Software Engineering

Group 33

Title:

Jobling：

The service platform of Job Hunting and Recruitment du

ring the COVID

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A Part:

Introduction

The purpose of this project is to create a system which could reduce the impact of COVID-19 on both the employers and the employees in the market. It aims to, with an intelligent system supported by big data, help companies find desirable candidates for vacant posts, and assist in job-hunting for the unemployed. One of the key features of the system is the creation and storage of profiles of its users, so that the users can showcase their needs, e.g. the nature of the jobs which they are providing, or the expertise which they possess, for the employers and employees, respectively. The system fulfils its purpose by analyzing the acquired user data using big data. Subsequently, a list of items of interest will be sent to the user as notifications on a regular basis. Alternatively, the users could also browse through the site themselves using different filters and engage in communication with the other party in an interactive way.

Scope

A login/registration procedure will be presented to all users. For new users, depending on the user type they choose (enterprise or personal),

different information needs to be supplied in order to complete the registration process.

For personal users:

·Name

·Education

·Working Experience

·Expected Salary

·Address

·Personal Contact Details (Phone numbers, email address, etc.)

·Password

These entries can be modified later by the user.

For enterprise users:

·Company Name

·Company Size

·Company Type

·Industry

·Address

·Contact Details (Phone numbers, email address, etc.)

·Password

These entries can be modified later by the user. However, such modifications require to be verified.

After login/registration, enterprise users can create job entries, which will be stored by the system and displayed on their profile. To create a job entry, the user should provide the following information:

·Job Type

·Required Experience Level

·Industry

·Role

·Salary

·Office location

·Job Description (i.e. A more detailed description on the requirement of this job, its benefit, etc.)

Personal users can search through the database of the system using the above information as filters, to pinpoint job entries of interest. They can then opt to apply for a specific job entry, by submitting their resume in a supported format (*.pdf, *.doc, *.docx, *.txt). Their profile along with the resume will then be uploaded by the system, which can later be viewed

by the enterprise user who created the job entry, and a notification will also be sent to the enterprise user.

Functional Requirements

User Accounts

a) The system allows first-time users to enter as visitors and recommends users to sign up for an account later.

    1.Visitors can only browse all the functions inside the app but must be both signed up and signed in to be able to use all the functions.

b) The system must help the user to register an account and provides users with two registration options: Enterprise Edition and personal edition.

    1.Personal edition users should register with their real names and provide email or mobile phone numbers as contact information, and users can only register once with their real names.

    2. Users are recommended to fill in their medical history, the date of last work, address, and other personal information.

    3. Enterprise edition users should register with their company’s information and the type of company, and company can only register once with their real name.

c) The system must help the user to sign into their account.

1. The system must check user's password.
2. The system should help user reset password, if user forgets the password or often logins in different places.

d) The system must check that a user is signed in to be able to use all functions and view their personal details.

Sign Up Questionnaire

a) The user will be asked to fill up a questionnaire on Sign Up.

b) The user needs to answer those questions below, and they will be recorded.

For employee

1. Age
2. Highest degree
3. The nature of the job you are currently looking for
4. The industry you are looking forward to working in
5. The career you are looking forward to
6. Work experience (if any)

For Employer

1. Establishment time
2. Enterprise background
3. Enterprise type
4. Enterprise scale

5. Average salary of enterprise staff

Personal location settings

a) The system will automatically ask if you need to turn on the positioning function when you log in successfully.

1. Refusing to use the location function may cause most of the other functions to become unavailable.
2. The positioning function can be turn on or turn off in the setting.

Information push

a) After signing up, the system will push recruitment and job search information according to the information filled in the questionnaire.

b) Users can find jobs or employee that they want.

c) If users are not satisfied with the information, the system will constantly update information and push the information per day.

Job Hunting and Recruitment System

a) The system should provide some common problems about how to use this system. The system is divided into two parts, one for employee and the other for employers.

1. For employers, the applicant should complete a form about his/her own situation.

2. For employee, the employer should complete a form about what kind of employers he/she requires.

b) The system should provide a chat room between employees and employers, the chat room will open at a specific time every day, and employers will answer questions during that time.

c) The system will match employers' forms with employee's forms. Both the employers and the employee will form a one-to-many situation. The employers can accept the resumes of different employee, and the employee will receive more suitable recruitment notices.

Personal profile (Resume Settings)

a) Employers should provide a CV (Curriculum Vitae), which must include education, field of expertise, personal hobbies, and work experience. The format of CV must be in the form of PDF, WORD, and TXT.

b) Employees should complete all the Sign-Up Questionnaires, and Job Hunting and Recruitment System will analyse the result of the questionnaires and then match the employers to suitable companies for recruitment.

c) Employers should participate in an online video interview, which will include relevant knowledge and workplace adaptability.

Language

a) The platform must allow the user to choose the language they prefer.

b) The supported languages should be fetched from the platform configuration database and should include all primary languages.

Risk Assessment of the work during COVID-19

a) The platform should show the percentage of infection in each area on the map.

b) The platform should list the degree of danger in each job.

Enterprise Recruitment

a) The system will automatically generate enterprise information according to the questionnaire.

b) Users can update and modify enterprise information by themselves.

c) Users can use videos（format .mp4 .avi）to promote their enterprises. (optional)

d) All enterprise information will be uploaded to system and used for recruitment.

non-functional requirements

Security

a) The system should ask the user whether he or she is willing to turn on the personal location function (the user has the right to refuse). After turning on the personal location function, we will prohibit other third-party plug-ins from tracking your personal location to protect your personal security.

b) A user's account is accessible if one of these identifications matches. e.g. six-digit password, facial or fingerprint recognition. The system must provide one attempt for checking Face ID or Fingerprint recognition (if available) and three attempts for password matching.

c) The system should minimise sharing private information with other third parties or users.

d) The system must ensure all information can only be viewed after the user signed in and on the user's trusted devices.

e) The system must follow the legislation in the European Data Protection Act.

Reliability

a) This software should be compatible with Android and IOS operating system.

b) When the system crashed, it must send a notification to user and let user know there is a problem within the system. In addition, there

should be a professional software team to immediately fix program crashes and malicious bugs.

c) The server must remain stable to handle a certain number of visits and users' operations.

d) We should design task synchronization and concurrency carefully, try our best to balance the task load, reasonably allocate and call resources, so that the server can run under less pressure, to avoid accidents.

Usability

a) The system must provide a guideline of all key features at the very beginning for new users.

b) Draw part of the information into a chart to simplify reading.

c) Users can log in on multiple trusted devices.

d) The system runs 24 hours a day.

e) The cumulative outage time of continuous operation should not exceed 10 hours throughout the year.

Efficiency

a) When multiple users are online at the same time, the response time of the system should be less than three seconds.

b) The time when the information is summarized and pushed to the user should be within 10 seconds.
c) The time for the system to review job search and recruitment requests should not exceed 12 hours.

Accuracy

a) The platform should accurately locate each user’s home address.
b) When an employee is recruited, the platform should inform all employers who have received the employee's resume that the employee has been recruited.
c) The platform must be updated in real time to ensure data accuracy.

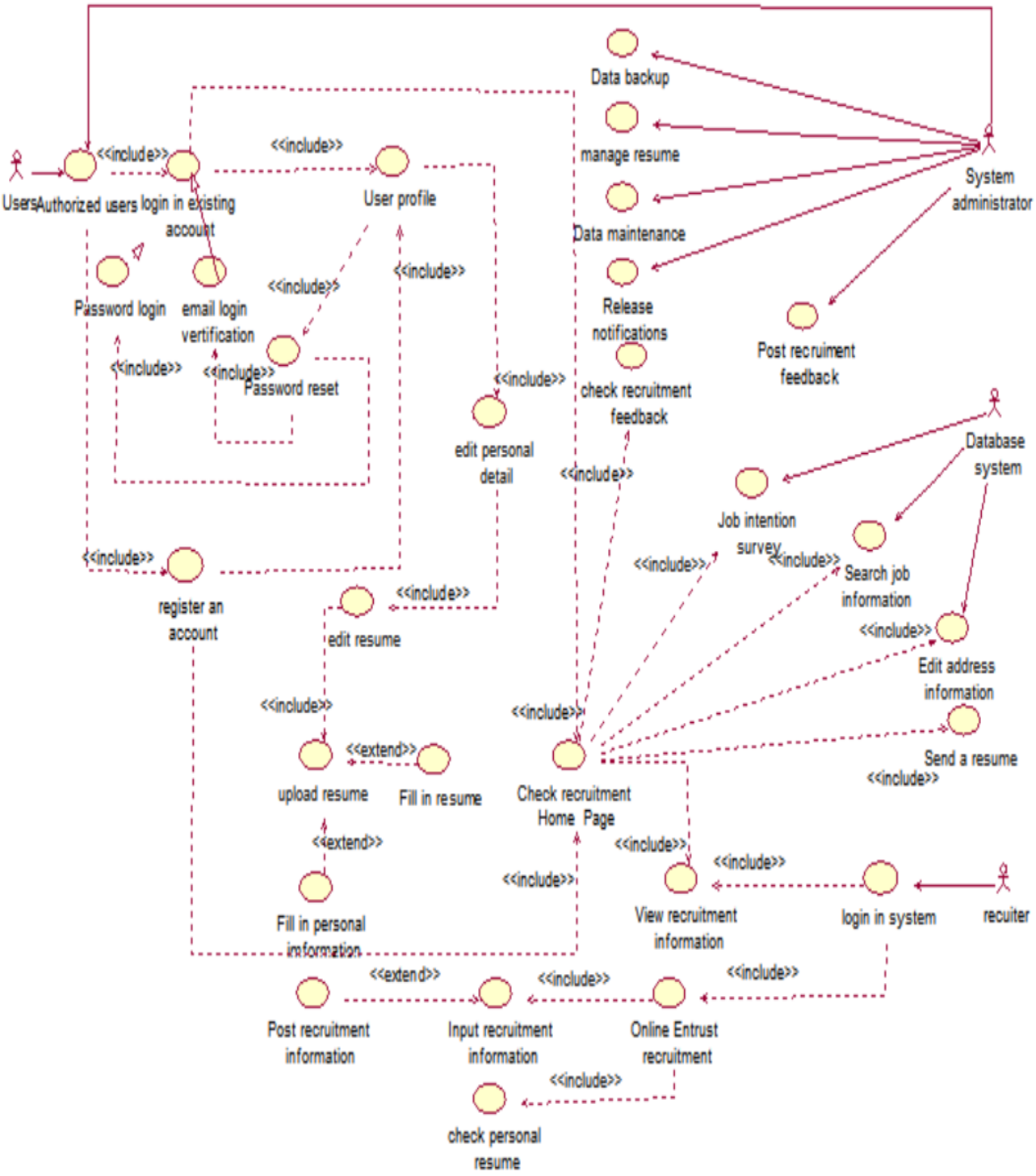
Maintenance

a) Make it easy for operations teams to keep the system running smoothly.
b) Make it easy for new engineers to understand the system, by removing as much complexity as possible from the system. (Note this is not the same as simplicity of the user interface.)
c) Make it easy for engineers to make changes to the system in the future, adapting it for unanticipated use cases as requirements change.

B Part:

Use Case Diagram

The Use Case Diagram for Jobling is presented below. It includes four actors and lots of use cases, actors are divided into users and systems, and users are divided into two groups, job seekers and recruiters. The system is also divided into two parts, the system administrator and the database, who performs specific functions. Two cases will be selected for analysis with pre-conditions and post-conditions, actors, flow of events.


Data backup
manage resume
Data maintenance
Release notifications
System administrator
Post recruiment feedback
Users
Authorized users
login in existing account
<<include>>
User profile
Password login
email login vertification
Password reset
edit personal detail
check recruitment feedback
Database system
Job intention survey
Search job information
Edit address information
Send a resume
register an account
edit resume
upload resume
Fill in resume
Fill in personal information
Check recruitment Home Page
View recruitment information
login in system
recuiter
Post recruitment information
Input recruitment information
Online Entrust recruitment
check personal resume
<<extend>>

Documented use cases

Use Case: View recruitment information

Actors involved: Users, recruiter, system administrator

Pre-conditions:

1. Users log in this software system.

Flow of events:

1. New users should register with their real names.
2. Users can choose to log in with mailbox authentication and password.
3. Users edit their personal information and account passwords.
4. Users edit their resumes in user profiles.
5. Users search for the job in the recruitment home page.
6. User require to upload their resumes on the recruitment page.

7. Recruiters carry out online commissioned recruitment.

8. Recruiters input recruitment information.

9. Recruiters post recruitment information.

10. The user database stores all the data and the system administrator takes a backup.

11. Users check the results of resume Posting.

12. Users check the recruitment information issued by the employers.

Post-conditions:

1. The user's personal information is saved and backed up by the system administrator.

2. The system administrator will send the recruitment feedback query results to the job seekers.

Scenario:

During the Corona-virus epidemic, considering the risk of infection and

the health and safety of all teachers and students, the school decided to temporarily suspend all classes. The specific opening hours will be determined by the epidemic situation. In the meantime, curriculum arrangements for teachers and students have also been cancelled, so teachers' salaries will not be paid by the school. Jack is a teacher in a university, responsible for teaching several majors. However, in this special period, he will have no income source. His friends suggest him to find a part-time job with Jobling software, which is similar to online tutoring, which not only meets the needs of students who need classes, but also satisfies his own needs. Jack then immediately download the software, he real-name registration for an account and then set up their own password to login, he entered the user configuration page to edit your resume and then log in to the recruitment page and search his preferred job and the company, he wants the company to provide enough demand on the students of this course, then devoted himself to write a good resume to the company. The next day after he back to login system to check the recruitment information, he found that the company has recorded his resume delivery and release the recruitment information, special company considering the outbreak period, so the company promised him to provide for himself on the ground after teaching part-time and keep in touch with him, he feel very happy and

satisfy yourself to find a part-time job and solve their financial troubles.

Use Case: Online Entrust recruitment

Actors involved: recruiter, system administrator

Pre-conditions:

1. The recruiter has successfully logged into the system.

2. The recruiter successfully typed the recruitment information.

Flow of events:

1. Recruiters logs into the system correctly.

2. Recruiters inputs the recruitment information on the commission recruitment on the home page.

3. Recruiters check the recruitment information.

4. Recruiters release recruitment information.

5. The system administrator maintains the recruitment information.

6. The recruitment information was successfully published on the

system.

Post-conditions:

1. System administrator release the recruitment information according to the recruiters.

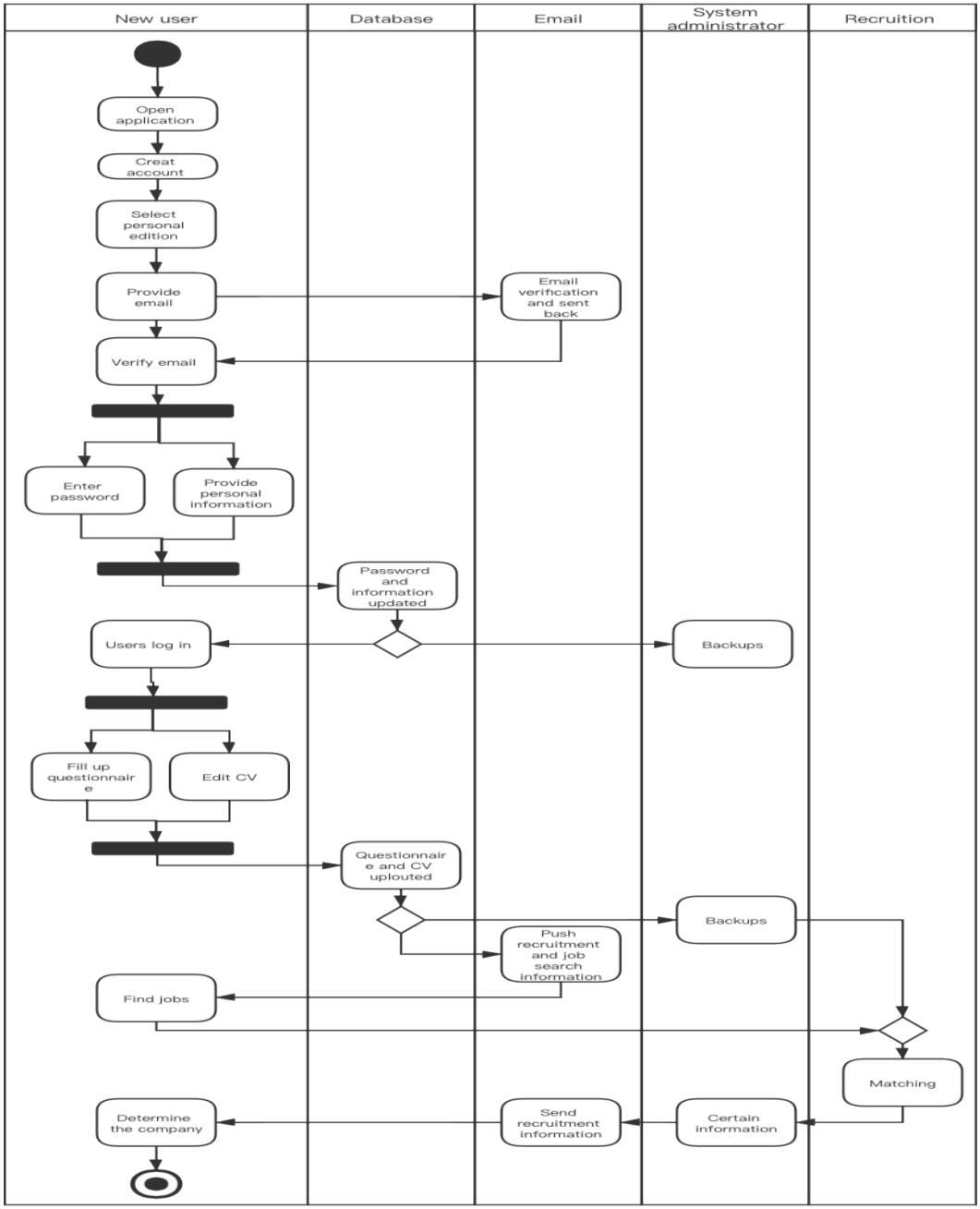
Scenario:

During the corona-virus, many companies faced the risk of infection and had to stop on-site recruitment and even operations. One of them is a company famous for its private tutoring. Through research, they found the software called Jobling, which allows employers to recruit employees through online interviews. They think this software not only avoids risks, but also enables the company to operate normally online. Company then login software account immediately, immediately received job seekers delivery resume and personal information, so they according to the demand of the corporate sector to recruit teachers and let them to online teaching, input information suitable staff and then released on the system, the system administrator to save and maintain information release on the net, then during that time, they passed the

software successfully solved the problems of the company's operations.

Activity Diagram

The activity diagram below details the process for the second documented use case, namely generating and sharing system report.



Class Diagram

Noun/Verb Analysis

To identify our candidate classes, we perform a noun/verb analysis, using the content by our use-cases and functional requirements. The first table of nouns were identified as potential classes, and the second table of verbs were suggested as potential actions user may do.

Noun Analysis

Candidate class	Use		Candidate class	Use
User Account	Class		Platform	Subclass
user information	attribute (user account)		Enterprises information	Class
password	attribute (user account)		Contact information	attribute (user account)
email system	out of scope		Security	Class
database	component		Face ID	Subclass (Security)
User			Fingerprint	Subclass (Security)
sign up questionnaire	Class		Reliability	Class
Employee	Subclass (questionnaire)		Accident	Subclass (Reliability)
Employer	Subclass (questionnaire)		Usability	Class
Personal location settings	Class		Efficiency	Class
Job Hunting and Recruitment	Class		Accuracy	Class

System				
Chat room	Subclass		Personal profile (Resume Settings)	Class
Language	Class			

Verb Analysis

Verb methods	**Scope**		**Verb method**	**Scope**
Sign in	out of scope		complete form	Job hunting
Sign up	out of scope		Participate interview	personal profile
Register	user account		Locate home address	Accuracy
Reset password	user account		Maintenance	Class
Check details	user account		Information push	Data analysis
turn on the positioning function	Security			

Responsibility-Driven Analysis

We performed a responsibility-driven analysis using CRC cards (Class, Responsibility and Collaborations) for candidate classes. Responsibilities show a brief overview of what each class needs to do, and collaborators are the classes which need to interact with in program execution.

User Account	
Responsibilities	Collaborators
Maintain detailed information about a particular user account, including personal information, sign up questionnaire	Security Sign Up Questionnaire

Sign Up Questionnaire	
Responsibilities	Collaborators
Maintain data concerning details about questions occurred during signing up.	Enterprise Recruitment

Enterprise Recruitment	
Responsibilities	Collaborators
The system will automatically generate the questionnaire, can be viewed at any time	User Account Sign Up Questionnaire

Security	
Responsibilities	Collaborators
Protect and backup all user's personal information, address, password, Face Id, etcsigning up.	User Account

Reliability	
Responsibilities	Collaborators
Balance the task load, reasonably allocate and call resources, so that the server can run under less pressure, to avoid accidents.	Security

Usability	
Responsibilities	Collaborators
Provide a guideline of all key features at the very beginning for new users.	Security

Personal location settings	
Responsibilities	Collaborators

Locate the users Refusing to use the location function may cause most of the other functions to be unavailable.	Security

Efficiency	
Responsibilities	Collaborators
response time of the system should be fast when users request.	Security Reliability

Job Hunting and Recruitment System	
Responsibilities	Collaborators
The basics of the system working. Maintain data about employees and employers.	User Account Sign Up Questionnaire

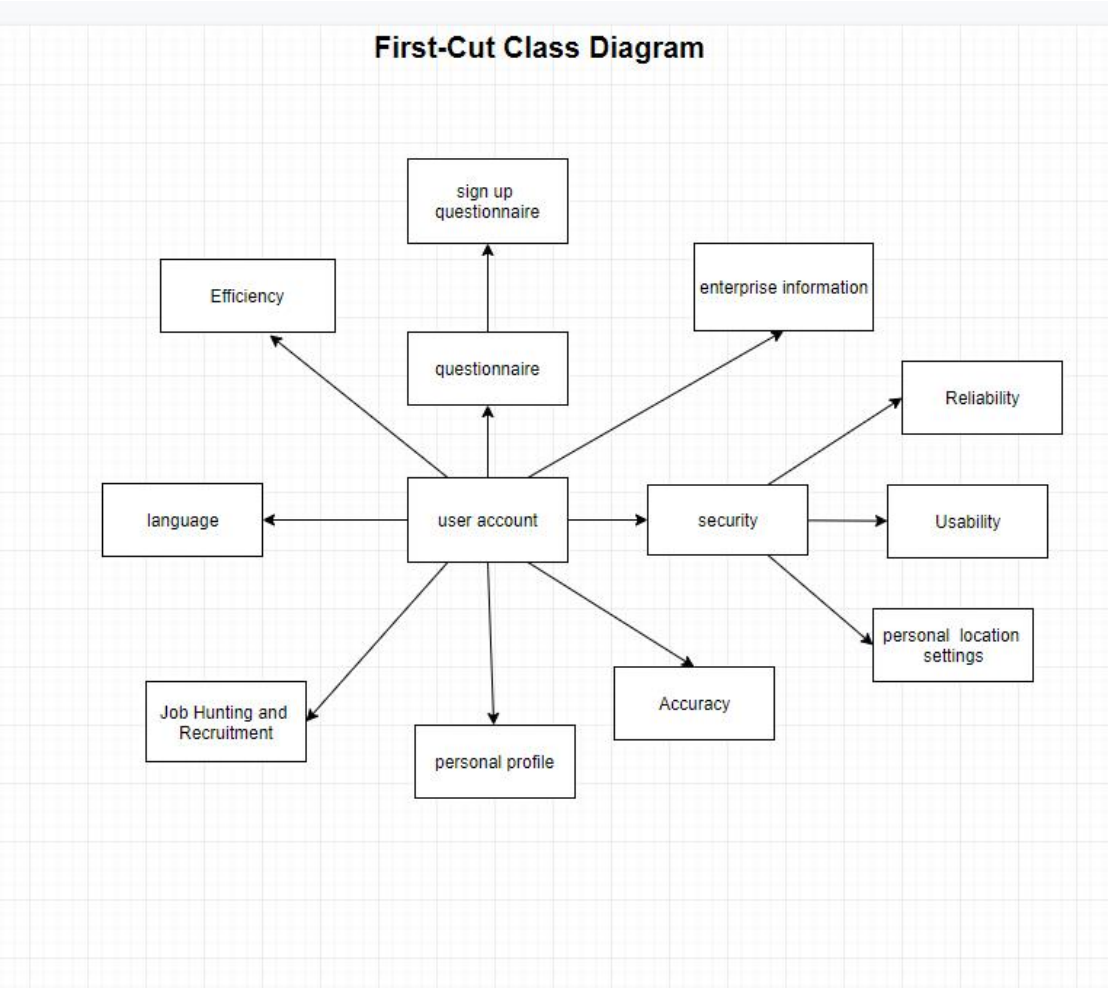
Accuracy	
Responsibilities	Collaborators
Maintain efficient operation of the system. Ensure that users can efficiently address requirements based on their data.	User Account

Personal profile	
Responsibilities	Collaborators
Make the data of platform more perfect, including personal information and job hunting and recruitment.	User Account Job Hunting and Recruitment system Sign Questionnaire

Language	
Responsibilities	Collaborators
Provide the convenience of communication. Maintain readability of data about users ’preferred languages	User Account

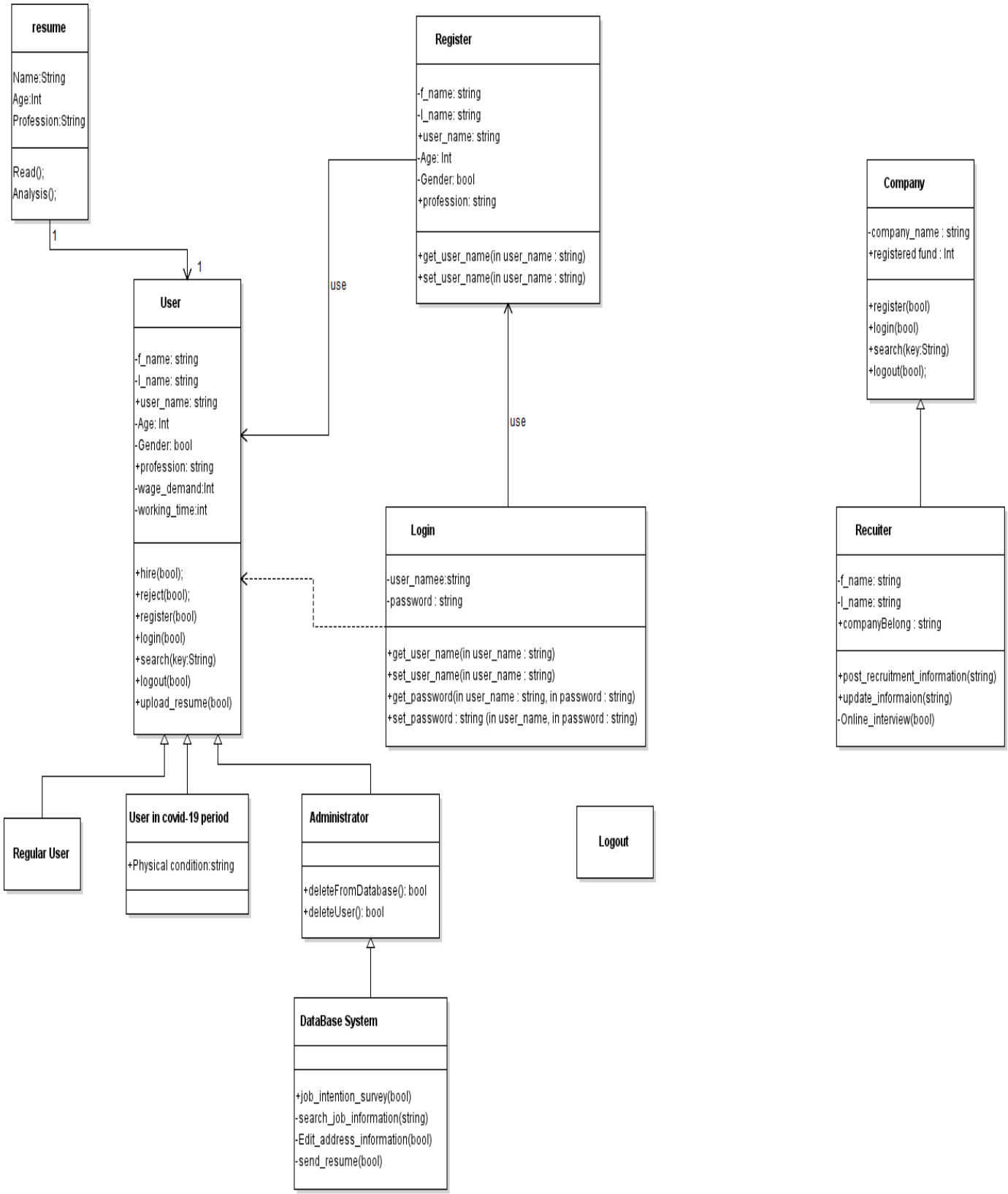
First-Cut Diagram

According to Noun/Verb and Responsibility-Driven Analysis, the first-cut diagram is introduced below:

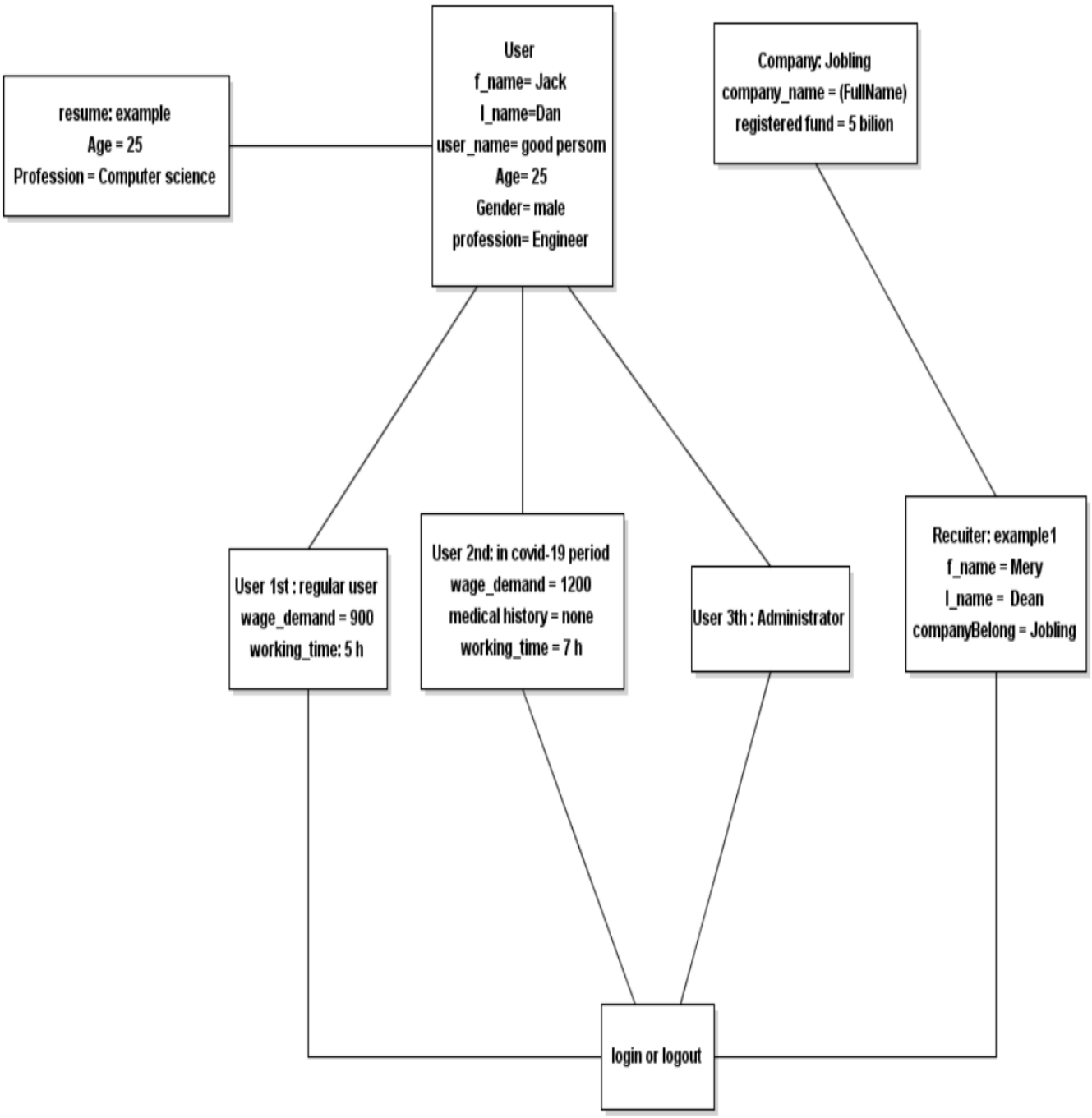


Class diagram

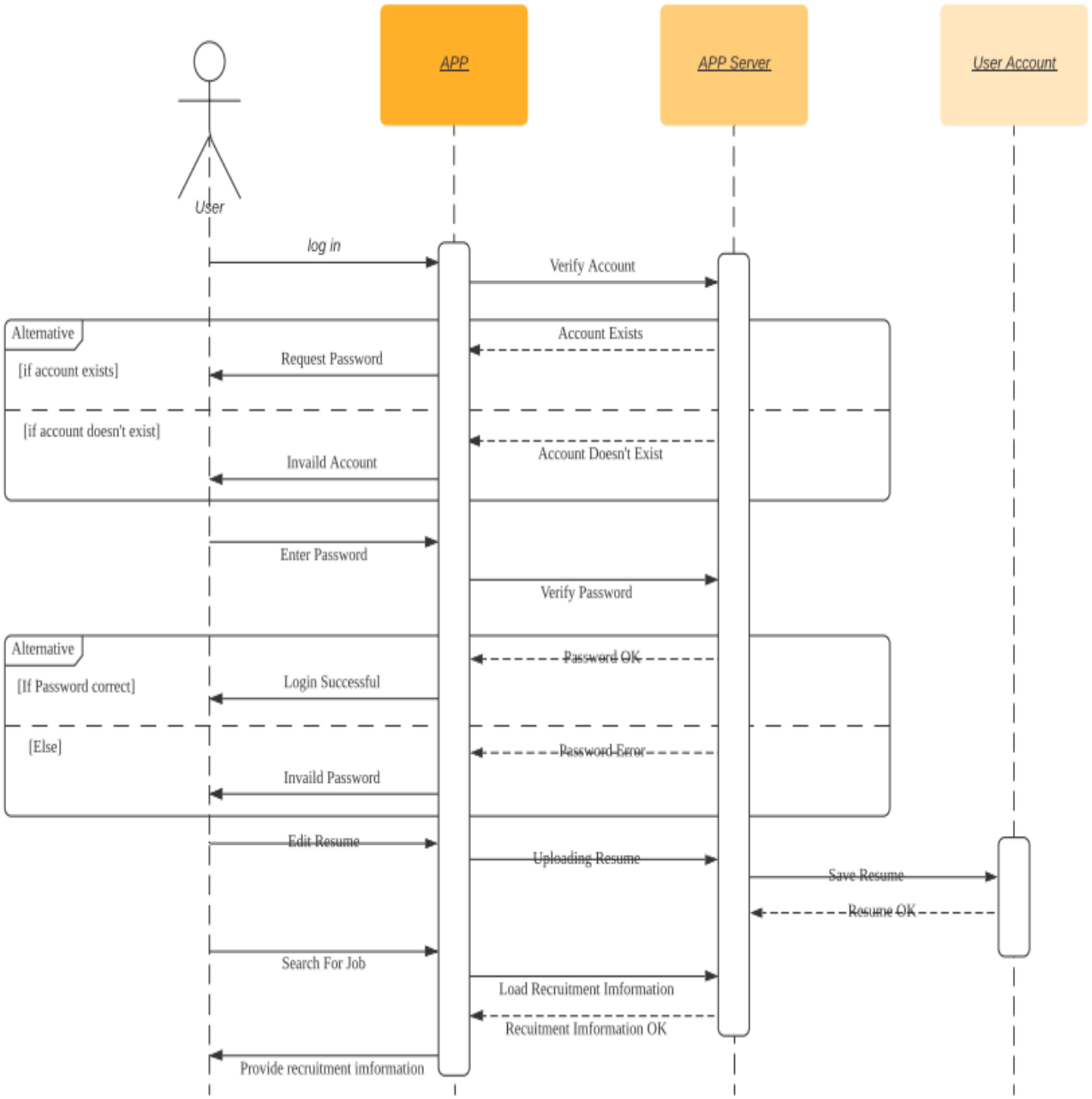
The following is a class diagram, which includes all classes used in the system, attribute of each class, operation of each class and relationships among the class.


resume
Name:String
Age:Int
Profession:String
Read();
Analysis();
1
1
Register
-f_name: string
-l_name: string
+user_name: string
-Age: Int
-Gender: bool
+profession: string
+get_user_name(in user_name : string)
+set_user_name(in user_name : string)
use
Company
-company_name : string
+registered fund : Int
+register(bool)
+login(bool)
+search(key:String)
+logout(bool);
User
-f_name: string
-l_name: string
+user_name: string
-Age: Int
-Gender: bool
+profession: string
-wage_demand:Int
-working_time:int
+hire(bool);
+reject(bool);
+register(bool)
+login(bool)
+search(key:String)
+logout(bool)
+upload_resume(bool)
use
Login
-user_namee:string
-password : string
+get_user_name(in user_name : string)
+set_user_name(in user_name : string)
+get_password(in user_name : string, in password : string)
+set_password : string (in user_name, in password : string)
Recuiter
-f_name: string
-l_name: string
+companyBelong : string
+post_recruitment_information(string)
+update_informaion(string)
-Online_interview(bool)
Regular User
User in covid-19 period
+Physical condition:string
Administrator
+deleteFromDatabase(): bool
+deleteUser(): bool
Logout
DataBase System
+job_intention_survey(bool)
-search_job_information(string)
-Edit_address_information(bool)
-send_resume(bool)

Object diagram



Sequence diagram



Scenario:

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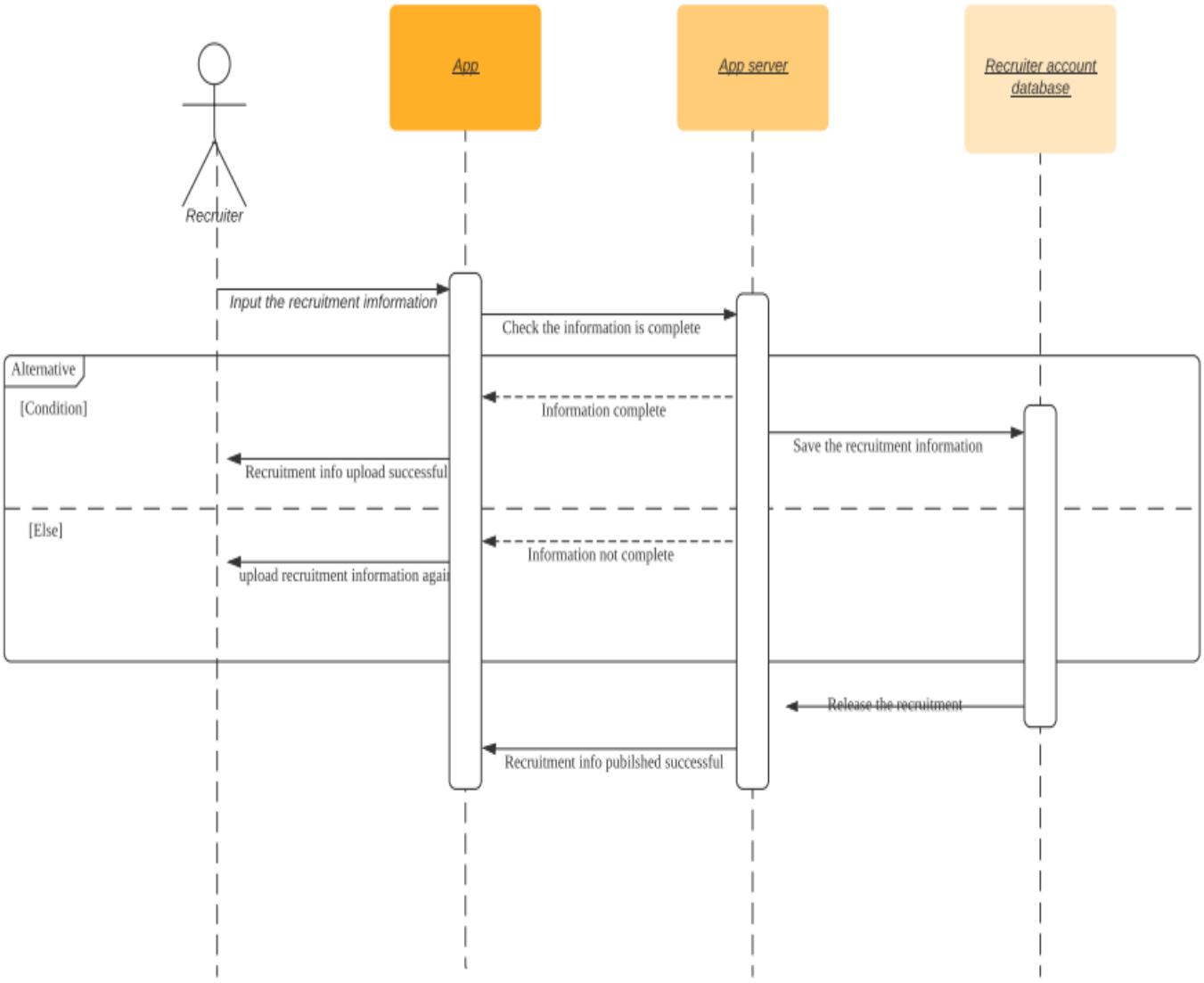
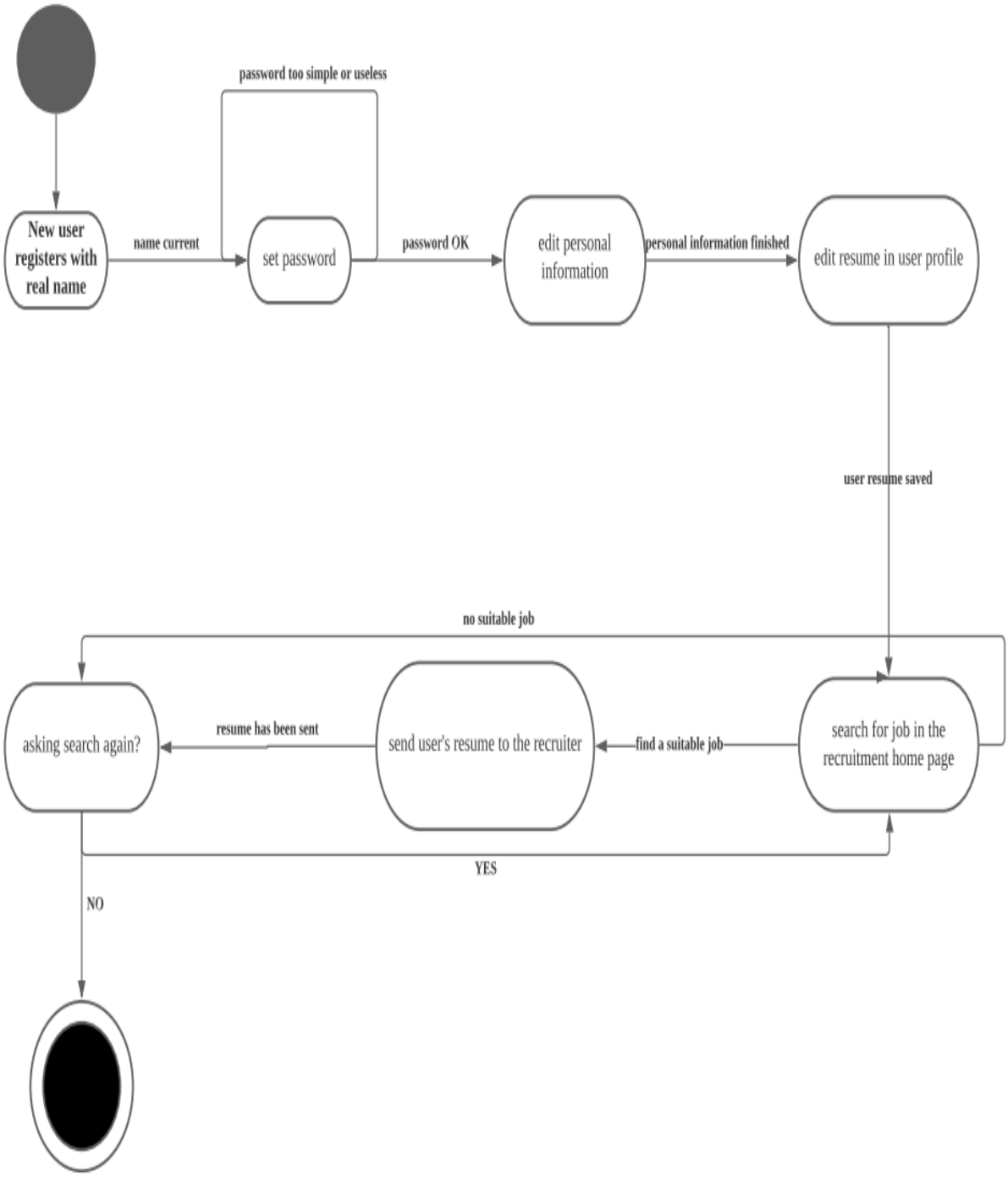
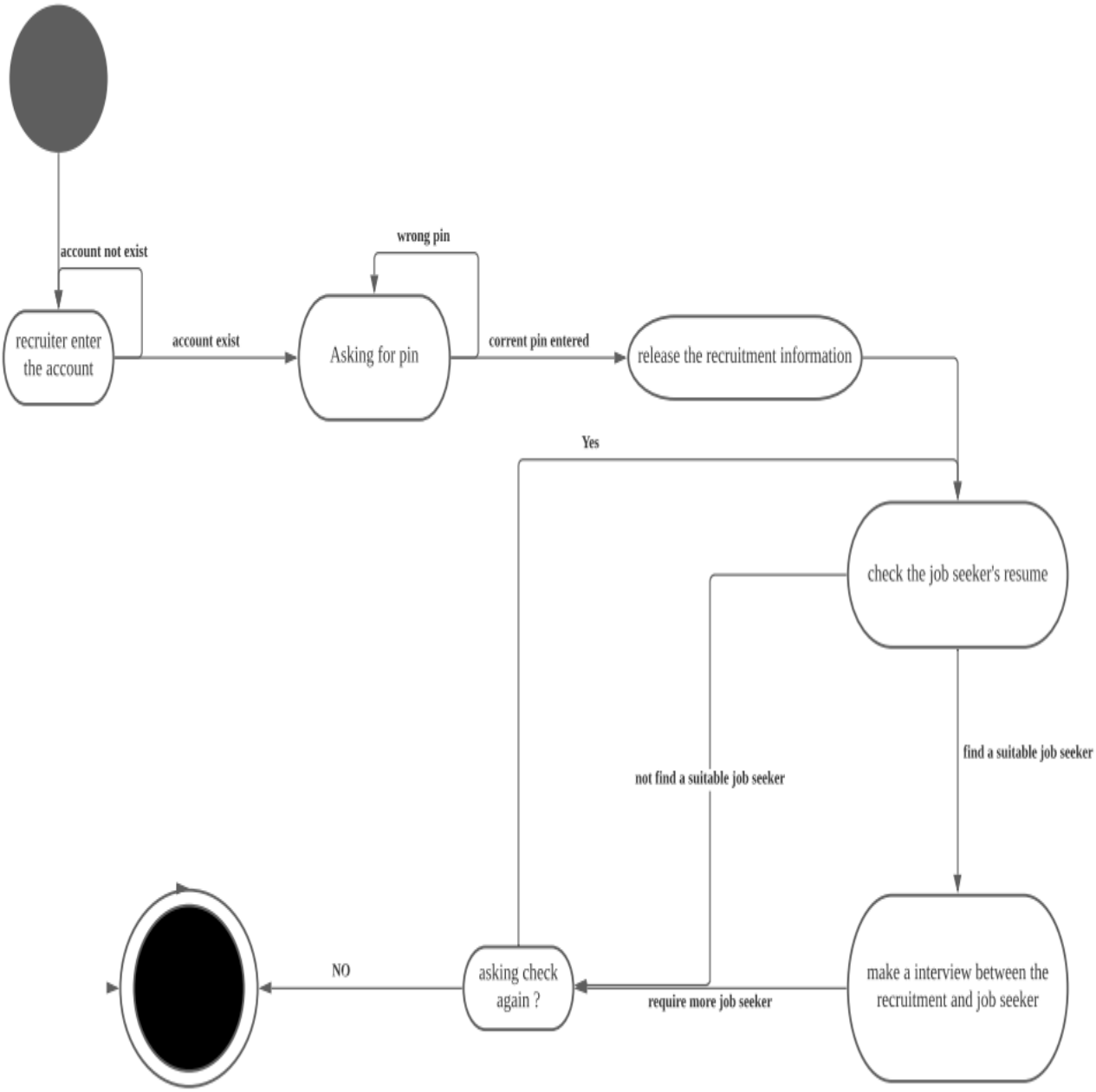

App
App server
Recruiter account database
Recruiter
Input the recruitment imformation
Check the information is complete
Alternative
[Condition]
Information complete
Save the recruitment information
Recruitment info upload successful
[Else]
Information not complete
upload recruitment information agai
Release the recruitment
Recruitment info pubilshed successful

Scenario:

During the corona-virus, many companies faced the risk of infection and had to stop on-site recruitment and even operations. One of them is a company which famous for its private tutoring. Through research, they found the software called Jobling, which allows employers to recruit employees through online interviews. They think this software not only avoids risks, but also enables the company to operate normally online. Company then login software account immediately and received many job seekers' delivery resume and personal information. Then the recruitment checks all the resumes and selects many excellent candidates from them. With the help of the Jobling, recruiter will soon have an online interview with all these excellent candidates. And it will help the company recruits more good employees.

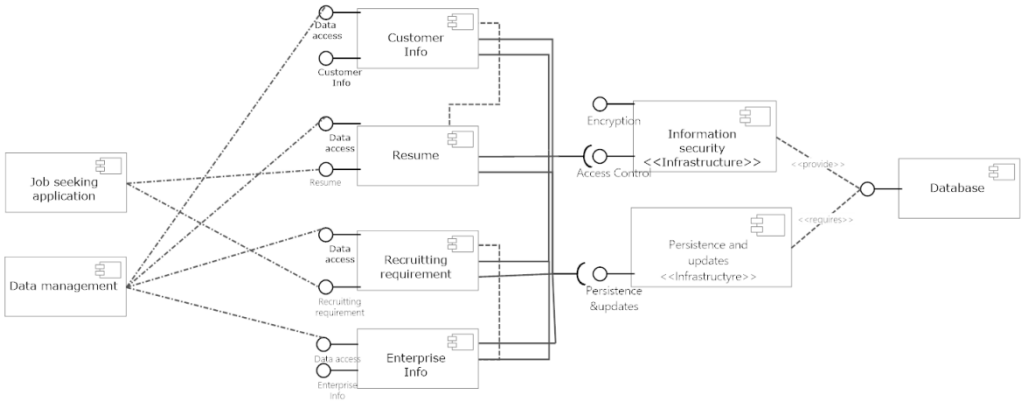
State diagram


password too simple or useless
New user registers with real name
name current
set password
password OK
edit personal information
personal information finished
edit resume in user profile
user resume saved
no suitable job
asking search again?
resume has been sent
send user's resume to the recruiter
find a suitable job
search for job in the recruitment home page
YES
NO

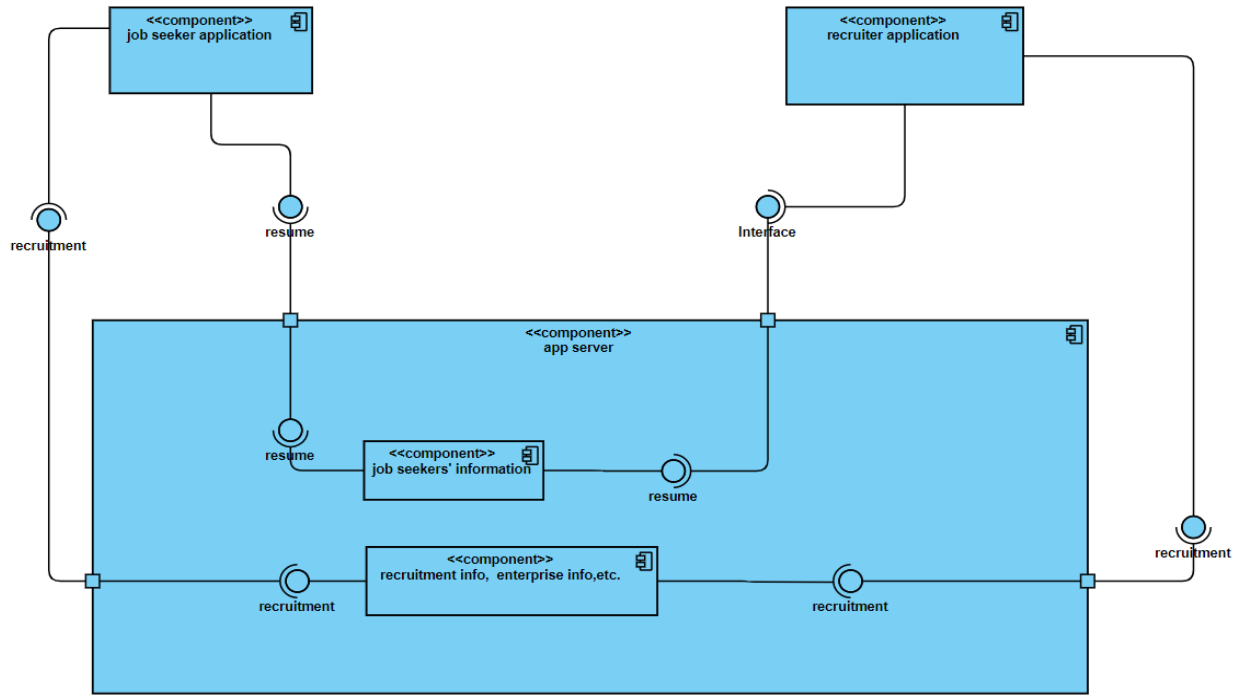

account not exist
wrong pin
recruiter enter the account
account exist
Asking for pin
corrent pin entered
release the recruitment information
Yes
check the job seeker's resume
not find a suitable job seeker
find a suitable job seeker
NO
asking check again ?
require more job seeker
make a interview between the recruitment and job seeker

C Part:

Component diagram

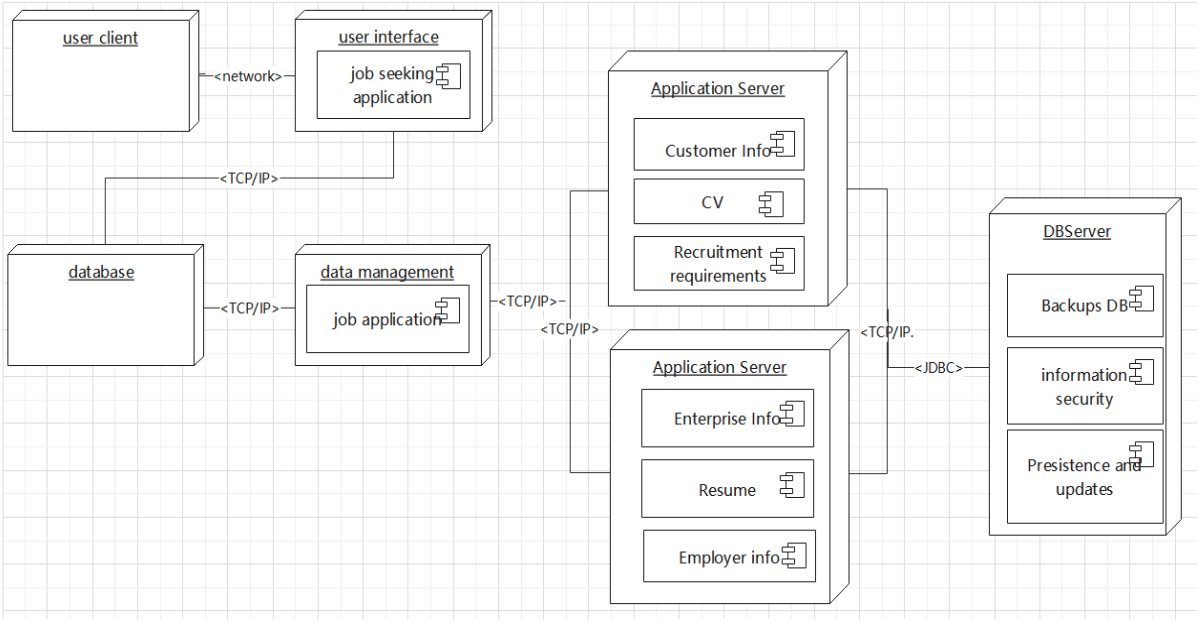


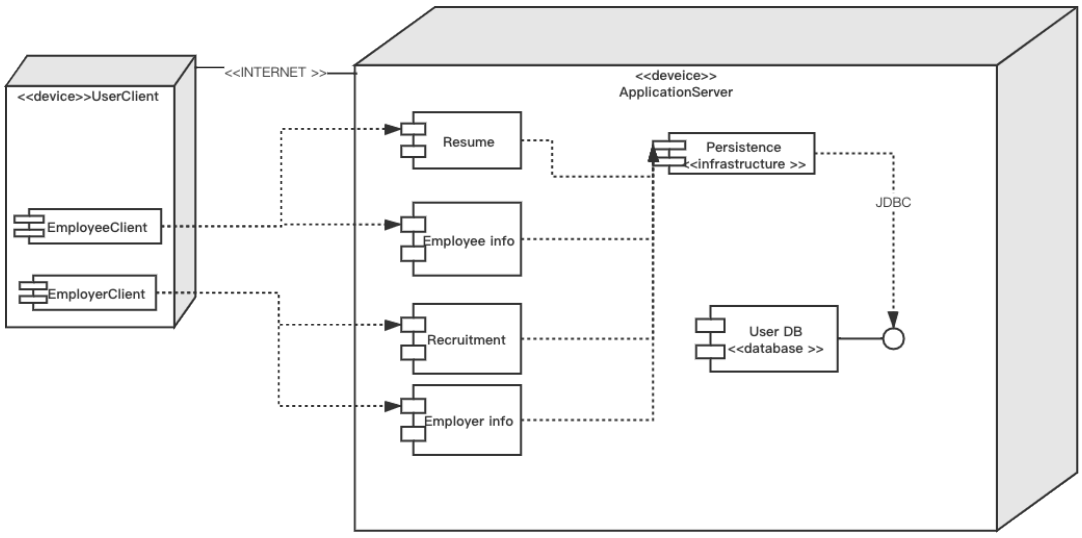
As for the architectures styles of N-tiers, It is difficult to changes into one part of the application without changing the rest . This causes the frequent updates and persistence, and also limited the speed of adding new features.



Client-Server style can easily add new servers or upgrade existing servers, and it has a faster response because it only has one layer of interaction. However, it has a high maintenance cost cause each software update requires a new download.

Deployment diagram





During the exploitation of our app, C/S patter were applied. Because it has powerful ability of data operation and transaction processing. Furthermore, is simpler to be understand. The two chosen architectures patter are 2-tiers and 3-tiers C/S.

After the compare of two kinds of pattern, we picked 3-tiers as a result. Basic on the app, there are several situations must be considered, Information security, server burden and expansibility of clients.

As for the Information security, 2-tiers patter are not fit it. Because the interactive only occurs between client and the server, the clients could access the data database directly from the app or other program. So, it is comparatively easier for hacker to get the information from out servers. But applying 3-tiers C/S may avoid these problems. 3-tiers separated the data tier in two areas, TP (transaction processing unit) and database operation. So after typed in the personal information of client in the first tier of expression, the transaction processing will give SQL request to the third tier which is the database, then finish the SQL request and give the feedback to the TP unit, output will be given as a result in expression tier. Therefore, the interactive between the TP unit and database will be much safer than that of 2-tiers.

The second benefit of using 3-tiers rather than 2-tiers is more flexible to choose the hardware of software platform. These device's ability of processing capacity and processing feature will be more fit to the 3-tiers structure. And it is also more openness and updates. For example, we hope that our app will be more popular and more client, so we must extend our servers and quality. In the beginning, we deployed data and business tier in one PC, according to the increment of clients and register

of enterprise, it is possible to make that PC to deal with the business-tier only and add another PC to deal with server of data-tier respectively. If the business and the number of clients expands further, we just add the number of professional servers in the business-tier and lighten the burden on single server that makes the system performance more stable and longevity.

To sum up, 3-tiers C/S are not only clear and rational separated the structure respectively working, makes the system composition simple, but also laid a solid foundation for strict safety management. The management of whole system are more rational deployed and controllable.

D part:

Test plan

Introduction

This platform provides recruitment and job hunting.

Testing objectives:

- Ensure that all the functional and non-functional requirements can run successfully during test.
- Ensure the service platform satisfy client's quality needs.
- Critical Bugs/issues should be identified and fixed before go live.

  ° Response time for login to the service platform

° Response time to match suitable job hunting and recruitment information by analyzing the database

° User response time when system loaded with 1000 logged in

° User response time when 100 employer/employee information at the same time.

Test Items

The system to be tested include the frontend customer-facing website and back-end information processing. These systems should be tested in the lasted versions of Chrome, Firefox, Safari and Microsoft Edge.
Most of functional requirements will be tested, including User Accounts, Sign Up Questionnaire, Information Push, Job Hunting and Recruitment System, Personal Profile，Language and Enterprise Recruitment. Test for User Accounts will check whether User ID and password are valid. Job Hunting and Recruitment System part will test whether the applied position is required by the company. Information Push and Personal Profile parts will test whether each information format is correct. Sign Up Questionnaire part will test Whether all required parts filled in. Also including is the Language selected by the user. And the update of Enterprise Recruitment.

Some non-functional requirements will be tested, including Efficiency, Maintenance and Usability. The test will include response time, practicality, and check whether all customer needs are met.

Features to Be Tested

- As an employer, logging into the website as an employer
- As an employer, guiding to fill in the necessary information
- As an employer, modifying himself/herself profile
- As an employer, applying for a company
- As an employer, canceling application to a company
- As an employer, selecting several companies to vote for resumes
- As an employer, scheduling a video interview
- As an employer, asking related questions in the chat room
- As an employer, completing video interview
- As an employer, checking if CV is a supported format
- As an employee, providing questions for the video interview
- As an employee, collecting all the materials about employer
- As an employee, giving some suggestions about video interview
- As an employee, choosing who to admit
- As an employee, confirm whether the applied position is full

Features Not to Be Tested

The authenticity and validity of various certificates will not be tested. We don’t have a valid data available, and also we need a specific testing tool for this functionality.

The positioning system will not be tested. It is an interface to connect to the map. There is no map and positioning module in the database. Need to hit the deadline of client.

Approach

The quality team first needs to use a series of white box tests to test each function, and then use both black box and white box tests to test the mutual calls of different functions, and finally the entire system. The tester will execute tests by using Junit. The tester should tabulate all test results and sort out all cases that Pass or Fail. Finally, all the Fail cases are integrated into a table and list out what kind of questions (Error/Fault/Failure). Then sent to the developers. After the Developer make changes and resent it to tester, the testers continue to test until the test standard is reached.

Pass Fail Criteria

All core functionality of the systems should function as expected. There must be no critical defects found in the system.

We must run all test cases described in the test case template.

Test case	Test description	Test steps	Test Data	Expected result	Actual result	Pass/Fail	Test comments
TD-10	Verify the login with valid user ID and password	Go to Website Enter User ID Enter Password Click Login	User ID: acbe Password: Q12w	User should be able to login			
TD-11	Verify the login with valid user ID and password	Go to Website Enter User ID Enter Password Click Login	User ID : Frank Password: Bri1001	User should not Login into an application			
TD_20	Search for a job	Go to website Fill in profile	Job: ”Teacher”	System should show Result search page with 10 jobs with the key words teacher			

Other example of test access

- For video interview, the number limit should be two, one Employee and one Employer
- The login page should load automatically within 5 seconds
- Covid-19: The system shall implement the patient privacy

provisions as set out in UKGOV -245364

Exit criteria

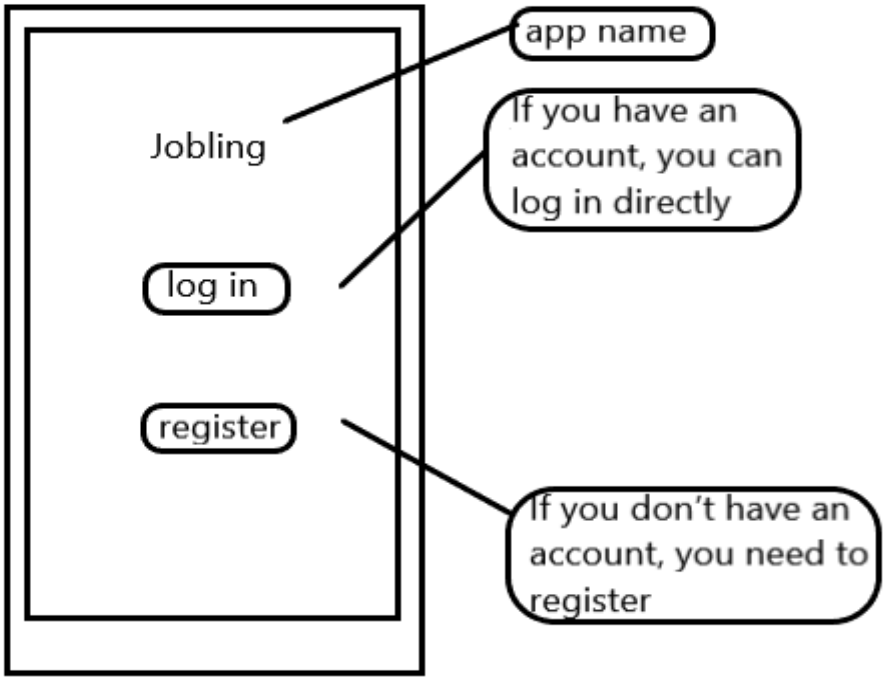
98% of all test cases should pass with no failed critical cases.

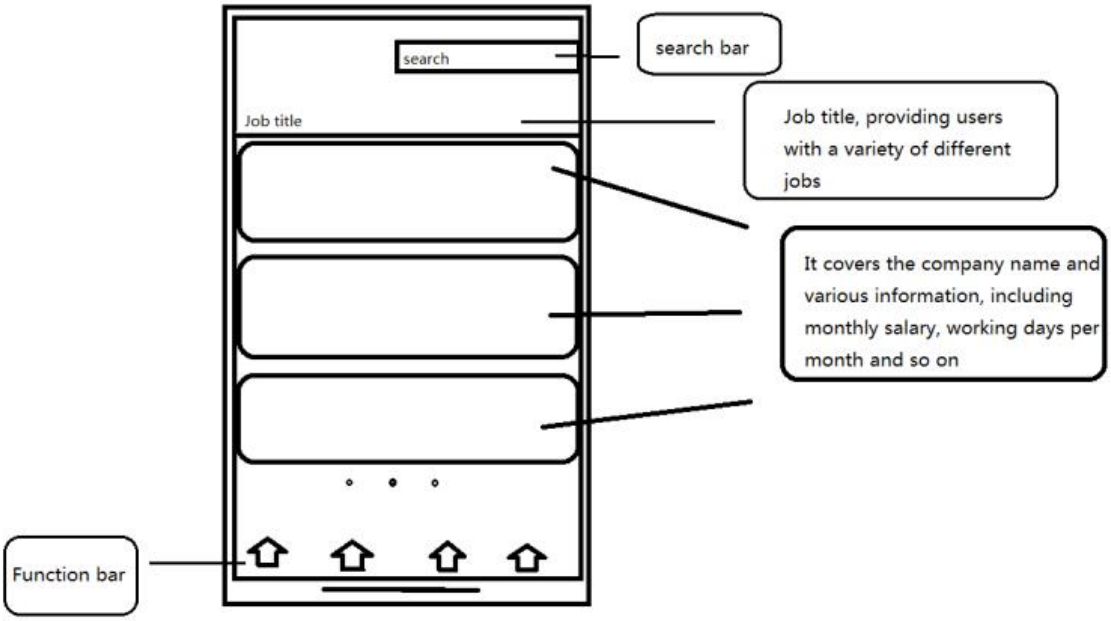
Assumption

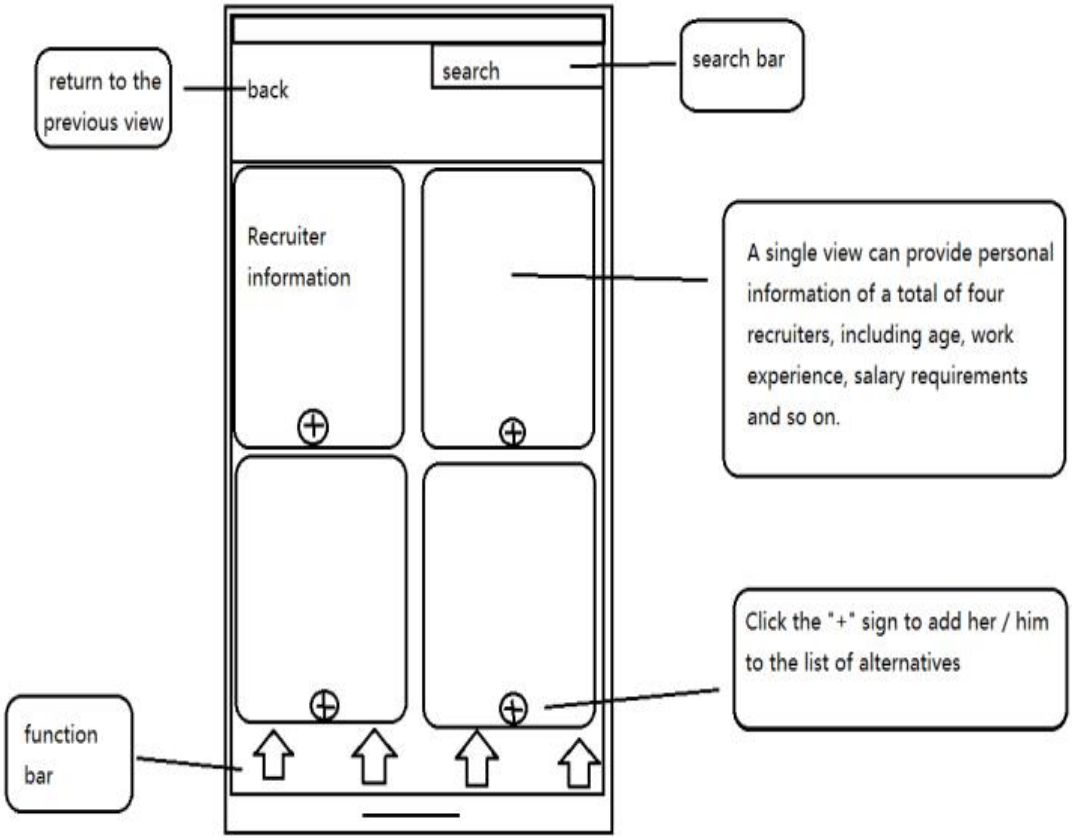
NA

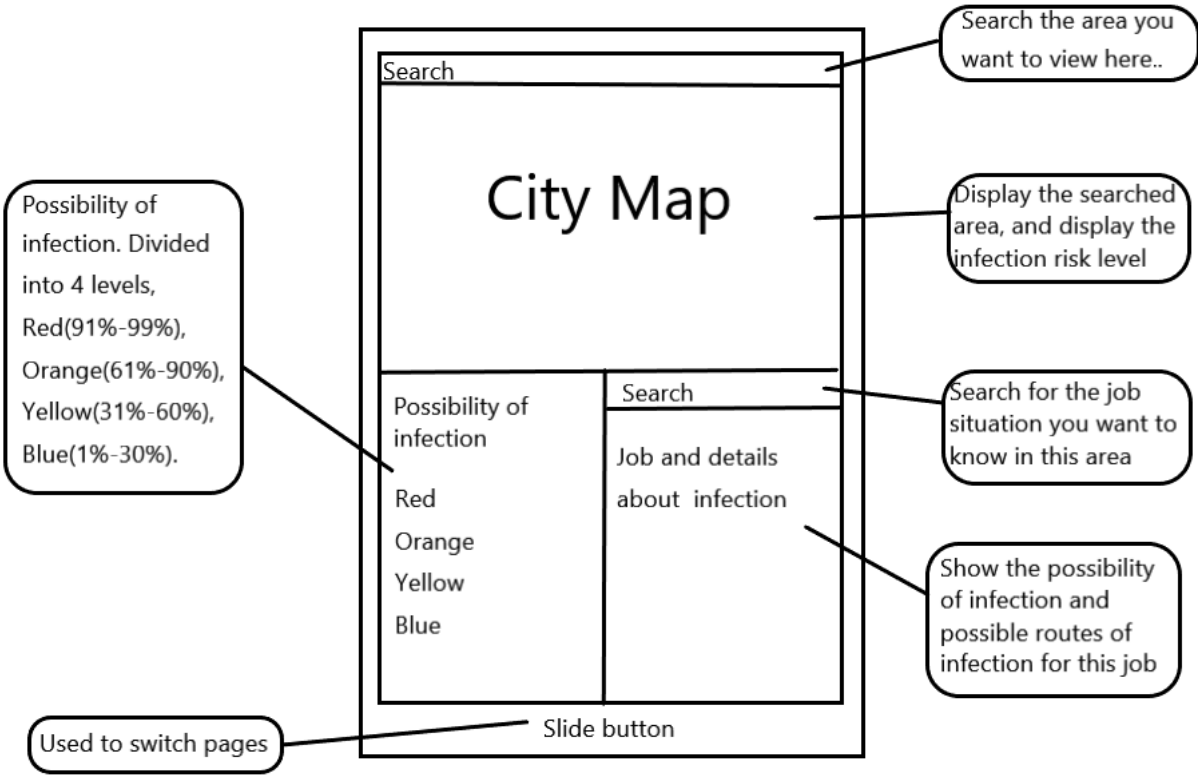
E part:

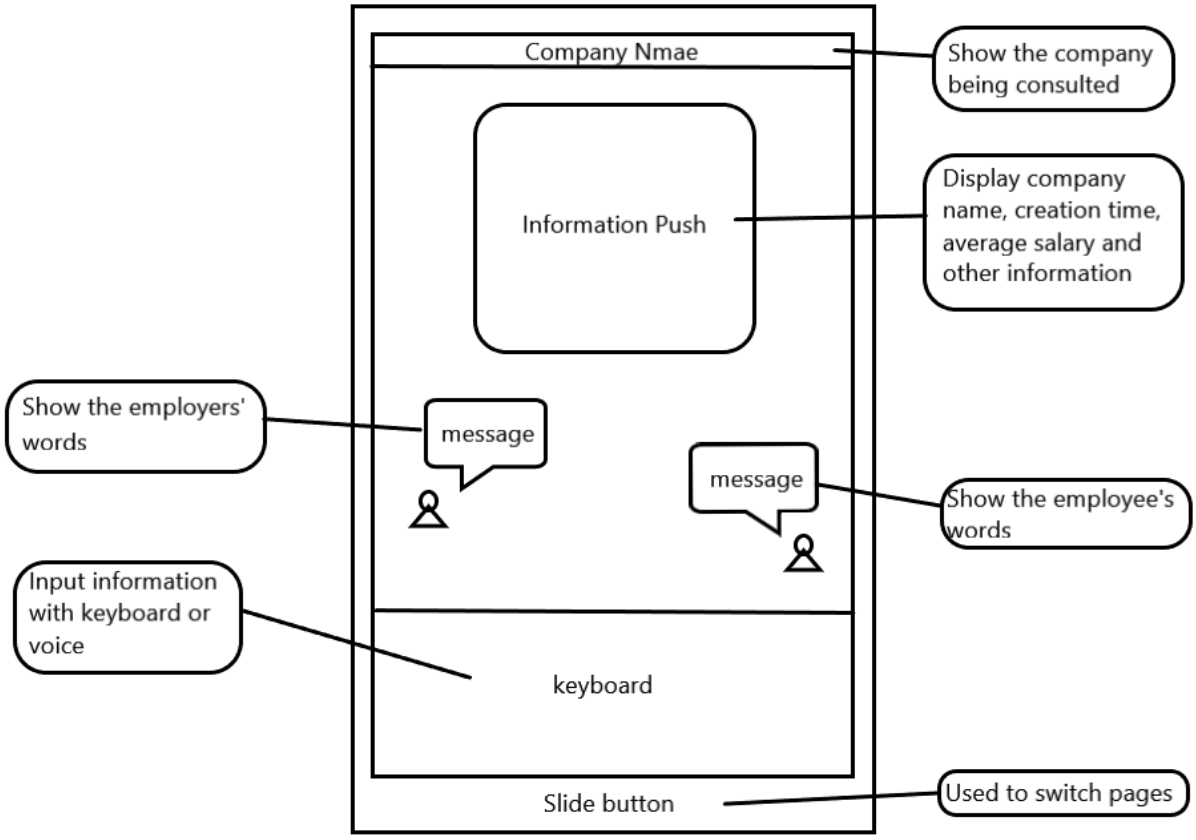
Sketch


app name
Jobling
If you have an account, you can log in directly
log in
register
If you don't have an account, you need to register


search
search bar
Job title
Job title, providing users with a variety of different jobs
It covers the company name and various information, including monthly salary, working days per month and so on
Function bar

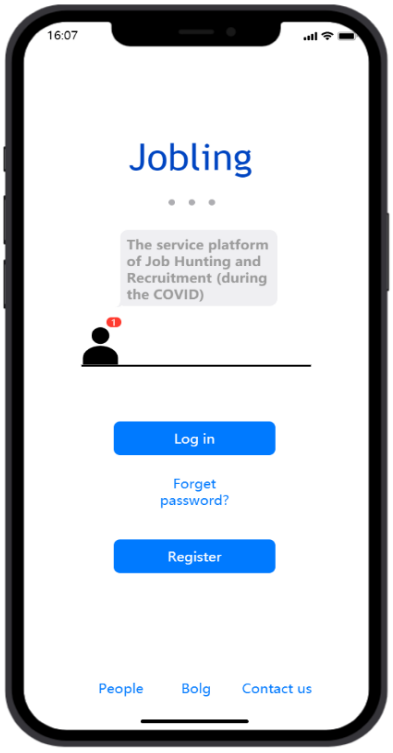

return to the previous view
back
search
search bar
Recruiter information
A single view can provide personal information of a total of four recruiters, including age, work experience, salary requirements and so on.
Click the "+" sign to add her / him to the list of alternatives
function bar


Search
Search the area you want to view here..
City Map
Display the searched area, and display the infection risk level
Possibility of infection. Divided into 4 levels, Red(91%-99%), Orange(61%-90%), Yellow(31%-60%), Blue(1%-30%).
Possibility of infection
Red
Orange
Yellow
Blue
Search
Search for the job situation you want to know in this area
Job and details about infection
Show the possibility of infection and possible routes of infection for this job
Used to switch pages
Slide button



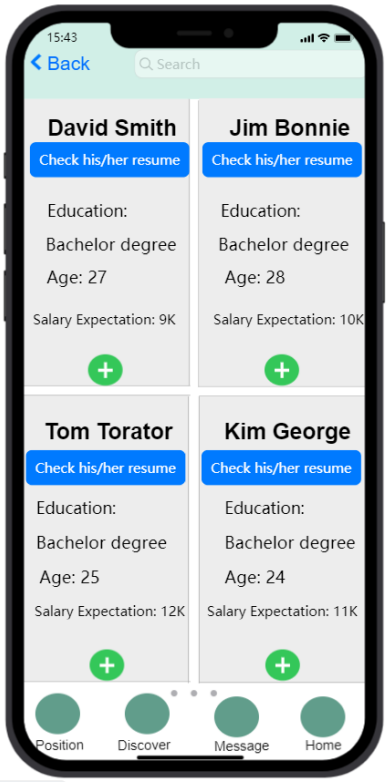
Prototype

1. login registration page



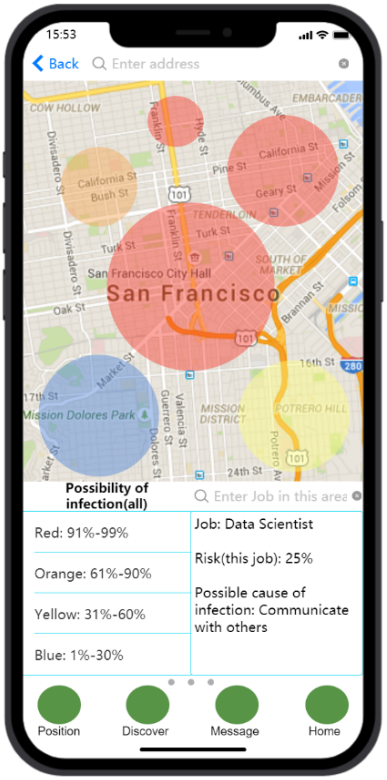
2. As an individual, browse the company profile information

3. As an enterprise, browse the chart of the recruiter's resume



4. Regional work risk assessment

5. Chat room, information push



F part:

Ethics and Professional Practice

IEEE and ACM are jointly published the rule SOFTWARE ENGINEERING CODE OF ETHICS AND PROFESSIONAL PRACTICE to standardize the professional ethics of software engineers, and we will evaluate and analyze our software system for each of these requirements.

For the first principle, our quality team used white box and black box tests to test each function in the system and the calls to each other of the different functions. Testers used junit to perform these tests and tabbed the results, listing the failure cases and sending them to developers for change until the tests met the standards. These tests of the system ensure that the software's specifications and tests are up to standard and do not degrade the quality of life of others. Therefore, the public interest is ensured.

For the second principle, we ensure that all the functional and non-functional requirements are met and can run successfully during test. Functional requirements include the user's registration login, uploads the resume, delivers the resume, check the recruitment information. Non-functional requirements include the efficiency, maintenance,

usability, response time and practicality, for example, we require login page should load automatically within 5 seconds. These tests ensure that the interests and needs of our clients and employers are met.

For the third principle, our system to be tested include the front-end customer-facing website and back-end information processing, functional and non-functional requirements are tested by using both black box and white box tests in the lasted versions of Chrome, Fire-Fox, Safari and Microsoft Edge, all the fail cases are integrated into a table and list out what kind of failures, then testers will revise them and test them until the test standard is reached, which ensure the critical Bugs or issues be identified and fixed before go live. Therefore, the improvement of our product is of the highest standard.

For the fourth principle, the satisfaction survey and feedback of our software to users will be uploaded to the system database, which will be stored and evaluated objectively by the system administrator. It ensures the objective judgment of software engineers.

For the fifth principle, in the practitioner of the use case, the user's personal information is stored in the database and backed up and managed by the system administrator, which promotes both quality and ethical management of software development.

For the sixth principle, in the stage of software testing improvement, professional testers should debug and improve the software. Testing by

the quality team, integrating test failure cases into a table to sort out the failure cases, and then feedback to the developers to make changes, which promotes the professionalism of software engineering.

For the seventh principle, during the design and development of the software, our development team will communicate with each other, encourage each other to abide by the code of ethics, and always for the sake of customers, employers and the public interest.

For the eighth principle, our development team is constantly committed to optimizing our software and promoting ethical practices.