**Human Resource Management System Software Quality Plan**

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# Scope

The Human Resource Management System Quality Plan is a framework to provide with the efficient approach to maintain the software quality throughout the project lifecycle.

The SQA Plan demonstrate all the SQA activities which performed throughout the project Human Resource Management System lifecycle. The activities cover the Requirement, Design, Implementation, Testing and Maintenance phases.

The project HRMS emphasize on resolving issues and delays in the human resource activity within a corporate company. The primary focus of this system is to provide day to day activity carried out in a company. The HRMS users include Admin, HR, Employee and Account. The production of the project is a CRUD application.

# Quality Goals

The goals / objectives met with the HRMS system are mentioned below

**System Requirement Engineering** should be ensured by requirement team, developers and project manager as mentioned in software requirement document. It should ensure the requirement clearly mentioned and free from ambiguity. A detail requirement analysis must carry out as follows

* Ambiguity as number of ambiguous modifiers
* Traceable in number of requirements as per requirement provider
* Completeness should be ensured by number of to be announced and to be decided requirement
* Requirement reviews must be implemented

**Software Design Engineering** should be carried out by developers, designers and project manager to prevent error free design. The design should be referred to software requirement document. A detail design quality analysis must insure following

* Architectural Integrity is carried as per existence of architectural model implementation
* Component completeness is ensured as number of components that is traceable to architectural model and complexity of design
* Number of design patterns followed
* Interface complexity obtained as of functions layout appropriateness.

**Software Development Code** quality is ensured by developers to implement the code as error free as possible. The code must be reusable, scalable and efficiently implemented. The quality is maintained as follows

* Complexity must be reduced which is determined by cyclomatic approach and determining the conditional branches
* Maintainability is ensured by number of design factors involved in the code.
* Understandability must be implemented through internal comments and objects naming conventions
* Reusability is achieved by implemented independent components that could be reuse

**Quality Control** is carried out by testing and maintenance team to reduce the errors and ensure the product is free from faults. It is carried out as follows

* Testing effectiveness is done through number of errors found and correcting an error.
* Acceptance testing and other testing techniques implemented.
* Resource Allocation for staff activity and working hours

# Software Quality Activities

The software quality activities carried for the HRMS system are as below

**Checkpoint**

Creating a project milestone schedule which evaluates the project stage and maintain the deliverable required. It ensures the project activity at each level.

**Reviews**

The purpose of the reviews is to verify the quality of the system and to evaluate it. The reviews are carried at the early stage of software development till the maintenance phase. The objective is to ensure error free implementation.

* Software Requirement Reviews are held to ensure the adequacy in the requirement document.
* Critical Design Reviews are held to critically analyze the defects in the architectural design, components and to ensure the acceptance of the requirement meet as mentioned in the software requirement document.
* Managerial reviews are done to assess the requirement, design and development quality to get the flaws in the process.

**Audits**

The audits are carried to inspect the process carried in the software development lifecycle process by comparing it against the established organization process.

* Software Code Inspection held to ensure all the new module follow the stated requirement.
* Testing description is inspected and audited against the functional requirement.
* Physical Audit is held to verify the documentation and its system implementation are consistent.
* Functional Audit are done to verify all the requirement are met as mentioned in software requirement document.
* All the Validation are carried out as per inspection report.

**Testing**

The testing is done to determine an error and bug free system and process. It ensures that the end product is highly verifiable.

* Unit testing by developer is held to determine faults in the code.
* Black box testing is held by Quality Assurance team to find out the interface error.
* White box testing is held by developers and Quality Assurance team to test the complete system modules and components with its architecture as well.
* Beta Testing are held by selected users to ensure the functional requirement are met.

# Software Methodology

The software methodology is a systematic way to manage a project to follow software development lifecycle. The software methodology adopted for Human Resource Management System is **Agile (Scrum) Methodology**. The purpose of choosing Agile methodology is to have a flexibility to adapt changes in the requirement which could easily be reflected in the design, development, testing and maintenance phase. The development complexity is reduced and it focuses on facilitating rapid development.

# Tools and Techniques

The tools that are used in the production of Human Resource Management System are

* Microsoft Word 2019 for the documentation
* Papyrus for the software designing and building architecture
* Visual Studio Code for the development of the software
* MySQL Workbench for the database system
* Selenium for the software testing and validation

The Software Engineering techniques followed are

* Interviews and Questionnaire for the requirement gathering process
* Functional Analysis System Technique for the requirement analysis
* Work Break Structure (WBS) for identifying systems component
* Functional Point (FP) analysis estimation for the functional size of the software application
* Source lines of code (SLOC) to measure the software source code in order to reduce complexity

# Problem Reporting & Correction

The project will be developed with all the guidelines and standards. Each team will be responsible for the identification of any error and problems that could occur during development, testing and maintenance phase. The task of the testing team is to validate the system against the given requirement document and report to the development team if any problems found.

The following problems can arrive

* The development and testing tools become outdated which will be reported to project manager.
* The technical expertise developer is not available within team.
* The deployment of the system causes problems at client side.

The above problems can be corrected as

* Updated tools need to be purchased/ downloaded.
* New recruitment for the required technology stack in the project.
* Provide certification and specialization to the personnel working in the project.
* Maintenance team is required to correct the deployment issues.

The task of the development team is to recover from the problems that was reported by testing and maintenance team. The testing team provides a detailed analysis test report to the development team with which the development team will correct the problems.