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Software Testing at Netsoft Solutions Limited Prepared By: Jami Shikder ID: 171-35-1925 A report submitted in partial fulfillment of the requirement for the degree of Bachelor of Science in Software Engineering Department of Software Engineering Daffodil International University DECLARATION I do hereby declare that the internship report entitled "Software Testing by Netsoft Solution Limited" has been prepared on the basis of six months of Internship activities it is an original work done by me under the supervision of "Nusrat Jahan", Lecturer; Department of Software Engineering. The report is a unique one which is not submitted anywhere for any academic purpose. The data and information which are mentioned here are also collected and organized by myself. I am solely responsible for any kind of misleading or manipulation of data or information in this report. Finally, this report is submitted to the Faculty of Science & Information Technology Department of Software Engineering of Daffodil International University for the partial fulfillment of the requirements of the Degree of Bachelor of Science. Submitted By: ..... Jami Shikder ID: 171-35-1925 Batch: 22 Department of Software Engineering at Daffodil International University. Certified By: ..... Nusrat Jahan Lecturer (Senior Scale) Department of Software Engineering at Daffodil International University. ACKNOWLEDGEMENT First, I would like to express my gratitude to the Almighty Allah. I would like to pay my deep respect to Nusrat Jahan, Lecturer (Senior Scale), Department of Software Engineering, Faculty of Science & Information Technology, Daffodil International University, due to her generous and friendly guidance. I am also grateful to her for helping me to understand those issues, which I have failed to understand. At the same time, I also pay my hearty gratitude to my organizational supervisor Golam Mirza, Team Lead Software Engineer, Netsoft Solution Limited who has extended her helping hands by showing the right and effective path to me and by motivating me to implement my theoretical knowledge studying SWE in their company. It is worth mentioning to utter the name of all respectable teachers of my department from whom I have received suggestions and advice for

preparing this report and learned over the academic years. Finally, thanks to all the scholars whose writings, valuable researches, and models helped me in completing this document. TABLE OF CONTENTS 1.1 Overview 1.2 Origin of the Report 1.3 Objectives 1.4 Methodology 1. 4.1 Primary Data Source 1.4.2 Secondary Data Source 1.5 Scope 1.6 Limitations 1.7 Conclusion 2.1 Company organizational chart of management 2.2 Company Strengths 2.3 Contact details 2.3.1 Company details 2.3.2 Mentor details 3.1 Overview 3.2 Internship Experience 3.3 Software department of Netsoft Solutions Limited 3.4 Working Environment and protocols 3.4.1 Rules and Regulations of Netsoft Solutions Limited 3.4.2 Facilities given to interns 3.5 Comparative Analysis of Office Culture 3.5.1 Mixed up with Office Culture 3.5.2 Entertainments & Refreshments 3.6 Internee life cycle 3.7 Personal expectations 3.8 Professional Environment 3.9 First Day at Office 3.10 Conclusion 7 7 8 8 8 8 9 9 9 11 11 12 12 12 13 13 13 14 14 14 14 14 14 14 15 15 15 15 4.1 What is testing? 4.2 Who does testing? 4.2.1 When to start testing? 4.2.2 When to stop testing? 4.3 Difference between Verification & Validation 4.4 Difference between Audit and Inspection 4.5 Difference between Testing and Debugging 4.6 Testing Myths 4. 7 Testing and ISO Standards 4.8 Manual Testing 4.9 Automation Testing 4.10 DAY AS AN INTERN 4.10.1 Initiation 4.10.2 Tools and technologies 5.1 Project description 5.1.1 My contribution 5.1.2 Challenges 5.1.3 UI Screenshot 5.2 Requirements Traceability Matrix 5.3 Test Cases 5.3.1 Check client info 5.3.2 Generate electricity bill 5.3.3 Generate garments bill 5.3.4 Payment all bill 5.3.5 Electricity bill payment 5.3.6 Garments bill payment 5.3.7 Check all payment report 5.3.8 Check User permission 5.3.9 Backup database 6.1 Concluding Statements 16 16 17 17 18 18 19 19 21 23 23 25 25 25 26 26 26 27 34 34 34 35 36 36 38 39 40 40 41 42 EXECUTIVE SUMMARY In my last semester of Master in Business Administration at Daffodil International University, I had to do an internship program of 6 months in a reputed software company. My internship company was Netsoft Solutions Limited or NSSL. NSSL is one of the reputable software firms in the country having a variety of products and services with a wide range of clients. NSSL has a good reputation both locally and abroad. During my internship period, I have worked on a project. The name of the project was ''Payment collection system for supermarkets'' for the NSSL. Through the course of my internship, I had to learn how to coordinate and manage a project according to the software development life cycle and how to deliver better quality products and ensure better services. Besides, I have learned how to behave properly in the office and picked up many soft skills such as responsibility, timeliness, respecting others, taking on new challenges etc.I have thoroughly enjoyed my experiences at NSSL and the internship program has been extremely useful for both my academic studies and future career. CHAPTER 1: INTRODUCTION 1.1 Overview The internship is a program that enhances the capability of the graduates and the scope to do practical works in an organization related to the student's major to gain work experience. According to the Oxford Dictionary, A student or trainee who works, sometimes without pay, in order to gain work experience or satisfy requirements for a qualification. As the outside world is very competitive for anyone after graduation, an internship gives the student a great opportunity to have a head start. Daffodil International University offers an undergraduate program in "BSc. in SWE". As a student of the undergraduate program, the program requires that we complete an internship period with a reputable company where I will be trained practically with working environment practices and get familiar with the industry. I worked for the Software Dept. Netsoft Solutions Limited where I am to complete 6 months of internship. Through the course of my internship, I had to learn how to coordinate and manage a project according to the software development life cycle and how to deliver better quality products and ensure better services. Besides, I have learned how to behave properly in the office and picked up many soft skills such as responsibility, timeliness, respecting others, taking on new challenges, etc. In this report, I have discussed my internship period at NSSL, an overview of the company and its activities, my experiences working for a reputed firm, what I have learned, and how it has helped me to develop and grow, and retaining software quality with proper testing. 1.2 Origin of the Report This report reflects upon the six -month-long internship period at Netsoft Solutions Limited. It focuses on an overview of the Software development department at Netsoft Solutions Limited, my contribution to the organization and how it has developed my skills and how I have applied the Software tester role in software development. 1.3 Objectives The main objective of the report is to analyze the software development cycle and implementation of the software tester's role in the software development life cycle. The report is designed to meet specific goals. Its goal is to: The introduction of the organization, including the standard following here. ● Testing products of the organization. ● Description About the team where I work. ● A detailed description of responsibilities. ● As an intern achievement, focusing on non-academic achievements. ● To know about the problems faced in the software industry. ● to know how these problems are solved. ● To know the coding style and conventions of the industry. ● To go through the development cycle and models. 1.4 Methodology All information used in the report is collected from both internal and

external sources. The primary and secondary sources of data for this report are as follows: 1.4.1 Primary Data Source ● Through personal experience and observation ● Through conversation with other employees 1.4.2 Secondary Data Source ● Company website ● Related office documents ● Internet 1.5 Scope In this document, I have discussed the company, its products and services, office environment and culture, and its policies. The second part of the report covers how I start my internship and the type of work done during my internship period. The third part of the report covers Software Development & how to use software testing tasks in the Software Development Life Cycle, and the necessary tools that I have used. 1.6 Limitations Firstly, due to the nature of the contract and the confidential agreement I had to sign when joining Netsoft Solution Limited, I cannot disclose various financial information that is sensitive to the company. Moreover, various constraints such as time and resources have limited my output. But I have still tried to present all the information that I could in the best way possible. 1.7 Conclusion The internship period helps in developing skills and knowledge, but it also gets us in touch with industry experts and big names. In this report, I have given an overview of my company, my experiences working there, my involvement and contributions and finally, I have made a self- assessment on my performance during the internship period. CHAPTER 2: COMPANY OVERVIEW Netsoft Solution Ltd (NSSL) is a complete solution provider of Software Development, Database Configuration, Database Maintenance, Database Backup and Recovery, IT Education, end-to- end communication services, web development, IT consultancy, outsourcing, data entry, processing, and analysis. It provides customer solutions ranging from equipment analysis to system design and implementation backed by technical expertise. A group of highly experienced IT professionals analyzes the user needs and designs a cost-effective system for any individual organization. NSSL began its operation with a vision to provide on-time, on-budget solutions to meet customer needs. Our advanced technology platform solutions unlock the potential of our customers' databases and help create better customer interaction, improved workflow, management, ultimately better products, and more revenue. Services: ● IT Education / Professional Training. ● Customized Software Design & Development. ● Database Design & Implementation. ● Domain & Hosting. ● Website Design & Development. ● Android Apps Developments. ● Search Engine Optimization. ● Consultancy ● Turnkey solution for sophisticated technical problems 2.1 Company organizational chart of management 2.2 Company Strengths ● Netsoft Solution is providing solution & services to more than 100 clients in ● local market in the last three years. ● The company has skilled engineers in the Software development sector. ● Excellent staff for handling sales with strong knowledge of current ● products. ● Strong customer relationships ● Strong Support team. ● The strong internal communications system ● A prime location of at our company ● Well-designed and successful marketing strategies ● A large product line of ERP Solutions, likes ○ NS General Accounting Management Systems ○ NS ERP for Educational Management Systems for School, College & Madrasah. ○ NS ERP for Educational Management Systems for University ○ NS POS-Point of Sales for Small Retailers ○ NS Sales Accounting Systems for Medium Retailers ○ NS ERP for Supply Chain Management for Big Retailers ● ● ● ○ NS ERP for Healthcare Management Systems (Indoor Patient & Outdoor ○ Patient Management with Pathology) ○ NS FVIS-Fingerprint Verification & Identification Systems. ○ NS Digital Document Archival Systems ○ NS General Insurance Management Systems ○ NS CRM Customer Relationship Management for Travel Agency ○ Digital Bidder Assessment System It has large areas of IT Education, Professional Training & Experienced. A department of Web & Ecommerce development. The business reputation of being innovative 2.3 Contact details 2.3.1 Company details Company name: Netsoft Solutions Limited Website: https://www.netsoftbd.com/ Email: info@netsoftbd.com Address: House-01(2nd Floor), Road-10, Block-H, Section-02, Mirpur-2, Dhaka-1216 2.3.2 Mentor details Name: Alamin Rahman (IT Executive) Phone: +880 16 1175 0850 CHAPTER 3: COMPANY CULTURE 3.1 Overview In our academic curriculum, the course outlines are so designed that they each have a defined purpose that helps shape the student to become as well prepared as possible when he/she graduates. The internship program has its purpose too. The most obvious benefit of the internship program is receiving real-life, on-hand training in the industry that a classroom can never simulate. The other notable benefit is learning how to behave in a professional setting. Learning about the best practices and popular technologies and processes falls under that former category. Responsibility, timeliness, cordiality, respect, etc. fall under the latter category. This chapter outlines my internship experiences, my involvement with NSSL in the last 6 months, how I have contributed to the company, and what I learned during my internship experiences. 3.2 Internship Experience NSSL is a small-medium company in Bangladesh and already has many products and services that are operational. Working at NSSL has given me insight into how medium software companies function and the practices that are followed. 3. 3 Software department of Netsoft Solutions Limited The Software Department of NSSL provides the support for the entire catalog of the

services that NSSL provides to its clients. This department also handles the smooth operation of software and database trouble of its client's servers. The software department consists of knowledgeable and skilled programmers, testers. 3.4 Working Environment and protocols 3.4.1 Rules and Regulations of Netsoft Solutions Limited ● Arrived at the office at 9.30 am & left at 5.30 pm. ● All communication/instructions must be from the official email and written. ● All office property must be left in the office before leaving the office. ● All decisions must be discussed, finalized, approved by management. 3.4.2 Facilities given to interns ● desk ● a computer ● internet connection and ● stationeries such as pen, pencil, notebook, mouse, keyboard, etc. ● Snacks and tea/coffee were also provided from the office. ● First aid and other medical supplies were available at the office. ● Two days weekend (Friday & Saturday). 3.5 Comparative Analysis of Office Culture 3.5.1 Mixed up with Office Culture My employer allowed me to transition to work at home. They also gave me freedom, flexibility to my work and improved productivity to keep me figuring out ways to deal with problems. Entire company sees them as a one team. 3.5.2 Entertainments & Refreshments It has very friendly working environment every day there has a tiffin and refreshment break and has lots of entertainments elements to fresh our mind 3.6 Internee life cycle The Project Manager to keep track of my progress. I had deadlines for each task that we had to meet. After 3months, the project manager extended my working periods from 3 months to 6 months. Based on my progress, I was provided beneficial feedback, which would prove to be really helpful for my future careers. 3. 7 Personal expectations My expectations on what I wanted to get from this internship experiences are listed as follows: ● Learning about the software development life cycle. ● Understanding the software tester task. ● Learning about new technologies ● Time management and responsibility. ● Good relationship building 3.8 Professional Environment Although an internship is a part of our study, the environment of an industrial company. It is not that easy to adapt to a professional environment. I have to maintain some code of conduct that is different from academia. The professional environment is not as normal as I expected. Professionalism, one of key codes helped me a lot to adapt with the professional environment and also the environment was quite friendly. The people around and my team were also very friendly to me. 3.9 First Day at Office The first day at my office is a memorable day for me. I was nervous about how the company would be, what would be the culture of the company, how they would behave with me. I was told to go to the office at 11.00 am and I went there before this time. When I reached the company, my industrial supervisor "Zakia Fard ous Nondita" met with me and talked with me. I felt a little bit easy after I met with them. When I was seated in the discussion room then the HR of the company came and welcomed me, he went through my Curriculum Vitae and talked with me about several issues. I thought they would ask me a lot of questions. But he only asked some simple questions about my study area. Then he showed me my seat. Another employee also introduced me to other employees and all of the employees said hello to me with a smiling face. 3.10 Conclusion My expectations were mostly met and I'm pretty satisfied with my internship program. NSSL has helped me to learn and develop my skills. The company has always encouraged me to learn the technologies and practices that interested me. Moreover, I was even given the responsibility of an entire application that taught me to manage and maintain the project by myself. CHAPTER 4: SOFTWARE TESTING OVERVIEW 4.1 What is testing? Testing is the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not. This activity results in the actual, expected and difference between their results. In simple words testing is executing a system in order to identify any gaps, errors or missing requirements in contrary to the actual desire or requirements. According to ANSI/IEEE 1059 standard, Testing can be defined as "A process of analyzing a software item to detect the differences between existing and required conditions (that is defects/errors/bugs) and to evaluate the features of the software item". 4.2 Who does testing? It depends on the process and the associated stakeholders of the project(s). In the IT industry, large companies have a team with responsibilities to evaluate the developed software in the context of the given requirements. Moreover, developers also conduct testing which is called Unit Testing. In most cases, following professionals are involved in testing of a system within their respective capacities: 1 .Software Tester 2 .Software Developer 3 .Project Lead/Manager 4 .End User Different companies have different designations for people who test the software on the basis of their experience and knowledge such as Software Tester, Software Quality Assurance Engineer, and QA Analyst etc.It is not possible to test the software at any time during its cycle. The next two sections state when testing should be started and when to end it during the SDLC. 4.2.1 When to start testing? An early start to testing reduces the cost, time to rework and error free software that is delivered to the client. However in Software Development Life Cycle (SDLC) testing can be started from the Requirements Gathering phase and lasts till the deployment of the software. However it also depends on the development model that is being used. For example in Waterfall model formal testing is conducted in the Testing phase, but in

incremental model, testing is performed at the end of every increment/iteration and at the end the whole application is tested. Testing is done in different forms at every phase of SDLC like during the Requirement gathering phase, the analysis and verifications of requirements are also considered testing. Reviewing the design in the design phase with intent to improve the design is also considered as testing. Testing performed by a developer on completion of the code is also categorized as Unit type of testing. 4.2.2 When to stop testing? Unlike when to start testing it is difficult to determine when to stop testing, as testing is a never ending process and no one can say that any software is 100% tested. Following are the aspects which should be considered to stop the testing ● Testing Deadlines. ● Completion of test case execution. ● Completion of Functional and code coverage to a certain point. ● Bug rate falls below a certain level and no high priority bugs are identified. ● Management decision. 4.3 Difference between Verification & Validation Verification· Validation· Are you building it right? Are you building the right thing? Ensure that the software system meets all the functionality. Ensure that functionalities meet the intended behavior. Verification takes place first and includes the checking for documentation, code etc. Validation occurs after verification and mainly involves the checking of the overall product. · Done by developers.· Done by Testers. Have static activities as it includes the reviews, walkthroughs, and inspections to verify that software is correct or not. Have dynamic activities as it includes executing the software against the requirements. 4.4 Difference between Audit and Inspection Audit: A systematic process to determine how the actual testing process is conducted within an organization or a team. Generally, it is an independent examination of processes which are involved during the testing of software. As per IEEE, it is a review of documented processes whether organizations implement and follow the processes or not. Types of Audit include the Legal Compliance Audit, Internal Audit, and System Audit. Inspection: A formal technique which involves the formal or informal technical reviews of any artifact by identifying any error or gap. Inspection includes the formal as well as informal technical reviews. As per IEEE94, Inspection is a formal evaluation technique in which software requirements, design, or code are examined in detail by a person or group other than the author to detect faults, violations of development standards, and other problems. 4.5 Difference between Testing and Debugging Testing: It involves the identification of bug/error/defect in the software without correcting it. Normally professionals with a Quality Assurance background are involved in the identification of bugs. Testing is performed in the testing phase. Debugging: It involves identifying, isolating and fixing the problems/bug. Developers who code the software conduct debugging upon encountering an error in the code. Debugging is the part of White box or Unit Testing. Debugging can be performed in the development phase while conducting Unit Testing or in phases while fixing the reported bugs. 4.6 Testing Myths Given below are some of the more popular and common myths about Software testing. Myth: Testing is too expensive. Reality: There is a saying, pay less for testing during software development or pay more for maintenance or correction later. Early testing saves both time and cost in many aspects however, reducing the cost without testing may result in the improper design of a software application rendering the product useless. Myth: Testing is time consuming. Reality: During the SDLC phases testing is never a time consuming process. However diagnosing and fixing the error which is identified during proper testing is a time consuming but productive activity. Myth: Testing cannot be started if the product is not fully developed. Reality: No doubt, testing depends on the source code but reviewing requirements and developing test cases is independent from the developed code. However iterative or incremental approach as a development life cycle model may reduce the dependency of testing on the fully developed software. Myth: Complete Testing is Possible. Reality: It becomes an issue when a client or tester thinks that complete testing is possible. It is possible that all paths have been tested by the team but occurrence of complete testing is never possible. There might be some scenarios that are never executed by the test team or the client during the software development life cycle and may be executed once the project has been deployed. Myth: If the software is tested then it must be bug free. Reality: This is a very common myth which clients, Project Managers and the management team believe in. No one can say with absolute certainty that a software application is 100% bug free even if a tester with superb testing skills has tested the application. Myth: Missed defects are due to Testers. Reality: It is not a correct approach to blame testers for bugs that remain in the application even after testing has been performed. This myth relates to Time, Cost, and Requirements changing Constraints. However the test strategy may also result in bugs being missed by the testing team. Myth: Testers should be responsible for the quality of a product. Reality: It is a very common misinterpretation that only testers or the testing team should be responsible for product quality. Tester’s responsibilities include the identification of bugs to the stakeholders and then it is their decision whether they will fix the bug or release the software. Releasing the software at the time puts more pressure on the testers as they will be blamed for any error. Myth: Test Automation should be used wherever it is possible to

use it and to reduce time. Reality: Yes it is true that Test Automation reduces the testing time but it is not possible to start Test Automation at any time during Software development. Test Automaton should be started when the software has been manually tested and is stable to some extent. Moreover, Test Automation can never be used if requirements keep changing. Myth: Any one can test a Software application. Reality: People outside the IT industry think and even believe that any one can test the software and testing is not a creative job. However testers know very well that this is a myth. Thinking of alternative scenarios, trying to crash the Software with the intent to explore potential bugs is not possible for the person who developed it. Myth: A tester's task is only to find bugs. Reality: Finding bugs in the Software is the task of testers but at the same time they are domain experts of the particular software. Developers are only responsible for the specific component or area that is assigned to them but testers understand the overall workings of the software, what the dependencies are and what the impacts of one module on another module are. 4.7 Testing and ISO Standards Many organizations around the globe are developing and implementing different Standards to improve the quality needs of their Software. The next section briefly describes some of the widely used standards related to Quality Assurance and Testing. Here is a definition of some of them: ISO/IEC 9126: This standard deals with the following aspects to determine the quality of a software application: Quality model External metrics Internal metrics Quality in use metrics. This standard presents some set of quality attributes for any Software such as: Functionality Reliability Usability Efficiency Maintainability Portability The above mentioned quality attributes are further divided into sub-factors. These sub characteristics can be measured by internal or external metrics as shown in the graphical depiction of ISO-9126 model. ISO/IEC 9241-11: Part 11 of this standard deals with the extent to which a product can be used by specified users to achieve specified goals with Effectiveness, Efficiency and Satisfaction in a specified context of use. This standard proposed a framework which describes the usability components and relationship between them. In this standard the usability is considered in terms of user performance and satisfaction. According to ISO 9241-11 usability depends on context of use and the level of usability will change as the context changes. ISO/IEC 25000: ISO/IEC 25000:2005 is commonly known as the standard which gives the guidelines for Software product Quality Requirements and Evaluation (SQuaRE). This standard helps in organizing and enhancing the process related to Software quality requirements and their evaluations. In reality, ISO-25000 replaces the two old ISO standards i.e. ISO-9126 and ISO- 14598. SQuaRE is divided into sub parts such as: ISO 2500n - Quality Management Division. ISO 2501n - Quality Model Division. ISO 2502n - Quality Measurement Division. ISO 2503n - Quality Requirements Division. ISO 2504n - Quality Evaluation Division. The main contents of SQuaRE are: Terms and definiti Standard related to Requirement Engineering (i.e. specification, planning, measurement and evaluation process ISO/IEC 12119: This standard deals with Software packages delivered to the client. It does not focus or deal with the client's (the person/organization whom Software is delivered) production process. The main contents are related to the following items: Set of Requirements for Software packages. Instructions for testing the delivered Software package against the requirements.Some of the other standards related to QA and Testing processes are: IEEE 829: A standard for the format of documents used in different stages of software testing. IEEE 1061: A methodology for establishing quality requirements, identifying, implementing, analyzing, and validating the process and product of software quality metrics is defined. IEEE 1059: Guide for Software Verification and Validation Plans. IEEE 1008: A standard for unit testing.IEEE 1012: A standard for Software Verification and validation. IEEE 1028: A standard for software inspections. IEEE 1044: A standard for the classification of software anomalies. IEEE 1044-1: A guide to the classification of software anomalies. 4.8 Manual Testing This type includes the testing of the Software manually i.e. without using any automated tool or anyscript. In this type the tester takes over the role of an end user and tests the Software to identify any unexpected behavior or bug. There are different stages for manual testing like unit testing, Integration testing, System testing and User Acceptance testing.Testers use test plan, test cases or test scenarios to test the Software to ensure the completeness of testing. Manual testing also includes exploratory testing as testers explore the software to identify errors in it. 4.9 Automation Testing Automation testing which is also known as "Test Automation", is when the tester writes scripts and uses another software to test the software. This process involves automation of a manual process. Automation Testing is used to re-run the test scenarios that were performed manually, quickly and repeatedly.Apart from regression testing, Automation testing is also used to test the application from load, performance and stress point of view. It increases the test coverage; improves accuracy, saves time and money in comparison to manual testing. What to automate: It is not possible to automate everything in the Software; however the areas At which user can make transactions such as login form or registration forms etc,any area where large numbers of users' can access the Software simultaneously should be

automated. Furthermore all GUI items, connections with databases, field validations etc. can be efficiently tested by automating the manual process. When to Automate: Test Automation should be uses by considering the following for the Software: • Large and critical projects. • Projects that require testing the same areas frequently. • Requirements not changing frequently. • Accessing the application for load and performance with many virtual users is stable. • Software with respect to manual testing. • Availability of time. How to Automate: Automation is done by using a supportive computer language like VB scripting and an automated software application. There are a lot of tools available which can be used to write automation scripts. Before mentioning the tools let's identify the process which can be used to automate the testing: • Identifying areas within a software for automation. • Selection of appropriate tool for Test automation. • Writing Test scripts. • Development of Test suits • Execution of scripts • Create result reports. • Identify any potential bug or performance issue. Following are the tools which can be used for Automation testing: • HP Quicktest Professional • Selenium • BM Rational Functional Tester • SilkTest • TestComplete • Testing Anywhere • WinRunner • LaodRunner • Visual Studio Test Professional • WATIR 4.10 DAY AS AN INTERN 4.10.1 Initiation At the beginning of my internship period I was paired with a senior software engineer to see and understand what they are making, what is the project all about and the way all engineers work together. They gave me access to their Git repository, from where I can pull the latest "development" branch code, run it, test it in various ways and give them feedback. 4.10.2 Tools and technologies Core Tools: Postman, Selenium Programming Language: python, js Database: Postgresql, Mysql, MSSQL Operating System: MacOS, ubuntu, Windows 10, iOs CHAPTER 5: TESTING PROJECT 5.1 Project description One of the projects that I have done is a bill collector system for supermarkets. This application is being used by supermarkets in Mirpur Dhaka to collect their utility bills and other necessary fees. 5.1.1 My contribution I was fairly new to the world of software testing, so at first I was assigned to do blackbox testing of the softwares that the company is currently making. Here I had to use the knowledge that I have gained from the Software Testing Course at Daffodil International University. After these I was assigned to do test REST API using a tool named "Postman" and later write postman tests using javascript. And at the end of the internship I was assigned to do browser automation testing using selenium where I had to use python programming language. To run these project locally i had to use the stack that other developers were using. 4 5.1.2 Challenges I was fairly new into software testing so I had to learn and adapt from help of my mentors and research on my own. As the company has many concurrent projects going on at the same time I was to switch my mindset from one project to another one at short notice. Also I had to learn the basics of javascript and postman so that i can use postman and write tests effectively. 5.1.3 UI Screenshot 5.2 Requirements Traceability Matrix Project Manager: Business Analyst Lead: QA Lead: Target Implementation Date: BR# Requirement Description Actor Test Reference Case Comment s BR-01 Check client info Admin 5.3.1 BR-02 Generate electricity bill Admin 5.3.2 BR-03 Generate garments bill Admin 5.3.3 BR-04 Payment all bill Admin 5.3.4 BR-05 Electricity bill payment Admin 5.3.5 BR-06 Garments bill payment Admin 5.3.6 BR-07 Check all payment report Admin 5.3.7 BR-08 Check User permission Admin 5.3.8 BR-09 Backup database Admin 5.3.9 5.3 Test Cases 5.3.1 Check client info Test Case: 5.3 .1 Test Case Name: Check client info System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Admin will be able to see client info and client bill list Pre-condition: • Database has at least one client information to show Step Action Response Pass/ Fai l Comment 1 Admin click on client info Show info client Pass Post-condition: A new user account has been registered successfully 5.3.2 Generate electricity bill Test Case: 5.3 .2 Test Case Name: Generate electricity bill System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Visitors can view posts created by registered members Pre-condition: • User must be logged in Step Action Response Pass/Fai l Commen t 1 Fill all required field System create a bill and display it to the user Pass Post-condition: System displays bill info 5.3.3 Generate garments bill Test Case: 5.3 .3 Test Case Name: Generate garments bill System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Admin can generate garments bill Pre-condition: • User must be logged in Step Action Response Pass/Fai l Commen t Admin fill up all required 1 field and click generate button System displays generated bill information Pass Post-condition: Bill info displayed to the user 5.3.4 Payment all bill Test Case: 5. 3.4 Test Case Name: Payment all bill System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Admin can check payment bill info Pre-condition: • The post must have at least one comment to display Step Action Response Pass/Fai l Commen t 1 User fill up required info and click search System displays payment bill info Pass Post-condition: Bill payment info is displayed to user 5.3.5 Electricity bill payment Test Case: 5. 3.5 Test Case Name: Electricity bill payment System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Admin will be able to see electricity bill of client Pre-condition: • User must be logged in Ste p Action Response

Pass/Fa il Comment 1 Enter client id and Show click search button electricity bill Pass Post-condition: System display bill info 5.3.6 Garments bill payment Test Case: 5. 3.6 Test Case Name: Garments bill payment System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Admin will be able to see garments bill of client Pre-condition: • User must be logged in Step Action Response Pass/Fai l Commen t Enter client id and 1 click search button Show electricity bill Pass Post-condition: Garments bill payment 5.3.7 Check all payment report Test Case: 5.3.7 Test Case Name: Check all payment report System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Admin will be able to see all bill of payment Pre-condition: • Database has at least one bill info Step Action Response Pass/Fai l Commen t 1 Fill required field and System will display click print all payment info Pass Post-condition: System displays all payment info to user 5.3.8 Check User permission Test Case: 5.3.8 Test Case Name: Check User Permission System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Admin can see user and their permission Pre-condition: • DB must have at least one user. Step Action Response Pass/Fai l Commen t 1 Admin clicks on a user permission System displays user list along with permission Pass Post-condition: User list is displayed to the admin 5.3.9 Backup database Test Case: 5.3.9 Test Case Name: Backup database System: Subsystem: Designed by: Design Date: Executed by: Execution Date: Description: Admin can backup data Pre-condition: • User must be logged in Step Action Response Pass/Fai l Commen t 1 Admin clicks on a Database back up System displays success message and data will be back up Pass Post-condition: Success message will be displayed to the member CHAPTER 6: CONCLUSION 6.1 Concluding Statements My experience at NSSL was really good, All of the employees were nice and friendly, They helped me when I was stuck at a problem and also gave me learning materials so that I can make myself better. Working here I have learned how to work in a professional software company, how to behave formally, how other developers work as a team and how to push myself more to learn everyday. With the experience that I had in the last 6 month I think it will help me prepare for my future career better. 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42