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**Capstone Project Alterra – SI Kampus Merdeka**

**“Testing Web, Rest API dan Mobile Application”**

**Test Plan Learning Management System**

**Version 1.0**

**Kelompok A 4**

**Revision History**

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# Daftar Isi

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**Test Plan**

# Introduction

A test plan is a document that contains a definition of the goals and objectives of testing within the iteration (or project) scope, the items to be tested, the approach to be taken, the resources required. In other words, a test plan can be referred to as a plan or scenario to carry out testing that will be carried out either by experts or general users.

The Test Plan Document explains how the software created can run according to plan. The trials were not only carried out on the feature, but also on the rest api, components, interfaces, security, and performance of the software that was built.

The test plan is also the basis used in testing the suitability of the results of making the application. so that the test can be detailed properly, careful design is needed and in accordance with what was previously planned, also must have experience in doing testing.

## Purpose

1. The test plan document is very important, here is the purpose of using the test plan:
2. Make the maintenance process more useful and efficient.
3. Can identify problems that arise in the build process
4. Minimize the risk of bugs
5. Know the performance of a web, mobile and API response

## 1.2 Background

In the testing phase, the application that is built requires performance effectiveness in the process of the application running. in addition to minimizing the occurrence of errors or bugs that appear.

The scope of testing that must be carried out so that performance runs optimally includes:

1. Manual Testing, steps to look for defects or bugs in software programs, in this method the tester / tester has an important role as the end user to check all application features are working properly. Testers perform manual checks without using the help of tools or scripts, the goal is to ensure that the application being tested is free of defects and the software application can work as expected.

here are some tests that will be done in manual testing:

* Integration Testing, one of the levels of software testing in which individual units are combined and tested as a group. The purpose of this level of testing is to expose errors in the interactions between integrated units.
* User Interface Testing, The function of the interface is to verify that communication between systems is carried out properly.
* Regression Testing, important & very useful stage for developers to identify product an connect one application with another application besides that it can be used for communication with various programming languages.

1. Automation Testing, Depends on pre-scripted tests that run automatically, its function is to compare the expected results with the actual results. So that you can find out whether the application is running as expected, using automated testing can be done repeatedly. So if the results are not the same as expected, you will get a bug.
2. API (End Point Testing), API is an interface that can connect one application with another application. In other words, the role of the API is as an intermediary between various different applications, both within the same platform or across platforms.

## 1.3 Scope

In this test plan, there are several tests that must be carried out, including:

1. Web Testing

In web testing testing, there are several scopes which include functional testing using automation and manual testing, to testing components auth, features course, features profile, download report and certificate, and interfaces of the web.

1. Rest API Testing

In testing API Testing includes functionality, API response, and the time it takes to retrieve the API.

1. Mobile Testing

While the Mobile Testing test is the same as using automation and manual testing web. includes functionality, avoiding errors, preventing bugs, and increasing the effectiveness of the application.

## 1.4 Project Identification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Document (and version / date)** | **Created or**  **Available** | **Received or**  **Reviewed** | **Author or**  **Resource** | **Notes** |
| Requirements Specification |  Yes  No |  Yes  No | Hanii mustofa |  |
| Functional Specification |  Yes  No |  Yes  No | Hanii mustofa |  |
| Project Plan |  Yes  No |  Yes  No | Hanii mustofa |  |

# Requirements for Test

In doing Testing on the Web, API and Mobile Testing, of course, it requires several requirements, namely in the form of a design document to be used as the basis for a test, and a matrix that is used as the basis for using a web or mobile application.

# Test Strategy

This testing is done by requiring several software components including:

## 3.1 Testing Types

### **3.1.1 Web UI Testing**

1. *Function Testing*

|  |  |
| --- | --- |
| Test Objective | 1. Form Input (all forms that require data input) can input data for database or for processing. 2. Form search, can generate searches according to the keywords entered 3. The button cart can be adjusted according to the product with the added amount 4. checkout button can process purchases according to what was ordered |
| Technique | 1. Test each button on the form. 2. Ensure the results of the report in accordance with the input and data in the master. 3. Testing the input form with various input conditions |
| Completion Criteria: | 1. Each input form can input data into the database or input data to be processed properly. 2. Output issued in accordance with the input and transactions that have been made. 3. Can generate reports as expected. |
| Special  Considerations: |  |

b. *User Interface Testing*

|  |  |
| --- | --- |
| Test Objective | Ensure all the components in each form can work well |
| Technique | 1. Login Form   Input: Enter characters to perform sql injection, Perform brute force password.  Output: The login form can only accept users who have access rights.   1. View Course :   Input: Click Button.  Output: can view course user history   1. Form Search All Course:   Input: Keyword  Output: issued according to the search keyword |
| Completion Criteria : | The appearance of the application is easy to use by the user |
| Special  Considerations: |  |

*c. Integration Testing*

|  |  |
| --- | --- |
| Test Objective | Combines all the existing cases in the feature so that the feature can run well over and over again. |
| Technique | * Test every button on every page such as register, login etc. * Test various input conditions on the input page. * Ensure that all reports that have been made are in accordance with what has been expected |
| Completion Criteria : | * All input forms are expected to be able to input data correctly and according to what is expected. * When making a transaction, the output is expected to match what has been inputted. * Ensure all report results are in accordance with what has been expected |
| Special  Considerations: |  |

1. *Manual Testing*

Tests carried out manually by QA. In the test, QA checks all the features in the software, to make sure there are bugs in the software. To get visual feedback from the UI/UX display, and find out what the user likes.

|  |  |
| --- | --- |
| Test Objective | This is done to avoid a bug (error) so it is necessary to check all the features on the AltaShop Website so that they can function properly. |
| Technique | * Create a test plan * Analyze * Create test cases * Execute test cases * Looking for bugs (errors) * Fixed bugs (errors) |
| Completion Criteria : | After all the features have been tested, they can function properly and there are no bugs (errors). |
| Special  Considerations: |  |

1. *Automation Testing*

Procedure by which automated tools are used to write test cases and run them, including tests of characteristics such as loading, pressure, and performance. Automated processes are designed to provide higher efficiency, effectiveness and accuracy.

|  |  |
| --- | --- |
| Test Objective | Depends on pre-scripted tests that run automatically, its function is to compare the expected results with the actual results |
| Technique | Installing software testing on the system/application that we build.  Writing “testing code/scripts” on software testing to test each feature in the system.  “Testing code/script” written in software testing is adjusted to the needs/desired output for each feature.  Running software testing to see whether the features in the system/application “pass the test” by software testing or not. |
| Completion Criteria : | After the automation is executed, it will issue an output in the form of a report, which tests are successful or fail. |
| Special  Considerations |  |

### **3.1.2 Rest API**

The purpose of using the API is to share data between different applications, speeding up the application development process by providing a separate function so that developers no longer need to create similar features.

1. Manual Testing

|  |  |
| --- | --- |
| Test Objective | Determine whether the response obtained is valid and in accordance with the functional requirements of an item being tested. |
| Technique | * Entering the fire link that will be requested * Define method * Fill in http body if needed * Added authorization (token) * Analyzing the results of the response obtained |
| Completion Criteria : | The response obtained is in accordance with the request given |
| Special  Considerations |  |

1. Automation Testing

|  |  |
| --- | --- |
| Test Objective | Verify the response obtained from the request, and analyze the test results |
| Technique | - Define automation testing tools  - Create object repository  - Create scenarios and test cases  - Execute test files  - Analyze the test results tested |
| Completion Criteria : | After the automatic test results are carried out, the results obtained will come out whether an error or success |
| Special  Considerations |  |

### **3.1.3 Mobile App**

1. *Function Testing*

|  |  |
| --- | --- |
| Test Objective | 1. Form Input (all forms that require data input) can input data for database or for processing. 2. Form search, can generate searches according to the keywords entered 3. The button cart can be adjusted according to the product with the added amount 4. checkout button can process purchases according to what was ordered |
| Technique | 1. Test each button on the form. 2. Ensure the results of the report in accordance with the input and data in the master. 3. Testing the input form with various input conditions. |
| Completion Criteria: | 1. Each input form can input data into the database or input data to be processed properly. 2. Output issued in accordance with the input and transactions that have been made. 3. Can generate reports as expected. |
| Special  Considerations: |  |

1. *User Interface*

|  |  |
| --- | --- |
| Test Objective | Ensure all the components in each form can work well |
| Technique | Login form:  Input: Enter characters to perform sql injection, Perform brute force password.  Output: The login form can only accept users who have access rights.  Add to Cart :  Input: Click Button.  Output: can calculate the product according to the one added using the button cart  Form Search:  Input: Keyword  Output: issued according to the search keyword |
| Completion Criteria: | The appearance of the application is easy to use by the user |
| Special  Considerations: | - |

1. *Intergration Testing*

|  |  |
| --- | --- |
| Test Objective | Combines all the existing cases in the feature so that the feature can run well over and over again. |
| Technique | * Test every button on every page such as register, login etc. * Test various input conditions on the input page. * Ensure that all reports that have been made are in accordance with what has been expected |
| Completion Criteria: | * All input forms are expected to be able to input data correctly and according to what is expected. * When making a transaction, the output is expected to match what has been inputted. * Ensure all report results are in accordance with what has been expected |
| Special  Considerations: |  |

1. *Manual Testing*

Tests carried out manually by QA. In the test, QA checks all the features in the software, to make sure there are bugs in the software. To get visual feedback from the UI/UX display, and find out what the user likes.

|  |  |
| --- | --- |
| Test Objective | This is done to avoid a bug (error) so it is necessary to check all the features on the AltaShop Website so that they can function properly. |
| Technique | * Create a test plan * Analyze * Create test cases * Execute test cases * Looking for bugs (errors) * Fixed bugs (errors) |
| Completion Criteria : | After all the features have been tested, they can function properly and there are no bugs (errors). |
| Special  Considerations |  |

1. *Automation Testing*

Procedure by which automated tools are used to write test cases and run them, including tests of characteristics such as loading, pressure, and performance. Automated processes are designed to provide higher efficiency, effectiveness and accuracy.

|  |  |
| --- | --- |
| Test Objective | Depends on pre-scripted tests that run automatically, its function is to compare the expected results with the actual results |
| Technique | Installing software testing on the system/application that we build.  Writing “testing code/scripts” on software testing to test each feature in the system.  “Testing code/script” written in software testing is adjusted to the needs/desired output for each feature.  Running software testing to see whether the features in the system/application “pass the test” by software testing or not. |
| Completion Criteria : | After the automation is executed, it will issue an output in the form of a report, which tests are successful or fail. |
| Special  Considerations |  |

### **CI / CD Pipeline**

Bridge between the operational and development teams by automating the development, testing, and release of applications. CI/CD is also useful in helping developers and testers to release and update applications or software more quickly and safely, especially because CI/CD is carried out in a structured ‘environment’.

|  |  |
| --- | --- |
| Test Objective | Verification of applications that have been made, to be deployed, analyzed so as to produce applications that are as expected. |
| Technique | * perform Version Control. * do the build stage to continue the code. * carry out the testing phase for the feasibility of the software * carry out the deployment stage * carry out the automation testing phase * Analyze test results |
| Completion Criteria : | The features in the application are as expected, and no bugs were found. |
| Special  Considerations |  |

## Tools

|  |  |  |
| --- | --- | --- |
| **Function** | **Tools** | **Version** |
| Software Testing | Katalon | 8.2.5 |
| Test Scenario & Matrix | Spreadsheet | - |
| Report Document | Microsoft Word | 2019 |
| CI/CD | Github Actions | - |
| Android Emulator | Vysor | 4.1.104 |

# Resources

This resource describes the need for testing on the Web, API and Mobile Testing. To perform the test, the following resources are needed:

## 4.1. Workers

|  |  |  |
| --- | --- | --- |
| Worker | Minimum Resources Recommended | Specific Responsibilities/Comments |
| Test Manager / Test Project Manager | 1 | 1. Overcome all activities in the project. 2. Knowing the course of the program 3. Manage the flow of the program creation system 4. Provide technical direction. 5. Obtaining the right resources. 6. Provide management reports. |
| Test Designer | 1 | * Conduct a survey on user habits * Understand User Interface and User Experience * Make recommendations for user interfaces like |
| Tester | 1 | 1. Make a test plan. 2. Make a solution for the error that occurs 3. Analyze the output report that appears after testing |
| Implementer | 1 | 1. Implementing and testing the developed project Task details : 2. Try the application according to the flow that has been made. 3. Keep records of everything events that occur during implementation |

This document contains a test report on the website, Rest API and Mobile App that have been tested.

## 4.2 System

The following is a table of resources used in the implementation of testing. There are several sections that are defined, namely:

|  |  |
| --- | --- |
| **System Resources** | |
| **Resource** | **Name / Type** |
| **URL Link Test**  Website Address  REST API  Application Name |  |
|  |
|  |
|  |
|  |
| Client Test PC's  Specification PC | Windows 10 Pro 64bit |
| Intel Core i5 7200U  12 GB Ram  500 GB SSD |

# Project Milestones

In a project, milestones are time benchmarks in the form of work activities or can be said to be projected working time. With the milestones, workers can complete the work according to the specified duration or time.

The following are the milestones in the test plan made, namely:

|  |  |  |  |
| --- | --- | --- | --- |
| **Milestone Task** | **Effort** | **Start Date** | **End Date** |
| Plan Test | 100 % | 28/05/2022 | 01/06/2022 |
| Design Test | 0 % | 11/06/2022 | 01/07/2022 |
| Implement Test | 0 % | 11/06/2022 | 01/07/2022 |
| Execute Test | 0 % | 11/06/2022 | 01/07/2022 |
| Evaluate Test | 0 % | 11/06/2022 | 01/07/2022 |

# Deliverables

This web and mobile application generates information in the form of products that are sold by transaction and adds the product to the cart. The information on this web is very much needed by the user in transacting with the seller to be able to get the goods according to the user's needs.

## Test Model

In this case the test model that is carried out is using regression testing, integration testing, manual testing, interface display testing, and automation testing which is implemented into CI/CD

# Appendix A: Project Tasks

Below are the test related tasks:

|  |  |
| --- | --- |
| 1 | Plan Test |
| 2 | Identify Requirements for Test |
| 3 | Design Test |
| 4 | Identify and Describe Test Cases |
| 5 | Create Schedule |
| 6 | Implement Test |
| 7 | Record or Program Test Scripts |
| 8 | Execute Test |
| 9 | Evaluate Execution of Test |
| 10 | Evaluate Testing |
| 11 | Report Test |
| 12 | Analyzing the results |
| 13 | Investigate Unexpected Results |