TOUR MATE Vehicle Management System - Test Documentation

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## 1. Introduction

This document provides comprehensive testing information for the TOUR MATE Vehicle Management System. The purpose of testing is to ensure that the application meets all the specified requirements and functions correctly in various scenarios. The system consists of several modules including user authentication, vehicle management, and sales management. Each module has been tested individually and as part of the integrated system to ensure proper functionality.

### Testing Objectives

The main objectives of the testing process are:

1. Verify that all functional requirements have been implemented correctly
2. Ensure the system can handle invalid inputs appropriately
3. Verify data persistence through file operations
4. Ensure proper navigation between different system modules
5. Test the overall usability of the system

### 1.2 System Overview

The TOUR MATE Vehicle Management System is a console-based application designed to manage a cab service company's vehicle fleet and sales operations. The system includes the following key features:

* User authentication (login/logout)
* Vehicle management (add, view, update, delete, search)
* Sales management (record sales, view sales, search sales, generate reports)
* Company information display
* Text file-based data persistence

The system is implemented in C++ and follows object-oriented design principles with separate classes for Vehicle, Sales, and User entities.

## 2. Test Plans and Test Cases

### 2.1 Authentication Module Tests

| **Test Case ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Status** |
| --- | --- | --- | --- | --- | --- |
| AUTH-01 | Valid login with admin credentials | Username: adminPassword: admin123 | Login successful messageAccess to main menu | Login successful messageAccess to main menu | PASS |
| AUTH-02 | Invalid login with incorrect username | Username: invalidPassword: admin123 | Error message: "Invalid username or password"Return to login menu | Error message: "Invalid username or password"Return to login menu | PASS |
| AUTH-03 | Invalid login with incorrect password | Username: adminPassword: wrongpass | Error message: "Invalid username or password"Return to login menu | Error message: "Invalid username or password"Return to login menu | PASS |
| AUTH-04 | Empty username login attempt | Username: (empty)Password: admin123 | Error message: "Invalid username or password"Return to login menu | Error message: "Invalid username or password"Return to login menu | PASS |
| AUTH-05 | Empty password login attempt | Username: adminPassword: (empty) | Error message: "Invalid username or password"Return to login menu | Error message: "Invalid username or password"Return to login menu | PASS |
| AUTH-06 | Logout functionality | Select logout option from main menu | Logout message displayedReturn to login menu | Logout message displayedReturn to login menu | PASS |

### 2.2 Vehicle Management Module Tests

| **Test Case ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Status** |
| --- | --- | --- | --- | --- | --- |
| VEH-01 | View all vehicles when no vehicles exist | Select "View All Vehicles" | Message: "No vehicles found in the system" | Message: "No vehicles found in the system" | PASS |
| VEH-02 | Add a new vehicle with valid details | Make/Model: Toyota CamryYear: 2023Type: SedanReg Number: ABC123Status: AvailableRate: 50 | Vehicle added successfullyVehicle ID generated | Vehicle added successfullyVehicle ID: V1 | PASS |
| VEH-03 | View all vehicles after adding | Select "View All Vehicles" | Display of all vehicle details including the newly added vehicle | All vehicle details displayed correctly | PASS |
| VEH-04 | Update existing vehicle | Vehicle ID: V1New Make/Model: Toyota Corolla | Success messageVehicle details updated | Success messageVehicle details updated | PASS |
| VEH-05 | Delete existing vehicle | Vehicle ID: V1Confirm: Y | Success messageVehicle deleted | Success messageVehicle deleted | PASS |
| VEH-06 | Search vehicle by ID | Search option: 1 (ID)Search term: V1 | Display matching vehicle details | Matching vehicle details displayed | PASS |
| VEH-07 | Search vehicle by non-existent ID | Search option: 1 (ID)Search term: V999 | Message: "No matching vehicles found" | Message: "No matching vehicles found" | PASS |
| VEH-08 | Search vehicle by Make/Model | Search option: 2 (Make/Model)Search term: Toyota | Display all Toyota vehicles | All Toyota vehicles displayed | PASS |
| VEH-09 | Add vehicle with invalid year | Make/Model: Honda CivicYear: abcType: SedanReg Number: XYZ789Status: AvailableRate: 45 | Input validation errorPrompt for numeric input | Input validation errorPrompt for numeric input | PASS |
| VEH-10 | Add vehicle with invalid rate | Make/Model: Honda CivicYear: 2022Type: SedanReg Number: XYZ789Status: AvailableRate: abc | Input validation errorPrompt for numeric input | Input validation errorPrompt for numeric input | PASS |

### 2.3 Sales Management Module Tests

| **Test Case ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Status** |
| --- | --- | --- | --- | --- | --- |
| SALE-01 | View all sales when no sales exist | Select "View All Sales" | Message: "No sales found in the system" | Message: "No sales found in the system" | PASS |
| SALE-02 | Add new sale when no vehicles exist | Select "Record New Sale" | Message: "No vehicles found in the system" | Message: "No vehicles found in the system" | PASS |
| SALE-03 | Add new sale with valid details | Vehicle ID: V1Customer: John DoeContact: 123-456-7890Start Date: 2025-10-15End Date: 2025-10-20Amount: 250Payment Status: Paid | Sale added successfullySale ID generated | Sale added successfullySale ID: S1 | PASS |
| SALE-04 | Add sale with non-existent vehicle ID | Vehicle ID: V999 | Error message: "Vehicle not found" | Error message: "Vehicle not found with ID: V999" | PASS |
| SALE-05 | Add sale with unavailable vehicle | Vehicle ID: V1 (already rented) | Error message: "Vehicle is not available" | Error message: "Vehicle is not available for sale" | PASS |
| SALE-06 | View all sales after adding | Select "View All Sales" | Display of all sales details including the newly added sale | All sales details displayed correctly | PASS |
| SALE-07 | Search sale by ID | Search option: 1 (ID)Search term: S1 | Display matching sale details | Matching sale details displayed | PASS |
| SALE-08 | Search sale by customer name | Search option: 3 (Customer Name)Search term: John | Display all sales for customers named John | All matching sales displayed | PASS |
| SALE-09 | Search sale by payment status | Search option: 4 (Payment Status)Search term: Paid | Display all paid sales | All paid sales displayed | PASS |
| SALE-10 | Generate sales report | Select "Generate Sales Report" | Report generated with correct statisticsReport file created | Report displayedFile created with correct data | PASS |

### 2.4 Menu Navigation Tests

| **Test Case ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Status** |
| --- | --- | --- | --- | --- | --- |
| NAV-01 | Navigate from login menu to main menu | Valid login credentials | Main menu displayed | Main menu displayed | PASS |
| NAV-02 | Navigate from main menu to vehicle menu | Option 1 (Vehicle Management) | Vehicle menu displayed | Vehicle menu displayed | PASS |
| NAV-03 | Navigate from vehicle menu back to main menu | Option 6 (Return to Main Menu) | Main menu displayed | Main menu displayed | PASS |
| NAV-04 | Navigate from main menu to sales menu | Option 2 (Sales Management) | Sales menu displayed | Sales menu displayed | PASS |
| NAV-05 | Navigate from sales menu back to main menu | Option 5 (Return to Main Menu) | Main menu displayed | Main menu displayed | PASS |
| NAV-06 | Exit from login menu | Option 2 (Exit) | Program terminates with goodbye message | Program terminates with goodbye message | PASS |
| NAV-07 | Exit from main menu | Option 5 (Exit) | Logout and program terminates with goodbye message | Logout and program terminates with goodbye message | PASS |
| NAV-08 | Invalid option in main menu | Option: 9 | Error messagePrompt for valid input | Error messagePrompt for valid input | PASS |
| NAV-09 | Invalid option in vehicle menu | Option: 9 | Error messagePrompt for valid input | Error messagePrompt for valid input | PASS |
| NAV-10 | Invalid input type in menu selection | Input: abc | Error messagePrompt for numeric input | Error messagePrompt for numeric input | PASS |

### 2.5 Input Validation Tests

| **Test Case ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Status** |
| --- | --- | --- | --- | --- | --- |
| VAL-01 | Non-numeric input for menu selection | Input: abc | Error messageInput clearedPrompt for valid input | Error messageInput clearedPrompt for valid input | PASS |
| VAL-02 | Non-numeric input for vehicle year | Input: abc | Error messageInput clearedPrompt for valid input | Error messageInput clearedPrompt for valid input | PASS |
| VAL-03 | Non-numeric input for daily rate | Input: abc | Error messageInput clearedPrompt for valid input | Error messageInput clearedPrompt for valid input | PASS |
| VAL-04 | Non-numeric input for sale amount | Input: abc | Error messageInput clearedPrompt for valid input | Error messageInput clearedPrompt for valid input | PASS |
| VAL-05 | Empty input for required fields (Make/Model) | Input: (empty) | Field accepted but potentially problematic | Field accepted | FAIL |

### 2.6 File Operations Tests

| **Test Case ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Status** |
| --- | --- | --- | --- | --- | --- |
| FILE-01 | Create vehicles.txt on first vehicle add | Add a new vehicle | File created with correct vehicle data | File created with correct vehicle data | PASS |
| FILE-02 | Create sales.txt on first sale add | Add a new sale | File created with correct sale data | File created with correct sale data | PASS |
| FILE-03 | Create users.txt if not exists | First program run | File created with default admin user | File created with default admin user | PASS |
| FILE-04 | Load vehicle data from existing file | Start program with existing vehicles.txt | Vehicles loaded correctly | Vehicles loaded correctly | PASS |
| FILE-05 | Load sales data from existing file | Start program with existing sales.txt | Sales loaded correctly | Sales loaded correctly | PASS |
| FILE-06 | Create sales report file | Generate sales report | Report file created with correct filename and data | Report file created with correct filename and data | PASS |