Situation

The company I have been working for is LHS Productions Inc., d/b/a VideoBank located in Northvale, New Jersey. The main line of the company’s business is to provide software systems which work with large amounts of mission-ready data to many various clients and governmental associations. Most systems are processing to access, save, share, and analyze the big amount of data with various public and private formats. LHS Productions Inc., is a small sized startup company, having only two departments. One is software department where I am joining and another management or admin department especially for finance and human resources tasks. In the software department, there are 7 employees in total currently, one project manager or a technological consultant working for part time, two product engineers who mainly interact with customers and four software engineers. Most of the assigned tasks are for individual. So, I must communicate only with project manager sometimes, one product engineer and one senior software engineer who is also my supervisor when I was on on-boarding process. Her job title is the same with me as a Software Developer for now, but she is in the appraisal for Tech Lead position. My job title is as Software Developer. I have been working for almost 9 months since June 1st, 2022.

Task

The task I was assigned was to replace SQL with Mongo for most retrieval backend functions of the existing application. The reason was to improve the software performance because they wanted to use SQL database for command and Mongo database for query purposes. My supervisor learned about Mongo before I was assigned. They explained me how it works and how we can develop to meet what we want. Then she explained details about my task. It was mainly to store all data we want to show in one collection of Mongo database while the old flow was saving to different tables on MSSQL database and to retrieve data to return the front-end applications as the same result as before with MSSQL. There is no deadline for that wide-range task, but I had divided the functions I must work and gave the expected time to complete to my supervisor.

Actions

After I understood my task clearly, I started to review the old SQL functions how it worked for like its business logic. As business logic spreads in API applications and window services, I also learned about the window services which was new for me. When I understood well about the old logic and knew how to work with window services, I started to practice CRUD operations (create, retrieve, update, and delete) with Mongo database in C# applications, by creating a C# windows console application.

The more I learned about old functions and about both SQL and non-SQL Mongo databases, the more I had confidence to work on my task because I have already knowledge about CQRS (Command Query Responsibility Segregation) and different types of databases from Software Architecture course. I also felt that I can apply that academic knowledge in the real workplace. Then I started to replace the old SQL functions to work with Mongo database.

As I have experience for API applications, my task was done with the help of MongoDB C# Driver. For window services, every window service solution had two projects one project for development and one installer project for publishing .exe file. MongoDB C# Driver was not working at project build although there was no compile time errors. So, I made research how to solve that problem. After some time, I got the solution by adding that driver not only the development project but also the installer project. Only when every project under one solution had same driver references, the solution would be able to run successfully.

After that one, it was not difficult to do my task and finished smoothly because I had practiced with the test C# windows console application. When I was doing code implementation, I applied the software design principles/patters I learned from Advanced Software Development courses like DRY (Don’t repeat yourself). Then I did also code refactoring so the codes I implemented were clean and easy to understand with the comments I provided.

Results

It took about 2 days to learn old logic and windows services. Then I took 3 days to practice with Mongo database in my test C# application and 2 weeks for my assigned task. As the result, I could deliver my task without any errors on time. It could be said that I had done my task earlier than my expected end date.

My supervisor and project manager did code review on my task, they were happy because they saw that I used different approaches to solve the problems. And it did not need to modify or refactor code more. The significant improvement was the performance because the task I was assigned was to segregate between command (to work with relational SQL database) and query (to work with non-relation Mongo database) and I did the right way. The applications’ performance was 80% faster than before. The senior software engineer or my supervisor appreciated me to bring new approaches more than what she explained to me.

Because I also got the overall knowledge of business logic, I can be able to open any new task to be assigned. As far as I have been working in this LHS Production Inc., I felt that I had been assigned in almost every project after this big task to replace some retrieval SQL function to use Mongo. I knew about window services and MongoDB details and how it works and how we can implement to meet what we want. So, I believe that knowledge can make my future career enhancement better and accelerated.

I believe that it can help me for better benefits in my future. By seeing the layoffs of the other companies, I felt that my current company is different and good on me. It could be because I tried my best and they like my skills and commitments. They gave me bonus as a gift card, and it was also easy for me to get a visa sponsorship.