Abstract

Station Program Note Pull Automation

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Fall 2015 – Spring 2016 Internship

Upon commencement of my internship, I was in charge of maintaining the CoFR (Certificate of Flight Readiness) Tool. The tool acquires data from existing Excel workbooks on NASA's and Boeing's databases to create a new spreadsheet listing out all the potential safety concerns for upcoming flights and software transitions. Since the application was written in Visual Basic, I had to learn a new programming language and prepare to handle any malfunctions within the program.

Shortly afterwards, I was given the assignment to automate the Station Program Note (SPN) Pull process. I developed an application, in Python, that generated a GUI (Graphical User Interface) that will be used by the International Space Station Safety & Mission Assurance team here at Johnson Space Center. The application will allow its users to download online files with the click of a button, import SPN's based on three different pulls, instantly manipulate and filter spreadsheets, and compare the three sources to determine which active SPN's (Station Program Notes) must be reviewed for any upcoming flights, missions, and/or software transitions.

Initially, to perform the NASA SPN pull (one of three), I had created the program to allow the user to login to a secure webpage that stores data, input specific parameters, and retrieve the desired SPN's based on their inputs. However, to avoid any conflicts with sustainment, I altered it so that the user may login and download the NASA file independently. After the user has downloaded the file with the click of a button, I defined the program to check for any outdated or pre-existing files, for successful downloads, to acquire the spreadsheet, convert it from a text file to a comma separated file and finally into an Excel spreadsheet to be filtered and later scrutinized for specific SPN numbers. Once this file has been automatically manipulated to provide only the SPN numbers that are desired, they are stored in a global variable, shown on the GUI, and transferred over to a new Excel worksheet for comparison.

I managed to get my application to acquire the CSWG (Computer Safety Working Group) and the SPNWG (Space Station Working Group) SPN's with just two mouse clicks for each pull, as opposed to several from the original process. When all three pulls are performed, an Excel sheet containing all three different results will be generated for the user to compare and determine which SPN's will be presented or reviewed the following month.

The experience from this internship has been spectacular. As a high school senior who will begin attending college in the fall, this internship has been both educationally and occupationally beneficial. The internship has allowed me the opportunities to learn new programming languages, effectively network with NASA personnel from a variety of departments at JSC, and allowed me to learn new professional skills and etiquette. My internship at NASA's Johnson Space Center has further motivated me to pursue a Master's degree in Software Engineering and strive for a prosperous career with NASA as a civil servant.