Internship Report – IT Engineer at DD&IT, Novo Nordisk

Duration: Jun 12nd, 2023 – Aug 9th, 2023

**Intern info:**

School: University of Wisconsin, Madison

Name: Shuyi Li

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**Company info:**

Company: Novo Nordisk

Department: DD&IT (Digital, Data & IT)

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**Executive Summary:**

During the two months of internship, Shuyi has been a valuable part of our team and has been working on various projects. In terms of technical skills, Shuyi has demonstrated proficiency in programming languages and contribute to our team with multiple programming solutions. During this internship, Shuyi also develops decent software developing skills that advance him to a qualified software engineer. In addition to technical skills, Shuyi has also shown strong communication and interpersonal skills. He has established effective collaboration with colleagues and initiative to ask for help and guidance when needed. At the end, we believe Shuyi has the potential to become a successful software developer and would be a valuable member to any organization.

**Takeaways:**

* + Advanced Java programming skills: Maven, SpringBoot, MyBatis, POI, JSoup
  + Database: MySQL, Microsoft SQL Server
  + Understand the overall structure and culture of a pharmaceutical enterprise
  + Participate in and contribute to a KATA project:

*KATA - a structured approach to continuous improvement that involves setting clear goals, evaluating current condition, developing a plan to achieve those goals, running experiments, and measuring progress.*

* + Meet with MES, ERP, ESC systems and understand their functionality
  + Improved communication and presentation skills

**Introduction of Novo Nordisk:**

Novo Nordisk A/S is a Danish multinational pharmaceutical company headquartered in Bagsværd, Denmark, with production facilities in nine countries and affiliates or offices in five countries. My internship was located at PS Site Tianjin, which is a multi-functional strategic manufacturing site of Novo Nordisk. It supplies to both global and domestic market with durable devices for insulin injection, finished product of insulin and needles for insulin injection.

**Duty of My Team:**

My colleagues and I are responsible to several manufacturing systems, including PAS-X (MES), SAP (ERP), and ESC (Electrical Supervision Code for global serialization). We maintain the operation, resolve incidents from production lines, improve performance, and practice LEAN production to optimize the production process.

**My Contribution:**

* Coding
  + Scheduled automation process:

Use Maven to integrate POI and JSoup and package an executable Jar file with dependencies which can run independently and repeatedly in a virtual machine in STJ to read latest deviation list from an XML file, read then update current deviation list from an Excel file.

* + One-time file conversion:

Develop a Java program to parse approx. 3k XML files into one Excel file with 3 sheets according to the XML files’ directories.

* + Data Access Layer:

Use Maven to integrate SpringBoot framework with MyBatis to establish a connection between web and MySQL that allows users to look up and edit intended field of data in MySQL without coding SQL instruction.

* Project:
  + PAS-X Hardware Upgrade:

Visit shopfloor to clarify the necessity of present devices renewal and new devices requisition; reorder the planned action list by the criticality of each; receive regional approval.

* + KATA-ESC Incident:

Aim to lower the count of incidents reported from ESC system by 50%; use PowerBI to analyze and demonstrate incident data of past 3 years; identify the top 3 production lines under ESC and top 3 cause categories for each; propose resolutions to each specific cause category.

* + IT-Operation Gemba:

Elaborate how DD&IT collaborate internally and externally with other departments to collect insights on improvements and provide good practices to the installation of a new production line.

**Ongoing Considerations:**

In the two months with Novo Nordisk, I’m satisfied and feel that I was able to learn as much as I could. All my colleagues are friendly and supportive. I’m so grateful to have this internship at Novo Nordisk that grants me the platform to practice the knowledge that I have learnt and apprehend new technical skills both from my colleagues and on my own. Last but not the least, I notice I’m still in lack of the proficiency in SpringBoot and MyBatis, so in the future I will pay more effort on them to become a competent software developer.