**TESTING DOCUMENTATION**

**INTRODUCTION**

The testing phase aims to ensure that the Sales and Employee Management System functions correctly, efficiently, and meets the intended requirements. This phase identifies and resolves defects, verifies system stability, and validates the accuracy of salary computations, employee management, monthly expenses and report generation. By conducting thorough testing, the system’s overall reliability and performance can be enhanced before deployment.

The primary objectives of the testing process include verifying that all functionalities operate as expected, identifying and resolving any defects, ensuring compliance with business requirements. Additionally, testing validates data integrity and security, confirms system performance and assesses usability. Each of these aspects plays a crucial role in ensuring that the system meets the needs of its users effectively.

The scope of testing includes salary computation accuracy, employee management features, report generation, system navigation, data validation, and security measures.

This document will serve as a guide for executing test cases, reporting issues, and ensuring a smooth implementation of the Sales and Employee Management System for AU Water Refilling Station.

**TESTING ENVIRONMENT**

Refers to the setup of hardware, software, and test data used to validate the system’s functionality, performance, and security. A well-defined testing environment ensures that all tests are conducted under controlled conditions that closely simulate real-world usage scenarios, leading to accurate and reliable results.

**Hardware Specifications**

The hardware specifications define the necessary computing resources required to efficiently test the system. This ensures that performance is accurately measured and system compatibility is verified across different configurations.

* **Processor**. Intel Core i3 or higher
* **RAM**. 4GB or higher
* **Storage**. 256GB SSD or higher
* **Operating System**. Windows 10/11
* **Network**. The system can function even without internet connection

**Software Requirements**

The software requirements outline the essentials tools and platforms used during testing. These tools help in automating tests, managing databases, and ensuring the system runs as expected in different environments

* **Operating System.** Windows 10/11 (32-bit or 64-bit)
* **Database Management System.** SQL Server Management Studio Management Studio 19
* **Framework.** .NET Framework 4.0

**Test Data**

Input provided to a system during testing to evaluate its functionality, accuracy, and performance. The test data section ensures the system behaves correctly under different conditions.

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| Test Data Types | Description | Example Inputs | Expected Output |
| Valid Test Data | Correct and expected inputs that meet the system's requirements. | Employee Name: Rubylyn Balansay Contact No. 09654915843 Address: 8 Saint James Sisa Extension Tinajeros Malabon City | Data is accepted and processed successfully. |
| Invalid Test Data | Incorrect inputs that do not meet system requirements. | Contact No. 0965abc | System displays error message or not accepting. |
| Boundary Test | Values at the extreme limits of acceptable input ranges | Salary: Accepts 1-4 digit only | Accepts data with valid range |
| Null/Blank Test Data | Empty or missing values to test system response | FullName(empty) Quantity(empty) | System won’t process the data and show warning message |
| Incorrect Data Type Test Data | Inputs that do not match the expected data type | Salary six hundred forty-five” | System won’t accept the input data |
| Duplicate Test Data | Repeated inputs to verify system handling of duplicates. | Employee ID: 128022 (already exists) | System alerts user about duplicate entry. |

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| Compatibility Test Data | Data used to test system behavior on different platforms. | Logging in from Windows 10 and Windows 11 | System functions correctly across environments. |
| Integration Test Data | Data shared between different modules. | Employee ID entered in Salary Modules | Data remains consistent across modules. |

**TESTING METHODOLOGY**

To ensure the reliability, security, and overall functionality of the system, a series of comprehensive testing strategies were implemented throughout its development. These testing methods aimed to identify potential issues, optimize system performance, and enhance user experience before full deployment. Each testing phase played a crucial role in refining the system, ensuring it met the required standards and performed as expected under various conditions. The following are the key testing strategies conducted by the development team.

1. **Alpha Testing.** This initial phase of testing was performed by the development team, particularly the software engineer and system analyst, during the system’s development process. The primary objective of alpha testing was to identify and fix potential bugs, logical errors, and performance issues before presenting the system to external user. Continuous debugging, internal validation, and rigorous functional testing were carried out to ensure that all modules worked correctly and met the project requirements.
2. **Beta Testing.** After internal validation, the system was subjected to beta testing, where selected external users were given access to test its functionality in a real-world environment. The goal of this phase was to collect feedback from users who interacted with the system for the first time. Their insights and suggestions were documented and analyzed to identify usability issues, potential improvements, and necessary refinements. This step ensured that the system was user-friendly and met the expectations of its intended users.
3. **Stress Testing**. To assess the system’s stability and robustness, stress testing was conducted by intentionally pushing it beyond its normal operating limits. This involved simulating extreme conditions, such as handling high volumes of data, executing multiple transactions simultaneously, and forcing incorrect inputs. The objective was to determine whether the system could maintain optimal performance under heavy loads and identify any weaknesses that could cause failures or slowdowns. Any areas of concern were addressed to enhance the system’s durability and reliability.
4. **Penetration Testing.** Security is a critical aspect of any system, and to ensure data protection and user authentication effectiveness, penetration testing was carried out. This involved simulating potential security threats, such as unauthorized login attempts, brute-force attacks, and other forms of exploitation. The purpose of this test was to verify that the system’s security measures, including authentication protocols and access controls, functioned correctly and could prevent unauthorized access. Any vulnerabilities identified were promptly fixed to strengthen the system’s overall security.

By conducting these rigorous testing phases, the development team ensured that the system was stable, secure, efficient, and fully functional before deployment.

**TEST CASES**

These are the detailed steps, conditions, and expected results used to verify if Sales and Employee Management System for AU Water Refilling Station function as intended.

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| Test Case ID | Test Description | Test Steps | Expected Output | Actual Output | Status | Remarks |
| TC001 | Login with valid credentials | 1. Enter username 2. Enter password 3. Click Login | User is redirected to dashboard | User is redirected to dashboard | Pass | N/A |
| TC002 | Login with invalid passwords | 1. Enter username 2. Enter incorrect password 3. Click Login | Error message appears | Error message appears | Pass | N/A |
| TC003 | Adding new employee information | 1. Enter full name 2. Enter Contact number 3. Address 4. Choose date 5. Click Submit | A message showing that adding new employee is successful | A message showing that adding new employee is successful | Pass | N/A |
| TC004 | Updating employee information | 1. Retrieve information from table records 2. Choose and enter the update data | Message showing that updating employee is successful | Message showing that updating employee is successful | Pass | N/A |

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| TC005 | Deleting new employee | 1. Retrieve information from table records 2. Click Delete | Confirmation message showing if the user is sure in deleting the employee information | Confirmation message showing if the user is sure in deleting the employee information | Pass | N/A |
| TC006 | Adding new sold gallons | 1. Enter regular water gallon 2. Enter Container with water 3. Enter regular container sold 4. Enter small water gallon 5. Enter small Container with water 6. Enter small container sold 7. Click Submit | Show message that adding new sales is successful | Show message that adding new sales is successful | Pass | N/A |
| TC007 | Updating sold gallons | 1. Retrieve information from table records 2. Choose and enter the update data 3. Click Update | message showing that updating sold data is successful | message showing that updating sold data is successful | Pass | N/A |

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| TC008 | Deleting sold gallons | 1. Retrieve information from table records 2. Click Delete | Confirmation message showing if the user is sure in deleting the sold information | Confirmation message showing if the user is sure in deleting the sold information | Pass | N/A |
| TC008 | Generating Sold Reports | 1. Select at least two rows from table records 2. Click generate report | message showing that the user is requesting for report for chosen date in the chosen rows | message showing that the user is requesting for report for chosen date in the chosen rows | Pass | N/A |
| TC009 | Inputting salary for employee | 1. Choose the Full name of employee 2. Choose date of sales 3. Enter Quantity 4. Click Submit | Show message that recording the sales of an employee is successful | Show message that recording the sales of an employee is successful | Pass | N/A |
| TC010 | Updating salary for employee | 1. Retrieve information from table records 2. Choose and enter the update data | message showing that updating the data is successful | message showing that updating the data is successful | Pass | N/A |

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| TC011 | Deleting salary of employee | 1. Retrieve information from table records 2. Click Delete | Confirmation message showing if the user is sure in deleting the salary of employee | Confirmation message showing if the user is sure in deleting the salary of employee | Pass | N/A |
| TC012 | Generating Salary Reports | 1. Select at least two rows from table records 2. Click generate report | message showing that the user is requesting for report for chosen date in the chosen rows | message showing that the user is requesting for report for chosen date in the chosen rows | Pass | N/A |
| TC013 | Recording the monthly expenses | 1. Enter Electricity Bill 2. Enter Water Bill 3. Water filter 4. Date 5. Click Submit | message showing that recording the expenses is successful | message showing that recording the expenses is successful | Pass | N/A |
| TC014 | Updating the monthly expenses | 1. Select row from the record table 2. Choose and enter the updated data 3. Click Update | message showing that updating the record data is successful | message showing that updating the record data is successful | Pass | N/A |

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| TC015 | Deleting the monthly expenses | 1. Select row from the record table 2. Click Delete | Confirmation message showing if the user is sure in deleting the record of expenses | Confirmation message showing if the user is sure in deleting the record of expenses | Pass | N/A |
| TC016 | Exporting Gross Revenue Report | 1. Select row from the record table 2. Click Export Record | A file manager windows shows and can choose where to save the exported report | A file manager windows shows and can choose where to save the exported report | Pass | N/A |
| TC017 | Exporting Salary Report | 1. Select row from the record table 2. Click Export Record | A file manager windows shows and can choose where to save the exported report | A file manager windows shows and can choose where to save the exported report | Pass | N/A |
| TC018 | Restore sold record | 1. Select row from the record table 2. Click Restore | A message will show saying that the restoration of record is successful | A message will show saying that the restoration of record is successful | Pass | N/A |

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| TC019 | Permanently deleting sold record | 1. Select row from the record table 2. Click Delete | Confirmation message showing if the user is sure in permanently deleting the record of sales | Confirmation message showing if the user is sure in permanently deleting the record of sales | Pass | N/A |
| TC020 | Restore gross revenue report record | 1. Select row from the record table 2. Click Restore | A message will show saying that the restoration of record is successful | A message will show saying that the restoration of record is successful | Pass | N/A |
| TC021 | Permanently deleting gross revenue report record | 1. Select row from the record table 2. Click Delete | Confirmation message showing if the user is sure in permanently deleting the record of gross revenue report | Confirmation message showing if the user is sure in permanently deleting the record of gross revenue report | Pass | N/A |
| TC022 | Restore employee salary record | 1. Select row from the record table 2. Click Restore | A message will show saying that the restoration of record is successful | A message will show saying that the restoration of record is successful | Pass | N/A |

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| TC023 | Permanently deleting employee salary record | 1. Select row from the record table 2. Click Delete | Confirmation message showing if the user is sure in permanently deleting the record employee salary report | Confirmation message showing if the user is sure in permanently deleting the record employee salary report | Pass | N/A |
| TC024 | Restore employee information record | 1. Select row from the record table 2. Click Restore | A message will show saying that the restoration of record is successful | A message will show saying that the restoration of record is successful | Pass | N/A |
| TC025 | Permanently deleting employee information record | 1. Select row from the record table 2. Click Delete | Confirmation message showing if the user is sure in permanently deleting the record employee information | Confirmation message showing if the user is sure in permanently deleting the record employee information | Pass | N/A |
| TC026 | Restore bills record | 1. Select row from the record table 2. Click Restore | A message will show saying that the restoration of record is successful | A message will show saying that the restoration of record is successful | Pass | N/A |

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| TC027 | Permanently deleting bills record | 1. Select row from the record table 2. Click Delete | Confirmation message showing if the user is sure in permanently deleting the record of the bills | Confirmation message showing if the user is sure in permanently deleting the record of the bills | Pass | N/A |
| TC028 | Logging out | 1. Click Logout | Confirmation message showing if the user is sure on logging out | Confirmation message showing if the user is sure on logging out | Pass | N/A |

**USER ACCEPTANCE (UAT)**

This is the phase where the clients used the system to test and confirm if the system functionality works as intended.

**Key Test Scenario**

1. Attempts to login to the system.
2. Password changes through a Gmail and OTP verification.
3. Update the prices of the gallon or business products in the dashboard of the system.
4. Add and update employee, referring to the delivery personnel.
5. Insert a sale daily per product category.
6. Input a quantity amount of delivered by the delivery personnel daily.
7. Generate the report of sales and salary.
8. Export the generated report of sales and salary.
9. Delete information from the table by selecting rows.
10. Restore the deleted information when needed.

**Expected Result from Test Scenario**

1. The valid credentials should be accepted and successfully login to the system, if not valid should decline and stays on the login page.
2. The Gmail verification account should accept the registered email only before to proceed of sending an OTP verification for change password and be able to change the password, if not an error message should prompt decline the request.
3. An edit to update the prices of the products such as gallon, gallon with water and container works properly without having any issues.
4. An add, update and delete should work properly as the function intended.
5. After inserting the sale for the specific date, it should computerize computed the equivalent gross revenue of that day.
6. An input of the amount delivered by the delivery personnel should computerize computed the equivalent salary of the employee according to the rate of commission per gallon delivered.
7. The generation of reports for sales and salary should display in Reports page of the system.
8. The export should work well and in Excel type document when being saved in the desktop device of the user.
9. Deleted information should be saved into the backup tables in the Recycle Bin page of the system, enabling the user to retrieve the information when needed.
10. The restore function of the deleted information should be restored from the according table and pages of the system such as the sold and salary.

**Client’s Feedback**

Here goes the feedback for the Sales and Employee Management System from the client, Ms. Willjane Cipres the owner of the AU Water Refilling Station.

After the deployment, the team conducted a daily consultation for the progress and performance of the system and if the client come up with other functionalities to add. Here the development team outlines the result of consultation starting from day one (1).

**Day 1**

So far, I haven’t had any struggles because it’s very easy to use. It seems like everything you need is already set up for you. For example, when processing payroll, you just input the details and the total immediately appears. It’s convenient and secure too the account password is well protected. It’s especially secure when you change your password because your new password isn’t easily exposed; when you update it, an OTP is automatically sent to you so you’ll immediately known if someone else is trying to access your account.

Right now, I don’t have any suggestions since I’ve only been using it for a day. However, regarding reporting and extraction, it’s great because you can monitor payroll effectively. As I mentioned earlier, you can see which entries have been processed based on the indicated rows when generating a report.

**Day 2**

Now I thought it would be nice if I could change an employee's commission so that it's not just fixed at one value, which would be better when increasing payroll.

**Day 3**

It's still the same, I haven't encountered any problems with the system, and I still don't have any suggestions.

**Day 4**

It's still the same, the system remains in good condition, functioning properly, and all its features are working as expected.

**Day 5**

Right now, it's still the same, I haven't encountered any issues with the system since it works well and the processing remains fast.

**Day 6**

I can't really think of any additional needs because everything I require is already there, and the primary functions I need are still working properly.

**Day 7**

It's still the same, there are no issues with the system, and it continues to work well.

**List of Necessary Improvements and Fixes**

These are the suggestions, bugs, and issues that is encountered by the client and need for adjustment would be written.

1. Addition of salary commission per delivered gallon for employee’s salary.

**CONCLUSION AND RECOMMENDATION**

The testing phase plays a crucial role in ensuring the reliability, accuracy, and performance of the Sales and Employee Management System for AU Water Refilling Station. Through systematic testing procedures, the development team has identified and resolved defects, validated functionalities, and ensured that the system meets the expected requirements. By following structured testing methodologies, the system has been optimized for stability and efficiency before deployment.

To maintain the integrity and quality of the system, the development team recommends the following

1. Conduct regular testing cycles for future updates to prevent potential issues.
2. Perform user acceptance testing (UAT) to validate system usability and performance in real-world scenarios.
3. Implement continuous monitoring and debugging to detect and resolve issues post-deployment.
4. Document all test cases, defects, and resolutions for future reference.

**CONCLUSION AND RECOMMENDATION**

Based on the results of the extensive testing conducted, the AU Sales and Employee Management System has been thoroughly evaluated for its functionality, security, performance, and usability. The system has successfully met the intended business requirements, including accurate salary computation, efficient employee management, seamless sales tracking, and comprehensive report generation. Through multiple testing phases, including alpha, beta, stress, and penetration testing, all critical features were assessed, and no major issues remain unresolved. Any previously identified bugs and vulnerabilities have been addressed to ensure a stable and fully operational system.

With the system proving to be reliable, efficient, and secure, it is now ready for deployment, pending final approval from the end-user.