

# Software Engineering and Project

## Software Requirements Specification

PG5

Xuankai Feng

Junjie Zhao

Sharon Khate Damaso

Sai Dheeraj Reddy Pallavolu

Kalpana Parvathaneni

Ying Wang

Yuedong Wang

Lantian Cai

1.0

26/8/2019

# Table of Contents

Version History	1
Introduction	2
Scope	2
Intended audience.	2
References	2
Glossary	2
User Requirements	3
Use Cases	8

## Version History

Date	Version	Changer	Description
20/8/2019	0.1	Junjie Zhao	Finalized section Introduction. Waiting for final document review
21/8/2019	0.2	Xuankai Feng	Finalized use cases of candidates
23/8/2019	0.3	Xuankai Feng	Finalized use cases of administrators
24/8/2019	0.4	Junjie Zhao	Finalized section User requirements
25/8/2019	0.5	Xuankai Feng	Merged three sections into a smooth report, organized the structure
26/8/2019	0.6	Xuankai Feng	Modify and add use cases
26/8/2019	1.0	Xuankai Feng	Add flow charts to each use case

# Introduction

## Scope

This document primarily introduces the software requirements from clients of the Hire Me Coder. The main purpose of this project is to develop a system which can check whether the coding ability of interviewees could match Map Tek's requirements. The system is a web-based application and obtained for both administrators and interviewees.

## Intended audience.

This document can be read by all related stakeholders.

All development team members are intended audiences. This management plan can be a guide for all members to comply with the management principles and follow the schedule. Moreover, both the scope part and the process part are helpful for developers to ensure all functions that they build can meet the requirements and expectation of the client to a great extent.

Clients from Map Tek are audiences of this report as well. Clients will be interested in all sections of this document since they need to understand our management plan that can help the project get success. Therefore, they can supervise requirements that the team develop.

## References

Software Engineering and project- software plan and management plan template. (2019).  
The interview with clients of project specification. (2019).  
Tutorialspoint.com. (2019). Scrum - Framework. [online] Available at:  
[https://www.tutorialspoint.com/scrum/scrum\\_framework](https://www.tutorialspoint.com/scrum/scrum_framework) [Accessed 20 Aug. 2019].

## Glossary

<b>Agile Methodology</b>	A software development approach that promotes continuous iteration of development and testing throughout the software development life cycle
<b>GitHub</b>	Software Development version control
<b>MapTek</b>	A leading provider of innovative software, hardware and services for the mining industry
<b>Scrum</b>	An agile process framework
<b>Slack</b>	Communication Tool
<b>SPMP</b>	Software Project Management Plan
<b>Trello</b>	Web-based list-making application
<b>QA</b>	Quality Assurance

# User Requirements

## 2.1 R001: Login System

### Description

The login system allows administrators and interviewees to login in the system. This system consists of admin mode and interviewee mode. The admin mode allows users to login and register to the system. And all administrators can manage the assignment database and arrange tests to the intended interviewee. The interviewee mode allows candidates to update the program they coded, which should be pdf documents.

### Rationale

The login system will be used by both administrators and interviewees to test the code ability of candidates to ensure all assignments are allocated to suitable interviewees. Also, all results of assignments can be uploaded to correct places by interviewees.

### Acceptance criteria

The system can allow users to register and login in the bug-free environment. The system can work smoothly and effectively in most time. This system is the foundation of the whole project. Therefore, this system should be implemented in the early stage of the project period. This function can work with the whole system and share the same database. Safety will be introduced in the safety requirement part.

### Source

Sourced from the first and second client meeting

### Priority

High

## 2.2 R002: Send Link Function

### Description

The send link function should be integrated to admin mode of the login system. This function can generate a link and send to the intended candidates after administrator selected assignments for the intended candidates. This link would expire in a limited time. And interviewees can receive the allocated assignments and upload code they programmed.

### Rationale

The send link function can be used by administrators to send assignments to the candidates. And this function should be the critical part of this project since administrators need to invite intended interviewees to finish code tests.

**Acceptance criteria**

This link generated by this function should be unique for every candidate and have a time counter to limit the time period the interviewee use. The link also can detect whether the visitor is approved, which means other users cannot enter the system by this link. This function should have high accuracy to produce a link automatically. This function can work with the whole system and share the same database. Safety will be introduced in the safety requirement part.

**Source**

Sourced from the first and second client meeting

**Priority**

High

**2.3 R003 View submission and provide feedback function****Description**

This view submission function should be a part of the login system. Administrators can view the code uploaded by interviewee. The function will provide the upload time and completion time of the assignment. Also, administrators can provide feedback to interviewees by this function. the feedback can be comment in the code. When the view stage finish, the system will send result to the targeted interviewee.

**Rationale**

This function can be used by administrators to check the quality of the code manually. This function helps administrator to review the code ability of interviewees which improve the efficiency of the process.

**Acceptance criteria**

This function can show the code by interviewees in a hierarchical way, which means users can be easy to view the work. Also, the feedback can be sent to interviewees with the result of the test in an email. This function can work with the whole system and share the same database. Safety will be introduced in the safety requirement part.

**Source**

Sourced from the first and second client meeting

**Priority**

High

## **2.4 R004 Manage candidates' profile**

### **Description**

The administrators can manage all candidates' profile in the system. The profile should include test result, the code candidates upload and the email address of the candidates. Also, the administrator can select one candidate to check his/her status, which may include:

- The candidate has been tested or not
- What test he/she has done
- The result of the test
- The contact information

### **Rationale**

The manage candidates profile function help administrators to review all candidates. This function helps administrators to track candidates.

### **Acceptance criteria**

This function can work with the whole system and share the same database. Safety will be introduced in the safety requirement part.

### **Source**

Sourced from the first and second client meeting

### **Priority**

Medium

## **2.5 R005 View assignment function**

### **Description**

This function is for interviewees. After the intended receive the invited link, they can click it and view the assignment they need to finish. And this function consists of a time counter to record how much time the interviewee uses to finish the test.

### **Rationale**

This function should be an important component of this project since all interviewee need to access to tests.

### **Acceptance criteria**

This function can work with the whole system. Safety will be introduced in the safety requirement part.

**Source**

Sourced from the first and second client meeting

**Priority**

High

**2.6 R006 Upload code file****Description**

This function allows interviewees to upload the work they have done. After they received an invited link, they can access to assignments and upload the code they developed via this function. This function should cooperate with the send link function.

**Rationale**

This function should be a critical part of this project since candidates need to submit their works to let interviewer review their code ability. This function can work with the whole system and share the same database. Safety will be introduced in the safety requirement part.

**Acceptance criteria**

The upload code file function will accept the code file from the intended candidate. Safety will be introduced in the safety requirement part.

**Source**

Sourced from the first and second client meeting

**Priority**

High

**2.7 R101 Safety****Description**

The safety requirements ensure this system can keep all users information confidentiality. In this project, user information will keep in the fire base. And only approved person can view and read the users information.

**Rationale**

Our system will focus on keeping information safe. And we need to pay attention to individual information privacy and avoid leak information.

**Acceptance criteria**

Our system will need to pass basic cyber security test including:

- Vulnerability scanners
- Penetration testing
- Program update checks

And these tests may be also included in our development stage.

**Source**

Sourced from the first and second client meeting

**Priority**

High



# Use Cases

## Use Case 001 – Administrators registration

### Brief Description

Maptek staff use their Maptek email address to register as administrators.

### Actors

Maptek staff who are responsible to manage or view the test in the system.

### Preconditions

This use case assumes that Maptek staff have their company emails.

### Basic Flow

1. The Maptek staff visit the system with website browsers
2. The Maptek staff register in the system with their company email addresses
3. The Maptek staff will receive an activation email from the system
4. The Maptek staff finishes activation and fill in basic information and create password for the system
5. The Maptek staff successfully finish registration

### Alternate Flows

- The Maptek staff returns to the homepage or close the website without saving any information

### Exception Flows

- The Maptek staff input wrong email address
- The Maptek staff did not receive the activation email
- The Maptek staff insert invalid password

### Post Conditions

The Maptek staff must receive an email to confirm his registration.

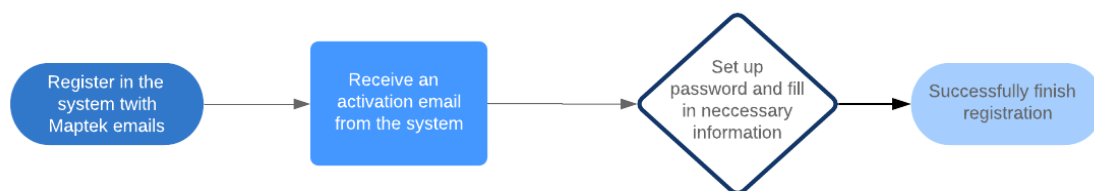


Figure 1. Administrators registration

## Use Case 002 – Administrators login

### Brief Description

Maptek staff use their registered administrator accounts to log in as administrators.

### Actors

Maptek staff who are responsible to manage or view the test in the system.

### Preconditions

This use case assumes that Maptek staff had already successfully registered in the system.

### Basic Flow

1. The Maptek staff visits the system with website browsers
2. The Maptek staff fill the username and password
3. The Maptek staff successfully log in the system

### Alternate Flows

- The Maptek staff returns to the homepage or close the website with logging status

### Exception Flows

- The Maptek staff forgets his username or password.
- The Maptek staff input incorrect login details.

### Post Conditions

The Maptek staff will log in the system as an administrator to manage it.

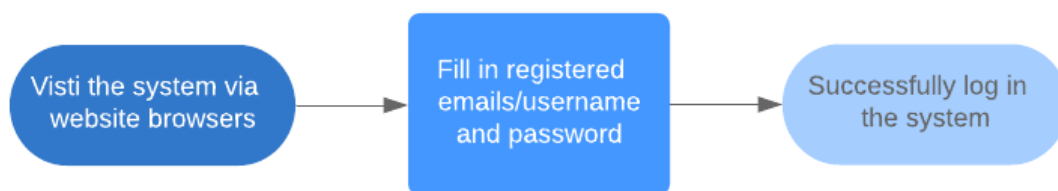


Figure 2. Administrators login

## Use Case 003 – Upload testing cases

### Brief Description

Administrators from MapTek who manage the tests use the administrator accounts to upload and create testing cases.

### Actors

The administrator is anyone who wishes to test the coding ability of candidates by conducting a coding test in their selective programming languages.

### Preconditions

This use case assumes the administrator had designed appropriate testing cases for candidates in various programming languages.

### Basic Flow

1. The MapTek staff log in the system with administrator account and password
2. The administrator uploads testing cases in the system backstage
3. The administrator publishes description and requirement of the test

### Alternate Flows

- The administrator returns to the previous screen without losing their upload files
- The administrator returns to the previous screen without losing their written description
- A login failure due to network errors

### Exception Flows

- The system crashes during uploading testing cases
- The uploaded testing cases missing or are incomplete

### Post Conditions

The administrator must have a local backup of the uploaded testing cases and send invitations to candidates.

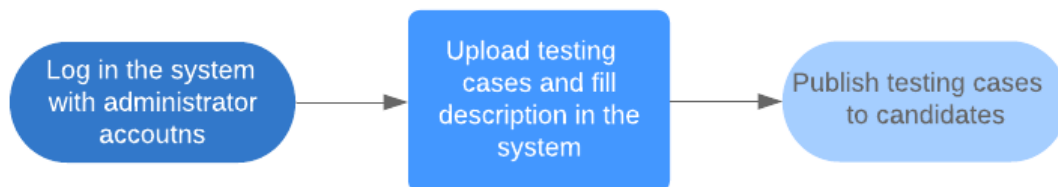


Figure 3. Testing cases upload

## Use Case 004 – Invitations sending

### Brief Description

Maptek staff use their registered administrator accounts to send invitations to intended candidates through emails.

### Actors

Maptek staff who are responsible to invite candidates to finish tests in the system.

### Preconditions

This use case assumes that Maptek staff had already successfully registered and logged in the system.

### Basic Flow

1. The Maptek staff logs in the system as an administrator
2. The Maptek staff send an invitation to the candidates for tests.

### Alternate Flows

- The Maptek staff returns to the homepage or close the website without sending invitations.

### Exception Flows

- The Maptek staff sends invitations to incorrect email addresses.

### Post Conditions

The invited candidates will log in the system and finish tests.

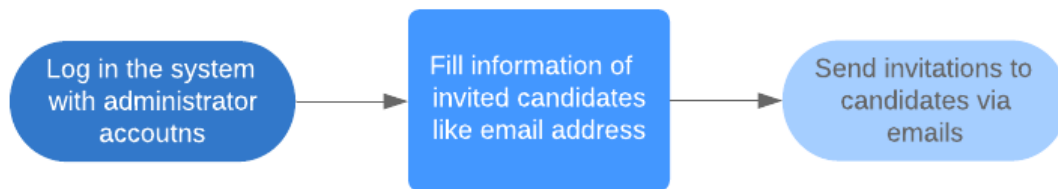


Figure 4. Sending invitations

## Use Case 005 – Acquire testing cases

### Brief Description

Invited candidates who wish to get access to the testing cases provided in the system by MapTek.

### Actors

The candidate is anyone who wishes to complete an online test via uploading their codes finished in their own computers or writing codes in the system online.

### Preconditions

This use case assumes that the candidate can view the testing cases and submit his codes in the system.

### Basic Flow

1. The candidate signs in with the username and password allocated by Maptek

2. The candidate selects the programming language in the system
3. The candidate views the testing cases and detailed requirements
4. The candidate finishes coding online or on his own device and save it as a file
5. The candidate uploads or submits his codes in the system

### Alternate Flows

- The candidate returns to the homepage to reselect programming languages after viewing the details of a testing case
- The candidate did not upload or submit any codes after the due date

### Exception Flows

- The descriptions of testing cases are missing or incomplete

### Post Conditions

The candidate must receive an email to indicate the due date and following steps.

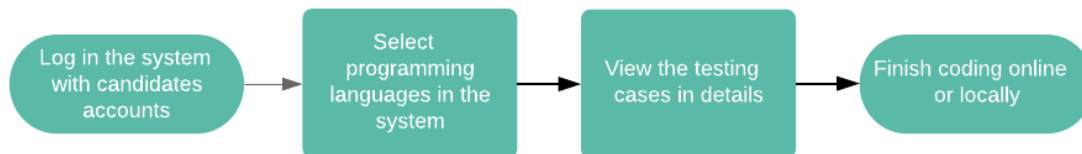


Figure 5. Acquire testing cases

## Use Case 006 – Finish test in the system online

### Brief Description

Invited candidates who wish to write codes in specific programming language to complete the test online.

### Actors

The candidate is anyone who wished to write his codes online, does not create any local files, does not take advantage of local integrated development environments or programming software.

### Preconditions

This use case assumes the candidate can finish the testing case via online editor of the system.

### Basic Flow

1. The candidate signs in with the username and password allocated by Maptek
2. The candidate read the description and requirement of the testing case
3. The candidate writes codes to finish the test via online editor
4. The candidate submits his codes to the system for MapTek review

5. The candidate receives a message to inform the following steps and wait for further response

### Alternate Flows

- The candidate returns to the previous page without losing his codes
- The candidate paused his coding for a while without losing his codes
- The candidate closes the page without losing his codes
- The candidate turns off his computer without losing his codes

### Exception Flows

- The system crashes by chance during online coding
- The system loses the candidate's codes after he submits

### Post Conditions

The candidates must have a successful submission at the end, to ensure the follow-up recruitment process. And wait for the feedback from Maptek.

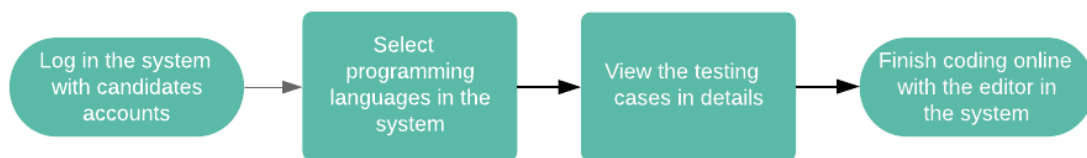


Figure 6. Finish test in the system online

## Use Case 007 – Upload codes to the system

### Brief Description

Invited candidates who wish to finish their tests may prefer to use the local programming software to write codes.

### Actors

The candidate is anyone who wishes to write codes locally, do not write codes online, do not wish to finish coding in the system with embedded editor.

### Preconditions

This use case assumes the candidate can utilize local integrated development environment to finish tests on time.

### Basic Flow

1. The candidate signs in with the username and password allocated by Maptek
2. The candidate read the description and requirement of the testing case

3. The candidate writes codes to finish the test via local integrated development environment and programming software
4. The candidate uploads his local codes to the system for MapTek review
5. The candidate receives a message to inform the following steps and wait for further response

#### Alternate Flows

- The candidate returns to the programming languages selection after uploading codes.

#### Exception Flows

- The system becomes jammed during uploading local codes
- The system loses the archive of uploading codes

#### Post Conditions

The candidates must have a successful submission at the end, to ensure the follow-up recruitment process. And wait for the feedback from Maptek.



Figure 7. Upload codes to the system

### Use Case 008 – Review testing codes

#### Brief Description

Administrators from MapTek who manage the tests use the administrator accounts to download and review testing codes submitted by candidates

#### Actors

The administrator is anyone who wishes to test the coding ability of candidates by conducting a coding test in their selective programming languages.

#### Preconditions

This use case assumes the administrator had published appropriate testing cases for candidates in various programming languages, and candidates had finished and submitted their testing codes.

#### Basic Flow

1. The MapTek staff log in the system with administrator account and password
2. The administrator downloads testing cases submitted by candidates in the system backstage

3. The administrator compiles testing codes locally
4. The administrator marks the testing codes for all candidates
5. The administrator publishes feedback and results on the system for candidates' review

#### Alternate Flows

- The administrator returns to the previous screen without losing their written feedback in the system
- The administrator returns to the previous screen without losing their uploaded notifications

#### Exception Flows

- The system crashes during uploading feedback and results
- The system fails in published corresponding feedback to candidates

#### Post Conditions

The administrator must have a local backup of the feedback and results of all candidates, and candidates will receive feedback.

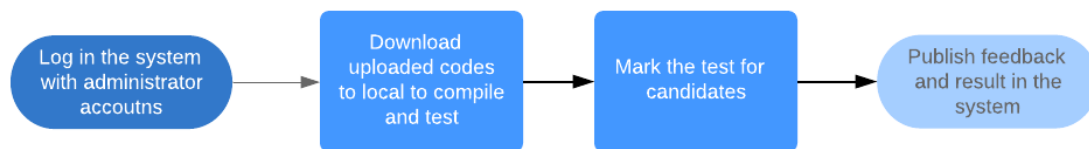


Figure 8. Review testing codes

### Use Case 009 – Receive feedback of tests

#### Brief Description

Invited candidates who had taken part in the coding test may want to receive feedback and result from MapTek.

#### Actors

The candidate is anyone who wishes to receive feedback for their submitted codes and the result of his application.

#### Preconditions

This use case assumes the candidate can get access to the system and read messages on it.

#### Basic Flow

1. The candidate signs in with the username and password allocated by Maptek
2. The candidate read the feedback of his codes from Maptek
3. The candidate read the result of application and follow-up actions from Maptek

#### Alternate Flows



- The candidate does not get access to the system and view the feedback

**Exception Flows**

- The feedback from MapTek did not appear in expected time
- The follow-up actions are missing or blurry

**Post Conditions**

The candidate must have a clean understanding of feedback and the follow-up actions.

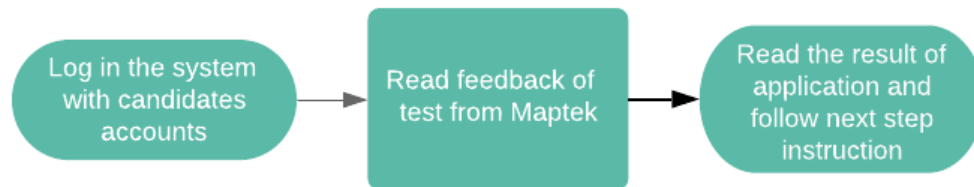


Figure 9. Receive feedback of tests

# Appendix A

- Figure 1. Administrators registration
- Figure 2. Administrators login
- Figure 3. Testing cases upload
- Figure 4. Sending invitations
- Figure 5. Acquire testing cases
- Figure 6. Finish test in the system online
- Figure 7. Upload codes to the system
- Figure 8. Review testing codes
- Figure 9. Receive feedback of tests