**ASTANA IT UNIVERSITY**

**SOFTWARE QUALITY ASSURANCE**

**TEST REQUIREMENTS FOR DATABASE TESTING**

Project Name: | Database Testing for Sales Management System |

Test Plan ID: | DBT-2023–001 |

Version: | 1.4 |

Date Prepared: | 31.05.2023 |

Last Updated By: | Arukhan Otarova |

Last Updated Date: | 07.06.2023 |

Test Environment: | PostgreSQL 13.2, Windows 10 |

Testing Approach: | Manual Testing |

Test Coverage: | Data integrity, Data retrieval, Performance, Security |

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Reviewed By: Tleubayeva A.O.

Link from Roadmap: [https://trello.com/b/lV5qYVkt/mb]

Link to the Jira repository: [https://jirdone.atlassian.net/projects/MOV?selectedItem=com.atlassian.plugins.atlassian-connect-plugin:com.deviniti.atlassian.apps.rtm\_\_project-main-view#!/requirements/issues-list-view/243906

Link to the Github repository: [https://github.com/T1N1Rl/SQA\_8practice]

**Astana, 2023**

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**1 INTRODUCTION**

The introduction section provides an overview of the test requirements document for database testing. It sets the context and outlines the purpose, scope, and structure of the document.

* 1. **Purpose**

The goal of this document is to outline the Cinema Paradiso Movie Database's test requirements. It guides the testing team in conducting comprehensive testing to ensure the database system's functionality, performance, security, and reliability. The scope of this document includes various aspects of the database system, including data integrity, data retrieval, performance, security, backup and recovery, and data migration.

* 1. **Scope**

The following are the test objectives for the Cinema Paradiso Movie Database:

* Data Reliability:

Validate that data is correctly recorded and preserved in the database.

Make certain that data constraints, such as data types, ranges, and uniqueness, are followed.

Check that data integrity rules, such as referential integrity, are appropriately applied.

* Information Retrieval

Try retrieving movie information such as a synopsis, ratings, reviews, and recommendations.

Validate the search functionality using different criteria, such as title, genre, or actor.

Ensure that prompt retrieval of relevant and correct data occurs.

* Efficiency

Examine the efficiency of database queries and operations like movie search and retrieval.

Measure database transaction response times to ensure they meet acceptable performance standards.

Examine the database system's ability to handle a large number of concurrent user requests.

1. **TEST REQUIREMENTS**

This section outlines the specific test requirements for the database testing. Each requirement is assigned a unique identifier and described along with the corresponding test cases, acceptance criteria, and status.

**2.1 Requirement ID:** [Unique identifier for each requirement]

**2.1.1 Requirement Description:** [Brief description of the requirement]

**2.1.2 Test Cases:** [List of test cases to validate the requirement]

**2.1.3 Acceptance Criteria:** [Criteria to determine if the requirement is met]

**2.1.4 Status:** [Pending/Approved/Rejected/Implemented]

The table below provides an example format for documenting test requirements:

|  |  |  |  |
| --- | --- | --- | --- |
| Requirement ID | Requirement Description | Test Cases Executed | Test Case Status |
| DBT-REQ-001 | Customer should be able to browse and search movies based on various criteria | TC001 | Passed |
| DBT-REQ-002 | Detailed information about each movie should be provided | TC002 | Passed |
| DBT-REQ-003 | Customer should be able to register for an account | TC003 | Passed |
| DBT-REQ-004 | Customer should be able to manage their rental queue | TC004 | Passed |
| DBT-REQ-005 | Customer should be able to check movie availability before adding to the queue | TC005 | Passed |
| DBT-REQ-006 | Customer should be able to request a rental and proceed to checkout | TC006 | Passed |
| DBT-REQ-007 | Rental fees should be calculated based on rental duration | TC007 | Passed |
| DBT-REQ-008 | Users should be able to manage their account settings | TC008 | Passed |
| DBT-REQ-009 | Rental history should be tracked for users | TC009 | Passed |
| DBT-REQ-010 | Users should be able to filter movies by rating | TC010 | Passed |
| DBT-REQ-011 | Users should receive rental reminders and notifications | TC011 | Passed |
| DBT-REQ-012 | Customer support channels should be available for users | TC012 | Passed |
| DBT-REQ-013 | Users should be able to filter movies by category | TC013 | Passed |
| DBT-REQ-014 | The movie's language(s) should be prominently displayed | TC014 | Passed |
| DBT-REQ-015 | Dates and times should be displayed in the user's preferred format and time | TC015 | Passed |
| DBT-REQ-016 | Customer address information should be captured during registration | TC016 | Passed |

*Note: The requirement IDs should be unique and consistent throughout the document. The test cases listed should correspond to the respective requirement. The status column helps track the progress and status of each requirement (e.g., pending, approved, rejected, implemented).*

1. **ASSUMPTIONS AND DEPENDENCIES**

This section describes the assumptions and dependencies for testing the Cinema Paradiso Movie Database. It clarifies the conditions and requirements for a successful test execution.

Assumptions:

The database system is properly installed and configured.

Required access privileges and permissions are granted to the testing team.

Test data is available and representative of real-world scenarios.

The testing environment closely resembles the production environment.

Dependencies:

Availability of test environment, including hardware and software resources.

Completion of any prerequisite tasks or activities before initiating the testing process.

Timely availability of any dependent components or systems required for testing (e.g., APIs, external services).

By documenting the assumptions and dependencies, the testing team can have a clear understanding of the underlying factors that may impact the testing process and take necessary actions to address them.

1. **TESTING APPROACH**
   1. **Test Levels**

The following test levels will be included in the Cinema Paradiso Movie Database database testing:

Unit Testing: This level of testing focuses on ensuring the proper functionality of individual database components such as tables, stored procedures, and functions.

Integration testing verifies the interaction of different database components and their flawless integration into the overall system.

System testing entails testing the entire Cinema Paradiso Movie Database to ensure that it satisfies the specified functional and non-functional requirements.

Acceptance testing is used to determine whether the database system meets the expectations and requirements of stakeholders and end users.

* 1. **Test Types**

During database testing, the following types of tests will be run:

Functional testing guarantees that the database system performs as expected and satisfies the stated functional criteria.

Performance testing focuses on evaluating the database system's responsiveness, scalability, and efficiency under various workload conditions.

Security testing is performed to discover and resolve any vulnerabilities or flaws in the database system, assuring sensitive data security.

Data Integrity Testing: Data integrity testing ensures that the data contained in the database is correct, consistent, and dependable.

Usability testing evaluates the usability and intuitiveness of the database system's interface and functionalities.

* 1. **Test Techniques**

During database testing, the following test techniques will be used:

Black-box Testing: This technique focuses on testing the database system's functionality and behavior without taking into account its internal structure or implementation.

White-box testing entails inspecting the database system's internal structure and logic to guarantee full test coverage.

Boundary Value Analysis (BVA): This approach entails evaluating the database system with both minimum and maximum boundary values to ensure that it behaves correctly at the limits.

Equivalence Partitioning entails separating the input data into groups or partitions and selecting representative test cases for each division.

Error guessing is an intuitive method that entails predicting probable mistakes or faults based on the tester's expertise and domain knowledge.

* 1. **Test Coverage**

The following areas of the Cinema Paradiso Movie Database will be tested:

Data Integrity: Ensuring the database's accuracy, consistency, and validity.

Data Retrieval: Ensuring that database queries and retrieval processes provide accurate and efficient results.

Performance: Evaluating the database system's performance under various loads and ensuring optimal response times.

Security: Validating the implementation of security measures to protect sensitive data, such as access controls, encryption, and secure authentication.

Backup and recovery testing entails ensuring that data can be recovered in the event of a system failure or data loss.

Data Migration: Ensuring that data is successfully migrated from old systems or during system upgrades while maintaining data integrity and consistency.

1. **TEST RENVIRONMENT**
   1. **Hardware Requirements**

The following hardware requirements are required to set up the Cinema Paradiso Movie Database testing environment:

Database hosting server:

Minimum: Intel Core i5 CPU, 8GB RAM, 100GB storage

Intel Core i7 CPU, 16GB RAM, and 250GB SSD storage are recommended.

Client Computers:

Minimum requirements: Intel Core i3 CPU, 4GB RAM, and 250GB storage.

Intel Core i5 processor, 8GB RAM, and 500GB storage are recommended.

Local Area Network (LAN) provides consistent communication between the server and client devices

* 1. **Software Requirements**

The Cinema Paradiso Movie Database testing requires the following software requirements:

Database Management System (DBMS): PostgreSQL 13.0 or higher

DBMS Client Tools: pgAdmin 4.0 or higher for PostgreSQL Operating Systems:

Windows Server 2016 or Linux (for example, Ubuntu 20.04)

Windows 10 or macOS Big Sur clients

It is recommended that the latest updates and patches be installed on both the server and client machines.

* 1. **Test Data**

For Cinema Paradiso Movie Database testing, the following test data needs should be considered:

Data types include:

Information about the film: Titles, category, actors, rating, and suggestions are all available.

Information about the customer: Names, addresses, email addresses, and payment data

Rental history: Rental durations, fees, and history

Creating Test Data:

Test data can be created manually or automatically utilizing data generating tools.

A range of test scenarios and realistic datasets may be generated using automated techniques.

Data Privacy and Security:

Ensure compliance with applicable data privacy requirements (for example, GDPR).

To safeguard people' privacy, anonymize or pseudonymize sensitive data.

Follow data security requirements and handle sensitive data safely.

**TEST DELIVERABLES**

* Test strategy: Conduct a database testing by creating test cases and requirements, test plans
* Test plan and estimation: Jira Software
* Test cases and test data: 16 test cases
* RTM: 16 requirements
* Test summary report: 4 reports

**TEST SCHEDULE**

Date: May 30, 2023

Test Planning Phase:

Define test objectives and goals for the database testing.

Identify the scope of the testing.

Determine the test environments and required resources.

Create a test plan outlining the testing approach and strategies.

Obtain necessary approvals for the test plan.

Date: May 31, 2023

Test Environment Setup:

Install and configure the required database management system (DBMS) software.

Set up the test environment, including hardware, network connectivity, and necessary tools.

Prepare test data sets and ensure their availability in the test environment.

Verify the connectivity and accessibility of the database server.

Date: June 1-2, 2023

Test Case Design:

Identify and document test scenarios based on the requirements.

Design test cases to cover various aspects of the database functionality.

Prioritize test cases based on criticality and impact.

Review and finalize the test cases with the stakeholders.

Date: June 3-4, 2023

Test Execution - Functional Testing:

Execute the test cases designed for functional testing.

Validate the behavior and functionality of the database.

Verify data integrity, consistency, and accuracy.

Log and track defects encountered during testing.

Date: June 5-6, 2023

Test Execution - Performance Testing:

Conduct performance testing to evaluate the database's scalability and responsiveness.

Generate a load on the database server to simulate real-world scenarios.

Monitor and measure response times, throughput, and resource utilization.

Identify performance bottlenecks and potential optimizations.

Date: June 7, 2023

Test Execution - Security Testing:

Perform security testing to assess the database's vulnerability to potential threats.

Verify authentication and access control mechanisms.

Test for SQL injection, cross-site scripting (XSS), and other security vulnerabilities.

Evaluate encryption and data protection measures.

**CHANGE HISTORY**

|  |  |  |  |
| --- | --- | --- | --- |
| Version Number | Date of Change | Summary of Change | Person Name |
| 1 | 2023-06-01 | Initial document creation | Dana Orenkyzy |
| 2 | 2023-06-03 | Updated test objectives section | Arukhan Otarova |
| 3 | 2023-06-05 | Revised test case design | Dana Orenkyzy |
| 4 | 2023-06-07 | Incorporated feedback and fixed errors | Arukhan Otarova |

**APPROVALS**

|  |  |  |  |
| --- | --- | --- | --- |
| Version Number | Date of Approval | Summary of Approval | Person Name |
| 1 | 2023-06-01 | Initial document Checking | Dana Orenkyzy |
| 2 | 2023-06-07 | Final confirmation | Arukhan Otarova |

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