American International University- Bangladesh (AIUB)

Department of Computer Science

Software Quality and Testing

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Project Title: Test Plan for DSS Automated Ticket System by Leads Soft Ltd.

COURSE: SOFTWARE QUALITY AND TESTING
SECTION: D

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Concept

Our software firm Leads Soft Bangladesh Ltd. has been granted the privilege with the contract to develop "An automated ticket selling system" for Dhaka Subway Systems (DSS). This document serves as a "Test Plan" for developing the software. The document elicits overall testing approach according to the functional and Non-Functional requirements.

Test Plan Identifier

Test Plan ID	Test case	Description
TPID_DSS_1.0.0	24/7 service	The software must provide 24/7 service to the user
TPID_DSS_1.1.0	Ticket availability information display	The software will show available ticket information
TPID_DSS_1.2.0	Train arrival and departure time display	The software will support display of the list of incoming trains, their destinations and arrival and departure times, fare
TPID_DSS_1.3.0	Touch screen menu selection	The system must have a touch screen menu selection
TPID_DSS_1.4.0	Source and destination selection	The software will let the user select the source and destination of their travel
TPID_DSS_1.5.0	Multiple ticket issue in one transaction	The system will let the user purchase multiple tickets at the same time
TPID_DSS_1.6.0	Cancellation of transactions at any time	A user must be able to cancel transaction at any time which the system must support

TPID_DSS_1.7.0	Ticket cancellation before final confirmation	The software will support ticket cancellation before final confirmation of the purchase
TPID_DSS_1.8.0	Ticket cancellation by the administrator	The software will support purchased ticket cancellation support by the administrator.
TPID_DSS_1.9.0	limiting the number of tickets purchased	The software will support limiting the number of tickets purchased at the same time
TPID_DSS_1.10.0	Purchase limit of tickets controlled by the administrator access only	Only the administrator should have access to control the ticket limit for a user
TPID_DSS_1.11.0	Next and previous navigation during ticket purchasing	The software will let the user navigate to the previous and next page during ticket purchase process
TPID_DSS_1.12.0	Credit/Debit card transaction	The user will be able to make payment using credit or debit card so the system must support credit and debit transaction and validate each transaction
TPID_DSS_1.13.0	Coin/Taka recognition and acceptance	The system must be able to recognize, validate and accept Coin/Taka
TPID_DSS_1.14.0	Information display via web	The software will support information display via web
TPID_DSS_1.15.0	Use of Oracle database server	Oracle database server will be used by the software to keep all user data
TPID_DSS_1.16.0	Take user reviews	The software will let the user give reviews

Reference

[1] Requirements Documents

[2] IEEE 829-1998 Test Plan Outline

Introduction

This document is an overview defining our testing strategy for the automated ticket selling application of Dhaka subway systems. Our software firm Leads Soft Bangladesh Ltd. will Develop software for Dhaka Subway Systems (DSS). The project's goal is to provide an interface for automated ticket selling of Dhaka subway system for public users. This dynamic web system will be available to the user 24/7. Users will be able to purchase ticket with their credit/debit cards. When the user presses the start button, a menu display of potential destinations is activated along with a message to the user to select a destination. Once a destination has been selected, user is requested to insert his/her credit card. The validity of the credit card is checked and the user is then requested to input a PIN number. When the credit transaction has been validated, the ticket is issued.

Software Risk issues

Software risk is a possibility of suffering from loss in software development process.
Below are the probable risks that we might face during this project:

- Ability of maintaining the schedule is uncertain
- Inaccurate time estimates
- The degree of uncertainty that the product will meet the requirements and fit for its intended use
- Systems reaction to real time access during heavy load
- Maintaining 24/7 availability for the system
- Some of our employees aren't experienced to use automated tools. Their training poses risk to the time management
- Poorly documented modules or change request
- Inaccurate identification of complexities, functionalities, or operations
- User's transaction safety issue while real time use
- Security risk due to unauthorized access because of any untracked vulnerability
- Any system failure causing loss to the customers
- New version of product should be highly risked to match with older one
- Maintenance risk

Features to be tested

Meeting the client's requirements is the top priority of the project. So accordingly we will start by testing the major functional requirements at first. Throughout the lifecycle of this project testing these features will be our prime concern. Besides that some functionality that are integral to the working of the software will be tested along.

Requirements	Test Plan ID	Priority	Will be tested (Y/N)
The software will support interface to touch screen monitors as well as keyboard interface.	TPID_DSS_1.3.0	HIGH	Yes
The software will support display of the list of incoming trains, their destinations and arrival and departure times, fare.	TPID_DSS_1.2.0	HIGH	Yes
The software will support multiple ticket purchase simultaneously.	TPID_DSS_1.5.0	HIGH	Yes
The software will let user select source and destination of their travel	TPID_DSS_1.4.0	HIGH	Yes
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.	TPID_DSS_1.9.0	HIGH	Yes
The software will support ticket cancellation before final confirmation of the purchase	TPID_DSS_1.7.0	HIGH	Yes
The software will support purchased ticket cancellation support by the administrator	TPID_DSS_1.8.0	HIGH	Yes
The software will support credit transaction and validation	TPID_DSS_1.12.0	HIGH	Yes
The software will support next and previous navigation during ticket purchase process	TPID_DSS_1.11.0	HIGH	Yes
The software will support ticket availability information	TPID_DSS_1.1.0	HIGH	Yes
The software must provide 24/7 service	TPID_DSS_1.0.0	HIGH	Yes
The software will support information display via web	TPID_DSS_1.14.0	HIGH	Yes
The software will use Oracle database server	TPID_DSS_1.15.0	LOW	Yes

Features not to be tested

These are features that are not supposed to be tested. With the type of requirements, budget, time constrains we have right now it is feasible not to test it at these moment. Later on there might be update to the test cases and with upcoming version these untested features may be tested along with the updated features in the future.

Requirements	Test Plan ID	Priority	Will be tested (Y/N)	Reason
The software will let the user give reviews	TPID_DSS_1.16.0	LOW	No	This feature is not asked by the client. Might Be tested in future versions
Coin/Taka recognition and acceptance	TPID_DSS_1.13.0	LOW	No	It's not specified by the client and it is not likely to need coin acceptance. It can be tested in later versions

Approach

A web-based system needs to be checked completely from end-to-end before it goes live for end users. By performing website testing, our organization can make sure that the web-based system is functioning properly and can be accepted by real-time users. For the system we are going to perform Unit testing, Integration testing, system testing and acceptance testing. Under system testing, we will conduct:

- Functionality testing
- Usability testing
- Interface testing
- Compatibility Testing
- Robustness Testing
- Availability Testing
- Performance testing
- Security testing

We are going to check the system manually for the most part with functionality testing, performance testing and regression testing being automated

- Unit testing will be done by the programmer and it's a test for preventing defects as much as possible so we are going to conduct both static and dynamic unit testing. Programmer can use the most appropriate method for unit testing. Such as: Control flow testing, data flow testing
- The static unit testing will be done through formal inspection. Informal walkthrough can also take place. For the formal inspection the programmer, a presenter, record keeper and moderator will be attending the meeting
- The record keeper will document all the change request and a Summary Report will be submitted to the test lead
- There will be a follow up meeting where the change requests will be validated
- After performing unit testing Integration testing must take place to test all the different modules in the application combined together and test as a group to see they are working fine. The test team will conduct the test. To see if it satisfies the user requirement properly and also look for possible defects
- The test lead will monitor throughout the process and all work progress must be reported
- The system testing will take place on the integrated software to test it as the end product and verify if the system works as expected or not. The team will try to validate the product and understand how it might be to the end user. The test cases will be executed during this phase. Under system testing we are going to conduct some basic system tests along with the ones described below:

    1. **Functionality test :**

       Test the System for verifying its ability to satisfy all the requirements specified in the document. It will be partially automated and mostly manual. We will use *"IBM Rational Functional Tester"*
       All the functionalities, links in web pages, database connection, Cookie testing etc will be conducted by the test team. Besides, in testing the functionality of the websites Internal Links, External Links, Mail Links, Broken Links are also tested.

    2. **Usability Testing**

    Usability testing will be conducted to test how the user might feel to interact with the software

    3. **Interface Testing**

    In web testing, the server-side interface should be tested. This will be done by verifying that the communication is done properly. Compatibility of the server with software, hardware, network, and the database should be tested.

    4. **Compatibility Testing**

    The compatibility of website is a very important testing aspect. We will see which compatibility test to be executed:
    - Browser compatibility
    - Operating system compatibility
    - Mobile browsing

5. **Robustness Testing**

Test tem will conduct robustness testing manually to ensure graceful recovery from any system failure

6. **Availability Testing**

Availability will tested to ensure 24/7 availability of the software

7. **Performance Testing**

Our web application should sustain a heavy load. Performance testing will be automated through "*HP Performance Tester*." Web performance testing should include:

- Web Load Testing
- Web Stress Testing

8. **Security Testing**

This non-functional testing will be conducted to ensure secured use of the system as much as possible. The customer's confidentiality must be secured in the system along with their transaction history and credit/debit card details

- If any change, bug fixing is needed regression Testing will be conducted to find impact of any change to the existing software functionality. The test cases will be re-executed to verify impact of change to the software. Regression test will be automated using "Selenium"

- Technical Beta testing will be conducted by the end user before final release to get user feedback and Acceptance

- Report must be generated after every test. Including the bug reports.

Item pass/fail criteria

1. The code will be given green signal for delivery if at least 98%- unit tests passes.

2. During system testing all test cases must be executed and must pass 100% of the test case to meet the requirements

3. After each module is integrated, regression tests must pass 100% of the test cases.

4. The system must perform well under load & stress testing

Test Deliverables

1. Test plan
2. Test case
3. Test script
4. Execution Log
5. Summary report

Remaining test tasks

This application is to be released in increments so there are few parts of the application that this plan does not address. There might also be updated requirements but until then the test cases below won't be executed for current version. The tasks that will be addressed in the next version of this software are:

TPID_DSS_1.16.0	TPID_DSS_1.13.0

Environmental needs

a. Software for development
b. Simulator for work assistance
c. Testing Tool

- Selenium
- IBM Rational Functional Tester
- HP Performance Tester
- HP ALM

d. Communications:

- Client/Server
- Topology
- Network
- External
- Internal
- Routers
- Security issues.

Staffing and Training needs

We are doing manual and automated testing in this testing plan. In this testing plan our employees need some training. The trainings are:

1. There will be a leading Team where 3 or 4 Expert testers have to stay. As they can train the team
2. The team also divided into two groups, as we said we are doing two type of testing. Manual and Automated testing
    a) 2/3 of the employees will get manual testing training
    b) 1/3 of employees will have automated testing training.
3. The training will also be two types:
    a) Training on the Hardware
    b) Training on the Software

Responsibilities

Responsibility	Roles				
	Project Manager	Record Keeper	Test Lead	Dev Team	Test Team
Planning, deploying and managing the testing effort .Creating Test procedures and rules			✔		
Test documentation		✔		✔	
Test report review and approval			✔		
Project time, cost estimation and Approval	✔				
Integration & System test Execution					✔
Acceptance test (Technical documentation)					✔

Test Schedule

Test Schedule ID: TS_DSS_1.0
Product Name: Automated Ticket Issuing System
Product Version: Version 1.0.0
Present Owner: Owner of the test schedule document - **Leads Soft Bangladesh Ltd.**
Created On: Test schedule document was created on 20/01/2021
Review On: Document was last Reviewed & Updated on 15/02/2021
Review By: Test lead of **Leads Soft Bangladesh Ltd.**
Review Comments: No comments yet
Change Details: No change yet in current version
Current Version: Current version of the test schedule document - TS_1.0
Current Status: In gradual development

Signing Off Authority

Name	Position	Signature
Islam, Mohammed Mohaimenul	Product Manager	Islam, Mohammed Mohaimenul
Mou, Tayba Islam	Test lead	Mou, Tayba Islam
Hoque, Syeda Walia	Quality Assurance manager	Hoque, Syeda Walia
Fatema Tuj Zohora Nusrat	Team Manager	Fatema Tuj Zohora Nusrat
Mifa, Afia farjana	Development Manager	Mifa,Afia farjana

In this project there are some test step for this test plan which is required for this Dhaka subway system (DSS). This following test steps are given below:

Test Step	Start Date	End Date	Responsibility
Completion	20.01.2021	18.04.2021	
1. Information gathering	20.01.2021	23.01.2021	**To support for the making the plans of work to emerge as greater absolutely including.**
i. Prepare for Interview	20.01.2021	21.01.2021	
ii. Conduct Interview	22.01.2021	23.01.2021	
iii. Summarize Findings	24.01.2021	26.01.2021	
2.Test Planning	27.01.2021	06.02.2021	**This plan normally consists of an in depth information**
i. Build Test Plan	27.01.2021	31.01.2021	
ii. Approve plan	1.02.2021	04.02.2021	
3.Test Case Design	05.02.2021	20.02.2021	**To Test this functionalities of the software program with the assist of useful cases**
i. Design test Function	05.02.2021	10.02.2021	
ii.GUI test	11.02.2021	13.02.2021	
iii. Explain the system	14.02.2021	17.02.2021	
iv. Approve design	18.02.2021	20.02.2021	
4. Test Development	21.02.2021	25.02.2021	**Software development process that involves synchronized application of a broad spectrum of defect**
i. Develop test script	22.02.2021	25.02.2021	
ii. Approve test development	26.02.2021	28.02.2021	
5. Test Evaluation	29.02.2021	15.03.2021	**To report organizes and presents a summary analysis of providing all the**

			necessary information regarding the software testing
i. Setup and testing	29.03.2021	08.03.2021	
ii. Evaluation	09.03.2021	12.03.2021	
iii. Environment	13.03.2021	15.03.2021	
6.Conduct Acceptance Testing	16.03.2021	28.03.2021	**A testing technique performed to determine whether or not the software system has met the requirement specifications.**
i. Complete Acceptance Test Plan	16.03.2021	18.03.2021	
ii. Complete Acceptance Test Cases	19.03.2021	21.03.2021	
iii. Approve Acceptance Test Plan	22.03.2021	25.03.2021	
iv. Execute the Acceptance Tests	26.03.2021	28.03.2021	
7. Conduct System Testing	29.03.2021	10.04.2021	**The functionalities of the system are tested from an end-to-end perspective. It includes both functional and Non-Functional testing.**
i. Complete System Test Plan	29.03.2021	31.03.2021	
ii. Complete System Test Cases	01.04.2021	03.04.2021	
iii. Approve System Tests	04.04.2021	07.04.2021	
iv. Execute the System Tests	08.04.2021	10.04.2021	
8. Summarize	11.04.2021		**To get final activity of the improvement process and all the tasks .**
i. Perform data reduction	12.04.2021	15.04.2021	
ii. Approve the final test report	16.04.2021	18.04.2021	

Planning Risks and Contingencies

In this test plan there are some risks to the project with some features on the testing process:

Risk ID	Description	Probability	Impact
Risk - 1	Requirements Inflation	80%	Medium
Risk - 2	Late delivery of the software, hardware or tools.	80%	Medium
Risk - 3	Changes to the original requirements or designs.	60%	Medium
Risk - 4	Insignificant Cost increase	90%	High
Risk - 5	Project Contain with bug	80%	Medium (major bug can be high impact)
Risk - 6	Number of test performed will be reduced.	60%	Medium
Risk - 7	Lack of personnel resources	80%	High
Risk - 8	Delays in training	50%	Medium
Risk - 9	Lower quality delivery product	50%	Medium
Risk - 10	Project Security	80%	High

Approvals

Developer Company	Client
Leads Soft Bangladesh Ltd.	Dhaka Subway Systems (DSS)
Signature:	***Signature:***