THOMAS MORE | UNIVERSITY OF APPLIED SCIENCES

Realization Summary

INTERNSHIP TELENET

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Internship at Telenet: Automation, Back-end, and Front-end Development with AWS

Introduction

My internship at Telenet focused on improving and modernizing the system for porting phone and mobile numbers between telecom operators without altering the number itself. Telenet already had an existing system, but it was outdated and often experienced failures.

It was decided to renew the system using new technologies like Amazon Web Services (AWS) and by refactoring the existing code to improve efficiency and reliability. Throughout my internship, I worked on various aspects of the project, including studying the existing code, writing automated tests, developing new software features, and fixing bugs.

The First Weeks: Introduction and Technical Onboarding

The first weeks of my internship were primarily focused on getting to know the company, the team, and the technologies used in the project. My internship mentor and the product owner, Sujith Samraj, ensured I had access to all the systems and software I needed to work on the project. This included access to various tools like AWS and other software used within the team. I was also introduced to colleagues who helped me with specific technical issues and the functionality of the systems.

Additionally, this period was meant to familiarize myself with the existing code and the technical terminology used in the project. Since the system had been in place for a long time, there were many terms and concepts I needed to understand to contribute effectively. This took some time, but with the intensive guidance from my colleagues and studying the documentation, I quickly gained a good overview of the different components and their functions.

The project I contributed to, renewing the mobile number porting system, was in its final phase. Since the project had been in development for over a year and a half, I had the opportunity to work on the next phase, which was to renew the system for fixed numbers. This allowed me to further develop my technical skills and face new challenges. In the first weeks, I mainly focused on learning the tools and reading documentation to build a solid foundation for later work on new features.

Learning Automation Testing

As my internship progressed, I gained more responsibility and became increasingly involved in writing automated tests. These tests were crucial to ensuring the system continued to function reliably after the changes we made. I started by learning the basics of automation testing, such as writing test cases and using testing tools like JUnit and Selenium. This process was educational and enabled me to expand my technical knowledge.

Writing automated tests required not only knowledge of the code but also an understanding of how the system worked. I had to ensure that the tests covered all possible scenarios, from simple cases to more complex ones where errors could occur. This was a challenge, but with help from my teammates, I quickly learned how to set up my tests efficiently and test the code for robustness and reliability.
Over time, I started writing test cases independently for various parts of the system. For example, I began by writing tests for the functionality of the mobile number porting system. This required me to first understand how the system worked and how the different components interacted. This process was both challenging and educational, as I not only improved my technical skills but also strengthened my problem-solving abilities.

Collaboration and Communication within the Team

Collaboration with my colleagues was an essential part of my internship experience. I had regular meetings with my team members and received feedback on my work. These interactions not only helped me improve my work but also allowed me to develop my communication skills. The team members were always willing to help when I got stuck, and their guidance was crucial to my learning process.

One of the highlights of my internship was attending a quarterly meeting, called "Infoflash," where all teams discussed their progress and new developments. This not only gave me a broader perspective on the work of other teams, but it was also a great opportunity to meet other colleagues and build a network within the company. During this meeting, I gained more insight into the broader company goals and the strategic direction of Telenet, which gave more context to my work within the team.

Transition to Software Development

As I gained more experience, I gradually became more involved in software development itself. Instead of just writing automated tests, I had the chance to develop new functionalities for the fixed number porting system. This was an important step in my internship, as I was now contributing directly to the development of new features, not just testing.

My first real development story involved working on an error-199. This was a bug that caused the system to not respond correctly when a certain type of error occurred. My task was to resolve the bug and ensure the system handled the error correctly by sending a message to the system indicating the error.

This project required me to dive into the code and understand both the existing logic and write new code to fix the bug.

In addition to fixing bugs, I also worked on improving test coverage and addressing technical debts, such as removing redundant code. This required a lot of attention to detail and ensured the codebase was cleaner and more stable, laying the foundation for further system development.

Contribution to Code Quality

In the next sprint, I focused mainly on improving code quality by fixing bugs and enhancing test coverage for various modules. This involved using tools like SonarQube to analyze and improve the quality of the code. I was also responsible for writing additional unit tests to increase the test coverage of the modules, making the code more reliable and easier to maintain.

The code smells I addressed were mainly related to code duplication and splitting up large methods. I was able to solve code duplication issues by creating new (helper) classes to handle the logic where needed.

Message Transformers

For the Fixed Number Porting project, I worked on three stories focused on transforming messages from XML to JSON format: the NCOSS transformer, the CRDC transformer, and the NCBSS transformer. To achieve this, several XSL files were developed to support the transformation process. Additionally, a serverless function was set up via AWS Lambda, allowing incoming messages to be automatically converted to the desired format.

For the NCOSS transformer, all necessary translations were successfully completed, and a shared account was created to enable deployment. Adjustments were also made for both the NCOSS and CRDC transformers, and the Terraform infrastructure was developed and applied. Ultimately, all modules, including those for the NCBSS transformer, were successfully deployed to AWS, making the systems ready for efficient message processing within the project.

Front-End Development

During the final sprint, two automation stories were picked up and successfully completed. Additionally, for the first time, I worked on a front-end story where a new feature was developed using Vue and React. This task involved implementing a button to export all orders to a CSV format.

In addition to technical tasks, a lot of attention was given to documentation. I worked on updating and improving documentation for the portfolio so that completed projects and results could be clearly presented.

Conclusion

My internship at Telenet was an incredibly valuable learning experience. Not only did I gain technical skills such as writing automated tests and developing software, but I also enhanced my problem-solving abilities, communication skills, and collaboration within a team.

At the start of the internship, I felt overwhelmed since the team had already been working on a system based on another system, which depended on the functioning of many other systems. The codebase is enormous, and understanding even a small part of it requires knowledge of Number Portability and other functionalities that form the foundation of a telecom company.

Ultimately, I was able to contribute during my internship thanks to the excellent guidance I received and by studying the documentation during the first weeks. Starting with automation tests was extremely helpful in getting a better understanding of various phases, such as a PORT-IN or DISCONNECT-IN. The development stories that followed went smoothly. In the end, through my back-end stories, front-end stories, and automation tests, I got to experience different aspects of the project.

Working with SonarQube was a great learning opportunity. Code coverage and bug-smell tools are commonly used by various companies.

Working with AWS was also an important experience, as I can see from current job listings that proficiency with AWS or Azure is often required. Since this is not typically taught in our education, I'm grateful for this opportunity.
I also had the chance to work on my soft skills. This was my first time working within a professional team. Communication, patience, and teamwork are key skills that help achieve better results. It's essential to adapt to the company culture for a positive work experience.

The opportunity to contribute both to testing and the development of new functionalities gave me a good overview of the full life cycle of a software project. The experience I gained during my internship will undoubtedly help me in my future career as a software developer.