



TestFort

INFO 6068 CAPSTONE

TEST STRATEGY

TestFort Corp.

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Related Documents:

These documents will provide additional information.

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Glossary of Terms:

List any terms used in this document.

Term	Acronym	Definition
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1. Introduction

1.1. Objectives

TestFort Corp. received a 4 months contract to test and report the defects found in the product offered by the sponsor. The product named eWheelz application is a web-based product, in which users will find and book a bus ticket, by selecting from various filters and selections available. This project should be implemented on a strict deadline and sponsor satisfaction is the main aim.

1.2. Scope

This Test Strategy will cover the following:

- **Roles and Responsibilities:** List and define various roles and responsibilities for the team members of TestFort Corp.
- **Testing Overviews:** Describes the lifecycle chosen and the approach taken along with the different testing stages in the project. In addition, the team will describe the test execution, roles, methods, and finally the exit and entry criteria for each phase and the process for reporting the test.
- **Test Data:** Describe from where and how each test data will be obtained for each testing phase.
- **Test Environment:** Lists out the environment used such as hardware, software, data and other utilities, tools required and other needs required for testing the product.
- **Testing tools:** Lists out the various testing tools that will be used for testing eWheelz applications.

2. Roles and Responsibilities

Project Manager	<ul style="list-style-type: none">- Overall responsibility for the planning, procurement, and execution of a project- Conduct the project meetings- Updating the present status to the sponsor- Updating the project plan
Scribe	<ul style="list-style-type: none">- A professional copyist, especially one who writes the minutes of the meeting that are to be submitted as a part of the project- Responsible to maintain IAD log (Issues, Actions, Decisions)
Test Environment Specialist	<ul style="list-style-type: none">- Responsible to fix the issues related to the testing environment.- Assist the team to finish the tasks in the project
Tester	<ul style="list-style-type: none">- Will creates and implement the test cases, scripts and report to Project Manager

3. Testing Overview

3.1. Test Lifecycle

The test lifecycle that will be followed is STLC (Software Testing Life Cycle). The phases of the life cycle are:

1. Requirement analysis:

During this phase, our team will analyze the requirements document to identify the functional and non-functional testable requirements. Identify the testing techniques to use, testing environments required, automation feasibility and prioritizing the requirements. The team will also set up meetings with the Sponsor to clarify the doubts.

2. Test Planning:

During planning our team will focus on making a test strategy. The scope of testing will be defined according to the resources and availability of time. Roles and responsibilities will be assigned to the team members. Testing techniques will be finalized and required testing tools will be selected. The project plan will be made with the scheduled deliverables and milestones. The entry and exit criteria for testing will be defined. All plans related to testing data, recording testing results, tracing defects back to requirements, will be made during this phase.

Deliverable: Test Strategy

3. Test case development:

In this phase, our team will prepare test cases and test scripts for automation testing. Most importantly all related test data for both manual and automated testing required will be created during this phase.

Deliverable: Test cases, Test Scenarios/Scripts

4. Environment Setup:

This phase will be done by our team, side by side the test planning phase in order to save time. During this phase, the required hardware and software for testing will be installed. The application to be tested will be installed along with the baseline test data. After the complete set up of test environments, a smoke test will be run to check the status.

5. Test Execution:

In this phase, the test cases will be executed and the results will be captured and will be logged in the report. The defects found will be reported back to the developers, who will be responsible to fix them. The fixed application will be tested again to identify if the defects are fixed, and, is there any new defect created (regression testing). This process is carried out until the exit criteria are met.

Deliverable: Test execution report

6. Test Cycle Closure:

This phase will only start when the testing exit criteria are met. In this phase, the team will evaluate the test completion, report any defects left and their severity and prepare the final report and presentation for the Sponsor. The team will also evaluate the lessons learned from this project.

Deliverable: Final presentation

3.2. Test Approach

The main goal is to test if the requirements are met and to satisfy the Sponsor. The main constraint in the project is the limited time, so the depth and coverage of testing will be reduced. We will strive for the effective and efficient testing based on the product risk analysis.

- The team will make the project timeline indicating the duration of the testing phases and the milestones and get it approved by the Sponsor
- All team members will participate in making the test cases and scripts
- The test cases will be approved by the Sponsor before execution
- The testing environment will be set for all team members, and the smoke test will be run before the start of the testing cycle
- The baseline data will be used for smoke testing
- The valid test data will be created based on the test cases, separate for functional and non-functional tests
- The functional testing will be executed in two cycles, running all the test cases for both cycles
- The first cycle will identify the critical defects and report it to the developer
- The second cycle will be run to check if the reported defects are fixed, or if any new defects are created. The second cycle will be based on regression testing using the same test cases and test data as of the first cycle
- The non-functional testing will be just one cycle, and the extent depends upon the skills of the team members and the availability of time
- The testing will be based on grey-box testing
- The Scope of testing and Strategy will be updated depending on the need and will be approved by the Sponsor
- The exit criteria will be evaluated after execution of each test cycle

3.3. Standards

The following severity levels are proposed for issues arising throughout the Test Lifecycle:

ID#	Severity level	Description
S1	Critical	The defect will be critical if it affects the main functionality or critical data. Example installation not successful, the feature completely failed to perform what is specified in requirements.
S2	Major	The defect affects major functionality. The feature is working but not working correctly in all cases and affecting major data.
S3	Minor	The defect that is affecting only minor functionality or data. The application can still go into production with this defect, and the newer version of the application will cater for it.
S4	Trivial	The defect does not affect any functionality or data. It does not impact any efficiency and productivity. It is just an inconvenience. Example issues related to usability or look and feel.

3.4. Test Stages

A coverage matrix of all the Test Stages / Test Areas to be covered in each Test Release is appended below

Test Areas/ Test Type	Requirement analysis	Test Planning	Test case development	Environment Setup	Test Execution Cycle 1	Test Execution Cycle 2	Test Cycle Closure
Smoke testing				X	X	X	
Functional					X	X	
Reviews		X	X		X	X	X
Inspection/ walkthroughs		X	X	X	X	X	X
Regression testing						X	X
Usability						X	X

3.5. Reviews and Inspections

3.5.1. Reviews

Each Test Stage will be run according to the Test Plan and Test Specification applicable to that stage. Each document will be reviewed internally and submitted to the Sponsor for review and approval.

3.5.2. Inspections and Walkthroughs

After reviewing the documents, a formal inspection will be conducted which includes inspection of the code, test cases, test scripts/scenarios to make sure all the requirements are met.

3.6. Test Documentation

All the Test documentation that will be delivered during each of the Test Phases and test cycles is shown below:

Document	Phase and cycle
Test Strategy	Test Planning (Periodic Update)
Project Plan	All
IAD Log	All
Test Cases	Test Case Development
Test Scripts/Scenarios	Test Case Development
Test Execution Report	Test Execution
Final Presentation	Test Cycle Closure

3.7. Test Execution

During the Test Execution the code is executed based on the test cases and test data created, and the expected results will be compared to the actual results.

There are seven team members and each member has a laptop with the required tools installed in it for conducting the testing processes. The test execution will be conducted on campus on the scheduled date and time.

3.7.1. Recording Actual Results versus Expected Results

The Test Reports will be kept up to date with the results of the tests carried out. Any supporting evidence required or provided and an indication as to whether the test step is considered to have “Passed” or “Failed”. This will be collected in an Excel spreadsheet.

3.7.2. Escalation of Issues for resolution

An IAD document which is an Excel file would be used to record the description, impact, owner, status and date of each and every issue identified during the different phases.

After studying the issues, the team members will discuss and decide various actions that is to be taken when to solve the issue. The details of the action taken such as the completion date, status, who is responsible for performing the action and its impact are also recorded in IAD log.

If the action taken by the team does not resolve the issue and the issue is still existing, the team should decide on an alternative possible solution to fix the issue raised earlier. The decision tab in the IAD file documents the decisions taken by the team and justification on why the team took the particular decision.

3.7.3. Test Execution Roles

Each team member would conduct smoke test of the test environments once in a week to ensure that their environments are working properly. Project manager will make sure that the project is running smoothly and coordinate the team members effectively by conducting the meetings and providing the tasks to be completed and analysing the result. In addition, Scribe can log the minutes of the meeting and also help with the documentations and update the team members timely. All members are also testers and have to test the product individually, log the defects and report it to the project manager.

3.8. Entry & Exit Criteria

The high-level entry and exit criteria for all phases is shown in the table below:

3.8.1. Table of Entry and Exit Criteria

Phase	Entry Criteria	Exit Criteria
Capstone Project	a) Signup the contract	a) Sponsor acceptance of the deliverables b) Signoff
Requirement Analysis	a) Identification of the testing team b) Requirements gathered	a) Requirements classified as Functional and Non-functional b) Testing technique identified c) Test environment identified d) Requirements prioritized e) Kick-off meeting agenda prepared and emailed to the team and sponsor
Test Planning	a) Kick-off meeting conducted b) Sponsor sign-off	a) Scope of testing identified and defined b) Roles and responsibilities of the team members are assigned c) Test environment and tools are finalized d) Test strategy documented e) Sponsor Signoff
Test Case Development	a) Completed test strategy	a) Test cases and test scenarios are prepared b) Test data identified c) Peer review of test cases conducted d) Signoff
Environment Setup	a) Required testing tools are identified b) Data requirements are identified c) Application (eWheelz) delivered by the sponsor	a) Testing environment successfully installed b) Smoke test of the testing environment

Test Execution	<p>CYCLE 1:</p> <ul style="list-style-type: none"> a) Test strategy created b) Test cases and test scenarios are developed c) Successful installation of testing environment d) Smoke test of testing environment <p>CYCLE 2:</p> <ul style="list-style-type: none"> a) Defects are fixed b) Updated test cases c) Updated test scenarios 	<p>CYCLE 1:</p> <ul style="list-style-type: none"> a) Test cases executed b) Test results are recorded c) Pass/Fail identified d) Results are recorded e) Severity of the defects are identified f) Defects are prioritized <p>CYCLE 2:</p> <ul style="list-style-type: none"> a) Test cases executed b) Test results are recorded c) Pass/Fail identified d) Record and prioritize the defects, if any <p>Test execution report submitted to the sponsor</p>
Test Cycle Closure	<ul style="list-style-type: none"> a) Test execution exit criteria met 	<ul style="list-style-type: none"> a) Team approved test completion b) Document the lessons learned c) Final presentation is conducted d) Sponsor approved test completion

3.9. Test Results Capture

The results of each cycles of test execution would be recorded in the same excel file as the test cases. The success or failure of the test case would be determined by comparing the expected result of the particular result to the actual result obtained after performing the test. If the expected result is equal to the actual result, the test case would be determined as a Pass. If there is any divergence between the expected and actual results, the test case would be noted as a Fail, an associated test issue will be recorded and the team will decide upon the severity of each defects or issues which caused the failure of the test cases.

3.10. Progress Reporting

3.10.1. Test Report

The team would prepare a test report after the completion of Test Execution phase, which is the consolidated report of testing performed in the project. The report includes the purpose of the document, overview of the application being tested, scope of testing summary of test results and defects, types of testing conducted, lessons learned, recommendations and conclusion.

4. Test Data

Test Type	Source of Test Data
Smoke Test	Baseline
Functional Testing	Baseline, Manual
Usability Testing	Baseline, Manual
Reviews	Documents created during the project
Inspection and Walkthroughs	Baseline, Manual
Regression Testing	Baseline

5. Testing Environments

5.1. Specification

A testing environment includes software, hardware, data and configured network for the testing team to perform testing. For test environment, we need to set up the following:

Hardware- As a team of 7, we would require 7 personal computers or laptops as one of our hardware. Hardware Configurations are listed below:

- Model name- HP laptop 15-bw0xx
- Processor- AMD A9-9420 RADEON R5, 5 COMPUTE CORES 2C+3G 3.00GHz
- Installed RAM - 8.00 GB
- System Type- 64-bit operating system, x64-based processor

Software- The software that would be providing a testing environment or front end running environment would be required for testing an application. The software that our team would be using are:

- Apache Tomcat 9.0.8 server
- MySQL
- Web application: eWheelz

Handling test data can be done by databases for which we are using MySQL as a database server. Monitoring the environment in all laptops and updating/ deleting outdated ones is necessary for test management.

Network- Most of the testing and documentation work will be done at our college campus where we have wireless and wired internet connectivity i.e.

- Internet setup
- LAN Wi-Fi setup

Data- The team has installed the baseline data provided with the web application. The data required for rest of testing will be created as the project progresses.

5.1.1. Security and access requirements to the test area and equipment

- All laptops have an access password assigned to them. Only individuals who are aware of the passwords can use or access the environment
- MySQL has an assigned password in each laptop so that the database is kept securely and cannot be accessed by an outsider

6. Testing Tools

6.1. Test Management Tools

- Excel
- Microsoft Word
- Project
- Google drive

6.2. Test Automation Tools

- Selenium