

**GoldFolks**

**Software Quality Assurance (SQA) Plan**

**By ElevenDegree**

**Date: 11 September 2021**

**Signature Page**

**Prepared by: LOW JIN TENG JACKSON** **Date: 3 September 2021**

**Reviewed by 1: LIONEL WONG ZHI NENG Date: 7 September 2021**

**Reviewed by 2: Ng Chi Hui**   **Date: 7 September 2021**

**Approved by: CHAN SHAO JING**   **Date: 11 September 2021**

**Document Change Record**

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision** | **Description of Change** | **Approved**  **by** | **Date** |
| **0.10** | **Initial Template** | **Chan Shao Jing** | **3 September 2021** |
| **1.00** | **Completed all the sections with the relevant information** | **Chan Shao Jing** | **11 September 2021** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Contents**

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

￼

# Purpose and Scope

## Purpose

The purpose of this Software Quality Assurance (SQA) Plan is to establish the goals, processes, and responsibilities required to implement effective quality assurance functions for the GoldFolks project.

The Software Quality Assurance Plan provides the framework necessary to ensure a consistent approach to software quality assurance throughout the project life cycle. It defines the approach that will be used by the QAM and Software Quality (SQ) personnel to monitor and assess software development processes and products to provide objective insight into the maturity and quality of the software. The systematic monitoring of products, processes, and services will be evaluated to ensure they meet requirements and comply with policies, standards, and procedures, as well as applicable Institute of Electrical and Electronic Engineers (IEEE) and ISO standards.

## Scope

The purpose of SQA is to ensure that the software developed does not deviate from the original intended product. SQA is also concerned to identify any errors, omissions, inconsistencies, and alternatives, enhancements or improvements that can be made at any stage of development.

GoldFolks is an application built for the elderly. It allows users to set reminders for their medicine, has exercise videos and simple games to help the users with their physical and mental well-being. The suppliers of this software are Google Play Store and Apple App Store.

# Reference Documents

* IEEE STD 730-2002, IEEE Standard for Software Quality Assurance Plans (<http://standards.ieee.org/reading/ieee/std_public/description/se/730-2002_desc.html>)
* ISO IEC 90003:2004 Software Standard (<http://praxiom.com/iso-90003.htm>)
* Project Plan
* System Requirement Specifications
* Dartdoc guidelines (<https://dart.dev/guides/language/effective-dart/documentation>)

# Management

This section describes the management organizational structure, its roles and responsibilities, and the software quality tasks to be performed.

## Management Organisation

The implementation of quality assurance system is the responsibility of the Quality Assurance Manager (QAM).

### Project Management

The Project Manager will be responsible for approving:

* The system requirement specification document
* The overall time scale for the project
* The choice of system development life cycle
* The choice of software development tools and techniques utilised
* The selection of project teams
* The training of project teams

### Assurance Management

The QAM provides Project Management with visibility into the processes being used by the software development teams and the quality of the products being built. The QAM maintains a level of independence from the project and the software developers.

In support of software quality assurance activities, the QAM has assigned and secured Software Quality personnel from the pool of available SQ trainees to coordinate and conduct the SQ activities for the project and report back results and issues.

## Tasks

This section summarizes the tasks (product and process assessments) to be performed during the development of software. These tasks are selected based on the developer’s Project Plan and planned deliverables and identified reviews.

### Product Assessments

The following product assessments will be conducted by SQ personnel:

* Game Component
* Accurate Medicine Reminders
* Offline Functionalities
* Easy-to-use User Interface
* Stability of Application
* Loading Speed
* Exercise Video Access

### Process Assessments

The following process assessments will be conducted by SQ personnel:

* Ensuring deadlines are followed.
* User-friendliness is prioritized.
* Requirements stated in SRS are all met.
* Evaluation of all team members’ technical skillset and knowledge
* Updates on a regular basis
* Easy-to-understand code with appropriate comments

## Roles and Responsibilities

This section describes the roles and responsibilities for each assurance person assigned to the Project.

### QAM

Responsibilities include, but are not limited to:

* Secure and manage SQ personnel resource levels
* Ensure that SQ personnel have office space and the appropriate tools to conduct SQ activities
* Provide general guidance and direction to the SQ personnel responsible for conducting software quality activities and assessments
* Assist SQ personnel in the resolution of any issues/concerns and/or risks identified as a result of software quality activities
* Escalate any issues/concerns/risks to project management

### Software Quality Personnel

Responsibilities include, but are not limited to:

* Develop and maintain the project software quality assurance plan
* Generate and maintain a schedule of software quality assurance activities
* Conduct process and product assessments, as described within this plan
* Identify/report findings, observations, and risks from all software assurance related activities to the QAM

# Documents

## Purpose

This section identifies the minimum documentation governing the requirements, development, verification, validation, and maintenance of software that falls within the scope of this software quality plan. Each document below shall be assessed (reviewed) by SQ personnel.

## Minimum Document Requirements

* System Requirement Specifications
* Use Case Diagrams and Descriptions
* Design report on software maintainability
* Software Requirement Specification
* Quality Management
* Software Model Prototype
* Configuration Management Plan
* Change Management Plan
* Release Plan
* Test Plan and Documentation

# Standards, Practices, Conventions and Metrics

## Purpose

This section highlights the standards, practices, quality requirements, and metrics to be applied to ensure a successful software quality program.

## Software Quality Programme

These practices and conventions are tools used to ensure a consistent approach to software quality for all programs/projects.

For the GoldFolks project, the four most important qualities we are looking out for are:

* Functionality – The core idea of the mobile app was to combine different functionalities into an all-in-one/multi-purpose app, and it is important that the app functions as intended.
* Reliability – Functions such as Medication Reminder should be reliable as failure to do so may result in grave consequences.
* Usability – Design should be made suitable for elderly such as large fonts, simple, and intuitive controls.
* Portability – To be able to reach out to more users across different platforms such as Android and IOS devices, and smart watches in the future.

### Standard Metrics

The following standard metrics are the minimum planned metrics that will be collected, reported, and maintained in the area of software quality assurance:

* Fan-in/fan-out
* Length of code
* Length of identifiers
* Cyclomatic complexity
* Depth of conditional nesting
* Fog index

# Software Reviews

## Purpose

This section identifies the number and type of system/subsystem reviews and engineering peer reviews that will be supported by the SQ Personnel. The project milestone chart, and the SQ Personnel resource levels determine the reviews that are supported.

## Minimum Software Reviews

For each review, SQ will assess the review products to assure that review packages are being developed according to the specified criteria, the review content is complete, accurate, and of sufficient detail, and Requests for Action are captured, reviewed, and tracked to closure. In addition, SQ will assess the processes used to conduct the reviews to determine if appropriate personnel are in attendance, correct information is presented, entry and exit criteria are met, and appropriate documents are identified for update.

The following software reviews will be assessed by SQ:

* Project Plan Review
* Requirements Analysis Review
* Software Design Review
* Test Plan Review
* Acceptance Review
* Peer Review
* Post-Implementation Review

# Test

SQ personnel will assure that the test management processes and products are being implemented per Test Plan. This includes all types of testing of software system components as described in the test plan, specifically during integration testing (verification) and acceptance testing (validation). SQ personnel will monitor testing efforts to assure that test schedules are adhered to and maintained to reflect an accurate progression of the testing activities. SQ will assure that tests are conducted using approved test procedures and appropriate test tools, and that test anomalies are identified, documented, addressed, and tracked to closure. In addition, SQ will assure that assumptions, constraints, and test results are accurately recorded to substantiate the requirements verification/validation status. SQ personnel will review post-test execution related artifacts including test reports, test results, problem reports, updated requirements verification matrices, etc.

Unit Testing

We intend to test every individual component of the software and ensure that it functions the way we intend it to. Before testing, we also must ensure that each individual component’s code is testable by using a testing module.

Integration Testing

We will use integration testing to test the compatibility of the individual components combined and see if there are any issues with the interactions between the components. Any interface errors that may occur during this test will be addressed and fixed.

System Testing

We will use system testing to test the entire program, with every single component linked together as a system. We will then try to identify the limitations and possible errors in the application.

Validation Testing

We will use validation testing to ensure that our individual components meet the user’s requirements and needs, and business logic or scenarios are tested, to ensure all critical functionalities are met.

User Acceptance Test

A Beta test application will be released to certain actual intended users to test the software system to ensure that all functions fulfill the requirements specification, and all use cases are handled by the application.

# Problem Reporting and Corrective Action

The problems and findings faced by SQ personnel through the various forms of testing will be recorded and tracked using a centralized Reporting and Corrective Action System, which is maintained in an EXCEL spreadsheet in the company’s documentation webpage.

The findings in the spreadsheet will be reviewed and brought up in our weekly meetings. Following which, the project manager will assign a developer to follow up on the corrective actions needed. All of these will be kept up to date in the spreadsheet throughout, to maintain consistency and transparency in the whole team.

Once the issue is resolved by the developer, the project manager will assign a SQ personnel to test the functionality again. If the functionality is now satisfactory, the issue will be closed by the Project Manager in the centralized system. Otherwise, another issue will be raised by the SQ personnel in the system.

SQ personnel generate, track, and trend assessment findings and observations in a centralized Reporting and Corrective Action System.

Assessment data and corrective action status will be communicated to the QAM during the weekly regular updates or the monthly risk management meetings.

# Tools, Techniques and Methodologies

GoldFolks’ QA team will require access to the following:

## Software Quality Tools

* Microsoft Office tools (i.e., Word, Excel, and PowerPoint)
* Diagrams.net
* Visual Paradigm
* Figma
* Android Studio
* Firebase
* Trello
* TeamGantt

# Media Control

SQ deliverables will be documented in one of the following Microsoft software applications: Word, Excel, or PowerPoint. Deliverables will be in soft copy, except for completed checklists from process and product assessments. See Section 12 for additional details on the collection and retention of key records. Software Quality personnel will request space on the project’s secured server for SQ records. This server is password protected and backed up nightly.

Our project will be stored using the following services

* MediaWiki
* SVN
* Microsoft Teams
* GitHub

MediaWiki is a free open-source service which is easy to use. There are many online resources available to teach users the various functions available to create information in different styles. It also allows for collaboration and concurrent editing of information by different users.

SVN is mainly used for release and version control. It helps to keep track of the different version of source code files and documents uploaded.

Microsoft Teams is used for hosting team meetings and facilitating discussions. It additionally allows for simultaneous editing of documents.

GitHub is used for collaborative work across team members. This   
service helps to update and revise different versions of source code files and   
documents being uploaded upon pulling request, as well as facilitating version control.

# Supplier Control

[Not applicable for this project]

# Record Collection, Maintenance, and Retention

Throughout GoldFolks’ software development life cycle, all of our SQ personnel will record their assessments on documents in the company’s documentation website. These documents will be constantly maintained and updated by the SQ personnel while checked and approved by the QA manager.

We will be mainly keeping copies of the documentation through 2 ways: Hardcopy and Softcopy. Although GoldFolks’ webpage is secured, there may be unforeseen possibilities of data getting corrupted or hacked. Thus, there is a need to have a redundant hard copy of every version of our documentation as back-up.

Our SQ project folders will contain documents such as checklists, assessments, assessment rubrics, supporting objective evidence, notes etc. Every version of each documentation will be archived after 1 year upon completion for good documentation practices.

The table below identifies the record types that will be collected, as well as the Record Custodian and Retention period.

|  |  |  |
| --- | --- | --- |
| **Record Title** | **Record Custodian** | **Record Retention** |
| SQA Assessments | SQ Personnel | One Year |
| SQA Checklists | SQ Personnel | One Year |
| Deliverable Defects | SQ Personnel | One Year |

# Training

SQ personnel have fundamental knowledge in the following areas through prior experience, training, or certification in methodologies, processes, and standards:

* Audits and Reviews (Assessments)
* Risk Management
* Software Assurance
* Configuration Management
* Software Engineering
* ISO 9001, ISO 9000-3
* CMMI
* Verification and Validation

# Risk Management

SQ personnel will assess the project’s risk management process and participate in monthly risk management meetings and report any software risks to the QAM and the project manager.

The QA team has identified some possible risks, the probability, seriousness, consequences, as well as the risk management strategy for the GoldFolks Project.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Risk Type | Risk | Probability | Seriousness | Impact | Strategy |
| Resource | Unable to meet Project Deadline | Moderate | High | Reduced functionalities or delay the deployment date. | Have regular meetings and updates from the developer team to check on their progress. |
| Hardware | Hardware failure e.g., Hard Drive corrupted | Low | High | Unable to meet deadlines as codes cannot be written or ran. | Maintain backups via version control software, e.g., git to minimize the impact. |
| Software | Feature creep | Moderate | High | Will delay the project and may not be able to meet the set deadlines. | Maintain traceability between documentation and code to not go beyond the specified requirements. |
| Communication | Updates to code not communicated to every group member | High | Moderate | Overlapping of codes which may lead to errors while running the program, and documentation may be inaccurate. | Ensure transparency between group members when it comes to updating of work done, which will lead to less miscommunication and conflicting information. |

# SQA Plan Change Procedure and History

SQ personnel are responsible for the maintenance of this plan. It is expected that this plan will be updated throughout the life cycle to reflect any changes in support levels and SQ activities. Proposed changes shall be submitted to the Quality Assurance Manager (QAM), along with supportive material justifying the proposed change.