

Internship on Software Quality Assurance (SQA)

BY

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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DAFFODIL INTERNATIONAL UNIVERSITY

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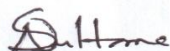
APPROVAL

This Project titled “**Internship on Software Quality Assurance (SQA)**”, submitted by “**Md. Hasibul Islam**”, ID No: 213-15-4496 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on July 16, 2024.

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DECLARATION

Hereby, I declare that this work will be submitted to Assistant Professor **Md.Sazzadur Ahmed** at Daffodil International University's Computer Science and Engineering Department. If a candidate is found to have any part(s) related to another thesis then he/she will automatically be disqualified.

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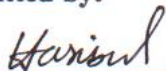
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Finally, I must acknowledge with due respect the constant support and patience of my parents.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Quality assurance for software (SQA) is crucial in making sure that the software products are reliable and trustworthy. This process eventually increases the consumer's confidence as well as decreasing expensive post-release problems. Quality assurance (QA) involves meticulously analyzing and enhancing software engineering methods; hence, it creates an atmosphere in which efficiency and quality are entrenched while developing programs and tools.

1.2 Background

This post pertains to my internship experience at Creative Soft Technology Ltd. Creative Soft Technology Ltd was the choice for this internship because of its industry-wide recognition as a top provider of IT services marked by dynamic growth rate and swift project implementation through the use of standard technologies, among many others. It is a well-established company with an excellent track record.

1.3 Objective

To ensure the delivery of high-quality software by implementing effective testing and quality assurance processes, thereby enhancing product reliability and customer satisfaction.

1.4 Motivation

Quality assurance appeals to me as it allows me to play a critical role in delivering reliable and bug-free software, contributing to customer trust and product success.

1.5 Report Layout

Is the format of the report started how the report format was created? In the basic sense, there were four sections that I worked on, they included...

Chapter number one mentions the introduction, background, summary of the report, motivation, and objectives, which were followed by the report layout later.

Chapter number two mentions the organization's Overview and Activity.

Chapter number three mentions the Road to SQA & Tester and the Challenges.

Chapter number four mentions the Acquired Knowledge and Concluding Statements.

1.6 Summary of Report

The mentor opts for a particular workflow and gives the fellow a little time to internalize and implement the solution. There was the performance phase in which he/she had to learn as much as he/she could within the stipulated time.

CHAPTER 2

Organization Overview and Activity

2.1 Organization Overview

Creative Soft Technology Ltd is a company that offers information technology services by constructing internet-based software products that are user-friendly, cost-effective, of high quality, innovative, comprehensive and multi-purpose. This company is also recognized for their skills in SQA-testing that makes sure that programs are in good condition and satisfy all demands of the customer. Automation systems created by Creative Soft Technology Ltd usually comprise IT, ICT, and labor force in a smart way.

2.2 Company Profile

In January 2015, Creative Soft Technology Ltd was founded. It has since grown into a significant IT firm that is dedicated to providing software solutions, web design, digital marketing as well as consulting for start-ups, small and medium enterprises (SMEs), large corporations (LCs) including those in fortune 500 list companies. It also serves as an information and communication technology provider for different levels of government (national and local) and the private sector. By the end of 2022, they expect to have more than 20 partners and clients, alongside more than 50 successful projects.

2.3 Vision, Mission and Values

Our focus and our goals are the consequence of our corporate thinking as well as our desire to render prospective IT services. All of them have faith in, create and conceptualize best-of-breed software development along with web design services which are contributing directly to the customer's general success and return on investment of our customers must be highest.

2.4 Declaration

Creative Soft Technology Ltd hereby declares that all information supplied through this document is accurate and genuine. Consequently, the company stipulates that no one within its ranks shall be barred by any authority either legal censure when it comes to signing agreements or deeds within Uganda be it private or non-governmental.

2.5 Major Clients

Creative Soft Technology Ltd. provides IT Enablement Services to various government departments and organizations. Some of them are foreign client. Some of our most recent clients include:

- ANSAR-VDP
- Bangladesh Krishi-Bank
- Asia Youth Conclave
- United Nations Development (UNDP)
- Sastho-bd
- The World Bank
- Bangladesh Jatiya-Sangsad
- Hotel Sea Cox

2.6 Activity

I am a significant person according to Creative Soft Technology Ltd. and I really appreciate the fantastic working situation which they have provided. Interns are presented with an opportunity to increase their understanding, especially when they deal with the team one on one.

2.7 Work Load

Junior developers are encouraged to choose one field from others given in the question that is asked frequently by them. So for me, I am studying Android development and A.I. By the way, I would like to know about SQA - what kind of dogs they have at their place as you have stated before? I am necessitated by my occupation to learn the creation process of scenarios, performance examination, and performance aspects of testing. After grasping and internalizing the essential principles during the workshop, I started applying them in different practical pilot projects then giving reports afterward to my guide. He pondered on all my works and showed me the mistakes. Finally, I ended up in some significant real-life projects. Writing tests formed my duties.

CHAPTER 3

Road to SQA & Tester and Challenges

After a couple of days, I began working as an SQA and learned new methods for testing software. I began with designing test cases and later did functional as well as non-functional testing. From there until now, I have been regularly using the new skills I got from becoming an SQA. I left the class working on different exercises that were given by the teacher. By then I was promoted to join the main SQA team where I was involved in working on projects that had real life applications.

3.1 Test Case Development

During my early work I had to make changes to Test Case Development; I had to familiarize myself with conditions and requirements for writing test cases and then used random ones as my basis. Subsequently, I shifted from this approach by coming up with my pattern on an Excel sheet after several trials. I practiced vigilantly to attain the skill of analyzing requirements, identify test scenarios, define test objectives, find test data, create test steps, specify expected results, handle test requirements, include post-condition checks, review and validate and update and maintain test cases.

Shown in figure 3.1.1

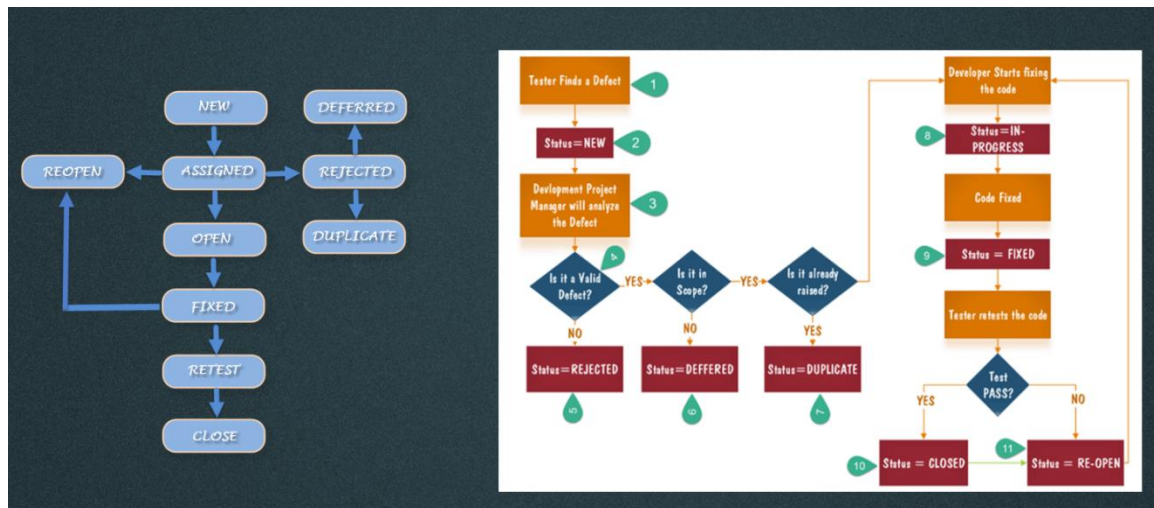


Figure: 3.1.1 Explain the steps that the defect goes through from discovery to resolution.



Figure: 3.1.2 Software Development Life Cycle Vs Software Testing Life Cycle

3.2 Functional Testing

Functional testing let me really understand what is needed for each feature in terms of demands and requirements of the software under test. Using this knowledge I am able to develop comprehensive test cases that cover different scenarios including positive/negative tests as well as limit cases or exception handling circumstances. By executing these identical written test cases, I am able to confirm that the software is working fine by identifying any deviations from anticipated output; I have significant expertise in functional testing. Shown in figure 3.2.1

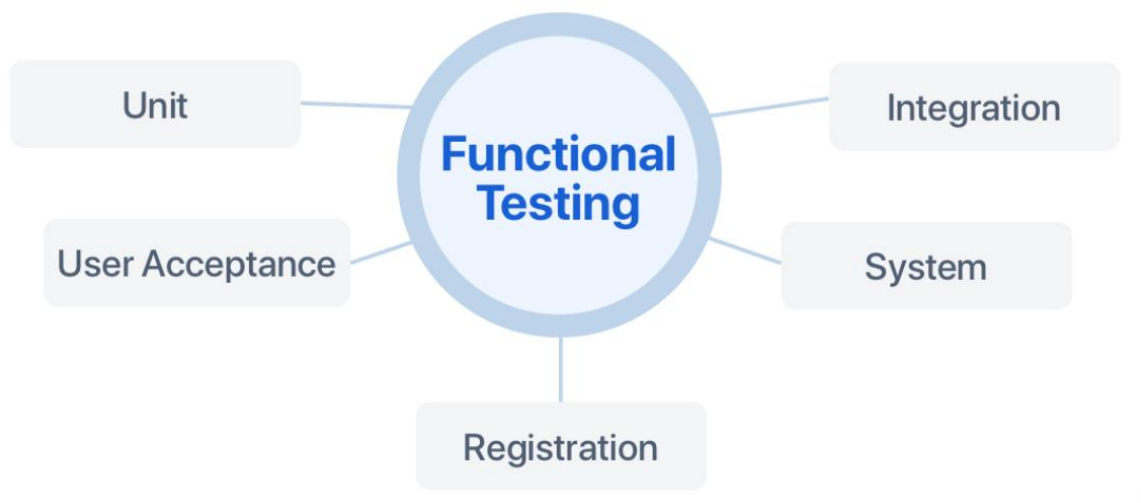


Figure: 3.2.1 Functional Testing

3.3 Non-Functional Testing

Driven by great love for software testing, I decided to specialize in non-functional testing upon immediately entering it by acquiring highly necessary skills. To ensure software quality and performance depend thoroughly on it was an important role that prompted me to study testing comprehensively. Through research, I got to understand more that non-functional testing incorporates numerous crucial domains, thereby rendering it a vital component of my testing. From evaluating software's non-functional features such as performance, security, usability, and scalability testing, I have gained a profound

Comprehension about their significance due to continuous learning and applying them in practice. Shown in figure 3.3.1

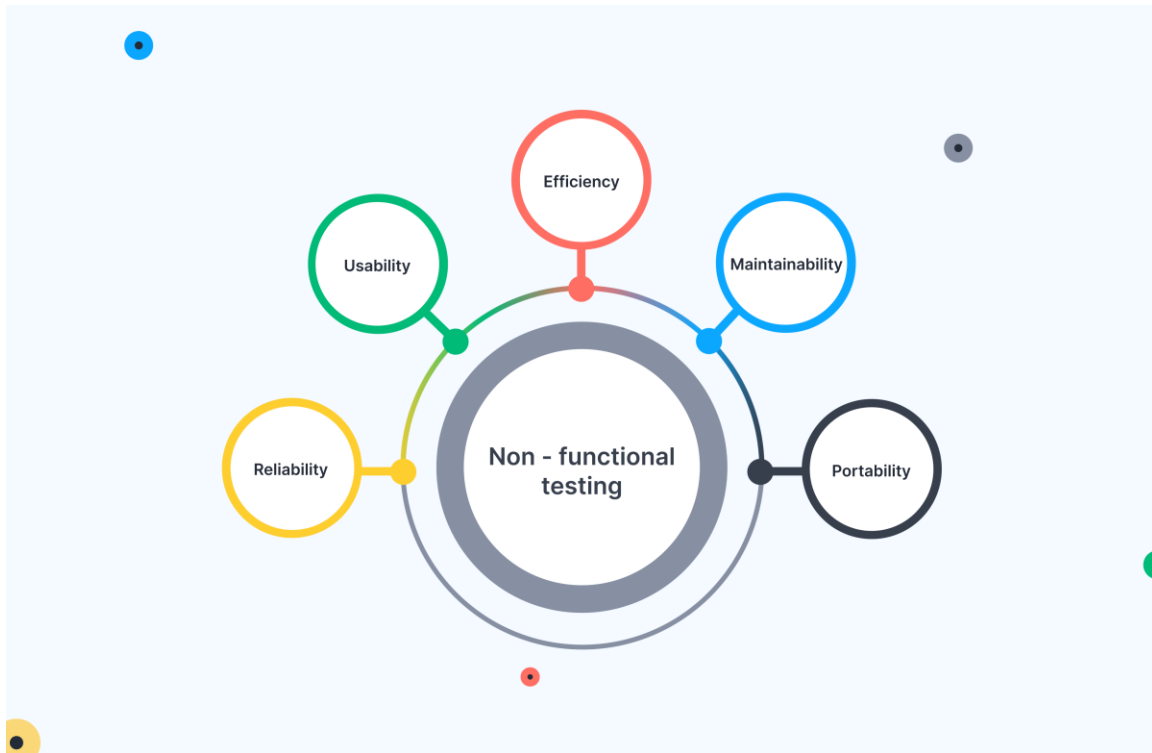


Figure: 3.3.1 Non-Functional Testing

3.4 Manual Testing

Manual testing is a type of software testing that involves doing it without any automation tools. From the user perspective, according to which the tester performs entire manual test cases, we try to determine if an application conforms to its requirement document.

Manual testers are responsible for checking software with the help of computerized procedures. Continue your reading to uncover the manual tester jobs and the skills and payments they should have. Quality assurance or QA in short, plays an important role in the Software Development Life Cycle (SDLC).

Conducting a manual examination on an item to discover defects and guarantee that the software application meets the preferred outcome of the organization entails creating, executing test cases, and recognizing as well as documenting mistakes while collaborating closely with the development team in solving respective issues.

Manual testing is meant for debugging and checking for errors before the software is installed. A tester who conducts manual testing is used to approve key functionalities in software. Analysts are known to process test cases and make the whither up error reports without any specialized automation tools.

Here is a step-by-step guide on how to do manual testing:

1. Look at what the software requirement specification has as its requirements.
2. Develop a test plan that is very easy to understand.
3. Come up with test cases that are going to cover every requirement that is explained in the document.
4. Have the QA team leader check it.
5. Run these tests and find any errors that exist.

Shown in figure 3.4.1, 3.4.2,

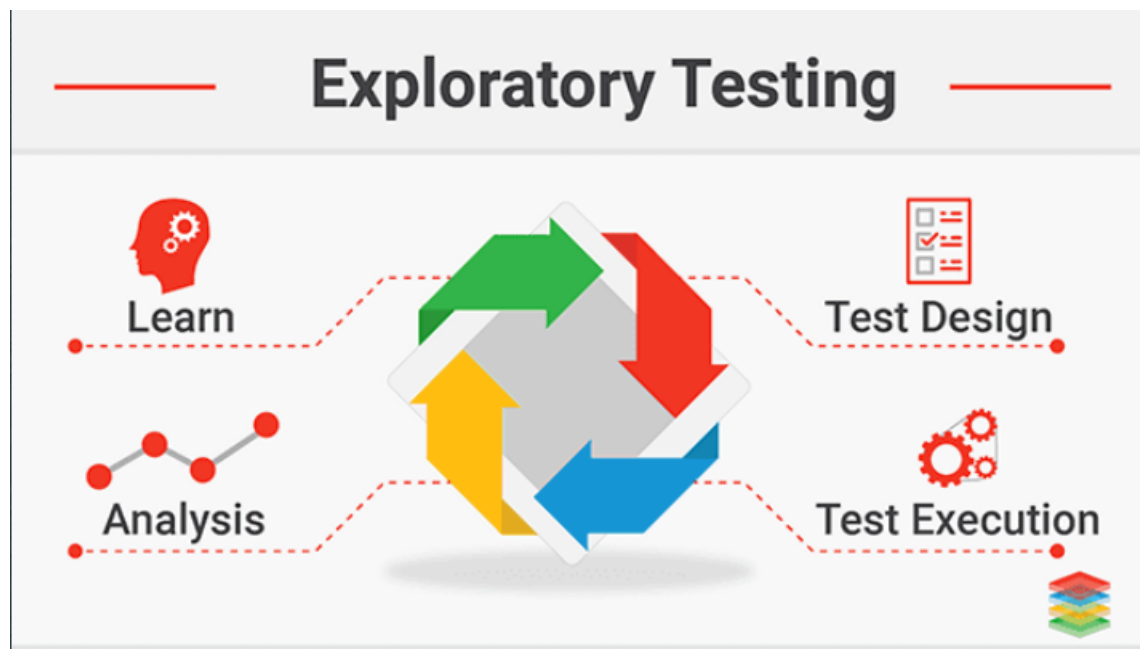


Figure: 3.4.1 Exploratory testing for Manual

Test Scenarios Login Page

1. Verify that the login screen is having option to enter username and password with submit button and option of forgot password
2. Verify that user is able to login with valid username and password
3. Verify that user is not able to login with invalid username and password
4. Verify that validation message gets displayed in case user leaves username or password field as blank
5. Verify that validation message is displayed in case user exceeds the character limit of the user name and password fields
6. Verify that there is reset button to clear the field's text
7. Verify if there is checkbox with label "remember password" in the login page
8. Verify that the password is in encrypted form when entered
9. Verify that there is limit on the total number of unsuccessful attempts
10. For security point of view, in case of incorrect credentials user is displayed the message like "incorrect username or password" instead of exact message pointing at the field that is incorrect. As message like "incorrect username" will aid hacker in brute forcing the fields one by one
11. Verify the timeout of the login session
12. Verify if the password can be copy-pasted or not
13. Verify that once logged in, clicking back button doesn't logout user
14. Verify if SQL Injection attacks work on login page
15. Verify if XSS vulnerability work on login page

Test scenarios for Registration Page

1. Verify that all the specified fields are present on the registration page
2. Verify that the required/mandatory fields are marked with * against the field
3. Verify that for better user interface dropdowns, radio buttons and checkboxes etc. fields are displayed wherever possible instead of just textboxes
4. Verify the page has both submit and cancel/reset buttons at the end

Figure: 3.4.2 Test Scenarios for Manual Testing

Evaly_Test_Cases - Microsoft Excel

G28		PASS							
Product Name	EvalyWebsite	TC Start Date		2/2/2024	TC Execution Start Date		TEST CASE SUMMARY		
Module Name	Evaly Website sign in	TC End Date		2/2/2024	TC Execution End Date		PASS	22	
Developer Name (TL)	x	Test Case Developed By	Santo		Browser (tested)		FAIL	0	
Test Executed by	Santo	Test Case Reviewed By	Fahad		Performance (tested)	No	WARNING	0	
Test Case ID	Name	Test Data	Step Description	Expected Result	Actual	Status	TOTAL 22		
TC_Sign_in_01	verify that evaly "sign in" page is loading	Verify evaly sign up page URL: https://evaly.com/bdaut/login	Go to the url	Successfully Loading evaly sign in page	As Expected	PASS			
TC_Sign_in_02	verify that all the specified fields are present on the sign in page.	verify that all the specified fields are present on this sign up page URL: https://evaly.com/bdaut/login	Go to the url	Successfully show evaly sign up page	As Expected	PASS			
TC_Sign_in_03	verify that "Sign in" background colour white or not	"Sign in" background colour	1 Launch Evaly Website 2 Click in "Sign-in"	Application should be show "Sign in" background colour white this sign in page	As Expected	PASS			
TC_Sign_in_04	verify that "Login to Evaly" text visible present in sign in page	"Login to Evaly" text	1 Launch Evaly Website 2 Click in "Sign-in"	Application should be show "Login to Evaly" text visible present in sign in page	As Expected	PASS			

Figure: 3.4.3 Practice of Test Cases for Sign-in Page

Test Case Title: Test empty password login.

First condition: The user must go to the platform's homepage.

Second condition: The email address used to register the account must be in the email field.

Third condition: A password must be set in the password field.

Fourth condition: The submit button must be clicked.

Expected Result: The user will get an error message saying that his password is essential, hence not yet set, but remains on the sign-up page.

Evaly_Test_Cases - Microsoft Excel

G2							
Product Name	Evaly APK	TC Start Date	11/20/2024	TC Execution Start Date	11/20/2024	TEST CASE SUMMARY	
Module Name	Evaly APK new user SignUp	TC End Date		TC Execution End Date		PASS	30
Developer Name (TL)	x	Test Case Developed By	Santo	Browser (tested)		FAIL	2
Test Executed by	Santo	Test Case Reviewed By	Fahad	Performance (tested)	No	WARNING	0
Test Case						TOTAL	36
Test Case	Test Case	Test Data	Step Description	Expected Result	Actual	Status	Remarks
TC_SignUp_01	verify that evaly signup page is loading	Verify evaly signup page. URL: https://evaly.com/bd/auth/signup	Go to the url	Successfully Loading evaly signup page	As Expected	PASS	
TC_SignUp_02	verify that all the specified fields are present on the signup page.	verify that all the specified fields are present on this signup page. URL: https://evaly.com/bd/auth/signup	Go to the url	Successfully show evaly signup page	As Expected	PASS	
TC_SignUp_03	verify that "SignUp" background colour white or not	SignUp background colour	1. Launch Evaly Website 2. Click in "SignUp"	Application should be show "SignUp" background colour white this signup page	As Expected	PASS	
TC_SignUp_04	verify that "Create your Evaly account" in evaly signup	"Create your Evaly account"	1. Launch Evaly Website 2. Click in "SignUp"	Application should be show "Create your Evaly account" in evaly signup	As Expected	PASS	
TC_SignUp_05	verify that "Full name" option visible present in signup page	"Full name option"	1. Launch Evaly Website 2. Click "SignUp" 3. "Full name" option	Application should be show "Full name" option visible present in signup page	As Expected	PASS	
TC_SignUp_06	verify that "Full name" option background visible present in signup page	"full name option background"	1. Launch Evaly Website 2. Click "SignUp" 3. "Full name" option	Application should be show "Full name" option background visible present in signup page	As Expected	PASS	
TC_SignUp_07	verify that "Full name" option background colour	"Full name" option	1. Launch Evaly Website 2. Click "SignUp"	Application should be show "Full name" option background colour white this signup page	As Expected	PASS	

Figure: 3.4.4 Practice of Test Cases Sign-up page

Test Case Name: Verify Password Reset Functionality

Conditions: The user must be on the login page.

Steps: 1. Click on the "Forgot Password" link.

2. Enter a registered email address.

3. Click on the "Submit" button.

4. Enter a new password.

5. Confirm the new password.

6. Click on the "Reset Password" button.

Expected Result: A confirmation message, "Your password has been reset successfully," should be displayed. The user should be redirected to the login page.

3.5 API Testing

API testing involves the analysis of the interface (API) of an application program to ensure it meets predetermined requirements regarding its purpose, security, speed, and usability. Testing an API will ensure that it operates in accordance with its design specifications and without any abnormalities or mistakes since APIs are commonly referred to as “the engine” behind an application being developed.

API testing makes you able to even find defects early. Postman is a standalone API testing software; you can create, test, design, change, and document APIs using it. It is also an easy user-friendly GUI to send and receive HTTP requests and responses.

Postman software allows you to assess and interrelate with APIs through a good-natured interface. In a selection of ways, you can make requests to each API endpoint using Postman, and review the responses.

Are you new to API testing? This article gives you the tricks to help you achieve the pros of API testing.

1. Understand API requirements.
2. Specify well the API output status.
3. Focus on small and functional APIs.
4. Organize API endpoints.
5. Take advantage of automation capabilities when testing APIs.
6. Be sure to select a suitable automation tool.
7. Be sure to select appropriate verification methods.
8. Write tests according to the positive and negative cases.
9. The live testing process.
10. API automation testing is not a thing to be underestimated.

9 Types API Testing

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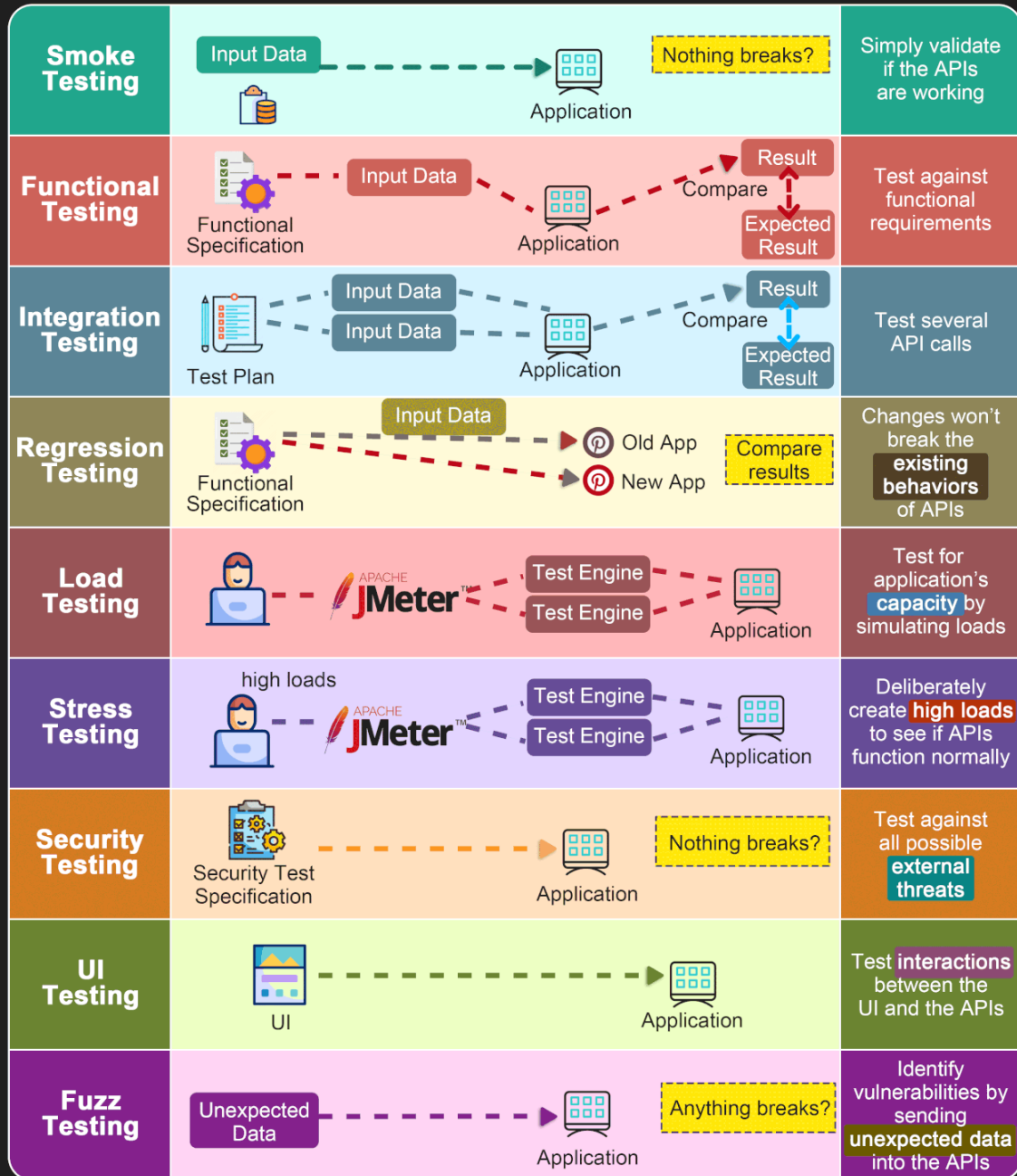


Figure: 3.5.1 API Testing Scenarios

Figure Practice for API Testing :

```
1 {
2   "first_name": "Hasibul",
3   "middle_name": "Islam",
4   "last_name": "Santo",
5   "date_of_birth": "14-05-2000"
6 }
```

body Cookies Headers (11) Test Results (23/38) Status: 201 Created

Pretty Raw Preview Visualize JSON ↕

```
1 {
2   "id": 10292656,
3   "first_name": "Hasibul",
4   "middle_name": "Islam",
5   "last_name": "Santo",
6   "date_of_birth": "14-05-2000"
7 }
```

Figure: 3.5.2 API Testing Collections

```
1 var jsonData = pm.response.json()
2 pm.environment.set("ID", jsonData.id)
3
4 pm.test("Verify that Body matches string 'id' ", function () {
5   pm.expect(pm.response.text()).to.include("id");
6 });
7
8 pm.test("Verify that Body matches string 'id' ", function () {
9   pm.expect(pm.response.text()).to.include("Dhaka");
10 });
11
12 pm.test("Verify that Body matches string 'first_name' ", function () {
13   pm.expect(pm.response.text()).to.include("first_name");
14 });
15
16 pm.test("Verify that Body matches string 'first_name' ", function () {
17   pm.expect(pm.response.text()).to.include("Dhaka");
18 });
19
20 pm.test("Verify that Body matches string 'middle_name' ", function () {
21   pm.expect(pm.response.text()).to.include("middle_name");
22 });
23
```

Figure: 3.5.3 API Testing Test Cases

Filter variables

	Variable	Type	Initial value	Current value
☒	Base Url	defa... ▼	https://thetestingw...	https://thetestingworldapi.com
☒	ID	defa... ▼		10292656
	Add new variable			

Figure: 3.5.4 API Testing Environments

3.6 Performance Testing:

People usually undertake performance testing to determine whether specific components can deliver results within given workloads. For instance, an individual might check his/her telephone's ability to handle multiple applications at once or ensure that their video game system remains responsive after being used over time. This kind of evaluation involves monitoring different parts so as to establish if the tested system remains consistent throughout the examination thereof during each test cycle or not. Performance testing is actually an instance of non-functional testing in which individuals strive to embed expected levels of performance into their systems' implementation as well as architecture and design.

Characteristics of performance testing include speed, scalability, stability, and reliability. Tools used to test performance include J-Meter, Open STA, Load Runner, Web Load, etc.

Features of disaster recovery include: generating load on the system being tested. To measure the timing of specific transactions as the load on the system changes. To hatchet in ire response times. To plot graphs or charts over time.

The objective of performance testing is: The ultimate goal is to determine baseline performance for the system. Performance testing is not aimed at finding bugs in the application software under test; instead, it is used to measure various properties of the

application, such as response time, throughput, or average time. There are several methods by which it can be achieved, which vary from tool to tool, including various types of user profiles, various types of activities, timing delays, and other parameters.

Performance Testing Techniques:

To evaluate the capacity of an application to perform under anticipated user loads, load testing is used. Before an application is launched, performance bottlenecks are to be determined.

Under stress testing, an application is tested at extreme workloads to establish how it handles loads or data processing. The main aim is to reveal where the application breaks.

Ensuring software systems are capable of managing anticipated loads over extended periods of time typically involves endurance testing. Spike testing, on the other hand, focuses on subjecting applications to sudden, dramatic increases in user traffic.

Volume testing, as the name suggests, requires filling a database with large amounts of information and then watching the resultant program behaviors. The main point behind this type of quality assurance is to gauge software productivity when faced with different scales of databases.

Scalability testing determines an application's effectiveness in scaling up so that more users can be supported, which will help you plan the capacity addition to your software system. It is not possible without it.

To conduct load testing, you need to concentrate on two parameters in the graph results that help in the analysis of the web server's performance and load.

- Throughput

- Deviation

Throughput proves to be the most significant parameter that shows how capable the server is of handling enormous loads. The higher the throughput, the better the performance of the server. The deviation is shown in red, it shows the error from the mean value; the smaller it is, the better.

J-Meter can be used for carrying out stress Tests: Inside the thread group, you are to include a response assertion. In a software load test plan, this element is crucial when certain requests are responded to, thus making it an essential part that every tester should assign to his operations. It is common to use the response assertion to validate that we get a response code of 200 after sending our HTTP request. This signifies that our request was successful in the HTTP language. Setting it as any other number other than 200 will make the test fail.

You are now able to add some users or threads and increase the number of iterations for the loop, which will serve to stress your server. Even in such conditions, you may desire to go ahead with the test and check how your site is doing under any given amount of load stress.

Endurance testing Question: We should test for about a period of an hour using 5000 users. How can I set this up using J-Meter while having exactly 5000 users in 1 hour? A better way of doing it is as follows: Configure the thread group with such a time frame and make sure that you execute your test through J-Meter in non-GUI mode.

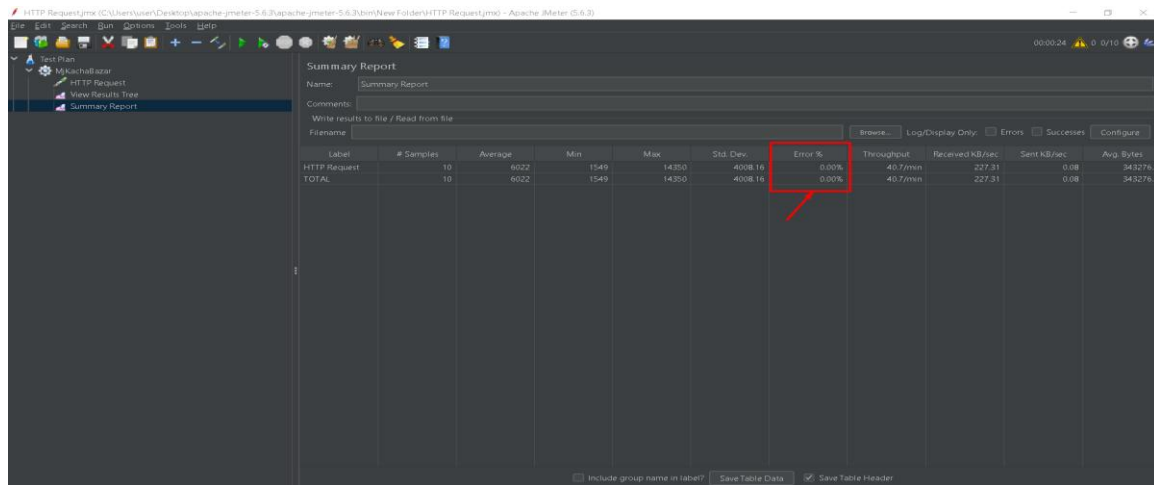


Figure: 3.6.1 J-Meter

Putting to the test the response shall be given by stress testing with a shot of adrenaline kind of approach we are healthy and young at heart. A check on the behavior of the system under an increased load is what makes Spike testing unique amongst other types of performance testing. To conduct spike testing in J-Meter, you can utilize a synchronization timer. By synchronizing the timer, we mean that it locks up all threads until a certain number of them are blocked or unblocked at the same time creating one big spike of load.

3.7 Management Testing

The most common meaning of test management is handling the process of testing. It is something associated with automation software: a testing tool is a software program used to control tests that were pre-defined in a test procedure, either in manual or automated format.

During system-level tests, developers ensure that the functional modules interact properly and find out whether they work when combined.

Tools for test management keep information on how to do testing, plan testing activities, and report the status of quality assurance activities. Test tools embrace different testing approaches and therefore have different sets of properties.

Test management is the planning, monitoring, and documenting of testing activities used for product quality assurance. Consistently with software testing, and test management.

The time management test assesses how effectively candidates can prioritize, plan, execute, and reflect on tasks and projects within a professional environment. This test explores the test takers' capability to do this in typical workplace situations.

It includes things like planning for a test, designing cases for it, carrying out the process, and analyzing results. This is a process of managing and monitoring software application testing to ensure that all resources are concentrated on dangerous or challenging areas of a software product.

Examining a product over its development stages creates customer confidence and trust as they get to know both the strengths and weaknesses of this particular product. The reason why when customers finally receive the product they are certain about its fitness for use after trying it out many times, hence delivering top quality goods.

Skillful time management entails the use of resources to enable one to get the results he/she wants thus effectively using time more productively by putting it into good use. This can enable one to divide his time equally to all things he is supposed to do. Among some major successful time management skills are: Organization and priority setting.

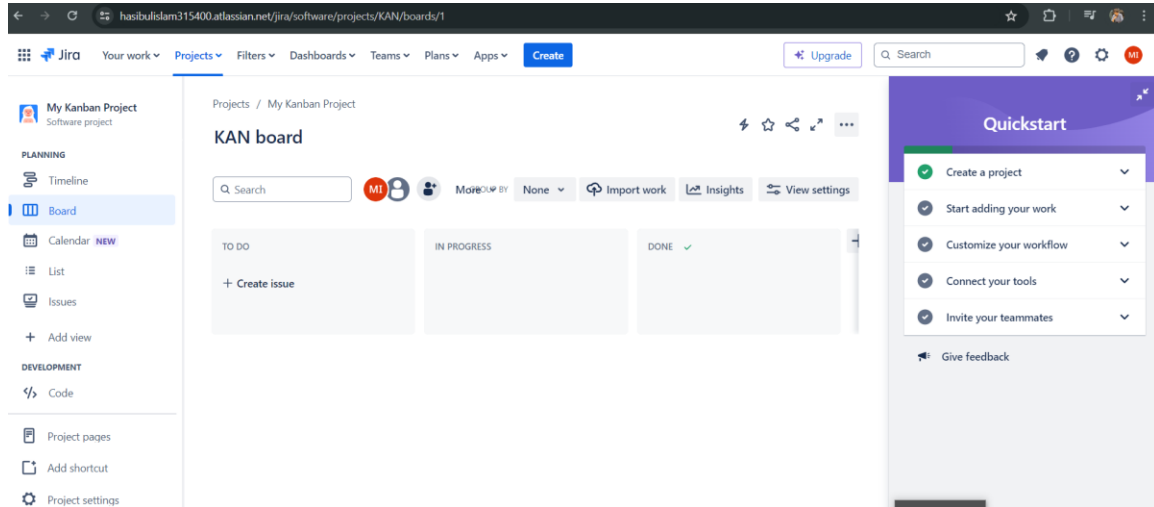


Figure: 3.7.1 Jira for Project Management

3.8 Challenges

At Creative Soft Technology Ltd., I am able to work more professionally and start a successful career. This boosts myself assurance and enables me employ better methods.

3.9 Academic Preparation

The academic theory helped me understand how to be confident when solving issues and scenarios in the SQA region.

3.10 Identified

The primary goal of this study was to discover appropriate steps taken for constructing and solving a small problem within a specified period. Acquire development architecture programs which might be useful in your professional growth.

3.11 Personal Skills

The internship transformed me from a novice to an expert in SQA & Testers. At first, I was foreign to numerous terms that described these new technology's characteristics. (However), what is important is that (but) through internships I learned how to prepare for issues as well as work with real-life projects being SQA specialist. In addition this same course enables me to learn big piece of software for testing that boosts my self-assurance and skills. I began my career path as unskilled manual workers testing system functions without any automation support and finally turned into someone who has valuable competences required for successful work at any project which involves software testing.

CHAPTER 4

Acquired Knowledge and Concluding Statements

When I started my internship at Creative Soft Technology Ltd, I felt awkward with everything around me. However, I was so determined; I choose to work with the mentor. I faced a challenge for few days, but the assistance from the mentor enabled me overcome the difficulty.

4.1 Implications for University's Internship Program

I appreciate the opportunity provided by the Faculty of Science and Information Technology for me to gain industrial experience during the course of my program and experience the flavor of software jobs which have attracted my interest. DIU Office of Employment and Alumni, as well as the Faculty of Science and Information Technology at DIU, deserve special appreciation for providing an opportunity for me to follow my passion and earn experience during internship periods.

4.2 Effects on Personal Skills

The internships I followed gave me savvy during my first professional life. I considered software testing hard when I threw myself into it. It took much time, but I could not do anything. But when I received guidance, I found out it was not as hard as I thought to myself, these people were good at teamwork and they could quickly come up with solutions to problems, this was helped by the kind of organization that had one of the best office designs ever seen from within or without. A proactive management style ensured high levels of staff motivation; that is why everyone could witness my proficiency for every task since the process of organizing performances was impressive that I had to keep moving to meet requirements.

4.3 Ability to learn

It's what draws every individual who's serious about computer hardware to this location. Changing may help some people recover. I was upbeat when it comes to learning more about software development and testing, this issue then became an interesting topic for me.

4.4 Dependability

Because of these reasons, I started working on them and also communicated with my mentor about the SQA sector and in turn gained insight. Therefore, I believe such honesty will lead to consistency in the future in the relationship between Creative Soft Technology Ltd. and DIU.

4.5 Initiative

Should I be confronted by any problem; my recourse is to try and solve it on my own; but in cases where I find myself unable then I turn to a consultant for guidance while at the same time providing me with the shortest possible solution he can come up with. In this way, I believe that such assistance has been very beneficial in helping me acquire knowledge that is useful.

4.6 Summary

Perhaps one of the top suppliers of IT services, in the world, is Creative Soft Technology Limited that has vast recognition for their tremendous services provision. This is because they ensure their customers are well catered for. I used to work at Creative Soft Technology Ltd where I conducted Software Quality Assurance and Testing duties.

4.7 Organization

Before I went to work at Creative Soft Technology Limited, I would communicate well but feel very challenged when it came to managing my flow of work during that time. Nevertheless, that was when the mentor from the organization came around for me; with his/her help I managed to get over these hitches. This was a project I had undertaken with a consultant for whom we reached consensus on various issues during the period of its execution. Now Creative Soft Technology Limited is an employer for everybody with working conditions fit for all.

4.8 University

The way a student can become a professional is by having internship, an internship can see a student build foundations for his or her profession on how it might pan out.

4.9 Professional

It is very wrathful for persons to use internships for self-presentation in job market and boost their knowledge application capability in workplaces. Nonetheless, some are met by various difficulties that need persistent seriousness and commitment. However, SQA's require great skills which can enable them to progress into their professions, hence I found out how to relate with professionals from several fields of computer literacy.

CHAPTER 5

Conclusion and Future Goals

5.1 Conclusion:

Software testing techniques are pivotal to the pursuit of high-quality software. Here, three conference papers focus on quality assurance (SQA), software quality and testing practices for an overarching review of contemporary research efforts in this area.

The first paper examines the Bangladeshi software industry and reiterates the challenges that are there in the area of software testing. It is quite evident that low use of automatic test tools and lack of competent staff are major obstacles to production of flawless software. While Bangladesh's ICT sector has been expanding at a rapid pace, testing procedures still have a long way to go, hence need for immediate action towards enhancement of software quality.

However, the second paper compares manual and automated testing methods, offering advice on choosing the more appropriate one according to project requirements. It discusses the advantages and disadvantages of each, shedding light on the trade-offs involved in testing practices between efficiency and effectiveness.

The third paper probes SQA in Scrum, an agile software development method focusing on the problems and prospects of merging practices of Software Quality Assurance into agile surroundings. It highlights the significance of adjusting SQA practices for agile methods and stresses the importance of both development and testing departments working together.

These papers taken together underscore the vital import of software quality assurance and testing for ensuring that software applications are reliable and effective. Though it may have different forms from one context to another, the need is always the same: for software to be delivered in good condition just as users expect.

In conclusion, this review has summarized the results of the three conference papers; it has presented useful information on how software testing techniques have evolved. Addressing the issues identified and acting on the suggestions made would enable

software development teams to improve their SQA practices and thus produce superior software products to their clients.

5.2 Future Goals:

The future of software quality assurance (SQA) will be shaped by several crucial objectives. These objectives will try to make SQA methods more efficient, effective, and comprehensive, which have been greatly influenced by technological advancements and changing industry needs.

One aim is to implement AI and advanced automation in the testing process. By leveraging machine learning and AI, we can improve test automation to a great extent, such as by predicting defects, creating intelligent test cases, and performing more comprehensive testing. Also, robotic process automation (RPA) is essential in automating repetitive QA tasks, thereby enhancing productivity and lowering the chances that human effort may be expended in vain.

Focusing on optimizing the test environment and data management is crucial too. Creating scalable and consistent test environments that mimic real-world conditions accurately will often require the use of virtualization and containerization technologies. Another key point is generating synthetic test data to design authentic testing scenarios, ensuring data security and privacy.

Another significant aim is to improve security testing. To secure constant security evaluations and automated vulnerability scanners, it is important to incorporate security testing within the development pipeline. Moreover, for an additional level of protection within the security testing domain, particularly in cloud-based applications, it is important that one consider using zero-trust architectures.

It is essential to enhance performance and scalability during tests. You can do a better job of detecting and solving any problems ahead by employing improved monitoring tools that are able to analyze real-time performance. Leveraging the cloud for cloud-based load

removal requires large-scale loads or stress tests, which require lots of on-premises hardware.

Enhancing the general quality of software involves facilitating collaboration as well as communication among development teams, quality assurance teams, and operational teams. But when you opt to use sophisticated collaboration tools, coupled with improved documentation practices, you can be sure better communication and knowledge sharing within teams will be experienced.

Automated testing, AI integration, security, and user-centric approaches are what will likely shape the future of software quality assurance. SQA professionals must remain ahead of these trends by continuously adapting to new technologies so as to assure high-quality software delivery amidst a rapidly changing and complicated technology landscape.

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Internship on Software Quality Assurance (SQA)

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