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SGCI Coding Institute

Pearc 17

When we first arrived to the Pearc 17 conference on Sunday, we attended the student welcoming event. During the event, two FBI agents by the name of Tracey Lin Tracie Smith went over the importance of cyber security. During their presentation, they discussed hacktivism, crime, insiders, terrorism, and warfare. Hacktivism is hacktivists use computer network exploitation to advance their political or social causes. They use the same tools as hackers, but they do it to bring attention to a political or social issue. Crime is when sophisticated criminal enterprises steal personal information and use it for financial gain. Criminals utilize things like identity theft, online fraud, and phishing to get information on society. Insiders happen when there are people who were former employees or business partners that misuse their authorized authority. Insiders can be the most threatening to cyber security. Because of a former employee or business partner's knowledge on a business, he or she would know all of the weak points of the business and how to profit the most from the business.

Terrorism is intrusions into the government and private computing systems. The focus of terrorism is to cripple the military, financial, and service sectors. Those are the main focuses because terrorist look at that as a way of weakening a country. The last cyber security issue that was discussed was warfare. Warfare is when a nation, state, or international organization attacks another nation's computers or networks. Most of the time it is done through malware. Malware is software that is intended to damage or disable computer systems. Cyber Security is imperative to society because it prevents criminals from deceiving people. After Tracey Lin finished discussing warfare, Tracey Smith informed us on situations that the FBI has encountered with cyber security over the years. One of the situations was a guy who was making coupons for free iPhones. The coupons actually worked, and it costed Apple millions. It took a while for the FBI to catch him, but he messed up when he posted a video showing everybody how to make the coupons. The other cyber security issue that Tracie Smith discussed was how a guy wrote a code that copied the code of that Mercedes Benz uses for their cars at dealerships. Mercedes Benz would sell it to the dealerships for about \$23,000, but the guy who copied the code was selling his for only \$8,000. He costed Mercedes Benz millions as well. From the cyber security issues presented to us from both Tracey Lin and Tracie Smith, it was clear that cyber security is a very serious matter.

On Monday, I was involved in a python tutorial event. Python is a widely used high-level programming language for general-purpose programming, created by Guido van Rossum. In the tutorial, we went over things like variables, types, operators, input/output, control flow, functions, classes, lists, libraries, plotting, data files, and Jupyter notebooks. I was already familiar with some of the topics because of the training from Jerome, but it was a fun experience to learn new things dealing with the python language. Later on that day, we had a mentor lunch. As part of the Pearc 17 conference, every student is paired up with a mentor. It is a great way for the students to make a connection with a person who can impact their lives forever. My mentor

was Dr. Olabisi Ojo. He has a doctorate degree in Biology. He is currently a professor in Biology at Sandiego State University. While we was having dinner, Dr. Ojo left me with very inspirational words. We were discussing the path that lead us to where we are now in life. Dr. Ojo advice was to never limit my mind , and always try to learn more. He opened up my eyes to looking into more things that involves Computer Science. He is someone that I am sure that I will keep in touch with over the years.

On Tuesday, we had the modeling day event. Modeling Day was an event where students would have to work in teams on solving a real world problem using the python programming language. There were five problems for teams to choose between. The first one was the Felix Baumgartner Parachute Project. The project focused on modeling the fall of the skydiver Felix Baumgartner and his famous "Stratos" jump in 2012. The team would have to write a program that would plot Felix's position and velocity in freefall and after he opens his parachute. The second problem was modeling the Flint Water-Crisis. A team had to write a program that would examine the change in lead concertation in a house in Flint over a two year period when the city's water supply was changed from Detroit water to Flint river water and back again. The third problem was a Mathematical Model for Malaria Transmission Disease. Malaria is a very devastating disease and a leading cause of death in tropical regions of the world. A team would have to write a program that would help public health professionals have a better understanding of the disease transmission and identify effective measures for the prevention and elimination of the disease.

The fourth problem was modeling the Population Dynamics of the Wolf and Moose Population of Isle Royale. A team had to write a program that would compare the conceptual relationships of the species on Isle Royale vs. Yellowstone National Park. I worked on the team along with five other members on the Felix Baumgartner Parachute Project. It was a great way to get to know new students and become better with programing as a team. Three of my team member were from the Science Gateway Community Institute as well. They were Kedarius Whitley, Dereck Morris, and Reggie Kelley. The other two members were Kurian George, who majored in physics, and Ebrahim Alareqi, who was also a computer science major. We used a program similar to the code of throwing a ball into the air to calculate the velocity and position of Felix. Once we finished the program , it would not run because it was saying the float numbers were too large. The problem was we continued calculating the drag force once the free faller had landed, and that was not necessary. When we stopped calculating the drag force once Felix had landed, the program ran with no errors. Later that Tuesday, I attended the poster session. The poster session involved students of the conference presenting their posters to judges on research they have conducted. I walked around during the poster session looking at student's work, and asking questions. It helped me with gaining more knowledge on what the judges are looking for. The poster session was very beneficial because I plan on doing a poster of my own in the future.

On Wednesday in the morning I had to volunteer. This was the first year that Pearc had volunteering services at a conference. It was a good way for students to help with the conference and also get a better understanding of new things. On Wednesday I volunteered along with

Reggie to help the judges with the posters. We gathered all the posters up , and when we finished with that, we tallied the number of votes on each poster to see who was the winner. After my volunteering, I had another meeting with my mentor. This time we had lunch together. We talked about two jobs that I would want to get into once I got my degree. The first one we discussed was application software. It is a career where software is developed to satisfy the needs of society. It was interesting me because I would be getting paid to help society, and there are always new apps to develop that can do that. The second career we discussed was artificial intelligence. It is when you program robots to act as man. Artificial Intelligence has always had my attention because I am very fascinated with robots, and it can lead to saving lives. Robots can withstand more harsh conditions than humans, so they could go in a danger situation like a house fire and save people without worrying about being hurt.

Thursday was the final day of the conference. In the morning the students had to do a group presentation on their problem from the Modeling Day event. When we presented, we discussed the focus of our problem, the summary, and the sensitivity testing. The focus was to provide a plot of Felix's position and velocity in free fall and after he opens the parachute. The summary was the final code uses variables and equations used in physics to create all of the different obstacles that Felix went through. With these assets we were able to calculate the velocity of Felix and his movement. In addition, this enabled us to make a model of his descent from space. The sensitive testing talked about the problem we ran into during our program. After the presentations, we had the lunch ceremony. The students who placed in the poster were recognized, and the chairman of Pearc informed on Pearc 18 which will be held in Pittsburg, Pennsylvania.

