Test Plan & Strategy for Testing

Project Name: SQS – The Internet Web Application

SQS – Test Plan: The Internet Web Application

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***Reference - Functional/Technical Documentation***

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# INTRODUCTION

## Purpose

This test plan describes the testing approach and overall framework that will drive testing activities for the SQS technical Web Application Project – <https://the-internet.herokuapp.com/challenging_dom> site. The document introduces:

* Test Planning and Strategy: Test Basis and structure of testing, including testing activities. Analysis of the Project Requirement and Technical Specifications, including description test process to ensure validity and verification during this effort. Project Dates and Testing schedules for planning and preparation. Entry and Exit Criteria defined and used alongside Test Case development. Scheduling of testing to ensure all testing can be facilities during specific spirits.
* Implementation and Execution Strategy: describes how the test will be performed and process to identify and report defects, this will include working with Development and QA teams to find resolutions or workarounds to fix and implement fixes for further testing.
* Test Management and Process Strategy: Identifying logistical issues which may arise during the testing effort. Hardware and software failure, resources required are not available for testing period. This can also include communications between teams and departments, escalations or reporting required during this phase in the project.

## Audience

Assigned Tasks must be carried out by the Project, Development, QA and Business sectors. Team member should be allocated these tasks requested in this plan. They should provide further details and information to progress this project further.

* Project Manager should identify and plan testing activities, tasks and overall processes to Project. They should track the performance of testing and tests. Approval of the testing process and documents, final sign off for results progressing toward Release stages.
* The Stake Holders Representatives and participants involved in UAT processes identifying if there are any inconsistencies between Design and functionality using the initial requirements.
* Technical Team review the Test plan and Deliverables required for testing. They will provide the environment, to test the tools and follow the correct processes and procedures when resolving defects and bugs.
* Business Analysts, PM’s, educational staff and consultants provide additional input in relation to features and enhancements requested for functional change.

# TEST STRATEGY

## Test Objectives

The objective of the test is to verify that the functionality of SQS ‘The internet’ Web Application works according to the requirement and technical specifications (where available).

This includes verification of the test scripts, test will be executed, and issues identified. These issues will be categorized by severity and priority to prioritize and retest all high and medium severity defects as specified in the entrance criteria, meaning lower severity defects can be resolved and included in future releases. Risk and Impact analysis is a good method to prioritize issues in the project.

The final product of the test is twofold:

* A production-ready software;
* A set of stable test scripts that can be reused for Functional and UAT test execution.

## Audience

Tasks and duties must be carried out by the Project, Development and QA teams; this would also include Business and Marketing sectors. Teams are allocated task and overall project progress.

## Test Assumptions

**Key Assumptions**

* Production like data required and be available in the system prior to start of Functional Testing
* In each testing phase, Cycle 3 will be initiated if the defect rate is high in Cycle 2.
* Issues Rates and Reporting will keep all Project Teams aware if further cycles of testing are required

**General**

* Testing the Functionality, stability and overall performance of the web application
* Exploratory Testing would be carried out by QA once a build has been released by Development to the nominated environment
* Performance testing is not considered for this estimation. ( at this point, will be considered in later stages)
* Issues, bugs and defects should be logged and reported with valid and adequate detail including a snapshot JPEG format
* The Test Team will be provided with access to Test environment by the Senior/Lead Tester via VPN connectivity
* The Test Team assumes all necessary inputs required during Test design and execution will be supported by Development appropriately.
* Test case design activities will be performed by QA Team
* Test environment and preparation activities will be owned by Dev Team
* Dev team will provide Defect fix plans based on the Defect meetings during each cycle to plan. The same will be informed to Test team prior to start of Defect fix cycles
* BUSINESS ANALYST will review and sign-off all Test cases prepared by Test Team prior to start of Test execution
* The defects will be tracked through JIRA only. Any defect fixes planned will be shared with Test Team prior to applying the fixes on the Test environment
* Project Manager/BUSINESS ANALYST will review and sign-off all test deliverables
* The project will provide test planning, test design and test execution support
* Test team will manage the testing effort with close coordination with Project PM/BUSINESS ANALYST
* Project team has the knowledge and experience necessary, or has received adequate training in the system, the project and the testing processes.
* There is no environment downtime during test due to outages or defect fixes.
* The system will be treated as a black box; if the information shows correctly online and in the reports, it will be assumed that the database is working properly.
* Cycle 3 will be initiated if there are more defects in Cycle 2.

**Functional Testing**

* During Functional testing, testing team will use preloaded data which is available on the system at the time of execution
* The QA Team will be perform Functional testing on SQS Technical Test – The Internet

**UAT**

* UAT test execution will be performed by end users and QA Group will provide their support on creating UAT script.

## Test Principles

* Testing will be focused on meeting the business objectives, cost efficiency, and quality.
* There will be common, consistent procedures for all teams supporting testing activities.
* Testing processes will be well defined, yet flexible, with the ability to change as needed.
* Testing activities will build upon previous stages to avoid redundancy or duplication of effort.
* Testing environment and data will emulate a production environment as much as possible.
* Testing will be a repeatable, quantifiable, and measurable activity.
* Testing will be divided into distinct phases, each with clearly defined objectives and goals.
* Clearly defined entrance and exit criteria are provided.

## Data Approach

* In functional testing, SQS Technical Test – The Internet will contain pre-loaded test data which is used for testing activities.

## Scope and Levels of Testing

### Exploratory

**Purpose**: to ensure critical defects are removed before the next levels of testing commences.

**Scope**: Navigation and edit and delete

**Testers**: QA Team.

**Method**: No defined test scripts, however charts or diagramming may be used in its place.

**Timing**: at the beginning of each cycle.

### Functional Test

**Purpose:**  Functional testing will be performed to confirm the functionality of application. Functional testing is carried out by feeding the input and validates the output provided by the application.

**Scope**: Edit modules, delete modules and alert and success.

**Testers**: QA Team.

**Method**: The test will be performed according to Functional scripts, which are stored in GIT.

**Timing**: after Exploratory test is completed.

#### Test Acceptance Criteria

1. Approved Functional Specification document, Use case documents must be available prior to start of Test design phase.
2. Test cases approved and signed-off prior to start of Test execution
3. Development completed, unit tested with pass status and results shared to Testing team to avoid duplicate defects
4. Test environment with application installed, configured and ready to use state

#### Test Deliverables

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No.** | **Deliverable Name** | **Author** | **Reviewer** |
| 1. | Test Plan | Test Lead | Project Manager/ Business Analyst’s |
| 2. | Functional Test Cases | Test Team | Business Analyst’s Sign off |
| 3. | Logging Defects in JIRA | Test Team | Test Lead/ Programming Lead(Vijay) |
| 4. | Daily/weekly status report | Test Team/ Test Lead | Test Lead/ Project Manager |
| 5. | Test Closure report | Test Lead | Project Manager |

### User Acceptance Test (UAT)

**Purpose**: this test focuses on validating the business logic. It allows the end users to complete one final review of the system prior to deployment.

**Testers**: the UAT is performed by the end users.

**Method**: Since the business users are the most indicated to provide input around business needs and how the system adapts to them, it may happen that the users do some validation not contained in the scripts. Test team write the UAT test cases based on the inputs from End user.

**Timing**: After all other levels of testing are done. Only after this test is completed the product can be released to production.

#### Test Deliverables

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No.** | **Deliverable Name** | **Author** | **Reviewer** |
| 1. | UAT Test Cases | QA Team | Business Analyst’s Sign off |

# EXECUTION STRATEGY

## Entry and Exit Criteria

* The Entry Criteria are used to specify the required conditions to begin test execution. Any Code changes, migrations or fixes need to be reviewed at the end of each sprint cycle.
* The Exit Criteria are the conditions which need to be met before release stages to Implementation Teams.
* These criteria can be modified during Testing, however if these criteria are not met in the instance of Testing, then additional discussions need to determine the impact on the project and product and the next course of action.
* Entry Criteria is required to start the execution phase for the tests. These activities should be confirmed during Test Planning and completed before execution.

**Exit Criteria - Reviewed by QA Team and Technical Team**

* 100% Test Scripts/ Test cases Executed in QA environment
* 95% Pass Rate of Test Scripts/ Test Cases
* 95% of medium severity Issues have been closed
* All remaining Issues closed and documented as enhancement requests for future releases.
* All Expected and Actual Results are documented with the Test scripts
* Test Metrics based on JIRA Report
* All Defects logged in JIRA
* Closure Report and Test Summary Reports including sign off form
* Maintenance of Test Environment, reset or clean up and back up environment where required

## Test Cycles

* + There will be two cycles for functional testing. Each cycle will execute all Test Scripts.
  + The objective of the first cycle is to identify any blocking, critical defects or high defects. It is expected to use some work-around in order to get to all the scripts.
  + The objective of the Test Cycle 2 is to identify remaining high and medium defects, remove workarounds from Test Cycle 1, correcting and adding test scripts where required to obtain Overall test coverage and performance results.
* UAT test will consist of one cycle.

## Validation and Defect Management

* The defects will be tracked through Bug Tracking software only. The technical team will gather information daily from Bug Tracking software, and request additional details from the Defect Coordinator. The technical team will work on fixes.
* It is the responsibility of the tester to open the defects, link them to the corresponding script, assign an initial severity and status, retest and close the defect; it is the responsibility of the Defect Manager to review the severity of the defects and facilitate with the technical team the fix and its implementation, communicate with testers when the test can continue or should be halt, request the tester to retest, and modify status as the defect progresses through the cycle; it is the responsibility of the technical team to review Bug Tracking software on a daily basis, ask for details if necessary, fix the defect, communicate to the Defect Manager the fix is done, implement the solution per the Defect Manager request.

Defects found during the Testing will be categorized according to the bug-reporting tool “Mercury JIRA” and the categories are:

|  |  |
| --- | --- |
| **Severity** | **Impact** |
| 1 (Critical) | * This bug is critical enough to crash the system, cause file corruption, or cause potential data loss * It causes an abnormal return to the operating system (crash or a system failure message appears). * It causes the application to hang and requires re-booting the system. |
| 2 (High) | * It causes a lack of vital program functionality with workaround. |
| 3 (Medium) | * This Bug will degrade the quality of the System. However there is an intelligent workaround for achieving the desired functionality - for example through another screen. * This bug prevents other areas of the product from being tested. However other areas can be independently tested. |
| 4 (Low) | * There is an insufficient or unclear error message, which has minimum impact on product use. |
| 5(Cosmetic) | * There is an insufficient or unclear error message that has no impact on product use. |

## Test Metrics

Test metrics to measure the progress and level of success of the test will be developed and shared with the project manager for approval. The below are some of the metrics

|  |  |  |
| --- | --- | --- |
| **Report** | **Description** | **Frequency** |
| Test preparation & Execution Status | To report on % complete, %WIP, % Pass, % Fail  Defects severity wise Status – Open, closed, any other Status | Weekly / Daily (optional) |
| Daily execution  status | To report on Pass, Fail, Total defects, highlight Showstopper/ Critical defects  Scrum meetings with QA team, Development Team, Business analyst. | Daily |
| Project Weekly Status report | Project driven reporting (As requested by PM) | Weekly – If project team needs weekly update apart from daily and there is template available with project team to use. |

# Test Management Process

## Test Management Issue Tracking Software: JIRA

* JIRA Issue Tracking Tool is used for the Test Management within the project. All Test cases, Data Sets, Test Results and fix information is applied within the JIRA references.
* Hierarchy of the Project Folders with a defined structure created within JIRA to manage testing activities and processes.
* QA Team members will require access and rights to the JIRA tool and Projects - Restricted access for QA Testers.
* Testers will be assigned Test Cases and will be required to add status – Pass/Fail/Blocked where applicable.
* All Test cases during the Test Design and creation must be added to JIRA - Any changes can be applied and tracked within JIRA.
* Issue fixing and retesting, assigned back to initial tester for retest, JIRA reference is updated and closed with relevant details.
* JIRA Reporting, checking progress of projects, issues tracking, monitoring of critical issues and daily reporting with QA Team.

## Test Design Process

* ID and understand Requirements, establish traceability Matrix in JIRA, Preparation of Test Cases, and Test Cases Reviewed for Test, update or improve as advised during Review.
* Test cases will need to be reworked where applicable after sign off from QA Lead/ PM.
* During Planning Meetings - Product Diagramming, Functionality diagramming and customer usage diagramming will be reviewed. This will assist in identifying and covering areas for test but also writing Test Cases.
* Review of all Issues where further information or details is required from Development, Product, Education Teams to ensure issues are resolved correctly.
* Changes to Test Cases updated in JIRA for tracking purposes.

## Test Execution Process

* Execute each test step in the Test cases - Once this has been approved and environments for QA are available. Initial exploratory Testing carried out to define stability in the build released to QA. Testers are assigned Test cases from JIRA.
* Testers should Mark status Pass/Fail or blocked in JIRA, raise Issues for Failed or Blocked Test Cases in JIRA
* Updated Issues where escalation is needed for example showstoppers. This needs to be reported to the Test Lead and Development to prioritize and resolve.
* QA Team daily Reporting and updates - Test Lead: execution status reports, Issue Reports,
* Participate in Issue Analysis while Root Cause Analysis with Development Team. Issue status reported to Project Managers and stakeholders.
* QA Team will work to identify reasons for a fault or issue once reported. This additional information can save Development Time in finding the root cause.
* QA should provide Screenshots and additional information where possible within JIRA references.
* QA Team will repeat Testing until all Test Cases and Steps are executed and completed. If there is an issue, test case or test step which cannot be executed these also need to be captured and Test cases created.
* When issue have been fixed, retesting is required and once passed can be closed.
* Complete Execution of all Test Cases. Final Sign off Project Completion Sign off Form.

## Testing Risks and Constraint Factors

* Scheduling Testing with deadlines and additional Project Processes and UAT Testing. However, this must be controlled from the beginning. QA Teams will need to prepare for these initial stages of the project and use time effectively.
* Resources - Staffing resources may not be available. Or when they have been allocated to this Project, they may not have the Project background to join the Testing sessions. This can take additional time bringing members up to speed.
* Issues which are being found in all stages of testing, however if a critical issue has been uncovered at later stages, this can put additional pressures on the QA Team. Issue Management in this instance is the main focus, to achieve this, it is important to ensure JIRA issues can be resolved and retested in while meeting deadlines.
* Scope of the system has been defined; however additional input or requirements by stakeholders, PM’s and Development mean that changes always need to be considered by the QA Team.
* Testing Environment unavailable or Technical Issues can affect impact testing and project deadlines. It is important to ensure that back up environments are available in this instance (VM’s)
* Delayed Testing can cause issues due to tight deadlines and project objectives. However, in the instance QA Teams must be able to assess the issues noted and make judgements to ensure Testing can be modified and completed.
* Build Stability issues can also be a risk factor as this can take up a lot of time during exploratory test stages. Smoke and Sanity Tests cases could be defined to test initial critical functionality and provide a base level for further functional testing.

**Test Plan Approval**

**Final Sign off by Approvers**

|  |  |  |  |
| --- | --- | --- | --- |
| **Signature of Approver:** |  | **Signature of Approver:** |  |
| **Name:** |  | **Name:** |  |
| **Position:** |  | **Position:** |  |
| **Date:** |  | **Date:** |  |