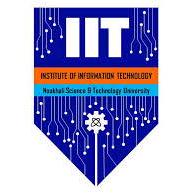
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**NSTU Bicycle rental System testing Report**

**Course Title: Software Testing and Quality Assurance Lab**

**Course Code: SE3210**

Submitted to

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**Date : 20 February 2020**

**Software Testing Life Cycle (STLC)**

The **Software Testing Life Cycle** (STLC) is a sequence of specific actions performed during the testing process to ensure that the software quality objectives are met.

A screenshot of a computer

Description automatically generated with low confidence

We build complete STLC for our project. Our project is NSTU-Bicycle Rental System. The project link-

<https://github.com/kamruzzamanshekh/NSTU-Bike-Rental-System>

**Requirement Analysis**

We use a Priority based requirement for Requirement analysis. There are two types requirements are functional and non-functional requirements.

**Functional Requirements**

|  |  |
| --- | --- |
| **FR - 01** | **Create Account** |
| **Description** | If anyone want to get our service, he/she first need to create account. |
| **Priority** | High |

|  |  |
| --- | --- |
| **FR - 02** | **Log In** |
| **Description** | If rider want to rent the bicycle , first they need to login the system using their user id and password |
| **Priority** | High |

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| --- | --- |
| **FR - 03** | **Bicycle List** |
| **Description** | Rider can see the Bicycle list and they can rent the bicycle according their choice. Their are different category bicycle and their rent price also be different (tk / hour) |
| **Priority** | Medium |

|  |  |
| --- | --- |
| **FR - 04** | **Booking Bicycle** |
| **Description** | Registered user can booking the bicycle by providing their information like Name , Phone Number , Date and Time. |
| **Priority** | Medium |

|  |  |
| --- | --- |
| **FR - 05** | **QR Scanner** |
| **Description** | Every bicycle have a QR code scanner. When a rider scan the QR scanner code , bicycle lock automatically open(Condition apply). |
| **Priority** | High |

|  |  |
| --- | --- |
| **FR - 06** | **Third party software application integration for payment (bkash)** |
| **Description** | When a rider rent a bicycle , they scan the QR code and payment will be done automatically and cycle will be unlock. |
| **Priority** | High |

|  |  |
| --- | --- |
| **FR - 07** | **Tracking System** |
| **Description** | GPS tracking system are implemented . So admin can track the bicycle for their bicycle security purpose. |
| **Priority** |  |

|  |  |
| --- | --- |
| **FR - 08** | **Zone view** |
| **Description** | Rider can ride the bicycle in specific area. |
| **Priority** | Low |

**Non-Functional Requirements**

|  |  |
| --- | --- |
| **NFR - 01** | **Security** |
| **Description** | NSTU-Bicycle Rental system must be implemented GPS system to track the bicycle for the security purpose. |
| **Priority** | High |

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| --- | --- |
| **NFR - 02** | **Performance** |
| **Description** | Rider use this system easily and system must be optimized for searching and finding relevant bicycle. |
| **Priority** | High |

|  |  |
| --- | --- |
| **NFR - 03** | **Scalability** |
| **Description** | System must be able to adding unlimited rider at a time and handle everything within short times. |
| **Priority** | High |

|  |  |
| --- | --- |
| **NFR - 04** | **Maintainability** |
| **Description** | System must be developed maintainable way for maintaining easily after release. |
| **Priority** | High |

|  |  |
| --- | --- |
| **NFR - 05** | **Extensibility** |
| **Description** | After release this system, It might be extensible for new feature . |
| **Priority** | High |

**Test Planning**

A test plan is a detailed document which describes software testing areas and activities. It outlines the test strategy, objectives, test schedule, required resources (human resources, software, and hardware), test estimation and test deliverables.

**Test strategy**

Diagram

Description automatically generated

**Testing Approach For NSTU-Bicycle Rental System**

* Functional Testing
* Usability Testing
* Security Testing
* Performance Testing
* Database Testing

**Roles and responsibilities**

|  |  |  |
| --- | --- | --- |
| **Roles** | **Responsibilities** | **Tester** |
| Test Manager | Manage the whole project, acquire appropriate re-sources and control team members. | Kamruzzaman  &&  Mynuddin­ |
| Test Analyst | Identify test conditions and features. |
| Software Development Engineer in Test | Develop tools for testing. |
| Software Test Engineer | Test the overall system using appropriate testing approach and instruments |
| Test Architect | Design various suitable testing models |
| SQA team | Check to confirm whether the testing process is meeting specified requirements |
| Developer in Test | Implement the test cases, test program, test suite etc. |

**Identifying the testing techniques and testing types**

|  |  |  |
| --- | --- | --- |
| **Testing Techniques** | **Testing Type** | **Perform on** |
| **Dynamic Testing**  **(Black Box)** | Boundary Value Analysis | Functional requirements, code |
| Equivalence Class Partitioning |
| Cause-effect Graph |
| **Dynamic Testing**  **(White Box)** | Logic Coverage Criteria | Structure,deign , code |
| Basic Path Testing |
| Control Flow Graph |
| Graph Matrix |
| Connection Matrix |
| **Static Testing** | Inspection | Whole system without execute code |
| **Validation Testing** | Unit Testing | Code Module |
| Integration Testing | Merged code |
| Function Testing | Functional design |
| System Testing | SRS |
| Acceptance Testing | Conformance to gathered requirements |
| Installing Testing | Adaptability with operating machine |
| **Regression Testing** | Test Prioritization | Testing requirements |

**Test Case Development**

**Functional Test Cases**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Test case** | **Verification** | **Test Data** |
| **TC01** | Check User registration with valid email | Valid | Name:kamruzzaman  Email: shekhnstuiit@gmail.com  Phone: 01647508443  password: shekh |
| **TC02** | Check user registration with invalid email | Invalid | Name:mynuddin  Email: mynu420@gmail.com  Phone: 65545  password: 12345 |
| **TC03** | Check user login with valid data | Valid | Username = shekh  Password = shekh |
| **TC04** | Check user login with invalid data | Invalid | Username = mynuddin  Password = mynuNSTU |
| **TC05** | Test to find out a specific bicycle using valid cycle name | Valid | Value:VILOCE LEGION 50 BLACK-RED |
| **TC06** | Test to find out a specific bicycle using Invalid cycle name | Invalid | Value: Roman C 560 cycle |
| **TC07** | Click on View Details for show a bicycle details | Valid |  |
| **TC08** | Click on Book button for booking a cycle | Valid |  |
| **TC09** | Test information before book confirm a bicycle | Valid | Name: kamruzzaman  Phone: 01647508443  Email: shekhnstuiit@gmail.com  Date:03/10/2021  Hours:5 |
| **TC10** | Test with wrong information before book confirm a bicycle | Invalid | Name: kamruzzaman  Phone: 01647508443  Email: shekhnstuiit@gmail.com  Date:03/10/2020  Hours:50 |
| **TC11** | Check valid information for payment(Scan QR Code) | Valid |  |
| **TC12** | Check Invalid information for payment(Scan QR Code) | Invalid |  |
| **TC13** | Check users can add book in Booking List | Valid |  |
| **TC14** | Check Every booked Bicycle show in booking list | Valid |  |
| **TC15** | Click on Cancel Button for cancel a book from the booking page’s list | Valid |  |
| **TC16** | Test sing out when click on logout button | Valid |  |

**Non-functional Test Cases**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Test case** | **Verification** | **Test Data** |
| **TC17** | Check it takes the expected time for a user to log in with the correct credentials. | Valid | Username= mynudddin  Password= mynu1234 |
| **TC18** | Check page loading speed is acceptable. | Valid |  |
| **TC19** | Check an application should be available at different battery conditions, including charging. | Valid |  |
| **TC20** | Check a user should be able to log in from different devices simultaneously. | Valid | Username= shekh  Password=shekh |
| **TC21** | Check the information from different devices should synchronize momentarily. | Valid |  |
| **TC22** | Check the application should not cause device heating or battery draining. | Valid |  |

**Test Environment Setup**

**Hardware (Desktop / Laptop)**

* RAM : 200 MB or more
* Hard drive : 512MB or above
* Processor : 1.80 GHz or above

**Software**

* Operating System : All
* Browser : Anything’s
* versions
* Code editor : Visual Studio Code

We installed OS - window 10 Home, 4GB RAM and 1TB hard-disk, processor - Intel(R) Core(TM) i3-3110M CPU @ 2.40GHz, chrome browser and Visual studio code as editor.

**Test Execution**

**Functional test case execution**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Scenario** | **Test Steps** | **Test Data** | **Expected Results** | **Actual Results** | **Pass/**  **Fail** |
| TC01 | Check User registration with valid email | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/register.php> 2. Click registration button 3. Enter valid name,email,phone and password 4. Click REGISTER | Name:  kamruzzaman  Email: shekhnstuiit@gmail.com  Phone: 01647508443  password: shekh | Rider should Registration into system. | As Expected | Pass |
| TC02 | Check user registration with invalid email | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/register.php> 2. Click registration button 3. Enter invalid name,email,phone and password   4.Click REGISTER | Name:  mynuddin  Email: mynu420@gmail.com  Phone: 01792457854  password: 12345 | Rider should not Registration into an application. | As not Expected | Fail |
| TC03 | Check user login with valid data | 1. Go to site http://localhost/NSTU-Bike-Rental-System/login.php 2. Enter Username 3. Enter Password   4. Click Login | Username = shekh  Password = shekh | Rider should Login into system. | As Expected | Pass |
| TC04 | Check user login with invalid data | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/login.php> 2. Enter Username 3. Enter Password   4. Click Login | Username = mynuddin  Password = mynuNSTU | User should not Login into an application. | As Expected | Pass |
| TC05 | Test to find out a specific bicycle using valid cycle name | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/search.php> 2. Input a name of bicycles 3. Click on search button | Value:VILOCE LEGION 50 BLACK-RED | Rider see the list of bicycle based on search input. | As Expected | Pass |
| TC06 | Test to find out a specific bicycle using Invalid cycle name | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/search.php> 2. Input a name of bicycle 3. Click on search button | Value: Roman C 560 cycle | Rider see the the message “Result Not found” | As Expected | Fail |
| TC07 | Click on View Details for show a bicycle details | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/index.php> 2. Click on book button |  | Rider should go to Details page | As Expected | Pass |
| TC08 | Click on Book button for booking a cycle | 1. Go to site   <http://localhost/NSTU-Bike-Rental-System/view.php?id=7>  2.click on book button |  | Rider able to booking and going to booking page | As Expected | Pass |
| TC09 | Test information before book confirm a bicycle | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/book.php?id=7&price=15> 2. Provide every Information | Name: kamruzzaman  Phone: 01647508443  Email: shekhnstuiit@gmail.com  Date:03/10/2021  Hours:5 | Every information show accurate | As Expected | Pass |
| TC10 | Test with wrong information before book confirm a bicycle | 1. Go to <http://localhost/NSTU-Bike-Rental-System/book.php?id=7&price=15> 2. Provide every Information | Name: kamruzzaman  Phone: 01647508443  Email: shekhnstuiit@gmail.com  Date:03/10/2020  Hours:50 | Every information not show accurate | Not Expected | Fail |
| TC11 | Check valid QR scanner | 1. <http://localhost/NSTU-Bike-Rental-System/payment.php> 2. Scan the booking bicycle |  | Success full payment notification and unlock the bicycle | Not  Expected | Fail |
| TC12 | Check Invalid information for payment | 1. <http://localhost/NSTU-Bike-Rental-System/payment.php> 2. Scan the booking bicycle |  | Rider get a alert notification for provide wrong information | Not Expected | Fail |
| TC13 | Check users can add book in Booking List | 1. http://localhost/NSTU-Bike-Rental-System/bk.php 2. Rider see the bicycle in booking list |  | User should able to see booked bicycle in booking list | As Expected | Pass |
| TC14 | Check Every booked Bicycle show in booking list | 1. http://localhost/NSTU-Bike-Rental-System/bk.php 2. Rider see the bicycle in booking list |  | User should able to see all booked bicycle in booking list | As Expected | Pass |
| TC15 | Click on Cancel Button for cancel a book from the booking page’s list | 1. http://localhost/NSTU-Bike-Rental-System/bk.php 2. Click on Cancel Button for specific booked bicycle in the booking list |  | User must able to remove or cancel booking before booking time | As Expected | Pass |
| TC16 | Test sing out when click on logout button | 1. Click on logout menu |  | Rider profile access must be close | As Expected | Pass |

**Non-functional test case execution**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Scenario** | **Test Steps** | **Test Data** | **Expected Results** | **Actual Results** | **Pass/**  **Fail** |
| TC17 | Check it takes the expected time for a user to log in with the correct credentials. | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/login.php> 2. Enter Username 3. Enter Password | Username:  shekh  Password:  shekh | User should able to access profile within short time. | As Expected | Pass |
| TC18 | Check page loading speed is acceptable. | 1. Go to site every pages |  | Every pages load must be within short time | As Expected | Pass |
| TC19 | Check an application should be available at different battery conditions, including charging. | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/login.php> |  | User should see that application should be available at different battery conditions. | As Expected | Pass |
| TC20 | Check a user should be able to log in from different devices simultaneously. | 1. Go to [site http://localhost/NSTU-Bike-Rental-System/login.php](./site http:/localhost/NSTU-Bike-Rental-System/login.php) |  | Rider must be able to access profile from any devices | As Expected | Pass |
| TC21 | Check the information from different devices should synchronize momentarily. | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/login.php> 2. Username 3. Password | Username:  Shekh  Password:  shekh | User should able to log in from different devices simultaneously. | As Expected | Pass |
| TC22 | Check the application should not cause device heating or battery draining. | 1. Go to site <http://localhost/NSTU-Bike-Rental-System/login.php> |  | User should be able to use the system friendly without any battery problem. | As Expected | Pass |