Test Plan for Bike Garage Pro (Group 33, 2015)

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1 References

2 Introduction

2.1 Tested system

The system described in this document is the software for a public bicycle garage. This software is responsible for managing the authentication of users and the management of their information and their bicycles.

This document provides a specification for testing the bicycle garage software. The test process consists of the following phases:

- Unit testing
- Integration testing
- System testing
- Acceptance testing

3 Test process

3.1 Process overview

3.2 Unit testing

Every non-trivial function is tested in software through the use of a test suite library.

Performed by: Developers

Type of test: Structural

Criteria: Every line of code is tested

Stop rule: No errors found

3.3 Integration testing

Integration testing is performed in a similar way to unit testing, but larger and more inclusive modules are tested. Each module is tested in software through the use of a test suite library.

Performed by: Developers

Type of test: Structural

Criteria: Every API method is tested completely

Stop rule: No errors found

3.4 System testing

During system testing, all requirements specified inside the Software Requirements Specification are tested.

Performed by: Developers

Type of test: Functional

Criteria: All requirements inside the SRS are fulfilled

Stop rule: No critical errors found

3.5 Acceptance testing

Acceptance testing is performed by the client and not the developers, and is therefore not discussed in this document.

4 Tested items

5 Test recording procedure

5.1 Unit testing

5.2 Integration testing

5.3 System testing

5.4 Acceptance testing

6 Test cases for system testing

6.1 Test cases

6.2 Requirements coverage and traceability

A Test cases

Test case 1:	**Registration of a new user**
Primary actor:	Operator
Preconditions:	User is unregistered
Postconditions:	User is registered

Main success scenario:

1. The operator provides the required user information to the control interface.
2. A new PIN code is generated for the user.
3. The user is added to the system.

Test case 2:	**Registration of an already registered user**
Primary actor:	Operator
Preconditions:	User is registered
Postconditions:	User is registered

Main success scenario:

1. The operator provides the required user information to the control interface.
2. The system responds with an error message, e.g. ”The user is already registered.”

Test case 3:	**Unregistration of a registered user**
Primary actor:	Operator
Preconditions:	User is registered

Postconditions:	User is unregistered

Main success scenario:

1. The operator provides the required user information to the control interface.
2. All bicycles associated with the user are removed from the system.
3. The user is removed from the system.

Test case 4:	**Association of a new bicycle with a user**
Primary actor:	Operator
Preconditions:	User is registered; garage is not full
Postconditions:	Bicycle is associated with user

Main success scenario:

1. The operator provides the required user information to the control interface.
2. A unique 5-digit identification number is generated and associated with the bicycle.
3. The bicycle is added to the set of bicycles owned by the user.
4. A barcode associated with the 5-digit ID is printed and given to the user.

Test case 5:	**Disassociation of a user's bicycle**
Primary actor:	Operator
Preconditions:	The user is registered. The bicycle is associated with the user.
Postconditions:	Bicycle is not associated with user nor is it present in the system.

Main success scenario:

1. The operator provides the required user information to the control interface.
2. The bicycle is disassociated with the user.
3. The unique 5-digit identification number associated with the bicycle is returned to the pool of available ID's. As a consequence, the barcode is rendered invalid.

Test case 6:	**A valid PIN code is entered**
Primary actor:	User
Preconditions:	The PIN code entered is associated with a registered user, who has at least one bicycle stored in the garage.
Postconditions:	-

Main success scenario:

1. User enters their PIN code at the PIN code terminal.
2. The green LED lamp is lit for 4 seconds. Simultaneously, the entrance door opens and stays open for 10 seconds.

Test case 6:	**An invalid PIN code is entered**
Primary actor:	User
Preconditions:	The PIN code entered is not associated with any registered user.
Postconditions:	-

Main success scenario:

1. User enters the PIN code at the PIN code terminal.
2. The red LED lamp is lit for 4 seconds.

Test case XXX:	**Recovery of a lost/forgotten PIN code**
Primary actor:	Operator
Preconditions:	The user is registered.
Postconditions:	-

Main success scenario:

1. The operator provides the required user information to the control interface.
2. The operator requests the PIN code from the system, and gives it to the user.

Test case XXX:	**An invalid PIN code is entered**
Primary actor:	User
Preconditions:	The PIN code entered is not associated with any registered user.
Postconditions:	-

Main success scenario:

1. User enters the PIN code at the PIN code terminal.
2. The red LED lamp is lit for 4 seconds.

Test case XXX:	**An invalid barcode is scanned**
Primary actor:	User or other person
Preconditions:	The barcode is not a part of the system.
Postconditions:	-

Main success scenario:

1. The invalid barcode is scanned.
2. The red LED lamp is lit for 4 seconds.
