American International University- Bangladesh (AIUB)

Department of Computer Science

Software Quality and Testing

Summer 2019-2020

A TEST PLAN for Automated Ticket Issuing System for Bangladesh Road Transport Corporation (BRTC)

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Table of Contents

Test Plan Identifier: -

View soft, Inc. Release 0.0.0.1 Software test plan.

This document is based on the IEEE 829-1998 standard. And the additional reference standard is IEEE 1008 for Unit Testing, IEEE 1012 for Validation and IEEE 1059 for verification.

References: -

Kaner, C., Falk, J., Nguyen, H.-Q. Testing Computer Software. Wiley Computer Publishing, 1999.

- Paulk, M., et al., Capability Maturity Model for Software, Software Engineering Institute, Carnegie Mellon University, 1993.
- https://jmpovedar.files.wordpress.com/2014/03/ieee-829.pdf
- Pressman, Roger S. Software Engineering - A Practitioner's Approach. Fifth edition.

The functional requirement of the system:-

- The software will support interface to touch screen monitors as well as keyboard interface.
- The software will support display of the list of incoming buses, their destinations and arrival and departure times, fare.
- The software will support multiple ticket purchase simultaneously.
- 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 purchased 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.

Introduction: -

This is the documentation of software test plan for Automated Ticket Issuing System for Bangladesh Road Transport Corporation (BRTC). This project's goal is providing automated ticket selling for public uses. This document will cover detail information about the management plan used for the project. The intended audience for this document is the designers and the BRTCs of the project. We will utilize testing criteria under the white box, black box, and system testing paradigm. The testing process we will be applying the test documentation specifications described in the IEEE Standard 829 for Software Test Documentation.

Test Items: -

The major functionalities of the system are as follows:-

- 24/7 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 any time during transaction.
- Credit/Debit card transaction.
- Coin/Taka recognition and acceptance.

Software Risk Issues: -

- The Transaction Function should be tested.
- Third party product delivery should be checked.
- Safety should be tested.
- Touch screen menu selection should be tested.
- Poorly documented modules or change requests.
- Complexity of functionality should be checked
- Ticket availability information display function to be tested.
- Ability to use and understand a new package/tool, etc.

Features to be tested:

This feature will must be tested that are follows:

Ø Application notifies users about payment.

Ø Application records routes of every user.

Ø Application checks when ticket is expired and if user is still in vehicle application buys new ticket.

Ø Multiple ticket purchase support simultaneously.

Ø Limiting the number of tickets purchased at the same time by privilege control and the

administrator access only.

Ø Ticket cancellation support before final confirmation of the purchase.

Ø Purchased ticket cancellation support by the administrator

Ø Ticket availability information.

Ø System provides transport line data pushing when changes occur to transport unit application.

Ø Application performs scheduled route optimization and notification.

Ø Application has structured schema for network input.

Ø Displayed information via Website.

Ø Oracle database server support.

Features not to be tested:

The features are not to be tested given bellow:

Ø SMS Gateway's and Google API's functionality will not be tested.

Ø some of the exceptional cases like high workload on server will not be tested.

Ø network congestion and network delays will not be tested.

Ø 24/7 service.

Ø Ticket availability information display.

Ø Touch screen menu selection.

Ø Source and destination Selection.

Ø Credit/Debit card acceptance.

Ø Coin/Taka recognition and acceptance.

Approach:

The following represents the overall flow of the testing process approach:

Ø 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 (STR).

Ø Successful unit testing is required before the unit is eligible for component.

Ø Identify the requirements to be tested. All test cases shall be derived using the current Program Specification.

Ø Integration testing is performed before integrating any new module with the existing modules.

Ø system testing is done to verify that all the functionalities that are integrated, works correctly.

Ø Identify which particular test(s) will be used to test each module

Ø Identify the expected results for each test.

Ø Unsuccessful testing requires a Bug Report Form to be generated. It shall be used as a basis for later technical analysis.

Ø Test documents and reports shall be submitted. Any specifications to be reviewed, revised, updated shall be handled immediately.

Ø Document the test case configuration, test data, and expected results.

Ø Perform the tests.
integration/system testing.

Item Pass/Fail criteria:

Ø **Component Pass/Fail criteria**
Tests executed on components only pass when they satisfy the signatures, constraints, and interfaces dictated by the Object Design Specification for that component. This includes positive tests, negative and stress tests, and boundary tests.
If a 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.

Ø **Integration Pass/Fail criteria**

Tests 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 conditions, and tests 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.

Ø **System Pass/Fail criteria**
Tests executed against the system use the functional requirements, non-functional requirements, and use cases as the oracle to determine pass or fail.
If a test exhibits a product failure to meet the objectives of any of the functional requirements, nonfunctional 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.

Suspension Criteria and Resumption Requirements:

Know when to pause in a series of tests.

Ø If the number or type of defects reaches a point where the follow on testing has no value, it makes no sense to continue the test; you are just wasting resources.

Specify what constitutes stoppage for a test or series of tests and what is the acceptable level of defects that will allow the testing to proceed past the defects.

Testing after a truly fatal error will generate conditions that may be identified as defects but are in fact ghost errors caused by the earlier defects that were ignored.

Test Deliverables

View soft Inc. take responsibility for the BRTC provides automated ticket selling software testing deliverables:

Phase 1:

Name of the items	**Date**
System Test Results Documents	August 2020
Acceptance Test Results Documents	September 2020

The developer has responsibility for the following software testing deliverables:

Phase 2:

Name of the items	**Date**
Completion of Software Coding	August 2020
Completion of Unit, Integration & System Testing	August 2020
Integration Test Results Document	September 2020
Completion of Field Acceptance Testing	September 2020

Remaining Test Tasks

- Readily available components.
- Infrastructure components.
- Software interaction with GPS and website
- Database connectivity testing
- GUI Response properly
- Create Acceptance Test plan
- Create Integration Test plan
- Unit test rules provide
- Define Turnover procedures for each level
- Verify prototypes of screen
- Verify prototypes of Reports

Environmental Needs

In initial step need to controlled system testing, setup as per one standard, complete office environment. Maintain integrity of test environment his network will not be accessible to anybody this project. The printers are also need to test the network.

Hardware components required

- 1 Network controller
- 6 Network PC's(see below specifications)
- 1 DAP Workstation
- 1 Motorola 6520
- 1 Oracle Server
- 1 Batch Waste Printer
- 1 HP LaserJet 4v Printer
- 15 Touch screen monitor

PC Specifications

The 6 plc.'s required for the test environment will include the following:

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

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

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

These specifications 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.

Software

Test IMS environments

Test IMS region X will be required for System Testing. Additional or amended data will be populated where required.

Test Environment Software

System Test will be run on the following Software Versions:-

- Custom Desktop Vers.97.0.1
- Windows 7 Operating System
- Visual Basic 5 Runtime Files
- MS Office 2010
- Novell Netware

Staffing and Training needs

This section outlines approach staffing and training the test roles for the project. Staffing is fixed for the duration of this project. It is likely most of the staff will assume some testing role that will be discussed in details in responsibilities section bellow.

Responsibilities

Project Leader- Oindrila Chowdhury

- Ensure Phase 1 is delivered to schedule, budget & quality
- Ensure exit criteria are achieved prior to system test signoff
- Regularly review testing progress with test controller.
- Raise and manage issues/risks relating to project or outside test teams control.
- Review & sign off test approach, plans and schedule.

SQA Project Leader- Md. Rashedul Islam

- 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 – Redwanul Hossen Rafsan

- Ensure phase 1 is delivered to schedule, budget and quality
- Produce high level and detailed test conditions
- Produce expected results
- Report progress at regular status reporting meetings
- Co-ordinate review & signoff of test conditions
- Ensure entrance criteria are achieved prior to system test start.
- Ensure exit criteria are achieved prior to system test signoff.

Testers – Md. Salimullah

- Identify test data
- Supports IMS regions
- Resolve spooling issues
- Bookkeeping integration & compliance(if needed)
- Resolve queries arising from remote backup

Bookkeeping Support

- Provide Bookkeeping Technical support, if required
- Resolve queries , if required

Technical Support

- Provide support for hardware environment
- Provide support for software testing
- Promote software to system test environment

Schedules:

The 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'd 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. For details on the schedule, refer to the Automation ticketing application Project Schedule (this document). For details on general Engineering QA deliverables, refer to the test plan document.

Milestones	**End dates**	**Notes**	**QA** Deliverables/Roles
Planning Phase	28/08/2020	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	02/09/2020	This milestone is when all infrastructure development and functions should be complete.	The Test Engineers should have completed or in the final stages of their preliminary Infrastructure Test Plan, test cases and other QA documents related to test execution for each feature or component such as test scenarios , expected results, datasets, test procedures, scripts and applicable testing tools.
Code Complete-Functions	05/09/2020	This milestone includes unit testing and code review of each function component prior to checking the code into the test phase.	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 or in the final stages of their preliminary White Box Test Plan, test cases and other QA
Feature Complete	07/09/2020	This phase allows for feature clean up to verify remaining bug fixes and regression testing around the bug fixes.	All bugs verified and QA documentation is finalized.

Regression Test	07/09/2020	This milestone represents that all Automation ticketing application code and GUI interface to the Automation ticketing application	Complete regression test execution of complete system and update Test Summary Reports for regression.
Live	08/09/2020	Product is out.	Any unfinished Testing documents should be complete by this period.

Planning Risks and Contingencies:

Risk	**Probability**	**Risk** Type	**Owner**	Contingencies Approach
Unable to acquire the necessary number of skilled personnel as the components become ready to test.	35%	Schedule	Test Manager	Existing resources should be split and Schedule must be adjusted accordingly.
Unable to acquire some of the necessary hardware and software required for testing.	20%	Equipment	Project Manager	Utilize existing acquired hardware by splitting test execution on two shifts.
Turnover	20%	Personal	Test Manager	Testers will work in Groups on components. If a single member of the team decides to leave, other testers with the knowledge of the component will still be able to train a new tester or finish the work.

Approvals:

Project Manager	Oindrila Chowdhury
Test Manager	xxxxxxxx
Project Sponsor	xxxxxxxx
Development Team Manager	xxxxxxxx

Glossary:

ATS	Automated Ticketing System.
IT	Information Technology
PM	Project Manager
BRTC	Bangladesh Road Transport Corporation
QA	Quality Assurance
TM	Test Manager
Test Case	Test case has always four phases: preparation, execution, verification, and finalization. Test execution differs from normal execution in that there is this 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 test data.

Thank You