**INFO 6068 Capstone**

**Test Plan**

**[Zero to Hero]**

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This document must be reviewed by the following:

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**Related Documents:**

These documents will provide additional information.

| **Ref no** | **Doc Reference Number** | **Title** | **Version** |
| --- | --- | --- | --- |
| 1 | 1 | [Travel-and-Tourism-Management-System](https://www.fanshaweonline.ca/d2l/le/content/1604483/viewContent/14860139/View) | 1.0 |
| 2 | 2 | Microsoft Project Plan | 1.0 |

**Glossary of Terms:**

List any terms used in this document.

| **Term** | **Acronym** | **Definition** |
| --- | --- | --- |
| Concurrent Versions System | CVS | Concurrent Versions System (CVS) is a tool that allows developers to store and retrieve different versions of source code during the development process. |
| Random Access Memory | RAM | RAM is a type of volatile memory found in computers. It holds information and commands that the CPU is currently using and allows for quick access for processing tasks. However, when the power is switched off, the content of RAM is lost. |

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# Introduction

The test plan outlines the scope, approach , resources and schedule of all testing activities. It identifies the items and features to be tested: types of testing. It defines the testing objectives, the testing approach, test environment, milestones and deliverables.

## Objectives

The primary goal of the test plan is to ensure that there is enough time available for the team to perform high-quality risk analysis. To cover most of the risk a large set of automated and manual test cases will be conducted. Functional and Non-functional test types are adequately represented.

1. Creating a detailed plan for the user acceptance test.
2. Testing the technical and user documentation.
3. List all the deliverables to be conducted in test activities.
4. To analyse and identify the resources required for performing test activities.
5. Description of testing test strategy to be implemented.

## Team Members

| **Resource Name** | **Role** |
| --- | --- |
| Rupalben Patel | Scribe |
| Suvidha Desale | Project Manager |
| Swapna Tambe | Business Analyst |
| Fan Yang | QA lead |
| Bidushi Kabir | Tester |

# Scope

For this project, the primary phase of the scope will be to test all the fundamental requirements of this web application. Initially, we will focus on testing the functional requirements of this application. In the final stage of the initial phase, the testing team will be able to conduct the following steps.

1. Creating test cases that cover all the requirements.
2. Getting a review by the QA lead
3. Executing the tests and saving the results.

For the later phase of testing, the team will consider non-functional requirements such as performance and stress testing. As the team works with the product, they will define the needs for the second phase of test case documents.

# Assumptions / Risks

## Assumptions

This section outlines some assumptions that have been made for this specific stage.

1. The testing team will test the requirements that have been specified in the requirement document.

2. The Business team has reviewed and approved the software requirement documents.

3. The development team is responsible for performing the unit testing, not the testing team.

4. The product deliverable will be consistent with CVS, a version control system.

5. The team will follow the agile test methodology.

6. As the team is following agile test methodology stakeholders will actively participate and provide timely feedback throughout the project.

7. The project will be delivered within the specified timeline.

## Risks

The following table shows the risks and the appropriate action needed to mitigate their impact on the project. The impact is dependent on the severity of the risk if it gets triggered. The trigger is what milestone or event would cause the risk to become an issue that needs to be addressed.

| # | Risk | Impact | Trigger | Mitigation Plan |
| --- | --- | --- | --- | --- |
| R01 | Requirements are not clear | High | Delays in deliverables and Redo work | Document software requirements clearly with business and team. Conduct requirement gathering sessions. |
| R02 | Inadequate resources | High | Project schedule, budget change | Communicate and report to stakeholders about constraints and optimize the resource utilization |
| R03 | Lack of expertise | High | Affects the quality of the product | Identify the team's skill and provide training for necessary skills and hire experienced resources. |
| R04 | Technical Problems | High | Delay in Delivery of Project | Identify technical risk early and make provision for backup. |
| R05 | Team Communication Problem | Medium | Impacts the productivity and efficiency of project team | Encourage open communication and feedback sharing in the team. Set communication protocols and conduct regular meetings. |

# Test Approach

The test approach will clarify the details such as the project implementation methodology. Here, we are using the Agile Methodology which we will use to test the TravelApp application. To increase the quality of the product we need to do ongoing testing, our team decided to perform Manual and Automation testing.

The following test practices will be implemented

* Manual Testing: We are testing the software using the manual testing, we will use this testing to validate the Travel Apps functionality and user experience. Here we will perform several types of testing such as exploratory testing, user interface testing and acceptance testing. We will use boundary value analysis and equivalence partitioning. We will also use the State Transitions Testing Technique often applied to Manual and Automation testing.

* Automated Testing: This testing includes writing and running automated test scripts. This testing will help us to do more test cases in less time. Here, we are using the selenium web driver to speed up the testing process. Automation testing will concentrate on scenarios involving repetition and regression testing.

The following types of testing we are going to use in TravelApp

* Functional Testing - We are testing all modules such as the administrator, travel routes, reservations, and feedback modules to make sure they all are working correctly.
* System Testing - This testing includes end-to-end testing. The team will examine all functionality of Travel applications. This will help to identify any problem.
* Acceptance Testing – In this type of testing we make sure that Travel Applications meets the user's expectations.
* Regression Testing - Whenever recent changes occur our team will do the regression testing.

* 1. **Test Automation**

For the Travel application we have adapted the Agile Methodology technique, in which testing happens at regular intervals throughout the project cycle so under the development process the customer gets the feedback on the product. Also, this methodology helps the team to track the schedule. This automated testing process also helps to increase the speed of development of a lifecycle and within a limited time, this testing gives us high coverage. To increase the effectiveness, test coverage and for test execution speed we depend on automation testing to cover 75% of the test scenarios. This methodology helps to find defects in the early stage of the life cycle.

The process of Automated testing includes:

1. Understand the scope of automation
2. Selection of tool for test
3. Planning, designing and development of test cases
4. Test case maintenance

# Test Environment

Hardware Requirements:

1. Desktop Computer: To ensure compatibility and performance across various setups, use desktop computers with varied configurations to simulate diverse user scenarios.

2. Input devices: Make sure a keyboard and mouse are available so that users may interact with the programme while it is being tested.

3. Sufficient RAM and processing power: Make sure there are enough resources to run testing tools and the TravelApp without causing a drop in performance.

Software Requirements:

1. Operating System: In order to verify compatibility and recreate the end-user experience, Windows 11 will be used.

2. Web servers: Using Java and J2EE technologies, the TravelApp will be hosted on Apache Tomcat Version 10.

3. Database Management System: MySQL Version 8.0.35.0 will host the necessary databases, facilitating data storage and retrieval for the application.

4. Flash Replacement: To ensure smooth operation free from reliance on antiquated technology, Lightspark will be used to replace Flash functionality within the TravelApp.

5. Office Productivity Suite: Microsoft Word, Excel, Project, and PowerPoint will assist in documentation, management, and presentation tasks throughout the testing process.

6. Integrated Development Environment (IDE): To provide effective testing automation, Java test scripts will be developed and managed using the Eclipse IDE.

7. Issue Tracking and Project Management: JIRA will act as the main tool for efficiently managing testing tasks, keeping track of issues, and keeping tabs on project advancement.

8. Testing Tools: To create automated tests, we'll use Selenium WebDriver, JUnit or TestNG, and Maven. For load testing and continuous integration, we'll use JMeter and Jenkins, respectively.

Network Configurations:

1. Firewall Protocols: Set up the firewall in a way that permits safe communication between test components while blocking unwanted and unauthorized access.

2. IP addresses and DNS settings: To guarantee uniformity and smooth operation of the TravelApp, match network configurations with production environments.

Access Control and Security Measures:

1. Secure Environment: Testing will be conducted within a controlled and secure environment, restricting access to authorized personnel only.

2. Password Security: To prevent unauthorised access to test devices and equipment, put password protection procedures in place.

3. Encryption: To protect test data and documentation from unauthorised disclosure or alteration, use encryption techniques.

Test Data Preparation:

1. To accurately replicate the range of circumstances and situations that users of the TravelApp may encounter in the actual world, test data will be carefully prepared.

2. To guarantee thorough test coverage, data can be produced automatically using Data Generation Tools, manually generated, or taken from production situations.

Verification of Test Environment:

1. To ensure accuracy and readiness, check that the test environment complies with the requirements before beginning any testing.

2. To ensure that testing goes well, make sure that hardware, software, and network components are installed and configured correctly.

3. To make sure the TravelApp functions as anticipated, conduct smoke testing to confirm basic functionality and preparation for thorough testing.

# Milestones / Deliverables

## Test Schedule

| **Task Name** | **Start** | **Finish** | **Effort** | **Comments** |
| --- | --- | --- | --- | --- |
| Set up test environment | 01-17 | 01-24 | 8 days |  |
| Identify scope and review requirements | 01-25 | 01-31 | 7 days |  |
| Develop test strategy | 01-23 | 02-04 | 12 days |  |
| Develop test plan | 02-05 | 02-11 | 7 days |  |
| Design test case | 02-12 | 02-25 | 14 days |  |
| Design test script | 02-26 | 03-10 | 14 days |  |
| Allocate test resources | 03-11 | 03-12 | 2 days |  |
| Prepare test data | 03-12 | 03-14 | 2 days |  |
| Conduct functional testing | 03-15 | 03-25 | 11 days | different testers conduct functional testing and non-functional testing simultaneously |
| Conduct non-functional testing | 03-15 | 03-25 | 11 days | different testers conduct functional testing and non-functional testing simultaneously |
| Conduct regression testing | 03-26 | 03-28 | 3 days |  |
| Conduct acceptance testing | 03-29 | 03-31 | 3 days |  |
| Develop test report | 04-01 | 04-14 | 14 days |  |

(A high-level and detailed test schedule with more test activities of each test phase is in Microsoft Project Plan)

## Deliverables

| **Deliverable** | **For** | **Date / Milestone** |
| --- | --- | --- |
| Test Strategy | Project Sponsor, Zero to Hero team members | 02-04 |
| Test Plan | Project Sponsor, Zero to Hero team members | 02-11 |
| Microsoft Project | Project Sponsor, Zero to Hero team members | 02-11 |
| Requirements Traceability Matrix | Project Sponsor, Zero to Hero team members | 02-25 |
| Test Case | Project Sponsor, Zero to Hero team members | 02-25 |
| Use Case | Project Sponsor, Zero to Hero team members | 02-25 |
| Test Scenario/Test Script | Project Sponsor, Zero to Hero team members | 03-10 |
| Test Execution Report/Status Report | Project Sponsor, Zero to Hero team members | 04-07 |