**ASTANA IT UNIVERSITY**

**SOFTWARE QUALITY ASSURANCE**

**TEST PLANS FOR DATABASE TESTING**

**Project Name:** Customer Relationship Management Database Testing

**Test Plan ID:**  vb

**Version:**  1.0

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**Last Updated By:** Mariyam

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**Test Environment:** PostgreSQL 14

**Testing Approach:** Manual testing

**Test Coverage:** Data integrity, Data retrieval, Security

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**Link from Roadmap:** Link

**Link to the Github repository:** Link

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1. **Objectives**

* The primary goal of this test plan is to validate the functionality, integrity, performance, and security of the Customer Relationship Management (CRM) Database. The objective includes ensuring data integrity and accuracy, validating data retrieval and manipulation operations, assessing the performance of database queries and operations, and verifying the security measures implemented in the CRM Database system.
* To achieve these objectives, the test approach involves testing the database constraints to maintain data integrity, validating data retrieval and manipulation operations, conducting performance tests to evaluate query efficiency, and performing security tests to safeguard sensitive customer data.
* The test environment will utilize PostgreSQL 14 as the database platform, along with a specific operating system, and relevant testing tools. The test deliverables encompass a comprehensive test plan document, well-defined test cases with steps and expected results, detailed test execution reports, and thorough defect reports.
* A specified test schedule will be established, indicating the start and end dates of the testing process. Potential risks, such as inadequate test data, will be identified, and mitigation strategies will be implemented to address these risks effectively.

1. **Scope**

The scope of this test plan encompasses the following components of the Sales Management System database:

* 1. Customer Table: This includes testing the creation, retrieval, modification, and deletion of customer records. It involves validating data integrity, accuracy, and the enforcement of constraints on customer data.
* 2. Order Table: This involves testing the functionality related to order management, including creating new orders, updating existing orders, and retrieving order information. The focus will be on verifying the correctness and completeness of order data.
* 3. Inventory Table: This component entails testing the inventory management functionality, including adding new inventory items, updating inventory quantities, and retrieving inventory information. The objective is to ensure accurate tracking of inventory data.
* 4. User Authentication and Authorization: This involves testing the user authentication and authorization mechanisms implemented

**Example: The scope of this test plan encompasses the following components of the Sales Management System database:**

**| Component | Description |**

**|-------------------------------------------|-----------------------------------------------------|**

**| Customer table | Testing the creation, retrieval, modification, and deletion of customer records. This includes validating data integrity, accuracy, and enforcing constraints. |**

**| Order table | Testing the functionality related to order management, such as creating new orders, updating existing orders, and retrieving order information. The focus is on validating the correct handling of order data. |**

**| Inventory table | Testing the inventory management functionality, including adding new inventory items, updating inventory quantities, and retrieving inventory information. The goal is to ensure accurate tracking of inventory data. |**

**| User authentication and authorization | Testing the user authentication and authorization mechanisms. This involves verifying user login functionality, access control, and ensuring that only authorized users can access and manipulate customer data. |**

**| Data backup and recovery | Testing the backup and restore processes to ensure the reliability and effectiveness of data backup mechanisms. This includes validating the ability to backup and restore customer data in case of system failures or data loss. |**

1. **Test Approach**

The testing approach for the Customer Relationship Management (CRM) Database project is manual testing, where testers will perform test scenarios and validate the expected behavior of the database system.

1. **Test Case Template**

| **Test Case ID** | **Description** | **Status** |
| --- | --- | --- |
| TC001 | Verify that a new customer can be successfully created and added to the database. | Pass |
| TC002 | Verify that searching for a specific customer by ID and name returns the correct result. | Pass |
| TC003 | Validate that the database supports retrieving a list of all customers. | Pass |
| TC004 | Verify that validation rules are applied when updating customer data, such as field constraints or data type checks. | Pass |
| TC005 | Validate the deletion of a customer record and ensure that it is no longer present in the database. | Pass |
| TC006 | Verify that the database enforces a primary key constraint on the customer ID field, preventing duplicate or null values. | Pass |
| TC007 | Validate the behavior of the foreign key constraints when a referenced customer is deleted or updated. | Pass |
| TC008 | Validate that the database enforces appropriate data types for customer fields, preventing invalid or mismatched data. | Pass |
| TC009 | Verify that sensitive data, such as passwords or credit card numbers, is stored securely using encryption techniques. | Pass |
| TC010 | Validate the encryption and decryption processes to ensure the data is stored and retrieved correctly. | Pass |

1. **Test Schedule**

The test execution for the database testing will be conducted according to the following schedule:

| **Test Activity** | **Start Date** | **End Date** |
| --- | --- | --- |
| Test Case Creation | 2023-05-20 | 2023-05-25 |
| Test Environment Setup | 2023-05-26 | 2023-05-27 |
| Test Execution | 2023-05-28 | 2023-05-31 |
| Test Reporting and Documentation | 2023-06-01 | 2023-06-01 |

**6.** **Test Deliverables**

The following deliverables will be produced as part of this testing effort:

1. Test Plan Document:

A comprehensive document outlining the objectives, scope, approach, and schedule of the database testing. It provides guidance and instructions for the testing team to follow.

2. Test Case Documents:

Detailed test cases that cover various scenarios for validating different components of the Sales Management System database. Each test case includes test steps, expected results, and any necessary test data.

3. Test Execution Reports:

Reports summarizing the execution of test cases, including the test case ID, description, pass/fail status, and any issues encountered during the testing process. These reports provide a clear overview of the testing progress.

4. Defect Logs:

A log of all identified defects or issues discovered during the testing. Each defect should include details such as a description, severity level, steps to reproduce, and the person responsible for resolving the defect.

5. Final Test Report:

A comprehensive report summarizing the entire database testing effort. It includes an overview of the testing activities, test coverage, test execution results, identified issues, recommendations for improvement, and a conclusion.

**7.** **Test Dependencies**

Test Data: Prepare a comprehensive set of test data that covers different scenarios, including valid and invalid customer records, orders, and inventory items. Ensure the data is properly documented for future reference.

Test Environment Setup: Document the setup steps for the test environment, including the installation and configuration of pgAdmin NoSQL with the CRM database. Include any required settings, access credentials, and network configurations.

Test Execution Reports: Generate detailed test execution reports that document the steps taken, actual results, expected results, and any identified defects or issues. Include screenshots or logs if necessary to provide additional evidence.

Defect Reports: Document any identified defects or issues in a separate report, including the defect ID, description, severity, steps to reproduce, actual results, and expected results. Collaborate with the development team to track and resolve these issues.

Test Plan Updates: Regularly update the test plan as necessary to reflect any changes or additions based on the evolving requirements of the CRM database. Keep the document organized, easily accessible, and properly versioned for future reference.