Internship as a Software Quality Assurance Engineer

by

Shakib Ahmed Chowdhury
17301139

An internship project submitted to the Department of Computer Science andEngineering in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science

Department of Computer Science and Engineering
Brac University
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Declaration

It is hereby declared that

1. The project submitted is my/our own original work while completing degree at Brac University.

2. The project does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.

3. The project does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.

4. We have acknowledged all main sources of help.

Student's Full Name & Signature:

Shakib Ahmed Chowdhury
17301139

Approval

The project titled "Galapagos Health-tech - A project by Brain Station 23 Ltd" submitted by

1. Shakib Ahmed Chowdhury(17301139)

Of Spring, 2023 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of B.Sc.in Computer Science on March 31, 2023.

Examining Committee:

Supervisor:
(Member)

Sakib

_____

Sakib Al Mahmud
Sr. Project Manager
Brain Station 23

Co-Supervisor:
(Member)

_____

Arif Shakil
Lecturer
Department of Computer Science and Engineering
Brac University

Head of Department:
(Chair)

_____

Sadia Hamid Kazi, PhD
Chairperson and Associate Professor
Department of Computer Science and Engineering
Brac University

Abstract

During this pandemic the world has changed a lot and left us on a thought of importance that how much health tech is important for the survival of humanity. So along with other revolution, companies that are working on this industry are more focused than before to make noticeable changes to people's life. I am lucky to be working on such a project that was invested on this over such a big scale. The company name is Galapagos NV.

A bio-pharmaceutical business called Galapagos Health NV is situated in Mechelen, Belgium. The business is concentrated on creating novel therapeutics to address a variety of illnesses with unmet medical requirements, such as inflammatory and fibrotic diseases. One of the main items offered by the business is filgotinib, an oral JAK1 inhibitor used to treat a number of inflammatory diseases such rheumatoid arthritis, Crohn's disease, and ulcerative colitis. Clinical trials on filgotinib produced encouraging results, and it has been given European and Japanese approval for use. GLPG1690, a selective autotaxin inhibitor for the treatment of idiopathic pulmonary fibrosis, and MOR106, an antibody targeting IL-17C for the treatment of atopic dermatitis, are two further therapeutic candidates that Galapagos Health NV is working on. In 1999, the business was established.

Keywords: Software Quality Assurance; Brain Station 23; Galapagos; T20; Project Management; Content Team; Daily Stand Up

Dedication (Optional)

I want to dedicate my all achievement so far to my parents as they have done everything possible to make sure I get the highest opportunity in life. Though it was tough for them to make such huge sacrifice in their own life to give me the advantages, they made sure I have the field where I can score if my willingness and luck favor in affirmative. Alhamdulillah with all their blessings I am now having a good time learning new things everyday which will eventually make me stronger and more capable enough to compete in this fast-changing world.

Acknowledgement

My heartiest thanks to my supervisor Mr. Arif Shakil who has been very supportive throughout the time. I have faced few unavoidable incidents and he was empathetic enough towards me to support in this journey.

Also, my co-supervisor Mr. Sakib Al Mahmud, Project Manager in Brain Station 23 Ltd. who was very friendly and humble to help me every way possible to learn necessary things on my field. He gave me the scope and space where I can question and get the knowledge of different areas. He included me in every major meetings and discussion so that I can know how the higher authorities take decision in critical situation. I would say he is quite a genius in his field which is Quality Assurance as he has been pursuing this for last 10+ years.

Finally, the management of the company supported me to ensure I have all the gadget and environment to work properly though I was doing a non-billable internship.

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Chapter 1

Introduction

Thoughts behind the Internship Project Work

First of all, I want to express my gratitude to my faculty advisor, Mr. Arif Shakil, BRAC University for his support, understanding, and guidance throughout my internship at Brain Station 23. It would not have been feasible to finish the internship term without your earnest instruction. I'm grateful to Sakib Al Mahmud, my line manager, very much (Project Manager and QA Lead). They provided me with knowledge and resources at every level of my internship program. They deserve my sincere gratitude for their assistance in outlining the company's culture, atmosphere, and working methods as well as helping me prepare my report.

I would also want to express my gratitude to all of my colleagues from the Software Quality Assurance team, including Sabbir Ahmed, Ahona Afrin, Tawfiqur Rahman, Minhazul Billah, and Srijon Biswas. They actively responded to all of my inquiries and comments throughout my internship, which made the experience worthwhile.

In a nutshell, I have to complete a project for the bachelor's degree so that BRAC University can assess me through this report. Basically, I've discussed the difficulties and experiences I had working at this organization in this report. As a result, I've provided a thorough summary of the project I've been working on as an intern.

Aims and Objectives

The Objective of the report are as follows:

- To know about the problems faced in software quality assurance.

- To know how these problems are solved.

- To learn impact and importance of quality assurance work.

- To explore career interest and develop skills.

- Working with documentation and customization.

- Understanding the end user's requirements.

Executive Summary

goal of Brain Station 23 is to grow their multidisciplinary team in order to provide a wide range of specialized engineering, architectural, information technology, and management consulting services. They want to achieve this by becoming their clients' go-to professional service provider (PSP) by providing superior work across the board. Whether it's a construction project, civil or electrical engineering project, project management system deployment, or program management of a multifaceted endeavor, Brain Station 23 is an industry leader that goes above and beyond expectations and establishes new benchmarks. The local market was added to the new company's initial emphasis on the global market in 2010. Since then, the business has continued to develop, and it now employs more than 650 software engineers. In addition to Bangladesh, Brain Station 23 is now a well-known brand in the United States, United Kingdom, Netherlands, Denmark, Japan, Norway, Sweden, Germany, Canada, Switzerland, Turkey, and other nations. A team of ambitious and creative engineers founded Brain Station 23. It was registered particularly to handle tasks involving electrical and civil engineering. They are setting a new standard for technical analysis and troubleshooting in the realm of conventional business. When Brain Station 23 first opened in 2006, its primary focus was on project and program management and cost consulting. Nevertheless, as their clientele's demands grew and the business climate changed constantly, it became important to extend their perspective. Because of this, they offer under a single brand services for multidisciplinary management consulting, information technology, architecture, civil engineering, and electrical engineering. The firm expanded rapidly between 2006 and 2021, and it has since risen to become Bangladesh's top provider of IT services and software development. In terms of global reach, we are now in the next position, and we have improved our reputation. It has continued to work toward becoming a fully multidisciplinary organization capable of providing our Customers with the specialized attention and solutions demanded by a project environment that is always evolving. Brain Station 23 is in charge of fostering this environment because it views teamwork as the essential component to every project's success. At first when I joined their development team I was a bit skeptic. But after working there for a few days I learned a lot about engineering aspects. It was great opportunity for me to learn something new and I tried my best to make the best out of it.

Methodology

The development Team at Brain Station 23 Ltd. uses Adobe Experience Manager (AEM) to develop websites, apps and forms. Adobe Experience Manager (AEM) is one of the highly used CMS system around the world for bigger companies. The aim of this methodology is to deliver static and dynamic multi-functional and hugely informative websites. AEM makes it easy to manage marketing content and assets.

Reasons to choose this methodology:

- The goal of using this technique is on-time project delivery. The project is only marginally impacted by the time constraint due to the tight timeline.

- The second purpose is to enable customer participation, which guarantees open communication with them and prompt problem-solving.

- The third reason is to guarantee that the alterations do not affect current functionality since throughout the designing stage, changes are frequent and even during the back-end solution, certain adjustments are done to ensure enough time for accommodating changes without affecting current operations.

- The emphasis on unit testing for quick and easy early problem detection and repair is the fourth factor. It gets easier to detect whether the UI is more user-friendly.

- Making clients a member of the team will ensure ongoing contact and explanations, which brings us to our fifth point.

- Last but not least, to foster passion and goodwill via intense teamwork.

Chapter 2
Company Profile

Figure 2.1: Fig : 1

Background

A team of ambitious and creative engineers founded Brain Station 23 Ltd. It was registered particularly to handle tasks involving electrical and civil engineering. They are setting a new standard for technical analysis and troubleshooting in the realm of conventional business. Project and program management, as well as cost consulting, were the primary areas of focus when Brain Station 23 was founded in 2013. Nevertheless, as the needs of their clients grew and the business climate kept changing, it became necessary to widen the scope of the company. Because of this, they offer under a single brand services for multidisciplinary management consulting, information technology, architecture, civil engineering, and electrical engineering. In order to provide our Clients with the specialized one-on-one attention and solutions demanded by an environment where project requirements are constantly changing, Brain Station 23 has continued to work toward becoming a fully multidisciplinary entity. Brain station 23 is in charge of fostering this environment since it views teamwork as the essential component to every project's success. The overall project manager has a responsibility to provide effective and consistent communication with all parties and at all levels. On every project, Brain Station 23 favors a hands-on approach. Because of this, one of the firm's Directors will always be in charge of the crucial operations on our projects. The most up-to-date technology, as well as the appropriate personnel and resources, are all available at Brain Station 23 to guarantee the greatest professional service is offered at all times. By enthusiasm, tenacity, and self-improvement, they hope to develop into an entity that will add

value for the individuals, the company, and society at large.

Since 2006, Brain Station 23 Limited has offered cutting-edge software and IT solutions to the financial, telco, eCommerce, pharmaceutical, manufacturing, and retail industries both locally and internationally. With our love for technology, we want to "produce success and happiness for our customers and employees while offering high growth possibility of meaningful job thus serving humanity." They currently work with active partners in Germany, the United States, Norway, the Netherlands, Canada, Australia, Japan, and South Africa to provide software and IT solutions to over 25 countries. It provides the broadest selection of technology stack and cutting-edge technological solutions. Their service offerings include custom web and mobile application development, cloud solutions, AI/ML, BI, AR VR, ERP solutions, LMS, eCommerce solutions, fintech solutions, pharma solutions, telco solutions, and more. Since 2012, Brain Station 23 has collaborated with institutions like City Bank, AB Bank, UCBL, Modhumoti Bank, SouthEast Bank, HSBC, Metlife, etc. to help local banks transition to digital banking in the fintech aspect. Together with Ecommerce and Telecom, Brain Station 23 services for the Pharmaceutical business in Bangladesh and globally demonstrate a substantial contribution. Among of the company's major clients include Incepta, Aristopharma, Lazz Pharma, BAT, JTI, Grameenphone, Robi, Banglalink, Telenor, British Telecom, Axiata, PayPal, etc. It currently has over 600 software developers working for it, and it has finished more than 2000 projects successfully. Innovation and Digitalization for Companies and SMEs is known as Brain Station 23. It is an organization with outstanding accomplishments and recognitions that is ISO 90001 and 27001 certified.

Mission

By enabling others to accomplish more with less, you may become a trusted partner on the path to becoming a digital leader.

Vision

Being the partner with the fastest digital transformation and innovation through the recruitment of international talent would have a beneficial effect.

Company Departments

Brain Station 23 Ltd. maintains a flat organizational structure. Teams and responsibilities are generally formed and assigned around the nature and requirements of specific projects.

Recruitment Process

Candidates have to provide their resumes and offer letters to the company's HR. Then, if they accept it, they will call the candidate for letting them know about the interview which will be taken face to face. However, due to this pandemic situation

going on, they took my interview online where they asked me about the area I am interested in and assign me to the department I will perform best. Moreover, they also asked about my everyday life such as my hobbies etc. It was quite a very interactive and interesting interview.

Chapter 3

Training Phase

Getting Familiar With the Company

- I was introduced to the office staff and the environment.

- I had the opportunity to learn some basic information about our company, Brain Station 23 Ltd.

- was introduced to our Chief Executive Officer, Mr. Raisul Kabir; Content Factory Team Leader, Mr. Golam Asad Pias; Development Team Leader, Mr. A.H.M Imrul Hasan; QA Team Leader, Mr. Sakib Al Mahmud.

- I was given a short brief by our CEO on 'how to work on a particular project accordingly and pre-plan the projects before moving towards the next stage of the development process.

- I was introduced to the marketing strategies and the clients. I was briefed by our CEO and Managing Director on my ability to work and skills on Software Quality Assurance.

The real-world problems and solutions are far different than what I had expected. We have teams and consultants to take care of these problems. What I understood is that, works get distributed. For Example, some work on the graphics and logo designing, some work on the front-end part, etc. Interns are allowed to work only on the basic parts of the project. But Interns can also take part in the advanced parts of the project to observe and learn. So, I was being assigned on the Software Quality Assurance Team.

Figure 3.1: Fig : 2

We had quite good memories during this phase as the whole team used to go to team outing sometimes. It helped us growing team bonding.

Figure 3.2: Fig : 3

Figure 3.3: Fig : 4

Also, our colleagues from Brain Station 23 situated at Germany came for a week to conduct office training with us physically. There we had few trainings and outing session at the same time which helped us to be more comfortable with our foreign colleagues and clients while we are dealing projects.

Figure 3.4: Fig : 5

Work Environment

Brain Station 23 Ltd. has a very user-friendly working environment. I got to know some new people with various ideas and experiences. As an intern, I have been provided knowledge in various fields of work. However, since we are working from

home, we still manage to communicate with ease and flexibility.

Also, we had an SBU (Strategic Business Unit) annual tour to The Palace- Luxury Resort which is in Sreemangal. The journey made me realize how easily you can absorb the nervousness and get ease with you colleague if you can get a opportunity to spent long time with them out of the office.

Figure 3.5: Fig : 6

Types of Requirements

Functional Requirements

- The websites shall accept client's and professionals request.

- The websites shall be able to register health care professionals into the system.

- The websites shall be able to give accurate information to both professionals and general clients.

Non Functional Requirements

- The websites must be simple to use for all staff members, including managers and the content production team.

- The websites will support multiple languages.

- The websites will enable the creation of many themes for various projects.

System Requirements

- Windows 7, 8 and 10

- Dual Core Processor

- 1 GB Ram

Software Requirements

- Chrome
- Safari
- Internet Explorer
- Firefox
- Edge

My Works

Some of my works are displayed below :

Content Quality Check

Our QA team leader asked me to check all the content that has been authored by our authoring team:

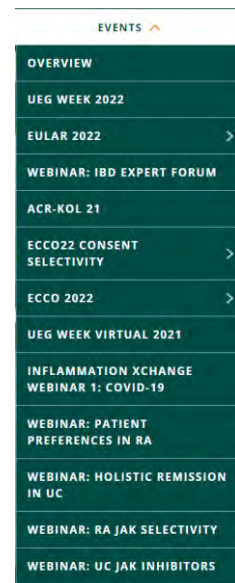
Figure 3.6: Fig : 7

Figure 3.7: Fig : 8

Figure 3.8: Fig : 9

Figure 3.9: Fig : 10

Multi Language Website Testing

As our company provides different linguistic website for different country, I was asked to check the accuracy of the translation done by development and content team:
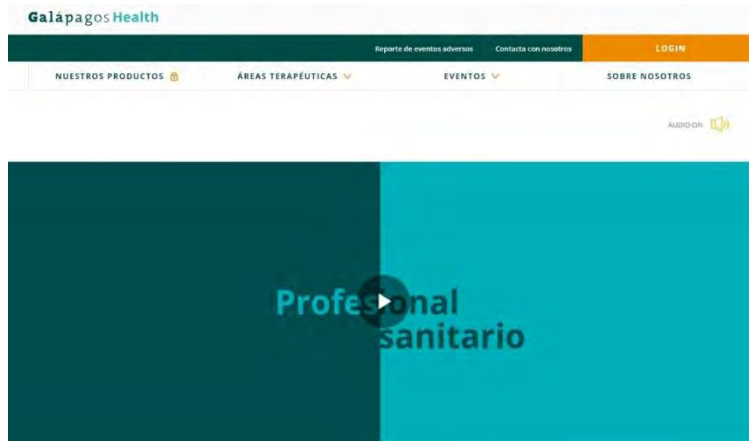

Figure 3.10: Fig : 11

Figure 3.11: Fig : 12

Responsive Design Testing

Our QA team leader advised me to check every website's design carefully whether it is adapting to different responsive sizes accurately or not:
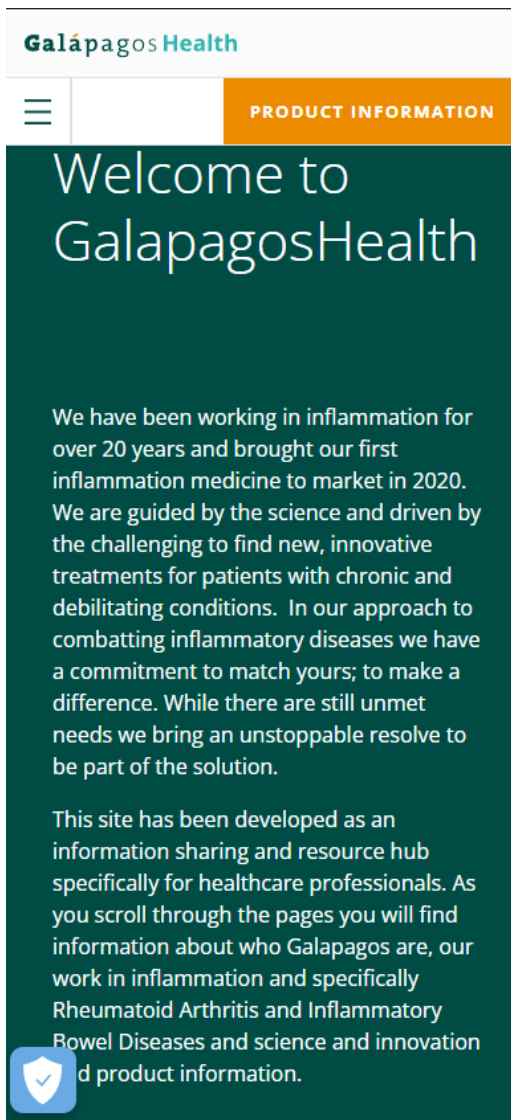

Figure 3.12: Fig : 13

Figure 3.13: Fig : 14

Figure 3.14: Fig : 15

Figure 3.15: Fig : 16

Appreciations

I was very happy that during the training phase I got few appreciation mails from our partners and clients for my dedication and hard work towards the project.
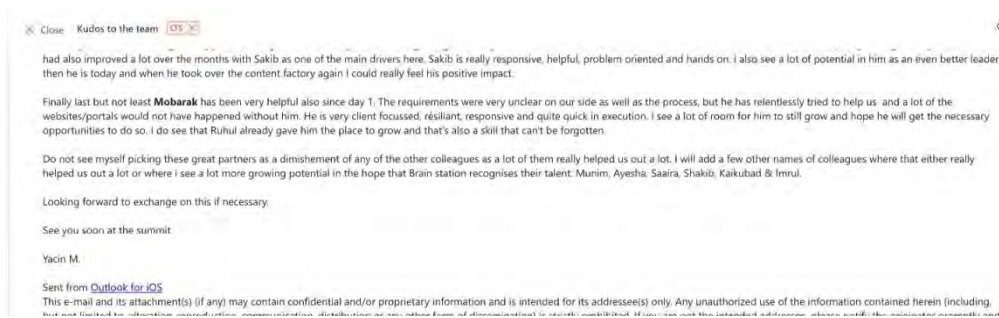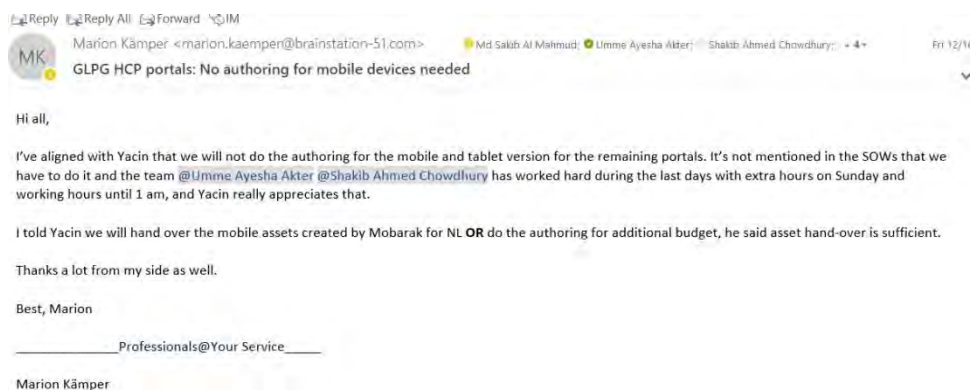

Figure 3.16: Fig : 17

Figure 3.17: Fig : 18

Skills

These are few skills that I gained while working with my team as a software quality assurance trainee:

Technical Skill

When it comes to work as a quality assurance officer in any kind of industry, it is must to be skillful. Situation like this arise that the team is going through a lot of work and team need to meet the deadline. So, if then the resources are not skillful enough the Team Lead gets a hard time managing the team. Few skills that I came across practicing while I worked as an intern in the company:

- SDLC (Software Development Life Cycle): As in software industry it is very important to follow process in order to have a smooth and quality delivery, the team member should have a proper knowledge about the management methology. There are few types of methology which this type of industry generally follows. Such as Agile Methology, Waterfall Methology, Scrum Methology and DevOps Methology.

- Manual Testing Techniques: Manual Testing is the process of testing software manually without using Automated tools. It can be used to identify and report software bugs and issues. Few manual testing techniques are UAT (User Acceptance Testing), System Testing, Black Box Testing, White Box Testing, Grey Box Testing.

- Getting familiar with software bug tracking system such as Jira, Trello.

- Knowledge gathering on software testing matrix and measurement testing.

Analytical Skill

As an SQA, strong analytical skill is very vital to handle critical situation. For effectively performing the role this skill can be handful on almost every task that an SQA will face in his job life. I have tried to learn few analytical skills in my internship phase. These are:

- Attention to detail: For identifying small bugs or errors I needed to be very attentive to each and every detail. Sometimes when I am testing a very big webpage, missing out little details can happen. So, I needed to be very sound and focused on every section while I was testing

- Problem Solving skill: Working as any role in software company requires problem solving skills. But when it comes to SQA, it is more important then anything. Identifying issues is the first phase of testing. Then what requires is thinking about the issue and its probable solution. I tried to find the best solution so that my teammates or the developers can get enough input from me for a good delivery.

- Root Cause Analysis: While detecting an issue I needed to think the root cause of that issue. That helps the team to go one step ahead on delivering bug free delivery overall.

- Risk Assessment: I was aware of the potential risk that can happen while developing any software or website. By analyzing that I tried to make my team informed and go for the best path possible.

- Logical Reasoning: I needed to think all the logical way to build any software or website. While writing the test cases the mix of both logical and systematic thinking is needed.

People Skills

Software quality assurance people need to also have few people skill like other designation. Here are they:

- Communication Skill: As an SQA it plays almost like a Project Management Co Ordinator in Software industry. I needed to nurture proper communication skill in order to co ordinate between the designer, content team and developer team. It was my task to convince the team for changes which will eventually result in positive as a whole.

- Teamwork: Working in the team I get to know how teamwork should be done in order to achieve a common goal. All the team member needs to be on the same page while taking an approach towards planning and execution.

- Adaptability: While working under different project methology I needed to be flexible towards any change request or any new task. For testing any software or website setting priorities in order to come up with the best demanded result was needed.

- Customer Service: In order to have a good impression over project delivery along with good quality and time management it is also important to identify the real expectation of the customer. For that I needed to attend regular meetings with our clients and needed to note down all the best way we can take to make the best delivery possible with current resources available.

Everyday Operations

Working in a software company requires constant reporting and analyzation. These are few of the activities I needed to do while working with the team:

- Daily Standup: Almost every team needed to have a daily standup in order to know where the team is standing on delivering the project on time. My team lead used to gather that information of what are the works ongoing and what we need do in the present day. I had to give everyone the update of my current work and what will be done in that day.

- Documentation: Being involved in every discussion I needed to make documentation so that it helps me to make a proof of my work. Also, for working on track I needed to note down each and every detail of all the meeting and session happened in that period.

- Collaborating with development team: As an SQA my first go to team after finalizing the issue was the developer team. I fist needed to identify the exact team where I need to go for discussion regarding the issue as Backend and Frontend team manage different work. Then understanding their capacity and trying to get the best out of it was the responsibility I had to take.

- Participating in project meeting: I was very lucky to be a part of few project meeting where I could get the opportunity to discuss with others how I can improve my work quality. Raising any issue regarding testing and what are the possible way to improve that is also what I did whenever I get the opportunity to give my opinion. It was also very helpful to learn how the process should be of discussion while attending a project meeting.

- Collaboration with design and content team: Though I was in the company as an SQA intern, I needed to assist on works related to design and content. I tried to do my best on how the designs should be as it will be implemented on responsive devices. Also, regarding the content management I tried to give proper input to the content team so that the content remains unbroken and clear. We needed to work on multilingual websites, so making sure the translation is proper and impactful it was my work to fully assist the content team understanding the way it should be done.

Conclusion

My internship experience so far is very pleasant and worthwhile. It will help me a lot in my future career. The challenges and the scheduled workflow taught me how to manage each project very efficiently. Learning is just grabbing the knowledge, whilst applying or implementing practically is a different thing. It taught me to synergize up with the client's requirements, what they need, what they want, etc. My supervisor, the team leader and the mentors have given me proper guidance and advice.