

Polytechnic University of Puerto Rico
Electrical & Computer Engineering & Computer Science Department
Hato Rey, PR

Software Test Documentation



Lambda Solutions Group Presents:



Name	Student ID	Program	Signature
Emilio Acosta Ortiz	86144	Computer Engineering	
Michael Quiles Melendez	83497	Computer Engineering	
Gabrielys Rivera Flores	89456	Computer Engineering	
Rafael Santiago Soliván	93818	Computer Engineering	
Manuel Seda Batista	120758	Computer Engineering	
Raúl Viruet Román	75747	Computer Engineering	

Changelog

Name	Date	Changes Performed	Version
Manuel Seda	2/3/2019	Began L ^A T _E X template	1.00
Manuel Seda	2/3/2019	Began working on Sections 3, 4, 14	1.01
Emilio Acosta	1/26/2019	Began Working on Sections 8 & 9	1.02
Raúl Viruet	2/4/2019	Began Working on Sections 10, 12, 13	1.03
Gabrielys Rivera	2/7/2019	Began working on Sections 7, 11, 15	1.04
Michael Quiles	2/7/2019	Began working on Sections 1, 2	1.05
Rafael Santiago	2/9/2019	Began working on Sections 5, 6	1.06

Contents

1	Test Plan Identifier	1
2	Introduction	1
2.1	Objectives	1
2.2	Background	1
2.3	Scope	1
2.4	References	1
3	Test Items	1
3.1	Program Modules	2
3.2	User Procedures	2
3.3	Operator Procedures	2
4	Features to be Tested	3
5	Features not to be Tested	3
6	Approach	3
7	Item Pass/Fail Criteria	4
8	Test Item Transmittal Report	4
8.1	Purpose	4
8.2	Outline	5
8.2.1	Transmittal Report Identifier	5
8.2.2	Transmitted Items	5
8.2.3	Location	5
8.2.4	Status	5
9	Test Log	5
9.1	Purpose	5
9.2	Outline	5
9.2.1	Test Log Identifier	6
9.2.2	Description	6
9.2.3	Activity and Event Entries	7
10	Testing Tasks	8
11	Environmental Needs	10
11.1	Hardware	10
11.2	Software	10
11.3	Security	11
11.4	Tools	11
12	Responsibilities	11
13	Staffing Needs	11
14	Schedule	11

List of Figures

List of Tables

3.1	Program Modules	2
3.2	User Procedures	2
3.3	Operator Procedures	2
4.1	Features to be Tested	3
7.1	Item Pass/Fail Criteria	4
8.1	Transmitted Items	5
9.1	Log Items	6
9.2	Tested Items	7
10.1	Task Schedule	10
13.1	Staffing Needs	11

1 Test Plan Identifier

2 Introduction

2.1 Objectives

A system test plan for the ticket vc island webapp should support the following objectives:

1. To detail the process required to prepare and conduct the system test.
2. To inform all parties that are responsible about the tasks they are going to perform.
3. To define the sources of the information used

2.2 Background

The Marine Transportation Authority has a conventional ticket system which is inefficient and had many inconsistencies overall, Lambda Solution Group is here to present a better alternative called Ticket VC Island which will be completely web based and will be accessible via phones and computers. It will offer accurate and concise schedule while adding a benefit of reserves seats for the residents of the island Vieques and Culebra. It will also include an active seat inventory system.

2.3 Scope

This test plan covers the full server side and web-app of Ticket VC Island. This includes the server test, and the test for the client threshold to verify performance and efficiency. It will also send payloads of data to test the strength of the server to verify that it will be a crash free system.

2.4 References

The following references use the IEEE citation format.

- [1] E. Acosta, M. Quiles, G. Rivera, R. Santiago, M. Seda, and R. Viruet, "Software Requirements Specification (SRS)," 2018.
- [2] E. Acosta, M. Quiles, R. Gabrielys, R. Santiago, M. Seda, and R. Viruet, "Software Design Description (SDD)," 2019.
- [3] E. Acosta, M. Quiles, R. Gabrielys, R. Santiago, M. Seda, and R. Viruet, "Software Management Test Plan (SPMP)," 2019.

3 Test Items

All items conforming the software elements of the Tickets VC Islands project will be tested. Some common hardware and operating system configurations will be tested to ensure compatibility with the target platforms.

3.1 Program Modules

The modules to be tested are as follows:

Module Name	Type	Identifier
Database Module	Back-end	DBM
Client Module	Front-end	CM
GUI Module	Front-end	GUIM

Table 3.1: Program Modules

3.2 User Procedures

Procedure Name	User Type	Description
Create an Account	Resident	User creates an account to keep track of their transactions and funds
Choose Language	Residents and Tourist	The user picks their preferred language for the GUI
Log-in	Resident	Users enter their credentials and access their account
Buy a Ticket	Residents and Tourists	The user buys a ticket for the trip
Print Ticket	Residents and Tourists	The users print the ticket(s) they bought

Table 3.2: User Procedures

3.3 Operator Procedures

Procedure Name	User Type	Description
Log-in	Clerk	Users enter their credentials and access their account
Validate an Account	Clerk	User validates resident documentation
Validate Ticket	Usher	User validates passenger ticket

Table 3.3: Operator Procedures

4 Features to be Tested

The following table describes the features to be tested:

Test Design Specification Number	Description
TVCI-01	Resident User Accounts in the Database
TVCI-02	Client-Database Integration
TVCI-03	Client-GUI Integration
TVCI-04	Complete transaction process for resident users
TVCI-05	Complete transaction process for tourist users
TVCI-06	Complete ticket validation process
TVCI-07	Complete resident user registration process from clerk user account
TVCI-08	Complete resident user registration process from resident user account

Table 4.1: Features to be Tested

5 Features not to be Tested

The features not to be tested are going to be all the possible configurations that the hardware can have because, unless the client chooses one hardware platform (meaning a tablet or computer) to run the application, it would be impossible to test how the application will run in every single configuration. Also, we are not going to test how the application will run or work without an internet connection because one of the requirements and/or assumptions is that the hardware running the application is going to have a secure internet connection all the time.

6 Approach

For the features to be tested, we are going to divide the tests in different section. For each section we are going to have a checklist to write the results of the tests. Each checklist will have all the feature to be tested in that section with the classification for each test is as follow: (P) for Pass and (F) for Fail. All the tests have to Pass in order for the test of that section to be successful. Also, besides the checklist, we are going to create a documentation where we are going to specify the Test Result for each Feature to be Tested, giving the client an idea of what to expect when doing the test. This is very helpful for the client and the development team because, beforehand, the client and the team are aware of how the feature are going to be.

Type of Tests Available:

1. **Unit Test** – the client will assign three persons giving them three roles, the principal roles. The admin user, the resident user and the visitor user. For each user there would be a checklist were each user can validate the feature for each role. Once the validation of the three main roles are done the Unit Test is completed.

2. **Integration Test** – the system would be tested in a basic, fully functional, tablet with a printer for the QR Code. We would make sure that the application can be fully compatible with the tablet as well as other tablets in market right now for usage. For the printer, it has to be a specific type of printer, one that print QR Codes, doesn't matter the brand. We would make sure that the application works with most of the QR Printer in the market right now.
3. **Functionality Test** – the system would be featuring all the requirements established in the SRS Document as well as all the design discussed in the SDD for the application. In this section we are going to test the functionality of the system. Example, test that the booking a boat ticket works, that the user have access to their account, etc.
4. **Performance Test** – we are going to pick an overall tablet that features the recommended settings for the performance test. We are going to test how the application works under pressure, meaning, how the application works when there's a lot of activity happening at the same time. The security, timing, recovery, quality are some of the other test we are performing in this section. Acceptance – the phase of the application before the production deployment are going to be divided in two: The Alpha Phase and The Beta Phase. The Alpha Phase are going to be the first test that the user would be using the application for real case scenarios. The Beta Phase are going to be a continued test of the Alpha Phase but featuring all the new implementation and the errors found in the Alpha Phase. Once the application has passed those two phases, the client can sign the Acceptance Documentation that the application is fully functional.

7 Item Pass/Fail Criteria

This section specifies the criteria that will be taken to determine pass or fail of test items.

Fail	Pass
User cannot create an account.	User can create an account.
User cannot access their account.	User can access their account.
User cannot choose the language.	User can choose the language.
User cannot choose their destination.	User can choose their destination.
User cannot proceed to make the payment.	User can make the payment.
User cannot recharge their account.	User can recharge their account.
User cannot pay with their credit card.	User can pay with their credit card.
Ticket is not printed.	Ticket is printed with the QR Code.

Table 7.1: Item Pass/Fail Criteria

8 Test Item Transmittal Report

8.1 Purpose

The purpose of this section is to identify the items that are being transmitted for testing.

8.2 Outline

8.2.1 Transmittal Report Identifier

The identifier for this transmittal report is: TKVCI-101

8.2.2 Transmitted Items

The items being transmitted are:

Transmitted Items	Personnel responsible	Reference
Log in	Test Manager Database Manager	Section 7.2.4.1
Set up	Test Manager	Section 7.2.4.2
Start	Test Manager	Section 7.2.4.3
Proceed	Test Manager	Section 7.2.4.4
	Test Manager Database Manager	Section 7.2.4.5
Shutdown	Test Manager	Section 7.2.4.6
Restart	Test Manager	Section 7.2.4.7
Stop	Test Manager	Section 7.2.4.8
Wrap up	Test Manager	Section 7.2.4.9

Table 8.1: Transmitted Items

8.2.3 Location

A copy of the software will be provided with full description and procedures to follow and to be able to satisfactorily complete the specified tests. The transmitted items can be found within the software. Also all the procedures can be found in section 7.2.4 of the STD.

8.2.4 Status

This is the first transmittal report therefore there are no previous documentation from any of the listed items. The items listed are currently in a development state and may have slight adjustments if this is the case, the reference and procedure documents will be updated and resubmitted. All of the items listed are in a fail state until the required test is completed and the status is changed to pass.

9 Test Log

9.1 Purpose

To provide a chronological record of relevant details about the execution of tests.

9.2 Outline

The test log will have the following structure:

9.2.1 Test Log Identifier

The test log unique identifier is: TKVCI-101. This part is referenced to the Transmittal report TKVCI-101.

9.2.2 Description

This section describes the items used in the Test Item Transmittal Report that were given to the team. This section will include all the conditions that were used to conduct the test.

Log items	Revision & Version level	Personnel responsible	Reference
Login	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2
Set up	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2
Start	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2
Items	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2
Measure	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2
Shutdown	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2
Restart	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2
Stop	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2
Wrap up	Ver 1.0 Rev 0.1	Test Manager	Transmittal Report section 8.2

Table 9.1: Log Items

Log items	Software	Hardware
Login	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection
Set up	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection
Start	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection
Items	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection
Measure	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection
Shutdown	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection
Restart	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection
Stop	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection
Wrap up	Tikets VC Island	Samsung Galaxy Tab A, Router 40 Mbps Internet Connection

Table 9.2: Tested Items

9.2.3 Activity and Event Entries

In this section, for each event, including the beginning and end of activities, we record the occurrence date and time along with the identity of the author.

Activity	Date	Time	Author
Register and log to Web Page	43505.0	0.5416666666666666	Tester: Manuel Seda Batista ID: 120758
Log to Database	43505.0	0.5625	Administrator: Raul Viruet Román ID: 75747
Log out to Database	43505.0	0.5833333333333334	Administrator: Raul Viruet Román ID:75747
Sign out to Web Page	43161.0	0.6041666666666666	Tester: Wilfredo Garcia Gonzalez ID: 120758

10 Testing Tasks

Task	Dependency	Responsibility	Required Skills	Effort	Finish Date
1) Prepare Test Plan	Employ Test Planning and Administration Personnel	Test Admin	Knowledge of aspects to be tested	4	11/23/2018
2) Prepare Test I Specifications	Task 1	Test Admin	Intermediate Programming Knowledge	7	12/01/2018
3) Prepare Test I Design Specifications	Task 2	Test Admin	Intermediate Programming Knowledge	7	12/06/2018
4) Prepare Test I Cases	Task 2	Test Admin	Intermediate Programming Knowledge	7	12/18/2018
5) Perform Function Test I	Task 4	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	01/15/2019
6) Perform Unit Test I	Task 4	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	01/15/2019
7) Analyze Test Results and Plan Modifications	Task 5, Task 6	Software Developer	Expert Programming Skills	9	01/19/2019
8) Prepare Test II Design Specifications	Task 5, Task 6	Test Admin	Intermediate Programming Knowledge	7	02/01/2019
9) Prepare Test II Cases	Task 7	Test Admin	Intermediate Programming Knowledge	7	02/01/2019
10) Perform Function Test II	Task 8	Test Admin	Intermediate Programming Knowledge	7	02/01/2019

Task	Dependency	Responsibility	Required Skills	Effort	Finish Date
11) Perform Integration Test I	Task 8, Task 9	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	02/08/2019
12) Perform Union Test II	Task 8, Task 9	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	02/08/2019
13) Perform Performance Test I	Task 8, Task 9	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	02/08/2019
14) Analyze Test Results and Plan Modifications	Task 10, Task 11, Task 12, Task 13	Software Developer	Expert Programming Skills	9	02/15/2019
15) Prepare Test III Design Specifications	Task 9, Task 10, Task 11	Test Admin	Intermediate Programming Knowledge	7	02/20/2019
16) Prepare Test III Cases	Task 9, Task 10, Task 12	Test Admin	Intermediate Programming Knowledge	7	02/20/2019
17) Perform Performance Test II	Task 15, Task 16	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	02/27/2019
18) Perform Integration Test II	Task 15, Task 17	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	02/27/2019

Task	Dependency	Responsibility	Required Skills	Effort	Finish Date
19) Perform Unit Test III	Task 15, Task 18	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	02/27/2019
20) Perform Function test III	Task 15, Task 19	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	02/27/2019
21) Perform Load Test I	Task 15, Task 20	Tester	Reading, writing, Using Mouse and keyboard, Using a Desktop Computer	2	02/27/2019
22) Analyze Test Results and Plan Modifications	Task 17, Task 18, Task 19, Task 20, Task 21	Software Developer	Expert Programming Skills	9	03/02/2019

Table 10.1: Task Schedule

11 Environmental Needs

This section lists the hardware, software, security and any other tools that are needed for a test environment.

11.1 Hardware

To test the hardware, it must be in an indoor place where it will not get wet if it rains. In addition, it must be connected to a voltage source, necessary for the equipment to turn on. The printer must have ink and paper to be able to print the test sheets.

11.2 Software

To be able to carry out tests to the software, it is necessary to have a web browser installed since the system is web-based. In addition, you need to have access to the internet to be able to access the website. Also, you must have a connection with the database, since it is the one that will receive the information that will be entered in the website.

11.3 Security

All equipment must be in a safe and constantly supervised place. Only people responsible for installation and testing can access.

11.4 Tools

To be able to assemble the equipment, several tools are needed, such as:

- Screws
- Screwdrivers
- Cables
- Black Tape

To be able to test the system, will be use Google Chrome, Internet Explorer, or Mozilla Firefox.

12 Responsibilities

This section details groups and their responsibilities and roles in the testing stages.

- **System Test Admin** - Responsible for designing and administrating tests. In charge of Collecting test results and analyze ways in which the system needs to be improved.
- **Test Group [Testers]** - Responsible for making system tests and asserting if the test in question meets the Pass or Fail criteria according to the instructions provided.
- **Software Developer** - Aids the System Test Admin in the creation of tests.

13 Staffing Needs

The following staff is required to carry out the testing procedures for this project

Staff	Number Needed
System Test Admin	4
Testers	15
Software Developers	4

Table 13.1: Staffing Needs

14 Schedule

The testing process should begin on November 5, 2018 and should end on April 2, 2019. Table 10.1 shows the schedule.

15 Risks & Contingencies

If all tests are affected by a system failure, the work team assigned to do the tests must be able to work with the database and ensure that user information is not lost. It must also be considered that to make tests the printer must be working and there must be enough paper and ink to recharge. In case of a wrong budget estimate, the cost may be exceeded. If that happens, establish the scope before starting the test tasks and pay attention to the planning of the project and constantly monitor the budget estimates.