

# Internship Report

Master's in bioinformatics and health Informatics

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## Internship Objectives

- Develop a comprehensive understanding of the tools and technologies used in the development of apps and reports, including but not limited to Power Apps, Power BI, and related Microsoft 365 applications.
- Contribute to the optimization of existing processes within different departments by leveraging technology and data-driven insights to identify areas for improvement.
- Foster collaboration by working closely with various departments to gather requirements, understand their unique needs and develop solutions that enhance overall efficiency and productivity.
- Gain hands-on experience in implementing quality assurance measures for the apps and reports developed, ensuring they meet high standards of accuracy, reliability, and user satisfaction.
- Participate in the creation of training materials for end-users, ensuring that documentation is clear, concise, and user-friendly to facilitate seamless adoption of the developed tools.
- Actively seek opportunities to expand your knowledge in the field of app development, reporting, and continuous improvement, staying abreast of industry best practices and emerging technologies.
- Enhance your project management skills by actively participating in project planning, tracking progress, and meeting deadlines for the timely delivery of app and report solutions.

**Introduction:**

Grand River Aseptic Manufacturing (GRAM) was established in 2010 with a singular focus—to meet the burgeoning demand for high-quality sterile injectable manufacturing services within the rapidly evolving life sciences sector. Committed to excellence, GRAM has become a cornerstone in the life sciences community, embodying its mission to manufacture quality sterile injectables.

In the ever-advancing landscape of pharmaceuticals and biotechnology, GRAM plays a pivotal role in ensuring the safety and efficacy of sterile injectable products. The company's state-of-the-art facilities and unwavering commitment to quality have positioned it as a trusted partner for pharmaceutical companies seeking reliable manufacturing solutions.

Beyond its role in the industry, Grand River Aseptic Manufacturing extends its impact to the local community by effectively manufacturing the Johnson & Johnson COVID-19 vaccines during 2020 and 2021 to be able to create immunity to this epidemic. This integration underscores the company's dedication not only to scientific excellence but also to the well-being of the broader community it serves.

During my internship at GRAM, I had the privilege of contributing to developing reports as well as applications for different departments to improve efficacy and increase data-driven decision-making. This report aims to provide a comprehensive overview of my experiences, the intricacies of the work undertaken, and the valuable insights gained during my tenure at this esteemed institution.

In the following sections, I will dive into the specific details of the internship, shedding light on the projects undertaken, the skills acquired, and the broader implications of the work accomplished. Through this report, I aim to convey not only the technical aspects of the

internship but also the holistic understanding gained about the pharmaceutical manufacturing landscape and its societal impact.

### **Description of Work:**

During my internship at Grand River Aseptic Manufacturing, my primary focus was on creating reports and applications for different departments using the following Microsoft Tools: Power BI, Power Automate, and Power Apps. This section provides a comprehensive overview of the tasks undertaken, the methodologies employed, and the significance of the work completed.

### **Project Overview:**

There were several projects that I was involved in. One was building a Power BI report for the training departments whereby using visuals and graphs they were getting insights from the MasterControl (MC) report (this is the software that is used in GRAM). MC reports are messy and large which makes it difficult to understand and read the data. Therefore, my goal was to create a report which would be easy and efficient to use.

Another project I was involved in, was in creating an app to keep track of the initials that the employees use to sign off papers and documents. This process used to be done in Excel however, this led to a lot of confusion and duplicates, so I automatized the process and made it more user-friendly for the user. Moreover, I created another app for the HR department where they track the process of a new employee from when the offer is accepted until the employee is assigned to orientation. Lastly, the last app I worked on was an inventory app that would track the inventory of a lab by ordering items, keeping items in stock up to date, and disposing of the items in the lab.

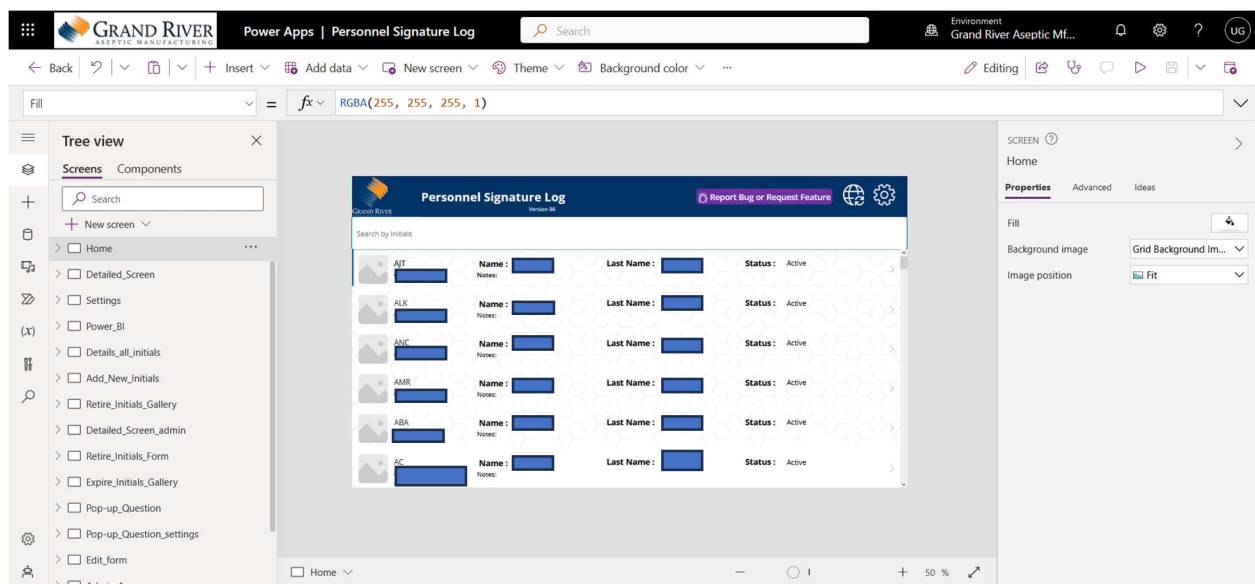
## Methodologies Employed:

In my projects, I used many different methodologies, techniques, and tools to achieve my goals. As I have mentioned before, I used Microsoft tools to do all my work. These tools are available for free, and they are extremely helpful to build reports, and apps and automate different tasks.

## Results Achieved:

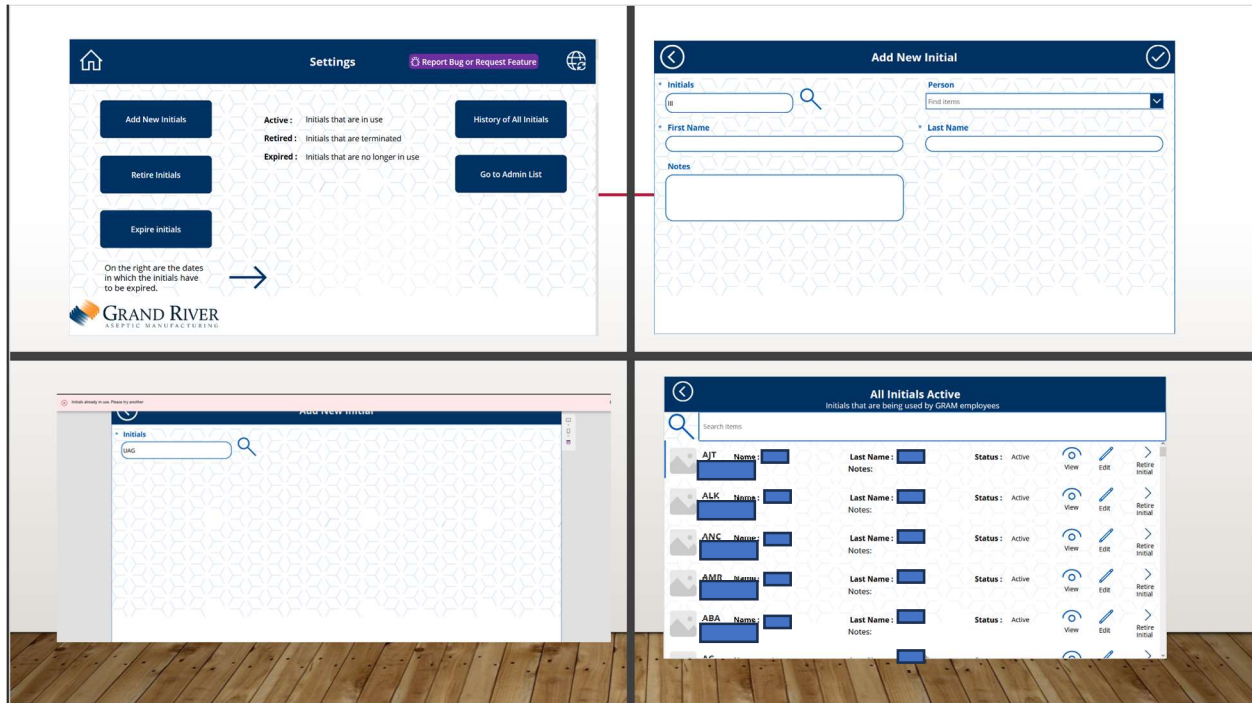
In this section I am going to go through the 3 Power Apps and the Power BI report that I created, and I will show some screenshots of what the app looks like.

In this first picture, is the home screen for the Personnel Signature Log app that would track all the employee's initials that are used to sign papers. As we can see there is a search bar where we can search by initials or name and there is some information displayed in the gallery per employee such as the name, the initials, the last name, and the status of the initial. It is important to track the status of the initials because when an employee leaves the company those initials are retired and 6 months after that expired. Once expired, a new employee could use the same initials that once were used by another employee.



In the pictures below, on the top left, is the screen where the user will navigate when clicking the settings icon of the home screen. In there, you have many different options such as adding new initials, retiring initials, expiring initials, history of all initials, and going to the admin list.

Moreover, I added some definitions for clarity, so users don't get confused between the different status options. When clicking on the add initials button, a form is displayed where you can check if the initials are available. This option was built in an errorproof manner meaning that if initials are currently used by an employee at GRAM they would get an error message (we can see this error message in the screenshot in the bottom left). If the initials entered are available, the new employee would be able to enter their information and store it in the SharePoint list. Lastly, the image shown on the bottom right is the screen that you would navigate when you click the retire initials button. It looks similar to the home screen with the addition of retiring initials. When clicking on the 'bigger than' icon on the right of every row in the gallery, a pop-up question appears to double-check that the user wants to retire the initial and then they would click yes and the status of the initial would change to 'retired'. Similarly, the same process is used to expire the initials with the addition that the status would change to 'expired' and that the initial is going to be available for future use.



For the second project, I created an app for the HR department to keep track of the incoming employees on what step they are at after they have accepted the job offer until they are assigned to the New Employee Orientation (NEO) which would be their first official day at work. As is shown on the top left picture in the image below, there are 3 parts in this app: Offer Accepted List, Background/Drug Screen Pending list, and Neo Dates/People Assigned to Neo Dates. Once an employee accepts the job offer, the app will bring the user to a screen that looks like the one on the top right. Here there are many entries where the person who is filling out this form is going to fill in about the incoming employee.

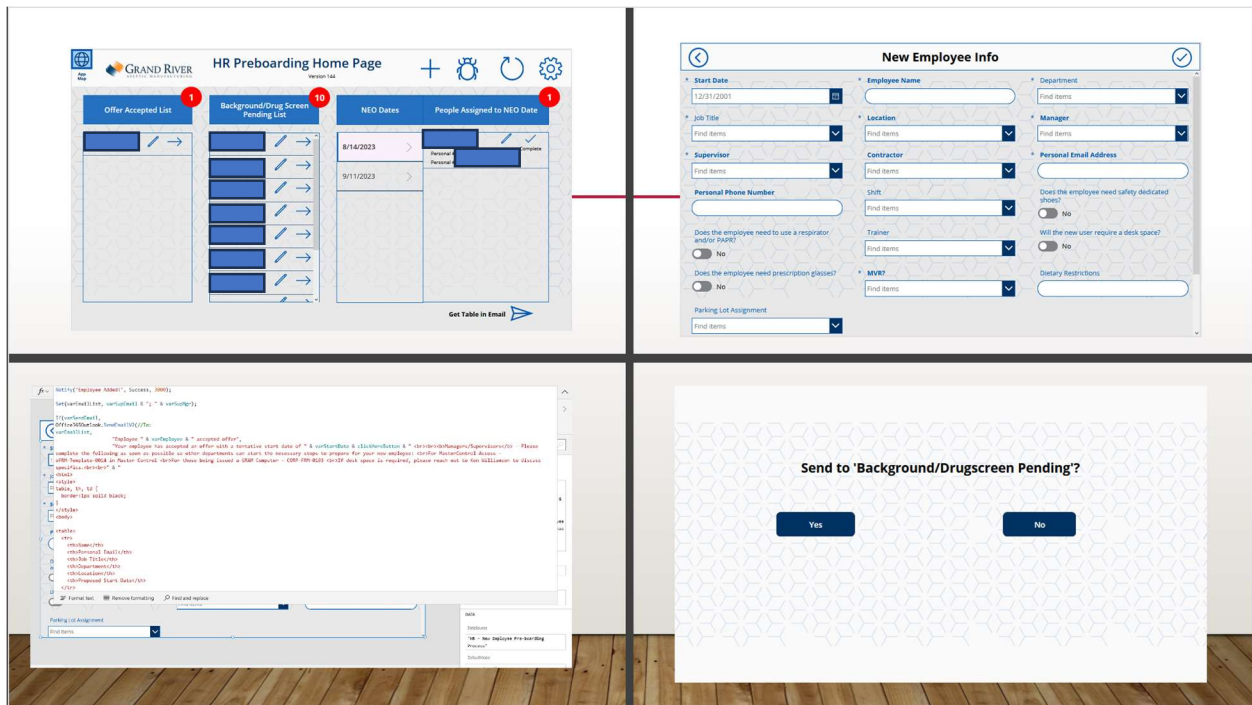
Once, the required entries are filled out, the user will submit the form by clicking on the top right icon that looks like a check badge and it will automatically bring you to the home screen but now the new employee's name will appear under the 'Offer Accepted List' gallery.



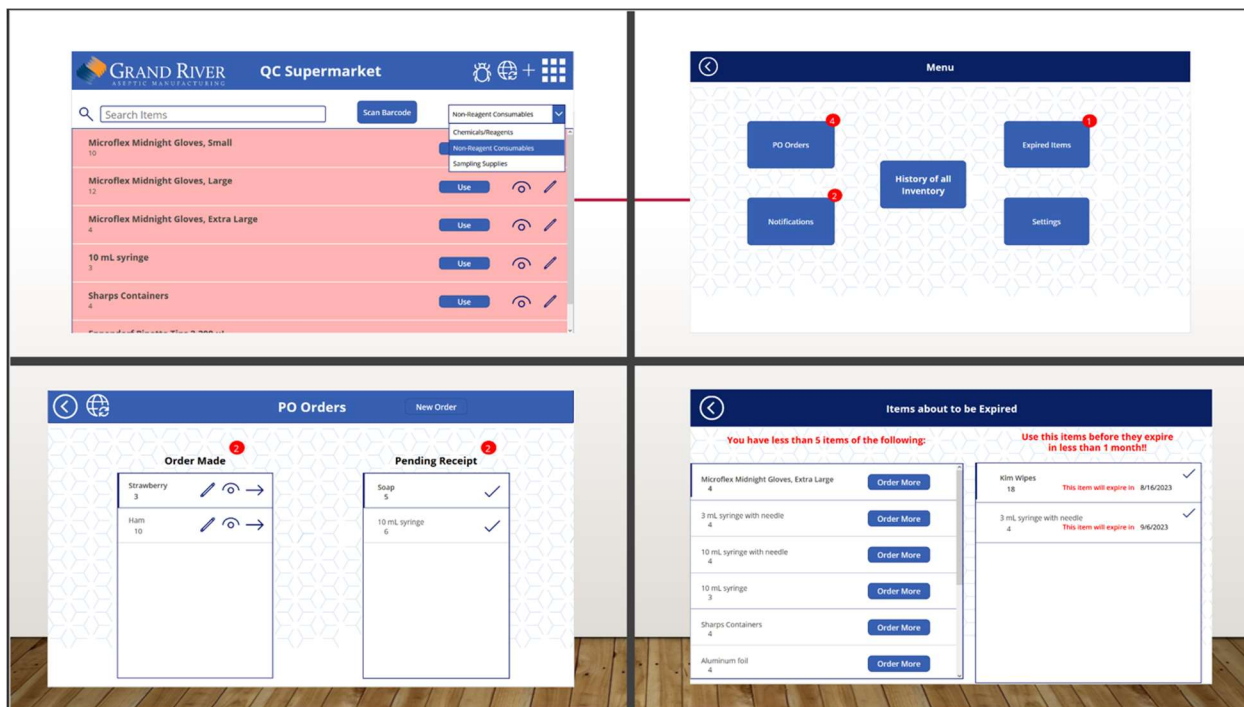
The following step is to move the employee to the background/drug test they have to complete. This process is completed by clicking on the right arrow icon that shows under every gallery. This again brings you to the pop-up question shown in the bottom right screenshot. Lastly, the goal is to assign that person to an NEO date which is when the person will start working for that company. As we can see, the user of this app can click on the different NEO dates and the gallery on the right of the dates will show the user the name of the new employees that will start on that date and once they have completed the presentation they will click on the complete icon and the person will have completed the whole process.

Another functionality I added, at the bottom of the home screen, says 'Get Table in Email' which will send an email of a table with all the information of the employees that will be starting on that date to all the presenters that may be that day, so they know their name and a little bit of their background.

There is a good amount of code when building this app and it is shown in the bottom left screenshot. The code is very extensive, and it would take a long time to go through it but I believe that it is easier to explain it with screenshots because it is visually easier to understand. However, there is some code involved when moving people from one step to another step because the HR department wanted to be notified when this happens. The coding language used in Power Apps is called Power Fx which is a low-code programming language that is designed to be user-friendly, allowing individuals with varying levels of coding expertise to create and customize applications. Moreover, Power Fx is based on Microsoft Excel formulas, making it familiar to users who are already accustomed to spreadsheet functions. This language is used for creating logic, defining data transformations, and implementing business rules within PowerApps.

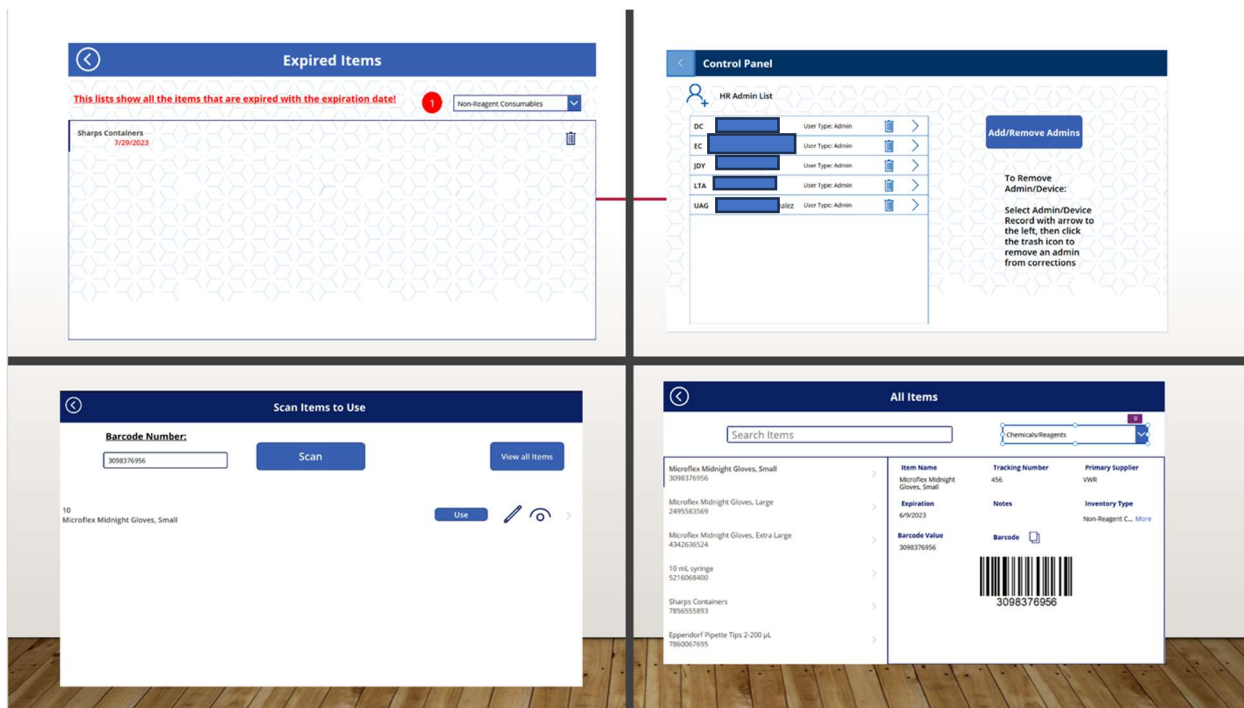


The third app I worked on was an inventory app for the Quality Control Department. This app is still in development process, meaning that it hasn't launched yet. It is expected to be launched in December 2023. In this app, the objectives are to track the order status, keep updating the 'in stock' items, and lastly, to be able to dispose of the items using unique barcodes. Sharepoint has an option that creates unique barcodes for every row that is populated in a list. Therefore, the goal was to put each unique barcode in the item (bottle, bag, etc...) and with an iPad be able to scan it and then dispose of them. However, this is still in the development process since there is a wide variety of parameters that have to be thoroughly considered for the app to work. However, the beta version looks like this:



The top left screenshot is the home screen where items can be searched through a search bar and even filtered down to ‘Chemical/Reagents’, ‘Non-Reagent Consumables’, and ‘Sampling-Supplies’. By clicking on the ‘waffle’ icon on the top right, it will bring us to the menu where different options are available to dig into (screenshot top right). By clicking on PO orders, it will bring the user to the next screen where there are 2 galleries: 1. Order made and 2. Pending Receipt. Once a new order is made it will go to the order-made gallery and then to pending receipts and from there to stock.

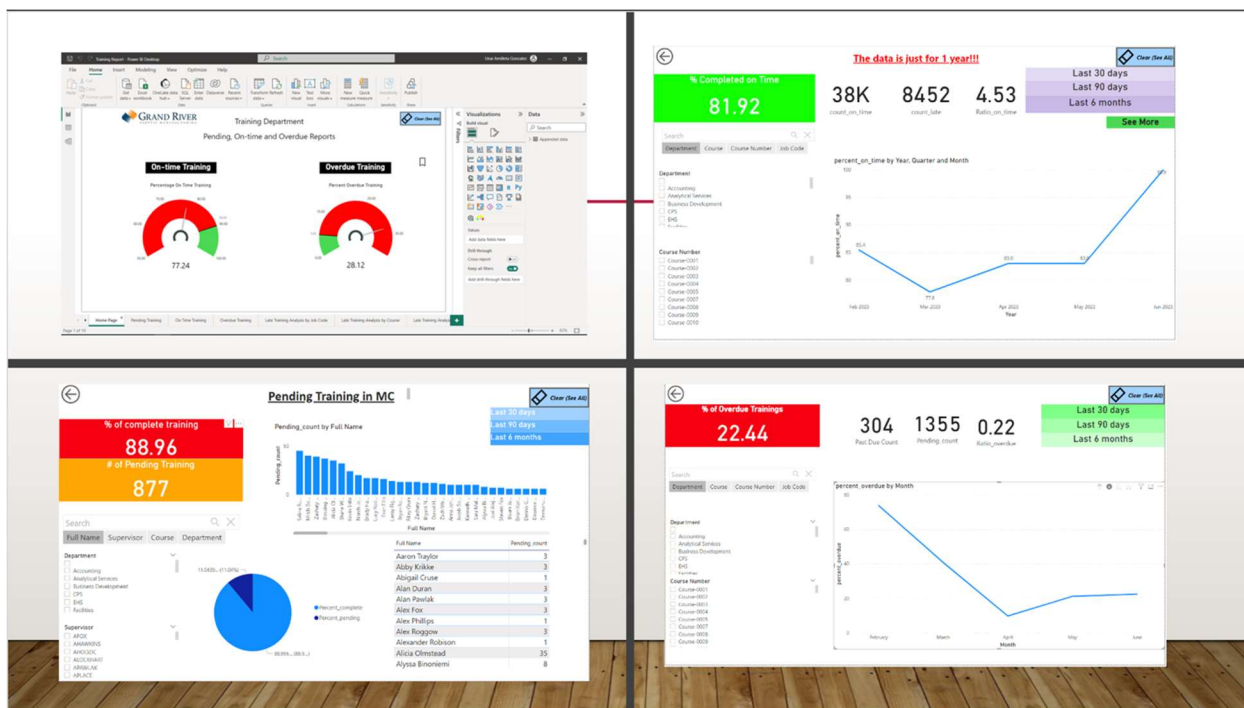
When clicking on the notification button, it brings to the items that are about to expire and we can see that on the bottom right screenshot where there are 2 galleries. The one on the left shows items that have less than 5 items which means that more must be ordered, and the ones on the right, are items that are going to expire in less than a month, therefore, they would have to use them before they go bad to avoid waste.



The top left screenshot shows the items that are expired meaning that we must dispose of them since they are not good for use anymore. On the right, it shows the settings screen where we can make some people administrators in this app. This is because administrators are going to be able to have the whole functionality of the app. Not everyone in GRAM is going to have access to create an order or to dispose of the items, therefore, with this feature, we restrict the permission to certain users. On both screenshots at the bottom are screens that navigate you through the barcodes. The one on the right shows the user the unique barcode for each item and the one on the left shows the result of a barcode being scanned and given the option to dispose of it once is used. However, as I have mentioned before, these are features that are still under development.

Lastly, the last project I worked on, was the report for the training department. This report shows data graphically to get insights on how well the training department is doing. This

report was developed in Power BI and that’s why the interface looks different. On the top left of the image below is shown the home page where with 2 graphs, we get a percentage of what training has been completed on time and how much of the overall training is overdue. Therefore, the goal is to increase the on-time completed training and to reduce the overdue training as much as possible. The other 3 screenshots, give us a better understanding of the parameters I am measuring on the home page and we can know what department has the most overdue training, the employees that haven’t completed their training, who is the supervisor for those employees, etc... This helps the training department to know who they can contact to remind them to complete the training so every employee’s training is up to date in GRAM.



Challenges and Solutions:

There were many challenges encountered in the projects that I worked on. First, I had never used these apps before, so I had to learn everything from the beginning. It was challenging because even though these tools are user-friendly, they were asking me to analyze training data

to be able to depict what percentage of the training completed in GRAM is completed on time and what percentage of all the training is overdue and then create tables to see the name of the employees with some more information so the training department can contact them to complete the training. To be able to do that, I had to clean up the data and create new measured columns to calculate parameters that would let me create those graphs. However, that learning curve of doing the research to the able to execute your plan is always going to be there on this kind of project and once I understood how the app works the level of satisfaction that I had was unmeasurable.

I overcame these problems by not being shy to ask questions to my supervisor as well as my coworkers who have been there longer than me and know more about the industry and the company. Another way I overcame my challenges was by doing a lot of research on my own. When I didn't know something, I would try to research it and find solutions on my own and try it myself. However, if I couldn't find anything then I would ask my supervisor who has been working with these tools for more than 2 years and he can respond to any question that I have.

#### Skills Developed:

In terms of technical skills, I developed proficiency in creating applications using Power Apps, learned to leverage Power BI for data visualization, and gained hands-on experience in workflow automation through Power Automate. Additionally, I improved my data analysis capabilities, particularly in extracting meaningful insights from complex datasets.

On the soft skills front, the internship significantly enhanced my communication skills through regular collaboration with cross-functional teams. I sharpened my problem-solving abilities by tackling real-world challenges faced by different departments within the organization. The experience also provided a platform for the development of project

management skills, including effective planning and ensuring timely delivery of app and report solutions. Adaptability and learning agility were crucial in navigating the dynamic work environment, and I demonstrated the ability to integrate feedback for iterative improvements. Collaborating with various departments showcased my effective cross-functional collaboration skills. Lastly, I strengthened my documentation skills, ensuring clear and concise communication for effective knowledge transfer when using PowerPoint to show any updates.

**Internship Discussion:**

Were the objectives achieved?

- Yes, I believe that during my summer internship as well as my fall semester of 2023 I have gained a lot of knowledge about how the industry works and about the tools that I have been using for the last 5 months.

What skills (scientific and professional) were learned during the internship?

- During my internship at Grand River Aseptic Manufacturing in the Training Department and Continuous Improvement, I acquired a diverse skill set.

**Scientific Skills**

I became proficient in data analysis using tools like Power BI and applied continuous improvement methodologies to optimize processes. Quality assurance measures for app development ensured compliance with industry standards, and I gained familiarity with pharmaceutical regulatory requirements.

**Professional Skills**

The internship enhanced my technical proficiency, especially in Power Apps, Power BI, and Microsoft 365 applications. Collaboration with cross-functional teams improved communication and project management skills. I learned to create user-friendly training materials, facilitating knowledge transfer. Adaptability, learning agility, and feedback integration became routine practices, and I demonstrated effective collaboration with various departments.

In summary, this internship equipped me with valuable scientific and professional skills applicable to roles in scientific research, process improvement, and technology-driven solutions within the pharmaceutical or manufacturing industries.

Did the PSM coursework properly prepare the student for the scientific content of the internship?

- I believe that PSM coursework has properly prepared me for the scientific content of this internship. Even though the tools I have used weren't used in the program of Health



Informatics and Bioinformatics, problem-solving and data analysis are some skills that we gained.

Did the PSM coursework properly prepare the student for the professional content of the internship?

- I believe that PSM coursework has properly prepared me for the professional content of this internship. The PSM classes 'Ethics in Professional Setting', 'Ethics and Professionalism', and 'Foundations of Biotechnology' were great for making you learn more about professional settings. We learned about how to make decisions, how to communicate effectively with coworkers via email or in person, what different departments oversee, and what responsibilities they have.

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What challenges did you experience during the internship? What you could have or did to overcome them?

- I experienced many challenges during the internship such as being able to manage all my workload and the class I was taking during the summer. However, apart from that everything ran very smoothly thanks to my supervisor and my coworkers because they were very welcoming and helpful throughout the whole internship period.

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What is your overall evaluation of the internship experience?

- The internship at Grand River Aseptic Manufacturing in the Training Department and Continuous Improvement was a highly positive experience. Working on real projects provided practical insights, enhancing problem-solving skills. The collaborative environment improved communication and teamwork, while exposure to advanced tools like Power Apps and Power BI contributed to technical skill development. The experience fostered professional growth, particularly in project management and adaptability. While overall positive, clearer guidance on certain project aspects and more structured feedback mechanisms could further enhance the learning experience. In conclusion, this

internship significantly enriched both scientific and professional skills, providing valuable insights into the pharmaceutical manufacturing industry.

**Conclusion:**

In conclusion, this internship has been a highly positive and transformative experience. I've strengthened my communication skills, becoming adept at professional interaction. The exposure to both soft and hard skills has enriched my skill set, bridging the gap between theory and practical application. Witnessing real-life problem-solving has enhanced my adaptability and resilience.

I am grateful for the opportunities and support that facilitated my growth during this internship. The lessons learned will undoubtedly shape my professional journey, providing a solid foundation for future endeavors. I am confident that the skills acquired will contribute significantly to my success in the chosen field in the future.