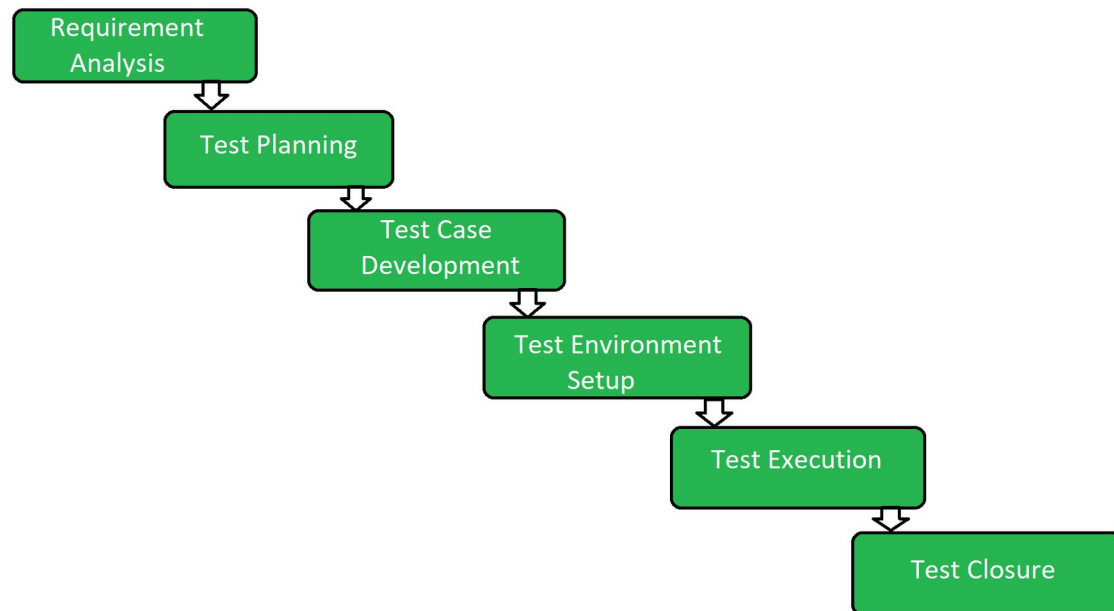# NSTU Bicycle rental System testing Report

Submitted to
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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.

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┌──────────────────┐
│   Requirement    │
│     Analysis     │
└──────────────────┘
         │
         ▼
    ┌──────────────┐
    │ Test Planning│
    └──────────────┘
             │
             ▼
        ┌──────────────┐
        │  Test Case   │
        │ Development  │
        └──────────────┘
                 │
                 ▼
            ┌──────────────────┐
            │ Test Environment │
            │      Setup       │
            └──────────────────┘
                     │
                     ▼
                ┌──────────────┐
                │Test Execution│
                └──────────────┘
                         │
                         ▼
                    ┌──────────────┐
                    │ Test Closure │
                    └──────────────┘
```

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

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

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

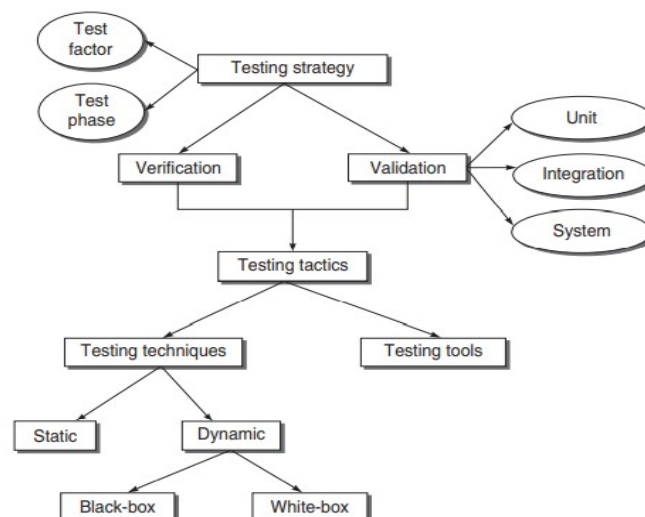| NFR - 04	Maintainability
Description	System must be developed maintainable way for maintaining easily after release.
Priority	High

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

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: mynuddin	Rider should not Registration into an application.	As not Expected	Fail

			name,email,phone and password 4.Click REGISTER	Email: mynu420@gmail.com Phone: 01792457854 password: 12345			
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	Every information not show accurate	Not Expected	Fail

			Hours:50				
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	1. Go to site http://localhost/NSTU-Bike-Rental-System/login.php		User should see that application should be available at different battery	As Expected	Pass

				conditions.		
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		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.	3. 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