content.

You should analyze which of the following technologies are suitable for the application and design your architecture accordingly to leverage the potential of the chosen tech stack.

**a/ Frontend**

- [React-based framework](#): e.g., React, Vite, Next.JS
- [Vanilla \(Plain\) HTML, CSS, and Javascript](#)

**b/ Backend**

- [MEN Stack](#): MongoDB, ExpressJS, NodeJS
- [Spring Boot](#)
- [Redis](#) and [Kafka](#)

**c/ Deployment:** [Docker](#) or [Kubernetes](#) (Bonus)

**R01: Design Conceptual Data Model for Database**

Develop an Entity Relationship Model (ER Model) to store information necessary for fulfilling the requirements. Include this ER model in your project report.

- **Conceptual Modeling:** Design a high-level representation of your database schema using appropriate concepts and entities relevant to your system's requirements.
- **Data Requirements:** Ensure the model accommodates all necessary data elements and relationships essential for system functionality.
- **Documentation:** Briefly explain the design ideas and purposes of entities and relationships depicted in your conceptual data model. **Justify the advantages and potential drawbacks of your data model design in ONE designated section. Describing the advantages and drawbacks in different sections results in 2 points penalty for your Data Model Justification.**

**R02: Present Architecture Diagram of the Entire System**

You are required to separate the front-end and back-end systems in your deliverable. That is, the front-end system is not inside the back-end, and vice-versa.

Create an architecture diagram illustrating the entire system using either UML Component Diagram (Option 1) or C4 Model System, Container, and Component Diagrams (Option 2).

#### Option 1: UML Component Diagram

Use UML Component Diagram to depict the architecture of your system.

##### **System Level:**

- **Architecture:** Illustrate the sub-systems (front-end, back-end, databases, etc.,) in your DEVision application, plus external systems that your front-end and back-end services use.

##### **Back-end:**

- **Architecture:** Illustrate how components are organized and interact to deliver the services.
- **Utilities Classes and Configuration:** Show helper classes and configurations used in your backend (e.g., Security, Token Generator, Cookie Configurer).

##### **Front-end:**

- **Architecture:** Illustrate components, sub-components, and helper classes used in your web application.
- **Interaction with Back-end:** Express how front-end components communicate with the back-end (e.g., REST API calls), which backend components are the intermediate or final recipient of each front-end request.

##### **Note:**

- Depict the System Level in one diagram. Only specify the sub-systems, not their modules, in your diagram.
- Depict the back-end and front-end architectures in two diagrams.
- Only show the element of a higher-level hierarchy on the other subsystem that directly interacts with the currently focused subsystem. For example, if you are drawing the front-end architecture and express that the User Authentication Service in the front-end communicates with the AuthenticationModule of the back-end, show only the FilterModule and AuthenticationModule in the back-end subsystem as the recipient of the request.
- **Component Roles:** Describe the role and responsibilities of key components in the back-end and front-end of your system. Note that database is considered a back-end element.

## Option 2: C4 Model Component Diagram

Use C4 Model Container and Component Diagrams to depict the architecture of your entire system.

Components Coverage:

- **Back-end and Front-end Components:** Represent components as described in Option 1.
- **Component Descriptions:** Include brief descriptions within each component regarding their purpose and functionality.
- Include sub-components in your C4 Component Diagram

General Requirements for Both Options:

- **Clarity and Conciseness:** Ensure the diagrams are clear, concise, and effectively communicate the system architecture. **Your diagrams altogether shall explicitly reveal the Layer-Based, Modular Monolith, or Microservice design of your back-end, or the Layer-Based, Componentized, or Headless UI design of your front-end.**
- **Alignment with Requirements:** Demonstrate how your architecture meets the specified system requirements and design principles.
- **Architectural Rationale:** Concisely justify the architectural choices made for each component. **Justify the advantages and potential drawbacks of your data model design in ONE designated section. Describing the advantages and drawbacks in different sections results in 2 points penalty for your Data Model Justification.**

Your design justification shall consider the following six aspects:

**1/ Maintainability:** Enables the system to be easily understood, updated, and tested independently by current and future Development Teams.

**2/ Extensibility:** Enables new features to be added with minimal impact on existing components. This approach allows for future enhancements and adaptations to changing user needs or market demands.

**3/ Resilience:** The system's ability to continue functioning correctly in the face of unexpected conditions, such as component failures or high loads.

**4/ Scalability:** The capacity of a system to handle increased load or user demand without sacrificing performance

**5/ Security:** The measures taken to protect a system and its users from unauthorized access, data breaches, and other threats.

**6/ Performance:** Performance relates to how quickly and efficiently a system responds to user requests and processes data.

These tasks aim to evaluate your ability to design a robust data model and articulate a coherent system architecture, which are essential skills in software engineering.

### R03: Frequent Usage of GitHub

Your team must use GitHub as the only tool to store your deliverables, including diagrams, reports, database, and code base. You are required to use GitHub in a professional, iterative, and active approach by frequently pushing your primitive, partially completed, or finalized deliverables into the repositories, and use appropriate communication language in your repository.

## Milestone 1 Presentation Requirements

Your Squad is required to present your **system architecture, data model**, and how the **frontends and backends architectures of the Job Manager and Job Applicant subsystems** provide the **job posting, job searching, job application, and application approval features**. Your Squad is also required to justify the **advantages and limitations** of your system design, which you can optionally use slides to organize your explanations.

After the presentation, each member will be questioned about the design decisions and justifications of your Squad's or subsystem's architecture. **Members who cannot explain the sections which they contributed to the report, system design and system analysis will be penalized.**

#### Additional Note:

- 1) NOT Using GitHub frequently during the project results in up to 10 points penalty of your assessment grade.
- 2) In your report, submit the proof of GitHub contribution throughout the project duration
- 3) In Canvas, submit the zip file of your GitHub repository.

Missing either 2) or 3) **results in three points penalty each.**

## Milestone 2 Requirements

**Due Date: 18:00 on 13 January 2026**

1/ You are required to implement the architecture and features using the following technologies:

a/ **Frontend**

- React-based framework: e.g., React, Vite, Next.JS
- Vanilla (Plain) HTML, CSS, and Javascript

b/ **Backend**

- Database: MySQL, MongoDB, Postgres
- Spring Boot, ExpressJS, NodeJS
- Redis & Kafka

c/ **Deployment:** Docker or Kubernetes (Bonus)

2/ Every Squad is required to include a database script to add the following initial data into the system:

a/ One **ADMINISTRATOR** who manages the system

b/ Four **COMPANY** accounts:

- Two **Freemiums**, each has at least two job posts with different job titles.
- Two **Premiums**, each has at least two job posts. Each company belongs to a different Computer Science domain, e.g., one Premium hires **Software Engineers**; the other hires **Data Engineers**.
- One **Premium** subscribes for talents knowing *React*, *Spring Boot*, and *Docker*, who want to work as a *Full-time Intern Software Engineer* in *Vietnam* with a desired salary of more than 800 USD.
- One **Premium** subscribes for talents knowing *Python*, *AWS*, and *Snowflake*, who want to work as a *Contractual Data Engineer* in *Singapore* with a desired salary of more than 1200 USD.

c/ Five **APPLICANT** accounts:

- Two are from *Vietnam*, two are in *Singapore*, one is from another nation.
- Two Premium accounts, one from *Vietnam*, the other from *Singapore*

# Architecture Requirements

You are strongly recommended to read through requirements of ALL three Levels and the rubric to decide your project goals and plans.

## Role Specification

- **APPLICANTS:** Individuals who apply for jobs
- **COMPANIES:** Organizations posting job positions and filtering applications of their job posts.
- **ADMIN:** Individuals managing applicants, job posts, and companies.

Level	Feature ID	Description
Simplex	A.1.1	Apply N-Tier (Layer-based) Architecture to divide your front-end AND back-end into different layers. Each layer has a designated concern and stores all classes addressing that concern across different business features.
	A.1.2	A typical Layer Hierarchy is <u>Presentation</u> , <u>Business Logic</u> , and <u>Data Access</u> . However, to reuse query operations <u>in the back-end</u> and separate query execution from data access object (DAO), you are required to implement <u>Repositories</u> , where queries statements are defined and executed.
	A.1.3	Any Feature that does not follow the Tier structure shall be organized separately. E.g., Cookie Configuration, Filter.
Medium Backend	A.2.1	Apply Modular Monolith Architecture to your back-end. Each module has a bounded context to handle a specific (group of) business feature. A module stores all classes of the N-Tier Layers or another design pattern to provide the business feature.
	A.2.2	Within a Module, the access rules shall go from one layer to another. Specifically, the <b>Presentation</b> Layer shall communicate with the <b>Business Logic</b> Layer which calls <b>Data Access</b> 's method to execute queries. The <b>Presentation</b> Layer must NOT be able to access the functions provided by the <b>Repository</b> Layer.
	A.2.3	Each Module contains two groups of <b>Service APIs</b> : 1. <b>External APIs</b> to expose public services for other modules in the system to invoke 2. <b>Internal APIs</b> to be used by the Presentation Layer or other Services of the module. <b>Internal API services are NOT accessible to other modules</b>

	<b>A.2.4</b>	Each module exposes its internal and external API <b>via interfaces</b> . The Presentation Layer or other modules shall NOT call the Business Logic Layer of the module to invoke the APIs' services.
	<b>A.2.5</b>	The backend must present only necessary data when responding to a request from the front-end. For example, when showing the <b>APPLICANTS</b> matching the search criteria, their credit card number shall not be exposed in the response.
	<b>A.2.6</b>	You must also organize your DTOs into internal and external DTOs. External DTOs are accessible by other modules, while internal DTOs are only accessible by classes within the module.
<b>Medium Frontend</b>	<b>A.2.a</b>	In the frontend, you should define common display elements (e.g., Buttons, Labels) as configurable components in a separate folder, so they can be reused by different pages without redefining the style again.
	<b>A.2.b</b>	<p>Componentize your Front-end, such that each component has a package containing the following elements:</p> <ol style="list-style-type: none"> <li>1. Component's presentation in HTML or JSX</li> <li>2. Sub-components</li> <li>3. Back-end service calls</li> <li>4. Event handlers on the component</li> <li>5. CSS styling, if applicable</li> </ol> <p>All the five elements are NOT placed in the same Component JavaScript file. These five elements shall be placed in separate files under the same package.</p>
	<b>A.2.c</b>	The front-end must contain a REST HTTP Helper Class to provide a base function for conducting REST Requests such as GET, POST, PUT, PATCH, and DELETE, along with parameters of request headers and request body.
<b>Ultimo Backend</b>	<b>A.3.1</b>	Apply Microservice Architecture to your back-end. Each service has a bounded context to handle a specific (group of) business capability. To achieve this, a microservice typically stores all classes of the N-Tier Layers for a single or group of related business capabilities, stores a module of a business capability from the modular monolith architecture, or applies a different design pattern to provide business capabilities.
	<b>A.3.2</b>	Communication among microservices shall be conducted via a Message Broker, e.g., Kafka.

	A.3.3	Every microservice manages its own database(s). Each microservice contains a specific connection String to its database.
	A.3.4	Your team must apply database sharding techniques to partition and query different shards. This requirement aims to test your design in terms of scalability and efficiency.
	A.3.5	<b>Bonus Feature:</b> Database must execute transactions instead of queries, hence it can rollback transactions when an unexpected error occurs.
Ultimo Frontend	A.3.a	<p>Apply Headless UI to your frontend architecture for every UI elements that share similar templates or actions, but can be customizable to suit with the context of the page.</p> <p>For example, the Table to show job posts and the Table to show applications to a job post can share the same data template: heading is the title of the job or the name of the applicant; A View Button to see the content of the job post or application, and a Delete Button to remove the job post or application from the current list. In this case, the Table can be a Headless component, where the Job Post List Page and Application Page use the Table to render the Job Post and Applications accordingly.</p>

## Deployment Requirements

Level	Feature ID	Description
Simplex	D.1.1	The frontend and backend systems are deployed in development environment.
	D.1.2	The Job Applicant system communicates with the Job Manager to provide and consume APIs for providing the software features (See API Provision and API Consumption Requirements)
Medium	D.2.1	The frontend, backend, database, redis cache, Kafka, API Gateway, Service Discovery, and other involved subsystems <b>are Dockerized</b> .
Ultimo	D.3.1	Communication between Job Applicant and Job Manager, or Communication among Microservices applies API Gateway and Service Discovery
	D.3.2	Kafka is applied for publish/subscribe and communication between the Job Applicant and Job Manager system.
	D.3.3	<b>Bonus Feature:</b> Deploy the DEVision ecosystem using Kubernetes

# Job Applicant Functional Requirements

## 1/ Job Applicant Registration

Level	Feature ID	Description
Simplex	1.1.1	The system shall provide a registration form requiring Email, Password, and Country as mandatory fields. Phone number, Street name/number, and City are optional fields.
	1.1.2	The system shall enforce a unique email constraint, ensuring no two Job Applicants share the same email address in the database.
	1.1.3	The system shall send an email to the new user with information on how to activate the account. A User can only login after they activate their account.
	1.24	The Country input field must be a selectable option (e.g., a dropdown list) instead of a direct text input field.
Medium	1.2.1	The system shall validate password strength against the following criteria: a) At least 8 characters. b) At least 1 number. c) At least 1 special character (e.g., \$#@!). d) At least 1 capitalized letter.
	1.2.2	The system shall validate the email syntax to ensure it meets standard formatting requirements, including: a) Contains exactly one '@' symbol. b) Contains at least one '.' (dot) after the '@' symbol. c) The total length of the email address must be less than 255 characters. d) No spaces or prohibited characters (e.g., ( ) [ ] ; :).
	1.2.3	The system shall validate the Phone number (if provided) to ensure it: a) Contains only digits and must start with a valid international dial code (e.g., +84, +49). b) The length of the digits following the dial code must be less than 13.
	1.2.4	All input validation specified above must be performed on both the frontend for quick user feedback and the backend for security. Any validation error must be clearly displayed to the end-user.
Ultimo	1.3.1	The system shall support registration via SSO (Single Sign-On) from ONE selected external platform: Google, Microsoft, Facebook, or GitHub.
	1.3.2	Upon successful SSO registration, the system shall persist the core user profile (name, email, country) in the server. The system must be configured so the user

		that logs in using the SSO interface cannot use a password for direct Job Applicant system access.
	1.3.3	The system shall select a User's attribute as the sharding key to partition and store the user data in the designated database shard. The chosen shard key must enhance the search algorithm of the Job Applicant and/or Job Manager systems

## 2/ Job Applicant Login

Level	Feature ID	Description
Simplex	2.1.1	The system shall authenticate the user using the submitted email and password. If the system does not use HTTPS, the frontend shall send credentials using the Basic Authentication format. If HTTPS is applied, the email and password can be sent in plaintext within the request body.
	2.1.2	Upon successful login, the backend shall generate a JSON Web Signature (JWS) token. This token must contain signed user identity data (e.g., user ID, Role) to verify its integrity.
Medium	2.2.1	Upon successful login, the backend shall generate a JSON Web Encryption (JWE) token instead of a JWS. This token must contain user identity information (e.g., user ID, Role) and ensure that the payload is encrypted and cannot be read by unauthorized parties.
Medium	2.2.2	The system shall implement a mechanism to prevent brute-force attacks on the login endpoint, blocking the authentication for that account after 5 failed login attempts within 60 seconds.
Medium	2.2.3	The system shall invalidate and revoke the user's JWE token when the user explicitly logs out or after the defined expiration time.
Ultimo	2.3.1	The system shall support logging in using an account from the single selected external platform defined in requirement 1.3.1 (Google, Microsoft, Facebook, or GitHub).
	2.3.2	The system shall use a dedicated Redis cache instance to store and quickly check the revocation status of the JWE tokens for non-SSO accounts, improving security performance.

	<b>2.3.3</b>	The backend shall implement a token refreshing mechanism for non-SSO accounts. The system issues a short-lived Access Token and a longer-lived Refresh Token to maintain user session without requiring frequent re-authentication.
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### 3/ Profile Management

Level	Feature ID	Description
Simplex	<b>3.1.1</b>	Job Applicants shall be able to <b>edit their core contact information</b> : Email, Password, Phone Number, Address, City, and <b>Country</b> .
	<b>3.1.2</b>	The system must allow the Job Applicant to create and save a <b>basic text-only profile</b> , including <b>Education</b> (see 3.1.3), <b>Work Experience</b> (See 3.1.4), and a brief <b>Objective Summary</b> .
	<b>3.1.3</b>	The system shall allow the user to manage their <b>Education</b> history as a <b>list of Degree, Academic Institution</b> (e.g., 'Bachelor of Software Engineering (Hons) at RMIT'), Duration (from year to year, or from year to current) and optionally <b>GPA</b> .  The Degree and Institution can be inputted in plaintext. GPA is from 0 to 100.
	<b>3.1.4</b>	The system shall allow applicants to declare their <b>List of Work Experience</b> . For each previous job, the applicant shall enter the <i>Job Title, Duration</i> (from mm-yyyy to mm-yyyy, or mm-yyyy to now), and <i>Job Description</i>
Medium	<b>3.2.1</b>	The Job Applicant shall be able to <b>upload an Avatar (profile picture)</b> . The system must automatically resize the image to a defined standard size for optimal display performance.
	<b>3.2.2</b>	The system shall allow the user to <b>tag and manage a list of Technical Skills and Competencies</b> (e.g., adding tags like "Python", "Kafka", "SQL").
	<b>3.2.3</b>	The Job Applicant shall be able to <b>upload images and videos</b> to showcase their skills or portfolio activities.

	<b>3.2.4</b>	The system shall display the current and past job applications of the Applicant. The persistence of those applications must be done by the Job Applicant team.
<b>Ultimo</b>	<b>3.3.1</b>	Profile updates must be propagated to a <b>Kafka topic</b> when the user changes skills or country. This enables a subscribed <b>Job Manager</b> system to be notified instantly if the applicant's technical and education background match their headhunt criteria.
	<b>3.3.2</b>	Any profile modification must be <b>persisted immediately</b> to the appropriate database shard. <b>Specifically</b> , if the Job Applicant changes the <b>Country</b> field, the application logic must perform a <b>data migration</b> of the entire user record to the new, corresponding database shard.

#### 4/ Job Search and Application

Level	Feature ID	Description
<b>Simplex</b>	<b>4.1.1</b>	The Job Applicant shall be able to search for job posts using four criteria: <i>Job Title</i> , <i>Employment Type</i> (Full-time, Part-time, Internship, Contract), <i>Location</i> (City or Country), and <i>Salary</i> (minimum or range). The system shall allow the user to select multiple Employment Types in a single search request
	<b>4.1.2</b>	The Job Title search must be case-insensitive (e.g., "Software Engineer" and "software engineer" yield the same results).
	<b>4.1.3</b>	In any single search request, the user can only provide one value for the <i>Location</i> field (either one City or one Country).
	<b>4.1.4</b>	<p>The search result shall display the <b>Job Title</b>, <b>Employment Type</b>, <b>Location</b>, <b>Salary</b> (if applicable), <b>Company Name</b>, <b>Posted Date</b>, and <b>Expiry Date</b> (if applicable) of each Job Post.</p> <p>Clicking on the Job Post shows the above information along with the job description.</p>
<b>Medium</b>	<b>4.2.1</b>	The system shall implement a Full-Text Search (FTS) capability on the Job Post data, <b>allowing searches across the Title, Description, and Required Skills fields</b> .

	<b>4.2.2</b>	The system shall allow Job Applicants to filter jobs based on a Fresher status (a boolean flag indicating if the job is suitable for fresh graduates).
	<b>4.2.3</b>	The system shall allow applicants to apply for a job post. An applicant can optionally include a Cover Letter when applying for a job.
	<b>4.2.4</b>	The frontend shall <b>lazy load</b> job posts matching the search result criteria
	<b>4.2.5</b>	The page that provides job search and result display shall be <b>responsive to desktop</b> and <b>mobile devices</b> .
	<b>4.2.6</b>	The search results shall display the <b>Skill Tags</b> (e.g., React, Kafka) of each job post item
<b>Ultimo</b>	<b>4.3.1</b>	The search query must be optimized to perform retrieval using a database sharding key (Country), ensuring searches are routed only to the relevant data shard.
		The system sets the default location of a job search to Vietnam.
	<b>4.3.2</b>	The system shall enable the Job Applicant to <b>upload files</b> for their <b>Curriculum Vitae (CV)</b> and <b>Cover Letter</b> when <b>applying for each application</b> .

## 5/ Premium Applicant Subscription

Level	Feature ID	Description
<b>Simplex</b>	<b>5.1.1</b>	The system shall provide a <b>monthly subscription feature</b> where applicants can pay a monthly fee of 10 USD using a <b>third-party credit-card payment system</b> (e.g., Stripe, Paypal). The system must <b>record and display the premium status</b> on the applicant's Profile page.
	<b>5.1.2</b>	The system must record the payment transaction in the system with the user's email and transaction time.

	<b>5.2.1</b>	The system shall allow applicants to define and save a <b>Search Profile</b> including desired <b>technical background</b> (5.2.2), <b>employment status</b> (5.2.3), <b>country</b> , <b>salary range</b> (5.2.4), and <b>semicolon-separated job titles</b> (e.g., "Software Engineer; Backend Developer;").
	<b>5.2.2</b>	The system shall record desired <b>technical background as tags</b> (e.g., Kafka, React, Spring Boot) for efficient matching.
<b>Medium</b>	<b>5.2.3</b>	The system shall record desired <b>employment status as multiple selections</b> from Full-time, Part-time, Fresher, Internship, and Contract. <b>If neither Full-time nor Part-time is specified, the matching logic must include both Full-time and Part-time jobs.</b>
	<b>5.2.4</b>	The system shall record desired <b>salary range</b> from a <b>minimum</b> to a <b>maximum</b> amount. If the minimum is not set, the minimum is 0. If maximum salary is not set, there is no upper limit. The search must also include jobs with <b>undisclosed salary</b> .
<b>Ultimo</b>	<b>5.3.1</b>	The system shall implement a real-time notification service using the Kafka messaging platform. A dedicated Kafka consumer service must instantly evaluate all incoming new job posts against the criteria of all active subscribers. For every found match, the system must deliver an immediate real-time notification to the applicants.

## 6/ Admin Panel

Level	Feature ID	Description
<b>Simplex</b>	<b>6.1.1</b>	The system shall provide a separate, secure <b>Login interface</b> for administrators.
	<b>6.1.2</b>	Administrators shall be able to <b>view and deactivate</b> any Job Applicant account or Company account based on their ID or email.
<b>Medium</b>	<b>6.2.1</b>	The Administration Portal must include a <b>search function</b> that allows administrators to find Job Applicant, Company, and Job Post by name.
	<b>6.2.2</b>	Administrators shall be able to <b>view and delete</b> any Job Post from the system.

## API Provision Requirements

Team Job Applicant **must provide the following Service APIs** to Team Job Manager:

1. Applicant Profile Data
2. Job Application API, i.e., who applied for which job post of a Company
3. Job Applicant System Authorization (whenever applicable)

## API Usage Requirements

**Team Job Applicant must NOT develop the following APIs.** Instead, **team Job Applicant must call the following service APIs from Team Job Manager:**

1. Company Information APIs
2. Job Post's Information APIs
3. Third-Party Credit Card Payment API
4. Job Manager System Authorization (whenever applicable)

## Deployment Requirements

Level	Feature ID	Description
<b>Simplex</b>	<b>D.1.1</b>	The frontend and backend systems are deployed in development environment.
	<b>D.1.2</b>	The Job Applicant system communicates with the Job Manager to provide and consume APIs for providing the software features (See API Provision and API Consumption Requirements)
<b>Medium</b>	<b>D.2.1</b>	The frontend, backend, database, redis cache, Kafka, API Gateway, Service Discovery, and other involved subsystems <b>are Dockerized and hosted in one or at most 2 different computers or cloud infrastructure.</b>
<b>Ultimo</b>	<b>D.3.1</b>	Communication between Job Applicant and Job Manager, or Communication among Microservices applies API Gateway and Service Discovery.
	<b>D.3.2</b>	Kafka is applied for publish/subscribe feature and communication between the Job Applicant and Job Manager system.
	<b>D.3.3</b>	To simplify the setup, <b>API Gateway and Service Discovery can operate together in one physical machine</b> , but they are <b>hosted separately</b> from the frontends and backends.  <b>Kafka is hosted separately</b> from the backends, frontends, API Gateway, and Service Discovery.

		In each subsystem, <b>backend microservices</b> must be hosted separately in <b>at least two</b> machines or cloud infrastructures.
D.3.4	<b>Bonus Feature:</b>	Deploy the DEVision ecosystem using Kubernetes

## Milestone 2 Presentation Requirements

Your Squad is required to deploy and demo your **DEVision** system with the integration of **Job Manager and Job Applicant subsystems** for providing features listed in the functional requirements.

After the presentation, each member will be questioned about their contribution to the development of the system, API Provision and API Usage. **Members who cannot explain or respond to the lecturer's questions will be penalized** by deducting the corresponding grade on the frontend, backend, or architecture.

## Penalty

P1) NOT Using GitHub frequently during the project results in up to **10 points penalty** of your assessment grade.

P2) In your Contribution Declaration Sheet, submit the proof of GitHub contribution. You will need to **set your repository to public** to collect the contribution data. State the name of every member if the GitHub username does not contain your first name AND last name. **Only publish your repository at most 24 hours before submission. Missing the GitHub contribution results in 3 points penalty.**

P3) NOT submitting the **zip file** of your Squad's final deliverable on GitHub results in **3 points penalty**

P4) NOT submitting the **Project Charter** before Milestone 1 results in **3 points penalty**

## End of Requirement Specifications