Internship Written Report
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Würth Elektronik

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Section 1

Internship Introduction

Introduction to the company

Wurth Elektronik

Wurth Elektronik, a renowned company and part of the Wurth Group, holds a big presence in the world of electronics. Founded in the city of Niedernhall, Germany, the company's growth trajectory has been truly amazing. With around 8,200 employees spread across the globe, the reach of Wurth Elektronik is indeed global. In 2022 alone, it reported sales of an impressive 1.33 billion euros, a testament to its successful operations and business strategies.

The Wurth Group, the parent company, has several child companies under its umbrella, and Wurth Elektronik stands out as one of its most successful. It is not just about the financial figures, but the expansive reach of the company, with business interests spread all over the world. The company proudly boasts 23 production sites worldwide, showcasing its expansive manufacturing capabilities and global reach. The geographic diversity and operational scale truly underscore Wurth Elektronik as a leading company within the Wurth Group.

The genesis of Wurth dates back to 1945, with a vision and drive embodied by its founder, Adolf Wurth. Interestingly, the initial purpose of the company was quite simple yet significant - selling screws. However, the untimely death of Adolf led to his son Reinhold taking over in 1954. Reinhold was just 19 at the time, but his leadership transformed the company and expanded its horizons.

Wurth, under Reinhold's leadership, widened its operations and delved into the distribution of fasteners and tools, an industry that was thriving. With an extensive product line with approximately 125,000 different products, the company catered to a diverse clientele. It served a multitude of industries, ranging from construction and wood and metal crafting to automotive industries and, more recently, an increasing number of industrial customers. Today, Wurth's customer base boasts more than 3.9 million customers, a testament to its wide appeal and reliable service.

Wurth Elektronik Spain is one of the company's many European branches and was the place of my internship experience. Situated in one of the most iconic locations, the Place de Catalunya, it is a bustling research and development center. The center stays abreast with the latest technologies, always striving to innovate and evolve in a rapidly changing technological landscape.

The internship experience at Wurth Elektronik Spain was unique and insightful, providing me with the opportunity to learn from seasoned professionals and work on challenging projects. Being a part of such an esteemed company, known for its commitment to excellence, and contributing to its operations was truly rewarding. The time I spent there offered me a detailed understanding of the company's operations, its work culture, and the relentless pursuit of innovation that sets Wurth Elektronik apart in the competitive electronics industry.

My colleagues

Embarking on my internship journey at Wurth Elektronik, I found myself in a unique situation. Amidst the dynamic workforce, I was the only intern in the company. However, far from feeling isolated, I was instantly welcomed and included by the existing employees. Despite their seniority they regarded me not as an intern but as their colleague, demonstrating the inclusive and respectful work culture of the organization.

The office, although it was an impressive physical space, often remained mostly vacant. The reason behind this was the strong preference for remote work among the employees.

The team was a truly global one, with members hailing from wide range of nationalities - German, Spanish, Latin, Ukrainian, Dutch, to name a few. This international composition further weakened the relevance of remote working as it allowed for seamless communication and coordination, irrespective of physical location. Thus, the importance of being physically present in the office was significantly diminished, replaced by digital connectivity.

I was fortunate enough to have Jose Leyva as my mentor during my internship. As the head of employees, Jose was a master of knowledge and experience. He undertook the task of introducing me to the company's operations, the work methodologies, and the team. Acknowledging my status as a student and recognizing my limited exposure to the corporate world, he integrated me into all team meetings.

These meetings were an invaluable learning platform, offering me a firsthand view of the team's work processes and organizational strategies. Through active observation and keen listening, I began to understand the complexities and nuances of a real-world work environment. It was a rare opportunity to learn directly from the seasoned professionals and observe their problem-solving and decision-making processes.

Throughout my time at Wurth Elektronik, I found myself growing both professionally and personally. The experience, the challenges, and the exposure that I received in this period were truly transformative. The open-mindedness of the employees, the global team, and the mentorship of Jose Leyva, all added significantly to my internship experience. Despite being the only intern, I was deeply involved in the workings of the company and got an authentic glimpse into the dynamic world of electronics at Wurth Elektronik.

Work Environment

The work environment at Wurth Elektronik is nothing short of exceptional. The company's culture is a reflection of its commitment to excellence, both in its approach to customer service and its treatment of employees.

It is a collaborative atmosphere where open communication is encouraged and everyone's contributions are valued.

It is based on the german values and work flow and germans are known for their commitment to work and their passion.
From my first day, I felt welcomed and became an integral part of the team, despite my status as an intern.
The office setup at Wurth Elektronik is designed to promote a balance between productivity and comfort. With state-of-the-art technology and resources readily available, I was equipped with the necessary tools to perform my role effectively like laptop, monitor, personal, desk etc.
Moreover, the office layout facilitates open collaboration and innovation, with ample breakout rooms and collaborative spaces for brainstorming and team discussions.
One of the most significant attributes of the Wurth Elektronik work environment is the focus on professional development and learning. As an intern, I was not confined to monotonous tasks or relegated to the sidelines. Instead, I was involved in significant projects, giving me the opportunity to apply my theoretical knowledge of computer science in real-world scenarios.
I worked alongside seasoned professionals, which provided me with an invaluable opportunity to learn from their expertise and insights. Regular feedback sessions with my supervisor helped me identify my strengths and areas for improvement, enhancing my professional growth.
Employees and interns come from a variety of backgrounds, which enriches the exchange of ideas and fosters creativity. This aspect of Wurth Elektronik's work culture taught me the importance of considering diverse perspectives when problem-solving and innovating, a lesson that I will carry forward in my future endeavors.
Overall, my internship at Wurth Elektronik was an enriching experience that allowed me to understand the dynamic nature of computer science in a corporate setting. The work environment was conducive to learning and personal growth, and it has helped shape my career goals.

Side Projects I worked on

Throughout my internship at Wurth Elektronik, my involvement wasn't limited to a singular main project. Rather, I was invited to participate in numerous mini-projects, each serving a unique purpose within the team's overall objectives. These smaller tasks provided me the opportunity to support various team members, exposing me to different facets of our work and broadening my understanding of the professional world of computer science.

Exporting Kiwi TCMS Test Cases

One of the most rewarding projects I worked on during my internship was for Mr. Pol, focusing on the task of exporting test cases from Kiwi TCMS. Kiwi TCMS, a test management software, was an integral tool used by the team, but it lacked a crucial feature - the ability to export test cases. This was necessary if the team ever decided to shift to a different application in the future. Here, my task was to create a solution using the Kiwi API.

The idea was straightforward enough: to develop a script that could extract the test cases from Kiwi TCMS. However, it wasn't just about getting the test cases; there were also test runs and test plans that needed to be retrieved. My script needed to be intelligent enough to pull all these different types of data and put them into an understandable format.

After thoroughly understanding the Kiwi API and doing a bit of research, I began coding the script. It was an interesting process, and I found myself learning new things along the way. At the end of it, I had a working script that could successfully pull test cases, test runs, and test plans from Kiwi TCMS.

The next part of my task was to organize the data. Since we intended to share this data among team members and potentially import it into a new software, I decided to format the data into an excel sheet. This would make the data easily readable and transferable.

Organizing the data involved carefully structuring the test cases, test runs, and test plans in a way that made sense to anyone who might need to use them. I made sure to create a clear and easy-to-understand layout for the excel sheet. It was challenging but also extremely satisfying once completed.

Extracting data from Excel sheet

Another intriguing project that I got to be part of during my internship at Wurth Elektronik was with Mr. Niall. In this project, my main task was to extract data from an excel sheet based on certain filters. It was a simple, yet important task as the quality of data we were going to end up with was crucial to whatever the team was planning to use it for.

When I first received the excel sheet, it was filled with rows upon rows of data. The first challenge was to understand the data structure, what each column represented, and how the data was interconnected. It was a bit overwhelming at first, but as I delved into it, the structure started making sense.

After familiarizing myself with the dataset, I moved on to the extraction process. This was my first time using 'pandas' and 'openpyxl' in Python, two powerful libraries that make handling data in Python much simpler. Initially, I was a bit uncertain about using these new tools, but as I got the hang of it, things became clearer.

The 'pandas' library in Python was particularly useful for this task as it provides data structures and data analysis tools that are perfect for handling such datasets. I used it to filter the data based on the conditions given to me. On the other hand, 'openpyxl' helped me work with Excel files in Python.

The process involved writing a script to filter out the data. I had to ensure the script would pull only the relevant data, those that passed certain conditions. It was a bit challenging to get the script to work perfectly, but with some tweaking and debugging, I was able to get it to function as needed.

Managing data of different Excel sheets

The third mini-project I worked on during my internship at Wurth Elektronik presented a different kind of challenge. This time, I was tasked with creating a script to manage data in a significantly large Excel document. The document was quite massive, with tens of thousands of rows and columns. This was not just a test of my technical skills but also a test of my ability to optimize the script to handle such a substantial amount of data.

Excel documents of this size can be quite daunting to handle. Loading such a document takes considerable time, and any operation performed on it can take even longer if not done efficiently. So, my primary focus, apart from creating a script to manage the data, was to optimize the script in a way that reduced loading time and made the whole process quicker.

I used Python pandas once again in this project, given its effective data handling capabilities. Writing the script was a meticulous process as I had to ensure it would be able to handle the enormous Excel document and still perform efficiently.

I spent a considerable amount of time optimizing the script. It involved some trial and error, as I tweaked different parts of the script to see what improved performance. Each small change could have a significant impact on how quickly the script could read and manage the data.

One major lesson from this project was understanding that efficiency is key when dealing with large datasets.

This was my first time dealing with data on such a large scale, and it was an enlightening experience.

In the end, I was successful in creating a Python script that could manage the data in the large Excel document and do so relatively quickly.

The main Project

My main project during my internship at Wurth Elektronik revolved around an electrical component known as a varistor. The task was complex and required a deep understanding of both the component and the mathematical processes involved. The aim was to compute voltage and current graphs for the varistor, based on a specific formula.

The varistor's formula needed nine arguments or variables. My task was to input random values into the formula and then process it through a minimizer function. The output generated from this function was then compared with the initial set of data given to me. Although it may sound straightforward, the task was anything but. The process required an in-depth comprehension of the component, the formula, and the minimizer function.

The process of selecting the random values, processing them through the minimizer function, and comparing the results to the initial data was an iterative and intense process. It was like searching for a needle in a haystack, trying to find that perfect set of values that would yield results matching our data.

This project was far from a simple data manipulation task. It was a thorough examination of my understanding of mathematics, programming, and electrical components. It required much studying and learning about the varistor, its formula, and how the minimizer function works.

Each week, I held meetings with Mr. Richard, an employee from Germany who supervised me on this project. These meetings provided a platform for me to discuss my progress, raise any issues I encountered, and gain valuable insight and feedback on my work. His guidance was instrumental in my understanding of the task and my ability to successfully complete it.

Despite the complexity of this project, or perhaps because of it, I found it immensely rewarding. It pushed me to learn and understand things that were entirely new to me, helped me hone my problem-solving skills, and allowed me to apply the theoretical knowledge I had gained in a practical, real-world scenario. It was, without a doubt, one of the most significant and enriching experiences of my internship at Wurth Elektronik.

Section 2

Internship Introduction

This second part of my report is to express my keen interest in becoming part of the upcoming project within our organization. I firmly believe that the skills and experiences I gained during my successful internship here at Wurth Elektronik have prepared me well to contribute positively to the project and be helpful to the whole team.

Firstly, let me highlight my ability to tackle complex challenges, as demonstrated during my time as an intern. A significant example of this was my main project where I analyzed a varistor, an electrical component. Despite the complexity of determining the voltage and current graphs using a formula requiring nine variables, I diligently studied and understood the subject matter. I then successfully applied this knowledge to manipulate the data effectively, contributing valuable insights for the team.

Furthermore, my experience with smaller, diverse projects has made me adept at multitasking and problem-solving, two skills vital to any project's success. For instance, I developed a Python script to extract and manage data from extensive Excel spreadsheets for Mr. Niall. Despite being my first time using Python Pandas and openpyxl, I embraced the challenge, learned the tools quickly, and delivered an optimized script to handle large amounts of data efficiently.

I also worked on another task for Mr. Pol, creating a script using the Kiwi API to export test cases, runs, and plans from Kiwi TCMS into an organized Excel sheet. Again, this required rapid learning, creative thinking, and competent coding skills.

Moreover, I am proud to be part of a truly global team here at Wurth Elektronik. Working collaboratively with colleagues of diverse nationalities – German, Spanish, Latin, Ukrainian, Dutch, and more, I have gained cross-cultural communication skills and the ability to adapt to various work styles. These are valuable assets that can promote effective teamwork in the upcoming project.

Lastly, under the mentorship of Mr. Jose Leyva, I have been privileged to learn about the company's operations, methodologies, and organizational strategies. I have been included in all team meetings and received constructive feedback on my work, fostering an understanding of work dynamics that I believe would be beneficial for the new project.

In light of the aforementioned skills and experiences, I am confident that I can contribute significantly to the new project. My technical abilities, combined with my adaptability, quick learning, and problem-solving skills, equip me well to take on the tasks that will inevitably arise.

I would greatly appreciate the opportunity to further discuss my participation in this project. Thank you for considering my request, and I look forward to the possibility of expanding my role within the Wurth Elektronik team.