

**CAPSTONE PROJECT REPORT**

**Report 5 – Software Test Documentation**

– Hanoi, October 2020 –

**Table of Contents**

[I. Project Report 3](#_heading=h.gjdgxs)

[1. Status Report 3](#_heading=h.30j0zll)

[2. Team Involvements 3](#_heading=h.1fob9te)

[3. Issues/Suggestions 3](#_heading=h.3znysh7)

[II. Project Management Plan 4](#_heading=h.2et92p0)

[1. Overall Description 4](#_heading=h.tyjcwt)

[1.1 Test Model 4](#_heading=h.3dy6vkm)

[1.2 Testing Levels 4](#_heading=h.1t3h5sf)

[1.3 Testing Types 4](#_heading=h.4d34og8)

[2. Test Plan 4](#_heading=h.2s8eyo1)

[2.1 Test Stages 4](#_heading=h.17dp8vu)

[2.2 Resources 4](#_heading=h.3rdcrjn)

[2.3 Test Milestones 5](#_heading=h.26in1rg)

[2.4 Deliverables 5](#_heading=h.lnxbz9)

[3. Test Cases 5](#_heading=h.35nkun2)

[4. Test Reports 5](#_heading=h.1ksv4uv)

# I. Project Report

## 1. Status Report

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Work Item** | **Status** | **Notes (Work Item in Details)** |
| 1 |  | Pending |  |
| 2 |  | In Progress |  |
| 3 |  | Completed |  |

## 2. Team Involvements

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Task** | **Member** | **Notes (Task Details, etc.)** |
| 1 |  | KienNT |  |
| 2 |  | TuanTV |  |
| 3 |  | AnhLM |  |

## 3. Issues/Suggestions

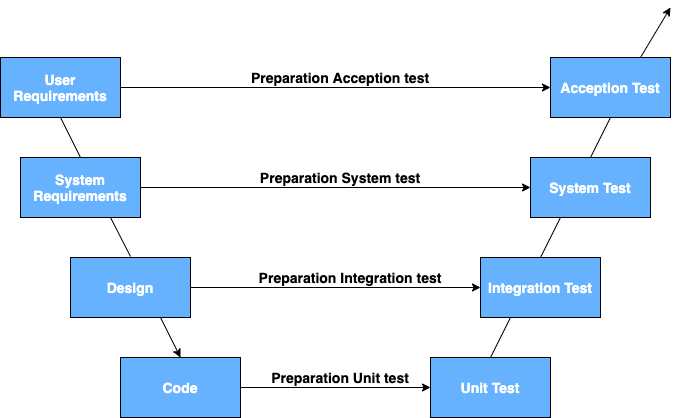
|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Issue** | **Status** | **Notes (Solution, Suggestion, etc.)** |
| 1 |  | Pending |  |
| 2 |  | In Progress |  |
| 3 |  | Completed |  |

# II. Project Management Plan

## 1. Overall Description

### 1.1 Test Model

Overall, to fit the software development process model selected Iterative and Incremental. We choose V-Model to implement the testing process.

**

*Figure 5.1- V-model*

With V-Model, software development is separated into two appropriate phase’s groups. Each stage will be a V-model. In this model, the verification and validation will be done side by side. It emphasizes the strict process flow to develop a quality product. The errors occurring in any phase will be corrected in that phase. Proactive defect tracking defects, which are found at early stages even, may be in the development phase before application being tested.

Specifically, CMA is divided into 2 sub-systems: CMA Back-end and Front- end. In each phase of the process, we use a specific process for each sub-system team to fit the requirement, the characteristic and the human resource of each team.

CMA Back-end has 2 levels of test:

● Unit testing: Automation tests that cover logic of Models and Libraries.

● API testing: Automation tests that involve testing APIs directly (in isolation) to determine whether APIs return the correct response (in the expected format) for a broad range of feasible requests, react properly to edge cases such as failures and unexpected/extreme inputs.

CMA Front-end works mostly with GUI instead of logic and it depends on CMA Back-end, so that CMA Front-end applies system testing which covers the whole CMA system.

### 1.2 Testing Phases

There are 4 testing phases that would be performed in the project: Unit testing, integration testing, system testing and acceptance testing.

|  |  |  |
| --- | --- | --- |
| **ID** | **Phases of testing** | **Description** |
| 1 | Unit Testing | The main aim of this endeavor is to determine whether the application functions as designed. In this phase, a unit can refer to a function, individual program or even a procedure, and a White-box Testing method is usually used to get the job done |
| 2 | Integration Testing | Integration testing allows individuals the opportunity to combine all of the units within a program and test them as a group. This testing level is designed to find interface defects between the modules/functions. This is particularly beneficial because it determines how efficiently the units are running together. |
| 3 | System Testing | System testing is the first level in which the complete application is tested as a whole. The goal at this level is to evaluate whether the system has complied with all of the outlined requirements and to see that it meets Quality Standards. |
| 4 | Acceptance Testing | Acceptance testing (or User Acceptance Testing), is conducted to determine whether the system is ready for release. During this phase, the tester and some alpha test users will test the system to  find out whether the application meets their business’ needs. |

### 1.3 Testing Types

The different types of testing that will be carried out this project are:

* API testing :
  + API testing will test all of the individual implemented API of CMA. Verify it works correctly for the function it was created.
  + Basically, almost all API test cases are executed as automation tests. After that all API with standard sample datasets will be saved and confirmation tests will be executed by using Postman with the developer’s local database.
* Function testing:
  + Test case dựa trên đặc tả của phần mềm. Các chức năng được test bằng cách nhập vào các giá trị nhập và kiểm tra kết quả đầu ra, và ít quan tâm đến cấu trúc bên trong của hệ thống. It is the process of trying to find the differences between the external specification of the software and the fact that the software provides.
  + Functional tests often use a black box test technique: Equivalence Class Partitioning, Pairwise, domain analysis.
* User Interface testing:

o Is testing the application through the graphical interface (GUI) to check if the application's interface meets the requirements of the design as well as the operations of each component on that interface (Click button, link ...):

GUI tests will be performed fully on all screens.

This test targets to cover the verification of the overall look and feel of the Family OKR system including initial position, font, text size, color, focus, initial button, tab order, label, screen sizes and sentences width.

Check all the GUI elements for size, position, width, length and acceptance of characters or numbers. For instance, it must be able to provide inputs to the input fields.

Check if error messages are displayed correctly.

Check if fonts used in the application are readable.

Check if the alignment of the text is proper.

* Security testing: Security Testing is a type of Software Testing that uncovers vulnerabilities of the system and determines that the data and resources of the system are protected from possible intruders. It ensures that the software system and application are free from any threats or risks that can cause a loss.
* Regression testing:
  + This test is performed to ensure that new code changes will not affect existing functions. It makes sure that the old code still works after a new code change is made.
  + Software maintenance is an activity that includes improving, fixing bugs, optimizing, and removing existing features. These modifications can cause the system to work incorrectly. Hence, Regression testing becomes necessary. Regression testing can be performed using the following techniques: Retest all, regression test selection, Prioritization of test case

## 2. Test Plan

### 2.1 Test Phases

The table below describes the stages in which common tests are executed:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Test** | **Phases of Test** | | | |
| ***Unit*** | ***Integration*** | ***System*** | ***Acceptance*** |
| API test | X |  |  |  |
| Function test | X | X | X | X |
| User Interface test | X | X | X |  |
| Security test | X | X |  |  |
| Regression testing | X | X | X | X |

### 2.2 Resources

#### a. Human Resources

The details on roles and responsibilities of the project members who would involve in testing works:

|  |  |  |
| --- | --- | --- |
| **Worker/Doer** | **Role** | **Specific Responsibilities/Comments** |
| Nguyen Thi Trang | Project Manager | * Responsible for project schedule and overall success of the project. * Review test cases and reports. |
| Le Thi Thu Trang  Do Trung Duc  Nguyen Thi Trang  Nguyen Duc Thien  Do Ngoc Khanh | Test Leader/ Tester | * Performing the actual system testing. * Manage test resources and assign test tasks. * Create test plan * Create test cases * Create test report * Execute test * Test log report |
| Do Trung Duc  Nguyen Thi Trang  Nguyen Duc Thien  Do Ngoc Khanh | Developer | * Create unit test and integration test scripts. * Fix bugs. |

#### b. Environment

The details about the tools (software, hardware, infrastructure) which the project would use for testing:

|  |  |  |  |
| --- | --- | --- | --- |
| **Purpose** | **Tool** | **Version** | **Provider** |
| Use to view the web server | Google chrome | v86.0 | - Support with minimal resolution: 1366 x 768  - Personal computer for developing:   * Dell Latitude E6430s * Intel(R) Core(™) i5-3320M CPU 2.60GHz * Ram 6614MB   - Server   * Intel(R) Celeron(R) CPU G550 @ 2.60GHz * RAM 4GB * HDD 500GB |
| Use to management test case | Microsoft Excel | Microsoft Office 2019 |
| Use to management test plan | Microsoft Word | Microsoft Office 2019 |
| Use to bug logging | Github | v2.27.0 |
| Use to management the list of all API and manually test API | Postman | v7.28.0 |

### 2.3 Test Milestones

The table below describes the test milestones for the CMA Project:

|  |  |  |
| --- | --- | --- |
| **Milestone Task** | **Start Date** | **End Date** |
| **Test preparation** | **19/10/2020** | **22/11/2020** |
| Test plan completion |  |  |
| Acceptance test cases completion | 19/10/2020 | 22/10/2020 |
| System test cases completion | 23/10/2020 | 30/10/2020 |
| Integration test cases completion | 31/10.2020 | 14/11/2020 |
| Unit test cases completion | 15/11/2020 | 22/11/2020 |
| **Test execution** | **23/11/2020** | **20/12/2020** |
| Unit test completion | 23/11/2020 | 29/11/2020 |
| Integration test completion | 25/11/2020 | 10/12/2020 |
| System test completion | 11/12/2020 | 18/12/2020 |
| Acceptance test completion | 19/12/2020 | 20/12/2020 |

### 2.4 Deliverables

The table below is the Deliverables for CMA Project:

|  |  |  |
| --- | --- | --- |
| **No** | **Deliverables** | **Due Date** |
| 1 | Test plan | 10/11/2020 |
| 2 | Test case | 22/11/2020 |
| 3 | Test case review | 24/11/2020 |
| 4 | Defect report | 21/12/2020 |
| 5 | Test report | 23/12/2020 |

## 

## 

## 3. Test Cases

*[Prepare the details on the test cases following the provided template*

* *Unit Test Cases: Report5\_Unit Test Case.xls*
* *Other Test Cases: Report5\_ Test Case.xls]*

## 4. Test Reports

*[Provide the test result, statistics and the relevant test analysis for your testing in the project]*