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System Enhancements for Mechanical Inspection Processes

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## **Introduction/Abstract**

Quality inspection of parts is a major component to any project that requires hardware implementation. Keeping track of all of the inspection jobs is essential to having a smooth running process. By using HTML, the programming language ColdFusion, and the MySQL database, I created a web-based job management system for the 170 Mechanical Inspection Group that will replace the Microsoft Access based management system. This will improve the ways inspectors and the people awaiting inspection view and keep track of hardware as it is in the inspection process. In the end, the management system should be able to insert jobs into a queue, place jobs in and out of a bonded state, pre-release bonded jobs, and close out inspection jobs.

## **Process/Goals/Purpose**

The goals of my project were to design an online queue system for the 170 Mechanical Group and combine my system with other inspection queues to create a one queue online system. To start my project, I first familiarized myself with the inspection process and the current queuing system. The inspection process varied for each inspection group and each group had its own queue and management system. This caused the problem of having people looking through various queues or calling multiple people to check the status or location of his or her part that is being inspected. The mechanical inspection queue and management system was only controlled and viewed on a computer using Microsoft Access in building 170, the building of the mechanical inspection group. The backend data of the queue was stored in a MySQL database that contained many key details of a job.

Once I was accustomed with the current queuing system, I started to use HTML and ColdFusion to create the functionality of a basic web-based queue. This was the first time I used ColdFusion; however, I have used the scripting language PHP, which has similarities to ColdFusion. Nevertheless, I found ColdFusion easier to use for the current project. The basic web design only had basic HTML forms and tables without the formatting, elegance, or “beauty” of a web site a person would usually see. The reason for this was to at least have a functional queue first, and then the skin and dynamic features can be added on top of the design. With the basic design, the users had the ability to add, edit, delete, bond, and pre-release jobs. A bonded job is a job that did not have all the requirements to proceed with the inspection process, so it is put in the bonded queue until the requirements are received. A pre-released job is a bonded job that is taken by an engineer or someone who uses the part, although it hasn’t passed inspection.

He or she could use the part for testing or other minimal tasks. However, a pre-released part has to be returned back to the inspection group.

After completing the functionality, I worked with Alfredo Bravo Iniguez to combine my building 170 queues with his building 241 queues. The combination process included using a shared MySQL database and putting all queues in one web location. This is when we added the formatting and beauty to the queues and management system. We used AJAX (Asynchronous JavaScript and XML) and JQuery to give the web site dynamic features and an appealing look. This also gave the users the ability to select between the different queues without going to different sites. Another dynamic feature was the ability to sort the output table by any field the user wants.

The last task of the project was to make a program to transfer the old building 170 database into the new shared database that contained all the queues. This task was trivial compared to the designing and implementation of the one queue system, but it is essential to preserve the old and ongoing jobs in the queue for record management.

In conclusion, I was able to complete nearly my entire project. The main functions and the one queue system were completed. Do to the compartmentalized nature of the project, adding more functionality or queues to the system would be easy to integrate into the system. We as interns know that this one queue system will be used to help the inspection group with organization and increase productivity.

## **Impact**

Doing this project has given me valuable experience in revamping and implementing a given project from the ground up. Also, I gained better teamwork skills and better communication skills. Working with others and bringing smaller pieces together in a bigger puzzle is what almost everyone working on small or large projects does in the workforce. The people that I worked with seemed to enjoy their job and enjoyed helping when someone has a question or is confused about something. Another attribute I took from this experience was leadership and planning skills. The interns and mentors that I worked with always planned meetings in order to get everyone together to discuss problems and to make sure that all of the individual parts of the project were going in the same direction so that integration could go smoothly. I can say that I will be confident when I have to lead or take charge in a project.