SQAT Project

Developing a TEST PLAN for Automated Ticket Issuing System for Dhaka Subway Systems (DSS).

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1.0 Test Plan Identifier:

Datasoft, Inc. released 1.0.0.1 Test Plant for Automated Ticket issuing System for Dhaka Subway Systems (DSS).

Note that this Test Plant is primarily based on IEEE 829 standard for Software Test Documentation.

2.0 References:

* TEST PLAN OUTLINE (IEEE 829 FORMAT)

* The Software will support interface to touch screen monitors as well as keyboard interface.

* The Software will support display of the list of the incoming trains, their destinations and arrival and departure times, fare.

* The Software will support limiting the number of tickets purchased at the same time. This privilege control will be done by the administrator access only.

* The software will support ticket cancellation before final confirmation of the purchase.

* The software will support purchase ticket cancellation support by the administrator.

* The software will support credit transaction and validation.

* The software will support next and previous navigation during ticket purchase process.

* The software will support ticket availability information.

* The software will support information display via web.

* The software will use Oracle database server.

3.0 Introduction:

This document is an overview to define our test strategy for the automated ticket selling application of Dhaka Subway Systems. This project's goal is to provide an automated ticket selling system for public use. This document will address the different standards that will apply to the unit, integration and system testing of the specified application. We will utilize testing criteria under the white box, black box and system-testing paradigm. This paradigm will include but is not limited to the testing criteria, methods and test cases of the overall design. Throughout the testing process we will be applying the test documentation specifications described in the requirement. The testing will consist of the following phrases:

- **Unit and integration level:** Adherence to coding standards and successful communication between units.
- **Code Quality assurance:** Acceptance into system level testing buy successfully repeating a small subset of the tests performed in the code and integration level.
- **System level:** compatibility, performance, usability, functionality etc.
- **System quality assurance and acceptance.**
- **Post implementation.**

4.0 Test Items:

The major items and functionalities of the system are given below:

- 24 Hours per week service.
- Ticket availability information display.
- Train arrival and departure time display.
- Touch screen menu selection
- Source and destination selection
- Multiple ticket issue in one transaction
- Limit the number of ticket issue at the same time
- Cancellation of transactions at time during transaction
- credit/debit card transaction
- Coin/taka recognition and acceptance.

5.0 Software Risk Issues:

5.1 Ticket available Information display function to be Tested :

- Ticket availability information display function to be tested.
- Touch screen menus should be tested, because users cannot interact with the software if the touch screen isn't working.
- The transaction function should be tested so customers can pay for the ticket and get the ticket instantly.
- Poorly documented modules or change requests

There are some inherent software risks such as complexity, these need to be identified.

- Transaction safety issue, so that intruders cannot break in and steal information.
- Real time access of clients is a risk issue.
- Government regulations and rules.
- Another key area of risk is a misunderstanding of the original requirements.

6.0 Features to be tested:

This feature will must be tested that are follows:

- Touch screen monitor and keyboard interface.
- Touch screen menu selection.
- Display of trains arrival & departure time, fare information
- Multiple ticket purchase support simultaneously.
- Limiting the number of tickets purchased at the same time by privilege control and administrator access only.
- Ticket cancellation support before final confirmation of the purchase.
- Purchased ticket cancellation support by the administrator.
- Ticket availability information.
- credit/debit card transaction.
- coin/taka recognition and acceptance.
- Displayed information via website.
- Oracle database server support.

7.0 Features not to be tested:

- 24 Hours per week service.
- Ticket availability information display.
- Train arrival and departure time display.
- Touch screen menu selection.
- Source and destination selection.

8.0 Approach:

The following represents the overall flow of the testing process approach

- Identify the requirements to be tested. All test cases shall be derived using the current program specification.
- Identify which particular tests will be used to test each module
- Review the test data and test cases to ensure that the unit has been thoroughly verified and that the test data and test cases are adequate to verify proper operation of the unit.
- Identify the expected results for each test.
- Document the test case configuration , test data and expected results
- Perform the tests.
- Document the test data, test cases, and test configuration used during the testing process. This information shall be submitted via the unit / system test report
- Successful unit testing is required before the unit is eligible for component integration/system testing
- Unsuccessful testing requires a bug report form to be generated. This document shall describe the test case, the problem encountered its possible cause and the sequence of events that led to the problem. It shall be used as a basis for later technical analysis.
- Test documents and reports shall be submitted and any specifications to be reviewed, revised or updated shall be handled immediately.

9.0 Item Pass/Fail criteria:

This section specifies generic pass/fail criteria for the tests covered in this plan. They are supplemented by pass/fail criteria in the test design Specification. Note that “fail” in the IEEE standard terminology means “Successful Test” in our Terminology.

9.1 Component Pass/Fail Criteria :

Test executed on components only pass when they satisfy the signatures, constrains and interfaces dictated by the Object Design Specification for that component. This includes positive tests, negative and stress tests and boundary tests.

If the test exhibits a product failure to meet the objectives of the object design specification, it will fail and a defect/issue will be reported in the defect tracking system for review by the triage team.

9.2 Integration Pass/Fail criteria :

Test executed on integrated components only pass when they satisfy the signatures, constraints and interfaces dictated by both the object design specification and the system architecture specification. This includes positive tests, negative and stress tests, boundary tests and test that explicitly manipulate the interface environment (such as the physical connection to the database server).

If a test exhibits a product failure to meet the objectives of both the object design specification and the system architecture specification , it will fail and a defect/issue will be reported in the defect tracking system for review by the triage team.

9.3 System Pass/Fail criteria :

Tests executed against the system use the functional requirements , non-functional requirements and use cases as oracle to determine pass or fail.

If a test exhibits a product failure to meet the objectives of any of the function requirements, non-functional requirements, or the use cases, it will fail and a defect/issue will be reported in the defect tracking system for review by the triage team.

10.0 Suspension Criteria and Resumption Requirements :

This section specifies the criteria for suspending the testing on the test items associated with the plan. It also specifies the test activities that must be repeated when testing is resume.

10.1 Automated Unit Testing :

As components are being developed, unit tests will be developed to test the interfaces of the components and low -level unit tests will be developed to test the methods of the underlying classes in the components.

As prerequisite to the Build Automated Testing, the automated unit tests will be run in build server on per-build basis.

When Automated Unit Test reports failures, testing will not occur on that build until the failure has been resolved or analysed. Testing will result on a build that passes the automated unit test.

10.2 Build Acceptance Test :

When a build is deemed ready to test by development, a build acceptance test will be run on the build. The build acceptance test will consist of a board, but a shallow set of tests determine the overall stability of the build and decide if it is worth testing.

If the Build Acceptance Testing is fails on a particular build, testing will be suspended until another build is created with any Build Acceptance Testing failure issues fixed, verified by running the Build Acceptance Testing again. Testing will resume on a build that passes the Build Acceptance Testing.

Different build acceptance tests will be developed and used for the different test phase. Component Build Acceptance Test will be small and localized for each of the components. Integration Build Acceptance Test will vary based on the level of integration testing being performed. The system test Build Acceptance Test will contain a set of tests that will utilize each of the components of the system.

10.3 Regression Testing :

On the build by build basis, major bug fixes or code changes will be reviewed to determine the effects they may have on the system. If the changes are deemed to cause a sufficient amount or risk, regression test sets of the appropriately judge size will be created and executed.

A system-wide regression will also be run on the release candidate build to ensure incremental changes to the system have not altered the result of the tests that were run early in the test cycle.

11.0 System Design Changes :

If at any point in time issues are submitted that require a design change to the system, all the testing will be suspended. After the changes to the requirements, system architecture, and object design are made, a review and updates will be performed of the test specification to ensure they are properly aligned with the revised system changes. After updates are made testing will resume. Tests in the vicinity of the change must all be rerun. A 20% of regression of other tests must also be performed to ensure the changes did not adversely affect other parts of the system.

12.0 Test Deliverable :

Datasoft, Inc. has responsibility for the following software testing deliverables and milestones:

Phase 1 Testing Deliverables:

Item Name	Date
Master Test Plan	July 2019
System Test Result Document	August 2019
Acceptance Test Results Documents	September 2019

Phase 2 Testing Deliverables:

Items Name	Date
System Test Results Document	October 2019
Acceptance Test Results Document	November 2019

The developer has responsibility for the following software testing deliverables and milestones:

Phase 1 Testing Deliverables:

Item Name	Date
Completion of Software Coding	July 2019
Completion of Unit, Integration & System Testing	September 2019
Integration Test Results Document	September 2019
Completion of Field Acceptance Testing	October 2019

Phase 2 Testing Deliverables:

Item Name	Date
Completion of Software Coding	November 2019
Completion of Unit, Integration & System Testing	December 2019
Integration Test Results Document	December 2019
Completion of Field Acceptance Testing	January 2019

13.0 Remaining Test cases :

*** 3rd party and off-The-Shelf components**
*** Infrastructure components**
*** Website and GPS device of software interaction.**
*** GUI response and directly database testing.**
*** Create Acceptance Test Plan.**
*** Create System/Integration Test Plan.**
*** Define Unit Test rules and Procedures.**
*** Define Turnover procedures for each level.**
*** Verify prototypes of Screens.**
*** Verify prototypes of Reports.**

14.0 Environment needs :

One separate, controlled system will be required for the initial phase of testing, setup as per one standard, complete office environment. In order to maintain the integrity of the test environment his network will not be accessible to anybody outside this project. The Printer are also exclusively for use by the test network.

1) Hardware Components required

*** 1 Network Controller**
*** 6 Networked PC's (see below)**
*** 1 DAP Workstation**
*** 1 Motorola 620**
*** 1 Oracle Server**
*** 1 Batch Waste Printer**
*** 1 HP LaserJet 4v Printer**

2) PC Specification:

The 6 PC's required for the test environment will include the followings:

1x P100, 1GB HD, and 16Mb RAM [Current Minimum Specification]

3x P166, 1.5GB HD, and 32Mb RAM [Current Standard Specification]

1x P333, 2.5GB HD, and 64Mb RAM [Current Maximum Specification]

These are the various specifications currently in use in different branches. 1 x Pentium running windows NT is also required as the test center for controlling and executing the automated testing.

3) Software

Test IMS Environment

Test IMS region X will be required for the system testing. Additional data will be populated where required.

Test Environment Software

System Test will run in the following software versions:
Custom Desktop Vers.97.0.1

Windows 7 operating System

Visual Basic 5 runtime files

MS Office 2010
Novell Netware

15.0 Staffing and Training Needs:

This section outlines how to approach staffing and training test roles for the project. Staffing is fixed for the duration of this project.

16.0 Responsibilities :

Project Leader -

- ✓ Ensure Phase 1 is delivered to schedule, budget and quality.
- ✓ Ensure exit criteria are achieved prior to system test signoff.
- ✓ Regularly review testing progress.
- ✓ Raise and manage issues/risks relating to the project.
- ✓ Review and signoff Test approach, plans and schedule.

SQA Project Leader –

- ✓ Ensure Phase 1 is delivered to schedule, budget and quality.
- ✓ Regularly review testing progress.
- ✓ Manage issues/risks relating to System test team.\
- ✓ Provide resources necessary for completing system test.

Test Planner/Controller –

- ✓ Ensure Phase 1 is delivered to schedule, budget and quality.
- ✓ Produce high level and detailed test conditions.
- ✓ Produce expected results.
- ✓ Report progress at meetings.
- ✓ Co-ordinate review and signoff test conditions.
- ✓ Ensure exit criteria are achieved prior to system test signoff.

Testers

- ✓ Identify Test data.
- ✓ Resolve Spooling issues (if necessary).
- ✓ Resolve queries arising from remote backup.
- ✓ Support IMS regions.
- ✓ Execute test conditions and markup the results.

Bookkeeping Support

- Provide Bookkeeping technical support (if required).
- Resolve queries (if required).

Technical Support

- Provide support for hardware environment.
- Provide support for test software.
- Provide software to system test environment.

17.0 Schedule:

This section contains the overall project schedule. It discusses the phases and key milestones as they relate to quality assurance. It discusses the testing goals and standards that we would like to achieve for each phase of testing that will be deployed, e.g., Usability testing, Code complete acceptance, Beta testing, Integration testing, Regression testing and System testing.

The key dates for overall Automation Ticketing Application development and testing are outlined below:

Milestones	End Date	Notes	QA Deliverables/Roles
Planning Phase	20/06/2019	At this milestone, the high-level planning should be completed. Some of the deliverables are: Project plan, Program function specifications.	High-level test planning activities which include preliminary development of master QA Plan.

Code Complete - **Infrastructure**	15/07/2019	This milestone is when all infrastructure development and functions should be completed. The testing team should have performed unit and integration testing before checking the code in any build.	The test engineers should have completed or in the final stage of their preliminary infrastructure test plan, cases and other QA documents related to test execution for each feature.
Code Complete - **Function**	15/08/2019	This milestone includes unit testing and code review of each function components prior to checking the code in the test phase. The deliverables include system and unit testing specification and integration plan.	The test engineers should have provided code complete assessment test to development engineer one week prior to code complete review date. The test engineers should also have completed their white box test plan, cases and other QA. Documents related to test execution for each feature or component such as test scenarios, expected results, data sets, test procedures, scripts and applicable testing tools.
Feature Complete	20/09/2019	This phase allows feature to clean up in order to verify the remaining bug fixes and regression testing around the bug fixes. This milestone indicates that the feature is ready for Beta regression.	All bugs verified and QA documentation is finalized. The test Engineers should asses that Automation ticketing application features are ready for Beta regression and have started their preliminary Test Summary Reports.
Regression Test	17/10/2019	This milestone represents that all Automation ticketing application code and GUI interface of the Automation ticketing application is ready for Regression Testing.	Complete the regression test execution of complete system and update the Test Summary Reports for regression.
Ship/Live	20/11/2019	Product is out.	Any unfinished Testing documents should be completed.

18.0 Planning Risks and Contingencies :

Risk	Probability	Risk type	Owner	Contingencies/Mitigation Approach
Unable to acquire the necessary number of skilled personnel as the components become ready to test	30%	Personnel Schedule	Test Manager	Resource for components will be split between the existing resources. Schedule must be adjusted accordingly.
Unable to acquire Some of the necessary hardware and software required for integration and	25%	Equipment	Program Manager, Test Manager, Development	Utilize the existing acquired hardware. Split test execution in morning and evening shifts such that testing can occur for
System testing			Development Manager	Multiple teams in the same day using the limited hardware. This requires support of the development during both shifts.
Third party services utilized in the system become unavailable During testing	5%	Third party	Alliance Manager	Setup a communication channel to a 3rd party to report and handle issues when they occur. Use the communication channel above to stay aware of planned outages and maintenance to help schedule test execution
Components are not delivered on time	25%	Schedule	Development Manager	Integration testing with those components is delivered. Overall integration test approach may be modified to do an appropriate amount of bottom-up as well as top-down or sandwich integration. Schedule must be adjusted accordingly.
Turnover	5%	Personnel	Test Manager	Testers will work in pair on components. If a single member of the team decides to leave, a secondary testing team with the knowledge of the component will still be able to train a new tester or finish the work. Schedule must be adjusted accordingly.

19.0 Approval :

Project Sponsor	Mr. Al Masud (Project Director)
Development Management	Eleasur Rahman
EDI Project Manager	Mostakim Rahman
RS Test Manager	Shohel Rana
RS Development Team Manager	Azmayer Khan
Reassigned Sales	Habib Wahid
Order Entry EDI Team Manager	MD. Ashik Hossain

20.0 Glossary :

Datasoft, Inc	**Datasoft, Inc. Bangladesh**
ATS	Automated Ticket System
IT	Information Technology
MTP	Master Test Plan
PM	Project Manager
Test Case	Test case has always four phases: preparation, execution, verification and finalization. Test execution differs from normal execution, in that there is a verification part
Test Data	The information that is given to the system and expected to get back from the system. Also, real feedback received from the SUT can be considered as a test data
Test Suite	A collection of test case that have the same test objective.
STR	System Test Report
BAT	Build Acceptance Test
QA	Quality Assurance
PM	Project Manager
TM	Test Manager