

**American International University-Bangladesh**

## Faculty of Science and Technology

**Project Title:** Software Test Plan for Automated Ticket Selling System for Bangladesh Road Transport Corporation (BRTC)

|  |  |
| --- | --- |
| **Course Title** | Software Quality And Testing |
| **Section** | C |
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# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Description** | **Author** |
| 0.0.1 | September 10, 2020 | The initial version of  the test plan. | Jannatul,Trisha,Akram,Tazi  n |

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## Test Plan Identifier:

### Southtech, Inc. Release 0.0.0.1 Software test plan.

This project has followed IEEE standards. Project documentation goes as described as in IEEE references. For Unit Testing IEEE 1008 standard and for Validation and verification IEEE 1012 and IEEE 1059 standard has been maintained.

## References:

* W Lewis, Electronic ticketing and validation system and method, 2003.
* 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>
* WB Wilder, Automated ticket sales and dispensing system, 1995.

## Introduction:

This project is about the Automated Ticket Issuing System for Bangladesh Road Transport Corporation (BRTC). The purpose of this project is to digitalize the manual system so that users can book or cancel tickets of their own.

In this documentation project management plan has been discussed and all related information. The intended audience for this document is the designers and the BRTCs of the project. We will follow IEEE standards in this project document. All the testing criteria under the white box, black box, and system testing paradigm will be covered in this project. IEEE Standard 829 for Software Test Documentation will be applying in this project.

## The functional requirement of the system:

* The software will support touch screen monitors and keyboard interface.
* The software will show ticket availability information.
* The software will use PHP database server.
* The software will show a display of the list of incoming buses, their destinations and arrival and departure times, fare.
* The software will support multiple ticket purchases simultaneously.
* This privilege control will be done by the manager 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 transactions and validation.
* The software will support next and previous navigation during the ticket purchase process.
* The software will support information display via the web.

## Test Items:

### The major functionalities of the system are as follows:-

* Most importantly 24/7 service.
* Touch screen selection test.
* showing arrival and departure time.
* showing availability of tickets.
* showing related information about the ticket.
* Source to destination route selection.
* Multiple ticket issues in one transaction.
* Ticket Cancellation any time during the transaction and update cancellation ticket in available one .
* Credit/Debit card transactions occur correctly.
* Money recognition and acceptance.

## Software Risk Issues:

* + Security of the system should be checked properly.
  + System failure backup should be tested.
  + Touch screen selection should be tested.
  + Ticket related information display should check
  + Transaction Function should be tested.
  + product delivery tracking should be checked.
  + Change requests should be tested.
  + Complexity of functionality should be checked.
  + Ability to use and understand a new package/tool, etc.

## Features to be tested:

This feature will must be tested that are follows:

1. Multiple ticket purchase support simultaneously.
2. Regarding all kinds of payment issues the application informs the user.
3. All the information is displayed via Website.
4. This application must support any type of browser.
5. Multiple users must be logged in this application.
6. All the ticket unavailability or availability information.
7. The number of tickets purchased at the same time is limited.
8. Purchased ticket cancellation support by the administrator.
9. Application identifies credit card validation.
10. Ticket cancellation support before final confirmation of the purchase.
11. Application performs scheduled route optimization and notification.
12. Oracle database server support.
13. Train arrival and departure time display
14. Train arrival and departure time display.
15. The software will support purchased ticket cancellation support by the administrator.

## Features not to be tested:

The features are not to be tested given bellow:

1. Network congestion will not be tested.
2. Servers delays/errors are not tested.
3. Google authentication code or SMS Gateway functionality will not be tested.
4. Users personal information collection from card.
5. Do not display the ticket availability or unavailability information before purchasing the ticket.
6. Coin/Taka recognition and acceptance.
7. 24/7 service.
8. Touch screen menu selection
9. Do not need to face a recognition system.
10. Do not need to snap a user picture via camera/webcam.

## Approach:

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

1. During the testing process document the test data, test cases, and test configuration.
2. Successful unit testing is required before the unit is eligible for components.
3. Identify the requirements to be tested.
4. All the test cases shall be derived using the current Program Specification.
5. System testing is done to verify the functionalities that are integrated.
6. After each test identify the expected result.
7. Every specification to be reviewed, revised,updated shall be handled immediately.
8. This information shall be submitted via the Unit/System Test Report (STR).
9. Test documents and reports shall be submitted.

## Item Pass/Fail criteria:

### Component Pass/Fail criteria

Tests executed on components only pass when they satisfy the signatures, constraints, and interfaces dictated by the Object Design Specification (ODS) for that component. This includes positive tests, negative and stress tests, boundary conditions, and tests that explicitly manipulate the interface environment. 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.

### 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. If a test exhibits a product failure to meet the objectives of both 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.

### 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.

* 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 a 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.

## Test Deliverables:

Southtech 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 |
| Error logs and execution logs | August 2020 |

|  |  |
| --- | --- |
| Integration Test results document | September 2020 |
| Completion of Field Acceptance Testing | September 2020 |
| Problem reports and corrective actions document | September 2020 |

**Remaining Test Tasks:**

➔ Database connectivity testing

➔ Readily available components.

➔ Infrastructure components.

➔ Interaction with GPS and website

➔ Create defect/Bug Reports

➔ Create Acceptance Test plan

➔ Create Integration Test plan

➔ Unit test rules provide

➔ Verify prototypes of screen

➔ Define Test logs

➔ Verify prototypes of Reports

## Environmental Needs:

This section will outline the necessary and desired properties needed for the test environment.The test environment should be designed to minimize any complicating factors that may result in anomalies unrelated to the specific test cases. Failure to isolate such variables in the test environment may result in false results to the test.

### Hardware components required

* + 1 Network controller
  + 10 Information Identifying Device
  + 6 Network PC’s
  + 1 DAP Workstation
  + 5 Control Device
  + 1 Oracle Server
  + 10 Printing Device
  + 1 HP LaserJet 4v Printer
  + 10 Display Device

### Software

**Test IMS environments**

For System Testing test IMS region X will be required. Additional or amended data will be populated where required.

### Test Environment Software

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

* + - Windows 10 Operating System
    - Custom Desktops
    - Visual Basic 15.8 Runtime Files
    - MS Office 2016
    - Novell Netware

## Staffing and Training needs:

### Staff Needs

During the 1st quarter of the project the project/test manager can play the role of a full time test engineer with a part time test engineer to assist with the review and initial planning of the project. After the initial build has been done, the validation and verification testing needs 2 full time testers and one of them needs to be the person connected with the project from the inceptions assisting tester.

### Training Needs

The Test manager and Project Manager needs to collaborate with administration personnel and train on the inner working of a course allocation flow and learn about available courses and prerequisite course needs.

## Responsibilities:

### Project Leader-

* Ensure Phase 1 is delivered to schedule, budget & quality
* Ensure exit criteria are achieved prior to system test signoff
* Regularly review testing progress with the test controller.
* Liaise with external Groups e.g. New Systems.
* Raise and manage issues/risks relating to project or outside test teams control.
* Review & sign off 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 the system test team.
  + Provide resources necessary for completing system tests.

### Test Planner/ controller –

* Ensure Phase 1 is delivered to schedule, budget & quality
* Produce High Level and Detailed Test Conditions
* Produce Expected Results
* Report progress at regular status reporting meetings
* Co-ordinate review & sign off of Test Conditions
* Manage individual test cycles & resolve tester queries/problems.
* Ensure test systems outages/problems are reported immediately and followed up.
* Ensure Entrance criteria are achieved prior to System Test start.
* Ensure Exit criteria are achieved prior to System Test signoff.

### Testers –

* Identify test data
* Execute Test Conditions and Mark off results
* 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 | 1/08/2020 | At this Milestone, high-level planning should be  completed. Some of th e deliverables are: Project Plan, Program  function specifications. | High-level test planning activities ,which include preliminary development of Master QA Plan. |
| Code  Complete-Infrastr ucture | 2/08/2020 | 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-Functio ns | 5/08/2020 | This milestone includes unit testing and code review of each | The Test Engineers should have provided Code Complete Assessment Test to |

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| --- | --- | --- | --- |
|  |  | function component prior to checking the code  into the test phase. | Development Engineer one week prior to Code Complete Review date. The T est Engineers should also have completed or in the final stages of their preliminary White Box Test  Plan, test cases and other QA |
| Feature Complete | 7/08/2020 | 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 | 9/08/2020 | 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 | 10/08/2020 | Product is out. | Any unfinished Testing docu ments should be complete by  this period. |

## Planning Risks and Contingencies :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk** | **Probability** | **Risk** Type | **Owner** | Contingencies Approach |
| Unable to | 45% | Schedule | Test Manager | Resources for |
| acquire the |  |  |  | components will |
| necessary |  |  |  | be split between the |
| number |  |  |  | existing |
| of skilled |  |  |  | resources. |
| personnel as the |  |  |  | Schedule must be |
| components |  |  |  | adjusted |
| become ready |  |  |  | accordingly. |
| to test. |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unable to acquire some of the necessary hardware and software required for testing. | 35% | Equipment | Project Manager | Utilize existing acquired hardware.  Split test execution into morning and evening shifts  such that testing can occur for |
| 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 | M.K.Akram Hossain |
| Test Manager | Tazin,Tanzila Nasrin |
| Project Sponsor | Ferdous jannatul |
| Development Team Manager | Trisha Roy |

**Glossary :**

|  |  |
| --- | --- |
| AIUB | American International  University-Bangladesh |
| 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 always has 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. |