Nasser Eledroos, Tyler Gauch, and Matthew Stoker
Wentworth Institute of Technology
Chemical Inventory

Tell us a little bit about yourselves.

Nasser: I'm Nasser, a Computer Science Major currently in my Junior year from Northborough, MA. I'm an off-campus student living in the Fort Hill area of Roxbury when school is in session.

Tyler: I am Computer Science major graduating in 2016 from Coventry Rhode Island. I lived on campus for two years and I am currently in an apartment commuting for my third year. I love programming, playing ultimate frisbee, and playing the guitar.

Matthew: My name is Matthew Stoker. I'm studying Computer Networking at WIT with a plan to graduate in 2016. I was born and raised in Newcastle Upon Tyne, England and am currently doing a semester here and London to get back to my roots a bit. I'm very much involved with music and performing arts as much as possible! I spend my free time in Boston as the president of two a cappella groups based out of WIT, but open to the COF (one non-auditioned and one auditioned, the latter of which I founded just this past September). Last year I was given the distinct honour of singing the National Anthem at Fenway Park for the Red Sox alongside a few other members of the COF. I also participate heavily in the COF Dance Project each semester!

Why did you select Wentworth Institute of Technology? What has your experience been like at Wentworth?

Nasser: I selected Boston for it's location and class sizes, primarily. Not going to lie, it was a bit of a rough start getting used to the engineering student life, but over time I've come to love the work I do, and it's project like this one that keep me highly interested in pursuing a full-time career in software engineering.

Tyler: I chose WIT for several reasons. Number one was the small class size. I liked this because it allows me to actually meet and work with my teachers. Number two was the Co-Op opportunities. Three was the location and the fact that I love Boston. Wentworth has been a great experience so far and a wonderful learning experience.

Matthew: I chose WIT because of their approach to learning. I was immediately drawn to their hands-on, project-based learning. I feel as though lectures are fine but, alone, they can't hammer home the skills that you need to understand fully what is happening. For example, if you were in a lecture for a computer programming course and the professor gave you slide after slide of example code and how to do various loops and functions, that's great. You know how those specific examples work, but until you're faced with a project or a problem that you need to implement the code to complete, you're not going to fully understand the concept. Wentworth really has the balance of theoretical and applied learning down and I immediately recognized that this was the way I wanted to be taught. That, and the central Boston location isn't too shabby either!

How did you get involved in the Chemical Inventory Database and can you explain the project in more detail for someone who might not understand the purpose?

Nasser: I started the project after talking to one of our faculty, Professor Lisa MacLean. She had this idea floating around for a database and after a chance encounter in a hallway, she helped me to get the ball rolling on this project. In its essence, the project is a system that you'll find in many enterprise labs where they're able to manage and maintain an active inventory of chemicals that a particular COF school needs to purchase and use over time.

Tyler: I was asked to help create a front-end model for the database because when I came on, there was no user-facing implementation. I have been working on creating a secure and easy user-interface. The project itself is a secure way of managing, tracking, and updating chemicals on campus. So, basically, a school orders some chemicals. A person from that school would then log where and when the chemicals arrived. Another person would then log where the chemicals are stored so that they can be easily found. The application will also allow for notifications if a chemical is expiring or if they chemical is used up and needs to be re-ordered. It will also help keep the chemicals MSDS up to date.

Matthew: I got involved right at the beginning of this project with Nasser Eledroos. We were both together in an Advanced Database course taught at WIT by Nathaniel Derbinsky. Professor Derbinsky assigned us a group project at the beginning of the semester, to be completed by the end of that semester. Nasser and I had known each other prior and decided to work together. That was the easy part. The difficult part was what to do for our project. We had to design and implement a working database around anything that could use a database in order to streamline the day to day function, but the tricky part was that it needed to be of a certain level of complexity. Strangely enough, we ended up speaking to one of our old database professors, Lisa MacLean, and she turned us on to the initial request for the Chemical Inventory Database. I'm not sure if Nasser has explained in a bit more detail what the project is about. I'm sure he has, but I'll explain a bit, as well, so you can have it from two perspectives. The project in its simplest form is a way of tracking chemicals around the COF in a more efficient manner! Until now, I get the impression that the records have been a bit scattered. In practice, the database

will track how much of each chemical is in each lab in each school and how old the chemical is, delivering a warning if it becomes too old. It will also track when chemicals are ordered and, as they are delivered, where they are being sent amongst the COF schools. Other functionality to be added will be throwing up flags when new safety data sheets need to be ordered alongside the chemical (as these change rather frequently), as well as a directory of users that will allow certain permissions on access to the database to be allocated on a person-by-person basis, dependent on need. Obviously with something like this, security is quite important and so we will be taking measures in order to make sure that it is secure to satifaction. We also intend to develop and improve a nice user-interface so that it's simple and easy to use by whomever may need it.

How can this project benefit the Colleges of the Fenway?

Nasser: Currently, a system like this is not in place. This is a huge problem that can lead to discrepancies when doing government reporting or simply trying to work out what is currently in stock in a school's chemical reserves.

Tyler: This project should help benefit the Colleges of the Fenway by giving them a simple and easy way of managing chemicals throughout the schools. This will help keep things safe and up to code and also limit the amount of ordered chemicals. One issue that came up was teachers not being able to find specific chemicals for classes. If they couldn't find them they would order more. This project should help track these chemicals so we don't lose, misplace, or not update chemicals.

Matthew: This project benefits the COF by keeping record of all chemicals as they move throughout the schools. As I mentioned, it seems as though the records before were either non-existent or were quite scattered and incomplete. Having this database in place should certainly make life easier on professors that teach in the chemistry labs—as they will know exactly how much and where each chemical is—and on people like Jennifer Bosselman (COF Director of Environmental Health and Safety).

What skills or knowledge have you gained from working on this project?

Nasser: From this experience, I've gained knowledge of Database Systems and how to effectively communicate a proposition with a client, how to go from idea to technical proposal, and then take that a step further to a live usable project that will bring huge benefits to the six institutions in the Boston area.

Tyler: So far, I have only implemented a security overlay for the project. I have learned a decent amount about security and how to handle some sensitive information. With that, I have also started developing an app for the project and have learned how to get these devices to talk to each other, and keeping that security in tact. I hope to learn a lot more as I progress through this project.

Matthew: I have thoroughly enjoyed having the opportunity to work on this project as it has given me a chance to see what real life application of my learning can do and just how prepared I am for the field that I am about to enter after graduating! Of course, in any project that comes along, there are roadblocks and complications, and it's these issues that arise that really help to hone your skills as you need to sometimes think outside of the box a bit to solve them. I think problem-solving and adaptability are key skills in the line of work that we do and it has been excellent so far in exercising those.

Is there anything else you'd like to share about the project or your involvement?

Nasser: This project has a long way to go, but I believe with the right support and work this project will undoubtedly turn into my Senior Project. I would like to have a fully developed and deployed system ready for demonstration not just to my immediate faculty, but also the department chairs and administration of all six institutions, by the time I graduate from Wentworth. And undertaking like this is undoubtedly challenging, but isn't that the fun of the whole project? To "engineer" something from scratch, from paper to ones and zeros.

Tyler: This project is a great opportunity for us to use our knowledge to benefit our school. Matt and Nasser have created great ground work for this to become a well-rounded and useful tool and I am glad I am able to help with it.

Matthew: I look forward to seeing where this project can go and I'm thankful to everyone involved, especially my partners, for the experience!