



TRƯỜNG ĐẠI HỌC FPT

MINISTRY OF EDUCATION AND TRAINING

# FPT UNIVERSITY

## Capstone Project Document

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Grabwork – The job platform supports the entire recruitment process

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<b>Capstone Project code</b>	SU22SE16

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## Definition and Acronyms

Acronym	Definition	Vietnamese
Candidate	A person that be authorized to the website and seeking or considered for some kind of position for a job	Ứng viên
Enterprise	A company or an organization that registered business activities and have a need to find employees for work	Doanh nghiệp
Apply	The action to make a formal request for a job position	Ứng tuyển
Application	The noun of apply, which means the act of applying for a job by a candidate	Đơn ứng tuyển
Shortlist	A list of selected candidates from which profile round. These candidates will be arranged for the interview round	Danh sách phỏng vấn
Job Catalog	Categories about job types such as: software, accounting, sales...	Ngành nghề
Job Board	Website used to post recruitment information and search for jobs	Trang web tuyển dụng
MVP	A minimum viable product, or MVP, is a product with enough features to attract early-adopter customers and validate a product idea early	Sản phẩm khả dụng tối thiểu
BR	Business Rule	Quy tắc nghiệp vụ
SRS	Software Requirement Specification	Đặc tả phần mềm
ERD	Entity Relationship Diagram	Mô hình quan hệ thực thể

Table 1: Definition and Acronyms

## I. Project Introduction

### 1. Overview

#### 1.1 Project Information

- Project name: Grabwork – The job platform supports the entire recruitment process
- Project code: SU22SE16
- Group code: GSU22SE37
- Software type: Web application

#### 1.2 Project Team

##### a. Supervisor

Full Name	Email	Phone Number	Title
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Table 2: Supervisor

##### b. Team Members

Full Name	Email	Mobile	Role
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Hoang Anh Dung	dunghase141025@fpt.edu.vn	033 275 90 39	Member
Nguyen Lam Nhat Tien	tiennlnse140098@fpt.edu.vn	096 368 48 08	Member
Vo Thanh Vuong	vuongvtse140208@fpt.edu.vn	091 571 94 23	Member

Table 3: Team Members

## 2. Introduction

Grabwork is a super application that is developed not only for searching for jobs but also fully supports the recruitment process and provides many useful tools to help users find a suitable job with the desired salary.

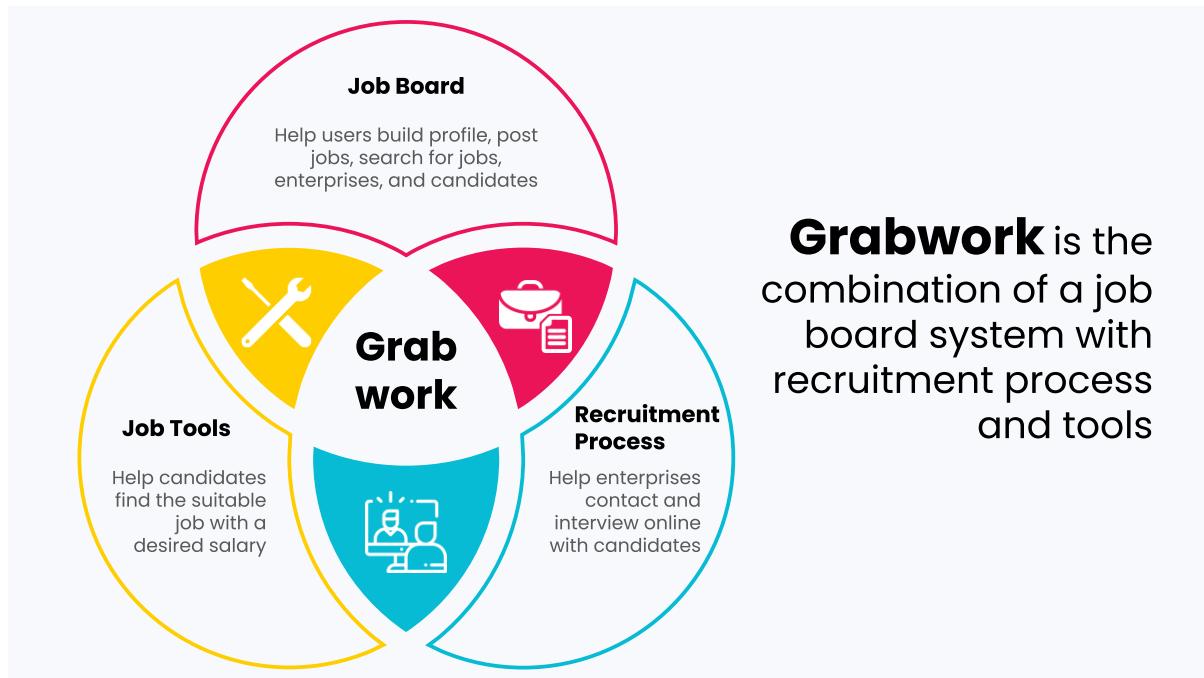


Figure 1: Grabwork Introduction

## 3. Product Background

The recruitment and job application process always makes both enterprises and candidates look for better solutions.

The basic problems of enterprises include: Where to post recruitment to attract candidate views? How to connect with excellent candidates? How to easily view profiles and contact candidates?

Like enterprises, candidates also face many concerns in the process of finding a job such as: How to know if a job is real? Has the enterprise been verified; How about the treatment of the enterprise; Is the job suitable for them?

In addition to the concerns of employers and candidates, there are common concerns that both want to find the optimal solution: optimize time for the recruitment and application process, increase the flexibility in choosing the interview time, online interview, and reduce working time via email.

From the above concerns, the need for an optimal tool for the recruitment segment exists. And our website was born, to tackle all the above problems for enterprises as well as candidates.

# Statement of the Problem



**Small businesses** have not enough resources to integrate the job board and recruitment process.



**Fresh graduates** lack experience in building professional profiles and having difficulty finding suitable jobs.

Figure 2: Statement of the Problem

## 4. Existing Systems

### 4.1. Vieclamtot

- Website: [vieclamtot.com](http://vieclamtot.com)
- Main features:
  - Create account, post job, search jobs.
  - Chat with other users.
  - Receive notifications about new jobs.
- Pros:
  - The jobs on **Vieclamtot** are very diverse, with all kinds of occupations, suitable for many levels of labour.
- Cons:
  - Anyone can post jobs without verifying their account. This can lead to fraudulent situations.
  - **Vieclamtot** only supports job search, does not support features related to the recruitment process.

### 4.2. Vietnamworks

- Website: [vietnamworks.com](http://vietnamworks.com)
- Main features:
  - Create account, update profile, post job.
  - Search companies, search jobs.
  - Create resume from available templates.
  - Follow a company to receive notifications about new jobs.
  - View average salary by job category.
- Pros:
  - **Vietnamworks** is one of the most popular recruitment websites in Vietnam with millions of visits every month.

- Most of the users on Vietnamworks are experienced candidates and large corporations.
- **Vietnamworks** also supports foreigners to find a job in Vietnam.
- Cons:
  - **Vietnamworks** only supports job search, and does not support features related to the recruitment process.

## 5. Business Opportunity

The labour market in Vietnam is always exciting for both employers and candidates. According to VietnamPlus<sup>1</sup> and VnEconomy<sup>2</sup> newspaper, only in the two first months of 2022, Hanoi city has more than 100 000 jobs and HCM has more than 70 000 jobs that looking for candidates.

However, according to Vietnam General Statistics Office<sup>3</sup>, there are more than 1 million unemployed workers. Therefore, at the present, current job board websites and social networking platforms have not fully met the requirements of enterprises and candidates.

Moreover, because of the impact of the epidemic for so long, everything in the market migrates online. That creates the online habit for many processes, including recruitment and interview processes. However, most of the current recruitment websites in Vietnam have not supported these important features. In addition, allowing anyone to post jobs without verification will lead to a high risk of fraud.

Therefore, when Grabwork launches, our application will attract many enterprises, especially small enterprises, because it fully supports the recruitment process from finding a job, to application, chat, profile round, picking interview schedule, interview through the online meeting, and result announcement. Through useful tools such as personality test, and average salary calculation, Grabwork also helps candidates, especially students and new graduates, to find a suitable job with the desired salary. Grabwork only allows enterprises with verified business licenses to post jobs to prevent fraud and make a safe recruitment environment.

## 6. Software Product Vision

The word "Grab" in the name Grabwork means diversity. Like the name, we want to develop Grabwork to become the leading super application in the field of recruitment in Vietnam with diverse tools to support users.

To achieve that success, we have set the following specific goals:

- MVP version:
  - Deadline: By the end of the 3rd quarter of 2022 (Q3 – September 2022)
  - Goal: At least 20 enterprises and 50 candidates register account
  - Key features:
    - Job board system: build profile, search enterprises, search jobs, ...
    - Recruitment process: apply job, chat, process profile round, pick interview schedule, join online interview, get result, ...
    - Useful tools: create resume with templates, personality test, average salary calculation, ...

<sup>1</sup> VietnamPlus newspaper. <https://www.vietnamplus.vn/nhu-cau-tuyen-dung-nganh-du-lich-va-san-xuat-se-tang-manh-trong-quy-2/782693.vnp>

<sup>2</sup> VnEconomy newspaper. <https://vneconomy.vn/tp-hcm-can-65-000-72-000-lao-dong-trong-quy-2-2022.htm>

<sup>3</sup> Vietnam General Statistics Office. <https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2022/04/thong-cao-bao-chi-tinh-hinh-lao-dong-viec-lam-quy-i-nam-2022>

- Beta version:
  - Deadline: By the end of the 4th quarter of 2022 (Q4 – December 2022)
  - Goal: At least 50 enterprises and 500 candidates register account
  - Key features:
    - Grabwork mobile application for candidates
    - Content management system: manage blog posts, interact with posts, ...
- Release version 1:
  - Deadline: By the end of the 2nd quarter of 2023 (Q2 – June 2023)
  - Goal: At least 500 enterprises and 5000 candidates register account
  - Key features:
    - Human resource management system for enterprises
- Release version 2:
  - Deadline: By the end of the 4th quarter of 2023 (Q4 – December 2023)
  - Goal: At least 500 enterprises and 5000 candidates register account
  - Key features:
    - Improve application's accessibility, performance, security, UI/UX, and SEO (Search Engine Optimization)
    - Use AI and machine learning technology for better recommendations

Our product roadmap:

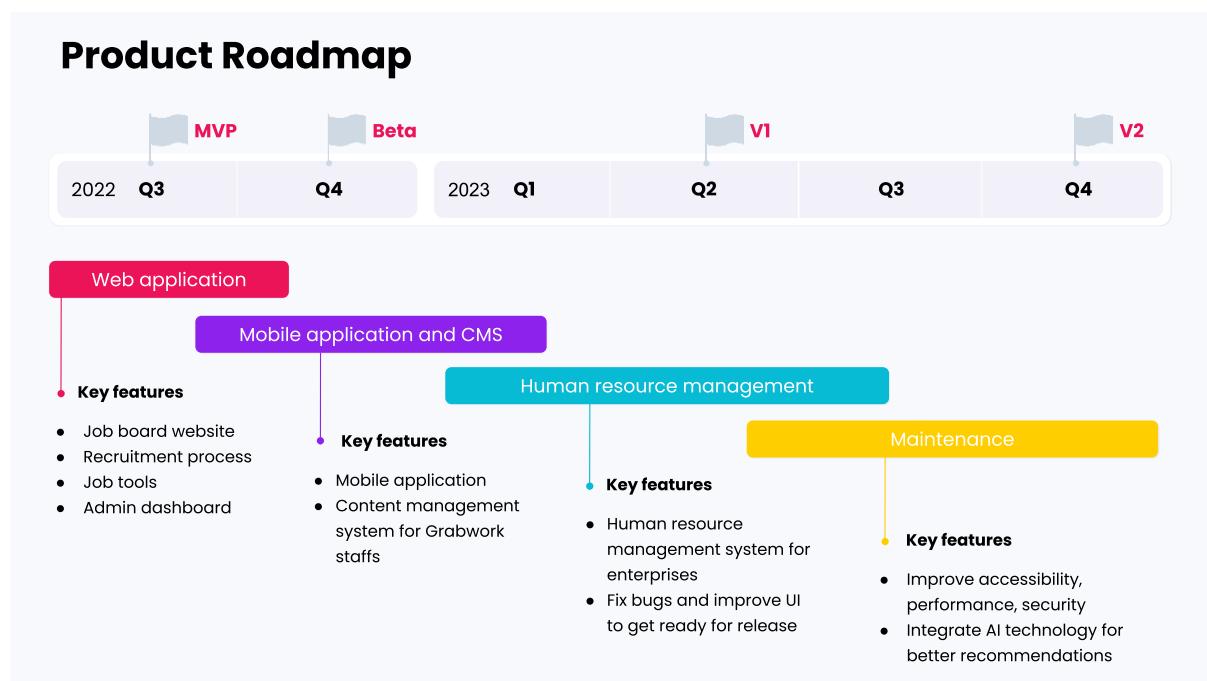


Figure 3: Product Roadmap

## 7. Project Scope & Limitations

### 7.1 Major Features

Our mission in this Capstone Project is to complete the MVP version for Grabwork. The main features are listed in the table below:

Category	Feature	Description
	FE-01	As an enterprise, I want to update my enterprise's profile

Job board system	FE-02	As a candidate, I want to update my candidate's profile
	FE-03	As an enterprise, I want to post a job
	FE-04	As an enterprise, I want to search for candidates and view candidate's profile details
	FE-05	As a candidate, I want to search for enterprises and view enterprise's profile details
	FE-06	As a candidate, I want to search for jobs and view job details
Recruitment process	FE-07	As a candidate, I want to apply for a job
	FE-08	As an enterprise, I want to reject or approve a candidate's application
	FE-09	As an enterprise, I want to set interview schedules
	FE-10	As an enterprise, I want to create an online meeting room
	FE-11	As a candidate, I want to pick an interview schedule
	FE-12	As a candidate, I want to join the online meeting room
	FE-13	As a candidate, I want to send messages to enterprise
Recruitment tools	FE-14	As a candidate, I want to export resume from templates
	FE-15	As a guest, I want to do personality test
	FE-16	As a guest, I want to do tax calculation
Admin management	FE-17	As an admin, I want to manage all enterprises in the system
	FE-18	As an admin, I want to manage all candidates in the system
	FE-19	As an admin, I want to manage all jobs in the system
	FE-20	As an admin, I want to view the application's statistic
System handler	FE-21	Make suggestion about suitable job based on candidate's profile
	FE-22	Make suggestion about suitable candidates based on the job criteria

Table 4: Major Features

The below diagram summarizes our main features:

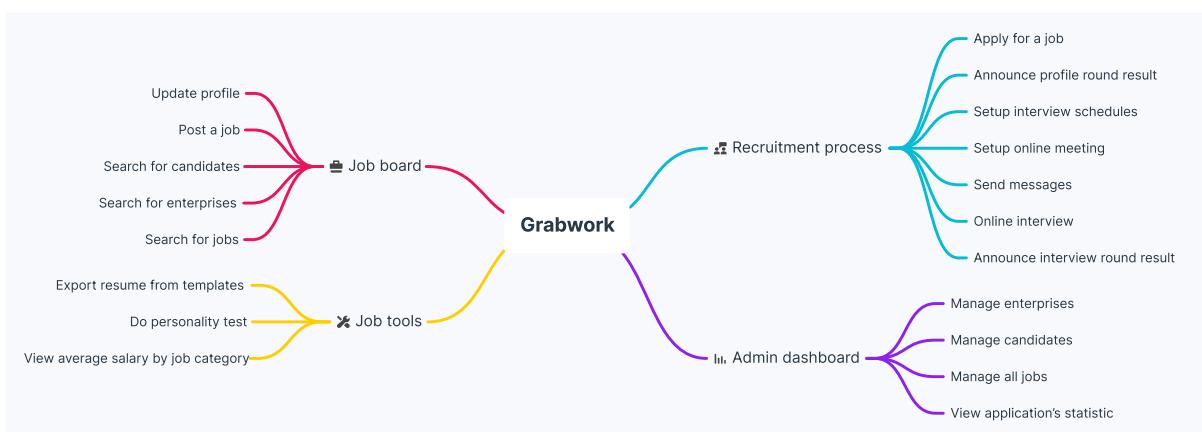


Figure 4: Main Features

## 7.2 Limitations & Exclusions

The below are the limitations we noticed in the MVP version. They are planned to be updated in Beta or V1 Release version.

Limitation & Exclusion	Description
LE-01	The MVP version only focuses on developing features on the website and does not yet support for mobile users.
LE-02	The MVP version does not yet support human resource management for enterprises.
LE-03	The data used to calculate the average salary is not large enough.
LE-04	The business sector of the enterprise is taken from 15 business investment fields listed on the website of the Ministry of Industry and Trade: <a href="https://dangkytinhdoanh.gov.vn/vn/Pages/Nganhnhedaututinhdoanh.aspx">https://dangkytinhdoanh.gov.vn/vn/Pages/Nganhnhedaututinhdoanh.aspx</a>

Table 5: Limitations & Exclusions

## II. Project Management Plan

### 1. Overview

#### 1.1 WBS & Estimation

#	WBS Item	Complexity	Est. Effort (man-days)
<b>1</b>	<b><i>Market analysis</i></b>		<b>8</b>
1.1	Define product background and context	Medium	2
1.2	Define users' problems	Medium	2
1.3	Competitive analysis	Medium	2
1.4	Business opportunity analysis	Medium	2
<b>2</b>	<b><i>Technology training</i></b>		<b>24</b>
2.1	Learn .Net API framework	Complex	6
2.2	Learn ReactJs frontend framework	Complex	6
2.3	Learn DevOps tools (Docker, GitHub Action...)	Complex	6
2.4	Research 3 <sup>rd</sup> party services (Twilio, Goong Map...)	Complex	6
<b>3</b>	<b><i>Workspace setup</i></b>		<b>11</b>
3.1	Setup scrum board	Medium	3
3.2	Setup resources storage workspace	Simple	1
3.3	Setup communication channel	Simple	1
3.4	Setup common tools and editors	Medium	3
3.5	Setup source code version control	Medium	3
<b>4</b>	<b><i>Write document</i></b>		<b>37</b>
4.1	Write project introduction	Medium	5
4.2	Write project management plan	Medium	4
4.3	Write software requirement specification	Complex	6
4.4	Write software design document	Complex	6
4.5	Write test document	Medium	4
4.6	Write user guide document	Medium	4
4.7	Write final document	Complex	8
<b>5</b>	<b><i>Interface design</i></b>		<b>44</b>
5.1	Define screens navigation	Medium	3

5.2	Draw wireframes	Complex	6
5.3	Setup design system (font, color...)	Medium	5
5.4	Design common components	Complex	6
5.5	Finish prototype		
5.5.1	Design authentication pages	Medium	3
5.5.2	Design home pages	Medium	3
5.5.3	Design enterprise dashboard pages	Complex	6
5.5.4	Design candidate dashboard pages	Complex	6
5.5.5	Design other pages (support, contact, pricing...)	Complex	6
<b>6</b>	<b><i>Implementation</i></b>		<b>141</b>
6.1	Implement authentication features		
6.1.1	Register	Medium	3
6.1.2	Login	Medium	3
6.1.3	Logout	Simple	1
6.2	Implement job board features		
6.2.1	Search jobs	Complex	8
6.2.2	Search enterprises	Complex	8
6.2.3	Search candidates	Complex	8
6.2.4	Create candidate's profile	Complex	6
6.2.5	Create enterprise's profile	Complex	6
6.2.6	Save profile to wish list	Medium	3
6.2.7	Post a job	Medium	3
6.3	Implement recruitment process features		
6.3.1	Apply for a job	Medium	4
6.3.2	Announce profile round	Medium	4
6.3.3	Setup interview schedules	Medium	5
6.3.4	Create interview meeting room	Medium	4
6.3.5	Chat application	Complex	8
6.3.6	Announce interview round	Medium	4
6.3.7	Manage job applications	Medium	5

6.3.8	Job recommendation	Complex	10
6.4	Implement job tool features		
6.4.1	View average salary	Medium	6
6.4.2	Tax calculation	Simple	4
6.4.3	Personality test	Medium	6
6.4.4	Export resume from templates	Complex	10
6.5	Implement admin dashboard features		
6.5.1	Manage candidates	Complex	6
6.5.2	Manage enterprises	Complex	6
6.5.3	Manage job categories	Complex	6
6.5.4	View application statistic	Medium	4
<b>7</b>	<b>Testing</b>		<b>24</b>
7.1	Unit Test	Complex	8
7.2	Integration Test	Complex	8
7.3	System Test	Complex	8
<b>8</b>	<b>Closing</b>		<b>13</b>
8.1	Define plan for Beta and Release version	Medium	5
8.2	Hand over maintenance documents to representator	Medium	5
8.3	Prepare slides for thesis defense	Medium	3

**Total Estimated Effort (man-days)**      **302**

Table 6: WBS & Estimation

### 1.2 Project Objectives

#	Quality Stage	No. of Defects	% Of Defect	Notes
1	Reviewing	12	20	
2	System Test	42	70	
3	User Acceptance Test	6	10	

**Total**      **60**      **100%**

Table 7: Project Objectives

### 1.3 Project Risks

#	Risk Description	Impact	Possibility	Response Plans

1	Technology risk: cannot find the suitable solution for technique problems, the software cannot fulfill the expectation.	High	Medium	Do more research on documentation, ask mentor for help.
2	Members drop out	Critical	Medium	Reduce scope of project.

Table 8: Project Risks

## 2. Management Approach

### 2.1 Project Process

## SCRUM FRAMEWORK

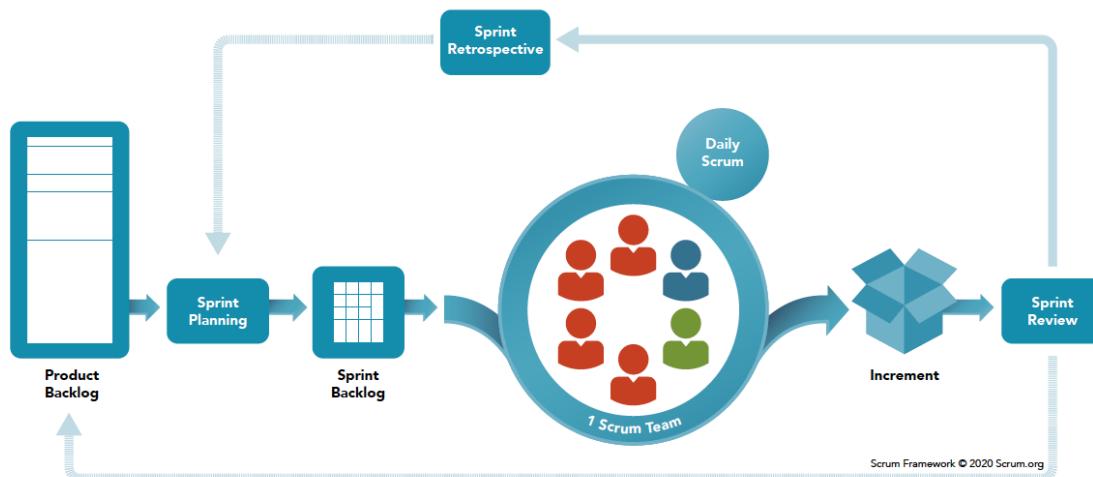


Figure 5: Scrum Model

Grabwork project is developed using the Scrum model – an Agile framework for product development. We used this model because of following reasons:

- Our customers require runnable application to easily give feedbacks anytime. Therefore, the deployment stage needs to be implemented in parallel with coding and designing stage.
- Grabwork is a start-up project so that the requirements are constantly changing, and we often adjust and add new features. Therefore, it is necessary for choosing an easily adaptable model like Scrum.

In this project, each sprint spans 2 weeks and the duration of product backlog is 16 weeks. The below is the screenshot of our product backlog:

The screenshot shows a 'Product Backlog' board view in Grabwork. The left sidebar lists 'SHARED' and 'PRIVATE' sections, with 'Team Workspace' and 'Product Backlog' selected. The main area displays a grid of seven columns, each representing a sprint from Sprint 1 to Sprint 7. Each column contains several user stories, each with a brief description, assigned developer (e.g., Hoang Anh Dong, Thuc Pham, Tien Nguyen, Vu Thanh Vuong), priority level (e.g., High Priority, Medium Priority, Low Priority), complexity (e.g., Simple, Complex), and status (e.g., Done, To-do). The board also includes filters, sort options, and a 'New' button at the top right.

Figure 6: Product Backlog

## 2.2 Quality Management

To make our product better, Grabwork applies some rules:

- API convention:
  - Name the API Route that maps to the entity in the system
  - Each API response must return the following general information:
    - Status code: 200, 204, 400, 401, 404, ...
    - Status text: fail, success
    - Total: number of data items have been returned
    - Data: an array that contains all data items
- Coding convention:
  - Set the meaningful names for variables
  - Add comments to code can be confusing
  - Use Pascal casing for naming Enum, Class and Interface
  - Use GitHub Action to run automation code formatting when having new pull request
- Testing:
  - Use GitHub Action to run automation test before deploying to server
  - Observe how customers use the application and get feedbacks

Below is the screenshot of CI/CD integration using GitHub Action:

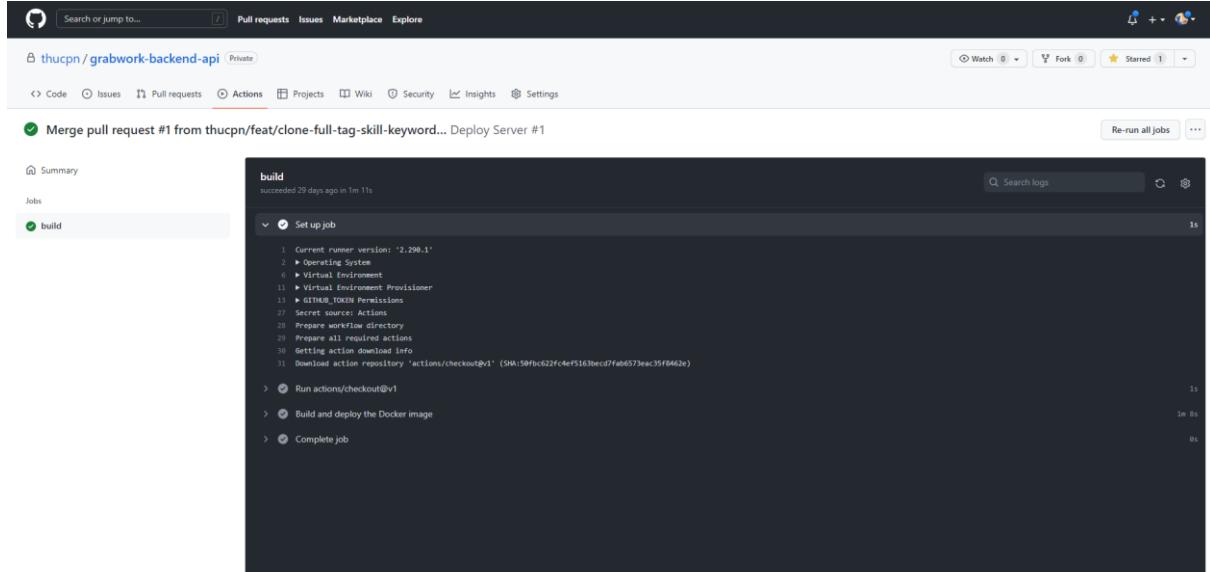


Figure 7: CI/CD with GitHub Action

### 2.3 Training Plan

Training Area	Participants	When, Duration	Waiver Criteria
.Net API framework	DungHA, VuongVT, TienNLN	Week 1 – 6 days	Mandatory
ReactJs frontend framework	ThucPN	Week 1 – 6 days	Mandatory
DevOps tools (Docker, GitHub Action...)	ThucPN, DungHA	Week 1 – 3 days	Mandatory
Research 3 <sup>rd</sup> party services (Twilio, Goong Map...)	All member	Week 1 – 6 days	Mandatory

Table 9: Training Plan

### 3. Master Schedule

Sprint	Deliverable	Due Date	Deliverable Scope
1	Project Plan document	22/05/2022	The overall of project plan
2	Use-case specification	05/06/2022	Requirements specification
3	Design documents	19/06/2022	Database design, Prototype design, Architecture Design, Detailed Design
4	Job board system and recruitment process module	03/07/2022	Code & documents, User manual
5	Job tools and admin	17/07/2022	Code & documents, User manual

	dashboard module		
6	Test reports	31/07/2022	Code & System test reports
7	Guideline document	14/08/2022	User manual guides, maintenance guides
8	Final project package	28/08/2022	Final Code, documents & User manual

**Table 10: Master Schedule**

## 4. Project Organization

### 4.1 Team & Structures

Role	Full name
Product Owner	Kieu Trong Khanh Pham Cam Vi
Scrum Master	Pham Ngoc Thuc
Develop Member	Pham Ngoc Thuc Hoang Anh Dung Nguyen Lam Nhat Tien Vo Thanh Vuong

**Table 11: Team & Structures**

### 4.2 Roles & Responsibilities

Role	Responsibility
Product Owner	<ul style="list-style-type: none"> <li>Provide advice on both technical and business problems</li> <li>Specify the requirements</li> <li>Review product and documents</li> </ul>
Scrum Master	<ul style="list-style-type: none"> <li>Define sprint plans</li> <li>Clearly define requirements</li> <li>Tracking team working process</li> <li>Assign tasks to members</li> <li>Help members solve problems and finish tasks on time</li> <li>Receive feedbacks from customers and define the solutions to resolve</li> </ul>
Develop Member	<ul style="list-style-type: none"> <li>Analyze, understand, and give opinions about requirements, constraints, and business rules</li> <li>Design prototype, database, ...</li> <li>Coding</li> <li>Testing</li> </ul>

**Table 12: Roles & Responsibilities**

## 5. Project Communication

### 5.1 Communication Plan

Communication Item	Who/ Target	Purpose	When, Frequency	Type, Tool, Method(s)
Working with advisor	Supervisor 1 (Kieu Trong Khanh) and team members	<ul style="list-style-type: none"> <li>• Review documentation</li> <li>• Demonstrate features</li> <li>• Evaluate progress and result</li> </ul>	2 times per week	Face to face, Google Meet
Working with representator	Supervisor 2 (Pham Cam Vi) and team members	<ul style="list-style-type: none"> <li>• Discuss about requirements</li> <li>• Report bugs and give feedbacks</li> </ul>	Always	Messenger, Zalo
Working in team	Team members	<ul style="list-style-type: none"> <li>• Raise opinions, problems</li> <li>• Ask for help from other members</li> <li>• Report working status to leader</li> </ul>	Always	Messenger and Slack

Table 13: Communication Plan

### 5.2 External Interface

#### a. FU Contacts

Function	Contact Person (Name, position)	Contact address (Email, telephone)	Responsibility
Advisor	Kieu Trong Khanh	khanhkt@fe.edu.vn 090 813 33 04	<ul style="list-style-type: none"> <li>- Provide document template</li> <li>- Give instruction to project team</li> <li>- Review deliverables</li> <li>- Supervise project status</li> </ul>

Table 14: External Interface

#### b. Customer Contacts

Function	Contact Person (Name, position)	Contact address (Email, telephone)	Responsibility
Product owner	Pham Cam Vi	vipc@tamhuyetviet.vn 090 697 91 38	<ul style="list-style-type: none"> <li>- Provide requirements</li> <li>- Provide server and resources</li> <li>- Give feedbacks about features</li> <li>- Run marketing campaigns</li> </ul>

Table 15: Customer Contacts

## 6. Configuration Management

### 6.1 Tools & Infrastructures

Tools & Infrastructures	Description
Programming languages	TypeScript, C#
Framework	ReactJS, NextJS
API	.NET Core 5.0
DBMS	PostgreSQL 13.5
IDEs/Editors	Visual Studio Code 1.67, Visual Studio 2019
UML tools	Draw.io
Version Control	GitHub
Deployment server	Vercel, Heroku Server, Heroku Postgres, Firebase Storage
Project management tool	Notion

Table 16: Tools & Infrastructures

### 6.2 Document Management

- Using OneDrive to save documentations: [Link OneDrive Workspace](#)
- Using Notion to take notes: [Link Notion Workspace](#)
- Using Google Drive to save reports, images, diagrams: [Link Drive Workspace](#)

### 6.3 Source Code Management

- Using GitHub to store source code (private):
  - Backend API Repo: [Link](#)
  - Frontend User Repo: [Link](#)
  - Frontend Admin Repo: [Link](#)
- Follow these rules when using Git:
  - Commit convention:
    - Commit code with syntax: `git commit -m "type: what-commit-does"`
    - Types of commits include:
      - feat: new feature
      - fix: handle bug
      - config: change related to config file
      - refactor: refactoring production code
      - docs: changes related to config file documentation (comments, readme, ...)
      - test: adding testing code
      - chore: resolve conflict
  - Pull request convention:
    - Attach a link to the task on Notion in the description of the pull request
    - Do not push code directly to main/master branch. Let's create a new branch for every new task
    - Tag the leader for code review

### III. Software Requirements Specification

#### 1. Overall Description

##### 1.1 Product Overview

###### *1.1.1 Guest Requirements*

Guests are people who have not been authenticated to the system. They only have limited access the following functions:

- Sign up
- Search and view job detail
- Search and view candidate detail
- Search and view enterprise detail

###### *1.1.2 Enterprise Requirements*

Members are people who have logged in to the job board website with “Enterprise” role. They can use these following functions:

- Login, logout
- Get profile statistic
- Update business information
- Manage jobs
- Manipulate recruitment process

###### *1.1.3 Candidate Requirements*

Members are people who have logged in to the job board website with “Candidate” role. They can use these following functions:

- Login, logout
- Get profile statistic
- Update resume profile
- Apply job
- Manipulate job tools

###### *1.1.4 Admin Requirements*

Members are people who have logged in to the admin dashboard website with “Admin” role. They can use these following functions:

- Login, logout
- Manage users
- Manage jobs
- View Grabwork statistic

#### 1.2 Business Rules

Below are the general business rules for the entire Grabwork system. We will also describe specific business rules for each use case below the specifications.

<b>ID</b>	<b>Rule Definition</b>
BR-01	The notification sent to the user must be a push notification, it can show on device's screen. If the device is turned off, the message should appear again when the user opens the device.

BR-02	Chat application on the website should be real-time messages.
BR-03	Some job tools such as resume export, tax calculation can be used even there's no internet connection.
BR-04	There are 15 business sectors in the application that referenced from the website of the Ministry of Industry and Trade.
BR-05	Meeting service for the online interview should be popular site such as Google Meet or Zoom.
BR-06	Enterprise must upload the business license to get verified. The time that waits for admin verifying is under 1 week.
BR-07	Both candidates and enterprises must complete the basic profile before doing any action.
BR-08	A job posting will expire after a maximum of 3 months, this time can be adjusted by the business.
BR-09	A job application will be set to be done after a maximum of 2 months; this time can be adjusted by Grabwork admin.
BR-10	An enterprise account that hasn't been upgraded can only post up to 3 jobs. There is no limit for a pro enterprise account.

Table 17: Business Rules

## 2. User Requirements

### 2.1 Overview

#### 2.1.1 Use Case Diagram

The 2 use-case diagrams below are built according to the OMG Unified Modeling Language specification (UML Superstructure Specification version 2.4.1)

### 2.1.1.1 Job board system

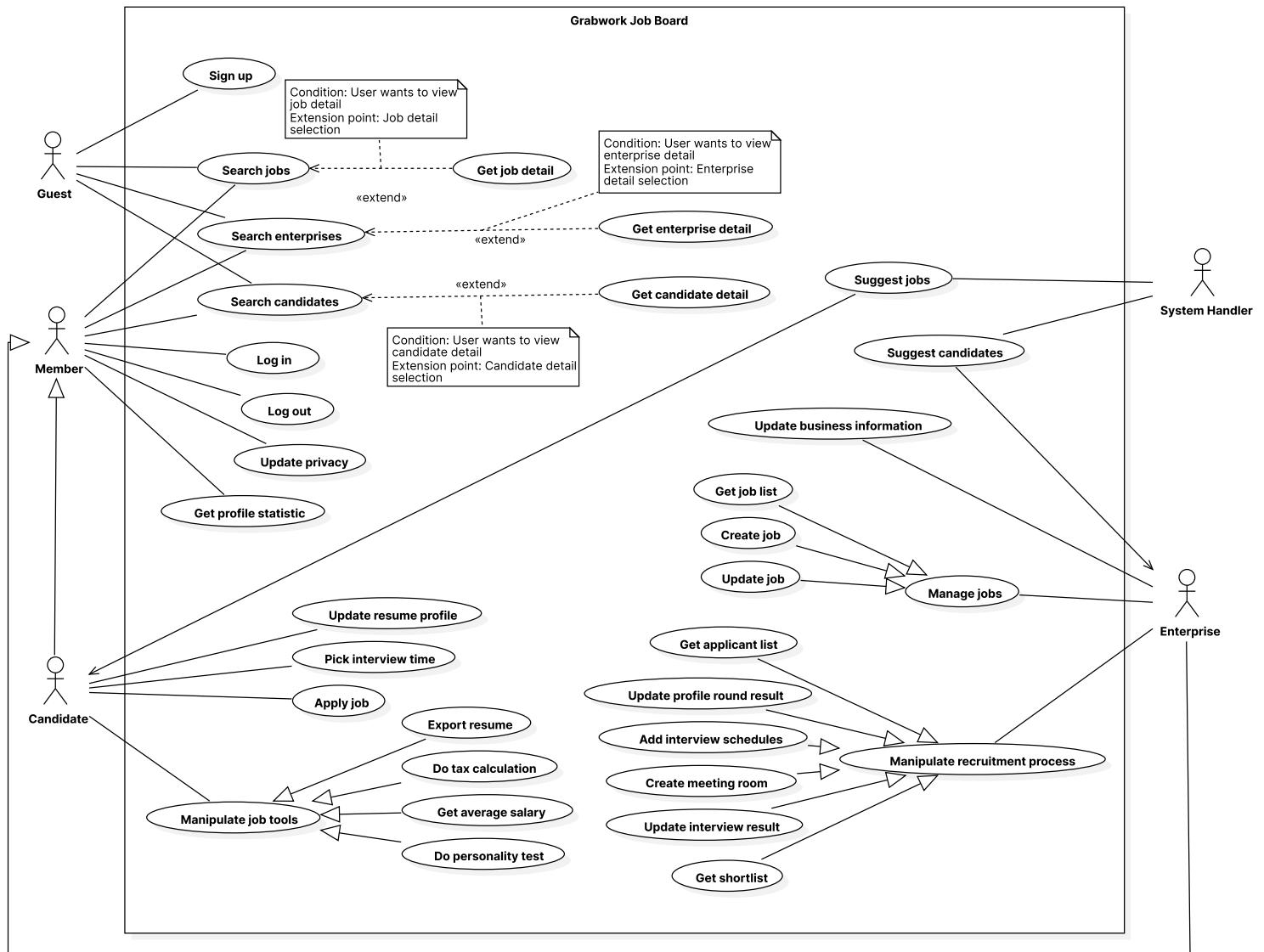


Figure 8: Use Case Diagram – Job Board System

### 2.1.1.2 Admin system

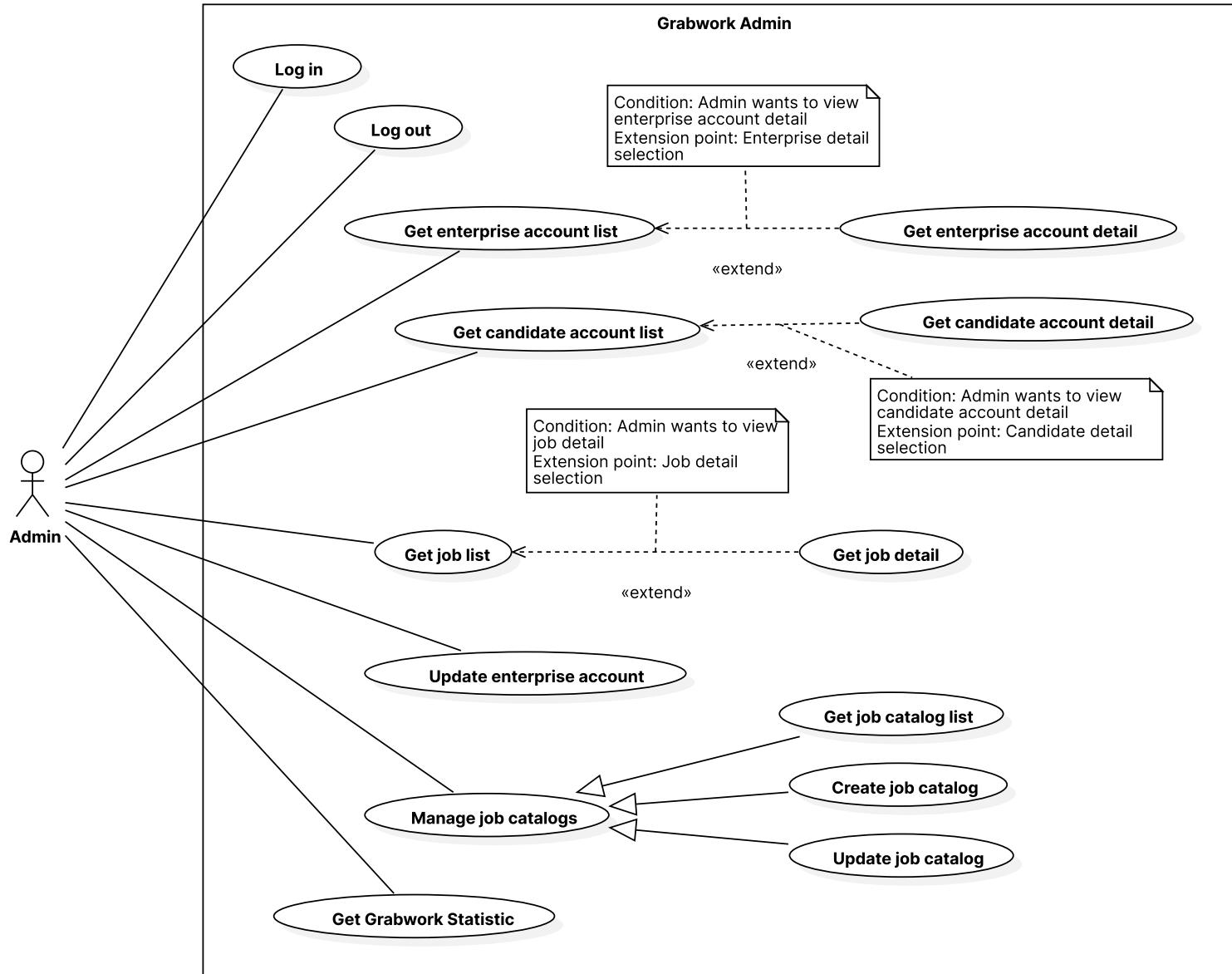


Figure 9: Use Case Diagram – Admin System

### 2.1.2 System Actors

#	Actor	Description
1	Guest	Guests are people who have not been authenticated to the system. Guest will be surfing through the website to see introductory information about Grabwork.
2	Member	Guests are people who have logged in to job board website. Depending on the choice in registration step, a member can become a candidate or an enterprise.
3	Enterprise	Enterprises are people who have logged in to job board website as “enterprise” role. Enterprise will manipulate the job board, create jobs, and interview candidates.
4	Candidate	Candidates are people who have logged in to job board website as “candidate” role. Candidates will search jobs, apply job, and interview with enterprise.
5	Admin	Admin is person who have logged in to admin dashboard website as “admin” role. Admin is the person who manages all user activities and monitors the development of Grabwork system.

Table 18: System Actors

### 2.1.3 Use Cases List

#### 2.1.3.1 Job board system

ID	Use Case	Primary Actors	Secondary Actors
UC-01	Sign up	Guest	
UC-02	Search jobs	Guest, Member	
UC-03	Get job details	Guest, Member	
UC-04	Search enterprises	Guest, Member	
UC-05	Get enterprise detail	Guest, Member	
UC-06	Search candidates	Guest, Member	
UC-07	Get candidate details	Guest, Member	
UC-08	Log in	Member	
UC-09	Log out	Member	
UC-10	Update privacy	Member	
UC-11	Get profile statistic	Member	
UC-12	Update business information	Enterprise	
UC-13	Get job list	Enterprise	
UC-14	Create job	Enterprise	
UC-15	Update job	Enterprise	
UC-16	Get applicant list	Enterprise	
UC-17	Update profile round result	Enterprise	
UC-18	Add interview schedules	Enterprise	
UC-19	Create meeting room	Enterprise	
UC-20	Update interview result	Enterprise	
UC-21	Get shortlist	Enterprise	
UC-22	Update resume profile	Candidate	
UC-23	Pick interview time	Candidate	

UC-24	Apply job	Candidate	
UC-25	Export resume	Candidate	
UC-26	Do tax calculation	Candidate	
UC-27	Get average salary	Candidate	
UC-28	Do personality test	Candidate	
UC-29	Suggest jobs	System Handler	Candidate
UC-30	Suggest candidates	System Handler	Enterprise

Table 19: Use Case List - Job board system

### 2.1.3.2 Admin system

ID	Use Case	Primary Actors	Secondary Actors
UC-31	Log in	Admin	
UC-32	Log out	Admin	
UC-33	Get enterprise account list	Admin	
UC-34	Get enterprise account detail	Admin	
UC-35	Get candidate account list	Admin	
UC-36	Get candidate account detail	Admin	
UC-37	Get job list	Admin	
UC-38	Get job detail	Admin	
UC-39	Update enterprise account	Admin	
UC-40	Get job catalog list	Admin	
UC-41	Create job catalog	Admin	
UC-42	Update job catalog	Admin	
UC-43	Get Grabwork Statistic	Admin	

Table 20: Use Case List - Admin System

## 2.2 Specification

### 2.2.1 Job board system

#### 2.2.1.01 Sign up

ID and Name:	UC-01: Sign up		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Guest	Secondary Actors:	N/A
Priority:	High	Frequency of Use:	Usually
Trigger:	The actor wants to register an account in Grabwork web application.		
Description:	This feature allows actor to create new account to become candidate or enterprise in the system.		
Preconditions:	<ul style="list-style-type: none"> <li>Actor has phone number or email or Google Account that can be used to receive OTP number</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Redirect to member profile page</li> <li><b>Fail:</b> System shows error message corresponding to error code</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In register page, actor selects tab “Đăng ký tài khoản ứng viên”. <b>[Alternative 1, 2]</b>	System shows a form with these fields: <ul style="list-style-type: none"> <li>Phone number: number text input, required, length 9 – 11</li> <li>OTP number: number text input, required, length 6</li> </ul>
	2	Actor inputs phone number	
	3	Actor clicks “Gửi mã xác thực”	System validates phone number and invoke 3 <sup>rd</sup> service send OTP number to actor's device. <b>[Exception 1, 2]</b>
	4	Actor inputs OTP number	
	5	Actor clicks “Đăng ký”	System checks OTP number. If correct, create new candidate account and redirect to profile page. <b>[Exception 3, 4]</b>
Alternative Flows:	Alternative 1:		
	Step	Actor Action	System Response
	1	In register page, actor selects tab “Đăng ký tài khoản doanh nghiệp”.	System shows a form with these fields:

			<ul style="list-style-type: none"> <li>- Email: free text input, required, regex format <code>/^\S+@\S+\.\S+\$/</code></li> <li>- OTP number: number text input, required, length 6</li> </ul>
	2	Actor inputs email address	
	3	Actor clicks “Gửi mã xác thực”	<p>System validates email address and invoke 3<sup>rd</sup> service send OTP number to actor's device.</p> <p><b>[Exception 1, 2]</b></p>
	4	Actor inputs OTP number	
	5	Actor clicks “Đăng ký”	<p>System checks OTP number. If correct, create new enterprise account and redirect to profile page.</p> <p><b>[Exception 3, 4]</b></p>
	<b>Alternative 2:</b>		
	Step	Actor Action	System Response
	1	In register page, actor selects tab “Đăng ký với Google”.	<p>System redirects to Google OAuth page</p>
	2	User chooses Google account and login	<p>System validates email address. If correct, create new account and redirect to profile page.</p> <p><b>[Exception 2]</b></p>
Exceptions:	No	Cause	System Response
	1	At least one input field doesn't match the constrain	System shows error message corresponding to the fail constrain.
	2	Email or phone number existed in the system	System shows error message: “Tài khoản đã tồn tại trong hệ thống”.
	3	OTP number is expired	System shows error message: “Mã xác thực đã hết hiệu lực”.
	4	OTP number is not correct	System shows error message: “Mã xác thực không đúng”.
Business Rules:	<ul style="list-style-type: none"> <li>• OTP input consists of 6 positive numbers and valid in 10 minutes.</li> <li>• If actors input wrong OTP 5 times, their email/phone-number will be locked in 10 minutes.</li> </ul>		

	<ul style="list-style-type: none"> <li>After signing up success, status of account is “inactive” and need update profile to become “active”.</li> </ul>
Assumptions:	<ul style="list-style-type: none"> <li>Actor does not block Grabwork from sending OTP number</li> <li>The OTP 3<sup>rd</sup> service is still working well</li> <li>Actor's internet connection is available</li> </ul>

### 2.2.1.02 Search jobs

ID and Name:	UC-02: Search jobs		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Guest, Member	Secondary Actors:	N/A
Priority:	High	Frequency of Use:	Often
Trigger:	The actor wants to search jobs so that he could find the suitable job.		
Description:	This feature allows actor to search for jobs according to the input keyword and some filter fields.		
Preconditions:	N/A		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays a list of jobs that satisfies input keyword.</li> <li><b>Fail:</b> System inform “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn.”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Actor selects tab “Tìm việc”. <b>[Alternative 1]</b>	System redirects to search jobs page and show list all available jobs.
	2	In search jobs page, actor types keywords into search textbox.	System shows a hide suggestion text for search in Search textbox is “Ứng viên, từ khóa, công ty...”
	3	Actor clicks search icon or press “enter” key.	System shows list of jobs that match with keywords. <b>[Exception 1]</b>
	4	Actor choices options in filters according job catalog, gender... and sorters.	System shows list of jobs that match with actors requires. <b>[Exception 1]</b>
Alternative Flows:	<b>Alternative 1:</b>		

	Step	Actor Action	System Response
	1	In home page, actor types keywords into Search textbox.	System shows suggestion text for search in search textbox is “Ứng viên, từ khóa, công ty...”
	2	Actor clicks “Tìm việc” button or press “enter” key	System redirects to search jobs page and shows list of jobs that match with keywords. <b>[Exception 1]</b>
	3	Actor choices options in filters according job catalog, gender... and sorter.	System shows list of jobs that match with actors requires. <b>[Exception 1]</b>
Exceptions:	No	Cause	System Response
	1	Result is empty	System informs “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn.”.
Business Rules:	<ul style="list-style-type: none"> <li>Jobs display for actor must in published status.</li> <li>The result jobs are responded to the actor if the keyword is in the title, keyword or full name company.</li> <li>The default values of fields of sorter are: “Tin mới trước” and “Hiển thị 10”.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available</li> </ul>		

#### 2.2.1.03 Get job detail

<b>ID and Name:</b>	<b>UC-03: Get job detail</b>		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Guest, Member	Secondary Actors:	N/A
Priority:	High	Frequency of Use:	Often
Trigger:	The actor wants to view detail information of Job.		
Description:	This feature allows actor to view details such as salary, major, work location, job requirements, ...		
Preconditions:	<ul style="list-style-type: none"> <li>The status of job is currently public.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Show detail information of Job.</li> <li><b>Fail:</b> Show not found page if the Job is not existed.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response

	1	Click to job card. <b>[Alternative 1]</b>	Redirect to job detail information page. The website shows job detail information such as: <ul style="list-style-type: none"> <li>- Job name</li> <li>- Work location</li> <li>- Job's view count</li> <li>- Job type (full-time, part-time)</li> <li>- Job status</li> <li>- Job descriptions</li> <li>- Job requirements</li> </ul>
Alternative Flows:	Step	Actor Action	System Response
	1	In browser search box, actors enter a links of job detail with format “grabwork.tech/search/job/{jobId}”	In job detail information page, the website shows Job detail information such as: <ul style="list-style-type: none"> <li>- Job name</li> <li>- Work location</li> <li>- Job's view count</li> <li>- Job type (full-time, part-time)</li> <li>- Job status</li> <li>- Job descriptions</li> <li>- Job requirements</li> </ul> <b>[Exception 1]</b>
Exceptions:	No	Cause	System Response
	1	Job is not found in production database.	Redirect to not found page (404).
Business Rules:	<ul style="list-style-type: none"> <li>• The location of the job must be rendered in map view. If actors click to the map view, the system will redirect to work location in Google Map.</li> <li>• The system must keep track of the number of views of the job.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>• Actor's internet connection is available.</li> </ul>		

#### 2.2.1.04 Search enterprises

<b>ID and Name:</b>	<b>UC-04: Search enterprises</b>		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Guest, Member	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Seldom
Trigger:	The actor wants to search enterprises.		
Description:	This feature allows actor to search for enterprises according to the input keyword.		

Preconditions:	N/A		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays a list of enterprises that satisfies input keyword.</li> <li><b>Fail:</b> System inform “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn.”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Actor selects tab “Doanh nghiệp”.	System redirects to search enterprises page and show list all available enterprises.
	2	In search enterprises page, actor types keywords into search textbox.	System shows a hide suggestion text for search in Search textbox is “Tên công ty, từ khóa...”
	3	Actor clicks search icon or press “enter” key.	System shows list of enterprises that match with keywords. <b>[Exception 1]</b>
	4	Actor choices options in filters according to job catalog, location... and sorters.	System shows list of enterprises that match with actors requires. <b>[Exception 1]</b>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	Result is empty	System informs “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn.”.
Business Rules:	<ul style="list-style-type: none"> <li>Enterprises display for actor must in allow publish status and status of Enterprise's account must be active.</li> <li>The result enterprises are responded to the actor if the keyword is in the company name, tag properties of the enterprises.</li> <li>The default values of fields of sorter are: “Mới thành lập” and “Hiển thị 10”.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.05 Get enterprise detail

ID and Name:	UC-05: Get enterprise detail
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Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Guest, Member	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Seldom
Trigger:	The actor wants to view detail information of Job.		
Description:	This feature allows actor to view details such as short name, enterprise size, founded year, contact information, ...		
Preconditions:	<ul style="list-style-type: none"> <li>The enterprise public their profile.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Show detail information of enterprise.</li> <li><b>Fail:</b> Show not found page if the enterprise is not existed or Enterprise is not public their profile.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Click to enterprise detail's card. <b>[Alternative 1]</b>	<p>Redirect to enterprise detail information page. The website shows enterprise detail information such as:</p> <ul style="list-style-type: none"> <li>- Short name</li> <li>- Enterprise size</li> <li>- Founded year</li> <li>- Province</li> <li>- Specific address</li> <li>- Contact information</li> <li>- Description (if any)</li> </ul>
Alternative Flows:	Step	Actor Action	System Response
	1	In browser search box, actors enter a links of enterprise detail with format “grabwork.tech/search/enterprise/{enterpriseld }”	<p>Redirect to enterprise detail information page. The website shows enterprise detail information such as:</p> <ul style="list-style-type: none"> <li>- Short name</li> <li>- Enterprise size</li> <li>- Founded year</li> <li>- Province</li> <li>- Specific address</li> <li>- Contact information</li> <li>- Description (if any)</li> </ul> <b>[Exception 1]</b>
	2		

	No	Cause	System Response
Exceptions:	1	Enterprise is not found in production database.	Redirect to not found page (404).
Business Rules:	<ul style="list-style-type: none"> <li>The company instruction video must be rendered and can be play in enterprise detail information page.</li> <li>The number of images is displayed in gallery maximum is 8.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's Internet connection is available.</li> </ul>		

#### 2.2.1.06 Search candidates

ID and Name:	UC-06: Search candidates		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Guest, Member	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to search candidates.		
Description:	This feature allows actor to search for candidates according to the input keyword.		
Preconditions:	N/A		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays a list of candidates that satisfies input keyword.</li> <li><b>Fail:</b> System inform “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn.”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Actor selects tab “Ứng viên”.	System redirects to search candidates page and show list all available candidates.
	2	In search candidates page, actor types keywords into search textbox.	System shows a hide suggestion text for search in search textbox is “Tên ứng viên, từ khóa...”
	3	Actor clicks search icon or press “enter” key.	System shows list of candidates that match with keywords. <b>[Exception 1]</b>
	4	Actor choices options in filters according job catalog, job status... and sorters.	

			System shows list of candidates that match with actors requires. <b>[Exception 1]</b>
Alternative Flows:	<b>N/A</b>		
Exceptions:	No 1	Cause Result is empty	System Response System informs “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn.”.
Business Rules:	<ul style="list-style-type: none"> <li>Candidates display for actor must in allow publish status and status of candidate's account must be active.</li> <li>The result candidates are responded to the actor if the keyword is in the company name, tag properties of the candidates.</li> <li>If actor doesn't choices age options in a field of filters, system will response all values of this fields and field age is from 18 to 60 to the actor.</li> <li>The default values of fields of sorter are: “Tài khoản mới” and “Hiển thị 10”.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's Internet connection is available.</li> </ul>		

#### 2.2.1.07 Get candidate detail

ID and Name:	<b>UC-07: Get candidate detail</b>		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Guest, Member	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to view the detail profile of a candidate so then they can contact him.		
Description:	This feature allows actor to see full profile of a candidate such as name, job title, experiences...		
Preconditions:	<ul style="list-style-type: none"> <li>The candidate set his profile publish in the privacy setting</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Show detail information of candidate.</li> <li><b>Fail:</b> Show not found page if the candidate is not existed or candidate is not public their profile.</li> </ul>		
Normal Flow:	Step 1	Actor Action Click to candidate detail's card. <b>[Alternative 1]</b>	System Response Redirect to candidate detail information page. The website shows candidate detail information such as: <ul style="list-style-type: none"> <li>- Name</li> <li>- Job title</li> <li>- Address</li> <li>- Images</li> <li>- Video introduction</li> </ul>

			- Educations - Work experiences - Awards
	Step	Actor Action	System Response
Alternative Flows:	1	In browser search box, actors enter a links of candidate detail with format "grabwork.tech/search/candidate/{candidateId}"	Redirect to candidate detail information page. The website shows candidate detail information such as: - Name - Job title - Address - Images - Video introduction - Educations - Work experiences - Awards <b>[Exception 1]</b>
	2		
Exceptions:	No	Cause	System Response
	1	Candidate is not found in production database.	Redirect to not found page (404).
Business Rules:	<ul style="list-style-type: none"> <li>The introduction video of candidate can be played in profile page.</li> <li>The educations, work experiences and awards should be shown in a timeline that sorted by time.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.08 Log in

ID and Name:	UC-08: Log in		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Member	Secondary Actors:	N/A
Priority:	High	Frequency of Use:	Usually
Trigger:	The actor wants to authorize to the system so that he could access more functions as a member		
Description:	This feature allows actor to login to website		
Preconditions:	<ul style="list-style-type: none"> <li>Actor has created account in Grabwork application</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System redirects actor to dashboard home page</li> <li><b>Fail:</b> System informs the message corresponding error code</li> </ul>		
Normal Flow:	Step	Actor Action	System Response

	1	In login page, actor inputs phone number and clicks “Gửi mã xác thực” <b>[Alternative 1]</b>	System validates phone number and invoke 3 <sup>rd</sup> service send OTP number to actor's device. <b>[Exception 1, 2]</b>		
	2	Actor inputs OTP number and click “Đăng nhập”	System checks OTP number. If correct, redirect to dashboard home page. <b>[Exception 3, 4]</b>		
<b>Alternative 1:</b>					
Step		Actor Action			
1		In login page, actor selects tab “Đăng nhập với Google”.			
		System redirects to Google OAuth page			
2		User chooses Google account and login			
		System validates email address. If correct, redirect to dashboard home page. <b>[Exception 2]</b>			
No		Cause			
1		At least one input field doesn't match the constrain			
		System shows error message corresponding to the fail constrain.			
2		Email or phone number does not exist in the system			
		System shows error message: “Tài khoản chưa tồn tại trong hệ thống”.			
3		OTP number is expired			
		System shows error message: “Mã xác thực đã hết hiệu lực”.			
4		OTP number is not correct			
Business Rules:	<ul style="list-style-type: none"> <li>OTP input consists of 6 positive numbers and valid in 10 minutes.</li> <li>If actors input wrong OTP 5 times, their email/phone-number will be locked in 10 minutes.</li> </ul>				
Assumptions:	<ul style="list-style-type: none"> <li>Actor does not block Grabwork from sending OTP number</li> </ul>				

	<ul style="list-style-type: none"> <li>The OTP 3<sup>rd</sup> service is still working well</li> <li>Actor's internet connection is available</li> </ul>
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#### 2.2.1.09 Log out

ID and Name:	UC-09: Log out		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Member	Secondary Actors:	N/A
Priority:	High	Frequency of Use:	Usually
Trigger:	The actor wants to sign out current account so that he can switch to another account or become guest		
Description:	This feature allows actor to clear current season and become a guest		
Preconditions:	<ul style="list-style-type: none"> <li>User has authorized as a candidate or enterprise</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System redirects actor to login page</li> <li><b>Fail:</b> System informs “Có lỗi xảy ra. Vui lòng thử lại sau giây lát”</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In dashboard home page, actor clicks to “Đăng xuất” <a href="#">[Alternative 1]</a>	Call browser API to clear the local storage in client and sign out the Firebase season. <a href="#">[Exception 1]</a>
	2		Redirect actor to the login page.
Alternative Flows:	Step	Actor Action	System Response
	1	Actor click to avatar to open quick select dropdown	
	2	Actor clicks to “Đăng xuất”	Call browser API to clear the local storage in client and sign out the Firebase season. <a href="#">[Exception 1]</a>
Exceptions:	No	Cause	System Response
	1	Firebase sign out error	System informs “Có lỗi xảy ra. Vui lòng thử lại sau giây lát”
Business Rules:	<ul style="list-style-type: none"> <li>In addition to the JWT token information, other information related to the user must be deleted from the client when logging out.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available</li> </ul>		

#### 2.2.1.10 Update privacy

ID and Name:	UC-10: Update privacy
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Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Member	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Seldom
Trigger:	The actor wants to update privacy that allow to show their profile in public or not.		
Description:	This feature allows actor to update privacy that allow to show their profile in public or not.		
Preconditions:	<ul style="list-style-type: none"> <li>The actor has logged in to the system by enterprise or candidate account.</li> <li>The actor has activated their basic information.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system updates the privacy setting of the actor to database and shows the successful message in a popup dialog.</li> <li><b>Fail:</b> The system shows the specify error message in a popup dialog.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	The actor clicks on the “Cài đặt tài khoản” tab in the left most of the screen.	<p>The system shows a form which has these fields:</p> <ul style="list-style-type: none"> <li>Login email: disabled text field.</li> <li>Privacy status: a drop list to choose a privacy and have a current privacy as default value.</li> <li>Account status (upgraded or not).</li> <li>“Cập nhật”: a submit button send an update request to server.</li> </ul>
	2	The actor chooses an item in a privacy status drop list and clicks on “Cập nhật” button.	<p>The system saves the chosen item of the privacy status drop list to production database, then shows the successful message in a popup dialog.</p>
Alternative Flows:	N/A		
Exceptions:	N/A		
Business Rules:	<ul style="list-style-type: none"> <li>System shows a privacy setting of the actor in the drop list which current privacy status of the actor is the default value of the drop list.</li> <li>System shows a login email of the actor in the disabled text field.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.11 Get profile statistic

ID and Name:	UC-11: Get profile statistic
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Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Member	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Always
Trigger:	The actor wants to get their profile statistics		
Description:	This feature allows actor to visually observe the statistics surrounding their account.		
Preconditions:	<ul style="list-style-type: none"> <li>The actor has logged in to the system by enterprise or candidate account.</li> <li>Actor has already activated their basic information.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Display a page that full display of statistical information.</li> <li><b>Fail:</b> Show error page.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Actor clicks on “Tổng quan” tab in the left of the screen.	<p>Redirect to profile statistic page. The website shows profile statistic detail information such as:</p> <ul style="list-style-type: none"> <li>- Number of applications.</li> <li>- Number of interviews.</li> <li>- Number of messages.</li> <li>- Number of recommend jobs.</li> <li>- Chart to display profile view number in a range time.</li> </ul> <p><b>[Exception 1]</b></p>
Alternative Flows:	<b>N/A</b>		
Exceptions:	No	Cause	System Response
	1	User is not login.	System shows error message and redirect to login page.
Business Rules:	<ul style="list-style-type: none"> <li>System also shows all notification of the actor sorting by time.</li> <li>System also shows the chart that reflect the statistic in the last 3 or 6 months.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.12 Update business information

ID and Name:	<b>UC-12: Update business information</b>		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Enterprise	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to update some or all their information.		
Description:	This feature allows actor to update some or all their information, so that, their information must be more interest to attract candidates.		

Preconditions:	<ul style="list-style-type: none"> <li>The actor has logged in by an enterprise account.</li> <li>The actor has activated their basic information.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system update enterprise information in production database. Then, show successful message in pop-up.</li> <li><b>Fail:</b> Show specific error message in pop-up.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Clicks on "Thông tin cơ bản" tab. <a href="#">[Alternative 1]</a> <a href="#">[Alternative 2]</a> <a href="#">[Alternative 3]</a>	<p>System shows a form with these fields:</p> <ul style="list-style-type: none"> <li>- Short name: text input, required, max-length 100</li> <li>- Full company name: text input, required, max-length 500</li> <li>- Button for uploading logo image from local.</li> <li>- Founded year: number</li> <li>- Business sector (drop-list)</li> <li>- Enterprise size (drop-list)</li> <li>- Tax code: text input, required, max-length 20</li> <li>- Button for uploading business license front image from local, required.</li> <li>- Button for uploading business license back image from local.</li> </ul>
Alternative Flows:	2	The actor clicks to update button.	<p>System saves update and show message “Cập nhật thành công”.</p> <p><b>[Exception 1]</b></p>
	<b>Alternative 1:</b>		
Alternative Flows:	Step	Actor Action	System Response
	1	Clicks on "Hình ảnh, video & mô tả" tab.	<p>System shows a form with these fields:</p> <ul style="list-style-type: none"> <li>- Button for uploading image from local.</li> <li>- Button for uploading description video from local.</li> <li>- Search tag: dropdown list</li> </ul>

		- Description: text input, max-length 5000.
2	The actor clicks to update button.	System saves update and show message “Cập nhật thành công”. <b>[Exception 2]</b>

**Alternative 2:**

Step	Actor Action	System Response
1	Clicks on "Truyền thông và mạng xã hội" tab.	System shows a form with these fields: <ul style="list-style-type: none"> <li>- Website: text input</li> <li>- Phone contact: Phone-format text input, max-length 15.</li> <li>- Email contact: Email Address-format, max-length 500.</li> <li>- Facebook URL: text input.</li> <li>- Twitter URL: text input.</li> <li>- Instagram URL: text input.</li> <li>- LinkedIn URL: text input</li> </ul>
2	The actor clicks to update button.	System saves update and show message “Cập nhật thành công”. <b>[Exception 3]</b>

**Alternative 3:**

Step	Actor Action	System Response
1	Clicks on "Địa chỉ liên hệ" tab.	System shows a form with these fields: <ul style="list-style-type: none"> <li>- Province: drop-list, required.</li> <li>- District: drop-list, required.</li> <li>- Ward: drop-list, required.</li> <li>- Address: text input, required, max-length 200.</li> </ul>
2	The actor clicks to update button.	System saves update and show message “Cập nhật thành công”. <b>[Exception 4]</b> <b>[Exception 5]</b>

	No	Cause	System Response
Exceptions:	1	Enterprise logo is bigger than 10 MB	System informs “Vui lòng chọn hình ảnh có dung lượng dưới 10MB”
	2	Video introduction is longer than 30s	System informs “Vui lòng chọn video có chiều dài dưới 30s”
	3	Website input is not a URL format	System informs “Vui lòng nhập đúng định dạng đường dẫn”
	4	Ward is not belonged to District.	System informs “Ward is not belonged to District.”
	5	District is not belonged to Province.	System informs “District is not belonged to Province.”
Business Rules:	<ul style="list-style-type: none"> <li>• Ward must be belonged to District.</li> <li>• District must be belonged to Province.</li> <li>• Video duration is under 30 seconds</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>• Actor's internet connection is available.</li> </ul>		

#### 2.2.1.13 Get job list

ID and Name:	UC-13: Get job list		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Enterprise	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to get all their own jobs.		
Description:	This feature allows actor to view all job of his/her enterprise.		
Preconditions:	<ul style="list-style-type: none"> <li>• The actor has logged in by an enterprise account.</li> <li>• The actor has activated their basic information.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li>• <b>Success:</b> Show list of job's card overview.</li> <li>• <b>Fail:</b> Show error page.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Clicks on “Quản lý công việc” tab on the left screen.	Redirect to page that display the list of job's card overview that include some information: job title, company name, company logo, salary <b>[Exception 1]</b>
Alternative Flows:			
Exceptions:	No	Cause	System Response
	1	Enterprise is not existed in database.	System informs “Enterprise is not found.”
	2	The actor no job.	Show a “Tạo công việc mới” button.
Business Rules:	<ul style="list-style-type: none"> <li>• The actor can get their own jobs only.</li> <li>• The job card should have the status urgent or not</li> </ul>		

Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>
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#### 2.2.1.14 Create job

ID and Name:	UC-14: Create job		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Enterprise	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to create a new job.		
Description:	This feature allows actor to create a new job as public to attract candidates to apply to it.		
Preconditions:	<ul style="list-style-type: none"> <li>The actor has logged in by an enterprise account.</li> <li>The actor has activated their basic information.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System show a dialog with successful message when the job has been created successfully in database.</li> <li><b>Fail:</b> System show a dialog with specify error message.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Clicks on “Tạo công việc” on the left the screen. <b>[Alternative 1]</b>	System shows a form with these fields: - Title: text input, required, max-length 200 - Job type: dropdown list, required - Education level: dropdown list, required - Year experience: dropdown list, required - Job catalog: dropdown list, required - Gender: dropdown list, required - Number of recruits: number input - Is urgent: dropdown list, required - Payment method: dropdown list, required - Salary min: number input. - Salary max: number input. - Description: text input, max-length 3000. - Detail information: text input, max-length 3000. - Detail requirements: text input, max-length 3000 - Keywords: dropdown list, required, max 3 elements.

			<ul style="list-style-type: none"> <li>- Is work abroad: drop-list, required.</li> <li>- Province: drop-list, required.</li> <li>- District: drop-list, required.</li> <li>- Ward: drop-list, required.</li> <li>- Address: text input, required, max-length 200.</li> </ul> <p><b>[Exception 1]</b></p>
Alternative Flows:	Step	Actor Action	<p><b>System Response</b></p> <p>1 The actor choose “Nước ngoài” in “Vị Trí” drop-list.</p> <p>System shows a form with these fields:</p> <ul style="list-style-type: none"> <li>- Title: text input, required, max-length 200.</li> <li>- Job type: drop-list, required.</li> <li>- Education level min: drop-list.</li> <li>- Year experience require: drop-list</li> <li>- Job catalog: drop-list, required.</li> <li>- Gender require drop-list.</li> <li>- Number of recruits: number input.</li> <li>- Is urgent: drop-list, required.</li> <li>- Payment method: drop-list, required.</li> <li>- Salary min: number input.</li> <li>- Salary max: number input.</li> <li>- Description: text input, max-length 3000.</li> <li>- Details: list of text inputs, each index put in a line with – char at the first.</li> <li>- More requires list of text inputs, each index put in a line with – char at the first.</li> <li>- Keyword: drop-list, max 3 elements.</li> <li>- Is work abroad: drop-list, required.</li> <li>- Country: drop-list, required.</li> </ul> <p><b>[Exception 1]</b></p>
Exceptions:	No	Cause	<b>System Response</b>
	1	Existing invalid input.	System informs a specify error message in a popup dialog.
Business Rules:	<ul style="list-style-type: none"> <li>Free Account is just able to create 3 or less Jobs.</li> <li>SalaryMax &amp; SalayMin cannot be null at same time.</li> <li>SalaryMin must be smaller than SalaryMax.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

## 2.2.1.15 Update job

ID and Name:	UC-15: Update job		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Enterprise	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to update detail information of their job.		
Description:	This feature allows actor to view and update detail information of their job.		
Preconditions:	<ul style="list-style-type: none"> <li>• The actor has activated their profile basic information.</li> <li>• The actor currently in “Quản lý công việc” in the left tab of Dashboard page’s screen.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li>• <b>Success:</b> System show a dialog with successful message when the job has been updated successfully in database.</li> <li>• <b>Fail:</b> System show a dialog with specify error message.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	<p>The actor clicks on the edit button in the last column of the Job’s detail row.</p> <p><a href="#">[Alternative 1]</a></p> <p><a href="#">[Alternative 2]</a></p>	<p>System redirects to update job page with a form with these fields:</p> <ul style="list-style-type: none"> <li>- Title: text input, required, max-length 200.</li> <li>- Job type: drop-list, required.</li> <li>- Education level min: drop-list.</li> <li>- Year experience require: drop-list.</li> <li>- Job catalog: drop-list, required.</li> <li>- Gender: required, drop-list.</li> <li>- Number of recruits: number input.</li> <li>- Is urgent: drop-list, required.</li> <li>- Payment method: drop-list, required.</li> <li>- Salary min: number input.</li> <li>- Salary max: number input.</li> <li>- Description: text input, max-length 3000.</li> <li>- Details: list of text inputs, each index put in a line with – char at the first.</li> <li>- More requires list of text inputs, each index put in a line with – char at the first.</li> </ul>

			<ul style="list-style-type: none"> <li>- Keyword: drop-list, max 3 elements.</li> <li>- Is work abroad: drop-list, required.</li> <li>- Province: drop-list, required.</li> <li>- District: drop-list, required.</li> <li>- Ward: drop-list, required.</li> <li>- Address: text input, required, max-length 200.</li> </ul>
	2	The actor clicks on “Xem trước” button.	<p>System shows a preview dialog with full job detail information.</p> <p><b>[Exception 1]</b></p>
	3	The actor clicks on “Cập nhật” button on the preview dialog. <b>[Alternative 2]</b>	<p>System will create and save data of the job to production database then show a successful message on popup dialog.</p>
Alternative Flows:		Step	Actor Action
		1	<p>The actor choose “Nước ngoài” in “Vị Trí” drop-list.</p> <p>System shows a form with these fields:</p> <ul style="list-style-type: none"> <li>- Title: text input, required, max-length 200.</li> <li>- Job type: drop-list, required.</li> <li>- Education level min: drop-list.</li> <li>- Year experience require: drop-list</li> <li>- Job catalog: drop-list, required.</li> <li>- Gender: required, drop-list.</li> <li>- Number of recruits: number input.</li> <li>- Is urgent: drop-list, required.</li> <li>- Payment method: drop-list, required.</li> <li>- Salary min: number input.</li> <li>- Salary max: number input.</li> <li>- Description: text input, max-length 3000.</li> <li>- Details: list of text inputs, each index put in a line with – char at the first.</li> </ul>

			<ul style="list-style-type: none"> <li>- More requires list of text inputs, each index put in a line with – char at the first.</li> <li>- Keyword: drop-list, max 3 elements.</li> <li>- Is work abroad: drop-list, required.</li> <li>- Country: drop-list, required.</li> </ul>
	2	The actor clicks on “Hủy” button on the preview dialog.	Preview dialog is hidden, and the update job form is focused again.
Exceptions:	No	Cause	System Response
	1	Existing invalid input.	System informs a specify error message in a popup dialog.
Business Rules:	<ul style="list-style-type: none"> <li>• SalaryMax &amp; SalayMin cannot be null at same time.</li> <li>• SalaryMin must be smaller than SalaryMax.</li> <li>• Job just only can be updated by Enterprise that create it.</li> <li>• Job catalog exists and has not deleted yet.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>• Actor's internet connection is available.</li> </ul>		

#### 2.2.1.16 Get applicant list

ID and Name:	UC-16: Get applicant list								
Created By:	TienNLN	Date Created:	06/06/2022						
Primary Actor:	Enterprise	Secondary Actors:	N/A						
Priority:	Normal	Frequency of Use:	Often						
Trigger:	The actor wants to get all applicants of their jobs.								
Description:	This feature allows actor to get all applicants of their jobs with detailed information (interview schedules, job detail, candidate detail...).								
Preconditions:	<ul style="list-style-type: none"> <li>• The actor has activated their profile basic information.</li> <li>• The actor has some jobs.</li> <li>• The actor currently in “Danh sách ứng tuyển” in the left tab of Dashboard page's screen.</li> </ul>								
Post-conditions:	<ul style="list-style-type: none"> <li>• <b>Success:</b> Show basic information of each job applicants as card view.</li> <li>• <b>Fail:</b> Show error animation screen.</li> </ul>								
Normal Flow:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #6B8E23; color: white;"> <th>Step</th> <th>Actor Action</th> <th>System Response</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view its applicants. <b>[Alternative 1]</b></td> <td></td> </tr> </tbody> </table>	Step	Actor Action	System Response	1	The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view its applicants. <b>[Alternative 1]</b>			
Step	Actor Action	System Response							
1	The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view its applicants. <b>[Alternative 1]</b>								

			<p>System shows basic information of each job applicants of the job has chosen as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains 2 buttons for enterprise to apply or reject the job applicants.</p> <p><b>[Exception 1]</b></p>
Alternative Flows:	Step	Actor Action	System Response
	1	The actor choose an item in drop list at the rightmost.	<p>System shows basic information of each job applicants of the job has chosen with the status that equals to value of the item in a drop list as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains 2 buttons for enterprise to apply or reject the job applicants.</p> <p><b>[Exception 1]</b></p>
Exceptions:		No	Cause
		1	The job has no applicant.
Business Rules:		<ul style="list-style-type: none"> <li>• The actor can get job applicants of their job only.</li> <li>• System shows applicant details and basic information of candidates and events around the applicant.</li> </ul>	
Assumptions:		<ul style="list-style-type: none"> <li>• Actor's internet connection is available.</li> </ul>	

#### 2.2.1.17 Update profile round result

<b>ID and Name:</b>	<b>UC-17: Update profile round result</b>		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Enterprise	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to approve or reject the applicant belong to their job.		

Description:	This feature allows actor to approve or reject the applicant belong to their job.		
Preconditions:	<ul style="list-style-type: none"> <li>The actor has activated their profile basic information.</li> <li>The actor has some jobs.</li> <li>The actor currently in “Danh sách ứng tuyển” in the left tab of Dashboard page’s screen.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System updates status of the job applicants and save it to production database, then show a successful message on a popup dialog.</li> <li><b>Fail:</b> System shows specify error message on a popup dialog.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	<p>The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view its applicants.</p> <p><b>[Alternative 1]</b></p>	<p>System shows basic information of each job applicants of the job has chosen as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains 2 buttons for enterprise to apply or reject the job applicants.</p> <p><b>[Exception 1]</b></p>
	2	<p>The actor clicks on the check-icon button in the job applicant’s card view.</p> <p><b>[Alternative 2]</b></p>	<p>System shows confirmation popup dialog with message “Bạn có muốn phê duyệt hồ sơ này?” 2 options: “Có” and “Không”.</p>
Alternative Flows:	3	The actor clicks on “Có” button.	<p>System update status of the job applicants to “PASS_PROFILE_ROUND” and save it to production database, then informs “Đã thêm hồ sơ vào danh sách phỏng vấn”.</p>
	Step	Actor Action	System Response

	1	The actor choose an item in drop list at the rightmost.	<p>System shows basic information of each job applicants of the job has chosen with the status that equals to value of the item in a drop list as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains 2 buttons for enterprise to apply or reject the job applicants.</p> <p><b>[Exception 1]</b></p>
	2	The actor clicks on the x-icon button in the job applicant's card view. <b>[Alternative 3]</b>	System shows confirmation popup dialog with message "Bạn có muốn từ chối hồ sơ này?" 2 options: "Có" and "Không".
	3	The actor clicks on "Có" button.	System update status of the job applicants to "DROP_PROFILE_ROUND" and save it to production database, then informs "Đã từ chối hồ sơ".
Exceptions:	No	Cause	System Response
	1	The job has no applicant.	System informs "Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn. Vui lòng thử lại."
Business Rules:	<ul style="list-style-type: none"> <li>The actor can approve or reject job applicants of their job only.</li> <li>The job applicants must be "PROCESSING_PROFILE_ROUND".</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.18 Add interview schedules

ID and Name:	UC-18: Add interview schedules		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Enterprise	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to add interview schedules for job applicants of their job.		

Description:	This feature allows actor to remove existing interview schedules and add new interview schedules for job applicants of their job.		
Preconditions:	<ul style="list-style-type: none"> <li>The actor has activated their profile basic information.</li> <li>The actor has approved at least 1 job applicant of their jobs.</li> <li>The actor currently in “Danh sách ứng tuyển” in the left tab of Dashboard page’s screen.</li> <li>The target job applicant has not been created any interview schedules yet.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Show successful message in a popup dialog and refresh data of candidate profile card view.</li> <li><b>Fail:</b> Show specify error message in a popup dialog.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	<p>The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view the profile of candidate who has applied for it.</p> <p><b>[Alternative 1]</b></p>	<p>System shows some basic information of candidate and job applicants as card view with these fields:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains a drop list for enterprise choose action for the job applicant.</p>
	2	The actor chooses a “Thêm lịch phỏng vấn” item in a rightmost drop list.	System shows a dialog with a button with label beside “Thêm lịch phỏng vấn (tối đa 2)”, a “Cập nhật” button and “Hủy” button.
	3	The actor clicks on a button with label beside “Thêm lịch phỏng vấn (tối đa 2)” 2 times.	2 lines of date-chooser will appear with the delete icon at the rightmost.

	4	The actor clicks on a “Cập nhật” button. <b>[Alternative 1]</b>	The system will replace all existing interview schedules of this job applicants with all new, then show a successful dialog.
Alternative Flows:	Step	Actor Action	System Response
	1	The actor choose an item in drop list at the rightmost.	<p>System shows basic information of each job applicants of the job has chosen with the status that equals to value of the item in a drop list as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains 2 buttons for enterprise to apply or reject the job applicants.</p> <p><b>[Exception 1]</b></p>
	2	The actor clicks on a “Hủy” button.	The “Lịch phỏng vấn” dialog is hidden.
Exceptions:	No	Cause	System Response
	1	The job has no applicant.	System informs “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn. Vui lòng thử lại.”
Business Rules:	<ul style="list-style-type: none"> <li>The interview schedules' time must be after the current time.</li> <li>The job applicants must belong to job of this actor.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.19 Create meeting room

ID and Name:	UC-19: Create meeting room		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Enterprise	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to create a meeting room for their job applicant.		
Description:	This feature allows actor to generate a link of a meeting room for their job applicant.		
Preconditions:	<ul style="list-style-type: none"> <li>The actor has activated their profile basic information.</li> </ul>		

	<ul style="list-style-type: none"> <li>The actor has some jobs.</li> <li>The actor currently in “Danh sách ứng tuyển” in the left tab of Dashboard page’s screen.</li> </ul>						
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System generate a meeting room link and show successful message on a popup dialog.</li> <li><b>Fail:</b> System show a specify error message on a popup dialog.</li> </ul>						
Normal Flow:	<table border="1"> <thead> <tr> <th>Step</th><th>Actor Action</th><th>System Response</th></tr> </thead> <tbody> <tr> <td>1</td><td> <p>The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view the profile of candidate who has applied for it.</p> <p><b>[Alternative 1]</b></p> </td><td> <p>System shows some basic information of candidate and job applicants as card view with these fields:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains a drop list for enterprise choose action for the job applicant.</p> </td></tr> </tbody> </table>	Step	Actor Action	System Response	1	<p>The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view the profile of candidate who has applied for it.</p> <p><b>[Alternative 1]</b></p>	<p>System shows some basic information of candidate and job applicants as card view with these fields:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains a drop list for enterprise choose action for the job applicant.</p>
Step	Actor Action	System Response					
1	<p>The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view the profile of candidate who has applied for it.</p> <p><b>[Alternative 1]</b></p>	<p>System shows some basic information of candidate and job applicants as card view with these fields:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains a drop list for enterprise choose action for the job applicant.</p>					
<table border="1"> <tbody> <tr> <td>2</td><td>The actor chooses a “Tạo phòng họp” item in a rightmost drop list.</td><td>System shows a dialog with a button with label beside “Thêm lịch phòng vấn (tối đa 2)”, a “Cập nhật” button and “Hủy” button.</td></tr> </tbody> </table>	2	The actor chooses a “Tạo phòng họp” item in a rightmost drop list.	System shows a dialog with a button with label beside “Thêm lịch phòng vấn (tối đa 2)”, a “Cập nhật” button and “Hủy” button.				
2	The actor chooses a “Tạo phòng họp” item in a rightmost drop list.	System shows a dialog with a button with label beside “Thêm lịch phòng vấn (tối đa 2)”, a “Cập nhật” button and “Hủy” button.					
Alternative Flows:	<table border="1"> <thead> <tr> <th>Step</th><th>Actor Action</th><th>System Response</th></tr> </thead> <tbody> <tr> <td>1</td><td>The actor choose an item in drop list at the rightmost.</td><td> <p>System shows basic information of each job applicants of the job has chosen with the status that equals to value of the item in a drop list as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> </ul> </td></tr> </tbody> </table>	Step	Actor Action	System Response	1	The actor choose an item in drop list at the rightmost.	<p>System shows basic information of each job applicants of the job has chosen with the status that equals to value of the item in a drop list as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> </ul>
Step	Actor Action	System Response					
1	The actor choose an item in drop list at the rightmost.	<p>System shows basic information of each job applicants of the job has chosen with the status that equals to value of the item in a drop list as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> </ul>					

			<ul style="list-style-type: none"> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains 2 buttons for enterprise to apply or reject the job applicants.</p> <p><b>[Exception 1]</b></p>
Exceptions:	No	Cause	System Response
	1	The job has no applicant.	System informs “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn. Vui lòng thử lại.”
Business Rules:	<ul style="list-style-type: none"> <li>• The job applicants must belong to job of this actor.</li> <li>• The job applicant's status must be “PASS_PROFILE_ROUND”.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>• Actor's internet connection is available.</li> </ul>		

#### 2.2.1.20 Update interview result

ID and Name:	UC-20: Update interview result		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	Enterprise	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to approve or reject the applicant which is in the interview process belongs to their job.		
Description:	This feature allows actors to approve or reject the applicant which is in the interview process belongs to their job.		
Preconditions:	<ul style="list-style-type: none"> <li>• The actor has activated their profile basic information.</li> <li>• The actor has some jobs.</li> <li>• The actor currently in “Danh sách ứng tuyển” in the left tab of Dashboard page's screen.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li>• <b>Success:</b> System generate a meeting room link and show successful message on a popup dialog.</li> <li>• <b>Fail:</b> System show a specify error message on a popup dialog.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	<p>The actor clicks on the drop list “Chọn công việc” or clicks on button “Chọn công việc”, then choose the job that want to view its applicants.</p> <p><b>[Alternative 1]</b></p>	<p>System shows basic information of each job applicants of the job has chosen as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul>

			Moreover, the card view contains 2 buttons for enterprise to apply or reject the job applicants. <b>[Exception 1]</b>
	2	The actor chooses a “Thông báo đậu” item in a rightmost drop list. <b>[Alternative 2]</b>	System shows confirmation popup dialog with message “Bạn có muốn nhận ứng viên này vào làm việc?” 2 options: “Có” and “Không”.
	3	The actor clicks on “Có” button.	System update status of the job applicants to “PASS_INTERVIEW_ROUND” and save it to production database, then informs “Đã cập nhật thông tin ứng viên đậu phỏng vấn”.
Alternative Flows:	Step	Actor Action	System Response
	1	The actor choose an item in drop list at the rightmost.	<p>System shows basic information of each job applicants of the job has chosen with the status that equals to value of the item in a drop list as card view:</p> <ul style="list-style-type: none"> <li>- Candidate avatar.</li> <li>- Candidate name.</li> <li>- Current job.</li> <li>- Time since applied time.</li> </ul> <p>Moreover, the card view contains 2 buttons for enterprise to apply or reject the job applicants.</p> <p><b>[Exception 1]</b></p>
	2	The actor chooses a “Thông báo rớt” item in a rightmost drop list. <b>[Alternative 3]</b>	System shows confirmation popup dialog with message “Bạn có muốn đánh rớt ứng viên này?” 2 options: “Có” and “Không”.

	3	The actor clicks on “Có” button.	System update status of the job applicants to “DROP_INTERVIEW_ROUND” and save it to production database, then informs “Đã cập nhật thông tin ứng viên rớt phỏng vấn”.
Exceptions:	No	Cause	System Response
	1	The job has no applicant.	System informs “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn. Vui lòng thử lại.”
Business Rules:	<ul style="list-style-type: none"> <li>The actor can approve or reject job applicants of their job only.</li> <li>The job applicants must be “PASS_PROFILE_ROUND”.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.21 Get shortlist

ID and Name:	UC-21: Get shortlist								
Created By:	TienNLN	Date Created:	06/06/2022						
Primary Actor:	Enterprise	Secondary Actors:	N/A						
Priority:	Normal	Frequency of Use:	Often						
Trigger:	The actor wants to get all list of interviews.								
Description:	This feature allows actors to get all job applicants in interview process								
Preconditions:	<ul style="list-style-type: none"> <li>The actor has activated their profile basic information.</li> <li>The actor has some jobs.</li> <li>The actor currently in Dashboard page's screen.</li> </ul>								
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System shows all the list of job applicants and related details.</li> <li><b>Fail:</b> System shows a specify error message in a popup dialog.</li> </ul>								
Normal Flow:	<table border="1"> <thead> <tr> <th>Step</th> <th>Actor Action</th> <th>System Response</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>The actor clicks on the “Danh sách phỏng vấn” tab in the left most of the screen.</td> <td> <p>System shows a default screen with:</p> <ul style="list-style-type: none"> <li>Drop list shows a full list of job applicants of this actor and allows actor to choose a job to view its details.</li> <li>“Chọn công việc” button is another way to see the list that inside the drop list above.</li> <li>Search box to search all job applicants that is match with the input in search box.</li> </ul> </td> </tr> </tbody> </table>	Step	Actor Action	System Response	1	The actor clicks on the “Danh sách phỏng vấn” tab in the left most of the screen.	<p>System shows a default screen with:</p> <ul style="list-style-type: none"> <li>Drop list shows a full list of job applicants of this actor and allows actor to choose a job to view its details.</li> <li>“Chọn công việc” button is another way to see the list that inside the drop list above.</li> <li>Search box to search all job applicants that is match with the input in search box.</li> </ul>		
Step	Actor Action	System Response							
1	The actor clicks on the “Danh sách phỏng vấn” tab in the left most of the screen.	<p>System shows a default screen with:</p> <ul style="list-style-type: none"> <li>Drop list shows a full list of job applicants of this actor and allows actor to choose a job to view its details.</li> <li>“Chọn công việc” button is another way to see the list that inside the drop list above.</li> <li>Search box to search all job applicants that is match with the input in search box.</li> </ul>							

			- Drop list to filter job applicants by its status.
Alternative Flows:	<b>N/A</b>		
Exceptions:	No 1	Cause The job applicant has no profile being in the interview process and match the chosen item in the status drop list.	System Response System informs “Rất tiếc chúng tôi không tìm thấy kết quả theo yêu cầu của bạn. Vui lòng thử lại.”
Business Rules:	<ul style="list-style-type: none"> <li>Each index in drop list of job applicants include the job name and the number of candidate's profile that is being in the interview process.</li> <li>System allows to view job applicant if it has any profile is:           <ul style="list-style-type: none"> <li>PASS_PROFILE_ROUND</li> <li>DROP_INTERVIEW_ROUND</li> <li>PASS_INTERVIEW_ROUND</li> </ul> </li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.22 Update resume profile

ID and Name:	UC-22: Update resume profile		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Candidate	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to update resume profile.		
Description:	This feature allows actor to update information of resume profile include: basic information, social media, image, video, educations, experiences, awards.		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into website with candidate role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system shows message: “Cập nhật thành công”.</li> <li><b>Fail:</b> The system shows error message: “Vui lòng điền...”</li> </ul>		
Normal Flow:	Step 1	Actor Action In profile page, actor selects tab “Cơ bản”. <a href="#">[Alternative 1, 2, 3, 4, 5]</a>	System Response System shows a “Thông tin cơ bản” form with these fields: <ul style="list-style-type: none"> <li>Avatar: image file input, less than 10 MB, jpg or png format.</li> <li>Full name: text input, required, max limit length is 200.</li> <li>Job title: text input, required, max limit length is 300.</li> <li>Job catalog: select input, required.</li> <li>Job status: select input, required, options: “Đang tìm việc” or “Đã có việc làm”.</li> </ul>

			<ul style="list-style-type: none"> <li>- Education level: select input, required, options: “Đại học”, “Phổ thông” ...</li> <li>- Gender: date input, required, options: “Nam”, “Nữ” or “Khác”.</li> <li>- Ngày sinh: date input, required, format: dd-mm-yyyy.</li> <li>- Address city: select input.</li> <li>- Resume: file input, less than 10 MB, pdf format.</li> <li>- Language: select input, options: “Tiếng Anh”, “Tiếng Nhật” ...</li> </ul>									
	2	The actor clicks to “Lưu” button.	<p>System saves update and show message “Cập nhật thành công”.</p> <p>[Exception 1, 2, 3, 4, 5, 6, 7]</p>									
<b>Alternative Flows:</b>		<b>Alternative 1:</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #4f81bd; color: white;"> <th style="padding: 5px;">Step</th><th style="padding: 5px;">Actor Action</th><th style="padding: 5px;">System Response</th></tr> </thead> <tbody> <tr> <td style="padding: 5px;">1</td><td style="padding: 5px;">In profile page, actor selects tab “Mạng xã hội”.</td><td style="padding: 5px;"> <p>System shows a “Truyền thông và mạng xã hội” form with these fields:</p> <ul style="list-style-type: none"> <li>- Phone number: number input, max limit length is 15.</li> <li>- Email: text input, max limit length is 500.</li> <li>- Facebook: text input</li> <li>- Twitter: text input</li> <li>- Instagram: text input</li> <li>- Linkedin: text input</li> <li>- Website: text input</li> </ul> </td></tr> <tr> <td style="padding: 5px;">2</td><td style="padding: 5px;">The actor clicks to “Lưu” button.</td><td style="padding: 5px;"> <p>System saves update and show message “Cập nhật thành công”.</p> <p>[Exception 8, 9]</p> </td></tr> </tbody> </table>		Step	Actor Action	System Response	1	In profile page, actor selects tab “Mạng xã hội”.	<p>System shows a “Truyền thông và mạng xã hội” form with these fields:</p> <ul style="list-style-type: none"> <li>- Phone number: number input, max limit length is 15.</li> <li>- Email: text input, max limit length is 500.</li> <li>- Facebook: text input</li> <li>- Twitter: text input</li> <li>- Instagram: text input</li> <li>- Linkedin: text input</li> <li>- Website: text input</li> </ul>	2	The actor clicks to “Lưu” button.	<p>System saves update and show message “Cập nhật thành công”.</p> <p>[Exception 8, 9]</p>
Step	Actor Action	System Response										
1	In profile page, actor selects tab “Mạng xã hội”.	<p>System shows a “Truyền thông và mạng xã hội” form with these fields:</p> <ul style="list-style-type: none"> <li>- Phone number: number input, max limit length is 15.</li> <li>- Email: text input, max limit length is 500.</li> <li>- Facebook: text input</li> <li>- Twitter: text input</li> <li>- Instagram: text input</li> <li>- Linkedin: text input</li> <li>- Website: text input</li> </ul>										
2	The actor clicks to “Lưu” button.	<p>System saves update and show message “Cập nhật thành công”.</p> <p>[Exception 8, 9]</p>										
<b>Alternative 2:</b>		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #4f81bd; color: white;"> <th style="padding: 5px;">Step</th><th style="padding: 5px;">Actor Action</th><th style="padding: 5px;">System Response</th></tr> </thead> <tbody> <tr> <td style="padding: 5px;">1</td><td style="padding: 5px;">In profile page, actor selects tab “Hình ảnh, video”.</td><td style="padding: 5px;"> <p>System shows a “Hình ảnh và mô tả” form with these fields:</p> </td></tr> </tbody> </table>		Step	Actor Action	System Response	1	In profile page, actor selects tab “Hình ảnh, video”.	<p>System shows a “Hình ảnh và mô tả” form with these fields:</p>			
Step	Actor Action	System Response										
1	In profile page, actor selects tab “Hình ảnh, video”.	<p>System shows a “Hình ảnh và mô tả” form with these fields:</p>										

		<ul style="list-style-type: none"> <li>- Image: image file input, less than 10 MB, jpg or png format.</li> <li>- Video: video input, less than 50 MB, m4v or mp4 or webm.</li> <li>- Skill: select input.</li> <li>- Description: text input, max limit length is 500.</li> </ul>
2	The actor clicks to “Lưu” button.	System saves update and show message “Cập nhật thành công”.

**Alternative 3:**

Step	Actor Action	System Response
1	In profile page, actor selects tab “Học tập”.	System shows a “Lộ trình học tập” list.
2	The actor clicks to “Thêm trường học” button.	<p>System shows a “Thêm trường học” form section with these fields:</p> <ul style="list-style-type: none"> <li>- School name: text input, required, max limit length is 500.</li> <li>- Major: text input, required.</li> <li>- Degree: select input, required, option: “Cử nhân”, “Thạc sĩ”,....</li> <li>- Time start: date input, required.</li> <li>- Time end: date input, required..</li> <li>- Description: text input, required, max length limit is 1000.</li> </ul>
3	The actor clicks to “Thêm” button.	System adds this education information to “Lộ trình học tập” list and back to “Học tập” tabs.
4	The actor clicks to “Lưu” button.	<p>System saves update and show message “Cập nhật thành công”.</p> <p style="color: red;"><b>[Exception 10, 11, 12, 13, 14]</b></p>

**Alternative 4:**

Step	Actor Action	System Response
1	In profile page, actor selects tab “Kinh nghiệm”.	

		System shows a “Kinh nghiệm làm việc” list.
2	The actor clicks to “Thêm kinh nghiệm” button.	<p>System shows a “Thêm kinh nghiệm” form section with these fields:</p> <ul style="list-style-type: none"> <li>- Job name: text input, required, max limit length is 300.</li> <li>- Company name: text input, required, max limit length is 500.</li> <li>- Time start: date input, required.</li> <li>- Time end: date input, required...</li> <li>- Description: text input, required, max length limit is 1000.</li> <li>- Reference Name: text input, max limit length is 200.</li> <li>- Reference Phone: text input, max limit length is 15.</li> </ul>
3	The actor clicks to “Thêm” button.	System adds this experience information to “Kinh nghiệm làm việc” list and back to “Kinh nghiệm” tabs.
4	The actor clicks to “Lưu” button.	<p>System saves update and show message “Cập nhật thành công”.</p> <p><b>[Exception 14, 15, 16]</b></p>

#### Alternative 5:

Step	Actor Action	System Response
1	In profile page, actor selects tab “Thành tích”.	System shows a “Các thành tích và giải thưởng” list.
2	The actor clicks to “Thêm thành tích” button.	<p>System shows a “Thêm thành tích” form section with these fields:</p> <ul style="list-style-type: none"> <li>- Award name: text input, required, max limit length is 300.</li> <li>- Award Url: text input, required.</li> <li>- Received time: date input, required.</li> </ul>

		- Description: text input, required, max length limit is 1000.	
	3	The actor clicks to “Thêm” button.	System adds this experience information to “Các thành tích và giải thưởng” list and back to “Thành tích tabs.”
	4	The actor clicks to “Lưu” button.	System saves update and show message “Cập nhật thành công”. <b>[Exception 17, 18, 19]</b>
Exceptions:	No	Cause	System Response
	1	Name is null.	System shows error message: “Vui lòng điền tên đầy đủ”.
	2	Job/position is null.	System shows error message: “Vui lòng điền công việc hoặc chức vụ hiện tại”.
	3	Job catalog is null.	System shows error message: “Vui lòng chọn ngành nghề”.
	4	Job status is null.	System shows error message: “Vui lòng chọn tình trạng công việc”.
	5	Education level is null.	System shows error message: “Vui lòng chọn trình độ học vấn”.
	6	Birthday is null.	System shows error message: “Vui lòng chọn ngày sinh”.
	7	CV is not pdf.	System shows error message: “Vui lòng chọn file pdf”.
	8	Phone number is wrong format.	System shows error message: “Vui lòng nhập đúng định dạng số điện thoại”.
	9	Email is wrong format.	System shows error message: “Vui lòng nhập đúng định dạng email”.
	10	School name is null.	System shows error message: “Vui lòng điền tên trường”.
	11	Major is null.	System shows error message: “Vui lòng điền tên ngành”.
	12	Time start is null.	System shows error message: “Vui lòng chọn thời gian bắt đầu”.
	13	Time end is null.	System shows error message: “Vui lòng chọn thời gian kết thúc”.
	14	Description is null.	System shows error message: “Vui lòng điền mô tả”.

	15	Company name is null.	System shows error message: "Vui lòng điền tên công việc".
	16	Job name is null.	System shows error message: "Vui lòng điền tên công ty".
	17	Award name is null.	System shows error message: "Vui lòng điền tên thành tích".
	18	Link award is null.	System shows error message: "Vui lòng điền đường dẫn tới chứng chỉ".
	19	Receiving time is null.	System shows error message: "Vui lòng chọn thời gian nhận chứng chỉ".
Business Rules:	<ul style="list-style-type: none"> <li>“Gender” is required field, but if actor doesn’t choice, system will set default values is “other”.</li> <li>“Education level”, “Language”, “Skill” are select input fields, actor choices options from system. If target options of actor are not exists. Other is a target option of actor.</li> <li>Potential customers are Vietnamese, so phone number’s format has length is 10 or 11.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor’s internet connection is available.</li> <li>Actor knows their information.</li> </ul>		

#### 2.2.1.23 Pick interview time

ID and Name:	UC-23: Pick interview time		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Candidate	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to pick interview time.		
Description:	This feature allows actor to choose interview time options that enterprise schedule.		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into website with candidate role.</li> <li>Actor applied jobs and was allowed profile by enterprise.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system shows message: “Chọn lịch thành công”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In applicant page, actor click into schedule option of job that actor want to interview.	System shows a “Xác nhận thời gian phỏng vấn” confirm form.
	2	Actor clicks into “Có” button.	System shows a message is “Chọn lịch thành công”, system will update time interview and send notify for enterprise.
Alternative Flows:	N/A		
Exceptions:	N/A		

Business Rules:	<ul style="list-style-type: none"> <li>If actor doesn't pick schedule, and this schedule is time out. So, system will not display this schedule for actor.</li> <li>If actor picks one of schedule options, remaining option still display. But actor cannot pick continues.</li> </ul>
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>

#### 2.2.1.24 Apply job

ID and Name:	UC-24: Apply job		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Candidate	Secondary Actors:	N/A
Priority:	High	Frequency of Use:	Often
Trigger:	The actor wants to apply for a job so that he can join the interview with enterprise		
Description:	This feature allows actor to apply for a job to start recruitment process		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into website with candidate role.</li> <li>Actor has updated his detail profile</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System inform message “Ứng tuyển công việc thành công”</li> <li><b>Fail:</b> System inform error message based on the error code</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In the job detail page, actor click to apply for a job.	System shows a confirm modal.
	2	Actor clicks to “Xác nhận” in the confirm modal.	System shows successfully message and send push notification to enterprise. <b>[Exception 1]</b>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The job is enough hired candidate	System shows error “Công việc này đã tuyển đủ người”
Business Rules:	<ul style="list-style-type: none"> <li>Candidate only applies for a job in an enterprise at the same time</li> <li>If candidate has applied for a job, he cannot apply that job again</li> </ul>		
Assumptions:	Actor's internet connection is available.		

#### 2.2.1.25 Export resume

ID and Name:	UC-25: Export resume		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Candidate	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Sometime

Trigger:	The actor wants to export candidate profile to a PDF file		
Description:	This feature allows actor to export profile to resume in PDF		
Preconditions:	<ul style="list-style-type: none"> <li>Actor has login as a candidate</li> <li>Actor has update detail information for profile</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Download a pdf file to the browser of actor</li> <li><b>Fail:</b> System inform “Có lỗi xảy ra. Vui lòng thử lại sau giây lát”</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In candidate page, actor click to export resume button	System shows a modal for user choosing templates to export
	2	Actor chooses a template to download	System generate PDF file from candidate profile. After that, download that file to browser client. <b>[Exception 1]</b>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	Profile is not filling enough basic information	System inform “Vui lòng cập nhật thêm các thông tin cơ bản để có thể hoàn thiện resume”
Business Rules:	<ul style="list-style-type: none"> <li>The resume should be summary in one or two pages</li> <li>The size of PDF file is under 50 MB.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.26 Do tax calculation

ID and Name:	UC-26: Do tax calculation		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Candidate	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Sometime
Trigger:	The actor wants to calculate the tax		
Description:	This feature allows actor to use tool for calculating tax		
Preconditions:	<ul style="list-style-type: none"> <li>User logged in as a candidate account</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Show the tax output</li> <li><b>Fail:</b> System shows the error message based on exception</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Actor inputs total income and number of dependent people	System validates the input

			put number and show the tax output <b>[Exception 1]</b>
Alternative Flows:	<b>N/A</b>		
Exceptions:	No	Cause	System Response
	1	The invoice number is empty	System informs “Vui lòng nhập tổng thu nhập cá nhân”
Business Rules:	<ul style="list-style-type: none"> <li>Tax calculation formula must follow the latest update of Vietnamese law</li> <li>The website should explain the tax calculation formula to users</li> </ul>		
Assumptions:	<b>N/A</b>		

#### 2.2.1.27 Get average salary

ID and Name:	UC-27: Get average salary		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Candidate	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Sometime
Trigger:	The actor wants to view the average salary by job catalog, experience, and location		
Description:	This feature allows actor to get the average salary by select filter by job catalog, experience, and location		
Preconditions:	<ul style="list-style-type: none"> <li>User logged in as a candidate account</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System shows the average salary based on the filter fields</li> <li><b>Fail:</b> System shows message: “Chưa có dữ liệu về công việc này”</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In job tools page, actor clicks to salary average tool card	<p>System redirects to average salary page and show 3 fields for filter:</p> <ul style="list-style-type: none"> <li>- Job catalog: select field, required</li> <li>- Province: select field, required</li> <li>- Experience: select field, required</li> </ul>
	2	Actor selects filter fields and click view button	<p>System shows the average salary output.</p> <p><b>[Exception 1]</b></p>
Alternative Flows:	<b>N/A</b>		
Exceptions:	No	Cause	System Response
	1	The data about job is not found	System shows error message: “Chưa có dữ liệu về công việc này”

Business Rules:	<ul style="list-style-type: none"> <li>System should show some job title that related to the filter fields</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Data for calculating the average salary is big enough</li> </ul>		

#### 2.2.1.28 Do personality test

ID and Name:	UC-28: Do personality test		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Candidate	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Sometime
Trigger:	The actor wants to do personality test to find his favourite work		
Description:	This feature allows actor to do a simple personality test in multiple choices form		
Preconditions:	<ul style="list-style-type: none"> <li>User logged in as a candidate account</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System shows the personality result for the user</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In job tools page, actor clicks to personality test card	System redirects to personality test page and show 10 questions for select answers.
	2	Actor selects the answer for each question and click submit button	System shows the personality result for the user
Alternative Flows:	<b>N/A</b>		
Exceptions:	<b>N/A</b>		
Business Rules:	<ul style="list-style-type: none"> <li>Number of questions is under 10 questions</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>The content of question is simple and easily for actor pick answers</li> </ul>		

#### 2.2.1.29 Suggest jobs

ID and Name:	UC-30: Suggest jobs		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	System Handler	Secondary Actors:	Candidate
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to find all the suitable jobs and send a notification to the candidate.		
Description:	This feature allows the actor to find all the suitable jobs by the algorithm calculated based on job catalog, gender, education, and work experience and send a notification to the candidate.		
Preconditions:	<b>N/A</b>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Send notification to which candidates have suitable suggested jobs.</li> </ul>		

	<ul style="list-style-type: none"> <li><b>Fail:</b> Do nothing.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	This function is automatically performed on the server side periodically. At that time, a thread in server will be triggered to run the algorithm.	The system runs the background algorithm worker to find out all suitable jobs for the candidate. Then send the notification about the suggested jobs to that candidate.
Alternative Flows:	<b>N/A</b>		
Exceptions:	<b>N/A</b>		
Business Rules:	<ul style="list-style-type: none"> <li>Total weight is calculated based on weight of Job Catalog, weight of Gender, weight of Education, weight of Work Experience, weight of Address, weight of Keywords.</li> <li>Percent of matching to suggest job is 50%.</li> <li>Score of Job Catalog equals to weight of Job Catalog if JobCatalogId of Job and JobCatalogId of candidate is matched and 0 if not.</li> <li>Score of Gender equals to weight of Gender if Gender of Job and Gender of candidate is matched and 0 if not.</li> <li>Score of Work Experience equals to weight of Work Experience if Work Experience Required of Job and Work Experience of candidate is matched and 0 if not.</li> <li>Score of Education equals to weight of Education if Education Level Min of Job and Education Level of candidate is matched and 0 if not.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.1.30 Suggest candidates

<b>ID and Name:</b>	<b>UC-31: Suggest candidates</b>		
Created By:	TienNLN	Date Created:	06/06/2022
Primary Actor:	System Handler	Secondary Actors:	Enterprise
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to send a notification to the enterprise that owns jobs that are suggested to candidates.		
Description:	This feature allows actor to send a notification to the enterprise that owns jobs that are suggested to candidates.		
Preconditions:	<b>N/A</b>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System sends a notification to the enterprise that owns jobs that are suggested to candidates</li> <li><b>Fail:</b> Do nothing.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response

	1	<p>This function is automatically performed on the server side periodically. At that time, a thread in server will be triggered to run the algorithm.</p>	<p>The system gets all suggested jobs in the production database and finds its enterprise, then sends a notification to the enterprise about the candidates who are suggested their jobs.</p>
Alternative Flows:	<b>N/A</b>		
Exceptions:	<b>N/A</b>		
Business Rules:	<ul style="list-style-type: none"> <li>• Send notification to the enterprise about the candidate information who are received notification about suggest jobs. Moreover, those jobs are belonged to this enterprise.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>• Actor's internet connection is available.</li> </ul>		

## 2.2.2 Admin system

### 2.2.2.01 Log in

ID and Name:	UC-32: Log in		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	High	Frequency of Use:	Often
Trigger:	The actor wants to login to admin dashboard		
Description:	This feature allows actor to authorize to become admin of Grabwork system.		
Preconditions:	<b>N/A</b>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> Redirect to admin dashboard home page</li> <li><b>Fail:</b> System show the error message</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In login page, actor enter email and password	
	2	Actor clicks to login button	System validates email and password. If correct, redirect actor to admin dashboard home page. <b>[Exception 1, 2]</b>
Alternative Flows:	<b>N/A</b>		
Exceptions:	No	Cause	System Response
	1	The email or password is not correct format	System informs error message to remind user inputs correct format
	2	Email or password is not correct	System inform "Email hoặc mật khẩu không chính xác"
Business Rules:	<ul style="list-style-type: none"> <li>Password is not empty and at least 8 characters</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Admin account has been generated and provide for the system admin</li> <li>Actor's internet connection is available.</li> </ul>		

### 2.2.2.02 Log out

ID and Name:	UC-33: Log out		
Created By:	ThucPN	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to sign out current and become a guest		
Description:	This feature allows actor to clear current session and become a guest		
Preconditions:	<ul style="list-style-type: none"> <li>User has authorized as an admin</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System redirects actor to admin login page</li> </ul>		

	<ul style="list-style-type: none"> <li><b>Fail:</b> System informs “Có lỗi xảy ra. Vui lòng thử lại sau giây lát”</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In admin home page, actor clicks to “Đăng xuất”.	Call browser API to clear the local storage in client. <b>[Exception 1]</b>
	2		Redirect actor to the login page.
Alternative Flows:	<b>N/A</b>		
Exceptions:	No	Cause	System Response
	1	Browser API cannot clear the token	System informs “Có lỗi xảy ra. Vui lòng thử lại sau giây lát”
Business Rules:	<ul style="list-style-type: none"> <li>In addition to the JWT token information, other information related to the user must be deleted from the client when logging out.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available</li> </ul>		

#### 2.2.2.03 Get enterprise account list

<b>ID and Name:</b>	<b>UC-34: Get enterprise account list</b>		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to get enterprise account list.		
Description:	This feature allows actor to see email, logo, name of enterprise and their account's status, plan fields.		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays a list of enterprises.</li> <li><b>Fail:</b> System inform “No Data”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In home admin page, actor selects tab “Enterprises”.	System redirects to manage enterprises page and show full list of enterprises.
Alternative Flows:	<b>N/A</b>		
Exceptions:	No	Cause	System Response
	1	No enterprise has ever created an account.	System informs “No Data”.
Business Rules:	<ul style="list-style-type: none"> <li>Default display of system is account that was created earliest.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.2.04 Get enterprise account detail

<b>ID and Name:</b>	<b>UC-35: Get enterprise account detail</b>
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Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to get enterprise account detail.		
Description:	This feature allows actor to see basic information, business license, contact information, image and video, description detail of enterprise.		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays an information detail of enterprise.</li> <li><b>Fail:</b> System inform “Doanh nghiệp chưa cập nhật thông tin chi tiết”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In enterprise admin page, actor clicks into “>>” button.	<p>System show “Chi tiết doanh nghiệp” form section with these fields:</p> <ul style="list-style-type: none"> <li>- Basic information: text data, display table form, contain rows: year create, job catalog, scale, tax code.</li> <li>- Business license: image data.</li> <li>- Contact information: text data, display table form, contain rows: email, phone number, website, Facebook, Twitter, Instagram, LinkedIn.</li> <li>- Image &amp; video</li> <li>- Description detail: text data</li> <li>- Position: text data, display table form, contain rows: province - city, district, ward, address.</li> <li>- Keyword: text data, display tag form.</li> </ul>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	Enterprise has ever update basic information.	System informs “Doanh nghiệp chưa cập nhật thông tin chi tiết”.
Business Rules:	<ul style="list-style-type: none"> <li>Contact information's fields display row data link to stakeholders. Actor can call or send email or view profile.</li> <li>When actor clicks into business license image, which will zoom. Actor can review and approve.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.2.05 Get candidate account list

ID and Name:	UC-36: Get candidate account list		
Created By:	VuongVT	Date Created:	06/06/2022

Primary Actor:	Admin		Secondary Actors:	N/A		
Priority:	Normal		Frequency of Use:	Often		
Trigger:	The actor wants to get candidate account list.					
Description:	This feature allows actor to see phone, avatar, name of candidate and their account's status field.					
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>					
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays a list of candidates.</li> <li><b>Fail:</b> System inform "No Data".</li> </ul>					
Normal Flow:	Step	Actor Action	System Response			
	1	In home admin page, actor selects tab "Candidates".	System redirects to manage candidates page and show full list of candidates.			
Alternative Flows:	N/A					
Exceptions:	No	Cause	System Response			
	1	No candidate has ever created an account.	System informs "No Data".			
Business Rules:	<ul style="list-style-type: none"> <li>Default display of system is account that was created earliest.</li> </ul>					
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>					

#### 2.2.2.06 Get candidate account detail

ID and Name:	UC-37: Get candidate account detail			
Created By:	VuongVT		Date Created:	06/06/2022
Primary Actor:	Admin		Secondary Actors:	N/A
Priority:	Normal		Frequency of Use:	Often
Trigger:	The actor wants to get candidate account detail.			
Description:	This feature allows actor to see basic information, education line, experience, award, contact information, image and video, description detail, language, keyword of candidate.			
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>			
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays an information detail of candidate.</li> <li><b>Fail:</b> System inform "Ứng viên chưa cập nhật thông tin chi tiết".</li> </ul>			
Normal Flow:	Step	Actor Action	System Response	
	1	In candidate admin page, actor clicks into ">>" button.	System show "Chi tiết ứng viên" form section with these fields: - Basic information: text data, display table form, contain rows: position, job catalog, job status, resume, education, gender, birthday, location. - Education line: text data.	

			<ul style="list-style-type: none"> <li>- Experience line: text data.</li> <li>- Award line: text data.</li> <li>- Contact information: text data, display table form, contain rows: email, phone number, website, Facebook, Twitter, Instagram, LinkedIn.</li> <li>- Image &amp; video</li> <li>- Description detail: text data</li> <li>- Language: text data, display tag form.</li> <li>- Keyword: text data, display tag form.</li> </ul>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	Candidate has ever update basic information.	System informs “Ứng viên chưa cập nhật thông tin chi tiết”.
Business Rules:	<ul style="list-style-type: none"> <li>• Contact information's fields display row data link to stakeholders. Actor can call or send email or view profile.</li> <li>• When actor clicks into image, which will zoom. Actor can review and approve for active account.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>• Actor's internet connection is available.</li> </ul>		

#### 2.2.2.07 Get job list

ID and Name:	UC-38: Get job list		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to get job list.		
Description:	This feature allows actor to see title, create time, status field of jobs.		
Preconditions:	<ul style="list-style-type: none"> <li>• Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li>• <b>Success:</b> The system displays a list of jobs.</li> <li>• <b>Fail:</b> System inform “No Data”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In home admin page, actor selects tab “Jobs”.	System redirects to manage jobs page and show full list of jobs.
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	No enterprise has ever created a job.	System informs “No Data”.
Business Rules:	<ul style="list-style-type: none"> <li>• Default display of system is job that was created earliest.</li> </ul>		

Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>
--------------	---------------------------------------------------------------------------------------------

#### 2.2.2.08 Get job detail

ID and Name:	UC-39: Get job detail		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to get job detail.		
Description:	This feature allows actor to see basic information, description, description detail, requirement other, address, keyword of job.		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays an information detail of job.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In job admin page, actor clicks into ">>" button.	<p>System show "Chi tiết công việc" form section with these fields:</p> <ul style="list-style-type: none"> <li>- Basic information: text data, display table form, contain rows: owner, job catalog, job type, job status, urgent, quantity, min salary, max salary, payment method.</li> <li>- Description: text data.</li> <li>- Description detail: text data.</li> <li>- Requirement other: text data.</li> <li>- Location: text data, display table form, contain rows: province/city, district, ward, address.</li> <li>- Keyword: text data, display tag form.</li> </ul>
Alternative Flows:	N/A		
Exceptions:	N/A		
Business Rules:	<ul style="list-style-type: none"> <li>If field in form section is null or empty, system displays for this field is "Đang để trống".</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.2.09 Update enterprise account

ID and Name:	UC-40: Update enterprise account		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Normal	Frequency of Use:	Often
Trigger:	The actor wants to update enterprise account.		
Description:	This feature allows actor to upgrade enterprise account status to active and plan account to premium.		

Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays a message is “Cập nhật thành công!”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In “Chi tiết doanh nghiệp” form section, actor clicks into menu dashboard.	System shows two options are: 1) Active account 2) Upgrade account
	2	Actor clicks into “Active account” option.	System shows a “Xác nhận kích hoạt tài khoản doanh nghiệp” confirm form.
Alternative Flows:	3	Actor clicks into “Kích hoạt” option for confirm.	System shows a message “Kích hoạt thành công” and updates enterprise account’s status from inactive to active.
	Step	Actor Action	System Response
	1	In “Chi tiết doanh nghiệp” form section, actor clicks into menu dashboard.	System shows two options are: 1) Active account 2) Upgrade account
Alternative Flows:	2	Actor clicks into “Upgrade account” option.	System shows a “Xác nhận nâng cấp tài khoản doanh nghiệp” confirm form.
	3	Actor clicks into “Nâng cấp” option for confirm.	System shows a message “Kích hoạt thành công” and updates enterprise account’s plan from basic to premium.
Exceptions:	N/A		
Business Rules:	<ul style="list-style-type: none"> <li>If account’s status is active, “Active account” option is blur and actor cannot click into this option.</li> <li>If account’s plan is premium, “Upgrade account” option is blur and actor cannot click into this option.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor’s internet connection is available.</li> </ul>		

#### 2.2.2.10 Get job catalog list

ID and Name:	UC-41: Get job catalog list		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Seldom
Trigger:	The actor wants to get job catalog list.		
Description:	This feature allows actor to see name, status field of job catalog.		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> The system displays a list of job catalog.</li> </ul>		

	<ul style="list-style-type: none"> <li><b>Fail:</b> System inform “No Data”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In home admin page, actor selects tab “Job catalog”.	System redirects to manage job catalog page and show full list of job catalog.
Alternative Flows:	<b>N/A</b>		
Exceptions:	<b>N/A</b>		
Business Rules:	<ul style="list-style-type: none"> <li>Default display of system is job catalog which's status is active.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.2.11 Create job catalog

<b>ID and Name:</b>	<b>UC-42: Create job catalog</b>		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Seldom
Trigger:	The actor wants to create job catalog.		
Description:	This feature allows actor to create new job catalog.		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System displays a message is “Create new job catalog success!”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In job catalog page, actor clicks into “+ Create” button.	System shows a “Create job catalog” form, with a Name field: text input, required, max limit length is 500.
	2	Actor clicks into “Submit” button.	System shows a message is “Create new job catalog success!” and create this job catalog.
Alternative Flows:	<b>N/A</b>		
Exceptions:	<b>N/A</b>		
Business Rules:	<ul style="list-style-type: none"> <li>If catalog's name input is contained by other catalog's name in system. System shows a “Cảnh báo ngành nghề đã tồn tại” confirm form. Actor clicks into “Có” button for confirm or “Không” to cancel.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor's internet connection is available.</li> </ul>		

#### 2.2.2.12 Update job catalog

<b>ID and Name:</b>	<b>UC-43: Update job catalog</b>		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	Low	Frequency of Use:	Seldom
Trigger:	The actor wants to update job catalog.		
Description:	This feature allows actor to update name for job catalog.		

Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System displays a message is “Update job catalog success!”.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	In job catalog page, actor clicks into button in Action column at row that actor wants to update.	System shows two options are: 1) Update 2) Delete
	2	Actor clicks into “Update” option.	System shows a “Update job catalog” confirm form, with a Name field: text input, required, max limit length is 500.
	4	Actor clicks into “Submit” button.	System shows a message is “Update job catalog success!” and create this job catalog.
Alternative Flows:	<b>N/A</b>		
Exceptions:	<b>N/A</b>		
Business Rules:	<ul style="list-style-type: none"> <li>ID field of “Update job catalog” confirm form is blurred and actor cannot edit id of job catalog.</li> </ul>		
Assumptions:	<ul style="list-style-type: none"> <li>Actor’s internet connection is available.</li> </ul>		

#### 2.2.13 Get Grabwork Statistic

ID and Name:	UC-44: Get Grabwork Statistic		
Created By:	VuongVT	Date Created:	06/06/2022
Primary Actor:	Admin	Secondary Actors:	N/A
Priority:	High	Frequency of Use:	Always
Trigger:	The actor wants to see statistic of data of system.		
Description:	This feature allows actor to see statistic of data system contain quantity of account registered, premium account, profile updated...		
Preconditions:	<ul style="list-style-type: none"> <li>Actor login into Grabwork website for admin with account has admin role.</li> </ul>		
Post-conditions:	<ul style="list-style-type: none"> <li><b>Success:</b> System displays a statistic of data and chart.</li> </ul>		
Normal Flow:	Step	Actor Action	System Response
	1	Actor clicks into home tabs	<p>System redirects to home admin page and show fields:</p> <ul style="list-style-type: none"> <li>- Sum of account registered: integer data.</li> <li>- Sum of premium account: integer data.</li> <li>- Sum of profile updated: integer data.</li> <li>- Sum of enterprise’s profile: integer data.</li> </ul>

		<ul style="list-style-type: none"> <li>- Sum of candidate's profile: integer data.</li> <li>- Sum of jobs: integer data.</li> <li>- Sum of job catalog: integer data.</li> <li>- Sum of time interview: integer data.</li> <li>- Sum of account register notifies: integer data.</li> <li>- Sum of referent jobs: integer data.</li> <li>- Top of job catalog that has many jobs: chart display.</li> <li>- Top of job catalog that has many candidates: chart display.</li> </ul>
Alternative Flows:	<b>N/A</b>	
Exceptions:	<b>N/A</b>	
Business Rules:	<ul style="list-style-type: none"> <li>• Top of job catalog that has jobs statistic job catalog that more than 5 jobs are created.</li> <li>• Top of job catalog that has many candidates' statistic job catalog that more than 5 candidates apply</li> </ul>	
Assumptions:	<ul style="list-style-type: none"> <li>• Actor's internet connection is available.</li> </ul>	

### 3. Functional Requirements

#### 3.1 System Functional Overview

##### 3.1.1 Screen Flow

###### 3.1.1.1 Guest Flow

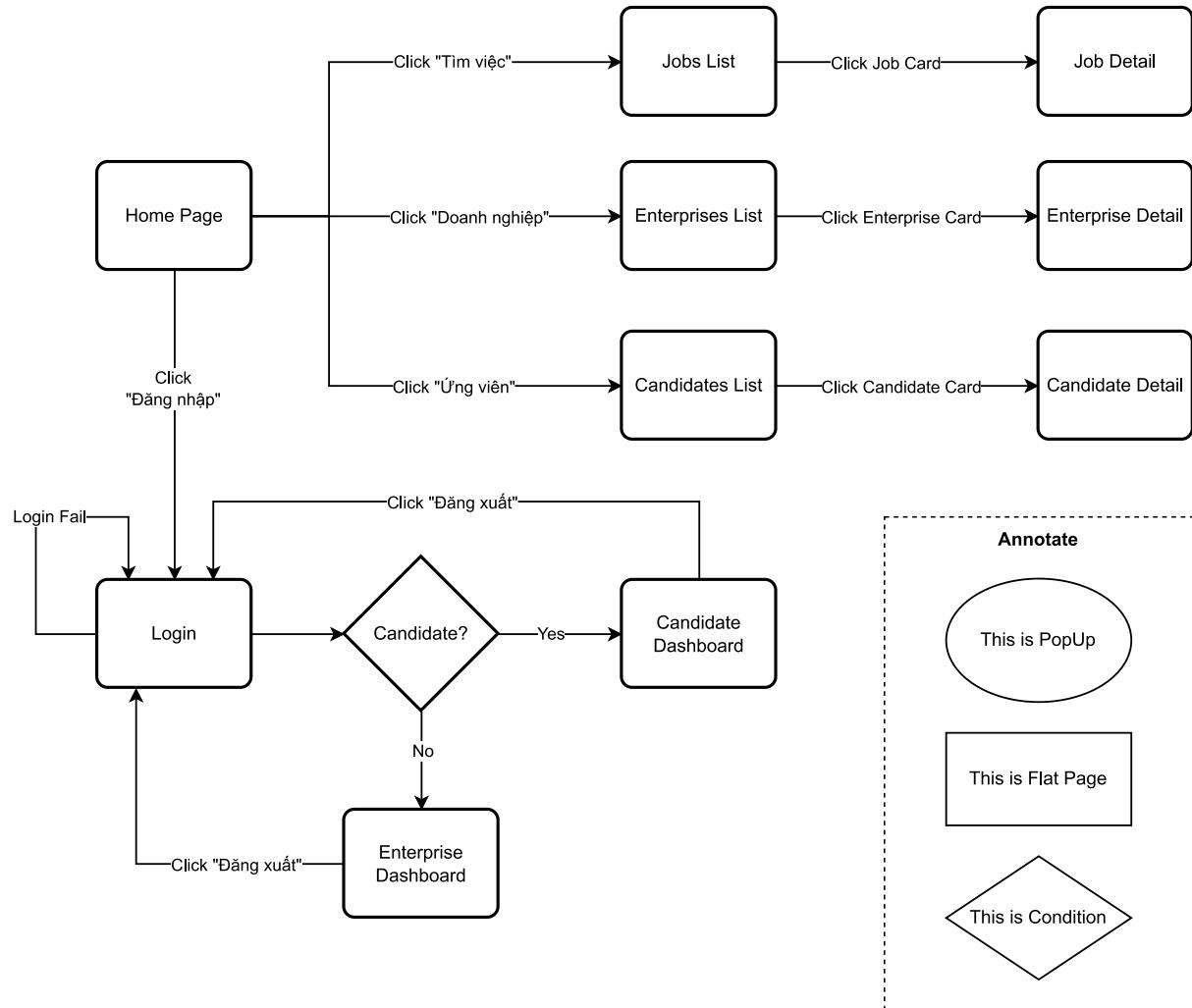


Figure 10: Guest Flow

### 3.1.1.2 Enterprise Flow

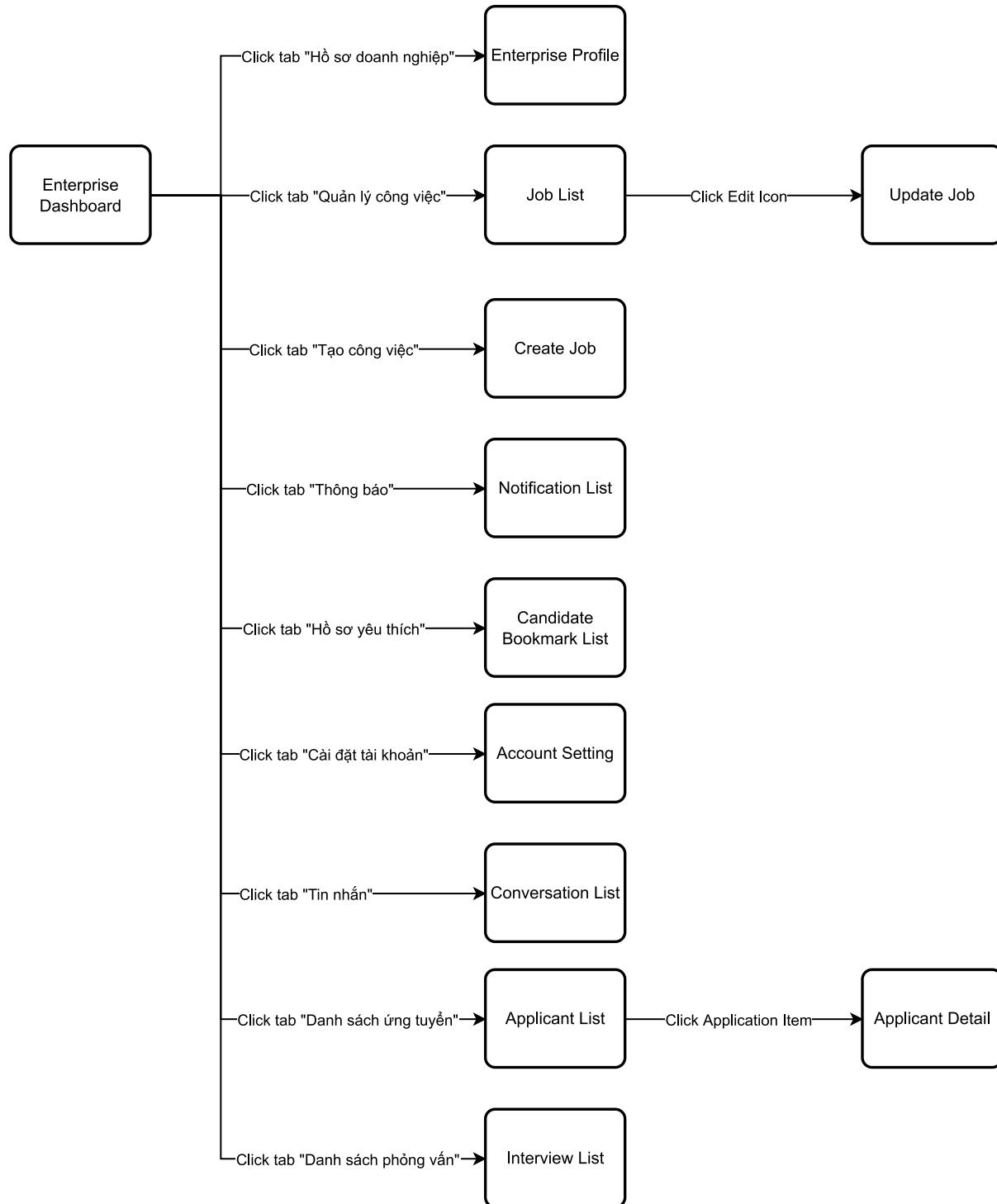


Figure 11: Enterprise Flow

### 3.1.1.3 Candidate Flow

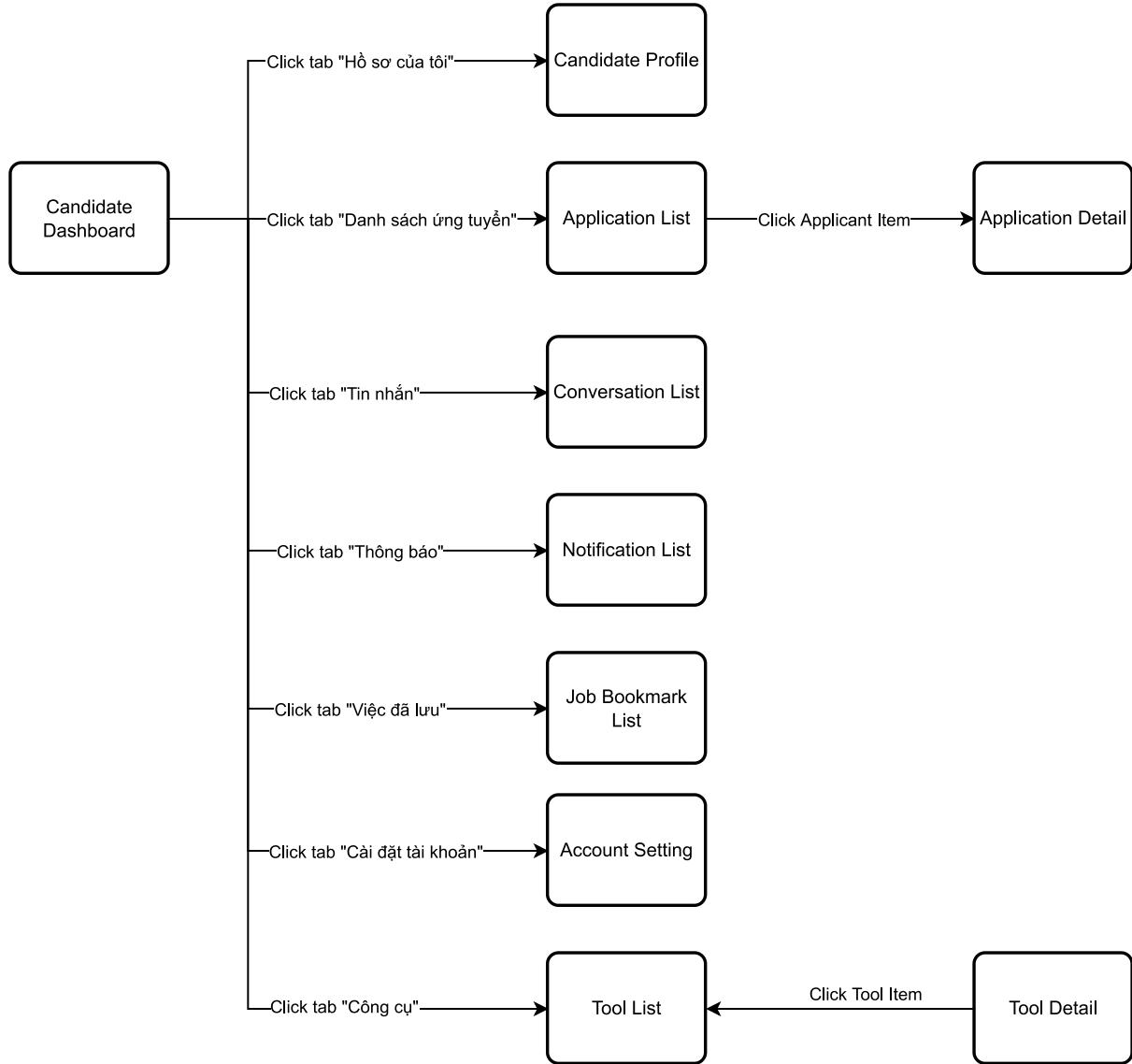


Figure 12: Candidate Flow

### 3.1.1.4 Admin Flow

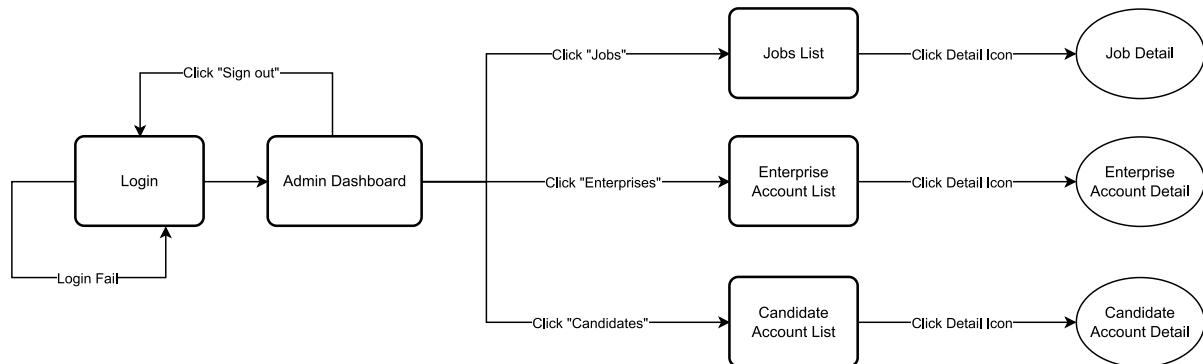


Figure 13: Admin Flow

### 3.2 Screen Details

#	Feature	Screen	Description
Guest Screens Flow			
1	Sign in	Login	A page contains a form to login: <ul style="list-style-type: none"><li>• Email/phone number text field</li><li>• OTP text field</li></ul>
2	Grabwork overview	Home Page	A page contains information about customer, purpose, vision of Grabwork.
3	Search job	Job List	A page contains list of jobs and filter menu (search by name, job category...)
4	Search enterprise	Enterprise List	A page contains list of enterprises and filter menu (search by name, industry, founded year...)
5	Search candidate	Candidate List	A page contains list of candidates and filter menu (search by name, skill, gender, experience...)
6	Get job detail	Job Detail	A page shows detail information about job such as salary, address, job description, job requirements...
7	Get enterprise detail	Enterprise Detail	A page shows detail information about enterprise such as logo, full name, address, images, vision...
8	Get candidate detail	Candidate Detail	A page shows detail information about candidate such as avatar, full name, skills, experience, images...
Enterprise Screens Flow			
9	Get enterprise statistic	Enterprise Dashboard	A page shows statistic information about enterprise such as: number of views, number of jobs...
10	Update profile	Enterprise Profile	A page shows detail information about enterprise profile and allow them updating profile.
11	Manage jobs	Job List	A page contains all jobs of an enterprise. They can do quick search by name and filter by status
12	Create job	Create Job	A page with a form to create new job includes these fields: title, salary, location...
13	Update job	Update Job	A page with a form to update existed job. Enterprise also click button to update status of this job.
14	Get notification list	Notification List	A page shows list of notification. The newest notification is shown first.
15	Get candidate favourite list	Candidate Bookmark List	A page shows list of favourite candidates. A search box helps enterprise search candidate by name.
16	Update account privacy	Account Setting	A page with a dropdown to update status of an account to "hide" or "public"
17	Get conversation list	Conversation List	A page shows list of conversation. A search box helps enterprise search conversation by receiver's name.
18	Get applicant list	Applicant List	A page shows list of candidate profiles that have applied for a job of enterprise

19	Get applicant detail	Applicant Detail	A page shows application of a candidate with basic information such as: candidate's name, apply time, the job title...
20	Get interview list	Interview List	A page help enterprise manages candidates that pass profile round and do interview process.
Candidate Screens Flow			
21	Get candidate statistic	Candidate Dashboard	A page shows statistic information about candidate such as: number of views, number of applications...
22	Update profile	Candidate Profile	A page shows detail information about candidate profile and allow them updating profile.
23	Get job application list	Application List	A page shows list of job applications that candidate has applied.
24	Get conversation list	Conversation List	A page shows list of conversation. A search box helps candidate search conversation by receiver's name.
25	Get notification list	Notification List	A page shows list of notification. The newest notification is shown first.
26	Get job favourite list	Job Bookmark List	A page shows list of favourite jobs. A search box helps candidate search job by name.
27	Update account privacy	Account Setting	A page with a dropdown to update status of an account to "hide" or "public"
28	Get tool list	Tool List	A page contains a list of jobs tool with summary description about each of tools
29	Manipulate tool	Tool Detail	A page contains detail information about a tool. Candidate can do action with some specific tool such as export CV, view average salary...
Admin Screens Flow			
30	Sign in	Login	A page shows form with email and password to login into admin dashboard
31	Get Grabwork statistic	Admin Dashboard	A page shows overview statistic about Grabwork system: total jobs, total users, total job applications...
32	Get job list	Jobs List	A page shows list of jobs with filter and pagination.
33	Get enterprise account list	Enterprise Account List	A page shows list of enterprise accounts with filter and pagination.
34	Get candidate account list	Candidate Account List	A page shows list of candidate accounts with filter and pagination.
35	Get job detail	Job Detail	A popup shows detail information about job such as title, description, job requirements...
36	Get enterprise account detail	Enterprise Account Detail	A popup shows detail information about enterprise such as logo, description, location...
37	Get candidate account detail	Candidate Account Detail	A popup shows detail information about candidate such as name, work experiences,...

Table 21: Screen Details

### 3.3 Screen Authorization

Category	Screen	Guest	Member	Candidate	Enterprise	Admin
Guest Screens Flow	Login	X	X	X	X	X
	Home Page	X	X	X	X	X
	Job List	X	X	X	X	X
	Enterprise List	X	X	X	X	X
	Candidate List	X	X	X	X	X
	Job Detail	X	X	X	X	X
	Enterprise Detail	X	X	X	X	X
	Candidate Detail	X	X	X	X	X
Enterprise Screens Flow	Enterprise Dashboard				X	
	Enterprise Profile				X	
	Job List				X	
	Update Job				X	
	Create Job				X	
	Notification List				X	
	Candidate Bookmark List				X	
	Account Setting				X	
	Conversation List				X	
	Applicant List				X	
	Applicant Detail				X	
	Interview List				X	
Candidate Screens Flow	Candidate Dashboard			X		
	Candidate Profile			X		
	Application List			X		
	Conversation List			X		
	Notification List			X		
	Job Bookmark List			X		
	Account Setting			X		
	Tool List			X		
	Tool Detail			X		
Admin Screens Flow	Login	X				X
	Admin Dashboard					X
	Jobs List					X
	Enterprise Account List					X
	Candidate Account List					X
	Job Detail					X
	Enterprise Account Detail					X
	Candidate Account Detail					X

Table 22: Screen Authorization

### 3.4. Non-Screen Functions

#	System Function	Description
1	Suggest job	The cron job runs at a specific time that send notifications to candidates about new matching jobs.

2	Suggest candidate profile	The cron job runs at a specific time that send notifications to enterprises about new matching candidates.
3	Update expired job	The cron job runs at a specific time that update status of expired job in database
4	Update expired applicant	The cron job runs at a specific time that update status of expired applicant in database

Table 23: Non-Screen Functions

### 3.5. Entity Relationship Diagram

The entity relationship diagram below uses the Chen Notation<sup>4</sup> for modelling the basics of entities and relationships.

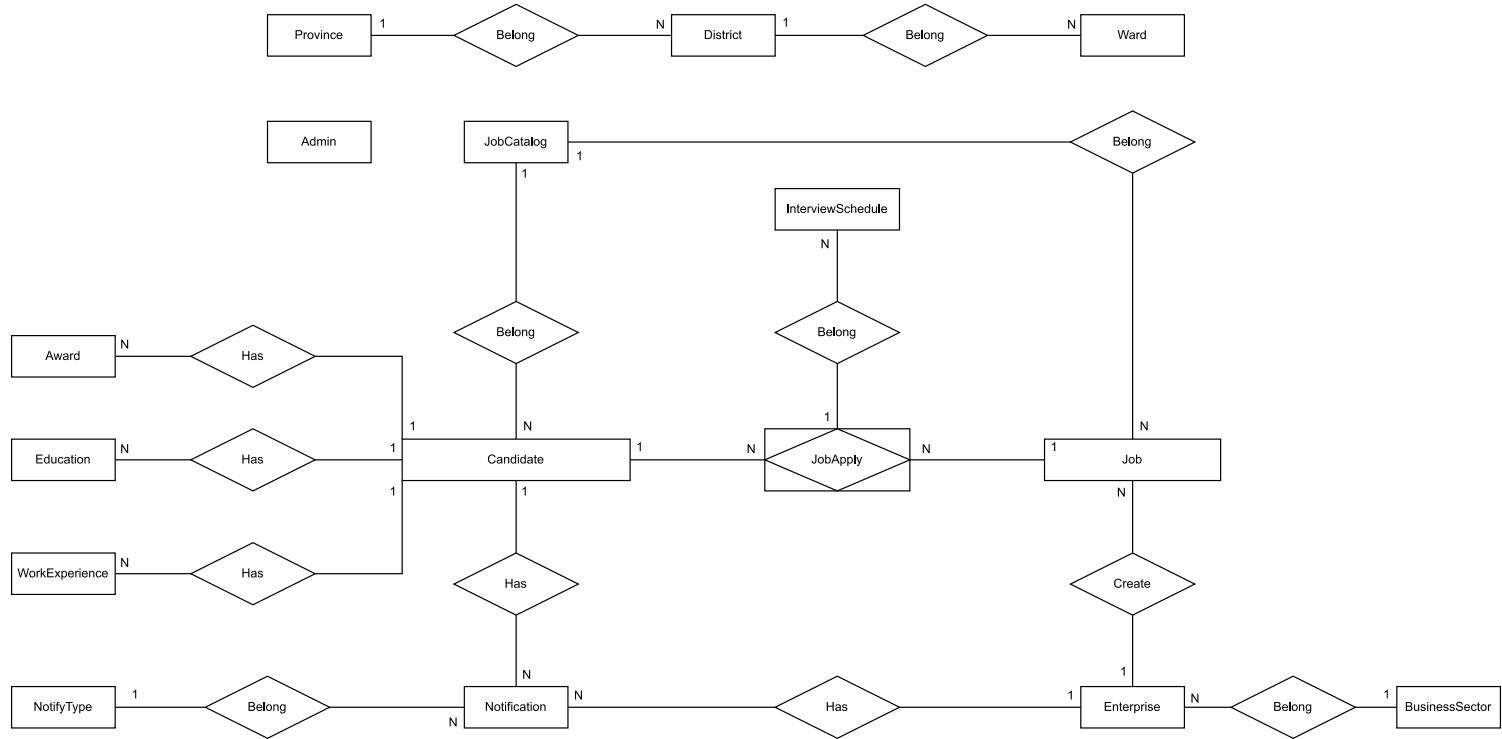


Figure 14: Entity Relationship Diagram

#### Entities List

#	Entity	Vietnamese	Description
1	Enterprise	Doanh nghiệp	Enterprises are people who manipulate the job board, create jobs, and interview candidates.
2	Candidate	Ứng viên	Candidates are people who want to find a suitable job. They can search jobs, apply job, and interview with enterprise.
3	Admin	Quản trị viên	Admin is the person who manages all user activities and monitors the development of Grabwork system.
4	BusinessSector	Lĩnh vực hoạt động	Each enterprise can do business in different industries. In this project, we call these industries by the name “BusinessSector”.
5	JobCatalog	Ngành nghề	A job catalog is a collection of jobs that have similar properties such as IT, Finance, Health Care...
6	Job	Công việc	A job is a recruitment information created by an enterprise to find suitable candidates.

<sup>4</sup> Chen Notation. <https://www.softwareideas.net/chen-er-diagram-erd>

7	JobApply	Ứng tuyển công việc	JobApply is an associate entity that created when a candidate applies for a job
8	InterviewSchedule	Lịch phỏng vấn	InterviewSchedule is a list of candidate interview time that created by enterprise. Candidate could select one of that time.
9	NotifyType	Loại thông báo	There are different types of notifications in the system such as apply job notification, interview result notification...
10	Notification	Thông báo	Notification is an entity contains information about some updated things with users.
11	Award	Thành tích	Candidates could add some awards to their profile to make it outstanding. An award includes information such as title, certificate link...
12	Education	Học vấn	Candidates could add some education histories to their profile. An education object includes information such as school name, start time, end time...
13	WorkExperience	Kinh nghiệm làm việc	Candidates could add some work experiences to their profile to help enterprise know their skill level. An experience object includes information such as company, start time, end time, reference people...
14	Province	Tỉnh thành	Province entity provides information about provinces in Vietnam: code, name
15	District	Quận huyện	District entity provides information about districts in Vietnam: code, name, province code
16	Ward	Xã phường	Ward entity provides information about wards in Vietnam: code, name, district code

Table 24: Entities List

## 4. Non-Functional Requirements

### 4.1 External Interfaces

#### 4.1.1 User Interfaces

- The UI for end users must support Vietnamese
- The UI for admin can be flexible in Vietnamese or English

#### 4.1.2. Communications Interfaces

- The system should use HTTP method to transfer data

### 4.2 Quality Attributes

#### a. Usability

- All text, label, alert, and notification for end users should be written in Vietnamese.
- The web application should be friendly and easy for end users to use without training.

*b. Portability*

- The web applications should run well in modern browsers:
  - Chrome version 58.0 and higher
  - Firefox version 54.0 and higher
  - Safari version 10.1 and higher
  - Edge version 16.0 and higher

*c. Security*

- All input data are validated before saving to the database.
- Each role of the user has a specific permission to interact with the system.

## IV. Software Design Document

### 1. Overall Description

#### 1.1 Assumptions

This system is designed basing on following assumptions:

- End users is small enterprises and university students
- The devices they use commonly are Windows 10 and Google Chrome version 96

#### 1.2 Design Constraints

The system should follow these constraints:

- Time to complete this project is in 14 weeks
- Expenses for process, development, design, and server for MVP version is under 160 million VND

## 2. System Architecture Design

### 2.1 Overall Architecture

#### 2.1.1 System Architecture

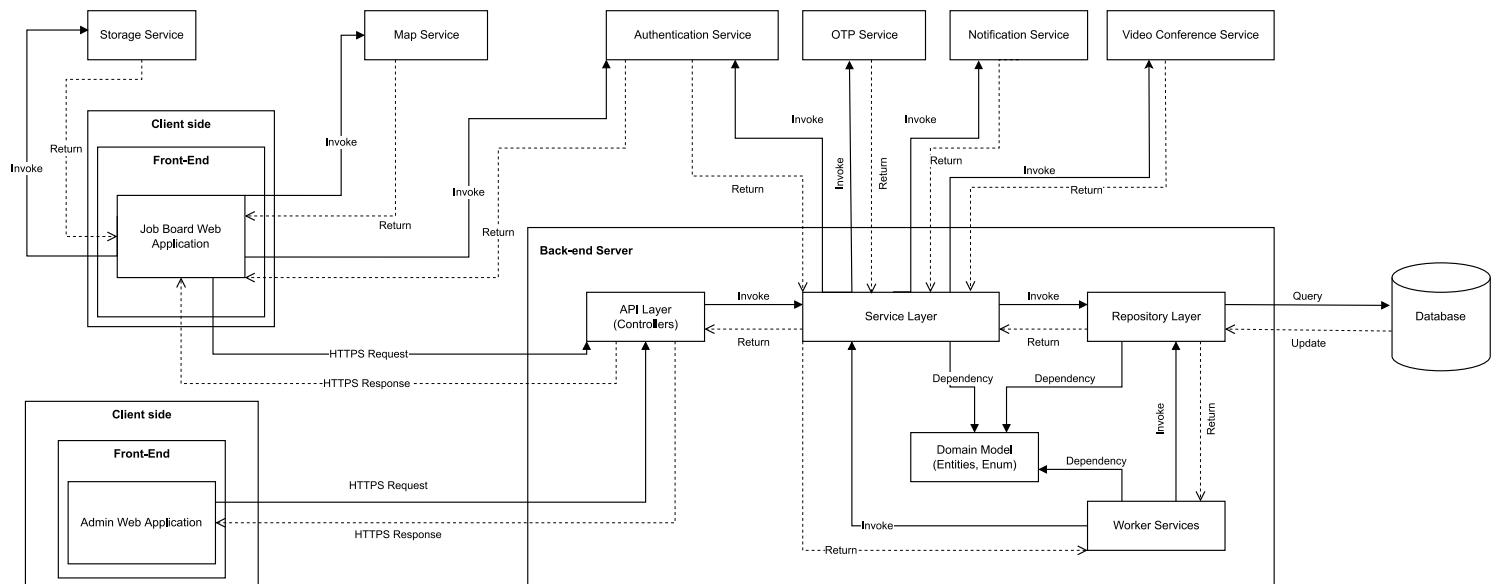


Figure 15: Overall System Architecture Diagram

No	Name	Description
01	Controllers	It is resource endpoint API. Is where the request is received, calling the layers below to process the request and send back the response
02	Services layer	This is where the business logic of the system is implemented and assumes the role of interfacing with third-party services
03	Repository layer	It is an abstract class responsible for reading and writing to the database
04	Database	It is where the system's data is stored
05	Domain model	Is a part of the system, containing entities, enums, data transfer objects (DTO)
06	Worker service	Is where the scheduled background jobs run
07	Admin web application	Is a web application for administrators to perform system management functions
08	Job board web application	is a web application where candidates can find jobs and apply for jobs. Enterprises can post jobs and search for suitable candidates for the job.
09	Storage service	We use third party services to store files because these services have built-in features like auto optimize media, auto add meta-data for media, get media with suitable size. Moreover, the service's CDN network will make file access faster
10	Map service	Is a third-party service providing services about maps, locations. Help users locate on the map and have a visual view
11	Authentication service	Perform user authentication for the system and send authentication results to the system
12	OTP service	Is a third-party service to send one-time passwords to email or phone numbers
13	Notification service	Is a service of vendors (Google, Mozilla) support for sending push messages to all clients

14	Video conference service	Is a third-party service that takes care of creating and running video conferences
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Table 25: System Architecture Description

### 2.1.2 Detail client-side architecture

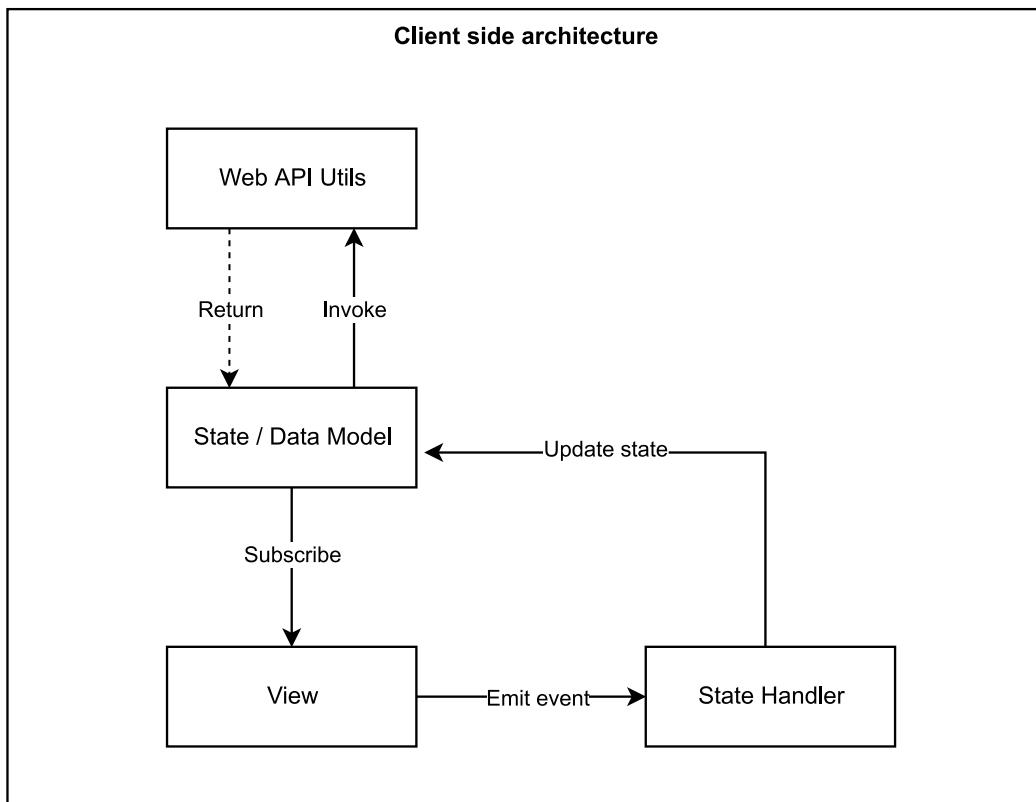


Figure 16: Client-side Architecture

No	Name	Description
01	Web API Utils	The service layer help frontend retrieve/modify data in backend through API
02	State / Data Model	The data layer to help manage state of the components
03	View	The components that render UI to the user on browsers. They will be re-rendered if the states change.
04	State Handler	The function handlers that help update the state of the components. These functions can be trigger by event on HTML element

Table 26: Client-side Architecture Description

## 2.2 Component Diagram

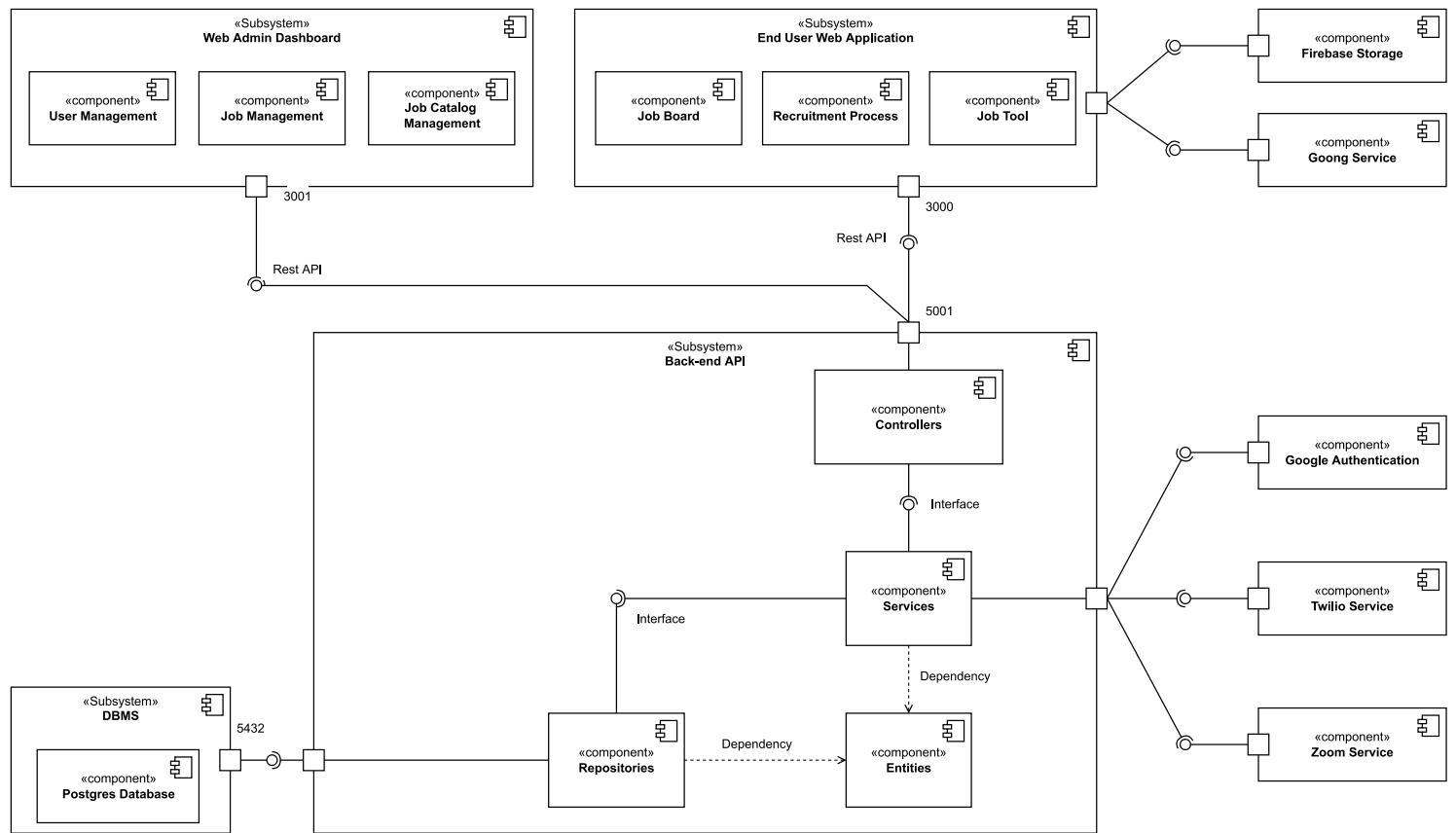


Figure 17: Component Diagram

No	Name	Description
01	Controllers	receive requests from users, send them to the appropriate services to perform business logic and respond to users.
02	Services	Handle the business logic of the system and communicates with third-party services
03	Repository	Responsible for reading and writing to the database
04	Entities	Are model classes that contain data fields and are mapped 1-1 with database tables
05	Postgres Database	It is where the system's data is stored
06	Firebase storage	Provide users' file storage services
07	Goong service	Provide services about maps, locations. Help users locate on the map and have a visual view
08	Google authentication	Handle user authentication via gmail for system and send the authentication results back to the system
09	Twilo service	Handle sending one time password to email or phone number and verify OTP
10	Zoom service	Handle creating and running video conferencing
11	User management	Frontend UI Component for admin managing users
12	Job management	Frontend UI Component for admin managing jobs
13	JobCatalog management	Frontend UI Component for admin managing job categories
14	Job Board	Frontend UI Component for end users to help them update profile and search jobs.

15	Recruitment Process	Frontend UI Component for end users to help them apply job and process interview.
16	Job Tools	Frontend UI Component for end users to help them manipulate useful tools.

Table 27: Component Diagram Description

### 3. System Detailed Design

#### 3.1 Enterprise update company information and post job

##### 3.1.1 Activity Diagrams

Two diagrams below depict the activities of an enterprise when he first started using Grabwork. Enterprise will go to the dashboard and update company information. Then, they can create job post to recruit candidates.

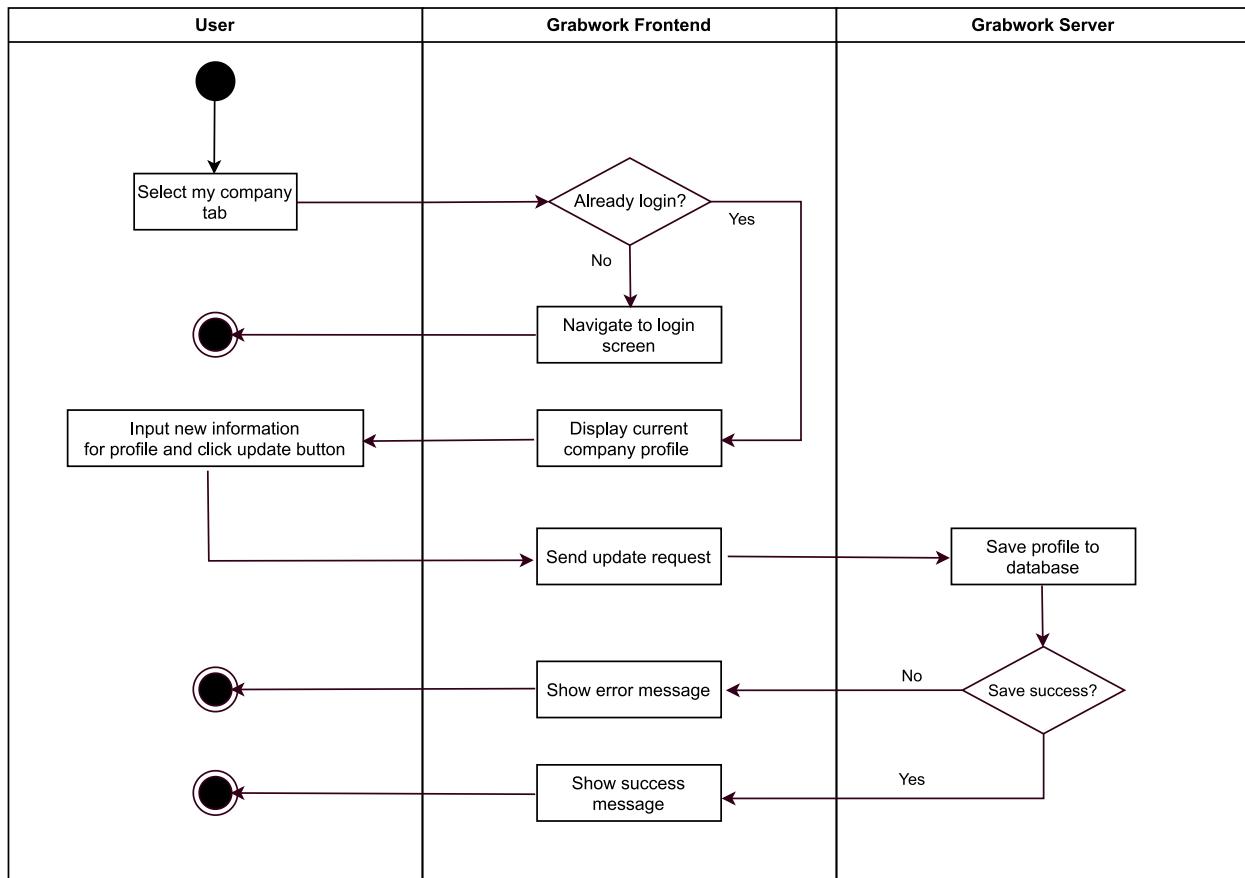


Figure 18: Activity Diagram - Enterprise updates company information

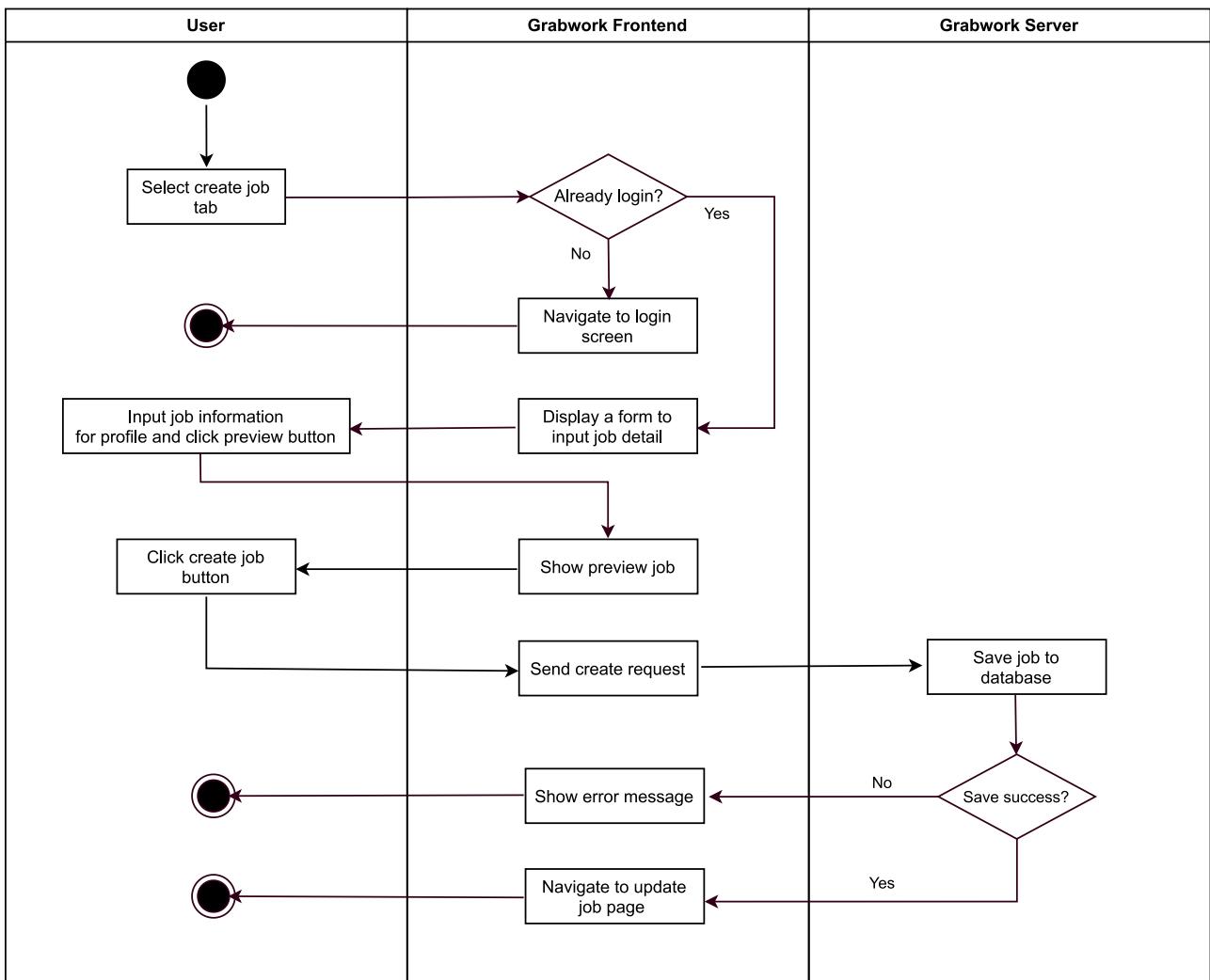


Figure 19: Activity Diagram - Enterprise posts job

### 3.1.2 Class Diagrams

Two diagrams below show the relationship between the classes in the server backend when the enterprise updates the company information and create new job.

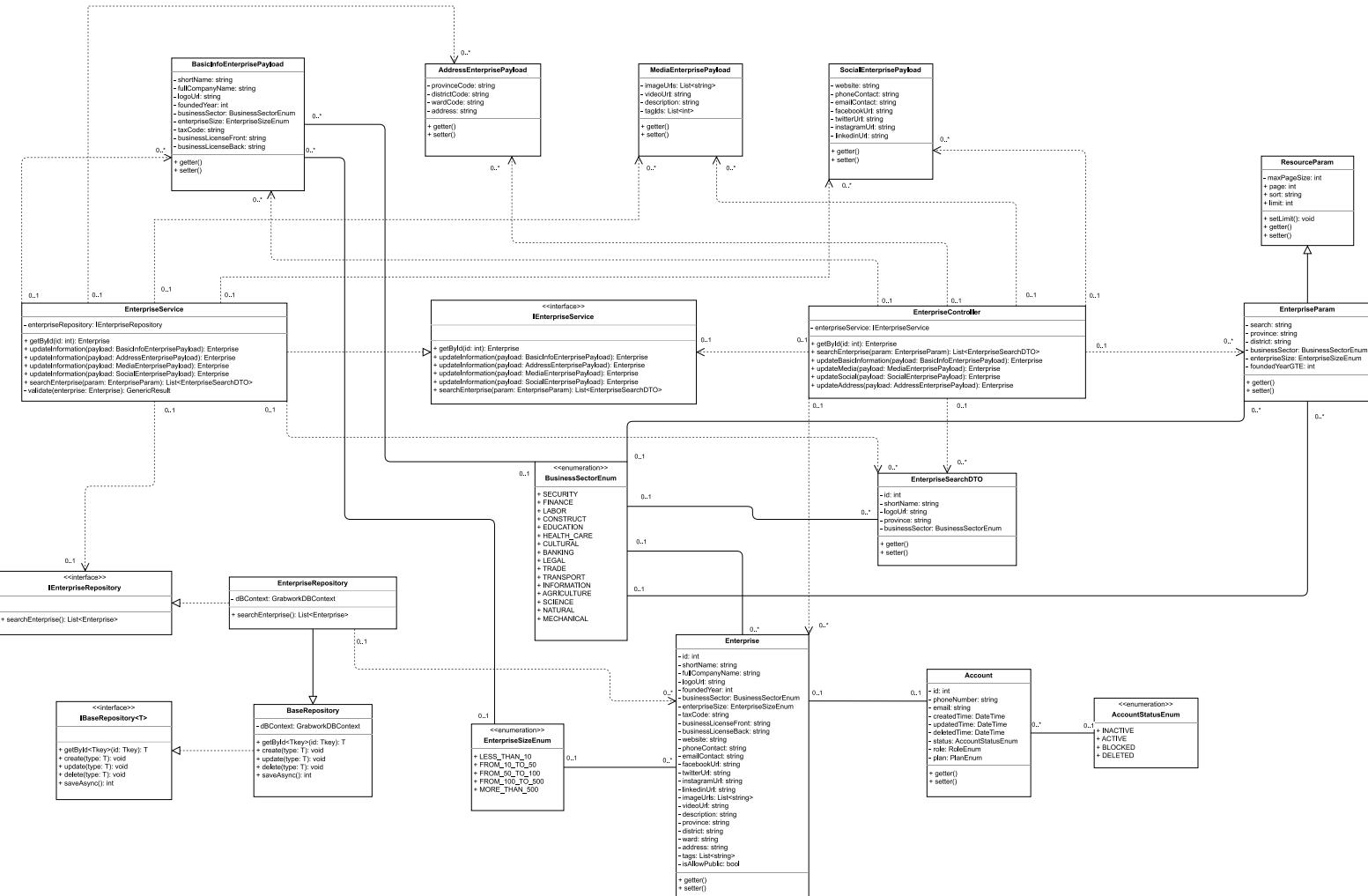


Figure 20: Class Diagram - Enterprise updates company information

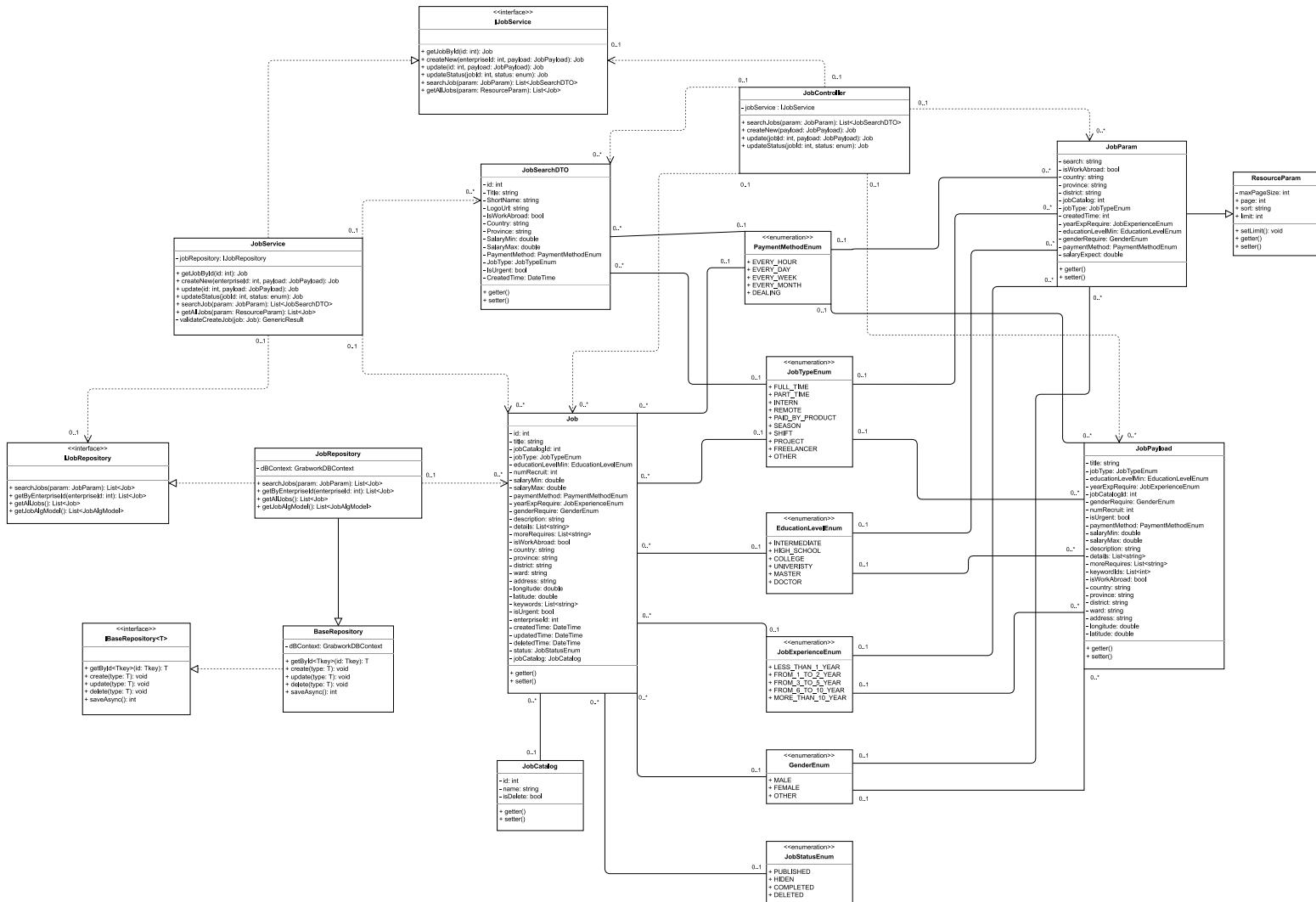


Figure 21: Class Diagram - Enterprise posts job

### 3.1.2.1 BasicInfoEnterprisePayload Class

No	Attribute	Data Type	Visibility	Description
1	shortName	string	Private	Company's short name
2	fullCompanyName	string	Private	Company's full name
3	logoUrl	string	Private	Logo's url link of company
4	foundedYear	int	Private	Year that company was founded
5	businessSector	BusinessSectorEnum	Private	Sector that company focus on
6	enterpriseSize	EnterpriseSizeEnum	Private	Abstract quantity employee of company
7	taxCode	string	Private	Tax number of company
8	businessLicenseFront	string	Private	Front of business license

9	bussinessLicenseBack	string	Private	Back of business license
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No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.2 AddressEnterprisePayload Class

No	Attribute	Data Type	Visibility	Description
1	provinceCode	string	Private	Code of province
2	districtCode	string	Private	Code of district
3	wardCode	string	Private	Code of ward
4	address	string	Private	Details address

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.3 MediaEnterprisePayload Class

No	Attribute	Data Type	Visibility	Description
1	imageUrls	List<string>	Private	Image's url link
2	videoUrl	string	Private	Video's url link
3	description	string	Private	Description about media of enterprise
4	tagIds	List<int>	Private	List keyword tag id

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.4 SocialEnterprisePayload Class

No	Attribute	Data Type	Visibility	Description
1	website	string	Private	Link website of company
2	phoneContact	string	Private	Phone number
3	emailContact	string	Private	Email address
4	facebookUrl	string	Private	Facebook's url link
5	twitterUrl	string	Private	Twitter's url link

6	instagramUrl	string	Private	Instagram's url link
7	linkedinUrl	string	Private	Linkedin's url link

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.5 EnterpriseService Class

No	Attribute	Data Type	Visibility	Description
1	enterpriseRepository	IEnterpriseRepository	Private	Use methods inside this repository.

No	Method	Return Type	Visibility	Description
1	getById	Enterprise	Public	Get enterprise according to id
2	updateInformation	Enterprise	Public	Update BasicInfoEnterprisePayload of Enterprise
3	updateInformation	Enterprise	Public	Update AddressEnterprisePayload of Enterprise
4	updateInformation	Enterprise	Public	Update MediaEnterprisePayload of Enterprise
5	updateInformation	Enterprise	Public	Update SocialEnterprisePayload of Enterprise
6	searchEnterprise	List<EnterpriseSearchDTO>	Public	Search list Enterprise according to EnterpriseParam
7	validate	GenericResult	Private	Validate information update of enterprise

### 3.1.2.6 EnterpriseController Class

No	Attribute	Data Type	Visibility	Description
1	enterpriseService	IEnterpriseService	Private	Use methods inside this service.

No	Method	Return Type	Visibility	Description

1	getByld	Enterprise	Public	Get enterprise according to id
2	updateInformation	Enterprise	Public	Update BasicInfoEnterprisePayload of Enterprise
3	updateInformation	Enterprise	Public	Update AddressEnterprisePayload of Enterprise
4	updateInformation	Enterprise	Public	Update MediaEnterprisePayload of Enterprise
5	updateInformation	Enterprise	Public	Update SocialEnterprisePayload of Enterprise
6	searchEnterprise	List<EnterpriseSearchDTO>	Public	Search list enterprise according to EnterpriseParam

### 3.1.2.7 EnterpriseParam Class

No	Attribute	Data Type	Visibility	Description
1	search	string	Private	Keyword that actor wants to search enterprise
2	province	string	Private	Province that actor wants to search enterprise
3	district	string	Private	District that actor wants to search enterprise
4	businessSector	BusinessSectorEnum	Private	Sector business of company that actor wants to search
5	enterpriseSize	EnterpriseSizeEnum	Private	Scale of company
6	foundedYearGTE	int	Private	Number year that company has founded

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.8 ResourceParam Class

No	Attribute	Data Type	Visibility	Description
1	maxPageSize	int	Private	Maximum size page
2	page	int	Public	Index page
3	sort	string	Public	Form sort that actor want
4	limit	int	Public	Limit of page

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute
3	setLimit	void	Public	Set limit for a page

### 3.1.2.9 EnterpriseRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDB Context	Private	DbContext of the database.

No	Method	Return Type	Visibility	Description
1	searchEnterprise	List<Enterprise>	Public	Search list enterprise according to EnterpriseParam

### 3.1.2.10 EnterpriseSearchDTO Class

No	Attribute	Data Type	Visibility	Description
1	Id	int	Private	Identification enterprise
2	shortName	string	Private	Company's short name
3	logoUrl	string	Private	Logo's url link
4	province	string	Private	Province location of company
5	businessSector	string	Private	Sector business that actor wants to search

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.11 BaseRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDB Context	Private	DbContext of the database.

No	Method	Return Type	Visibility	Description
1	getById	Data Type	Public	Get entity by its id.
2	create	void	Public	Add a record of target entity to its dbSet.

3	update	void	Public	Update existing data of target entity to its dbSet.
4	delete	void	Public	Delete existing data of target entity to its dbSet.
5	saveAsync	Int	Public	Save all changes of dbContext to database.

### 3.1.2.12 Enterprise Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification enterprise
2	shortName	string	Private	Company's short name
3	fullCompanyName	string	Private	Company's full name
4	logoUrl	string	Private	Logo's url link of company
5	foundedYear	int	Private	Year that company was founded
6	businessSector	BusinessSectorEnum	Private	Sector that company focus on
7	enterpriseSize	EnterpriseSizeEnum	Private	Abstract quantity employee of company
8	taxCode	string	Private	Tax number of company
9	businessLicenseFront	string	Private	Front of business license
10	businessLicenseBack	string	Private	Back of business license
11	website	string	Private	Link website of company
12	phoneContact	string	Private	Phone number
13	emailContact	string	Private	Email address
14	facebookUrl	string	Private	Facebook's url link
15	twitterUrl	string	Private	Twitter's url link
16	instagramUrl	string	Private	Instagram's url link
17	linkedinUrl	string	Private	Linkedin's url link
18	imageUrls	List<string>	Private	Image's url link
19	videoUrl	string	Private	Video's url link
20	description	string	Private	Description about media of enterprise
21	province	string	Private	Province of company
22	district	string	Private	District of company
23	ward	string	Private	Ward of company
24	address	string	Private	Details address of company
25	tags	List<string>	Private	List hash tag about sector of enterprise

26	isAllowPublic	bool	Private	Status hides or visible information of enterprise
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No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.13 Account Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification account
2	phoneNumbe r	string	Private	Personal phone number
3	email	string	Private	Personal email address
4	createTime	DateTime	Private	Time create account
5	updateTime	DateTime	Private	Time update account
6	DeleteTime	DateTime	Private	Time delete account
7	Status	AccountStat usEnum	Private	Status of account
8	Role	RoleEnum	Private	Role of account
9	plan	PlanEnum	Private	Level of account

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.14 IEnterpriseService Interface

No	Method	Return Type	Visibility	Description
1	getById	Enterprise	Public	Get enterprise according to id
2	updateInfor mation	Enterprise	Public	Update BasicInfoEnterprisePayload of Enterprise
3	updateInfor mation	Enterprise	Public	Update AddressEnterprisePayload of Enterprise
4	updateInfor mation	Enterprise	Public	Update MediaEnterprisePayload of Enterprise

5	updateInformation	Enterprise	Public	Update SocialEnterprisePayload of Enterprise
6	searchEnterprise	List<EnterpriseSearchDTO>	Public	Search list Enterprise according to EnterpriseParam

### 3.1.2.15 IEnterpriseRepository Interface

No	Method	Return Type	Visibility	Description
1	searchEnterprise	List<Enterprise>	Public	Search list enterprise according to EnterpriseParam

### 3.1.2.16 IRepository<T> Interface

No	Method	Return Type	Visibility	Description
1	GetById	Data Type	Public	Get entity by its id.
2	Create	void	Public	Add a record of target entity to its dbSet.
3	Update	void	Public	Update existing data of target entity to its dbSet.
4	Delete	void	Public	Delete existing data of target entity to its dbSet.
5	SaveAsync	Int	Public	Save all changes of dbContext to database.

### 3.1.2.17 BusinessSectorEnum

No	Enum	Visibility	Description
1	SECURITY	Public	Sector about security
2	FINANCE	Public	Sector about finance
3	LABOR	Public	Sector about labor
4	CONSTRUCT	Public	Sector about construct
5	EDUCATION	Public	Sector about education
6	HEALTHY_CARE	Public	Sector about healthy
7	CULTURAL	Public	Sector about cultural
8	BANKING	Public	Sector about banking
9	LEGAL	Public	Sector about legal
10	TRADE	Public	Sector about trade
11	TRANSPORT	Public	Sector about transport
12	INFORMATION	Public	Sector about information

13	AGRICULTURE	Public	Sector about agriculture
14	SCIENCE	Public	Sector about science
15	NATURAL	Public	Sector about natural
16	MECHANICAL	Public	Sector about mechanical

### 3.1.2.18 EnterpriseSizeEnum

No	Enum	Visibility	Description
1	LESS_THAN_10	Public	Scale of employee less than 10
2	FROM_10_TO_50	Public	Scale of employee from 10 to 50
3	FROM_50_TO_100	Public	Scale of employee from 50 to 100
4	FROM_100_TO_500	Public	Scale of employee from 100 to 500
5	MORE_THAN_500	Public	Scale of employee more than 500

### 3.1.2.19 AccountStatusEnum

No	Enum	Visibility	Description
1	INACTIVE	Public	Account status when it hasn't been activated yet
2	ACTIVE	Public	Account status when it has been activated already by admin
3	BLOCKED	Public	Account status when it has been blocked by admin
4	DELETED	Public	Account status when it has been deleted by admin

### 3.1.2.20 JobPayload Class

No	Attribute	Data Type	Visibility	Description
1	title	string	Private	Title of job
2	jobType	JobTypeEnum	Private	Type of job
3	educationLevelMin	EducationLevelEnum	Private	Level education required
4	yearExpRequirement	JobExperienceEnum	Private	Number year experience required
5	jobCatalogId	int	Private	Identification of job catalog
6	genderRequirement	GenderEnum	Private	Gender required
7	numRecruit	int	Private	Quantity candidate necessary
8	isUrgent	bool	Private	Status about find candidate necessary urgent or not
9	paymentMethod	PaymentMethodEnum	Private	Method payment of enterprise

10	salaryMin	double	Private	Minimum salary
11	salaryMax	double	Private	Maximum salary
12	description	string	Private	Abstract description
13	details	List<string>	Private	Details of description
14	moreRequires	List<string>	Private	Required addition
15	keywordIds	List<int>	Private	List id of keyword
16	isWorkAbroad	bool	Private	Status of job in country or oversea
17	country	string	Private	Country location working
18	province	string	Private	Province location working
19	district	string	Private	District location working
20	ward	string	Private	Ward location working
21	address	string	Private	Address details working
22	longitude	double	Private	Longitude of company
23	latitude	double	Private	Latitude of company

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.21 JobParam Class

No	Attribute	Data Type	Visibility	Description
1	search	string	Private	Keyword that actor wants to search job
2	isWorkAbroad	bool	Private	Status of job in country or oversea
3	country	string	Private	Country location working
4	province	string	Private	Province location working
5	district	string	Private	District location working
6	jobCatalog	int	Private	Id of job catalog
7	jobType	JobTypeEnum	Private	Type of job
8	createdTime	int	Private	Time that post was created
9	yearExpRequirement	JobExperienceEnum	Private	Number year experience required
10	educationLevelMin	EducationLevelEnum	Private	Identification of job catalog

11	genderRequir e	GenderEnum	Private	Gender required
12	paymentMet hod	PaymentMet hodEnum	Private	Method payment of enterprise
13	salaryExpect	double	Private	Expect salary that actor wants to search job

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.22 JobRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDB Context	Private	DbContext of the database.

No	Method	Return Type	Visibility	Description
1	searchJobs	List<Job>	Public	Search job by JobParam
2	getByEnterpri sed	List<Job>	Public	Get job by Enterpriseld
3	getAllJobs	List<Job>	Public	Get all jobs
4	getJobsAlgMo del	List<JobAlgM odel>	Public	Get list job algorithm model

### 3.1.2.23 Job Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification Job
2	title	string	Private	Title of job
3	jobCatalogId	int	Private	Identification of job catalog
4	jobType	JobTypeEnum	Private	Type of job
5	educationLev elMin	EducationLev elEnum	Private	Level education required
6	numRecruit	int	Private	Number year experience required
7	salaryMin	double	Private	Minimum salary
8	salaryMax	double	Private	Maximum salary

9	paymentMethod	PaymentMethodEnum	Private	Method payment of enterprise
10	yearExpRequirement	JobExperienceEnum	Private	Quantity candidate necessary
11	genderRequirement	GenderEnum	Private	Gender required
12	description	string	Private	Abstract description
13	details	List<string>	Private	Details of description
14	moreRequires	List<string>	Private	Required addition
15	isWorkAbroad	bool	Private	Status of job in country or oversea
16	country	string	Private	Country location working
17	province	string	Private	Province location working
18	district	string	Private	District location working
19	ward	string	Private	Ward location working
20	address	string	Private	Address details working
21	longitude	double	Private	Longitude of company
22	latitude	double	Private	Latitude of company
23	keywordIds	List<int>	Private	List id of keyword
24	isUrgent	bool	Private	Status about find candidate necessary urgent or not
25	enterpriseld	int	Private	Id of enterprise who created this job
26	createdTime	DateTime	Private	Time create job
27	updatedTime	DateTime	Private	Time update job
28	deletedTime	DateTime	Private	Time delete job
29	status	JobStatusEnum	Private	Status of job
30	jobCatalog	JobCatalog	Private	Entity Job Catalog

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.24 JobCatalog Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification job catalog
2	name	string	Private	Job catalog's name
3	isDelete	bool	Private	Status of job catalog deleted or not

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.25 JobController Class

No	Attribute	Data Type	Visibility	Description
1	jobService	IJobService	Private	Use methods inside this service.

No	Method	Return Type	Visibility	Description
1	searchJobs	List<JobSearchDTO>	Public	Search job by JobParam
2	createNew	Job	Public	Create new Job
3	update	Job	Public	Update fields of job
4	updateStatus	Job	Public	Update status of job

### 3.1.2.26 JobSearchDTO Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification job that actor wants to search
2	title	string	Private	Title of job
3	shortName	string	Private	Job's short name
4	logoUrl	string	Private	Logo's url link
5	isWorkAbroad	bool	Private	Status of job in country or oversea
6	country	string	Private	Country location working
7	province	string	Private	Province location working
8	salaryMin	double	Private	Minimum salary
9	salaryMax	double	Private	Maximum salary
10	paymentMethod	PaymentMethodEnum	Private	Method payment of enterprise
11	jobType	JobTypeEnum	Private	Type of job
12	isUrgent	bool	Private	Status about find candidate necessary urgent or not
13	createdTime	DateTime	Private	Time that post was created

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.1.2.27 JobService Class

No	Attribute	Data Type	Visibility	Description
1	jobRepository	IJobRepository	Private	Use methods inside this repository.

No	Method	Return Type	Visibility	Description
1	getJobById	Job	Public	Get job by job id
2	createNew	Job	Public	Create new job
3	update	Job	Public	Update fields of job
4	updateStatus	Job	Public	Update status of job
5	searchJob	List<JobSearchDTO>	Public	Search job by JobParam
6	getAllJobs	List<Job>	Public	Get all jobs
7	validateCreateJob	GenericResult	Private	Validate information update of job

### 3.1.2.28 IJobService Interface

No	Method	Return Type	Visibility	Description
1	getJobById	Job	Public	Get job by job id
2	createNew	Job	Public	Create new job
3	update	Job	Public	Update fields of job
4	updateStatus	Job	Public	Update status of job
5	searchJob	List<JobSearchDTO>	Public	Search job by JobParam
6	getAllJobs	List<Job>	Public	Get all jobs

### 3.1.2.29 IJobRepository Interface

No	Method	Return Type	Visibility	Description
1	getJobById	Job	Public	Get job by job id

2	createNew	Job	Public	Create new job
3	searchJob	List<JobSearchDTO>	Public	Search job by JobParam
4	getAllJobs	List<Job>	Public	Get all jobs

### 3.1.2.30 PaymentMethodEnum

No	Enum	Visibility	Description
1	EVERY_HOUR	Public	Hourly pay
2	EVERY_DAY	Public	Daily pay
3	EVERY_WEEK	Public	Weekly pay
4	EVERY_MONTH	Public	Monthly pay
5	DEALING	Public	Depend on offer and deal

### 3.1.2.31 JobTypeEnum

No	Enum	Visibility	Description
1	FULL_TIME	Public	Type job is fulltime
2	PART_TIME	Public	Type job is parttime
3	INTERN	Public	Type job is intern
4	REMOTE	Public	Type job is remote
5	PAID_BY_PRODUCT	Public	Type job is paid by product
6	SEASON	Public	Type job is according to season
7	SHIFT	Public	Type job is according to shift
8	PROJECT	Public	Type job is according to project
9	PREELANCER	Public	Type job is freelancer
10	OTHER	Public	Other type job

### 3.1.2.32 EducationLevelEnum

No	Enum	Visibility	Description
1	INTERMEDIATE	Public	Education level is intermediate
2	HIGH SCHOOL	Public	Education level is high school
3	COLLEGE	Public	Education level is college
4	UNIVERSITY	Public	Education level is university
5	MASTER	Public	Education level is master

6	DOCTOR	Public	Education level is doctorate
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### 3.1.2.33 JobExperienceEnum

No	Enum	Visibility	Description
1	LESS_THAN_1_YEAR	Public	The job experience is less than 1 year.
2	FROM_1_TO_2_YEAR	Public	The job experience is from 1 to 2 years.
3	FROM_3_TO_5_YEAR	Public	The job experience is from 3 to 5 years.
4	FROM_6_TO_10_YEAR	Public	The job experience is from 6 to 10 years.
5	MORE_THAN_10_YEAR	Public	The job experience is more than 10 years.

### 3.1.2.34 GenderEnum

No	Enum	Visibility	Description
1	MALE	Public	Male gender
2	FEMALE	Public	Female gender
3	OTHER	Public	Different male and female gender

### 3.1.2.35 JobStatusEnum

No	Enum	Visibility	Description
1	PUBLISHED	Public	Information about job Public
2	HIDDEN	Public	Information about job is hidden
3	COMPLETED	Public	Job was completed recruit
4	DELETED	Public	Job was deleted

### 3.2.3 Sequence Diagrams

Two diagrams below show the interaction between the components from the UI to the backend when the enterprise updates company information and creates new job.

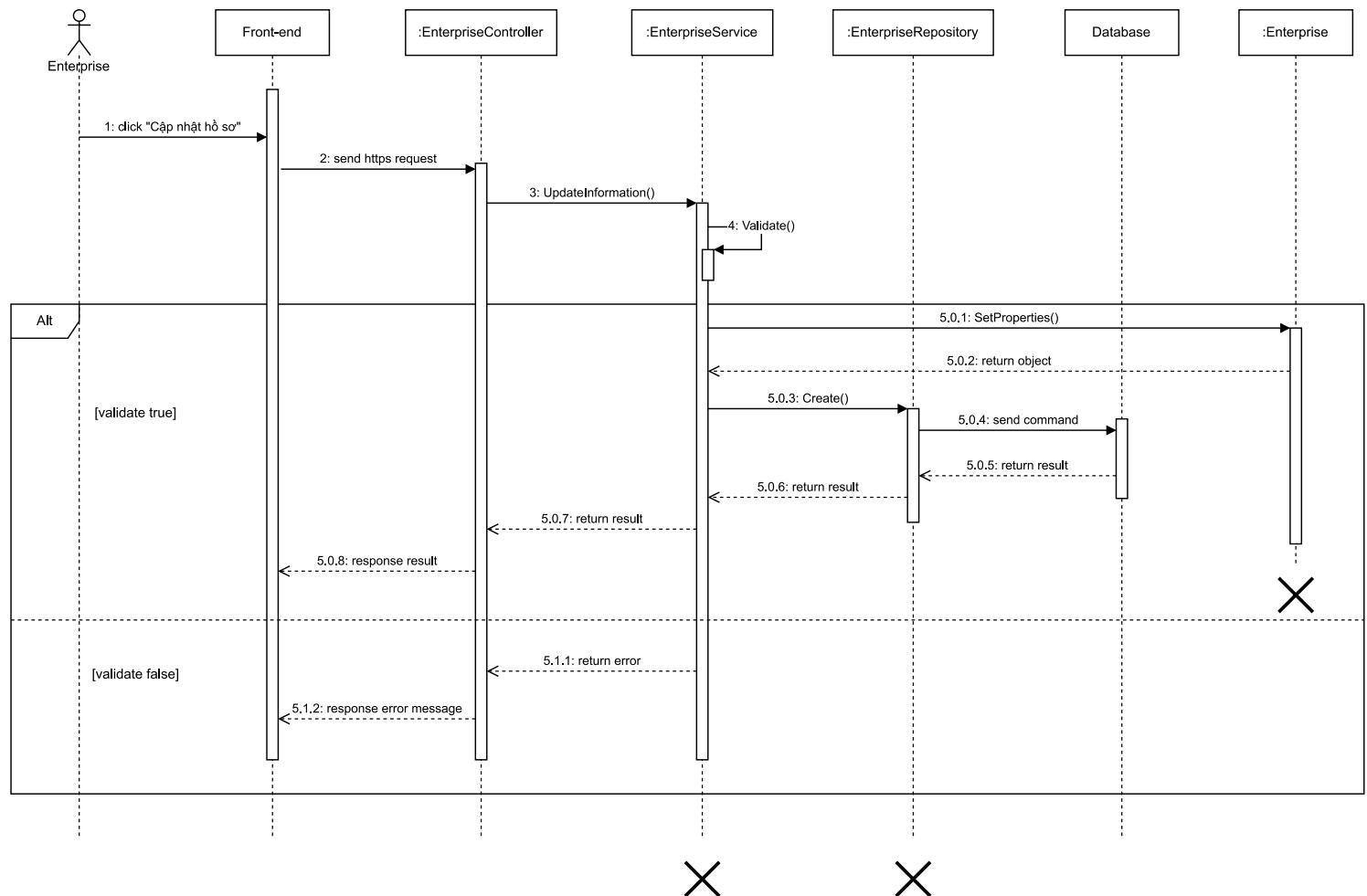


Figure 22: Sequence Diagram - Enterprise updates company information

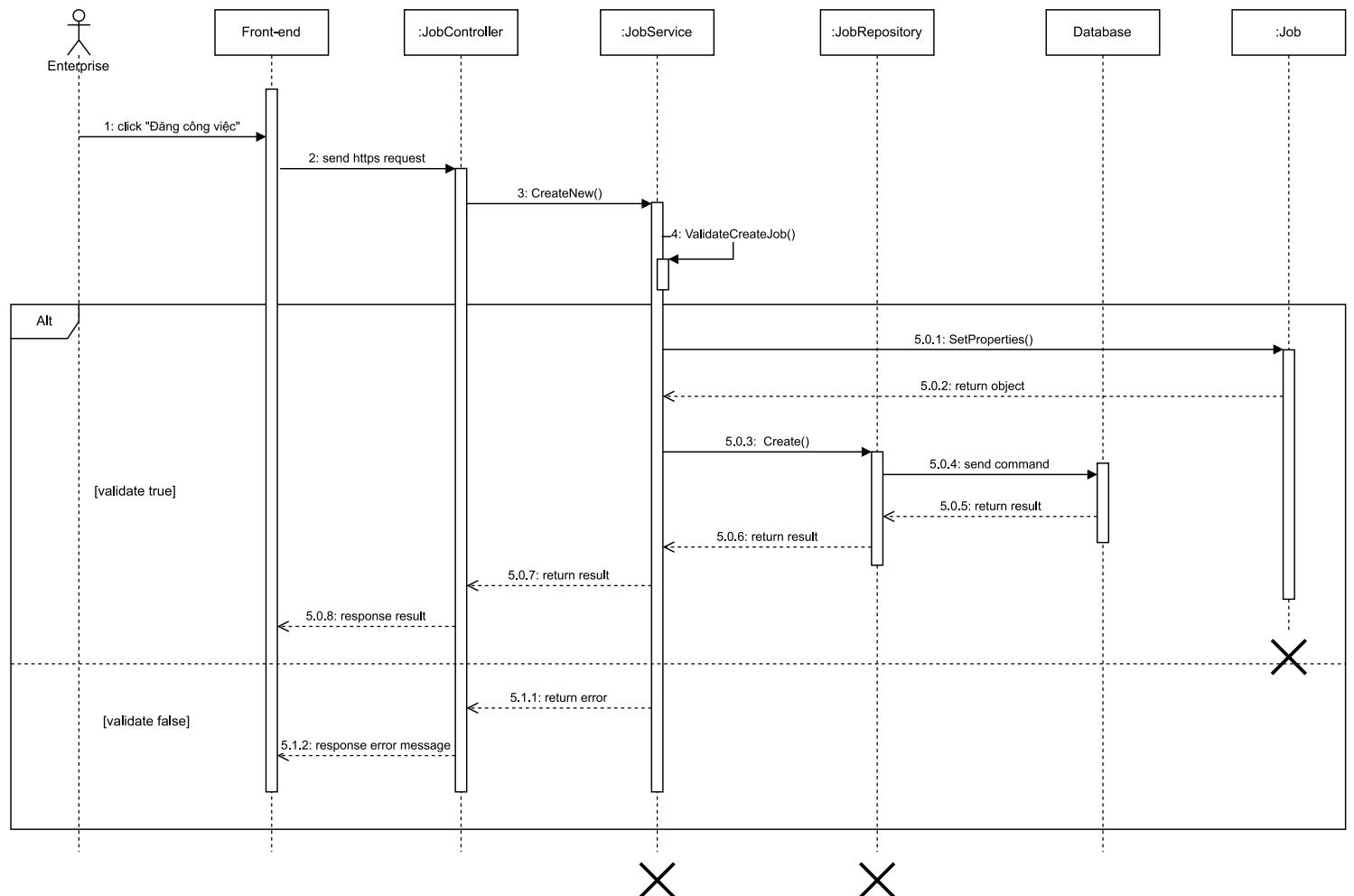


Figure 23: Sequence Diagram - Enterprise posts job

### 3.2 Candidate update resume profile

#### 3.2.1 Activity Diagrams

The diagram below depicts the activities of a candidate when he first started using Grabwork. Candidate will go to the dashboard and update information to attract recruiters.

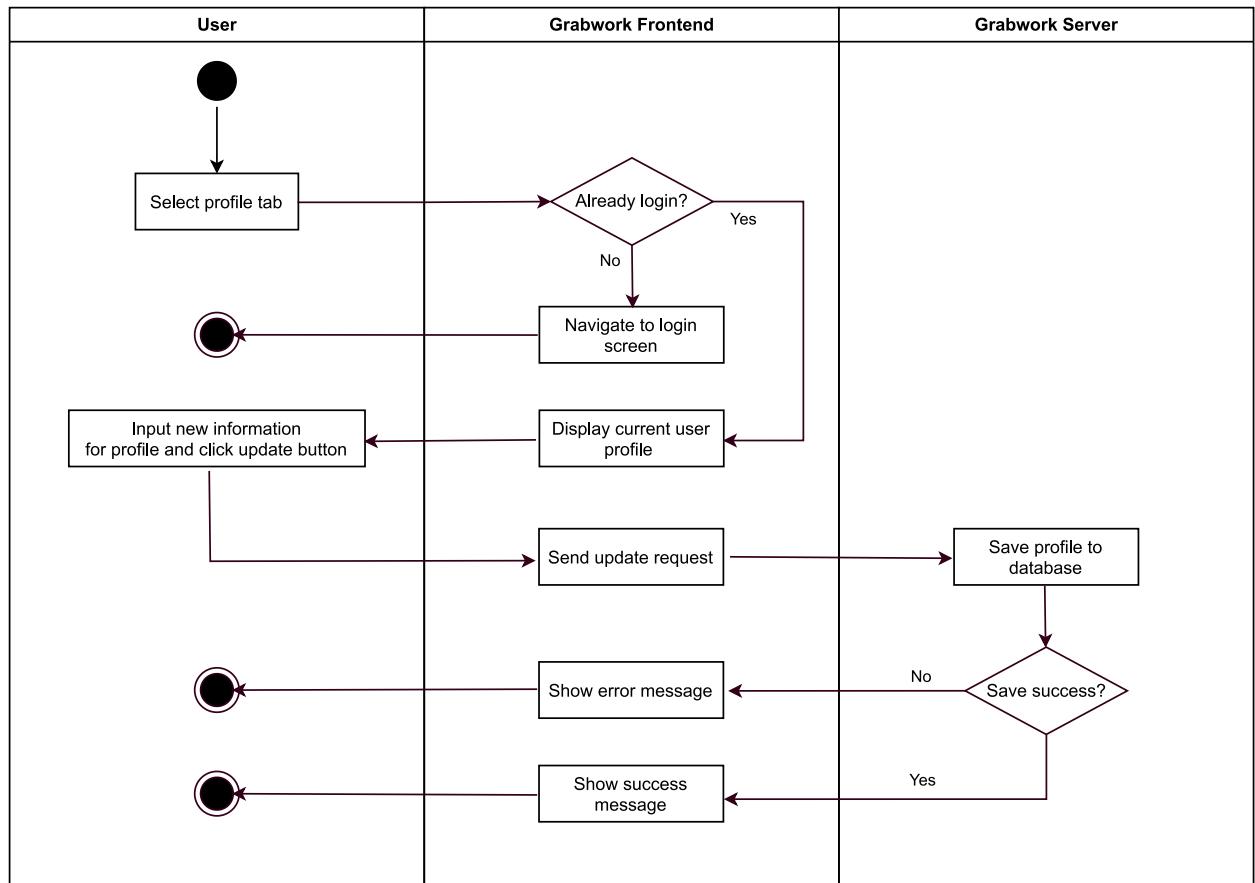


Figure 24: Activity Diagram - Candidate update resume profile

### 3.2.2 Class Diagrams

The diagram below shows the relationship between the classes in the server backend when the candidate updates the profile.

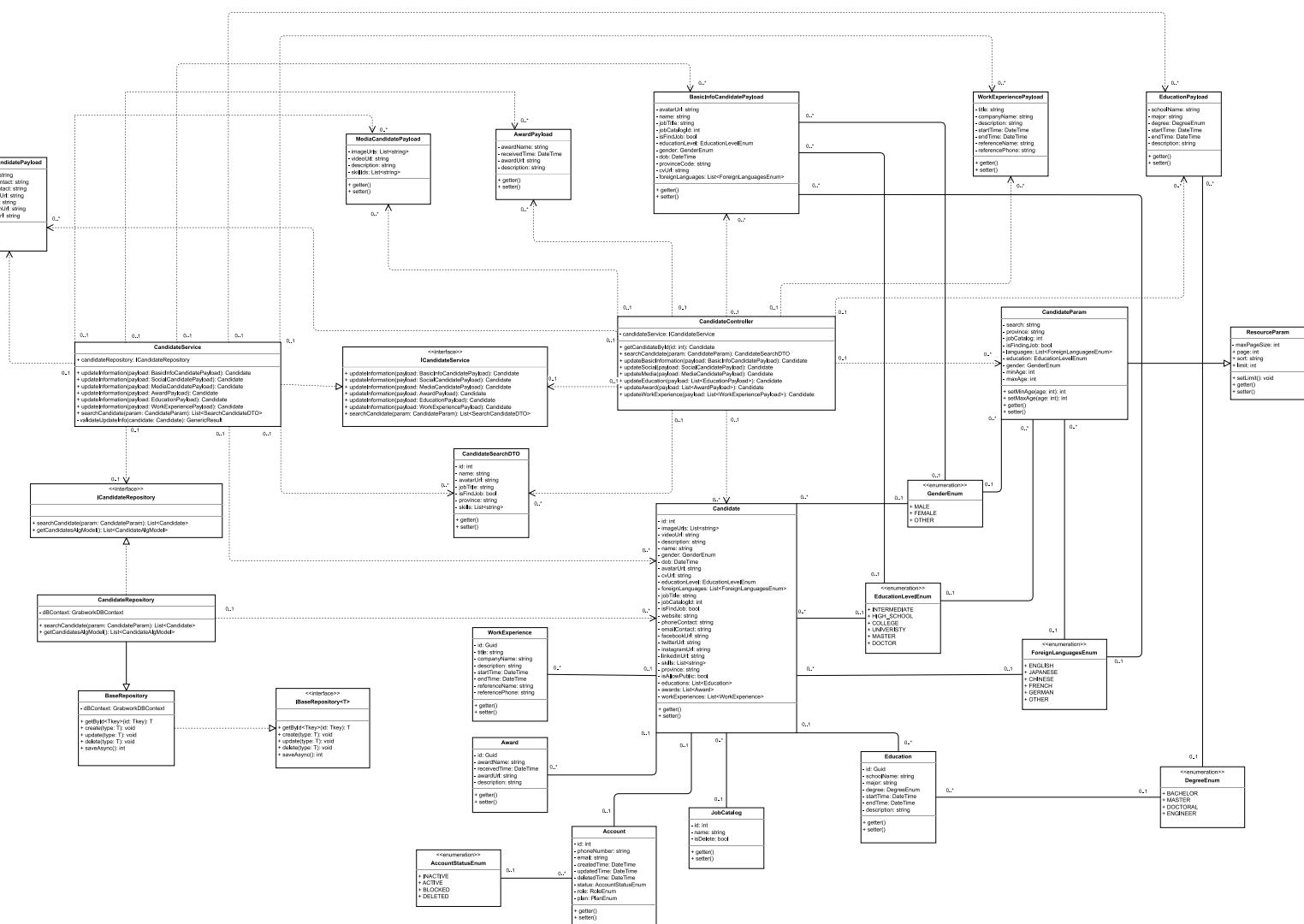


Figure 25: Class Diagram - Candidate update resume profile

### 3.2.2.1 Award Class

No	Attribute	Data Type	Visibility	Description
1	id	Guid	Private	Unique identifier of an award
2	awardName	string	Private	Title of an award
3	receivedTime	DateTime	Private	The time that candidate receives the award
4	awardUrl	string	Private	The verification link of award
5	description	string	Private	Summary information about an award

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.2 SocialCandidatePayload Class

No	Attribute	Data Type	Visibility	Description
1	website	string	Private	Personal website of candidate
2	phoneContact	string	Private	Candidate's personal phone number
3	emailContact	string	Private	Candidate's personal email address
4	facebookUrl	string	Private	Candidate's link personal Facebook
5	twitterUrl	string	Private	Candidate's link personal Twitter
6	instagramUrl	string	Private	Candidate's link personal Instagram
7	linkedinUrl	string	Private	Candidate's link personal LinkedIn

### 3.2.2.3 CandidateService Class

No	Attribute	Data Type	Visibility	Description
1	candidateRepository	ICandidateRepository	Public	Use methods inside this repository.

No	Method	Return Type	Visibility	Description
1	updateInformation	Candidate	Public	Update BasicInfoCandidatePayload of Candidate
2	updateInformation	Candidate	Public	Update SocialCandidatePayload of Candidate
3	updateInformation	Candidate	Public	Update MediaCandidatePayload of Candidate
4	updateInformation	Candidate	Public	Update AwardPayload of Candidate
5	updateInformation	Candidate	Public	Update EducationPayload of Candidate
6	updateInformation	Candidate	Public	Update WorkExperiencePayload of Candidate

7	searchCandidate	List<CandidateDTO>	Public	Search list candidate according to CandidateParam
8	validateUpdateInfo	GenericResult	Private	Validate information update of candidate

#### 3.2.2.4 CandidateRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDB Context	Private	DbContext of the database.

No	Method	Return Type	Visibility	Description
1	searchCandidate	List<Candidate>	Public	Search list candidate according to CandidateParam
2	getCandidateAlgModel	List<CandidateAlgModel>	Public	Get list candidate algorithm model

#### 3.2.2.5 BaseRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDB Context	Private	DbContext of the database.

No	Method	Return Type	Visibility	Description
1	getById	Data Type	Public	Get entity by its id.
2	create	void	Public	Add a record of target entity to its dbSet.
3	update	void	Public	Update existing data of target entity to its dbSet.
4	delete	void	Public	Delete existing data of target entity to its dbSet.
5	saveAsync	Int	Public	Save all changes of dbContext to database.

#### 3.2.2.6 MediaCandidatePayload Class

No	Attribute	Data Type	Visibility	Description
1	imageUrls	List<string>	Private	List links personal image of candidate
2	videoUrl	string	Private	Link personal video of candidate
3	description	string	Private	Description of candidate
4	skillIds	List<string>	Private	List skills of candidate

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.7 AwardPayload Class

No	Attribute	Data Type	Visibility	Description
1	awardName	string	Private	Award's name of candidate
2	receivedTime	DateTime	Private	Time that candidate was received award
3	awardUrl	string	Private	The verification link of award
4	description	string	Private	Summary information about an award

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.8 BasicInfoCandidatePayload Class

No	Attribute	Data Type	Visibility	Description
1	avatarUrl	string	Private	Link image avatar of candidate
2	name	string	Private	Name of candidate
3	jobTitle	string	Private	Title job of candidate
4	jobCatalog	Int	Private	Catalog Job of candidate
5	isFindJob	bool	Private	Status required find job of candidate
6	educationLevel	EducationLevelEnum	Private	Level education of candidate
7	gender	GenderEnum	Private	Gender of candidate
8	dob	DateTime	Private	Day of birth of candidate
9	provinceCode	string	Private	Candidate's code of province
10	cvUrl	string	Private	Link Resume of candidate
11	foreignLanguages	List<ForeignLanguageEnum>	Private	List languages skill of candidate

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.9 WorkExperiencePayload Class

No	Attribute	Data Type	Visibility	Description
1	title	string	Private	Title about experience working in the past
2	companyName	string	Private	The name of company used to work
3	description	string	Private	Description about experience working
4	startTime	Datetime	Private	This time start worked at this company
5	endTime	Datetime	Private	This time end worked at this company
6	referenceName	string	Private	Name of one that referencing to this job
7	referencePhone	string	Private	Phone of one that referencing to this job

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.10 EducationPayload Class

No	Attribute	Data Type	Visibility	Description
1	schoolName	string	Private	Name of school that studied
2	major	string	Private	Major that studied at this school
3	degree	DegreeEnum	Private	Type of degree that received
4	startTime	DateTime	Private	This time start studied
5	endTime	DateTime	Private	This time end studied
6	Description	string	Private	Description about major, degree...

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.11 CandidateController Class

No	Attribute	Data Type	Visibility	Description
1	candidateService	ICandidateService	Private	Use methods inside this service.

No	Method	Return Type	Visibility	Description

1	getCandidate byId	Candidate	Public	Get candidate by id of candidate
2	searchCandidate	CandidateSearchDTO	Public	Search candidate according to Candidate param
3	updateBasicInformation	Candidate	Public	Update basic information of candidate
4	updateSocial	Candidate	Public	Update social network information of candidate
5	updateMedia	Candidate	Public	Update media contain image, avatar, video of candidate
6	updateEducation	Candidate	Public	Update list information education of candidate
7	updateAward	Candidate	Public	Update list information award of candidate
8	updateWorkExperience	Candidate	Public	Update list information work experience of candidate

### 3.2.2.12 CandidateParam Class

No	Attribute	Data Type	Visibility	Description
1	search	string	Private	Keyword input about candidate
2	province	string	Private	Province input that actor wants to search
3	jobCatalog	Int	Private	Key job catalog that actor wants to search
4	isFindingJob	bool	Private	Demand about new job of candidate
5	languages	List<ForeignLanguagesEnum>	Private	List languages that actor wants to search
6	education	EducationLevelEnum	Private	Education level of candidate that actors want to search
7	gender	GenderEnum	Private	Gender input that actor wants to search
8	minAge	int	Private	Minimum ages input that actor wants to search
9	maxAge	int	Private	Maximum ages input that actor wants to search

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute
3	getMinAge	Int	Public	Get attribute ages value

4	setMaxAge	int	Public	Set value of attribute age
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### 3.2.2.13 ResourceParam Class

No	Attribute	Data Type	Visibility	Description
1	maxPageSize	int	Private	Maximum size of page
2	page	int	Public	Index display page
3	sort	string	Public	This type of sort for list
4	limit	int	Public	This limit page that actor wants to display

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute
3	setLimit	void	Public	Set value limit

### 3.2.2.14 CandidateSearchDTO Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification candidate that actor wants to search
2	name	string	Private	Name of candidate
3	avatarUrl	string	Private	Avatar's link URL of candidate
4	jobTitle	bool	Private	Title of job
5	isFindJob	string	Private	Demand about new job of candidate
6	province	string	Private	Name of province
7	skills	List<string>	Private	List key work about skills

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.15 Candidate Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification candidate that actor wants to search
2	imageUrls	List<string>	Private	Introduce image's link URL of candidate
3	videoUrl	string	Private	Introduce video's link URL of candidate
4	description	string	Private	Description of candidate
5	name	string	Private	Name of candidate
6	gender	Gender<Enum>	Private	Gender of candidate

7	dob	DateTime	Private	Birthday of candidate
8	avatarUrl	string	Private	Avatar's link URL of candidate
9	cvUrl	string	Private	Link URL about CV of candidate
10	educationLevel	EducationLevelEnum	Private	Level education of candidate
11	foreignLanguages	List<ForeignLanguagesEnum>	Private	List languages skill of candidate
12	jobTitle	string	Private	Title job that candidate cares
13	jobCatalogId	int	Private	Identification job catalog that candidate cares
14	isFindJob	bool	Private	Demand about new job of candidate
15	website	string	Private	Personal website of candidate
16	phoneContact	string	Private	Candidate's personal phone number
17	emailContact	string	Private	Candidate's personal email address
18	facebookUrl	string	Private	Candidate's link personal Facebook
19	twitterUrl	string	Private	Candidate's link personal Twitter
20	instagramUrl	string	Private	Candidate's link personal Instagram
21	linkedinUrl	string	Private	Candidate's link personal LinkedIn
22	skills	List<string>	Private	List key work about skills
23	province	String	Private	Name of province
24	isAllowPublic	Bool	Private	Status hides or visible profile of candidate
25	educations	List<Education>	Private	List information about education of candidate
26	awards	List<Award>	Private	List information about awards of candidate
27	workExperiences	List<WorkExperience>	Private	List information about experience of candidate

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.16 WorkExperience Class

No	Attribute	Data Type	Visibility	Description
1	id	Guid	Private	Identification work experience
2	title	string	Private	Title about experience working in the past

3	companyName	string	Private	The name of company used to work
4	description	string	Private	Description about experience working
5	startTime	DateTime	Private	This time start worked at this company
6	endTime	DateTime	Private	This time end worked at this company
7	referenceName	string	Private	Name of one that referencing to this job
8	referancePhone	string	Private	Phone of one that referencing to this job

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.17 Education Class

No	Attribute	Data Type	Visibility	Description
1	id	Guid	Private	Identification education
2	schoolName	string	Private	Name of school that studied
3	major	string	Private	Major that studied at this school
4	degree	DegreeEnum	Private	Type of degree that received
5	startTime	DateTime	Private	This time start studied
6	endTime	DateTime	Private	This time end studied
7	description	string	Private	Description about major, degree...

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.18 Account Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification account
2	phoneNumbe r	string	Private	Personal phone number
3	email	string	Private	Personal email address
4	createTime	DateTime	Private	Time create account
5	updateTime	DateTime	Private	Time update account
6	deleteTime	DateTime	Private	Time delete account
7	status	AccountStat usEnum	Private	Status of account
8	role	RoleEnum	Private	Role of account

9	plan	PlanEnum	Private	Level of account
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No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.19 JobCatalog Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Identification job catalog that candidate cares
2	Name	string	Private	Job catalog's name
3	isDelete	bool	Private	Job catalog deleted or not

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.2.2.20 ICandidateRepository Interface

No	Method	Return Type	Visibility	Description
1	searchCandidateRepository	List<Candidate>	Public	Search list candidate according to CandidateParam
2	getCandidateAlgModel	List<CandidateAlgModel>	Public	Get list candidate algorithm model

### 3.2.2.21 ICandidateService Interface

No	Method	Return Type	Visibility	Description
1	searchCandidate	CandidateSearchDTO	Public	Search candidate according to Candidate param
2	updateBasicInformation	Candidate	Public	Update basic information of candidate
3	updateSocial	Candidate	Public	Update social network information of candidate
4	updateMedia	Candidate	Public	Update media contain image, avatar, video of candidate
5	updateEducation	Candidate	Public	Update list information education of candidate

6	updateAward	Candidate	Public	Update list information award of candidate
7	updateWorkExperience	Candidate	Public	Update list information work experience of candidate

### 3.2.2.22 IBaseRepository<T> Interface

No	Method	Return Type	Visibility	Description
1	GetById	Data Type	Public	Get entity by its id.
2	Create	void	Public	Add a record of target entity to its dbSet.
3	Update	void	Public	Update existing data of target entity to its dbSet.
4	Delete	void	Public	Delete existing data of target entity to its dbSet.
5	SaveAsync	Int	Public	Save all changes of dbContext to database.

### 3.2.2.23 AccountStatusEnum

No	Enum	Visibility	Description
1	INACTIVE	Public	Account status when it hasn't been activated yet
2	ACTIVE	Public	Account status when it has been activated already by admin
3	BLOCKED	Public	Account status when it has been blocked by admin
4	DELETED	Public	Account status when it has been deleted by admin

### 3.2.2.24 DegreeEnum

No	Enum	Visibility	Description
1	BACHELOR	Public	Bachelor's degree
2	MASTER	Public	Master's degree
3	DOCTORAL	Public	Doctoral degree
4	ENGINEER	Public	Engineer degree

### 3.2.2.25 GenderEnum

No	Enum	Visibility	Description
1	MALE	Public	Male gender
2	FEMALE	Public	Female gender
3	OTHER	Public	Different male and female gender

### 3.2.2.26 ForeignLanguagesEnum

No	Enum	Visibility	Description
1	ENGLISH	Public	English language

2	JAPANESE	Public	Japanese language
3	CHINESE	Public	Chinese language
4	FRENCH	Public	French language
5	GERMAN	Public	German language
6	OTHER	Public	Other options language

### 3.2.2.27 EducationLevelEnum

No	Enum	Visibility	Description
1	INTERMEDIATE	Public	Education level is intermediate
2	HIGH SCHOOL	Public	Education level is high school
3	COLLEGE	Public	Education level is college
4	UNIVERSITY	Public	Education level is university
5	MASTER	Public	Education level is master
6	DOCTOR	Public	Education level is doctorate

### 3.2.3 Sequence Diagrams

The diagram below shows the interaction between the components from the UI to the backend when the candidate updates the profile.

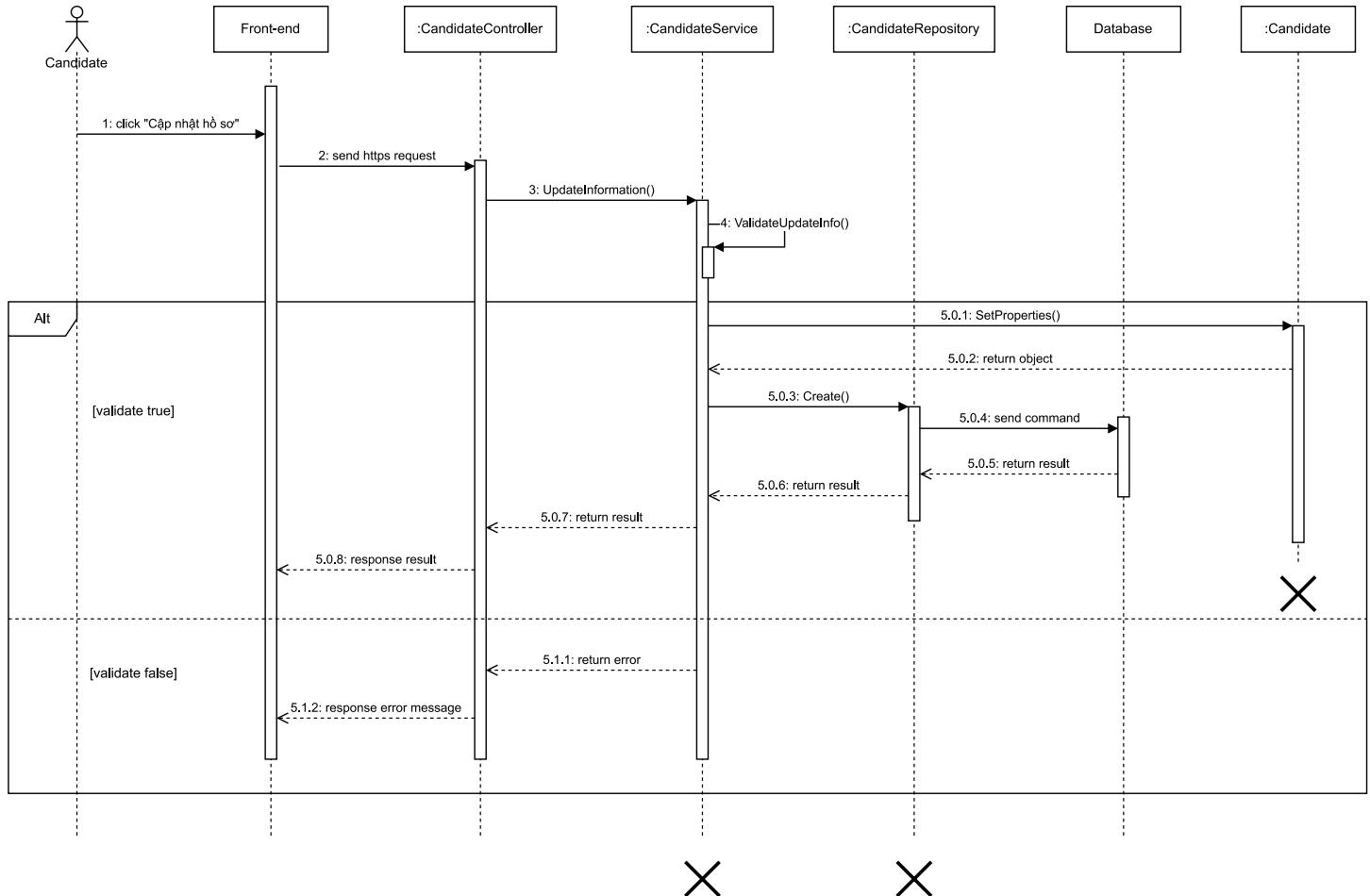


Figure 26: Sequence Diagram - Candidate update resume profile

### 3.3 System suggests matching jobs and candidates

#### 3.3.1 Activity Diagrams

Two diagrams below depict the activities to recommend jobs to a candidate. The first diagram is the steps to register receiving notifications. And the second diagram is the steps that the system sends the notifications to users.

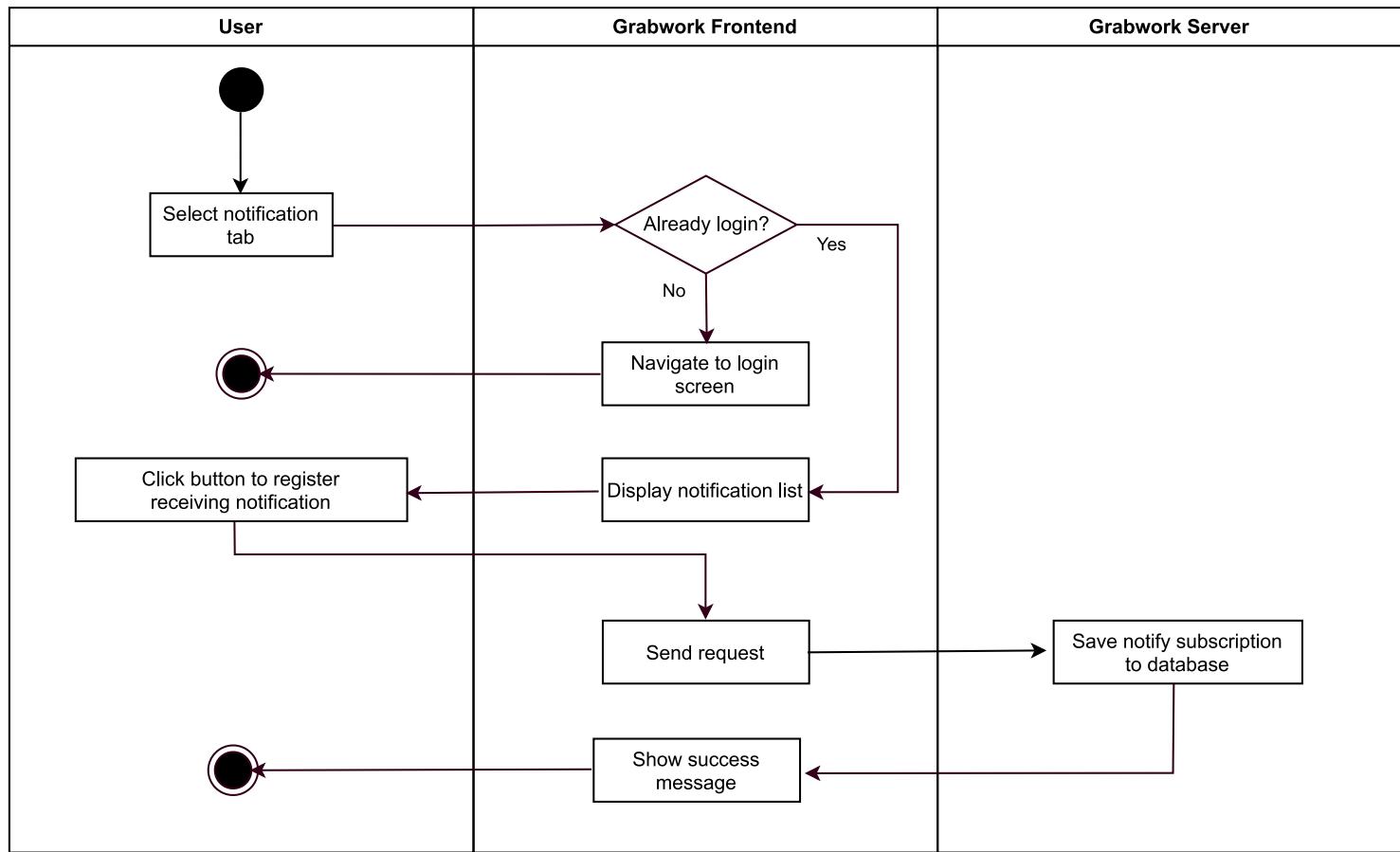


Figure 27: Activity Diagram - User registers to get notification

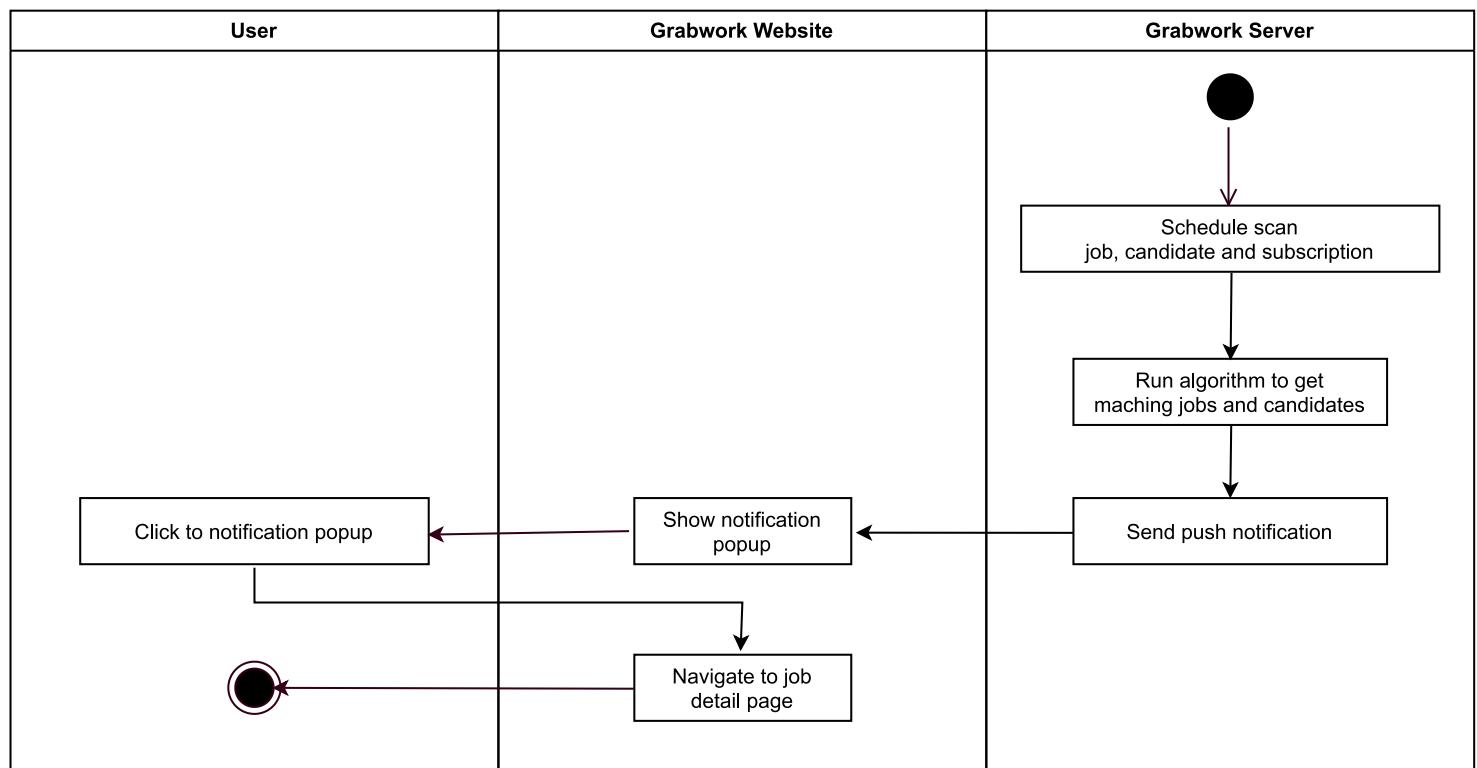


Figure 28: Activity Diagram - System suggests matching jobs and candidates

### 3.3.2 Class Diagrams

The diagram below shows the relationship between the classes in the server backend when the candidate registers receiving notifications and the system sends the notifications to users.

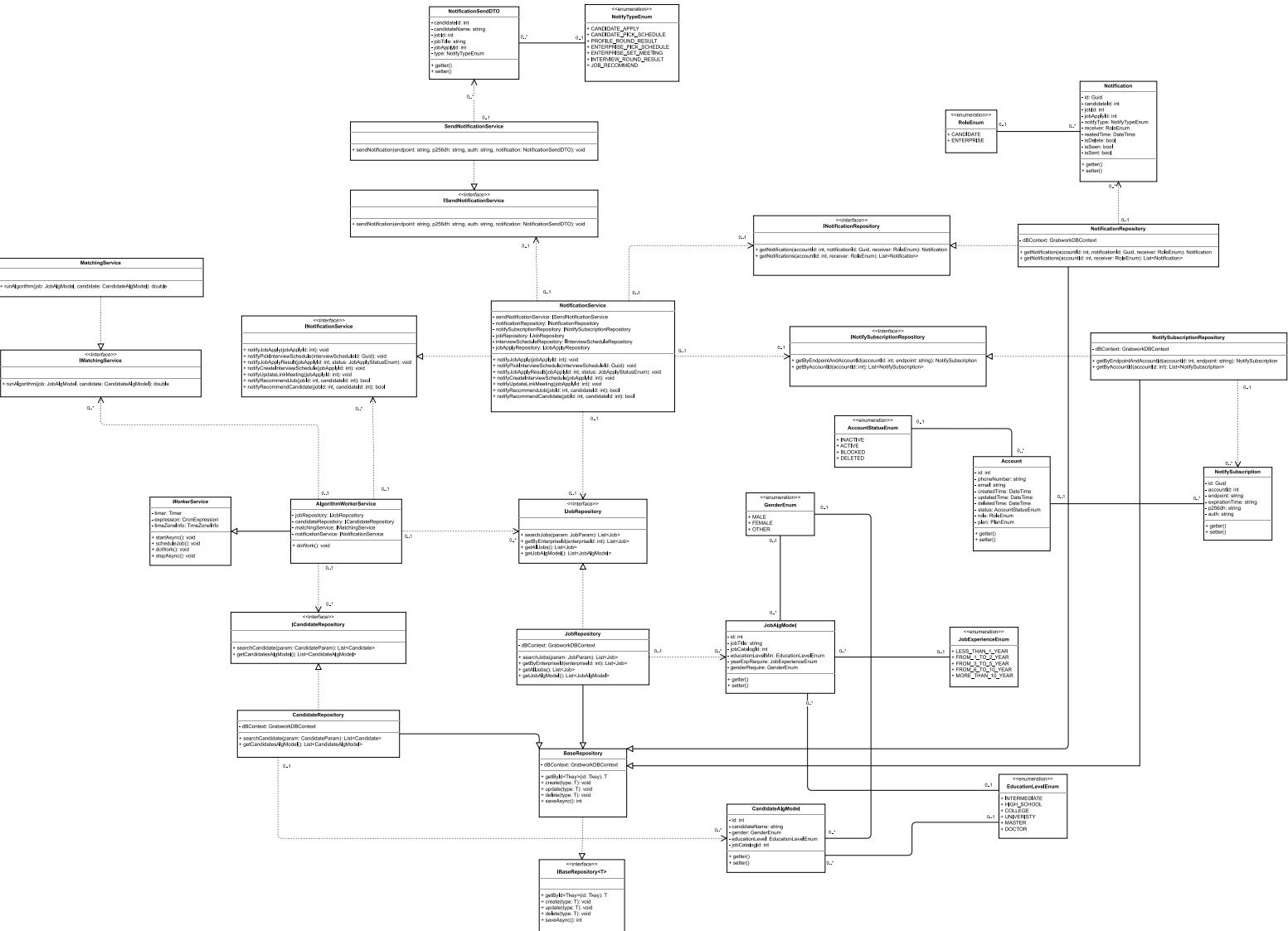


Figure 29: Class Diagram - System suggests matching jobs and candidates

#### 3.3.2.1 NotificationSendDTO Class

No	Attribute	Data Type	Visibility	Description
1	candidateId	int	Private	Id of the Candidate who will receive this Notification.
2	candidateName	string	Private	Name of the Candidate.
3	jobId	int	Private	Id of the Job.
4	jobTitle	string	Private	Title of the Job.
5	jobApplyId	int	Private	Id of the JobApply.

6	type	NotifyTypeEnum	Private	Type of this Notification.
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No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.3.2.2 SendNotificationService Class

No	Method	Return Type	Visibility	Description
1	sendNotification	Data Type	Public	Send notification with some params.

### 3.3.2.3 MatchingService Class

No	Method	Return Type	Visibility	Description
1	runAlgorithm	double	Public	Get attribute value

### 3.3.2.4 NotificationService Class

No	Attribute	Data Type	Visibility	Description
1	sendNotificationService	ISendNotificationService	Private	Use methods inside this service.
2	jobApplyRepository	IJobApplyRepository	Private	Use methods inside this repository.
3	notificationRepository	INotificationRepository	Private	Use methods inside this repository.
4	notifySubscriptionRepository	INotifySubscriptionRepository	Private	Use methods inside this repository.
5	interviewScheduleRepository	IIInterviewScheduleRepository	Private	Use methods inside this repository.
6	jobRepository	IJobRepository	Private	Use methods inside this repository.

No	Method	Return Type	Visibility	Description
1	notifyJobApply	Data Type	Public	Notify job apply by jobApplyId.
2	notifyPickInterviewSchedule	Data Type	Public	Notify interview schedule picked by interviewScheduleId.
3	notifyJobApplyResult	Data Type	Public	Notify job apply result by jobApplyId and JobApplyStatus.

4	notifyCreateInterviewSchedule	Data Type	Public	Notify interview schedule created by jobApplyId.
5	notifyUpdateLinkMeeting	Data Type	Public	Notify link meeting updated by jobApplyId.
6	notifyRecommendJob	Bool	Public	Notify recommend job by ResultAlgModel.
7	notifyRecommendCandidate	Bool	Public	Notify recommend candidate by ResultAlgModel.

### 3.3.2.5 Notification Class

No	Attribute	Data Type	Visibility	Description
1	Id	Guid	Private	The primary key of the Notification table.
2	CandidateId	int	Private	Id of the Candidate.
3	JobId	int	Private	Id of the Job.
4	JobApplyId	int (nullable)	Private	Id of the JobApply.
5	NotifyType	NotifyTypeEnum	Private	Type of Notification.
6	Receiver	RoleEnum	Private	Time that the Notification's created.
7	CreatedTime	DateTime	Private	Id of the Job.
8	IsDelete	bool	Private	If this Notification is deleted.
9	IsSeen	bool	Private	If this Notification is seen by the receiver.
10	IsSent	bool	Private	If this Notification is sent to the receiver.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.3.2.6 NotificationRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDbContext	Private	The database context of the production database.

No	Method	Return Type	Visibility	Description
1	getNotification	Notification	Public	Get notification by accountId, notificationId and role of the receiver.

2	getNotifications	List<Notifications>	Public	Get Notification by accountId and role of the receiver.
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### 3.3.2.7 NotifySubscriptionRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDb Context	Private	The database context of the production database.

No	Method	Return Type	Visibility	Description
1	getByEndpoint AndAccountId	NotifySubscription	Public	Get NotifySubscription by accountId and endpoint.
2	getByAccountId	List<NotifySubscription>	Public	Get NotifySubscriptions by accountId.

### 3.3.2.8 Account Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	The primary key of the Account table.
2	phoneNumber	string	Private	The phone number of the Account.
3	email	string	Private	The email of the Account.
4	createdTime	DateTime	Private	The created time of the Account.
5	updatedTime	DateTime	Private	The updated time of the Account.
6	deletedTime	DateTime	Private	The deleted time of the Account.
7	status	AccountStatusEnum	Private	The status of the Account.
8	role	RoleEnum	Private	The role of the Account.
9	plan	PlanEnum	Private	The plan of the Account.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.3.2.9 NotifySubscription Class

No	Attribute	Data Type	Visibility	Description
1	id	Guid	Private	The primary key of the NotifySubscription table.
2	accountId	int	Private	Id of the Account.
3	endpoint	string	Private	The endpoint of the NotifySubscription.
4	expirationTime	string	Private	The expiration time of the NotifySubscription.
5	p256dh	string	Private	The P256dh of the NotifySubscription.

6	auth	string	Private	The auth of the NotifySubscription.
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No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.3.2.10 JobAlgModel Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	The Id of the target Job.
2	jobTitle	string	Private	The title of the target Job.
3	jobCatalogId	int	Private	The job catalog's id of the target Job.
4	educationLevel IMin	EducationLevelEnum	Private	The minimum education level of the target Job.
5	yearExpRequirement	JobExperienceEnum	Private	The minimum year experience of the target Job.
6	genderRequirement	GenderEnum	Private	The gender required of the target Job.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.3.2.11 CandidateAlgModel Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	Id of target Candidate.
2	candidateName	string	Private	Name of target Candidate.
3	gender	GenderEnum	Private	Gender of target Candidate.
4	educationLevel I	EducationLevelEnum	Private	Education level of target Candidate.
5	jobCatalogId	int	Private	Id of target Candidate's job catalog.
6	workExperiences	List<WorkExperienceAlgModel>	Private	List of work experience of target Candidate.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

### 3.3.2.12 BaseRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDB Context	Private	DbContext of the database.

No	Method	Return Type	Visibility	Description
1	getById	Data Type	Public	Get entity by its id.
3	create	void	Public	Add a record of target entity to its dbSet.
4	update	void	Public	Update existing data of target entity to its dbSet.
5	delete	void	Public	Delete existing data of target entity to its dbSet.
6	saveAsync	Int	Public	Save all changes of dbContext to database.

### 3.3.2.13 CandidateRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDB Context	Private	Db context of the database.

No	Method	Return Type	Visibility	Description
1	searchCandidate	IQueryable<Candidate>	Public	Filtered search for a candidate by params.
2	getCandidateIncludManyById	Candidate	Public	Get a candidate with much information by candidateld.
3	countJobApply	Int	Public	Get the number of jobs that the candidate has applied to by candidateld.
4	countJobInterview	Int	Public	Get the number of jobs that the candidate has applied for, and status is being in the interview process by candidateld.
5	countProfileView	Int	Public	Get profile view of the candidate by candidateld and months.
6	getCandidatesAlgModel	List<CandidateAlgModel>	Public	Get candidateAlg model which is used to analysis.
7	getAllCandidates	IQueryable<Account>	Public	Get all candidates.

### 3.3.2.14 JobRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDB Context	Private	Db context of the database.

No	Method	Return Type	Visibility	Description
1	searchJobs	List<Job>	Public	Filtered search for a job by params.
2	getByEnterpriseId	List<Job>	Public	Get jobs by enterprise id.
3	getAllJobs	List<Job>	Public	Get all job.
4	getJobAlgModel	List<JobAlgModel>	Public	Get JobAlg models which is used to analysis.

### 3.3.2.15 WorkerService Class

No	Attribute	Data Type	Visibility	Description
1	timer	Timer	Private	Timer for worker service.
2	expression	CronExpression	Private	Cron expression use for the worker service.
3	timeZoneInfo	TimeZoneInfo	Private	Time zone information.

No	Method	Return Type	Visibility	Description
1	startAsync	Data Type	Public	Start an asynchronous thread for worker service.
2	scheduleJob	Data Type	Protected	Schedule worker service by time zone information and expression.
3	doWork	Data Type	Public	Do work.
4	stopAsync	Data Type	Public	Stop an asynchronous thread for worker service and stop the timer.

### 3.3.2.16 AlgorithmWorkerService Class

No	Attribute	Data Type	Visibility	Description
1	jobRepository	IJobRepository	Private	The repository of Job.
2	candidateRepository	ICandidateRepository	Private	The repository of Candidate.
3	matchingService	IMatchingService	Private	The matching service.
4	notificationService	INotificationService	Private	The notification service.

No	Method	Return Type	Visibility	Description
1	doWork	Data Type	Public	Do analysis work based on the algorithms inside.

### 3.3.2.17 ISendNotificationService Interface

No	Method	Return Type	Visibility	Description
1	sendNotification	void	Public	Use to send Notification by endpoint, p256dh, auth, and NotificationSendDTO data model.

### 3.3.2.18 IMatchingService Interface

No	Method	Return Type	Visibility	Description
1	runAlgorithm	double	Public	Calculate the matching percent of job and candidate.

### 3.3.2.19 INotificationService Interface

No	Method	Return Type	Visibility	Description
1	notifyJobApply	Data Type	Public	Notify job apply by jobApplyId.
2	notifyPickInterviewSchedule	Data Type	Public	Notify interview schedule picked by interviewScheduleId.
3	notifyJobApplyResult	Data Type	Public	Notify job apply result by jobApplyId and JobApplyStatus.
4	notifyCreateInterviewSchedule	Data Type	Public	Notify interview schedule created by jobApplyId.
5	notifyUpdateLinkMeeting	Data Type	Public	Notify link meeting updated by jobApplyId.
6	notifyRecommendJob	Bool	Public	Notify recommend job by ResultAlgModel.
7	notifyRecommendCandidate	Bool	Public	Notify recommend candidate by ResultAlgModel.

### 3.3.2.20 INotificationRepository Interface

No	Method	Return Type	Visibility	Description
1	getNotification	Notification	Public	Get Notification by accountId, notificationId and receiver role.
2	getNotifications	List<Notification>	Public	Get Notifications by accountId, and receiver role.

### 3.3.2.21 INotifySubscriptionRepository Interface

No	Method	Return Type	Visibility	Description
1	getByEndpointAndAccountId	NotifySubscription	Public	Get NotifySubscription by accountId and endpoint.
2	getByAccountId	List<NotifySubscription>	Public	Get NotifySubscriptions by accountId.

### 3.3.2.22 IBaseRepository Interface<T>

No	Method	Return Type	Visibility	Description
1	getById	Data Type	Public	Get entity by its id.
2	create	void	Public	Add a record of target entity to its dbSet.
3	update	void	Public	Update existing data of target entity to its dbSet.
4	delete	void	Public	Delete existing data of target entity to its dbSet.
5	saveAsync	Int	Public	Save all changes of dbContext to database.

### 3.3.2.23 ICandidateRepository Interface

No	Method	Return Type	Visibility	Description
1	searchCandidate	IQueryable<Candidate>	Public	Filtered search for a candidate by params.
2	getCandidatesAlgModel	List<CandidateAlgModel>	Public	Get candidateAlg model which is used to analysis.

### 3.3.2.24 IJobRepository Interface

No	Method	Return Type	Visibility	Description
1	searchJobs	List<Job>	Public	Filtered search for a job by params.
2	getByEnterpriseId	List<Job>	Public	Get jobs by enterprise id.
3	getAllJobs	List<Job>	Public	Get all job.
4	getJobAlgModel	List<JobAlgModel>	Public	Get JobAlg models which is used to analysis.

### 3.3.2.25 NotifyTypeEnum

No	Enum	Visibility	Description
1	CANDIDATE_APPLY	Public	Account status when it hasn't been activated yet
2	CANDIDATE_PICK_SCHEDULE	Public	Notify the enterprise when they have a candidate that picked the schedule.

3	PROFILE_ROUND_RESULT	Public	Notify the candidate when they have the result of profile round.
4	ENTERPRISE_PICK_SCHEDULE	Public	Notify the candidate when the enterprise picks a schedule.
5	ENTERPRISE_SET_MEETING	Public	Notify the candidate when the enterprise sets up a meeting.
6	INTERVIEW_ROUND_RESULT	Public	Notify the candidate when they have the result of the interview round.
7	JOB_RECOMMEND	Public	Notify the candidate when they have a job recommended.

### 3.3.2.26 RoleEnum

No	Enum	Visibility	Description
1	CANDIDATE	Public	The role of the account is candidate.
2	ENTERPRISE	Public	The role of the account is candidate.

### 3.3.2.27 AccountStatusEnum

No	Enum	Visibility	Description
1	INACTIVE	Public	The account has not been verified.
2	ACTIVE	Public	The account has been verified.
3	BLOCKED	Public	The account has been blocked.
4	DELETED	Public	The account has been deleted.

### 3.3.2.28 GenderEnum

No	Enum	Visibility	Description
1	MALE	Public	Gender of the account is male.
2	FEMALE	Public	Gender of the account is female.
3	OTHER	Public	Gender of the account is other.

### 3.3.2.29 JobExperienceEnum

No	Enum	Visibility	Description
1	LESS_THAN_1_YEAR	Public	The job experience is less than 1 year.
2	FROM_1_TO_2_YEAR	Public	The job experience is from 1 to 2 years.
3	FROM_3_TO_5_YEAR	Public	The job experience is from 3 to 5 years.
4	LESS_THAN_10_YEAR	Public	The job experience is from 6 to 10 years.
5	MORE_THAN_10_YEAR	Public	The job experience is more than 10 years.

### 3.3.2.30 EducationLevelEnum

No	Enum	Visibility	Description
1	INTERMEDIATE	Public	The education level of the candidate is intermediate.
2	HIGH SCHOOL	Public	The education level of the candidate is high school.
3	COLLEGE	Public	The education level of the candidate is college.

4	UNIVERISTY	Public	The education level of the candidate is university.
5	MASTER	Public	The education level of the candidate is master.
6	DOCTOR	Public	The education level of the candidate is doctor.

### 3.3.3 Sequence Diagrams

Two diagrams below show the interaction between the components from the UI to the backend when the candidate registers receiving notifications and the system suggests job for users.

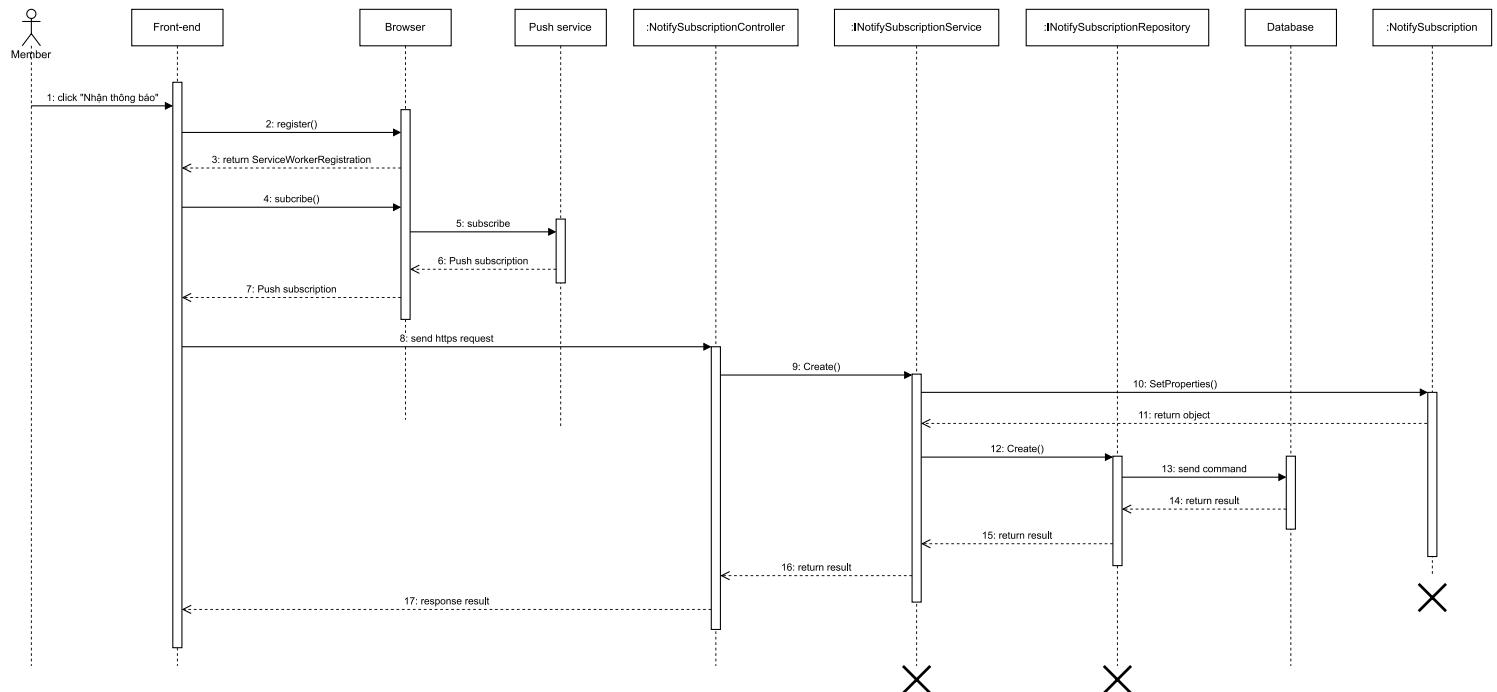
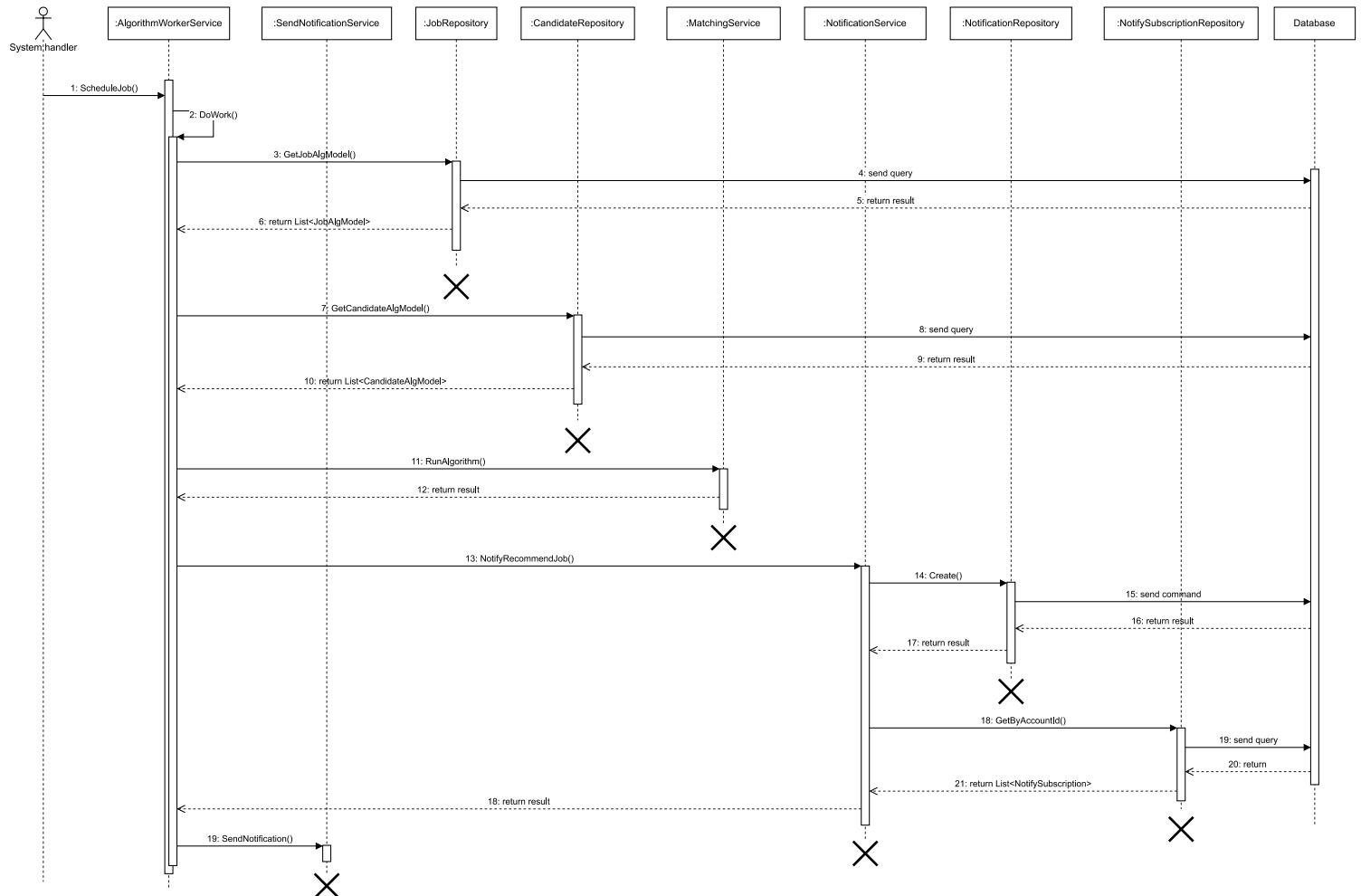


Figure 30: Sequence Diagram - User registers to get notification



**Figure 31: Sequence Diagram - System suggests matching jobs and candidates**

### 3.4 Candidate apply job and join interview

#### 3.4.1 Activity Diagrams

These diagrams below depict the activities when a candidate applies for a job. After that, the enterprise will conduct the interview process with candidates by creating an interview schedule, creating an online interview room, and announcing the interview results.

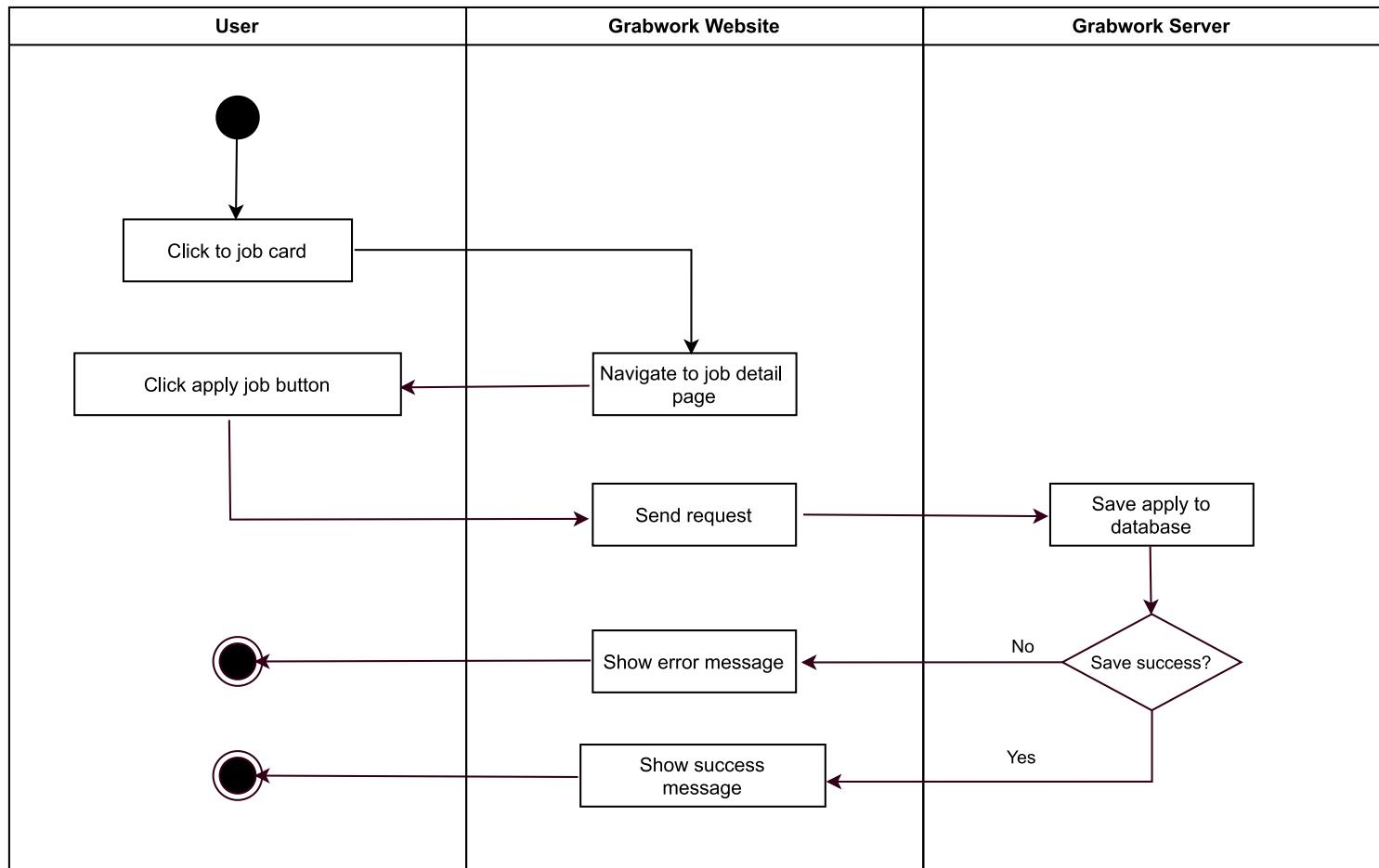


Figure 32: Activity Diagram - Candidate applies for a job

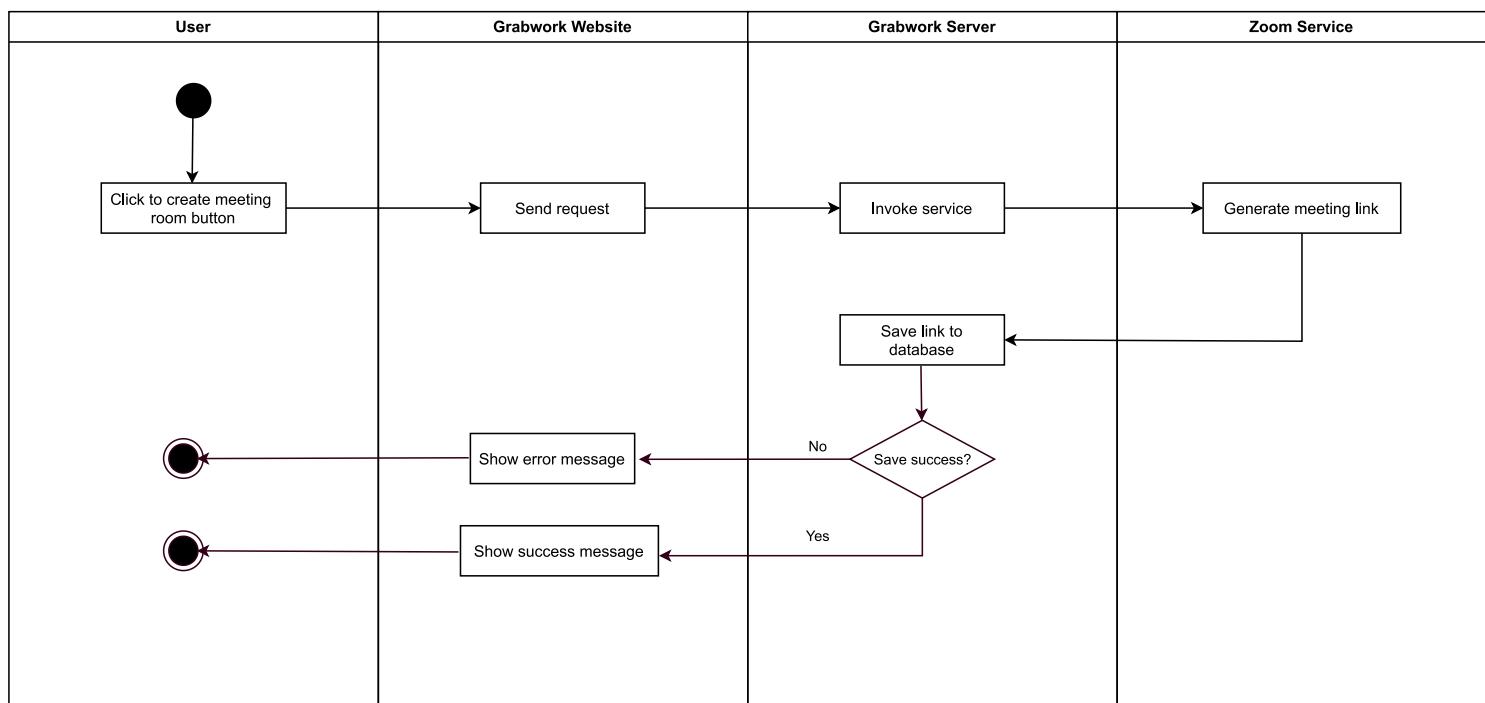


Figure 33: Activity Diagram - Enterprise creates link meeting

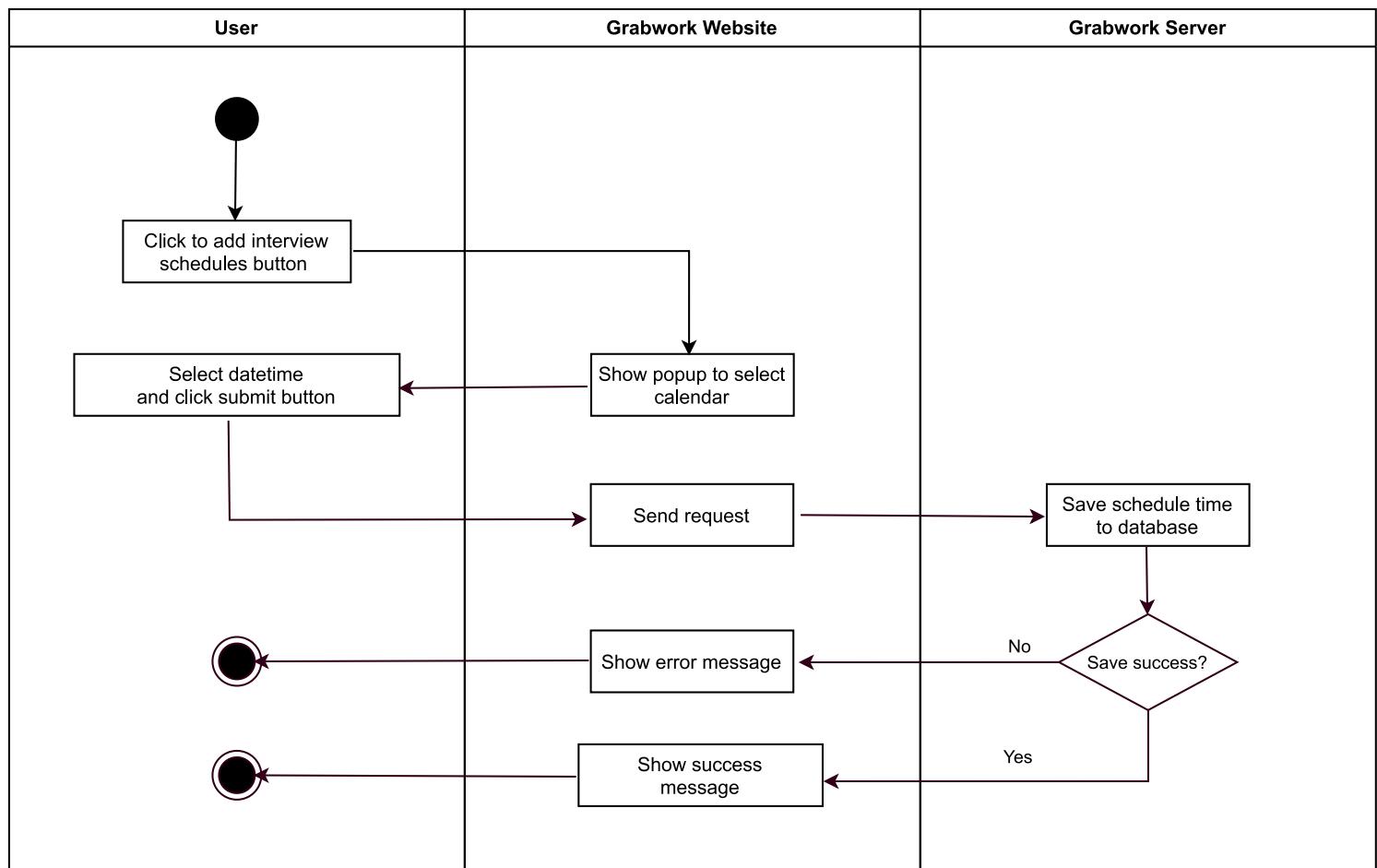


Figure 34: Activity Diagram - Enterprise adds interview schedules

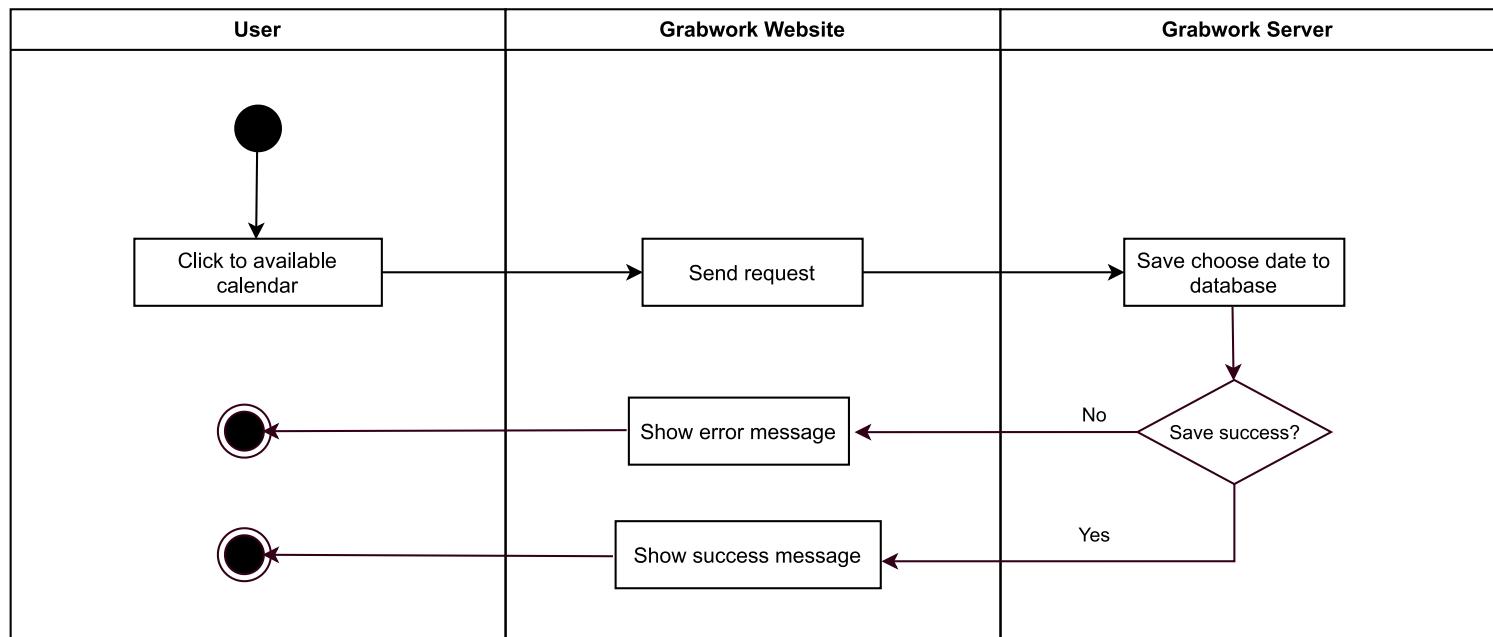


Figure 35: Activity Diagram - Candidate picks interview schedule

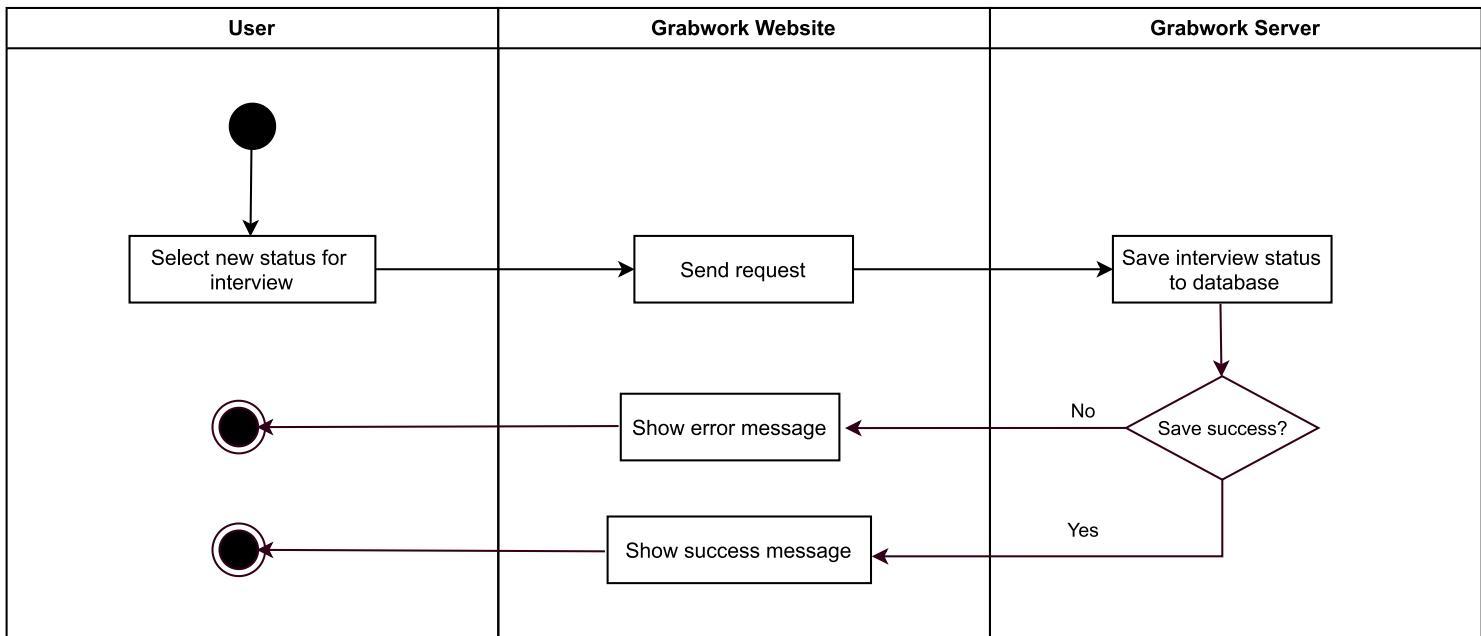


Figure 36: Activity Diagram - Enterprise updates interview result

### 3.4.2 Class Diagrams

The diagram below shows the relationship between the classes in the server backend in the recruitment process.

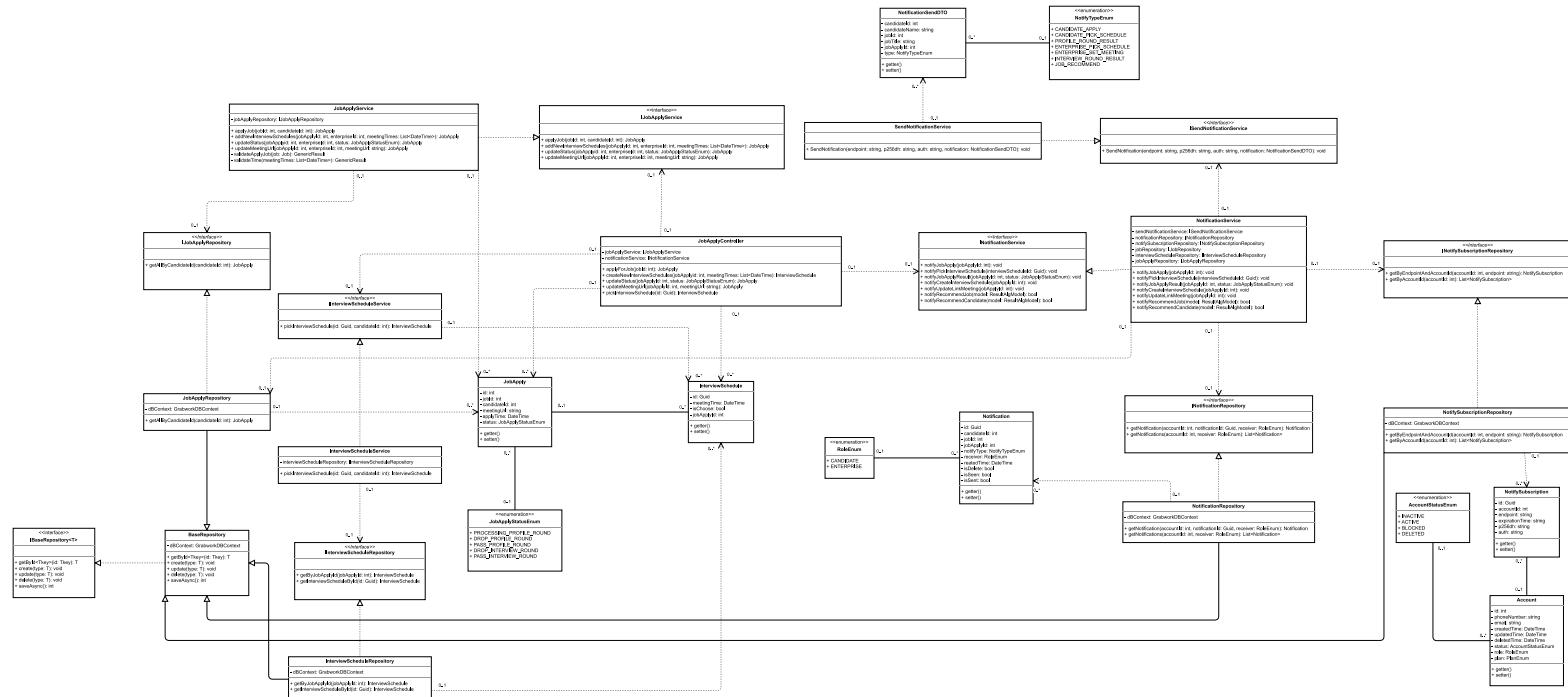


Figure 37: Class Diagram - Candidate apply job and join interview

#### 3.4.2.1 NotificationSendDTO Class

No	Attribute	Data Type	Visibility	Description
1	candidatId	int	Private	Id of the Candidate who will receive this Notification.

2	candidateName	string	Private	Name of the Candidate.
3	jobId	int	Private	Id of the Job.
4	jobTitle	string	Private	Title of the Job.
5	jobApplyId	int (nullable)	Private	Id of the JobApply.
6	type	NotifyTypeEnum	Private	Type of this Notification.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

#### 3.4.2.2 SendNotificationService Class

No	Method	Return Type	Visibility	Description
1	sendNotification	Data Type	Public	Send notification with some params.

#### 3.4.2.3 JobApplyService Class

No	Attribute	Data Type	Visibility	Description
1	jobApplyRepository	IJobApplyRepository	Private	The DI of IJobApplyRepository to use its feature.

No	Method	Return Type	Visibility	Description
1	applyJob	JobApply	Private	The candidate applies for a job.
2	addNewInterviewSchedule	JobApply	Private	The enterprise creates a list of interviews for its jobApply.
3	updateStatus	JobApply	Private	The enterprise changes the status of its jobApply.
4	updateMeeting	JobApply	Private	The enterprise update meeting url for its jobApply.
5	validateApplyJob	GenericResult	Private	Check if the jobApply belongs to this enterprise.
6	validateTime	GenericResult	Private	Check if the input of meetingTimes is later than current time.

### 3.4.2.4 JobApplyController Class

No	Attribute	Data Type	Visibility	Description
1	jobApplyService	IJobApplyService	Private	The DI of IJobApplyService to use its feature.
2	notificationService	INotificationService	Private	The DI of INotificationService to use its feature.

No	Method	Return Type	Visibility	Description
1	applyForJob	JobApply	Public	The candidate applies for a job.
2	createNewInterviewSchedules	InterviewSchedule	Public	The enterprise creates a list of interviews for its jobApply.
3	updateStatus	JobApply	Public	The enterprise changes the status of its jobApply.
4	updateMeetingUrl	JobApply	Public	The enterprise update meeting url for its jobApply.
5	pickInterviewSchedule	InterviewSchedule	Public	The candidate picks an interview schedule.

### 3.4.2.5 NotificationService Class

No	Attribute	Data Type	Visibility	Description
1	sendNotificationService	ISendNotificationService	Private	Use methods inside this service.
2	jobApplyRepository	IJobApplyRepository	Private	Use methods inside this repository.
3	notificationRepository	INotificationRepository	Private	Use methods inside this repository.
4	notifySubscriptionRepository	INotifySubscriptionRepository	Private	Use methods inside this repository.
5	interviewScheduleRepository	IInterviewScheduleRepository	Private	Use methods inside this repository.
6	jobRepository	IJobRepository	Private	Use methods inside this repository.
7	accountRepository	IAccountRepository	Private	Use methods inside this repository.

No	Method	Return Type	Visibility	Description
1	notifyJobApply	void	Public	Notify job apply by jobApplyId.
2	notifyPickInterviewSchedule	void	Public	Notify interview schedule picked by interviewScheduleId.
3	notifyJobApplyResult	void	Public	Notify job apply result by jobApplyId and JobApplyStatus.
4	notifyCreateInterviewSchedule	void	Public	Notify interview schedule created by jobApplyId.
5	notifyUpdateLinkMeeting	void	Public	Notify link meeting updated by jobApplyId.
6	notifyRecommendJob	Bool	Public	Notify recommend job by ResultAlgModel.
7	notifyRecommendCandidate	Bool	Public	Notify recommend candidate by ResultAlgModel.

#### 3.4.2.6 JobApplyRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDbContext	Private	The database context of the production database.

No	Method	Return Type	Visibility	Description
1	getAllByCandidateId	JobApply	Public	Get all job applies by candidateId.

#### 3.4.2.7 JobApply Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	The primary key of the JobApply.
2	jobId	int	Private	The id of the Job.
3	candidateId	int	Private	The id of the Candidate.
4	meetingUrl	string	Private	The meeting url of the JobApply.
5	status	int	Private	The status of the JobApply.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

#### 3.4.2.8 BaseRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDb Context	Private	The database context of the production database.

No	Method	Return Type	Visibility	Description
1	getById	Data Type	Public	Get entity by its id.
3	create	void	Public	Add a record of target entity to its dbSet.
4	update	void	Public	Update existing data of target entity to its dbSet.
5	delete	void	Public	Delete existing data of target entity to its dbSet.
6	saveAsync	Int	Public	Save all changes of dbContext to database.

#### 3.4.2.9 Notification Class

No	Attribute	Data Type	Visibility	Description
1	id	Guid	Private	The primary key of the Notification table.
2	candidateId	int	Private	Id of the Candidate.
3	jobId	int	Private	Id of the Job.
4	jobApplyId	int (nullable)	Private	Id of the JobApply.
5	notifyType	NotifyTypeEnum	Private	Type of Notification.
6	receiver	RoleEnum	Private	Time that the Notification's created.
7	createdTime	DateTime	Private	Id of the Job.
8	isDelete	bool	Private	If this Notification is deleted.
9	isSeen	bool	Private	If this Notification is seen by the receiver.
10	isSent	bool	Private	If this Notification is sent to the receiver.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

#### 3.4.2.10 NotificationRepository Class

No	Attribute	Data Type	Visibility	Description
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1	dbContext	GrabworkDb Context	Private	The database context of the production database.
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No	Method	Return Type	Visibility	Description
1	getNotification	Notification	Public	Get Notification by accountId, notificationId and role of the receiver.
2	get Notifications	List<Notification>	Public	Get Notification by accountId and role of the receiver.

#### 3.4.2.11 NotifySubscriptionRepository Class

No	Attribute	Data Type	Visibility	Description
1	dbContext	GrabworkDbContext	Private (readonly)	The database context of the production database.

No	Method	Return Type	Visibility	Description
1	getByEndpoint AndAccountId	NotifySubscription	Public	Get NotifySubscription by accountId and endpoint.
2	getByAccountId	List<NotifySubscription>	Public	Get NotifySubscriptions by accountId.

#### 3.4.2.12 NotifySubscription Class

No	Attribute	Data Type	Visibility	Description
1	id	Guid	Private	The primary key of the NotifySubscription table.
2	accountId	int	Private	Id of the Account.
3	endpoint	string	Private	The endpoint of the NotifySubscription.
4	ExpirationTime	string	Private	The expiration time of the NotifySubscription.
5	p256dh	string	Private	The P256dh of the NotifySubscription.
6	auth	string	Private	The auth of the NotifySubscription.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

#### 3.4.2.13 Account Class

No	Attribute	Data Type	Visibility	Description
1	Id	int	Private	The primary key of the Account table.

2	phoneNumbe r	string	Private	The phone number of the Account.
3	email	string	Private	The email of the Account.
4	createdTime	DateTime	Private	The created time of the Account.
5	updatedTime	DateTime (nullable)	Private	The updated time of the Account.
6	deletedTime	DateTime (nullable)	Private	The deleted time of the Account.
7	status	AccountStat usEnum	Private	The status of the Account.
8	role	RoleEnum	Private	The role of the Account.
9	plan	PlanEnum	Private	The plan of the Account.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

#### 3.4.2.14 InterviewSchedule Class

No	Attribute	Data Type	Visibility	Description
1	id	int	Private	The primary key of the InterviewSchedule.
2	meetingTime	DateTime	Private	The meeting time of the InterviewSchedule.
3	isChoose	bool	Private	Is the candidate of the InterviewSchedule is picked.
4	jobApplyId	int	Private	Id of the JobApply.

No	Method	Return Type	Visibility	Description
1	getter	Data Type	Public	Get attribute value
2	setter	void	Public	Set value of attribute

#### 3.4.2.15 InterviewScheduleService Class

No	Attribute	Data Type	Visibility	Description
1	interviewSche duleRepositor y	IInterviewSc heduleRepos itory	Private	The DI of IInterviewScheduleRepository to use its feature.

No	Method	Return Type	Visibility	Description

1	pickInterviewSchedule	InterviewSchedule	Public	The candidate picks the interview schedule.
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### 3.4.2.16 InterviewScheduleRepository Class

No	Method	Return Type	Visibility	Description
1	getByJobApplyId	InterviewSchedule	Public	Get InterviewSchedule by jobApplyId.
2	getInterviewScheduleById	InterviewSchedule	Public	Get InterviewSchedule by its id.

### 3.4.2.17 ISendNotificationService Interface

No	Method	Return Type	Visibility	Description
1	sendNotification	Data Type	Public	Send notification with some params.

### 3.4.2.18 IJobApplyService Interface

No	Method	Return Type	Visibility	Description
1	applyJob	JobApply	Public	The candidate applies for a job.
2	addNewInterviewSchedules	JobApply	Public	The enterprise creates a list of interviews for its jobApply.
3	updateStatus	JobApply	Public	The enterprise changes the status of its jobApply.
4	updateMeeting	JobApply	Public	The enterprise update meeting url for its jobApply.

### 3.4.2.19 IJobApplyRepository Interface

No	Method	Return Type	Visibility	Description
1	getAllByCandidateId	JobApply	Public	Get all job applies by candidateId.

### 3.4.2.20 INotificationService Interface

No	Method	Return Type	Visibility	Description
1	notifyJobApply	void	Public	Notify job apply by jobApplyId.
2	notifyPickInterviewSchedule	void	Public	Notify interview schedule picked by interviewScheduleId.
3	notifyJobApplyResult	void	Public	Notify job apply result by jobApplyId and JobApplyStatus.

4	notifyCreateInterviewSchedule	void	Public	Notify interview schedule created by jobApplyId.
5	notifyUpdateLinkMeeting	void	Public	Notify link meeting updated by jobApplyId.
6	notifyRecommendJob	Bool	Public	Notify recommend job by ResultAlgModel.
7	notifyRecommendCandidate	Bool	Public	Notify recommend candidate by ResultAlgModel.

#### 3.4.2.21 INotifySubscriptionRepository Interface

No	Method	Return Type	Visibility	Description
1	getByEndpointAndAccountId	NotifySubscription	Public	Get NotifySubscription by accountId and endpoint.
2	getByAccountId	List<NotifySubscription>	Public	Get NotifySubscriptions by accountId.

#### 3.4.2.22 IIInterviewScheduleService Interface

No	Method	Return Type	Visibility	Description
1	pickInterviewSchedule	InterviewSchedule	Public	The candidate picks the interview schedule.

#### 3.4.2.23 IIInterviewScheduleRepository Interface

No	Method	Return Type	Visibility	Description
1	getByJobApplyId	InterviewSchedule	Public	Get InterviewSchedule by jobApplyId.
2	getInterviewScheduleById	InterviewSchedule	Public	Get InterviewSchedule by its id.

#### 3.4.2.24 IBaseRepository<T> Interface

No	Method	Return Type	Visibility	Description
1	getById	Data Type	Public	Get entity by its id.
3	create	void	Public	Add a record of target entity to its dbSet.
4	update	void	Public	Update existing data of target entity to its dbSet.
5	delete	void	Public	Delete existing data of target entity to its dbSet.
6	saveAsync	Int	Public	Save all changes of dbContext to database.

### 3.4.2.25 INotificationRepository Interface

No	Method	Return Type	Visibility	Description
1	getNotification	Notification	Public	Get Notification by accountId, notificationId and role of the receiver.
2	getNotifications	List<Notifications>	Public	Get Notification by accountId and role of the receiver.

### 3.4.2.26 NotifyTypeEnum

No	Attribute	Visibility	Description
1	CANDIDATE_APPLY	Public	Notify the enterprise when have candidate apply to their job.
2	CANDIDATE_PICK_SCHEDULE	Public	Notify the enterprise when they have a candidate that picked the schedule.
3	PROFILE_ROUND_RESULT	Public	Notify the candidate when they have the result of profile round.
4	ENTERPRISE_PICK_SCHEDULE	Public	Notify the candidate when the enterprise picks a schedule.
5	ENTERPRISE_SET_MEETING	Public	Notify the candidate when the enterprise sets up a meeting.
6	INTERVIEW_ROUND_RESULT	Public	Notify the candidate when they have the result of interview round.
7	JOB_RECOMMEND	Public	Notify the candidate when they have a job recommended.

### 3.4.2.27 JobApplyStatusEnum

No	Attribute	Visibility	Description
1	PROCESSING_PROFILE_ROUND	Public	The candidate is waiting for the result of the profile round.
2	DROP_PROFILE_ROUND	Public	The candidate has dropped the profile round.
3	PASS_PROFILE_ROUND	Public	The candidate has passed the profile round.
4	DROP_INTERVIEW_ROUND	Public	The candidate has dropped the interview round.
5	PASS_INTERVIEW_ROUND	Public	The candidate has passed the interview round.

### 3.4.2.28 RoleEnum

No	Attribute	Visibility	Description
1	CANDIDATE	Public	The role of the account is candidate.
2	ENTERPRISE	Public	The role of the account is candidate.

### 3.4.2.29 AccountStatusEnum

No	Attribute	Visibility	Description
1	INACTIVE	Public	The account has not been verified.
2	ACTIVE	Public	The account has been verified.

3	BLOCKED	Public	The account has been blocked.
4	DELETED	Public	The account has been deleted.

### 3.4.3 Sequence Diagrams

The diagrams below show the interaction between the components from the UI to the backend when a candidate applies for a job, join interview, pick time for interview and get interview result.

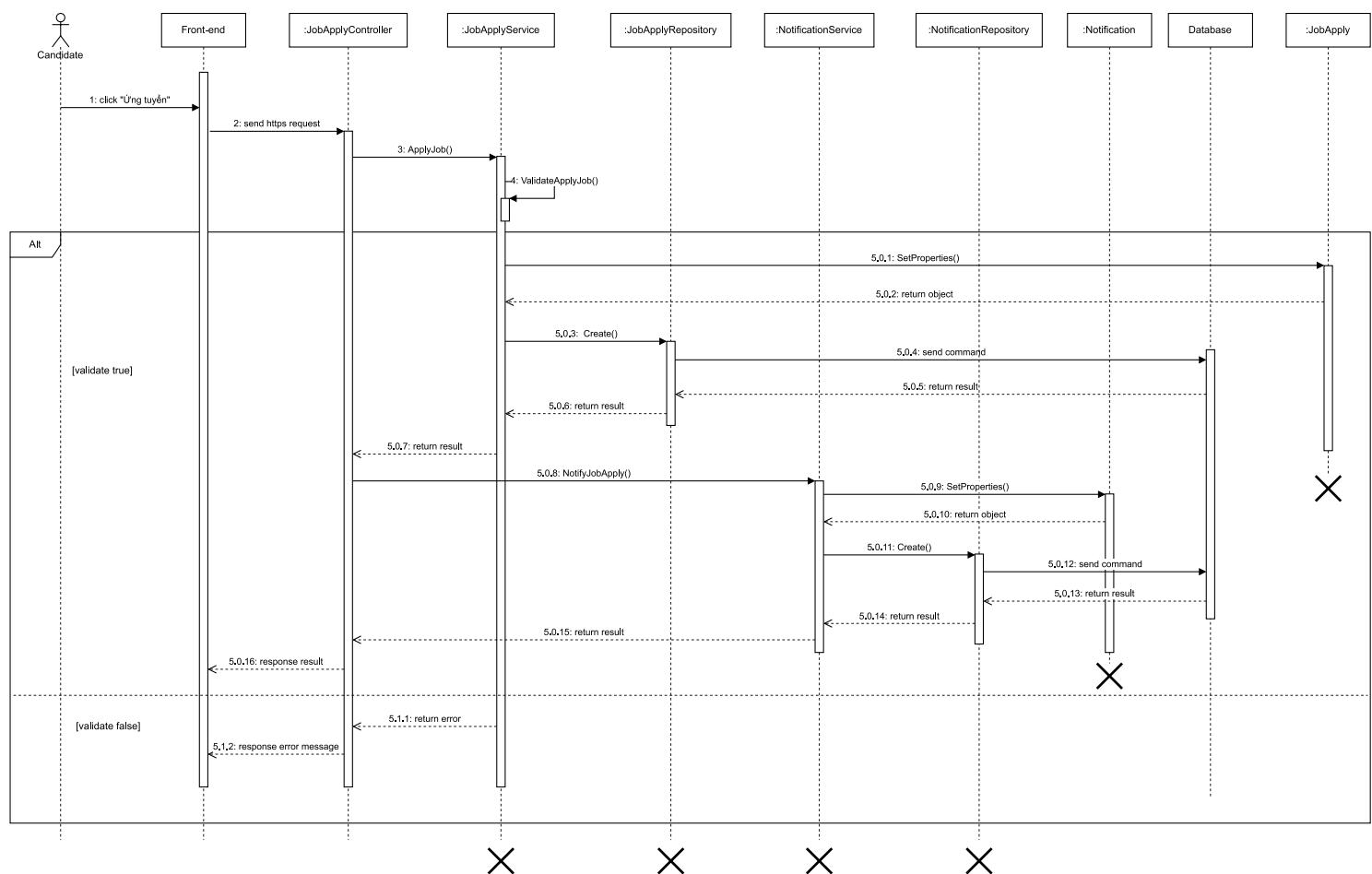


Figure 38: Sequence Diagram - Candidate applies for a job

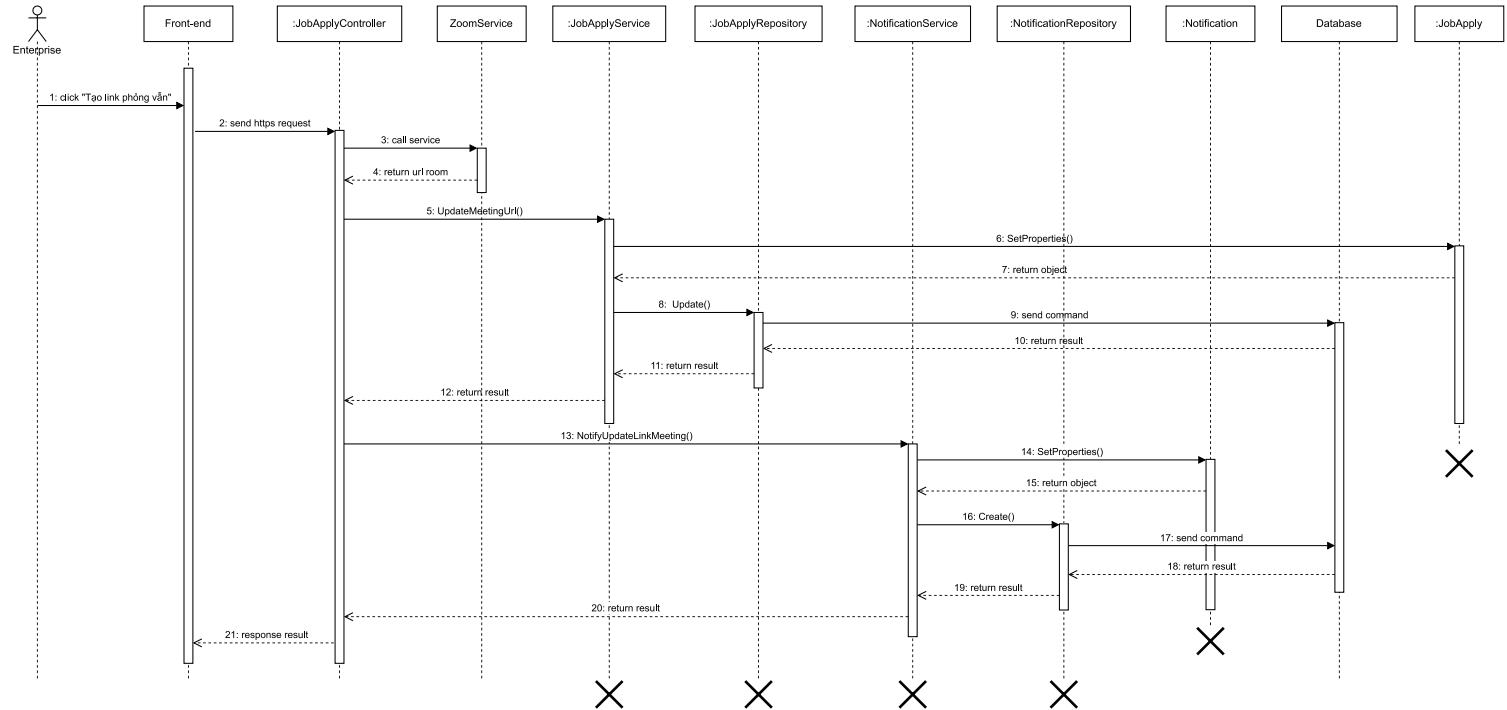


Figure 39: Sequence Diagram - Enterprise creates link meeting

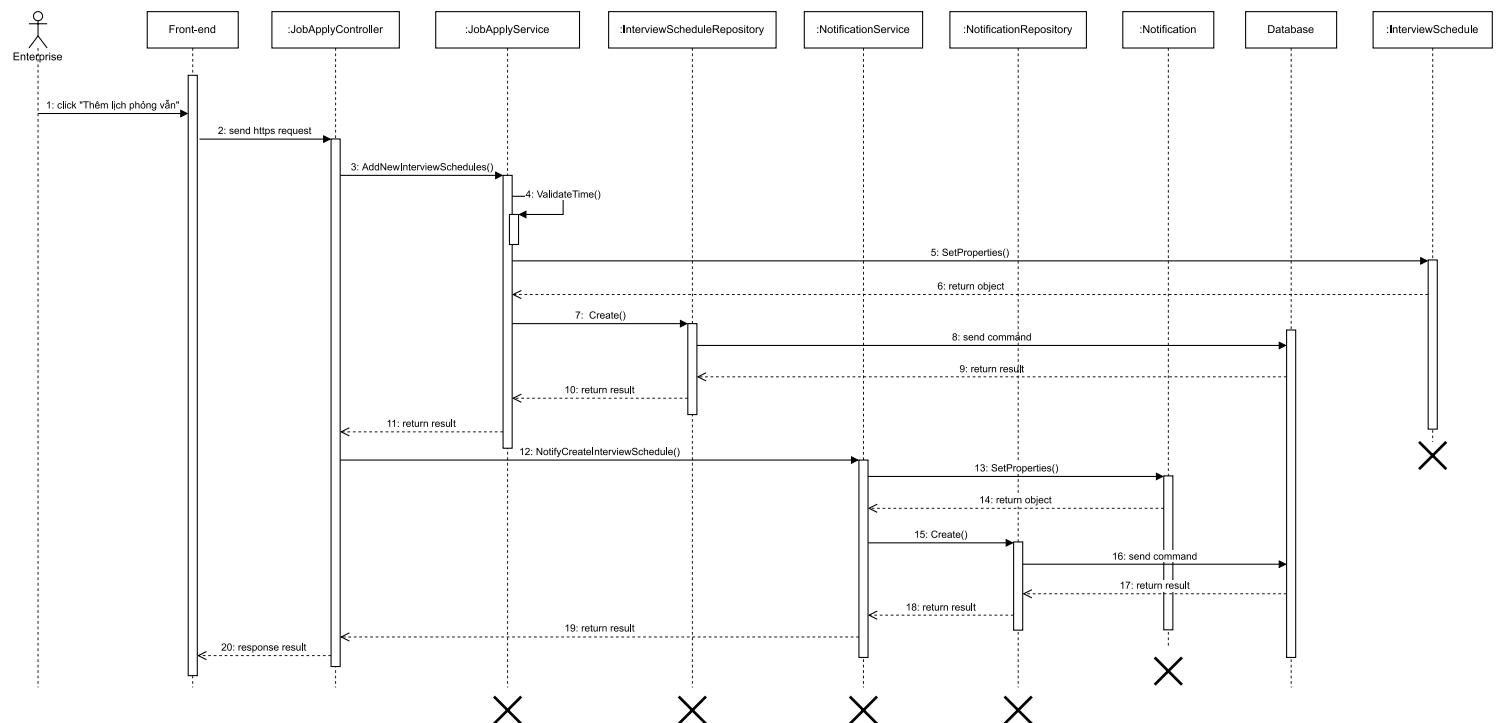


Figure 40: Sequence Diagram - Enterprise adds interview schedules

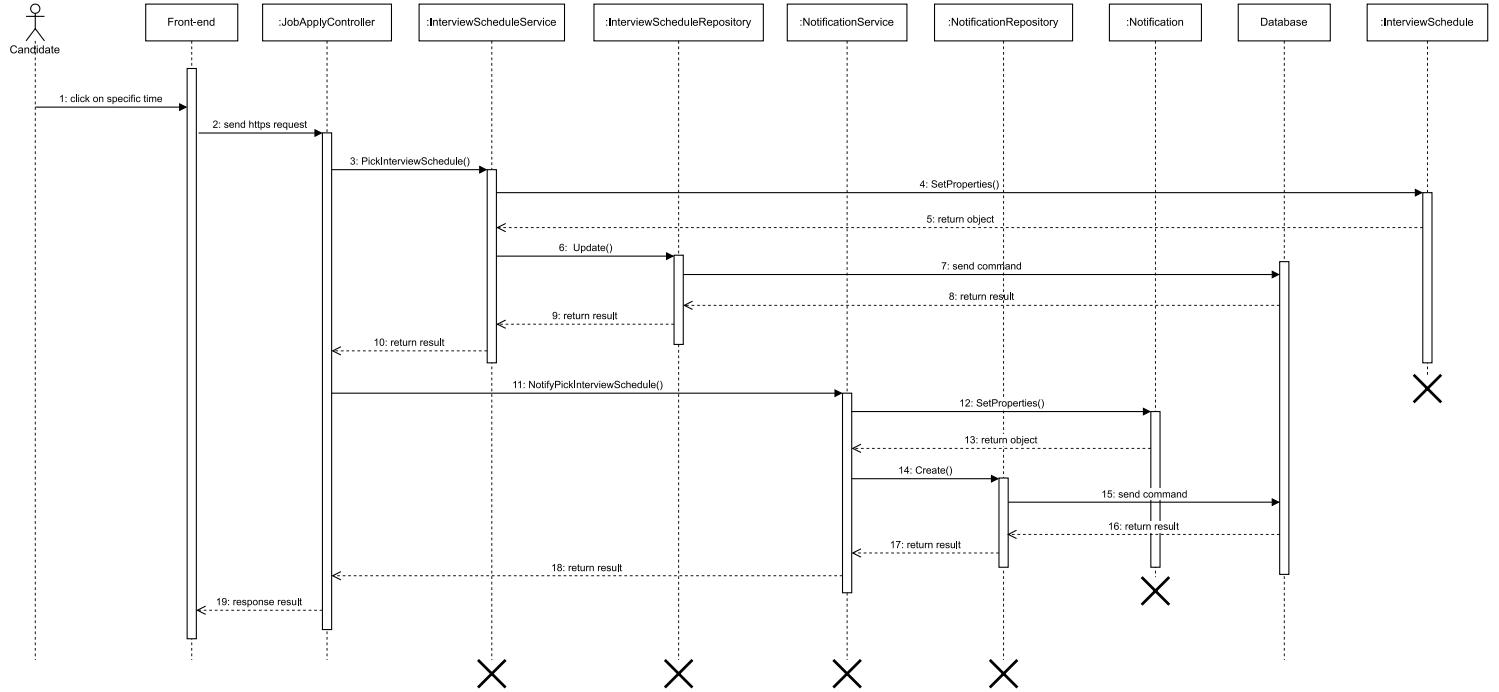


Figure 41: Sequence Diagram - Candidate picks interview schedule

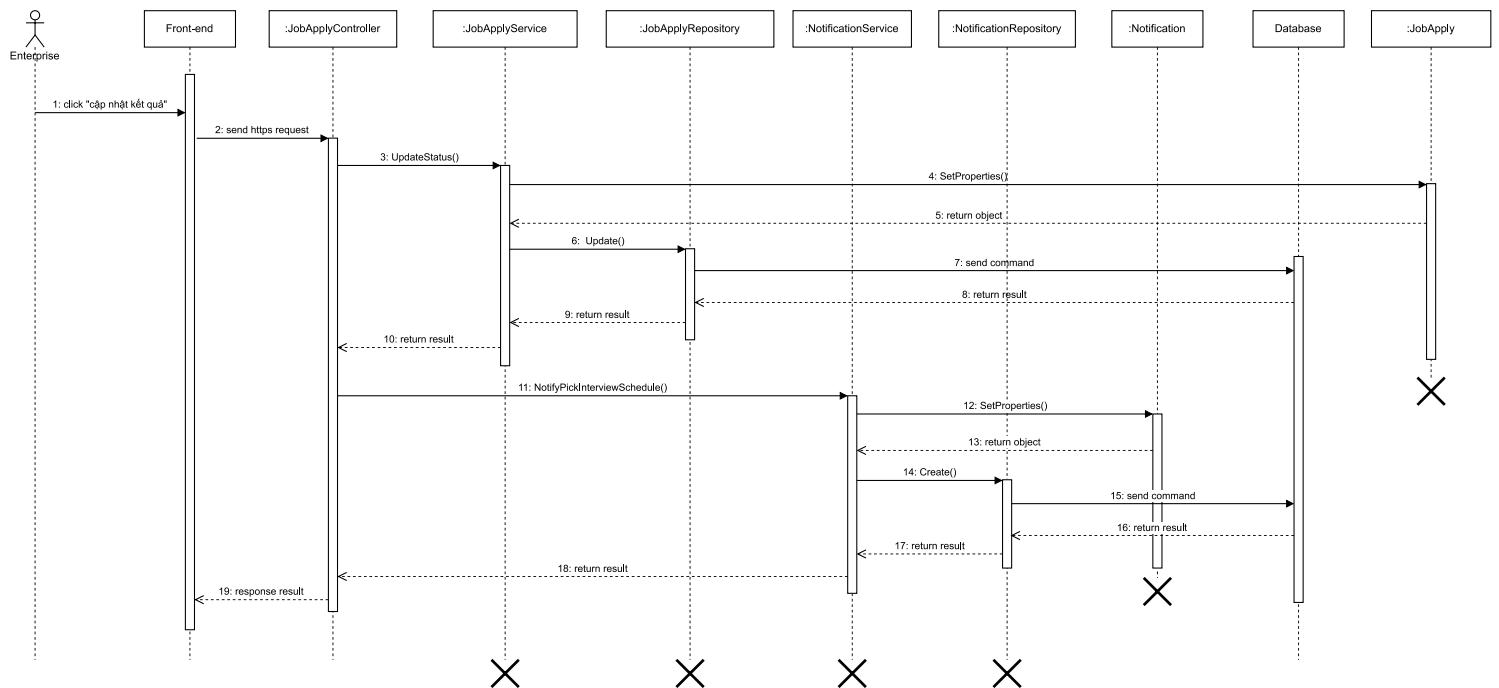


Figure 42: Sequence Diagram - Enterprise updates interview result

## 4. Data & Database Design

### 4.1 Table Relationship

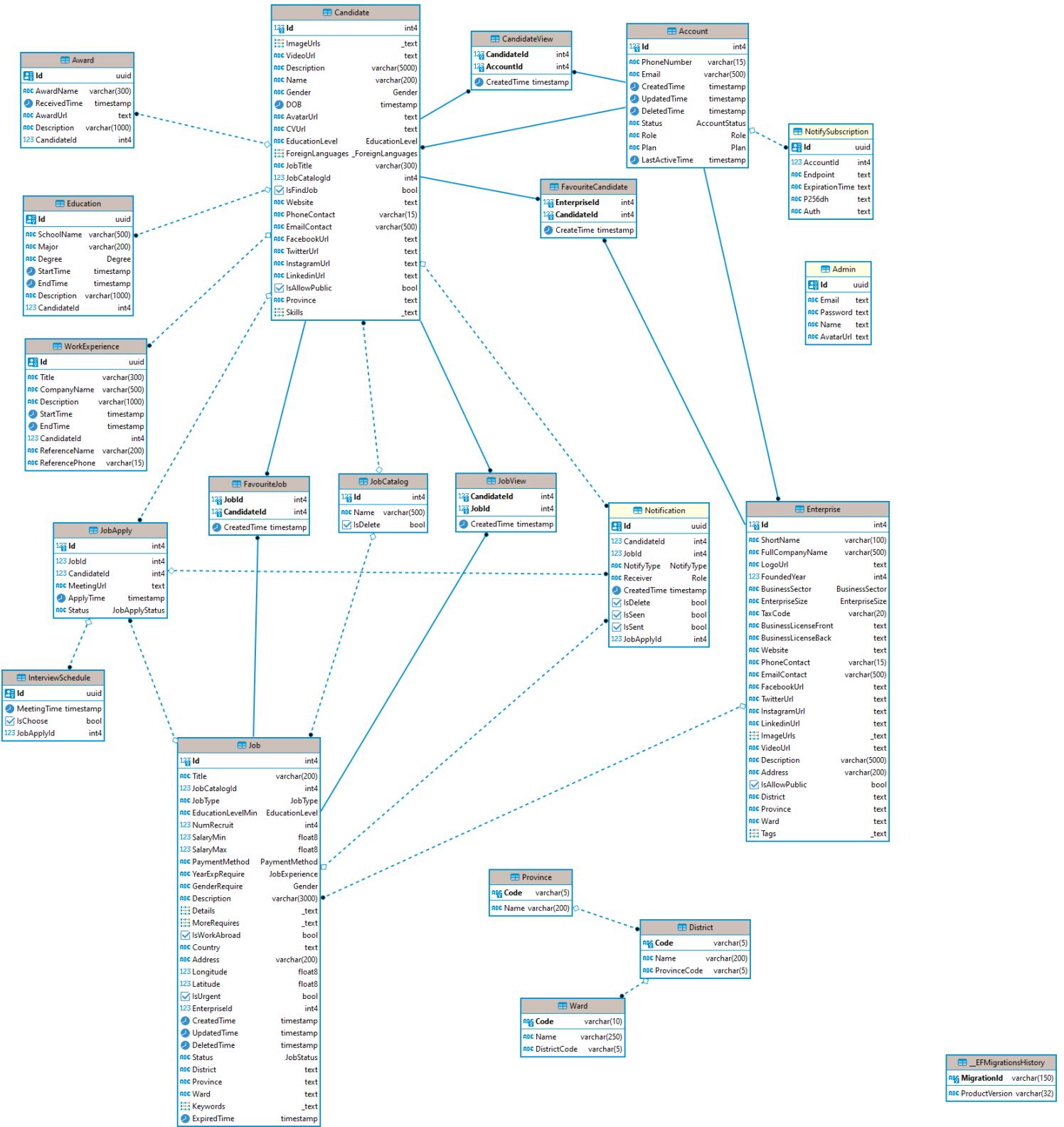


Figure 43: Database Diagram

The above database diagram is the physical data layer of Grabwork system. We have changed many parts from the ERD in the logical layer:

- Some category entities are converted to Enum for ease of server implementation.
- Some tables are separated in a one-to-one relationship to increase the scalability of the system.
- Table Province, District, Ward, instead of putting references into the tables, we used embed method to increase data query performance.

## 4.2 Data Dictionary

### 4.2.1 Award Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	uuid	X		PK	
2	AwardName	varchar(300)	X			
3	ReceivedTime	timestamp				
4	AwardUrl	text				
5	Description	varchar(1000)				
6	CandidateId	int4	X		FK	

Table 28: Award Table

### 4.2.2 Education Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	uuid	X		PK	
2	SchoolName	varchar(500)	X			
2	Major	varchar(200)				
3	Degree	Degree				Is an enum type with data fields: BACHELOR MASTER DOCTORAL ENGINEER
4	StartTime	timestamp	X			
5	EndTime	timestamp				
6	Description	varchar(1000)				
7	CandidateId	int4	X		FK	

Table 29: Education Table

### 4.2.3 WorkExperience Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	uuid	X		PK	
2	Title	varchar(300)				
3	CompanyName	varchar(500)				
4	Description	varchar(1000)				
5	StartTime	timestamp	X			
6	EndTime	timestamp				
7	CandidateId	int4	X		FK	
8	ReferenceName	varchar(200)				
9	ReferencePhone	varchar(15)				

Table 30: WorkExperience Table

## 4.2.4 Candidate Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	int4	X		FK	Is the primary key
2	ImageUrls	text[]				
3	VideoUrl	text				
4	Description	varchar(5000)				
5	Name	varchar(200)	X			
6	Gender	Gender				Is an enum type with data fields: MALE FEMALE OTHER
7	DOB	timestamp				
8	AvatarUrl	text				
9	CVUrl	text				
10	EducationLevel	EducationLevel				Is an enum type with data fields: INTERMEDIATE HIGH SCHOOL COLLEGE UNIVERSITY MASTER DOCTOR
11	ForeignLanguages	ForeignLanguages[]				Is an array of enum type with data field: ENGLISH JAPANESE CHINESE FRENCH GERMAN OTHER
12	JobTitle	varchar(300)				
13	JobCatalogId	int4	X		FK	
14	IsFindJob	bool	X			
15	Website	text				
16	PhoneContact	varchar(15)				
17	EmailContact	varchar(500)				
18	FacebookUrl	text				
19	TwitterUrl	text				
20	InstagramUrl	text				
21	LinkedinUrl	text				
22	IsAllowPublic	bool	X			
23	Province	text				
24	Skills	text[]				

Table 31: Candidate Table

#### 4.2.5 CandidateView Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	CandidateId	int4	X		FK	Combined into a primary key
2	AccountId	int4	X		FK	
3	CreatedTime	timestamp	X			

Table 32: CandidateView Table

#### 4.2.6 FavouriteCandidate Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	EnterpriseId	int4	X		FK	Combined into a primary key
2	CandidateId	int4	X		FK	
3	CreateTime	timestamp	X			

Table 33: FavouriteCandidate Table

#### 4.2.7 NotifySubscription Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	uuid	X		PK	
2	AccountId	int4	X		FK	
3	Endpoint	text	X			
4	ExpirationTime	text				
5	P256dh	text	X			
6	Auth	text	X			

Table 34: NotifySubscription Table

#### 4.2.8 FavouriteJob Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	JobId	int4	X		FK	Combined into a primary key
2	CandidateId	int4	X		FK	
3	CreatedTime	timestamp	X			

Table 35: FavouriteJob Table

#### 4.2.9 JobCatalog Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	int4	X		PK	
2	Name	varchar(500)	X			
3	IsDelete	bool	X			

Table 36: JobCatalog Table

#### 4.2.10 JobView Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	CandidateId	int4	X		FK	Combined into a primary key
2	JobId	int4	X		FK	
3	CreatedTime	timestamp	X			

Table 37: JobView Table

#### 4.2.11 JobApply Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	int4	X		PK	
2	JobId	int4	X		FK	

3	CandidateId	int4	X		FK	
4	MeetingUrl	text				
5	ApplyTime	timestamp	X			
6	Status	JobApplyStatus				Is an enum type with data fields: PROCESSING_PROFILE_ROUND DROP_PROFILE_ROUND PASS_PROFILE_ROUND DROP_INTERVIEW_ROUND PASS_INTERVIEW_ROUND

Table 38: JobApply Table

**4.2.12 InterviewSchedule Table**

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	uuid	X		PK	
2	MeetingTime	timestamp	X			
3	IsChoose	bool	X			
4	JobApplyId	int4	X		FK	

Table 39: InterviewSchedule Table

**4.2.13 Notification Table**

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	uuid	X		PK	
2	CandidateId	int4	X		FK	
3	JobId	int4	X		FK	
4	NotifyType	NotifyType				Is an enum type with data fields: CANDIDATE_APPLY CANDIDATE_PICK_SCHEDULE CANDIDATE_RECOMMEND PROFILE_ROUND_RESULT ENTERPRISE_PICK_SCHEDULE ENTERPRISE_SET_MEETING INTERVIEW_ROUND_RESULT JOB_RECOMMEND REMIND_INTERVIEW_TIME
5	Receiver	Role	X			Is an enum type with data fields: CANDIDATE_ENTERPRISE

6	CreatedTime	timestamp	X			
7	IsDelete	bool	X			
8	IsSeen	bool	X			
9	IsSent	bool	X			
10	JobApplyId				FK	

Table 40: Notification Table

## 4.2.14 Enterprise Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	int4	X		FK	Is a primary key
2	ShortName	varchar(100)	X			
3	FullCompanyName	varchar(500)	X			
4	LogoUrl	text				
5	FoundedYear	int4	X			
6	BusinessSector	BusinessSector	X			Is an enum type with data fields: SECURITY FINANCE LABOR CONSTRUCT EDUCATION HEALTH_CARE CULTURAL BANKING LEGAL TRADE TRANSPORT INFORMATION AGRICULTURE SCIENCE NATURAL MECHANICAL
7	EnterpriseSize	EnterpriseSize	X			Is an enum type with data fields: LESS_THAN_10 FROM_10_TO_50 FROM_50_TO_100 FROM_100_TO_500 MORE_THAN_500
8	TaxCode	varchar(20)	X			
9	BusinessLicenseFront	text	X			
10	BusinessLicenseBack	text				
11	Website	text				
12	PhoneContact	varchar(15)				

1 3	EmailContact	varchar(500)				
1 4	FacebookUrl	text				
1 5	TwitterUrl	text				
1 6	InstagramUrl	text				
1 7	LinkedinUrl	text				
1 8	ImageUrls	text[]				
1 9	VideoUrl	text				
2 0	Description	varchar(5000)				
2 1	Address	varchar(200)				
2 2	IsAllowPublic	bool		X		
2 3	District	text				
2 4	Province	text				
2 5	Ward	text				
2 6	Tags	text[]				

Table 41: Enterprise Table

#### 4.2.15 Job Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	int4	X		PK	
2	Title	varchar(200)	X			
3	JobCatalogId	int4	X		FK	
4	JobType	JobType	X			Is an enum type with data fields: FULL_TIME PART_TIME INTERN REMOTE PAID_BY_PRODUCT SEASON SHIFT PROJECT FREELANCER OTHER
5	EducationLevel Min	EducationLeve l				Is an enum type with data fields: INTERMEDIATE

						HIGH SCHOOL COLLEGE UNIVERISTY MASTER DOCTOR
6	NumRecruit	int4				
7	SalaryMin	float8				
8	SalaryMax	float8				
9	PaymentMethod	PaymentMethod	X			Is an enum type with data fields: EVERY_HOUR EVERY_DAY EVERY_WEEK EVERY_MONTH DEALING
10	YearExpRequire	JobExperience				Is an enum type with data fields: LESS_THAN_1_YEAR FROM_1_TO_2_YEAR FROM_3_TO_5_YEAR FROM_6_TO_10_YEAR MORE_THAN_10_YEAR
11	GenderRequire	Gender				Is an enum type with data fields: MALE FEMALE OTHER
12	Description	varchar(3000)				
13	Details	text[]				
14	MoreRequires	text[]				
15	IsWorkAbroad	bool	X			
16	Country	text				
17	Address	varchar(200)				
18	Longitude	float8				
19	Latitude	float8				
20	IsUrgent	bool	X			
21	Enterpriseld	int4	X		FK	
22	CreatedTime	timestamp	X			
23	UpdatedTime	timestamp				

2 4	DeletedTime	timestamp				
2 5	Status	JobStatus	X			Is an enum type with data fields: PUBLISHED HIDDEN COMPLETED DELETED
2 6	District	text				
2 7	Province	text				
2 8	Ward	text				
2 9	Keywords	text[]				
3 0	ExpiredTime	timestamp				

Table 42: Job Table

**4.2.16 Province Table**

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Code	varchar(5)	X		PK	
2	Name	varchar(200)	X			

Table 43: Province Table

**4.2.17 District Table**

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Code	varchar(5)	X		PK	
2	Name	varchar(200)	X			
3	ProvinceCode	varchar(5)	X		FK	

Table 44: District Table

**4.2.18 Ward Table**

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Code	varchar(10)	X		PK	
2	Name	varchar(250)	X			
3	DistrictCode	varchar(5)	X		FK	

Table 45: Ward Table

**4.2.19 Account Table**

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	int4	X		PK	
2	PhoneNumber	varchar(15)		X		
3	Email	varchar(500)		X		
4	CreatedTime	timestamp	X			
5	UpdatedTime	timestamp				
6	DeletedTime	timestamp				
7	Status	AccountStatus	X			Is an enum type with data fields:

						INACTIVE ACTIVE BLOCKED DELETED
8	Role	Role	X			Is an enum type with data fields: CANDIDATE ENTERPRISE
9	Plan	Plan	X			Is an enum type with data fields: BASIC PREMIUM
10	LastActiveTime	timestamp				

Table 46: Account Table

#### 4.2.20 Admin Table

#	Field name	Type	Not Null	Unique	PK/FK	Notes
1	Id	uuid	X		PK	
2	Email	text	X	X		
3	Password	text	X			
4	Name	text	X			
5	AvatarUrl	text				

Table 47: Admin Table

## 5. Algorithms

### 5.1.1 Summary

This algorithm describes how to calculate the match between candidate and job based on multiple criteria in candidate profile and job details.

**Input:** A list of candidates and a list of jobs

**Output:** A list of match jobs for each candidate and list of match candidates for each job

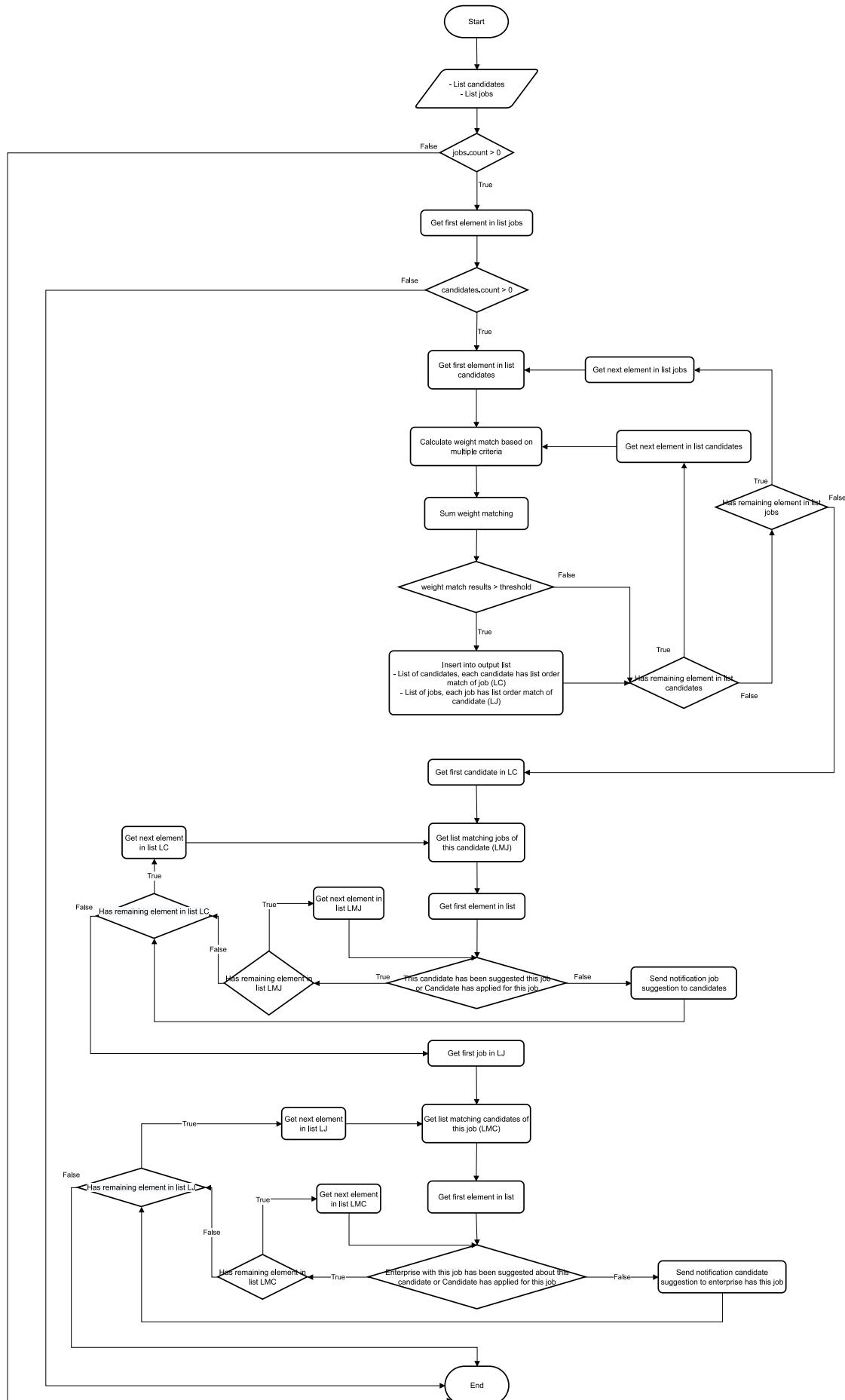
### 5.1.2 Define problem

There are many candidates and jobs in the system. Each candidate profile has many fields of information, and each job also has many recruitment criteria. So the system needs an algorithm to calculate the match between candidate and job based on multi criteria, then it can send notification suggestion to candidate about job match and send notification suggestion to enterprise about suitable candidates for their open jobs.

### 5.1.3 Solution

The diagram below shows the way algorithm run when it's time to periodically send notifications. There are 5 main steps in this algorithm:

- Load filtered candidate and job records
- Loop each candidate and job
- Calculate sum weight matching
- Return the ranking output
- Send notification to users



**Figure 44: Algorithm Flow****Matching criteria:**

The below table show the matching fields and the weight of each field (can be configured).

Field	Mark (total 100%)	Description
Job catalog	0.3	The job and candidate have the same job catalog
Gender	0.05	The job requires the gender suitable with candidate
Education	0.1	The required education level of job matches with the education of the candidate.
Work experience	0.1	The work experience of candidate is suitable with the job requirement.
Location	0.15	The job and candidate have the same location (province)
Skills, keywords	0.3	Some skills of candidates match with keywords of the jobs

**The output:**

After running algorithm, from the input with candidate and enterprise list, we get the output with two arrays:

First array shows a list of suggested jobs for candidates. The recommended jobs are sorted by the matching percent:

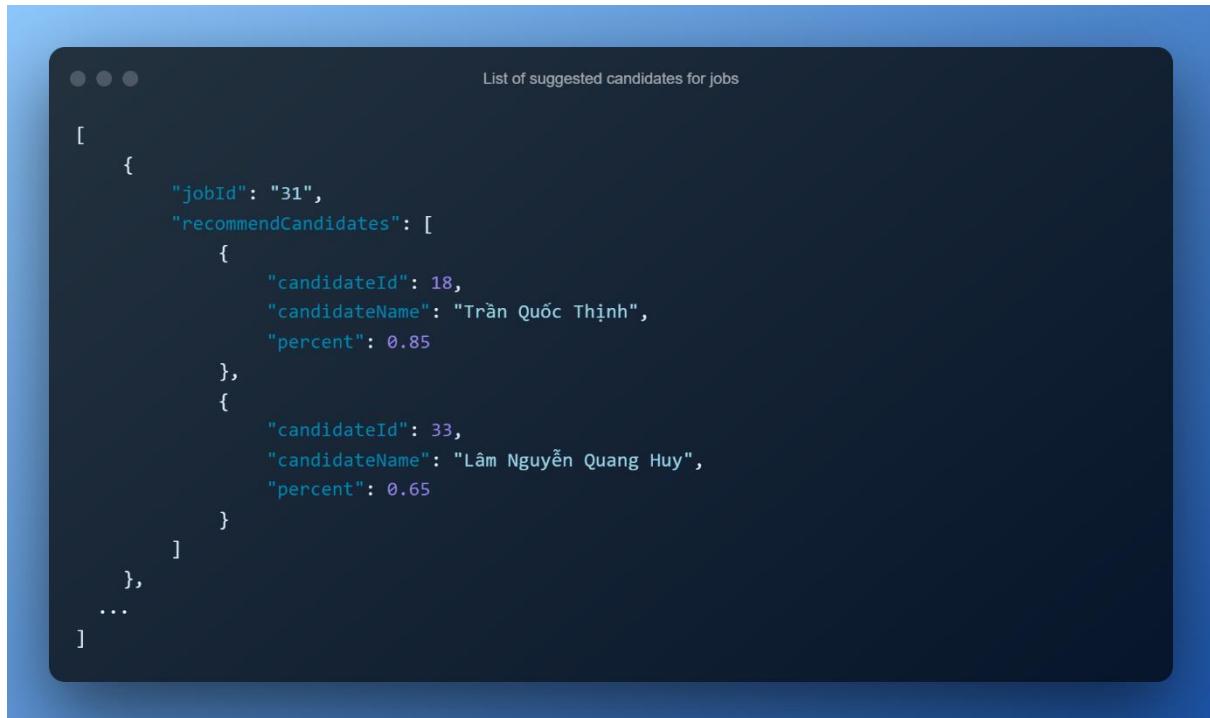
```

List of suggested jobs for candidates

[
  {
    "candidateId": "12",
    "recommendJobs": [
      {
        "jobId": 20,
        "jobTitle": "IT Business Analyst Intern",
        "percent": 0.7
      },
      {
        "jobId": 61,
        "jobTitle": "Junior Front End Developer",
        "percent": 0.6
      }
    ]
  },
  ...
]

```

Second array shows a list of suggested candidates for jobs. The recommended candidates are also sorted by the matching percent:



The screenshot shows a mobile application interface with a dark blue background. At the top, there is a header bar with three dots on the left and the text "List of suggested candidates for jobs" on the right. Below the header, there is a large black rectangular area containing JSON code. The code is a list of job recommendations, each consisting of a job ID and a list of recommended candidates. The first recommendation is for job ID "31", which has two candidates: one with candidate ID 18 and name "Trần Quốc Thịnh" (percent 0.85), and another with candidate ID 33 and name "Lâm Nguyễn Quang Huy" (percent 0.65). There are ellipses indicating more recommendations.

```
[  
  {  
    " jobId": "31",  
    " recommendCandidates": [  
      {  
        "candidateId": 18,  
        "candidateName": "Trần Quốc Thịnh",  
        "percent": 0.85  
      },  
      {  
        "candidateId": 33,  
        "candidateName": "Lâm Nguyễn Quang Huy",  
        "percent": 0.65  
      }  
    ]  
  },  
  ...  
]
```

With above output, we can easily suggest the most suitable job for candidates and most matched candidate for each job.

#### 5.1.4 Performance

- Input:
  - o List candidate with 100 records
  - o List job with 100 records
- Ram of server: 512 Mb
- Bandwidth network: 5 Mb/s
- CPU of server: 2.6Ghz, 4 Core
- Estimated average response time: 1.5 seconds

## V. Software Testing Documentation

### 1. Overall Description

#### 1.1 Test Model

In this project, we use incremental testing for following purposes:

- Each module has defined dependencies and specific role in the entire system.
- The duration of the Grabwork project is limited to 16 weeks. Therefore, we need to control critical errors to fix as soon as possible without having to rebuild the modules from scratch.

#### 1.2 Testing Levels

- Testing Level: System Test, User Acceptance Test
- Testing Types: Functional Testing, User Interface Testing

## 2. Test Plan

### 2.1 Test Stages

Type of Test	Stage of Test		
	Unit	System	Acceptance
Functional Testing		X	X
User Interface Testing			X

Table 48: Test Stages

### 2.2 Human Resources

Worker/Doer	Role	Specific Responsibilities/Comments
Pham Ngoc Thuc	Leader	Planning. Verify test result
Hoang Anh Dung	Member	Execute test and report as planned
Nguyen Lam Nhat Tien	Member	Execute test and report as planned
Vo Thanh Vuong	Member	Execute test and report as planned

Table 49: Human Resources

### 2.3 Deliverables

No	Deliverables	Due Date
1	Test document	31/07/2022

Table 50: Deliverables

## 3. Test Cases & Test Reports

Testing Level	File Name
System Test	<a href="#">Report5_Test Case.xlsx</a> (also attached in document folder)
User Acceptance Test	Acceptance Certificates

Table 51: Test Cases & Test Reports

## VI. Release Package & User Guides

### 1. Deliverable Package

#### 1.1 Source codes & documents

No.	Items	Sub-Items	Type	Version
<b>Code Package</b>				
1	Grabwork Backend	Web Service	Modify	1.5.0
2	Grabwork Frontend User	User Web Application	Modify	1.5.0
3	Grabwork Frontend Admin	Admin Web Application	Modify	1.5.0
<b>Database</b>				
1	Script	Grabwork-script.sql	Modify	N/A
<b>Documents</b>				
1	Project Introduction	Report1_Project Introduction.docx	Modify	1.0
2	Project Management Plan	Report2_Project Management Plan.docx	Modify	1.0
3	Software Requirement Specification	Report3_Software Requirement Specification.docx	Modify	1.0
4	Software Design Document	Report4_Software Design Document.docx	Modify	1.0
5	Test Documentation	Report5_Test Documentation.docx	Modify	1.0
6	Software User Guides	Report6_Software User Guides.docx	Modify	1.0
7	Final Project Report	Report7_FinalProjectReport.docx181	Modify	1.0

Table 52: Source codes & documents

According to the NDA agreement with Tam Huyet Viet company, our source code and database data are private and cannot be shared publicly. In case the council wants to evaluate the source code and database, please contact our team leader to grant the access.

### 2. Installation Guides

#### 2.1 System Requirements

##### 2.2.1 Hardware Requirements

Component	Minimum	Recommended
CPU	At least 2 (GHz) x64-bit CPU	Core i5 or i7
Memory	At least 2GB RAM	8GB RAM
Storage Space	10GB HDD	20GB HDD
Network	Internet Connection	-

Table 53: Hardware Requirements

### 2.2.2 Software Requirements

Component	Software and version	Description
Operating System	Window 10 or Linux	Operating system for running project
DBMS	PostgreSQL Admin 4.0	Manage database
Server Environment	.NET 5.0	Environment for running backend
Frontend Environment	Nodejs 14.17.3	Environment for running frontend
IDE	Visual Studio Code	Tool for view and edit code
VCS	Git	Tool for manage code version

Table 54: Software Requirements

## 2.2 Setup Files

- Grabwork-script.sql: Database script for system
- Grabwork-backend-api.zip: Web API
- Grabwork-frontend-user.zip: User web application
- Grabwork-frontend-admin.zip: Admin web application

## 2.3 Installation Instruction

### 2.3.1 Setup environment

- Download and install .Net 5.0
- Download and install Nodejs 14.17.3
- Download and install PostgreSQL 13.5
- Download and install Visual Studio Code
- Download and install Git
- Connect local Git with GitHub account
- Pull code from GitHub to local
- Connect GitHub account with Heroku and Vercel

### 2.3.2 Run backend server

- Clone the repository:  
`git clone https://github.com/thucpn/grabwork-backend-api`
- Go to ./grabwork.api folder, run the project in development:  
`dotnet run`
- Navigate to `http://localhost:5000` to see the API home page

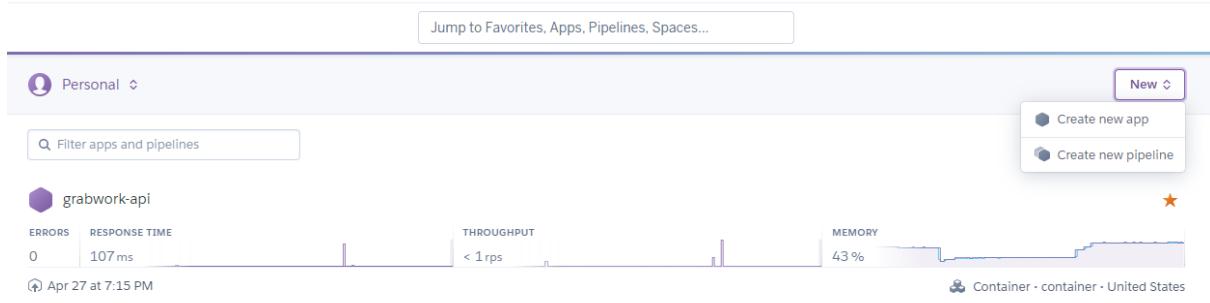
### 2.3.3 Run frontend web application

- Install yarn:  
`npm install --global yarn`
- Install packages:  
`yarn`
- Build project:  
`yarn build`
- Run project:  
`yarn start`
- Navigate to `http://localhost:3000` to see the website

## 2.4 Deployment Guide

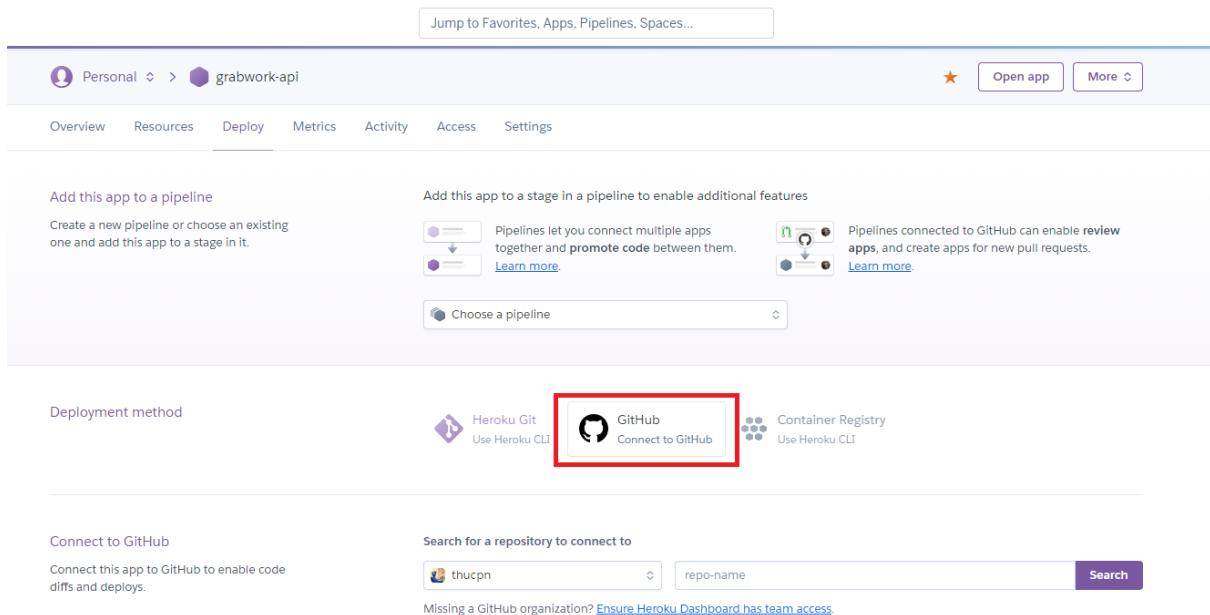
### 2.4.1 Deploy backend to Heroku

Step 1: Go to [Heroku website](#) and create new app



**Figure 45: Deployment Backend - Step 1**

Step 2: Switch to deploy tab and import project from GitHub



**Figure 46: Deployment Backend - Step 2**

### Step 3: Switch to setting tab and add secret environment variables

Jump to Favorites, Apps, Pipelines, Spaces...

Personal > grabwork-api

Open app More

Overview Resources Deploy Metrics Activity Access Settings

**App Information**

**App Name** grabwork-api

**Region** United States

**Stack** container

**Framework** Container

**Slug size** No slug detected

**Heroku git URL** https://git.heroku.com/grabwork-api.git

**Config Vars**

Config vars change the way your app behaves. In addition to creating your own, some addons come with their own.

Reveal Config Vars

Figure 47: Deployment Backend - Step 3

### Step 4: After Heroku successfully build project, you can visit it on application url that provided by Heroku

grabwork-api.herokuapp.com/index.html

Swagger. Powered by SMARTBEAR

Select a definition V1

**GrabWork v1.0 OAS3**

/swagger/v1/swagger.json

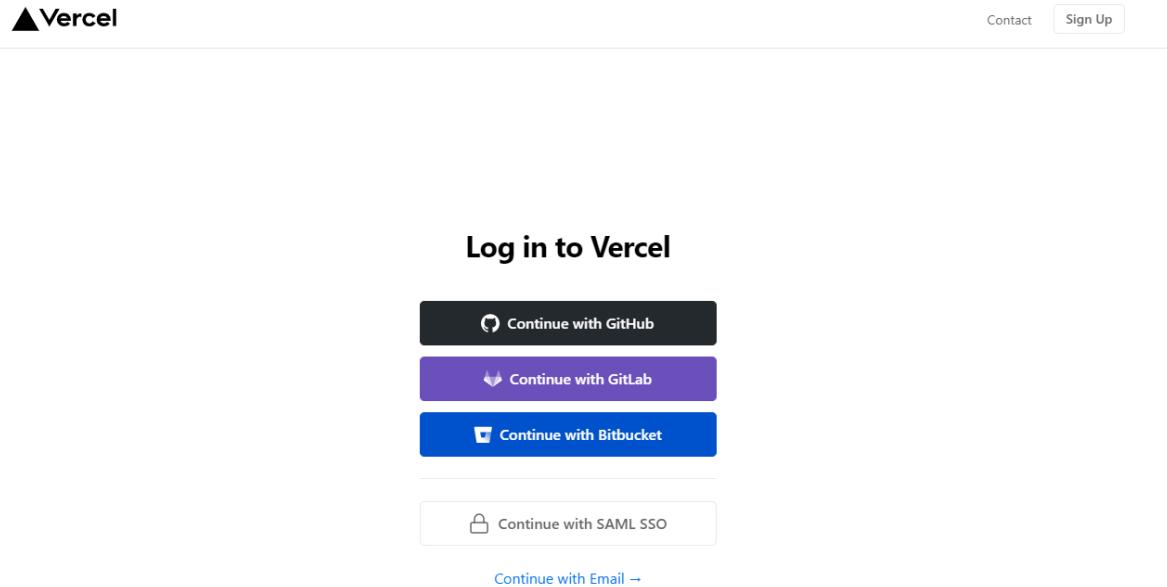
**Admin**

- POST /api/v1/manage/login
- GET /api/v1/manage/me
- PUT /api/v1/manage/users/{id}/status
- POST /api/v1/manage/test-push-notify
- GET /api/v1/manage/enterprises
- GET /api/v1/manage/statistic
- GET /api/v1/manage/candidates
- GET /api/v1/manage/jobs

Figure 48: Deployment Backend - Step 4

#### 2.4.2 Deploy frontend to Vercel

Step 1: Go to [Vercel website](#) and login with GitHub account



**Figure 49: Deployment Frontend - Step 1**

Step 2: In Vercel home page, click to New Project and import frontend project from GitHub

The screenshot shows the Vercel home page. At the top, there's a header with the Vercel logo, a user profile for Thuc Pham (Hobby), and links for Feedback, Changelog, Support, Docs, and a user icon. Below the header are tabs for Overview, Integrations, Activity, Domains, Usage, and Settings. The Overview tab is selected. A search bar and a "Create a Team" button are also present. The main area displays three recent projects: "grabwork-frontend-user" (grayscale icon), "grabwork-admin" (blue lightning bolt icon), and "morbius" (pink hashtag icon). Each project card includes a description of the latest commit, the date it was made, and a "via" link.

Project	Description	Date	Link
grabwork-frontend-user	Merge pull request #65 from thucpn/develop fix: job maximum	22d ago	via
grabwork-admin	Merge pull request #6 from thucpn/develop fix: update ui/ux	78d ago	via
morbius	feat: im	78d ago	via

**Figure 50: Deployment Frontend - Step 2**

Step 3: Switch to Setting tab -> Environment Variables and add some client variables

The screenshot shows the 'Project Settings' page for a project named 'grabwork-frontend-user'. On the left, a sidebar lists navigation options: General, Domains, Integrations, Git, Serverless Functions, Environment Variables (which is currently selected), Security, and Advanced. The main content area is titled 'Environment Variables' and contains a note: 'In order to provide your Deployment with Environment Variables at Build and Runtime, you may enter them right here, for the Environment of your choice.' Below this, a message says 'A new Deployment is required for your changes to take effect.' A form titled 'Add New' is displayed, with fields for 'NAME' (containing 'EXAMPLE\_NAME') and 'VALUE' (containing 'I9JU23NF394R6HH'). To the right, there's a section for 'ENVIRONMENT' with checkboxes for 'Production' (checked), 'Preview' (unchecked), and 'Development' (unchecked). A link 'Select Custom Branch' is also present. At the bottom of the form is a blue 'Add' button.

Figure 51: Deployment Frontend - Step 3

Step 4: Switch to Overview tab and wait for Vercel building and deploy the project

The screenshot shows the 'Overview' tab of the project 'grabwork-frontend-user'. The top navigation bar includes 'Feedback', 'Changelog', 'Support', 'Docs', and a user profile icon. Below the navigation, there are buttons for 'View Git Repository' and 'Visit'. The main content area is titled 'Production Deployment' and describes it as 'The deployment that is available to your visitors.' It features a preview of the deployed website, which displays a landing page for 'Grabwork' with a headline 'Có đến 1,178 tin tuyển dụng dành cho bạn!' and a placeholder image of a person. To the right of the preview, detailed deployment information is provided: 'DEPLOYMENT' (name: 'grabwork-frontend-user-pss5yqckx-thucpn.vercel.app'), 'DOMAINS' (list: 'grabwork.tech' and 'grabwork.vercel.app' with '+2' new domains), 'STATUS' (green circle indicating 'Ready'), 'CREATED' (22d ago), 'BRANCH' (radio button set to 'main'), and a note about a merge pull request. At the bottom, a call-to-action says 'To update your Production Deployment, push to the "main" branch.' and a 'Learn More' button.

Figure 52: Deployment Frontend - Step 4

Step 5: Switch to Setting tab -> Domains and add new domains for website

**Domains**

These domains are assigned to your Production Deployments. Optionally, a different [Git branch](#) or a [redirection](#) to another domain can be configured for each one.

mywebsite.com [Add](#)

**www.grabwork.tech** [↗](#) [Production](#)

- Valid Configuration
- Redirects to [grabwork.tech](#)

**grabwork.tech** [↗](#) [Production](#)

- Valid Configuration
- Assigned to main

**grabwork.vercel.app** [↗](#) [Production](#)

- Valid Configuration
- Assigned to main

Figure 53: Deployment Frontend - Step 5

Step 6: Go to new domain or the deployed URL that Vercel provide, you should see the frontend website

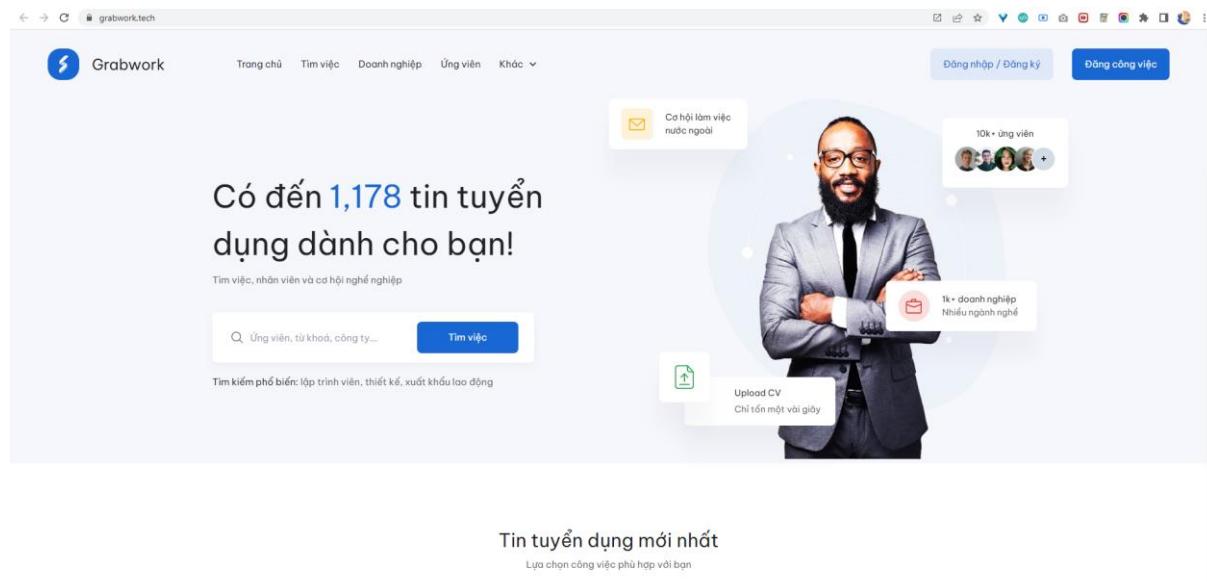


Figure 54: Deployment Frontend - Step 6

### 3. User Manual

#### 3.1 Feature 1 - Candidate update resume profile

Step 1: In dashboard home page, the sidebar has so many tabs, and in the middle is the statistic information. First, candidate click to “Hồ sơ của tôi” tab

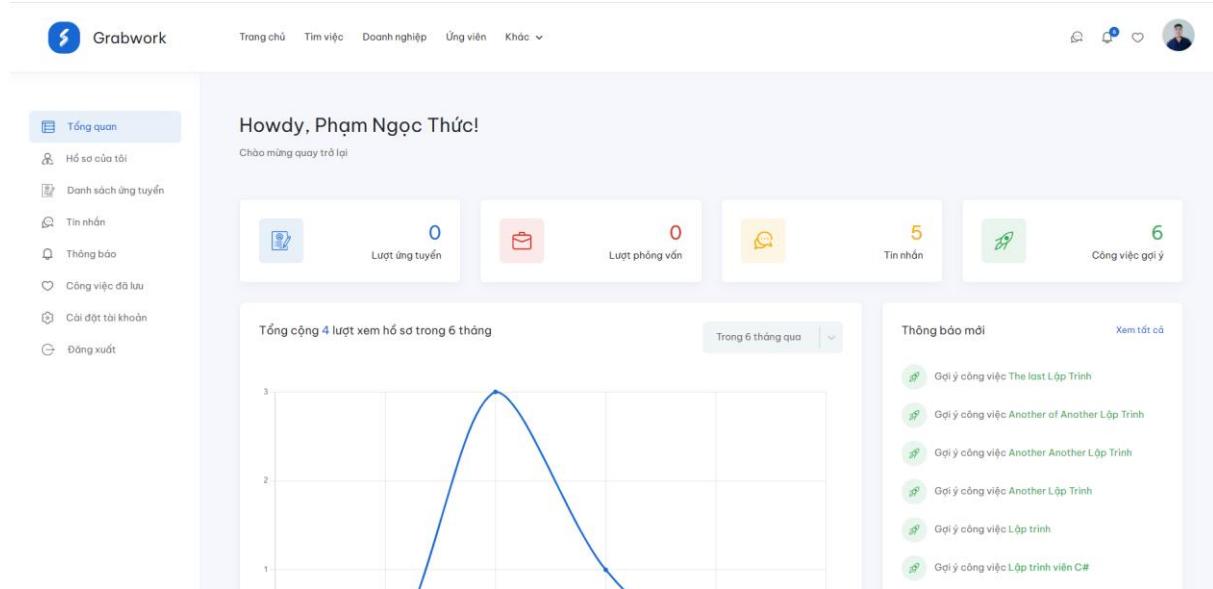


Figure 55: User Manual - Feature 1 - Step 1

Step 2: There are six tabs in the profile page. Now, candidate should switch to first tab and update basic information. Some required fields such as: name, job title, job catalog, job status, education, gender...

Figure 56: User Manual - Feature 1 - Step 2

Step 3: After successfully update basic information, candidate should switch to the second tab and update social information such as: phone number, email, social links...

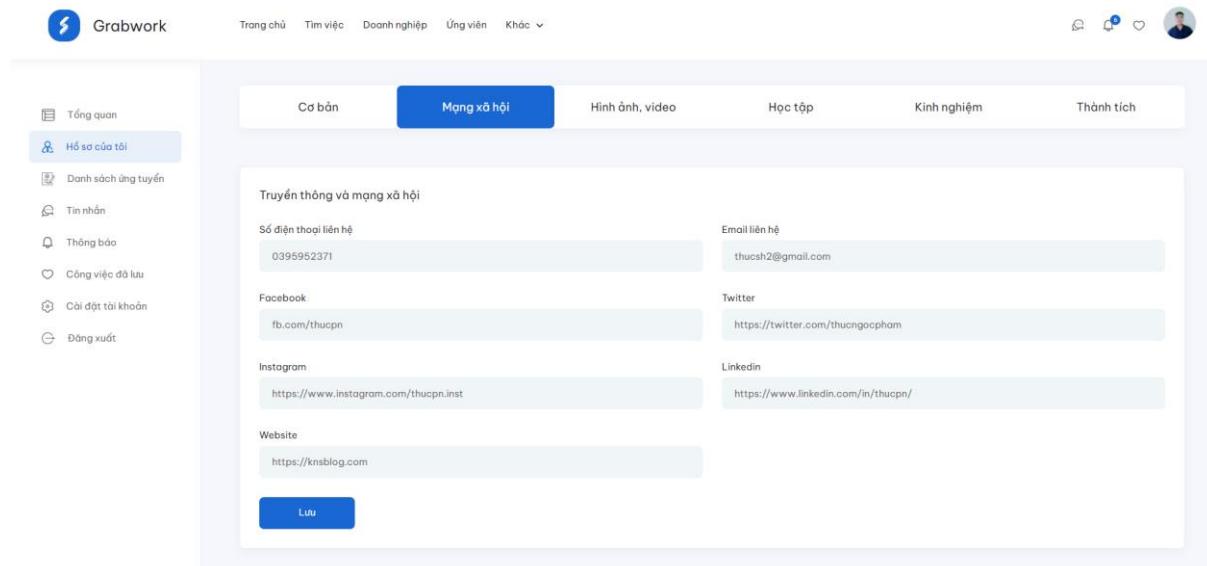


Figure 57: User Manual - Feature 1 - Step 3

Step 4: Now, candidate can update media information. He should switch to third tab and add some information such as: images, introduction video, description, skills, languages

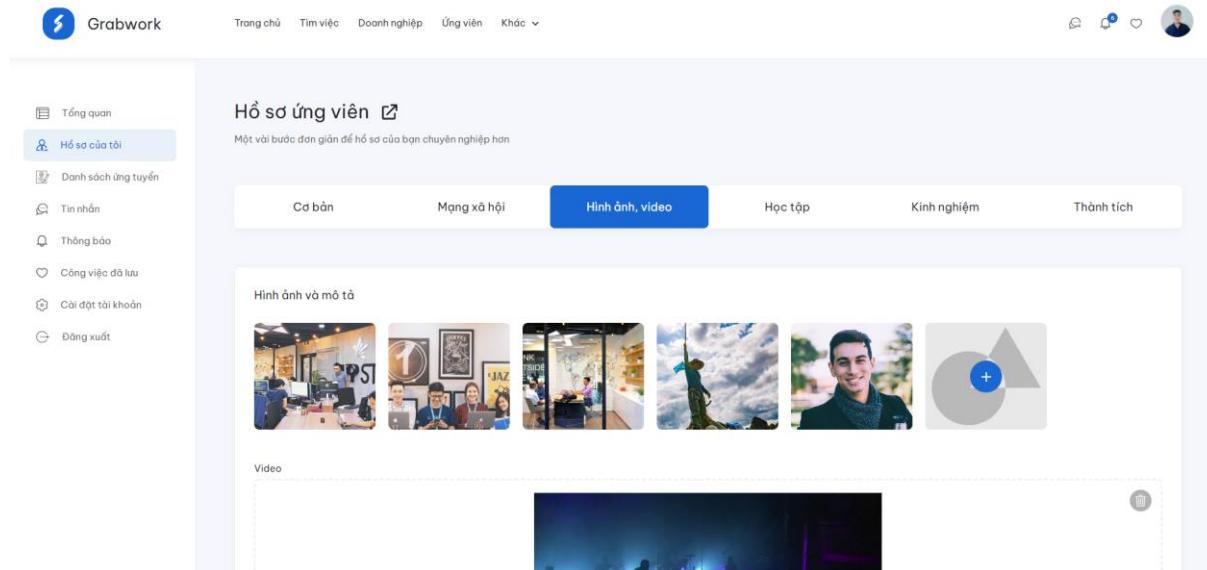


Figure 58: User Manual - Feature 1 - Step 4

Step 5: Candidate also updates education history. He could add the educations in the timeline with some information such as: university, major, study time and description.

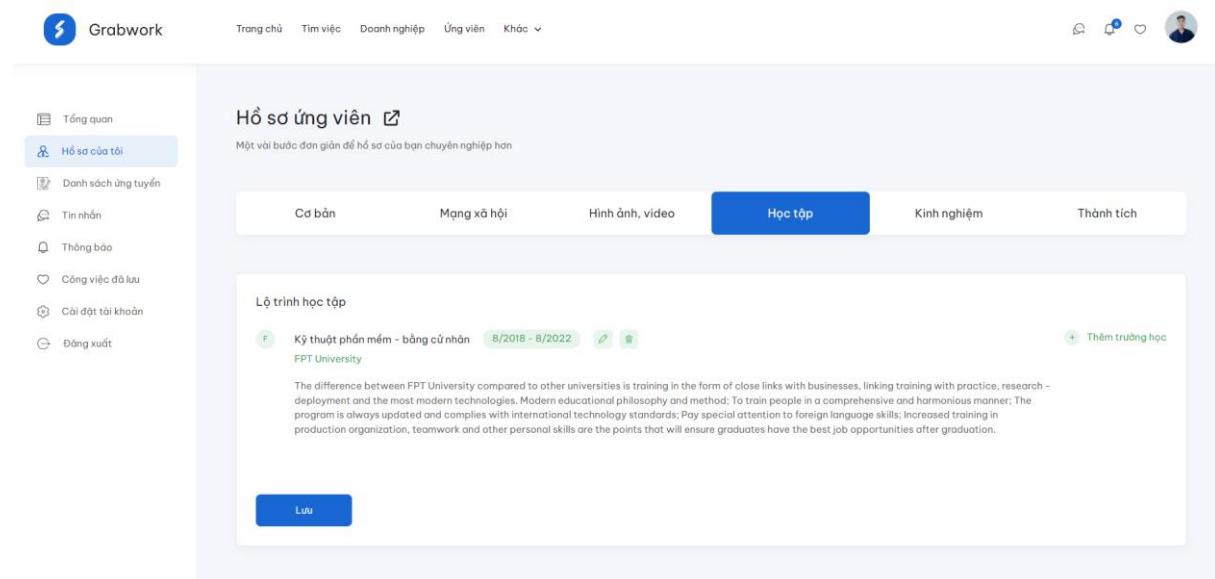


Figure 59: User Manual - Feature 1 - Step 5

Step 6: Switch to fifth tab and update work experience information such as: job title, company name, reference information, description.

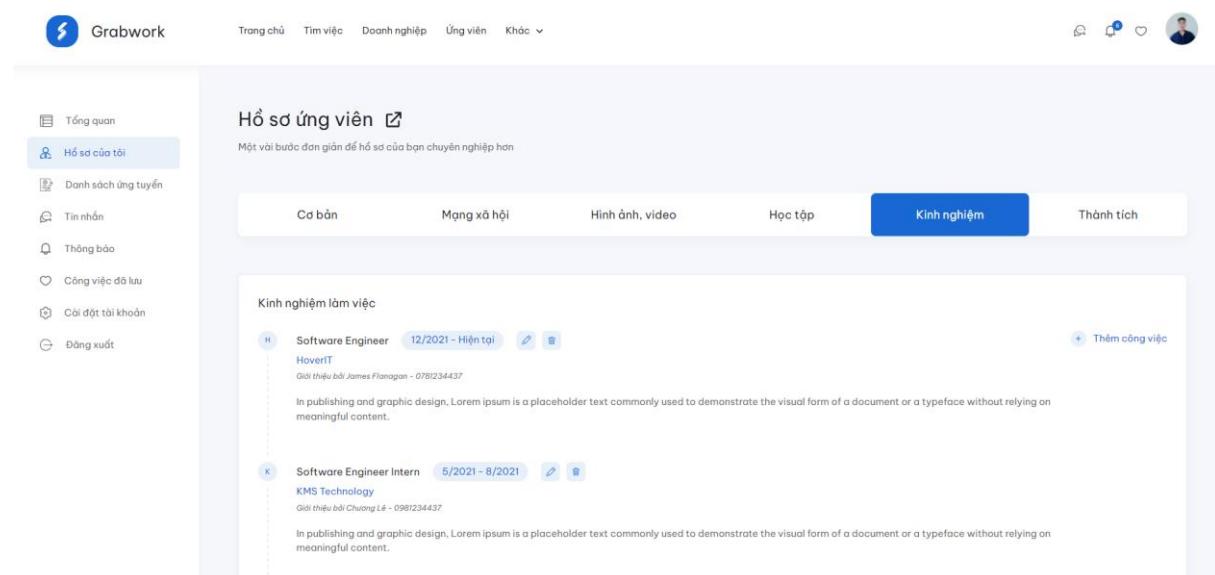


Figure 60: User Manual - Feature 1 - Step 6

Step 7: Switch to sixth tab and update award information: award name, link to certificate, description, received time.

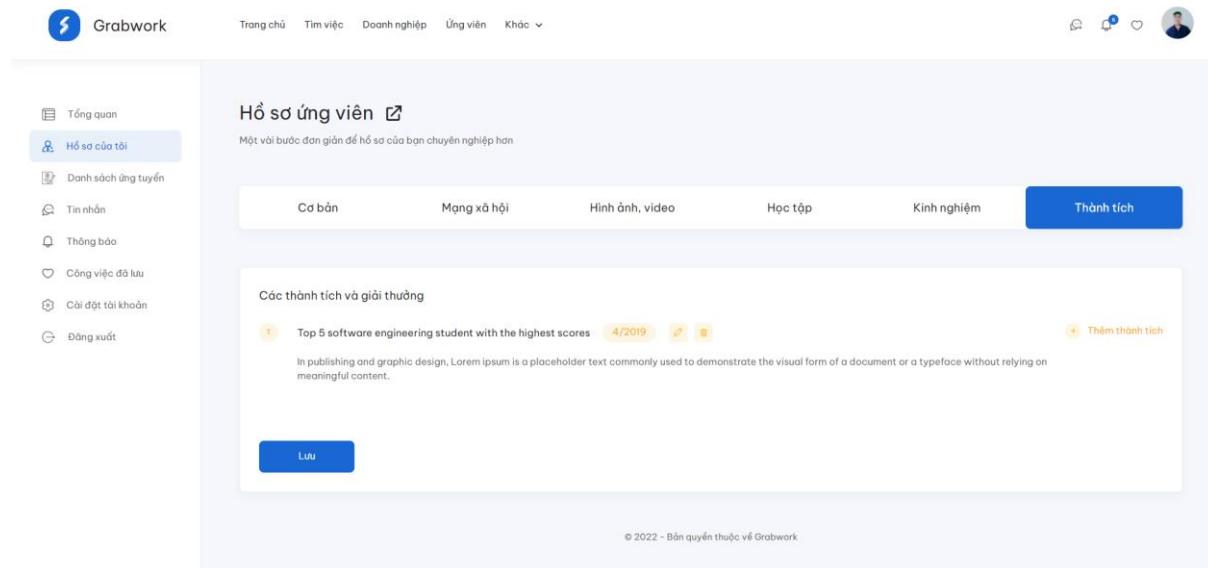


Figure 61: User Manual - Feature 1 - Step 7

### 3.2 Feature 2 - Enterprise update company information and post job

Step 1: In dashboard home page, the sidebar has so many tabs, and in the middle is the statistic information of enterprise. First, enterprise clicks to “Hồ sơ doanh nghiệp” tab.

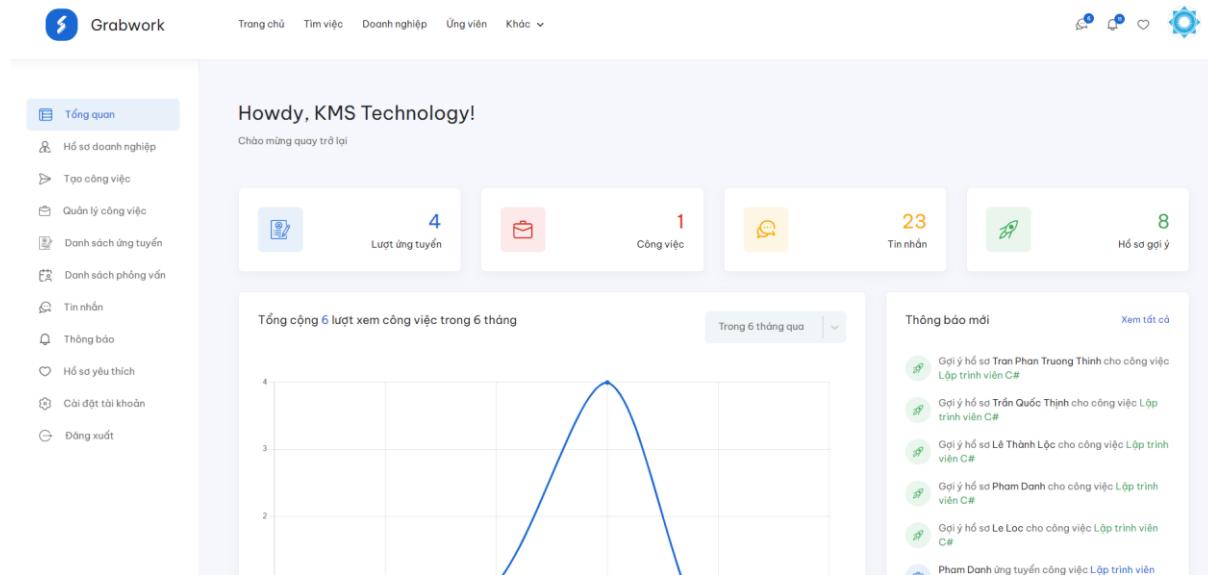


Figure 62: User Manual - Feature 2 - Step 1

Step 2: There are four tabs in the profile page. Now, enterprise should switch to first tab and update basic information. Some required fields such as: logo, name, job title, business sector, founded year,

enterprise size, business licences.

The screenshot shows the Grabwork interface for a business profile. On the left sidebar, under 'Hồ sơ doanh nghiệp', there are links for 'Tạo công việc', 'Quản lý công việc', 'Danh sách ứng tuyển', 'Danh sách phỏng vấn', 'Tin nhắn', 'Thông báo', 'Hồ sơ yêu thích', 'Cài đặt tài khoản', and 'Đăng xuất'. The main content area has tabs: 'Thông tin cơ bản' (selected), 'Hình ảnh, video & mô tả', 'Truyền thông và mạng xã hội', and 'Địa chỉ liên hệ'. The 'Thông tin cơ bản' tab contains fields: 'Logo' (with a placeholder image of a sun-like icon and a 'Tải lên logo' button), 'Tên viết tắt \*' (KMS Technology), 'Tên đầy đủ \*' (KMS Technology: Software Development and Consulting), 'Lĩnh vực hoạt động \*' (Lĩnh vực khoa học công nghệ, phần mềm, phần cứng, tự động hóa), 'Năm thành lập \*' (2008), 'Số lượng nhân sự \*' (Hơn 500 người), 'Mã số thuế \*' (MT2321312321312), and 'Giấy phép kinh doanh \*' (with a placeholder image of a certificate).

Figure 63: User Manual - Feature 2 - Step 2

Step 3: Now, enterprise can update media information. He should switch to second tab and add some information such as: images, introduction video, vision and mission of the company.

The screenshot shows the 'Hình ảnh, video & mô tả' tab selected. It features a grid of five images showing office environments and a video player at the bottom displaying a dark video thumbnail with a play button and progress bar.

Figure 64: User Manual - Feature 2 - Step 3

Step 4: After successfully update media information, enterprise should switch to the third tab and update social information such as: phone number, email, social links...

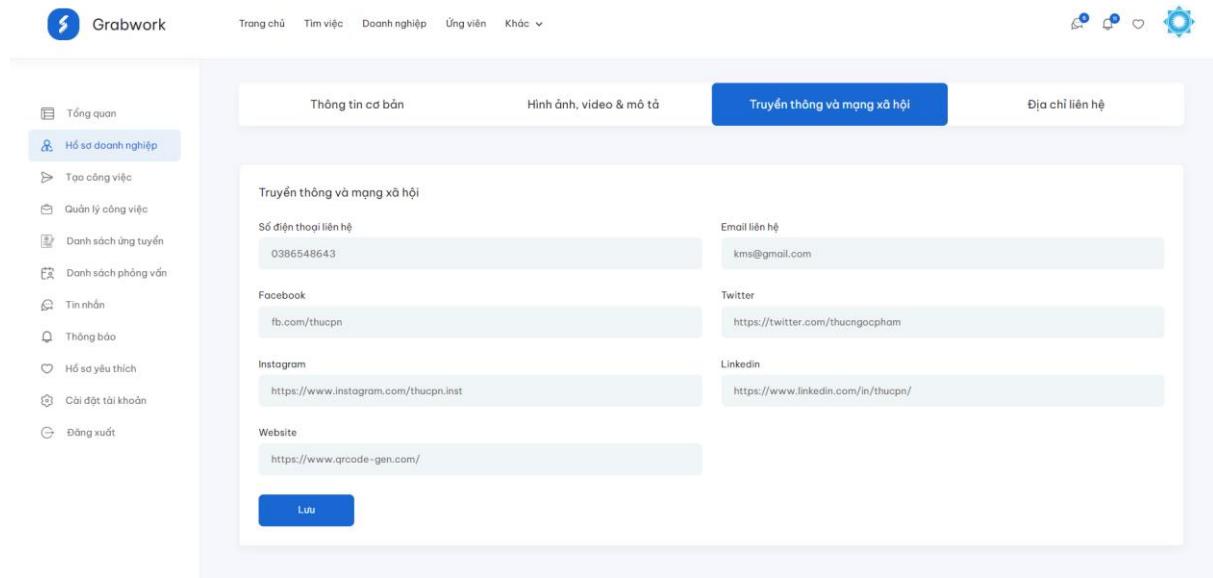


Figure 65: User Manual - Feature 2 - Step 4

Step 5: Enterprise also provides the company address information such as province, district, ward...

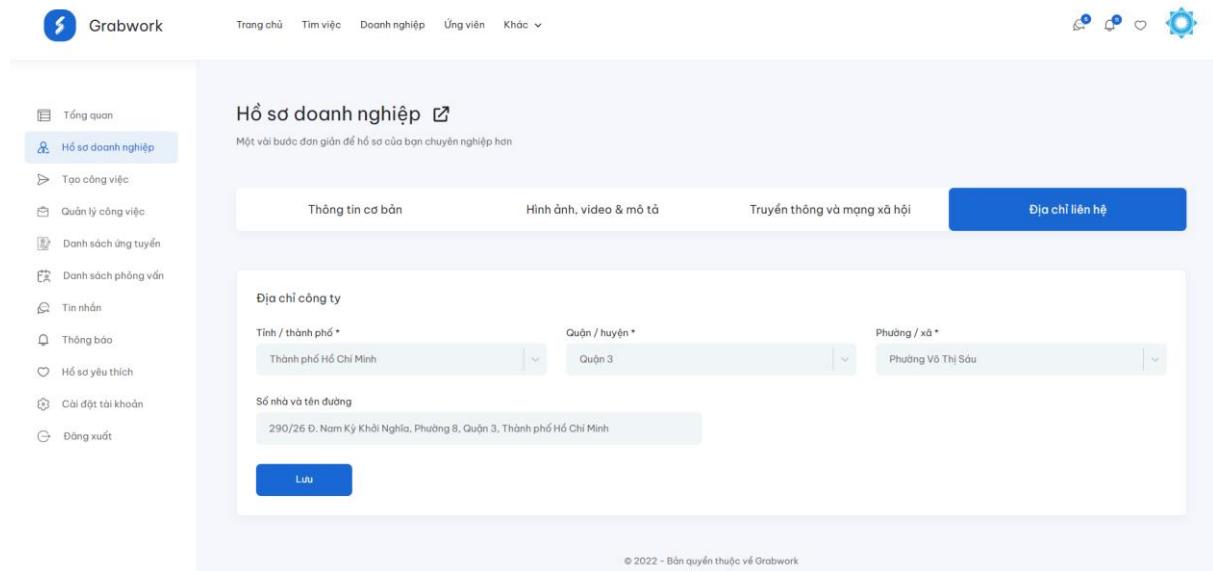


Figure 66: User Manual - Feature 2 - Step 5

Step 6: After successfully update profile, enterprise could start posting job. In the dashboard home page, enterprise click to “Tạo công việc” tab and input job information: job name, salary, address, job type, requirements...

Tạo công việc

Bắt đầu đăng tin tuyển dụng

Tên công việc \*

Loại công việc \* Ngành nghề \* Học vấn tối thiểu \*

Toàn thời gian Chọn ngành nghề... Không yêu cầu

Kinh nghiệm \* Giới tính \* Số lượng tuyển Cấp bậc nhân viên \*

Không yêu cầu Không yêu cầu Cô

Hình thức trả lương \* Mức lương tối thiểu (đồng / tháng) \* Mức lương tối đa (đồng / tháng) \*

Trả lương theo tháng

Mô tả (tối đa 3000 từ) \*

Figure 67: User Manual - Feature 2 - Step 6

Step 7: Enterprise can preview the job before publishing. After reviewing, enterprise clicks create button to publish the job.

Xem trước công việc

Test công việc

Thành phố Hà Nội Chưa có lượt xem Chưa có người ứng tuyển

Toàn thời gian Cản gấp

Mô tả chi tiết

Inone voluntaria familiari leguntur quae praesentium ille ad rerum parendum dicitis assentior inclusae controversia labefactant.

Các công việc cần làm

- Inone voluntaria familiari leguntur quae praesentium ille ad rerum parendum dicitis assentior inclusae controversia labefactant.

Yêu cầu và kinh nghiệm

- Inone voluntaria familiari leguntur quae praesentium ille ad rerum parendum dicitis assentior inclusae controversia labefactant.
- Không yêu cầu giới tính
- Không yêu cầu học vấn
- Không yêu cầu kinh nghiệm

Tổng quan công việc

Thời gian đăng Ngày bây giờ

Mức lương 10,000,000đ - 20,000,000đ / tháng

Ngành nghề Xây dựng

Số lượng tuyển dụng 12 người

Địa điểm làm việc Hồ Hoàn Kiếm, Phường Phúc Xá, Quận Ba Đình, Thành phố Hà Nội

Figure 68: User Manual - Feature 2 - Step 7

### 3.3 Feature 3 - System suggests matching jobs and candidates

Step 1: In the notification page, user click to “Đăng ký nhận thông báo”

**Thông báo**

Thông báo công việc, gợi ý ứng viên phù hợp với công việc của bạn

Gợi ý ứng viên

Nhận thông báo mỗi khi có ứng viên phù hợp với công việc

Đăng ký nhận thông báo

Hiện tất cả

Thời gian Xoá

Thông báo

• Gợi ý hồ sơ Trần Phan Trương Thịnh cho công việc Lập trình viên C#

16 ngày trước

Figure 69: User Manual - Feature 3 - Step 1

Step 2: System will scan the suitable job in the background, if have any jobs or candidates is matching, new notification will be show for user

Thông báo

Thời gian Xoá

- Gợi ý hồ sơ Trần Phan Trương Thịnh cho công việc Lập trình viên C#
- Gợi ý hồ sơ Trần Quốc Thịnh cho công việc Lập trình viên C#
- Gợi ý hồ sơ Lê Thành Lộc cho công việc Lập trình viên C#
- Gợi ý hồ sơ Phạm Danh cho công việc Lập trình viên C#
- Gợi ý hồ sơ Lê Lộc cho công việc Lập trình viên C#

Hiện tất cả

Figure 70: User Manual - Feature 3 - Step 2

### 3.4 Feature 4 - Candidate apply job and join interview

Step 1: In job detail page, candidate click to “Ứng tuyển” to apply job

The screenshot shows a job detail page for a "Lập trình viên C#" position. At the top, there's a header with the Grabwork logo, navigation links (Trang chủ, Tim việc, Doanh nghiệp, Ứng viên, Khác), and user profile icons. Below the header, the job title "Lập trình viên C#" is displayed along with location ("Thành phố Hồ Chí Minh"), views ("6 lượt xem"), and applications ("5 lượt ứng tuyển"). There are two buttons: "Ứng tuyển" (Apply) and "Cản gấp" (Reject). The main content area has sections for "Mô tả chi tiết" (Job description), "Các công việc cần làm" (Tasks required), "Yêu cầu và kinh nghiệm" (Requirements and experience), and a summary box titled "Tổng quan công việc" (Job overview) containing details like start date, salary range, industry, number of applicants, and location.

Figure 71: User Manual - Feature 4 - Step 1

Step 2: Enterprise view list of job applications. They can filter by the status and also search by the name of candidates.

The screenshot shows a list of job applications for the "Lập trình viên C#" position. On the left, a sidebar menu includes "Tổng quan", "Hồ sơ doanh nghiệp", "Tạo công việc", "Quản lý công việc", "Danh sách ứng tuyển" (selected), "Danh sách phỏng vấn", "Tin nhắn", "Thông báo", "Hồ sơ yêu thích", "Cài đặt tài khoản", and "Đăng xuất". The main content area is titled "Danh sách ứng tuyển" and shows a search bar with placeholder "Tim tên ứng viên..." and a "Tất cả" button. Below the search bar, four application cards are listed: Pham Ngoc Thuc (Applied 5 minutes ago), Pham Danh (Applied 18 days ago), Le Loc (Applied 18 days ago), and Hoang Anh Dung (Applied 16 days ago). Each card displays the applicant's name, profile picture, role, and application date.

Figure 72: User Manual - Feature 4 - Step 2

Step 3: Enterprise click job apply card to view it in detail. The UI shows detail information about the candidate, the job, the enterprise and the timeline of job applications.

Figure 73: User Manual - Feature 4 - Step 3

Step 4: Enterprise click to “Thông báo đậu hồ sơ” to approve profile for next round

Figure 74: User Manual - Feature 4 - Step 4

Step 5: Enterprise click to “Tạo phòng họp” to generate an online meeting room

Figure 75: User Manual - Feature 4 - Step 5

Step 6: Enterprise click to “Thêm lịch phỏng vấn” to add interview schedules

Figure 76: User Manual - Feature 4 - Step 6

Step 7: Candidate go to apply list page to view current job applications

Figure 77: User Manual - Feature 4 - Step 7

Step 8: Candidate go to apply detail page and choose suitable time for interview

Figure 78: User Manual - Feature 4 - Step 8

Step 9: Enterprise and candidate do interview in the online meeting room. After that, enterprise decide the result of the interview

Figure 79: User Manual - Feature 4 - Step 9

**Step 10:** A result notification will be sent to candidate in the notification page. The notifications is sort by the time and users can filter the notification by type.

Figure 80: User Manual - Feature 4 - Step 10

**Step 11:** If there are any concerns, candidate and enterprise can send the messages to each other. The chat application just simple link Messenger or Zalo chat, the message is implemented real time so that the users can see new message instantly.

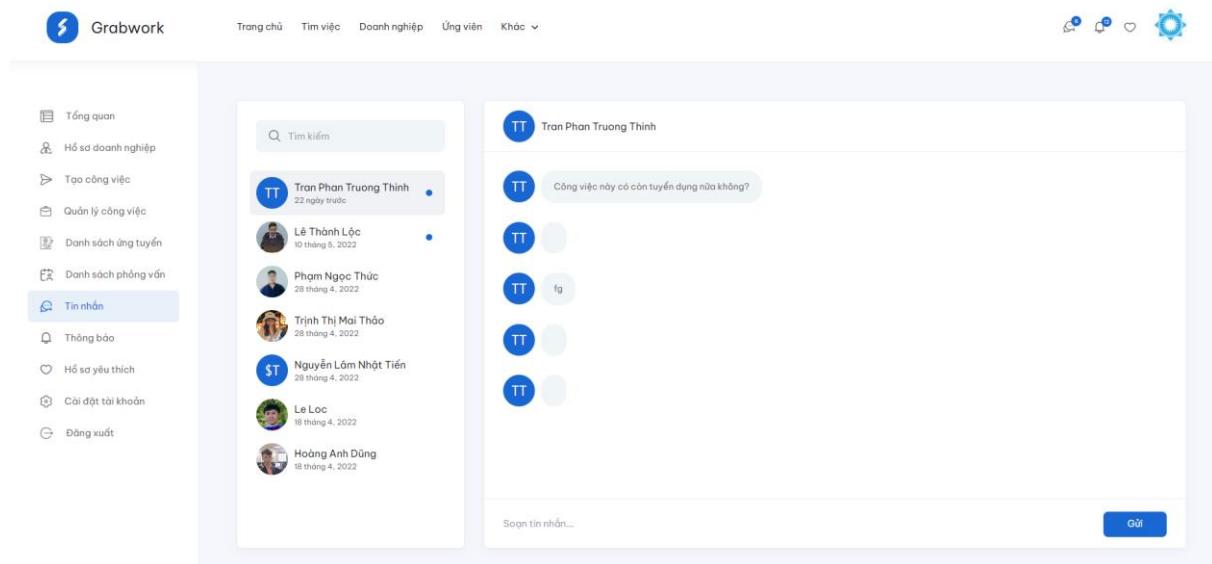


Figure 81: User Manual - Feature 4 - Step 11

## VII. Appendix

1. OMG Unified Modeling Language™ Superstructure

<https://www.omg.org/spec/UML/2.4.1/Superstructure/PDF>

2. Heroku Deploy Backend Site

<https://dashboard.heroku.com>

3. Vercel Deploy Frontend Site

<https://vercel.com/dashboard>