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Class / Prof: CSCI 390 Daniel Rogness

Topic: Internship Report.

This was my second semester doing the internship with Discover Financial services. I worked there full time in the summer of 2019 with successful completion of the AR360 app. They wanted me to come back for fall 2019, although due to me taking a heavy course load as well as prior personal commitments. I had to decline the offer. Since I was one of the leading contributors of my team the manager had asked me to come back. I found it unethical for me to work there knowing that I would not be able to dedicate 100% of my mental resources to it. I went there periodically to assist the new team, perhaps because it was my first professional project and I felt I had a responsibility towards it and to see it go into production with my name on it, was a proud moment. So, when I applied to come back for Spring 2020, I was accepted with open arms.

When I accepted the project, I did ask if the AR360 app was still being developed in the lab. Mike (the manager), told me that if it were, I would be in that team. I replied that if it is not, I would like to learn about full stack development. When the semester started, I was again nervous not knowing that how I would be able to contribute and if I would be able to contribute enough to the team that I join. The onboarding process was yet again difficult, there were some issues with communication with HR personnel but after I reached out to Mike it was resolved within a couple days. On the first day we had orientation. Even though I was a returning employee, I was treated as a new employee yet had the same credentials from last time for login which I appreciated. I got my old company user id and email address back. Which was amazing as I was able to access all my old files and GitHub repo with ease.

During the orientation we were explained that in the past only a handful of projects went into production. In the summer of 2019, there was a hand-picked team of the coding elites. Theirs and mine were the only ones which went into production. A happy and proud moment, but one which was met with concern as I want the stuff, I am working on to be exiting and useful to the team. Then they said that because the projects which went back to head quarters had been met with high praises this semester there would be banking projects. That there would be people from the banking division to explain to us what it is. All that was obviously preceded with the usual introductions and company videos which I will not go into detail in this report although it’s worth mentioning that due to corporate bureaucracy we have to go through that every time. I have worked for over 15 companies in my life, and each corporate company did that. Not sure if that was a legal requirement, but I was thinking that how much resources are wasted on that. While talking to a few peers about it, no one seemed to be interested neither was management in any of that stuff. Perhaps when if I ever get into a decision-making stage of my career, I can float the idea of saving resources by limiting such activities.

All new employees and I were given a welcome basket. One of them had my name on it, boss said if it is there take it and don’t question it. Then we were given laptops and had to install security and monitoring software. This semester we were only to work less than 20 hours. It was a flexible schedule. The hours of the lab got reduced after a few weeks due to staffing issues of security. One day we were told that the banking people were going to be coming to discover to discuss the projects.

There were 2 leading big projects which were further divided up into smaller teams. One to convert SOAP to Rest, and the other was to convert COBOL API’s also in SOAP which connected to the Mainframe to Rest API’s. I was one the SOAP to Rest team.

This was met with a lot of confusion early on as the teams did not know what we were doing for a long time and it took a while before the product owner got back to us on what exactly was expected from us. In the meanwhile, every day we started watching different tutorial videos on YouTube on JavaScript framework Spring. This was new for me, and I tried to watch as many videos as I could. Although I am a hands-on learner and not having something to practice and test what I am learning made it somewhat difficult. It was quite interesting not doing actual work but just learning. I asked management how they felt about that to which they said. In the real world you be would be doing research as well. Your skills would benefit the company, so we do not mind if you learn things that would help the company in the long run as well.

After a few weeks, the DSL team got their introduction from their product owners. They were converting come COBOL code to modern API’s. I was quite intrigued by it, so I attended the first big introduction session. After going through that, I loved what they were doing. I am interested in a career in Mainframes so the thought of me interacting with real world COBOL was fascinating!

I started collaborating with their team a little more that what was expected of me. None of the people in the team that it was given to had been assigned to had taken CSCI 465 (the COBOL class at NIU). They were quite happy that I was showing interest in their project. When the entire code was first given, they joked and named it the “pepe silvia” project. It was a joke from the TV show It’s always sunny in Philadelphia. We all kept joking on how complicated their project was, even the most technical interns tried helping them. Secretly, I was really fascinated by the x86 computer’s talking to Mainframe.

Discover owns Pulse. Pulse is the largest ATM service in the world. Over 95% of ATM transactions are processes on the Mainframe. In the summer of 2019 when we toured the data center. I did see 2 IBM Mainframes. When I asked what they do, they replied, they are legacy systems. They do not do much. I was amused by that answer. There is a vast amount of misinformation about the Mainframe platform which I got to experience in the summer. Now while working on the code base I saw that the people who oversaw this did know how much data goes through the Mainframe. At one point I remember the team talking to a top CIO’s of the company to which he asked why the need to do this, as cost wise it would increase the cost running all these transactions on PCF or AWS.

As an intern, I observed from the sidelines on how the people in real world operate rather than provide input. One of my mentors said, “act as a sponge there, get as much information. Take the cotton out of your ears and put it in your mouth”. I tried doing that. It helped me practice humility as well.

Going back to COBOL. I suddenly became the go to person in explaining what the COBOL code meant. I asked Mike if I could be switched over to that team, as I believed I could be more use to that team than my current team. He replied no, as he did not want to complicate things. He said, I could help them in every capacity that I could, although formally he would like to see me in my current team. In a few huddles and demo’s, I even received a few shout outs from their team. It made me really proud.

I suffer from extremely low self esteem issues and someone praising me for something that I had helped them with made my day. It also assured me that I can be helpful, and I would not be a total fail. What I learnt and studied for is helping someone. Just that fact alone made the whole internship experience worth it.

There was a piece of working code which had a date clause attached to something. It didn’t make sense to us. We spent hours researching that. I finally took that piece of code, after obtaining permission from Mike to show that piece of code to NIU faculty. I took the piece of code to Mr Decker who was my COBOL teacher the previous semester. He didn’t know how and why it was working. He suggested I take it do Dr Hutchins. Dr Hutchins didn’t know why and how it worked either. I went back to the lab and reached out to some of the people in the mainframe division at Discover & after reaching out to a lot of people. One person who had been working there for over 30 years said that, it was a broken piece of code after converting it into Assembler and looking at the system dump. He even spent over 2 hours with me explaining step by step how he did it and what his though process was.

I kept thanking him, I think he finally got tired of that. I don’t think he realized how much this meant to me. Here is a top person in his field taking the time out for someone like me. I think it was quite altruistic of him.

The last thing I would like to mention about that project was. This was given to NIU students as a test. They even said that most people would not be able to do something like this. I later found that out. Most of the time I was switching back from my team to this team and helping as much as I could. This was great experience as well for me as in the real world I am sure I would be assigned more than one project.

My own team had a little bit of hiccups as most of the people in the team were new and this was the first time, they were working in a group setting. I generally preferred working in a quiet space free of distractions they didn’t. I tried adjusting to it, although it was difficult to pay attention to my work. I started noticing that I don’t like open space work environments. This was a scary thought as most modern workplaces have that instead of offices. I also started to ask questions about this and the results that I gathered was that most millennials don’t really mind as we were never really given an option. We were just happy to be working here while most of our generation suffered economic hardships. In contrast the older generations thought that younger people like working in open spaces and they preferred offices or cubicles instead. I had to adjust.

It took a long time before we were given access to what was actually expected of us in the banking interface. After the basic introductions we were given over 200 pages of docs that we had to familiarize ourselves with. This was challenging again for me as I previously mentioned I am a hands-on learner. This was also form old SOAP code, which no one had worked in. A lot of this code had to be translated in JavaScript. Students in my team have had Java in high school, I had not. I am not sure how much of Java converted into JavaScript. Although I seemed to be having the most amount of difficulties getting started on it. The times that when we met was also different and the working styles didn’t really match.

I took a week to process this and then reached out to the product owner directly and asked what the next steps were. He asked if I understood the code and I frankly replied that there is no way for me to understand the code unless I am doing something hands on. If not I’m just wasting resources at this point. He gave me the next steps and I finished about 1 month worth of team work by myself.

My team was really happy with that obviously. The next few weeks were sporadic and was not much to do in the office. We communicated through discord to keep ourselves informed to any updates. I started helping my team to understand what was going on and they in turn helped the rest of the teams.

The next week the Discover was shut down due to the 2020 Coronavirus pandemic. This time has been nothing but a rollercoaster in my experience. It had a lot of ups and a lot of downs. It seemed a bizarre and surreal experience. A week or two after the shut down we were told that we would be given remote access and we will be switching projects. The new project would be something to do with API’s and something to do with web development. All we were told was if NIU opens, Discover lab opens. Obviously, that did not happen all semester long.

Then one day Discover said that they had made a decision to compensate all hourly employees of the week or two of not working. They also discussed on how the API projects were. They explained that the reason for this is that we get to learn these technologies and provide feedback. I was impressed by the commitment they had for the internship team. Not once they let us hanging. I did hear from a few of my friends that some other big companies shut down their internship programs.

A week or so before the shutdown happened Mike had sent me an email to see him. When I went to see him I was offered a full time position with Discover. This was the happiest moment of my NIU career. All the hard work seemed that it worked out. It meant that years and years of working to pay for school. Working hard to learn and absorb material had panned out. He even asked me if I was interested in mainframes. After I said yes, he said that every intern gets the same offer. He can try, but cannot guarantee my placement. I would finally go on to decline that offer and accept something else. Just the fact that a company who I had worked for, thought that I was worth hiring spoke volumes to me.

I was told to not announce it right away to current interns as some were not offered the position yet and some may not be offered. Having worked in different places it was obvious on why they do that. I respected that decision and went about my business.

My team selected working the COID19 API. It was decided that we would make a full stack app. Some of the tech stack we would be using would eb JavaScript, CSS, REST & many more. None of the people in the team knew how to do it, so we could not plan on how we were to proceed with it. We decided that we would start with what we know and then connect the dots as we went along.

The first couple weeks or so everyone was trying to understand what was expected of us. He also stared having daily huddles on WebEx. We all tried getting some sense of normalcy of the situation as we moved forward.

To say that this semester has been anything short of a rollercoaster ride would be an understatement. From the initial onboarding difficulties, to team dynamics & then all the way to a pandemic. I do have to say that Discover has yet again gone above and beyond to provide one of the best experiences they could given the circumstances. I have nothing but respect and good words for people the manager, supervisor and the company as a whole.

We started on thinking it would be best if we hosted it on PCF although not everyone had credentials (which was set up in fall 2019’s semester). When we decided to switch to AWS. I was the only person who could host it. Although I didn’t want to share my password with everyone in my team. Then we learnt that most of the people in the internship were having similar issues. So our team decided that it is probably best that we host it locally.

2 of the team members had worked the previous semester in a similar project and ended up doing the bulk of the work for this specific project. I was able to help out in the largest and most weighted user story. Most of other user stories went were from 1 or 2. One of the final ones were 6. I was able to contribute the bulk of the work as it entailed databases. I was able to utilize my knowledge of CSCI 466 database class. I had taken that class a while ago. Due to me taking notes in a way I can understand, asking questions to my teacher(s) & saving previous assignments and notes. I was able to open them and utilize it.

Once actual data was getting pulled a member of our team designed the front end. It was divided up into graphs and pie charts. We further decided that we should divide that for every country.

The website in itself isn’t something spectacular to look at. There are already many websites which have more up to date and relevant information. The point of this project was to learn teamwork for web development. As the semester is coming to an end, I can say with assurance that I was able to learn despite all the hardships we have had.

We also got to utilize and learn about working remotely. As well as teamwork during that. We used different technologies such as Discord & WebEx. We learnt the importance of teamwork and collaboration. We spoke with each other almost everyday making sure that all of us get through this together. Some of the demo’s and practice session were a lot of fun as we played games and joked around.

I thank you for taking the time to read this paper. Although this has been a challenging semester none the less I will always remember and cherish these moments as something to remember as I grow older.