**BRANDS Tech Llc.**

**Software Quality Assurance Plan**

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# **Purpose and scope**

* 1. Purpose

The **Quality Assurance Plan** for the **Library Management System Database Design project** aims to establish a unified framework for managing software quality throughout the project’s lifecycle. The plan ensures a shared understanding among all stakeholders, including the acquirer, project team, organization, and the Software Quality Assurance (SQA) team. Its primary purpose is to maintain high standards of quality by incorporating project management, documentation practices, testing procedures, and corrective actions.

The plan focuses on ensuring the successful design and implementation of the Library Management System database, adhering to both functional and operational requirements. It aligns with key project documents such as the **Acquisition Plan**, **Contract**, and **Concept of Operations** to guarantee that quality objectives are met consistently

* 1. Scope

The scope of the project covers the development of the Library Management System’s database, which manages core entities such as:

* Books
* Authors
* Borrowers
* Transactions

This plan outlines the specific SQA activities applicable across all phases of the Software Development Life Cycle (SDLC). It focuses on delivering a robust database system that supports library operations efficiently. The scope encompasses:

* **Testing and verification processes** for system functionality and performance.
* **Documentation standards** and the use of specific tools for quality tracking.
* **Problem reporting methods** and corrective action procedures.

The SQA role is integral to overseeing and controlling the quality of deliverables at every stage of development. By doing so, the plan ensures that all teams (acquirer, SQA, and project members) clearly understand their roles and responsibilities in achieving the project’s quality goals.

* 1. Assumptions and Constrains
* **Assumptions:** The development and testing teams will have access to all required tools, resources, and documentation necessary for the Library Management System Database project.
* **Constraints**: The project is subject to time and budget limitations, along with strict adherence to regulatory standards, including **Republic Act No. 10173 – Data Privacy Act of 2012** for personal data protection and compliance with international quality standards such as **ISO/IEC 25010** and **ISO/IEC 27001**.
  1. Risks

Potential product risks, including **system failures**, **data breaches**, or **performance issues**, are identified early in the project lifecycle. These risks are documented and regularly assessed to ensure that SQA activities are aligned with the level of risk. This proactive approach ensures that appropriate risk mitigation strategies are implemented, ensuring system reliability and data security.

# **Definitions and acronyms**

**Definitions:**

**Library Management System (LMS):** A software application designed to manage various aspects of a library's operations, including cataloging, circulation, and user management.

**Software Quality Assurance (SQA):** A set of activities and processes that ensure software meets specified standards, focusing on both process and product quality throughout the Software Development Life Cycle (SDLC).

**Software Development Life Cycle (SDLC):** The process used for planning, creating, testing, and deploying an information system, which includes phases like requirements gathering, design, implementation, and maintenance.

**Product Risk:** The potential risk that a defect or failure in the product could negatively impact its performance or the user's experience.

**Acquisition Plan:** A document that outlines the strategy and steps for acquiring the system or service, including timelines, budget, and vendor selection criteria.

**Concept of Operations (ConOps):** A document that describes how a system will be used from the perspectives of the stakeholders, detailing its operational context and objectives.

**Corrective Actions:** Actions taken to eliminate the causes of defects or other undesirable situations to prevent recurrence.

**Acronyms:**

**SQA:** Software Quality Assurance

**SDLC:** Software Development Life Cycle

**LMS:** Library Management System

**ConOps:** Concept of Operations

# **Reference documents**

**Government Regulations and Standards**

*Philippine Regulations:*

1. **Republic Act No. 10173 – Data Privacy Act of 2012 (Philippines):** This law governs the collection, processing, and storage of personal information, ensuring the protection of privacy and confidentiality within the Library Management System. Compliance with this act is essential to safeguard the personal data of library users (<https://privacy.gov.ph/data-privacy-act/>).
2. **Republic Act No. 8293 – Intellectual Property Code of the Philippines:** This law protects the intellectual property rights associated with the development and use of software, including the Library Management System. It ensures that proprietary software components are used in accordance with legal provisions (<https://www.officialgazette.gov.ph/1997/06/06/republic-act-no-8293/>).

*International Standards:*

1. **ISO/IEC 25010 – System and Software Quality Requirements and Evaluation (SQuaRE):** This international standard provides guidelines for evaluating the quality of software systems, focusing on functional suitability, performance efficiency, security, and maintainability. These are critical considerations for the Library Management System (<https://www.iso.org/standard/78176.html>).
2. **ISO/IEC 27001 – Information Security Management:** This standard defines requirements for establishing, implementing, maintaining, and improving information security management systems (ISMS), ensuring robust security practices for the data and operations of the Library Management System (<https://www.iso.org/standard/27001>).
3. **ISO/IEC 12207 – Software Life Cycle Processes:** This international standard outlines the processes and activities for software acquisition, development, operation, and maintenance, providing a framework for managing the entire software life cycle of the Library Management System (<https://www.iso.org/standard/63712.html>).
4. **General Data Protection Regulation (GDPR) – European Union:** Although this regulation primarily applies to the EU, it sets a global benchmark for data protection standards. It could impact the Library Management System if the project involves international users or collaboration, ensuring high standards of data privacy and security (<https://commission.europa.eu/law/law-topic/data-protection/data-protection-eu_en>).

**Organizational Reference Documents**

1. **Standard Operating Procedures (SOPs):** These internal guidelines provide the framework for project management, software development, and quality assurance processes within the organization. They ensure consistency in operations, define workflows, and specify responsibilities across teams working on the Library Management System (<https://www.larksuite.com/en_us/topics/project-management-methodologies-for-functional-teams/standard-operating-procedure-sop-for-software-development-teams>).
2. **Coding Standards:** Organizational coding guidelines that establish best practices for software development. These standards ensure uniformity in code style, readability, maintainability, and adherence to security practices throughout the Library Management System’s development (<https://www.lambdatest.com/learning-hub/coding-standards>).
3. **Document Templates:** Predefined templates used for creating and maintaining project documentation, such as design specifications, requirements documents, test plans, and user manuals. These templates streamline the documentation process, ensuring consistency and completeness in reporting.
4. **Quality Management System (QMS):** The organization’s internal policies and procedures for managing quality throughout the development lifecycle. The QMS outlines the steps required to meet quality objectives, including compliance with ISO/IEC standards and internal audits (<https://asq.org/quality-resources/quality-management-system?srsltid=AfmBOorplp3BdOxnBZYRh5eW2AxoZC664AthrrMcA-sIZbr4qNembnDC>).
5. **Risk Management Policy:** An organizational document outlining procedures for identifying, assessing, and mitigating risks within projects. This policy provides a structured approach to risk analysis, ensuring that potential risks in the Library Management System are effectively managed (<https://opentextbc.ca/projectmanagement/chapter/chapter-16-risk-management-planning-project-management/>).
6. **Training Guidelines:** Organizational standards for training team members on software tools, methodologies, and new technologies. These guidelines ensure that all project participants are equipped with the necessary skills and knowledge to contribute to the successful development of the Library Management System (<https://opentextbc.ca/projectmanagement/chapter/chapter-4-framework-for-project-management-project-management/>).
7. **IT Security Policy:** A set of guidelines that define how the organization protects its information technology assets, including data, systems, and networks. This policy ensures that the Library Management System adheres to best practices for cybersecurity and data protection (<https://nces.ed.gov/pubs98/safetech/chapter3.asp>).

**Project-Specific Documents**

1. **Contract:** The official agreement between the project stakeholders, outlining the scope, deliverables, timelines, and terms for the Library Management System Database Design project. This document defines the expectations and responsibilities of all parties involved (<https://opentextbc.ca/projectmanagement/chapter/chapter-9-scope-planning-project-management/>).
2. **Acquisition Plan:** A detailed document that outlines the strategy and steps for acquiring tools, resources, services, and software required for the successful completion of the project. The plan ensures that procurement aligns with the project’s needs and budget (<https://opentextbc.ca/projectmanagement/chapter/chapter-13-procurement-management-project-management/>).
3. **Project Plan:** This document provides an overview of the entire project lifecycle, detailing the timelines, milestones, deliverables, and team responsibilities. It serves as a guide for tracking progress and managing project risks to ensure timely completion (<https://www.projectmanager.com/guides/project-planning>).
4. **Document Plan:** This plan describes the approach for creating, managing, and storing project-related documentation, including design documents, technical specifications, testing reports, and user manuals. It ensures that all documentation is maintained in a structured and organized manner throughout the project lifecycle (<https://www.altexsoft.com/blog/technical-documentation-in-software-development-types-best-practices-and-tools/>).
5. **Test Plan:** A document outlining the testing strategy for the Library Management System, including the scope of testing, types of tests to be conducted, testing environments, and acceptance criteria. The Test Plan ensures that the system is thoroughly tested for functionality, performance, security, and usability (<https://katalon.com/resources-center/blog/test-plan>, <https://www.testrail.com/blog/test-planning-guide/>).

**Compliance Assessment**

The SQA team will assess the project’s compliance with applicable regulations, standards, and organizational requirements throughout the development lifecycle. The assessment process will include:

1. **Regulatory Compliance:** Ensuring the project meets all government regulations, such as the Data Privacy Act (Republic Act No. 10173) and other legal requirements related to data protection and software development (<https://privacy.gov.ph/data-privacy-act/>).
2. **Standards Compliance:** Verifying adherence to relevant international and industry-specific standards, such as ISO/IEC 25010 (Software Quality) and ISO/IEC 27001 (Information Security Management), ensuring the Library Management System meets global best practices (<https://www.mdpi.com/2071-1050/15/7/5828>).
3. **Organizational Compliance:** Confirming that all project activities follow internal organizational reference documents, including Standard Operating Procedures (SOPs), coding standards, and risk management policies (<https://www.epa.gov/sites/default/files/2015-06/documents/g6-final.pdf>).
4. **Contractual Compliance:** Monitoring compliance with the terms outlined in the project’s contract, ensuring that deliverables, timelines, and performance expectations are met (<https://www.cobblestonesoftware.com/blog/contract-compliance-process-beginners-guide>).
5. **Project-Specific Documents:** Ensuring that the project adheres to the documented processes in the Acquisition Plan, Project Plan, Document Plan, and Test Plan. The SQA team will review these documents regularly to ensure alignment with project objectives and to take corrective actions when necessary (<https://www.manageengine.com/products/service-desk/itsm/it-project-management-software.html?network=g&device=c&keyword=it%20project%20management&campaignid=10591226109&creative=466734804871&matchtype=p&adposition=&placement=&adgroup=105035475352&targetid=kwd-11573712&location=1011175&gad_source=1&gclid=Cj0KCQjw1Yy5BhD-ARIsAI0RbXYfRMCmM4jKOAqDf4mCBdTXU1hzwLq9tsLBHeZoaFn5GvC7jI6Noz0aAmU-EALw_wcB>).

# SQA plan overview

## 4.1 Organization and independence

## 4.2 Software product risk

## 4.3 Tools

## 4.4 Standards, practices, and conventions

## 4.5 Effort, resources, and schedule

# Activities, outcomes, and tasks

## 5.1 Product assurance

### 5.1.1 Evaluate plans for conformance

### 5.1.2 Evaluate product for conformance

### 5.1.3 Evaluate product for acceptability

### 5.1.4 Evaluate product life cycle support for conformance

### 5.1.5 Measure products

## 5.2 Process assurance

### 5.2.1 Evaluate life cycle processes for conformance

### 5.2.2 Evaluate environments for conformance

### 5.2.3 Evaluate subcontractor processes for conformance

### 5.2.4 Measure processes

### 5.2.5 Assess staff skill and knowledge

# Additional considerations

## 6.1 Contract review

## 6.2 Quality measurement

## 6.3 Waivers and deviations

## 6.4 Task repetition

## 6.5 Risks to performing SQA

## 6.6 Communications strategy

## 6.7 Non-conformance process

# SQA records

## 7.1 Analyze, identify, collect, file, maintain and dispose

## 7.2 Availability of records