# Test Plan for Mapping Software

## 1. Introduction

### a. Test Plan Objectives

The Mapping Software project is designed to provide a map representation along with delivery optimization capabilities for the company's 3 trucks. The objective of this testing phase is to ensure that all the functions and structures of the software are working correctly, well-integrated, and able to handle common types of user error. This includes testing the integrity of the route definitions, route population, and functionality of the map. We aim to have a fully functioning and bug-free software at the end of this testing phase.

## 2. Scope

The testing scope includes all the functions and structures defined in the code base. However, the performance of the software under extreme conditions such as very high load and stress, which is not the usual use case, will not be tested.

## 3. Test Strategy

### a. Approach

Our approach to testing will follow a combination of Unit testing, Integration testing, and System testing. All functions and structures will be tested independently at first and then in combination to ensure smooth interaction between them. The test data will be created manually based on different scenarios.

### b. Test design process

i. The test cases will be designed based on the requirements defined in the project specification document.

ii. A traceability matrix will be created to ensure all requirements have corresponding test cases.

iii. Test cases will be prepared based on the traceability matrix.

iv. The prepared test cases will be reviewed by another member of the QA team before being finalized.

## 4. Environment Requirements

The software will be tested in a standard desktop environment with the necessary compilers and tools for running and debugging C code.

## 5. Execution Strategy

### a. Entry and Exit Criteria

The entry criterion for a test is the availability of a test case and a test environment. The exit criterion will be 95% of test scripts passing with no critical defects remaining.

### b. Severity of Defects

Defects will be categorized into five levels: critical, high, medium, low, and cosmetic.

### c. Test Reporting

Daily test reports will be generated and sent to the project manager and team leads. The report will include the number of tests conducted, passed, and failed with a brief description of the areas being tested and the areas failing.

### d. Developer Interaction

The QA team will interact with the developers through bug review meetings and direct communication to resolve the defects found.

## 6. Test Schedule

The estimated duration for the testing phase is 7 weeks, starting from June 21, 2023, and ending on August 11, 2023.

## 7. Control Procedures

### a. Reviews

All test cases will be reviewed by another member of the QA team before being finalized.

### b. Bug Review Meetings

Regular bug review meetings will be conducted to discuss the found defects and their resolution.

### c. Change Request

Change requests will be raised for any changes in the requirements and will be implemented only after approval.

### d. Defect Reporting

All defects will be reported using the defect reporting tool defined by the organization.

## 8. Functions to be Tested

All functions and structures defined in the Mapping Software code base will be tested.

## 9. Resources and Responsibilities

### a. Resources

The resources for the test include a standard desktop environment and a QA team of 4 members.

### b. Responsibilities

Each QA team member will be responsible for creating and executing test cases, defect reporting, and defect retesting.

## 10. Deliverables

1. Test plan document

2. Test cases document

3. Test scripts and code

4. Bug reports and status reports

5. Final test report

## 11. Suspension/Exit Criteria

The testing phase will be suspended or exited if there are severe defects that impedes the testing progress, if the functionality of the program does not match the description given to the QA team, or if there are significant differences in the program outputs at a level that prevent meaningful analysis of the results.

## 12. Resumption Criteria

The testing phase will be resumed once the critical defects causing the suspension are resolved.

## 13. Dependencies

### a. Personnel Dependencies

The completion of the testing phase is dependent on the availability of all QA team members.

### b. Software Dependencies

The software depends on the C compiler and debugger for execution.

### c. Hardware Dependencies

A standard desktop environment is necessary for running the software.

### d. Test Data & Database

The test data will be created manually based on different scenarios.

## 14. Risks

### a. Schedule

There might be delays in the testing phase due to unforeseen issues.

### b. Technical

There might be technical issues during the testing phase.

### c. Management

There might be changes in the project requirements or priorities.

### d. Personnel

There might be a shortage of personnel due to illness or leave.

### e. Requirements

There might be unclear or misunderstood requirements.

## 15. Tools

The tools used for the testing phase include a C compiler and debugger, and a defect reporting tool.

## 16. Documentation

All the testing activities will be documented for future reference.

## 17. Approvals

Approval from project management, team leads, and QA lead is required to finalize this test plan.