**TRIBHUVAN UNIVERSITY**

**INSTITUTE OF SCIENCE AND TECHNOLOGY**

**Internship Report On**

**Quality Assurance**

**AT**

**Wolfmatrix Solutions**

**In partial fulfillment of the requirement for the bachelor’s degree in Computer Science and Information Technology**

**Under the supervision of**

Lecturer Dipendra Rai

Vedas College

Jawalakhel

**Submitted by:**

Abhishek Rijal(23683/076)

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Jawalakhel

**Submitted to**

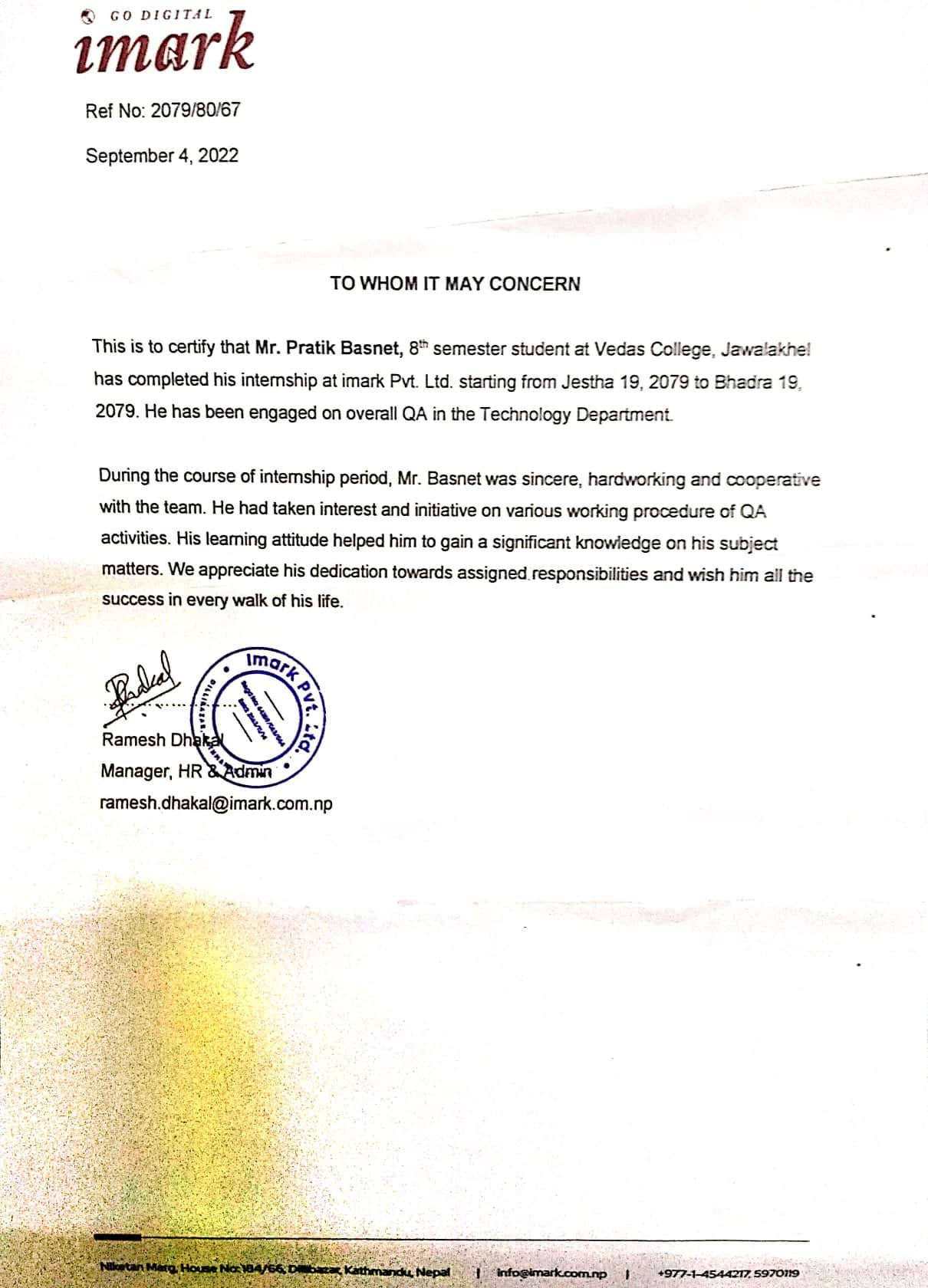
TRIBHUVAN UNIVERSITY

INSTITUTE OF SCIENCE AND TECHNOLOGY

Kirtipur, Kathmandu

**Date**

September, 2022



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# SUPERVISOR’S RECOMMENDATION

I hereby recommend that the report prepared under my supervision by Abhishek Rijal (TU Exam Roll No. 23683/076)entitled “**Internship on Quality Assurance (QA)**” in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Information Technology be processed for evaluation.

**…………………..…….**

**Mr. Dipendra Rai**

Project Supervisor, Department of CSIT

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****

Affiliated To Tribhuvan University

# CERTIFICATE OF APPROVAL

This is to certify that this report prepared by Abhishek Rijal (TU Exam Roll No. 23683/076) entitled “**Internship on Quality Assurance (QA)**” in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Information Technology has been well studied. In our opinion, it is satisfactory in the scope and quality as a report for the required degree.

|  |  |
| --- | --- |
| **……………………….**  **Lecturer Dipendra Rai**  Project Supervisor,  Department of Computer Science and IT  Vedas College  Jawalakhel, Lalitpur | **………………………**  **Mr. Prashant Thakur**  Director,  Department of Computer Science and IT  Vedas College  Jawalakhel, Lalitpur |
| **…………………**  **External Examiner**  Tribhuvan University  Kirtipur, Nepal | |

# ACKNOWLEDGEMENT

I would like to sincerely thank and show my deep gratitude to my project coordinator **Dipendra Rai ,** and Vedas College for their encouragement, support, references, and proper guidance throughout the project duration and report preparation, without which it would have been a difficult task for us to materialize and complete this internship report.

I would like to thank **Wolfmatrix** Pvt. Ltd for providing me an opportunity to work with the QA Team. This opportunity not only helped me learn in-depth about various testing but also guided and helped me expand my knowledge about the working process and testing methodology.

I would also like to thank **Mr. Rashmila Shrestha** for helping and guiding me throughout my internship period. With their suggestion and guidelines, this internship report has been completed.

At last, the loud hand of applause and appreciation to all the friends, colleagues, and entire **Wolfmatrix** Team who helped me and supported me every time to complete this internship report.

Sincerely,

Abhishek Rijal

BSc CSIT 8th Semester

TU Symbol no.: 23683/076

Vedas College

# ABSTRACT

The internship opportunity is given by “WolfmatrixPvt. Ltd.” has given me the chance to gain various knowledge and skills about Quality Assurance which are mentioned in this report.

This report contains the details of the activities carried out during the internship conducted for the three months internship duration. During my internship period, author had successfully completed the task of testing about software project known as “LODBOD” system under the guidance of organization’s mentor.

Initially, I was given the responsibility to test the vehicle owner, register, update profile, bidding process through vehicle, live tracking of vehicle and its owner through mobile application, notification alert and OTP verification through SMS system. My major job of mine in this internship period is to perform manual testing to make the product highly efficient by finding the bug and reporting it.

***Keywords: LODBOD, JIRA, Samaya SMS***

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# LIST OF ABBREVIATIONS

iPOS iMark Point of Sale

ICMS iMark Card Management System

QA Quality Assurance

CRM Customer Relationship Management

ERP Enterprise Resource Planning

CEO Chief Executive Officer

COO Chief Operating Officer

CTO Chief Technical Officer

CBO Chief Business Officer

CFO Chief Finance Officer

API Application Programming Interface

# CHAPTER 1-INTRODUCTION

## **1.1 Introduction to Project**

This report is about QA test that we have done during the internship period. Quality Assurance as an activity to ensure that an organization is providing the best possible product or service to customers. QA focuses on improving the processes to deliver Quality Products to the customer. An organization has to ensure, that processes are efficient and effective as per the quality standards defined for software products. Quality Assurance is popularly known as QA Testing, Quality Assurance is popularly known as QA Testing, is defined as an activity to ensure that an organization is providing the best possible product or service to customers. QA focuses on improving the processes to deliver Quality Products to the customer. An organization has to ensure, that processes are efficient and effective as per the quality standards defined for software products. Quality assurance has a defined cycle called PDCA cycle or Deming cycle. The phases of this cycle are:

* Plan
* Do
* Check
* Act

***Figure 1.1: PDCA cycle***

Act

Plan

Check

Do

These above steps are repeated to ensure that processes followed in the organization are evaluated and improved on a periodic basis. Let's look into the above steps in detail:

* Plan - Organization should plan and establish the process related objectives and determine the processes that are required to deliver a high-Quality end product
* Do - Development and testing of Processes and also "do" changes in the processes.
* Check - Monitoring of processes, modify the processes, and check whether it meets the predetermined objectives
* Act - Implement actions that are necessary to achieve improvements in the processes. An organization must use Quality Assurance to ensure that the product is designed and implemented with correct procedures. This helps reduce problems and errors, in the final product.

## **1.2 Problem Statement**

Quality assurance program problems can stem from a lack of regular calibration of the evaluation process. Standards need to be applied consistently across the board. All evaluators need to be professional and objective. Few things cause more quality assurance program problems than accusations of favoritism. Moreover, major issue to consider when planning and running a project may be:

* Lack of QA Guidelines.
* Lack of Standardized Testing Tools.
* Setting the Wrong Expectations.
* Having the Wrong Reward Structure.

## **1.3 Objectivesof the Internship**

To main objectives of the intern includes:

* To implement quality control procedures.
* To know the effectiveness of quality control method.
* To solve quality related problems during different phase of software development.
* To reduce the gap between the academic knowledge and the industry.
* To learn to maintain interpersonal and intrapersonal skills.
* To be able to learn the actual functioning of an organization.

## **1.4 Scope and Limitation**

The main purpose of this internship is to acquire the knowledge about Quality assurance and Coop with the industrial culture.

Some of the scopes of the tasks are:

* Create an application that streamlines the process of monitoring tasks
* Provide a proper visualization of the client's data

Allow monitoring of the events and logs triggered Some of the limitations of the tasks are:

* May not detect errors in complex scenarios
* The user must be from the technical background
* It takes time to quickly respond to the priority-based alert and incident

## **1.5 Report Organization**

**Chapter 1: Introduction**

In this section, the main points discussed are the introduction and aspects of Internship and Project, Objectives, Problem Statement, Scope of Project and Limitation of the Project.

**Chapter 2: Organizational Details and Overview**

This Section explains about the overview of the organization, its hierarchy, working domains of organization, description of intern department and explains about the literature of the research papers related to the project objectives and its overall review.

**Chapter 3: Internship Activities**

This section includes my roles and responsibilities, description of project that I was involved during my internship and all the task and activities that I was involved during the time of my internship.

**Chapter 4: Conclusion and Learning Outcomes**

This section includes conclusion and summarizes everything about the project and the internship and the learning outcomes that are gained from the internship.

# CHAPTER 2 - ORGANIZATION DETAILS AND LITERATURE REVIEW

## **2.1 Introduction to Organization**

Wolfmatrix Pvt. Ltd. is a multinational technology company incorporated in 2014 AD by the Australian app development company related to various development of application. It worked with different organizations like honey guide, Monash University, Medipro, ICIMOD by making the applications to make the quality of software best in terms of executing automation of the ideas and innovations using state of the art technology and platform. Wolfmatrix pvt. Ltd. Founded as a software developing company, it is evolving of making software through web and mobile applications. Wolfmatrix works over Web, Desktop and application issues. Well, required analysis, application design, debugging and process improvement is just part of this. Wolfmatrix has provided ongoing development services for MediPro Direct and Vanguard Genetics for several years. During this time, Wolfmatrix and its principals, have provided focused, dedicated support and ongoing communication. They have been fair in their pricing and resilient in dealing with any questions or concerns. If you have a development lead in-house or in-country, Wolfmatrix will be able to assist in moving your project forward more quickly and efficiently. I highly recommend this team. Over the past 4 years, Wolfmatrix has been a critical part of Concerto Analytics’ success. Accelerating our product vision including major releases and product capabilities is a key part of our business strategy and G2M. Wolfmatrix can create custom websites or developing new ones, so that websites will be able to meet specific goals.

**2.1.1 Contact Details**

**Name**: Wolfmatrix Private Ltd

**Location**: Sanepa, Lalitpur

**Contact**: 016200760, 9841440760

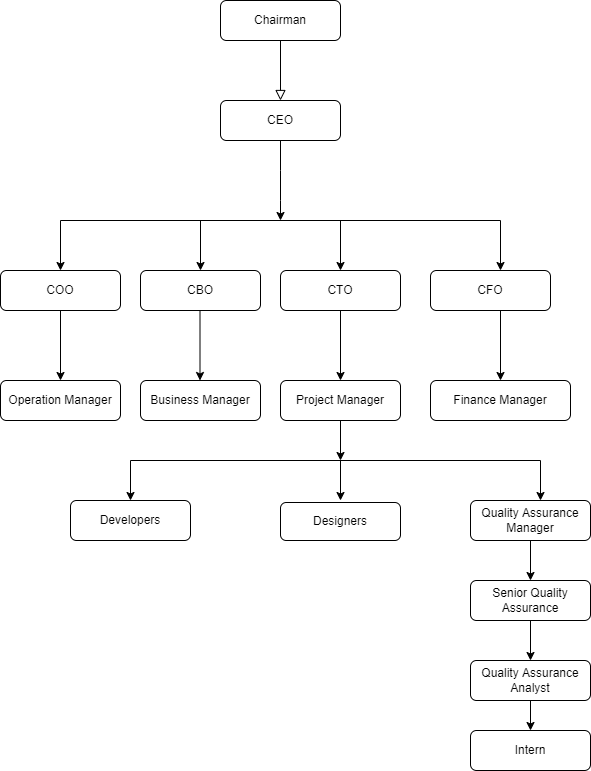
**Open Hours**: 9AM-6PM

**Open Days**: Monday-Friday

**2.2 Organization’s Hierarchy**

The figure below gives the idea of the structure of Wolfmatrix Ltd. The head of the organization is the Chairman, who works with the CEOto manage the organization. The CEO controls COO, CBO, CTO, CFO. Under COO the operation manager works who handle the operation department of the company Under CBO all the business activities are done. Generally Technical team developers, designer, QA works under CTO.

***Figure 2.2.1: Organization’s Hierarchy***



## 

## **2.3 Working Domains of Organization**

Wolfmatrix Pvt Ltd mainly focuses on building Mobile, Web applications for clients in web and software applications. The projects would be deployed for Staging server after enough testing and verification of the project in DEV server and after final verification of application in staging server lastly the application is deployed for production server. The departments in Wolfmatrix Pvt Ltd. They are described as below:

**Designers Team**

Responsible for the design and implementation of all the experiences a user has when interacting with a digital tool, such as a website.

**Developers Team**

A front-end web developer is responsible for implementing visual and interactive elements that users engage with through their web browser when using a web application. They are usually supported by back-end web developers, who are responsible for server-side application logic and integration of the work front-end developers do.

**QA Team**

QA team is generally responsible for the testing of the software. The main task of QA team is to perform manual and automation testing of the product developed by the organization and write test cases accordingly,

**Operation Team**

Operation Team is generally responsible for the operation generally operation team is led by operation manager. Since number of our clients are banking institution the main job of operation team is maintaining and monitoring card printing, monitoring POS status e.t.c.

## **2.4 Description of Intern Department/Unit**

Wolfmatrix Ltd is always looking for qualified graduates to hire as an intern. They care less about your past experiences and more about your ability to learn as well as grasp of fundamental concepts. They provide internship opportunities in Software development, QA, Software Design etc. The table below gives the detailed information about the internship including various topic such as working period, location, mentor as so on.

***Table 2.4.1: Internship Description***

|  |  |
| --- | --- |
| Internship | Quality Assurance Internship |
| Organization | WolfMatrix Pvt Ltd. |
| Address | Sanepa, Lalitpur |
| Mentor | Rashmila Shrestha |
| Time Period | 19thJestha 2079 to 19th Bhadra 2079 |
| Hours per day | 8 hrs. (9AM - 6PM) |
| Office days | 5 days (Monday – Friday) |
| Position | Intern |

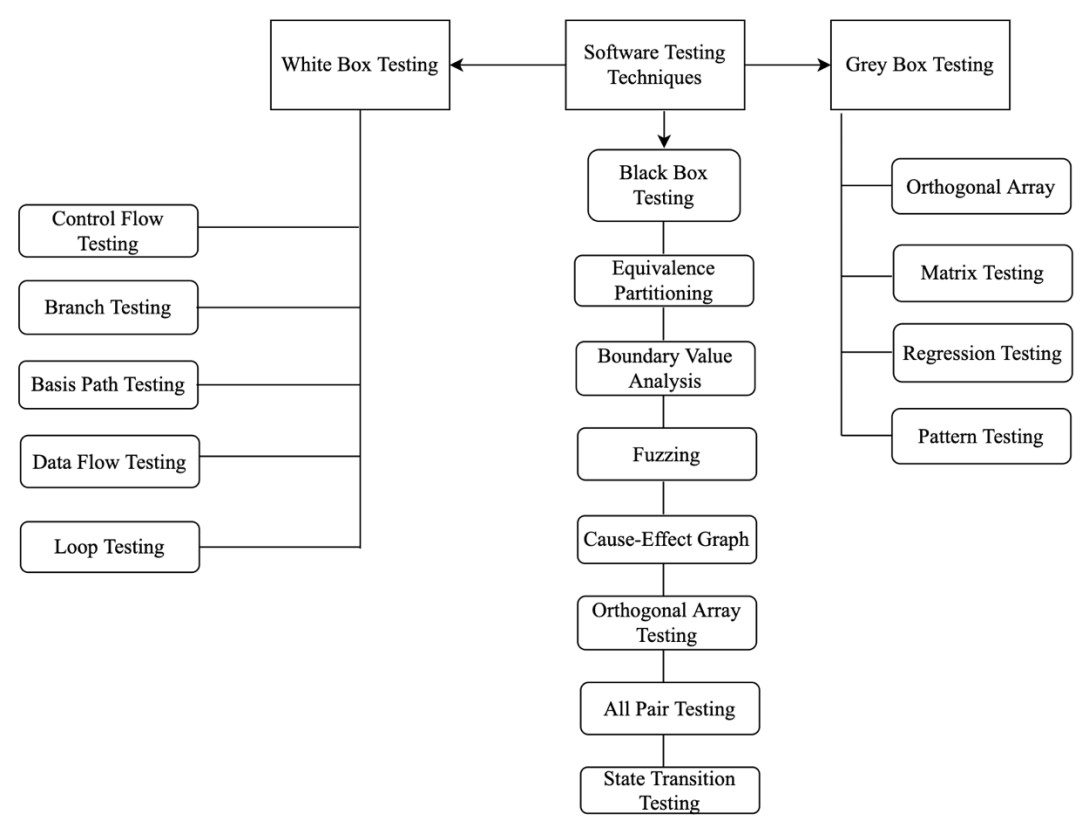
## **2.5 Literature Review**

Testing is defined as a process of evaluation that either the specific system meets its originally specified requirements or not. It is mainly a process encompassing validation and verification process that whether the developed system meets the requirements defined by user. Therefore, this activity results in a difference between actual and expected result.

Software Testing refers to finding bugs, errors or missing requirements in the developed system or software. So, this is an investigation that provides the stakeholders with the exact knowledge about the quality of the product. Testing has certain levels and steps according to which the person who does the testing differs from level to level. The three basic steps in the software testing are Unit testing, Integration testing and System testing. (Arumugam, Software Testing Techniques New Trends, 2022)

For the initiation of the Testing cycle, the initial step is to create experiments. The experiments are created utilizing different testing strategies, for successful and exact testing. The significant testing procedures are Black box testing, White Box Testing, and Gray Box testing.

***Figure 2.5.1: Software Testing Techniques***



White Box testing is altogether powerful as it is the technique for testing that tests the usefulness of the product as well as tests the inward structure of the application. While planning the experiments to lead white box testing, programming aptitudes are essential plan the experiments. This sort of testing can be applied to all levels including unit, coordination, or framework testing.

This sort of testing is additionally considered Security Testing that is it satisfies the need to decide if the data frameworks ensure information and keeps up the expected usefulness.

White box testing fills a need for being a perplexing testing measure because of the incorporation of programming aptitudes in the testing cycle. Discovery testing is a trying method that basically tests the usefulness of the application without going into its usage level detail. This method can be applied to each degree of testing inside the SDLC. It predominantly executes the testing so that it covers every single use of the application to decide if it meets the first determined prerequisites of the client or not. It is fit for finding inaccurate functionalities by testing their usefulness at every base, greatest, and base case esteem. It is the most straightforward and far and wide testing measure utilized overall.

Grey Box Testing is the combination of the White Box and Black Box Testing Technique serving the advantages of both. The need for such kind of aroused because in this type of testing the tester is aware of the internal structure of the application, hence testing the functionality in a better way by taking the internal structure of the application into consideration. (Sharma N. &., 2022 July 5).

Software Testing strategies provide a method of integrating software test case design methods into a well-planned Series of steps that can result in the successful construction of software. It provides the road map for testing. The software testing strategy is actually produced by project managers, software engineers, and testing specialists. There are four different types of software testing strategies:

Unit is the smallest testable part, i.e., the most modest collection of lines of code that can be tested. Unit testing is done by the developer as the proper knowledge about the core programming design is required. Generally, unit testing is considered a white-box testing class because it is partisan to evaluate the code as implemented rather than assessing conformance to some set of requirements.

Integration testing is an efficient technique for constructing the program structure as well as to perform tests to uncover errors related to interfacing. The objective of integration testing is to integrate the unit-tested component and tested them as a group. iii. Tests are conducted as each element is integrated.

In this approach, testing is carried out to authenticate whether the product is developed as per the standards and detailed criteria and meets all the requirements specified by the user. The user carries thistype of testing where the product is developed externally by a third party. Acceptance testing falls under the blackbox testing approach, where the user is not very much involved in the internal working of the scheme. The acceptance testing approach is also known asvalidation testing, QA testing, final testing, factory acceptance testing and application testing, etc. In software engineering, acceptance testing may be executed at two different levels; one at the system provider level and another at the end-user level.

System testing is a level of software or hardware testing where testing is conducted on a complete, integrated system to assess the system's compliance with its specified requirements. System testing falls within the category of Blackbox testing.

# CHAPTER 3 - INTERNSHIP ACTIVITIES

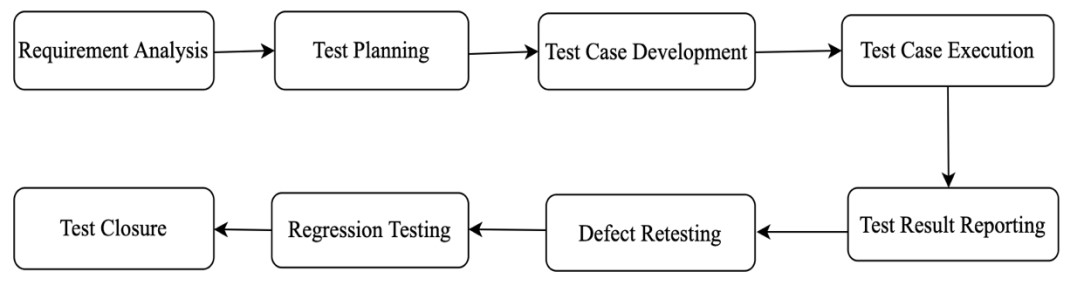
## **3.1. Roles and Responsibilities**

During the main period of the STLC, the initial role of the author is to read, understand, and analyze the requirement for the feature enhancement request.

Test planning is the second and most significant period of the STLC, where the author managed the arrangement of the test plan, which helped a definitive deliverable of the product. A test plan document was prepared on the basis of which the test cases and test scenarios were developed.

An appropriate test execution plan was made by the author in the Jira. The test cases were executed initially on the feature build by setting up the build on the test servers.

***Figure 3.1.1: Software Testing Life Cycle***



This was normally done to check what condition the application stops performing or to track the test status. The test execution phase involved the execution of the experiment’s dependent on the test plan that was delivered before the execution stage.

In the test result reporting phase, the test report consists of the results of pass/fail execution. Again, the defect retesting was carried out to verify the fixes of bugs. The regression testing was done to verify whether the recent fixes have affected the existing system or not.

The usefulness passed the execution stage with no bug reportage, the test was supposed to be cleared or finished, and each bombed experiment related to the discovered bug or blunder. Test Reporting was done by the author to reveal the produced outcomes after the execution of the experiments which additionally included bug detailing which at that point was sent to the developer throughclickup, so it tended to be fixed.

An approach and methodology for project management refers to the way in which the management of a project is carried out. There are various project management approach examples, each posing their own benefits to overall successful project completion. The way in which project management is carried out for a project is important to choose correctly as it will define the efficiency and effectiveness of the project as a whole.

The project management approach what we were using in my internship was Agile approach. There however different framework that can be implemented like Kanban, Scrum, Extreme Programming (XP) and Adaptive Project Framework (APF). We used to practice Scrum framework among them.

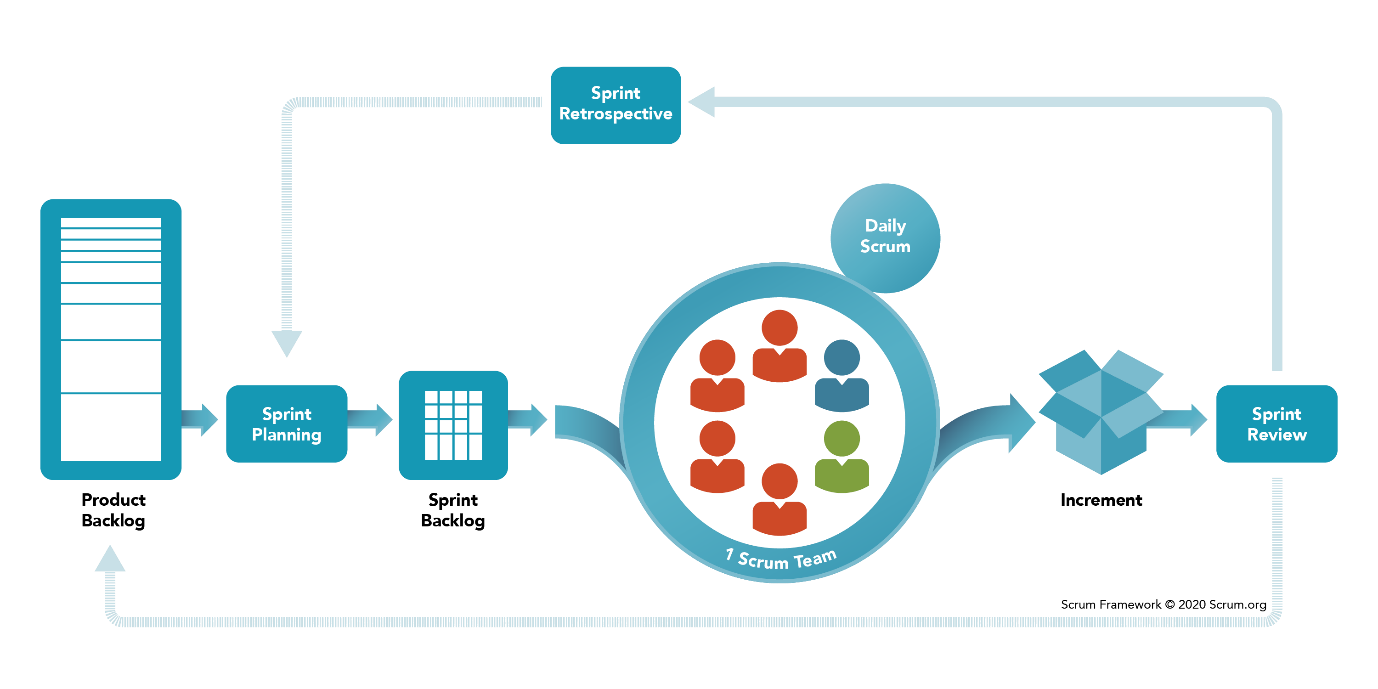
Scrum is simple. Scrum is not a methodology. Scrum implements the scientific method of empiricism. Scrum replaces a programmed algorithmic approach with a heuristic one, with respect for people and self-organization to deal with unpredictability and solving complex problems.

The fundamental unit of Scrum is a small team of people, a Scrum Team. The Scrum Team consists of one Scrum Master, one Product Owner, and Developers. Within a Scrum Team, there are no sub-teams or hierarchies. It is a cohesive unit of professionals focused on one objective at a time, the Product Goal.

The task in the Scrum is done on the basis of Sprint. They are fixed length events of one month or less to create consistency. A new Sprint starts immediately after the conclusion of the previous Sprint. All the work necessary to achieve the Product Goal, including Sprint Planning, Daily Scrums, Sprint Review, and Sprint Retrospective, happen within Sprints.

The working in Scrum framework can be illustrate by the following figure

***Figure 3.1.2: Scrum Framework***



### **3.2 Project Management Tool**

Project management tools assist an individual or team in organizing and managing their projects and tasks effectively. The term usually refers to project management software you can purchase online or even use for free. Project management tools aren’t just for project managers it can be customized to fit the needs of teams of different sizes and with different goals.

There are various project management tools available in the market some of them are ClickUp Jira, Assana, Trello, etc. Out of these the project management tool that we were using in Soch Point was ClickUp.

**Jira**

Jira is a highly popular tool used by QA teams for tracking bugs, new feature requests, and tasks. Its customizable nature allows for a broad set of use cases when it comes to managing software development projects. Jira is great for managing high volume backlogs and for bringing teams together to focus on the work that matters. The most common way software testing teams use Jira is to log bugs and new features. Jira can also be used as a test case management tool, but because Jira has not been specifically designed for this role, a number of time-intensive configurations need to be made to make it operable. For this reason, an increasing number of users are choosing to integrate Jira with a reliable, purpose-built test case management tool, such as Test Lodge. The integration gives them access to the twin resources, letting them get on with the actual job of testing far quicker than by using Jira alone. Some specific features of Jira that are useful for Test Case Management:

● Link to bugs and requirements

● Custom issue types such as test case and user story

● Multiple affects/fixes for versions

● Automatic and manual issue assignment

● Subtasks for manual testing

● Integrates with source code repository

● Reporting

● Issue comments and attachments

● Customizable

After running test cases written on excel, bugs used to be detected. These bugs were recorded by creating token at Jira and were used to be assigned to the developers to solve using Jira. While emailing bugs to the developers or walking up to a developer can be useful, but with such a large team it can hamper workflow and slow the pace of work. To reduce this, bugs status is recorded in Jira, a project management software which can be accessed in a browser. Jira allows a developer to create a new entry for each bug and provide detailed information to reproduce the bug. In addition, bugs can be given relations to other bugs and priorities for fixing. They are reported in different categories, which can be filtered. In Jira the filter categories were as following:

● Bugs

● Resolved (bugs supposedly fixed, require validation before closing)

● Fixed in next release (not fixed in current version but in next version of editor)

While using Jira for reporting bugs, first knowing bug life cycle is must. Bug life cycle is the process of creating ticket, assigning to the developer, fixing the bug and closing the ticket. The following figure shows the bug life cycle step by step:

## **3.2 Weekly Log**

The Weekly Log of the internship includes the following:

***Table 3.2.1: Weekly LOG***

|  |  |  |
| --- | --- | --- |
| Week | Task Assigned | Activities Performed |
| First | Research | Research about QA |
| Second | LODBOD APP | System Testing |
| Third | API | Released Note Testing |
| Fourth | KitnCode | System Testing |
| Fifth | API | System Testing |
| Sixth | LODBOD | Released Note Testing |
| Seventh | API | Bug Bashing |
| Eighth | API | System Testing |
| Ninth | API | Released Note Testing |
| Tenth | Manual | Released Note Testing |
| Eleventh | KitnCode | System Testing |
| Twelveth | LODBOD APP | Bug Retesting |

## **3.3 Description of Project(s) Involved During the Internship**

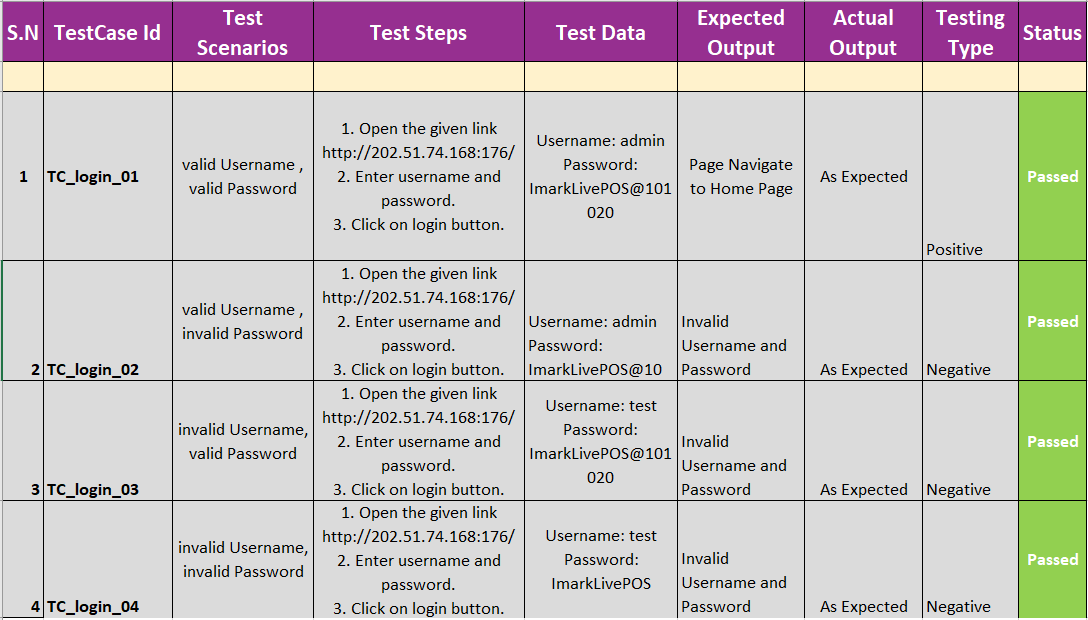
During my internship period I have involved in several Projects associated with the company Card Gallery, Billing System.

## **3.4 Tasks and Activities Performed**

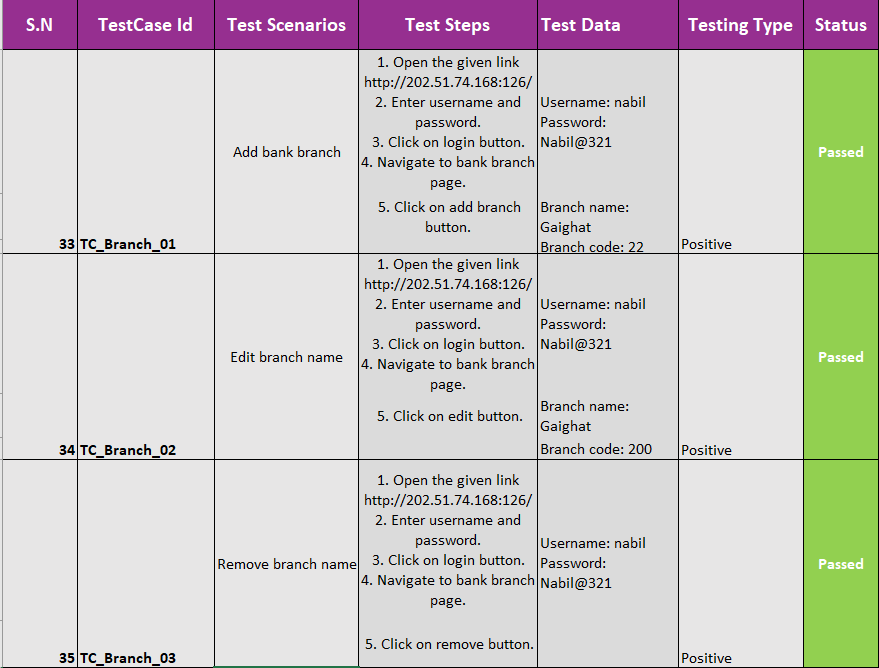
During internship Period following activities are preformed:

* **iPOS:**i-POS is a record keeping application of POS (Point of Sale) devices along with their other needed details which includes merchants’ name, MIDs, TIDs, serial number, bank, connectivity, application, location. etc. i-POS works mainly for the record keeping of detailed information of the Banks’ TID and MID numbers, POS machines, their switch and their respective serial numbers, management of the stock of the devices and their recording according to their selling heads (rental/partial rental), the internal connectivity of the POS machines. In this application, we added new stock quantity of terminals according to terminal types and added serial number. Likewise, we also added POS accessories that is being used. Bank request through bank portal for new terminal with merchant details. From admin portal, we verify deployment request from POS Master page and configure the terminal with serial number that is listed in stock. Then, interne verified the configuration with application version and limits of transaction. After configuration, that terminal is displayed in pending deploy page and we print the receipt and deploy that terminal at merchant location or respective bank card department. After deployment, we verify the details and saved it. Finally, that terminal is listed in Bankwise POS Report page. Now, we can provide technical support and delivered accessories to the respective merchant. Interne can sale the terminals to the respective bank and also delivered accessories to the bank as per their request. Interne manage overall workflow of POS terminals. Interne also can view report of terminals with merchant and bank details. Interne can add new user and assign role permission to the respective user.
* **Bank portal:** It includes merchants’ name, MIDs, TIDs, serial number, bank, connectivity, application, location. etc. i-POS works mainly for the record keeping of detailed information of the Banks’ TID and MID numbers, POS machines, their respective serial numbers, management of the stock of the devices and their recording according to their selling heads (rental/partial rental), the internal connectivity of the POS machines with respective bank. Interne added request for the new terminal and also request to replace old terminal through bank portal for single and bulk merchant details. Interne also request for accessories and made removal request for inactive merchants from bank portal. Interne added support and accessories request for respective merchant. Bank can view total pending terminals to be deployed in the market. Bank also can view deployed and removed details of terminals in the market. Interne can add and edit new branch name with bank code. Interne add and edit card request according to card type and its quantity. Bank user can create new user for its branch staff and also assign role like to add request or view data only.
* **Danphe EMR:**Danphe EMR is an electronic health records and hospital management solutions developed by iMark Pvt Ltd., an international IT company. For over a decade, we have evaluated the information technology needs in healthcare globally. With efficiency and ease in mind, we built a strong team to deliver world class electronic health records and hospital management solutions to meet the needs of our clients. Our work on data surfacing enables clinicians and the management to make informed decisions on patient care and operations of the organization. This transition will make healthcare more efficient thereby, improving the quality of patient care. Interne can centralize billing of patients. Different modules integrated in a single platform including inventory management with procurement. Interne can in-built planning and stock management, multi- locations are centrally managed. Interne add doctor's module with e-prescription and predefined templates. This system facilitates a paperless and cashless environment.
* **Imark Card Management System (ICMS):**Imark Card Management System is a system which provides cooperative customers card request and track status of card by API and generating BTRT file. Interne added new customer details from CoopMakerUser and request for card. After the request is made, CoopCheckerUser approve the card request. Now, interne open BankAdminUser and generate BTRT file and upload file in excel sheet of customer details for single and bulk entry. Card is acknowledged and dispatched by CoopAdminUser, now card is ready for activation. BankAdminUser activated the card and it is ready to use by customer.
* **iMerchant:**iMerchant is a mobile application used for tracking terminal location and status. It also includes merchants’ name,MIDs,TIDs,serial number, bank, connectivity, application, location.etc.i-POS works mainly for the record keeping of detailed information of the Banks’ TID and MID numbers, POS machines, their switch and their respective serial numbers, management of the stock of the devices and their recording according to their selling heads (rental/partial rental), the internal connectivity of the POS machines. At first, interne open this mobile application in the smartphone and login with valid credentials. Only support feature is available in the recent version where the support created from admin portal should be reflected in the support page of iMerchant mobile application. Interne resolve the support issue and move it to pending with valid reason. Interne update the location of different terminals and edit details of respective merchant.
* **Documentation of test case in excel sheet:** During internship period author had been involved in the documentation of test case of the project of iPOS, Bank portal.

***Figure3.4.1: Test case of login scenario***



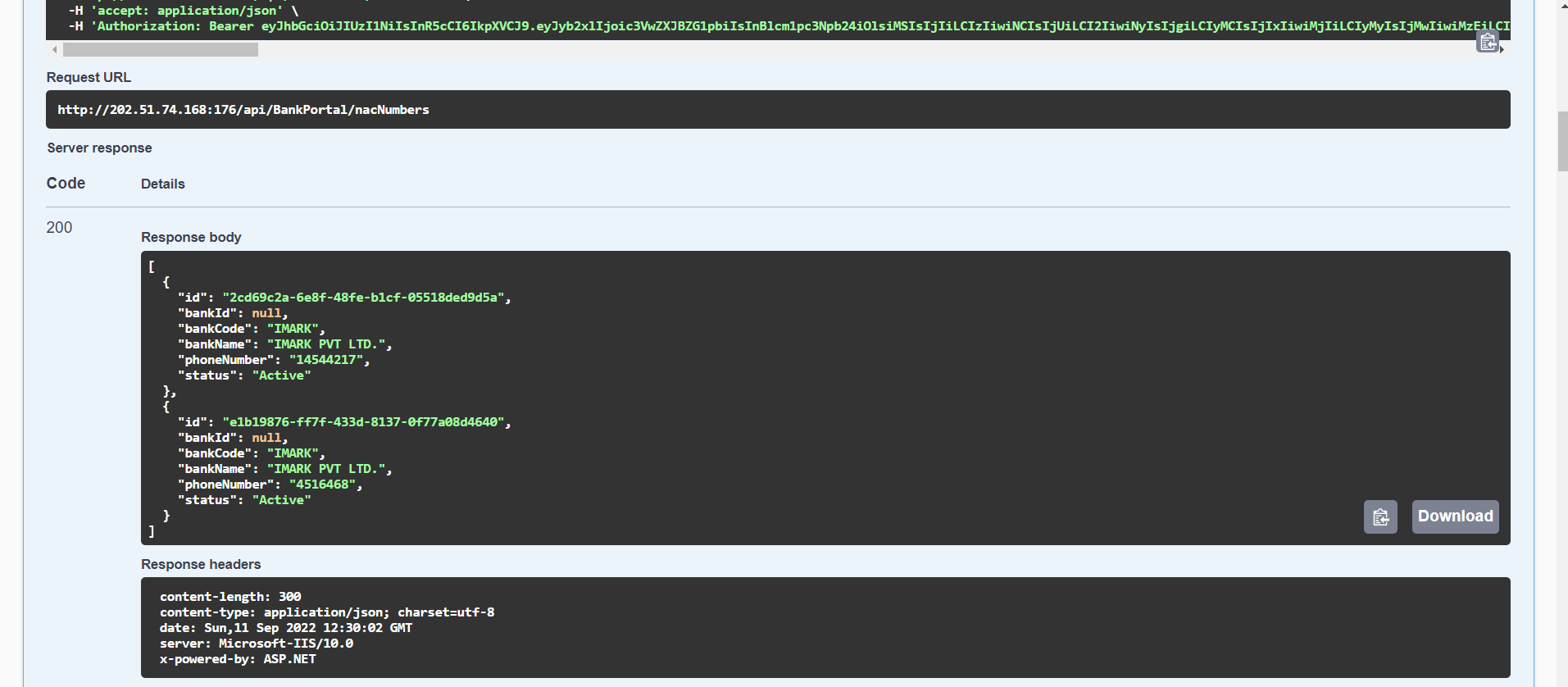
***Figure3.4.2: Test case for adding branch***



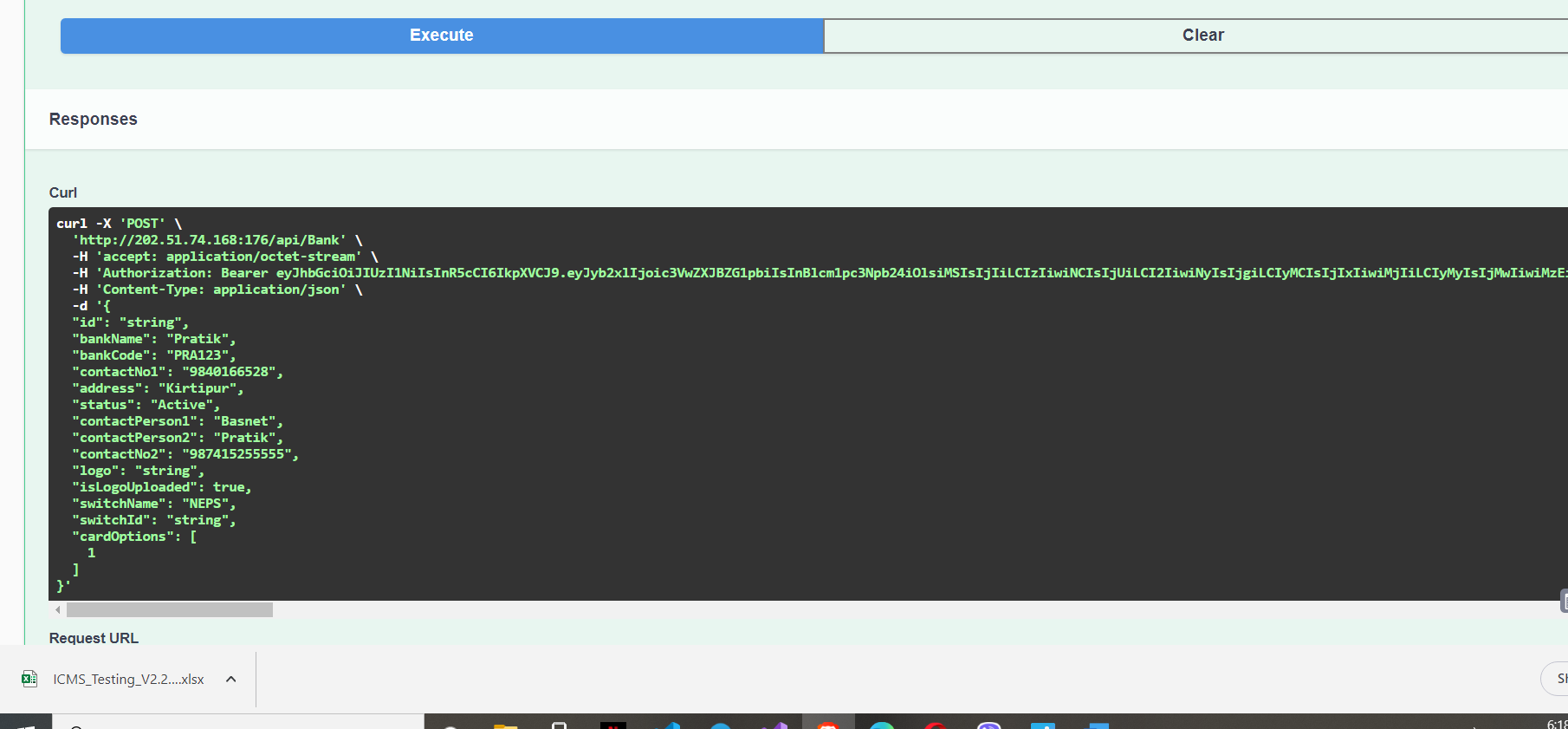
**API Testing**: API testing is a kind of software testing that analyzes an application program interface. To verify that it fulfils its expected functionality, security and performance.

During internship period author had involved in API testing of iPOS and bank portal to check whether the get and post function are working correctly or not with the help of swager and postman during API testing first we authenticate Bearer with the valid token than we perform post an get operation accordingly to check it is working or not some of the glimpse of API testing is shown in figure bellow:

***Figure 3.4.3: API for GET method***



***Figure 3.4.4: API for POST method***



# CHAPTER 4 - CONCLUSION AND LEARNING OUTCOMES

## **4.1 Conclusion**

This internship has been done for the partial fulfillment of requirement of Bachelor’s degree in Computer Science and Information Technology under TU. Author had completed the three months long internship atiMark Private Limited as a Quality Assurance.

The internship has helped in learning to use new tools, solve problems in real world through various new methodologies, work in team and developing social relationship with other employees. The interne realized the essence of coordination and cooperation in working environment especially in the field of software testing. It helped to learn about the software market and demands and hard work that takes in development of a software. It has been a great opportunity for the interne to learn about the organizational environment and work culture with industrial attachment. The interne got an opportunity to use the theoretical knowledge into practical use. This internship project has increased the intern’s knowledge and skills regarding the working environment as a team and real working scenario which is going to be helpful in the future. The organization provided all the necessary guidance and support for new fresher Interne. Throughout the internship, the interne got proper guidance from the supervisor Mr. Puskar KhadkaThe interne also got immense support from other members of the organization, which helped to develop not only the technical skills, but also the interpersonal and organizational skills. The interne got the chance to experience working environment, working procedure, rules and regulations, policies and commitments towards the organization during the internship.

## **4.2 Learning Outcomes**

**4.2.1Learned basic of selenium**

Selenium is one of the most widely used open-source Web UI automation testing suite. Selenium supports automation across different browsers, platforms and programming languages. Selenium can be easily deployed on platforms such as Windows, Linux, Solaris and Macintosh. Moreover, it supports OS for mobile applications like iOS, windows mobile and android. Selenium first came to life in 2004 when Jason Huggins was testing an internal application at Thought Works. Being a smart guy, he realized there were better uses of his time than manually stepping through the same tests with every change he made. He developed a JavaScript library that could drive interactions with the page, allowing him to automatically rerun tests against multiple browsers. That library eventually became Selenium Core, which underlies all the functionality of Selenium Remote Control (RC) and Selenium IDE. Selenium RC was ground breaking because no other product allowed you to control a browser from a language of your choice. While Selenium was a tremendous tool, it wasn’t without its drawbacks. Because of its JavaScript based automation engine and the security limitations browsers apply to JavaScript, different things became impossible to do. To make things worse, web applications became more and more powerful over time, using all sorts of special features new browsers provide and making these restrictions more and more painful

*Package PageObject;*

*import org.openqa.selenium.By;*

*Public class login {*

*public WebDriver driver;*

*public Login(WebDriver driver){*

*This.driver=driver;*

*}*

*By username= By.xpath("//input[@id='email']);*

*By password= By.xpath("//input[@id='password']);*

*By submit= By.xpath("//button[@class='ant-btn login-form-button ant-btn-primary']);*

*public webElement getUsername()*

*{*

*return driver.findElement(username);*

*}*

*public webElement getpassword()*

*{*

*return driver.findElement(password);*

*}}*

### **4.2.2 Learned about Database**

In the course of internship period the author had learned about database system of the project of the organization. During internship period author had learned about Microsoft SQL server to check the database of the system.

Microsoft SQL server is a relational database management system that supports the wide variety of transaction processing, business intelligence and analytics application in corporate environments. During this period author had learned about different SQL Query related to Microsoft SQL server which are follows:

* **Join:**JOIN is an SQL clause used to query and access data from multiple tables, based on logical relationships between those tables. In other words, JOINS indicate how SQL Server should use data from one table to select the rows from another table.
* **Sub query:** A subquery is a query that appears inside another query statement. Subqueries are also referred to as sub- SELECT s or nested SELECT s. The full SELECT syntax is valid in subqueries.
* **SQL aliases:** SQL aliases are used to give a table, or a column in a table, a temporary name. Aliases are often used to make column names more readable. An alias only exists for the duration of that query. An alias is created with the AS keyword.

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# APPENDIX

