

**Rowdy Rams Beverage Co.**

*Deliverable 3*

Bella Bedore, Mike Hutelmyer, Emily Miller, Tyler Pittenger, Cade Uhlin  
May 2, 2022

CSC 468-02 Introduction to Cloud Computing  
West Chester University of Pennsylvania

GitHub Repository Link: <https://github.com/CadeUhlin/moola-miners>

**Summary:**

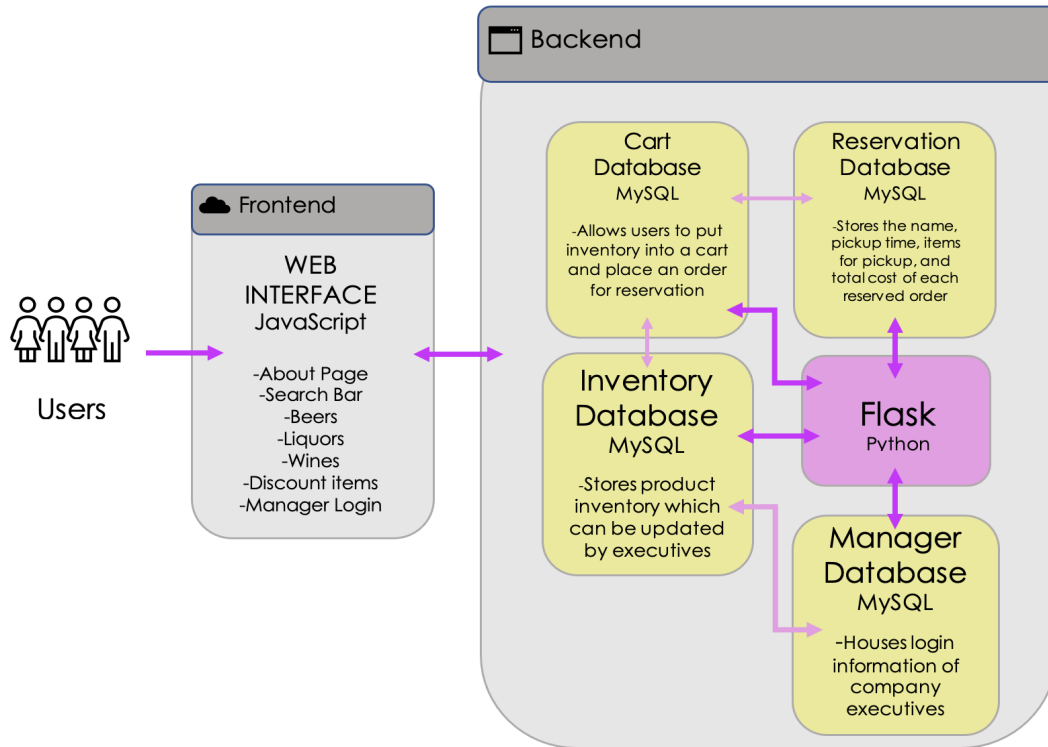
Rowdy Rams Beverage Co. is a service that aims to provide consumers with an advanced look at what is in stock at their local beverage store before they leave their home. The convenience of this service will enable consumers to save valuable time both knowing if what they want is in stock at a certain location, as well as holding the inventory they want, so it is ready for them to purchase when they arrive. We have all made a trip to the store, only to find what we wanted was not there. The anguish of wasted time is now a thing of the past when you rely on Rowdy Rams Beverage Co. to keep you up to date and informed when it comes to procuring the libations that you want to enjoy.

Creating the interface for what consumers will see and what managers/employees will see will use prior knowledge learned in WebUI and JavaScript. The back-end processes of maintaining the database of products will be managed using Flask and MySQL.

Incorporating our new knowledge that we are learning in CSC 468, specifically: virtualization, and containerization using CloudLab to deploy the infrastructure and using Kubernetes to orchestrate it.

## Technical Report:

### Chapter 1 - Project Vision



## Chapter 2 - Technical Implementation

Rowdy Rams Beverage Co. is an end-to-end solution to enhance inventory tracking technology for alcohol retail establishments. This website will allow customers to reserve an order for later pickup and purchase onsite. This will ensure that the distribution center will have enough inventory available to provide customers with their order, at the time of pickup. While designing the system architecture of this project, convenience and scalability are large components in the implementation of databases.

The front-end of the inventory tracking project is comprised of a WebUI that includes displaying available products, quantity available, a login portal for administrators or managers, and a cart option for users to request an order to be put on reserve for 48 hours. In addition, the webpage will include a search bar that will bring up matching results in real time. The front end will be built utilizing React, a JavaScript library for developing user interfaces.

The backend portion of this project will be handled by the Python framework Flask. Flask is a lightweight web framework written in Python that allows for quick and easy deployment of websites. Flask has the ability to handle multiple files of frontend languages such as JavaScript, HTML, and CSS that will allow a user to traverse the website. Flask also has the ability to interact with databases to pull data that will be represented on the frontend for the user. There will be two separate databases, inventory database and manager database. The inventory database will contain the product, SKU, quantity, and a few additional features. This will be implemented utilizing MySQL which works well with Flask. The Manager database will house the login information for company executives and employees, allowing them to manage and edit inventory. The inventory, cart, and reservation databases will communicate with each to reflect an accurate inventory as users reserve orders.

Overall, the main purpose of Rowdy Rams Beverage Co. is to provide a streamlined service to adult beverages distribution centers to maintain detailed records of their current stock while simultaneously providing customers with up to date information on if their favorite beverages are available.

## Chapter 3 - Intermediate Milestones

The original scope of our project that was submitted in Deliverable 1 has proven to be a good foundational vision. We have built on that idea in terms of creating the framework for the website we will be using. This framework has been created in an environment in Expo. We know what we want the interface to look like and that part is going more smoothly than the back-end development at this time (see Figure 1 and 2 below). We know that we will be using MySQL but are not quite sure yet how it will be implemented and what it will be pipelined to. Comprehending the Kubernetes CI/CD pipeline in terms of how to integrate it into our own repository vs following Dr Ngo's hello repository has been a challenge. We attempted to clone the Jenkins components from Dr Ngo's hello repository into our repository but the startup scripts are failing. This was likely because the worker-1 and worker-2 nodes were not configured properly. We have a thought of creating a new repository and starting it over based on what we have learned in the past 2 weeks. This might help us build better and smarter from the ground up now that we know more about what some of those pieces mean.

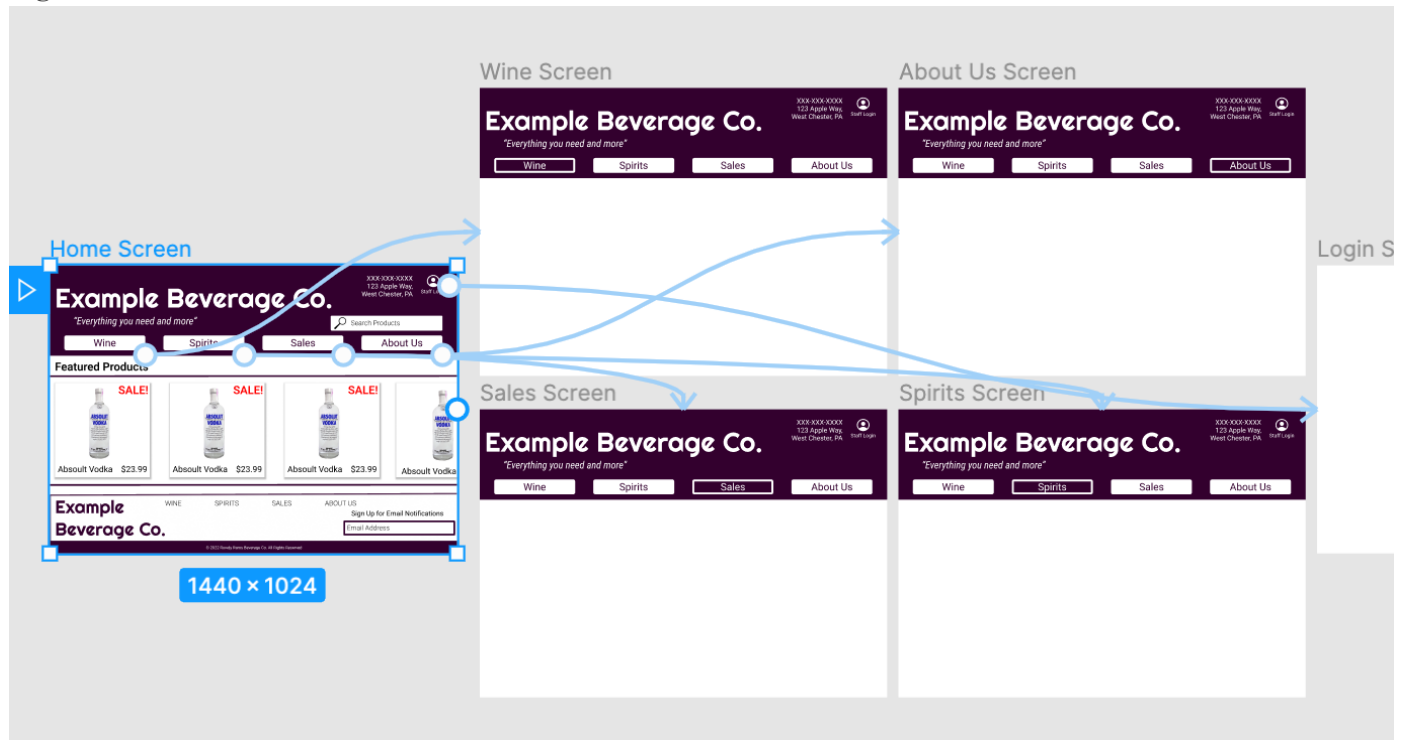
That seems to be our biggest hurdle at this time and we are confident that once we understand that starting point, we know how the other pieces of the puzzle will fit into place. The brainstorming on what the 2 databases will include (inventory data and employee data) is coming along, and the method to be used in MySQL is known.

Another hurdle that we are facing is figuring out what we don't know and utilizing the in-class meeting times, where Dr. Ngo is there, to answer questions to guide us along. Coming up with the right questions to ask, in order to move forward, has not been easy.

**Figure 1**



Figure 2



## Chapter 4 - Self Assessment

The first technical requirement was that the front-end WebUI started to be complex because of our utilization of ReactJS. We had previously worked with React Native therefore we had to learn how to adjust to different formatting and language to create our front end. Our goal was to create an eCommerce website so we wanted the formatting to look familiar to other beverage eCommerce sites. We began by initializing a react project and began editing it locally. The first necessity that we needed to include was the navigation bar. To create the navigation bar we needed to create multiple pages and import those pages into the main App.js file. From there the required JavaScript API react-native-navigation was implemented in order to format the top navigation bar accordingly. Once that was put in place the next step was to begin customizing to fit our goal of a multi-purpose beverage site. We then added a header containing the name of the company, a company logo, and contact information. Then we created the footer containing again the name of the company and contact information. Specifically to the home page, we formatted a section for featured products that included an image of the product, the name of the product, and the price of the product. This portion was difficult due to formatting bugs that hindered the ability to make each product line up uniformly. Unfortunately, during production, we ran into problems when switching to another page. While the pages were read when the navigation button was pressed, it would not show the information related to each specific link. Therefore, we decided to focus our efforts on completing the homepage to meet our goals and connect to our databases.

The second technical requirement was to set up a backend. This proved to be one of the easier requirements within our project. The goal of the backend was to handle opening the ports and sockets for all of the different components to see and communicate with each other. We utilized Flask and based it on Dr. Ngo's files within ramcoin. After some configuration of the files, we were able to have a successful backend. One big hurdle that we encountered was connecting the database with the frontend through the backend. We attempted to have the frontend send GET requests to Flask and have Flask respond with the appropriate data from the database. After a lot of head-scratching, we decided as a group to move the database and have the frontend connect with the database directly instead of trying to go through the backend. This, although not fully finished, proved to be a much easier way of pulling data from the database.

### **Databases:**

In relation to the third technical requirement, databases, we had initially planned on developing two databases to connect to the pipeline –

1. A database to store and authenticate employee data.
2. A database to store and monitor the store's inventory.

The first database would utilize components of both the front and the back end. On the front end, a login button would lead to a form to type in a username and password. This data would be run through the backend using a Flask API to verify the data by comparing it to values within the database. The second database would connect directly to the front end and be able to display the inventory of each item available at the store. This would include the item's name, the amount in stock, volume types (such as 750ml, a 12 pack of 8oz bottles, etc.), and possibly a picture of the item. We decided to guarantee the development and incorporation of database #2 for the scope of this class, but heavily considered the inclusion of database #2 depending on our success and timeline.

When it came to the development of database #1 itself, we faced no issues. Through the use of MySQL, we were properly able to create the database exactly as we had planned. Unfortunately, the big issue arose when we added this DB file to Github and attempted to connect it to the pipeline. To be completely transparent, we are still unsure of what the problem is and how to fix it, but our pipeline simply won't recognize the database. We tried to combat this issue by switching over to Redis, but the same problem persisted.

Eventually, we decided that we needed *something* to show, so we created a hardcoded database through the use of HTML, CSS, and JS. This would act as a temporary solution and vision of what we planned for our actual database to look like. However, this was around the time that Cloudlab itself had bugs and other issues that prevented us from progressing further. At this time, we do have all three different versions of database #1 ready to be implemented but were unable to complete any of these versions in time for the in-class demonstration.

The fourth and final technical requirement was to establish a pipeline using Docker, Kubernetes, and Jenkins. This proved to be very difficult for our group to accomplish. We were able to set up docker for our project and see the docker containers for our different components. However, we continuously ran into errors with Kubernetes not being able to see our docker containers. We attempted to reconfigure our pod layout and have all of our components run in separate pods to see if we would have any success there, unfortunately, we did not. Kubernetes was unable to recognize our docker containers and gave us an error reading unable to detect or connect to ports.

Overall, Rowdy Rams have come a long way since the beginning of the semester. Over the course of developing this full-stack project, our group has learned a lot. This is everything from creating an interactive WebUI using ReactJS, setting up a backend utilizing Flask, creating and filling a database, and working with cloud technologies. Even though we were unable to set up a fully functioning pipeline, we as a group learned a lot from this process. Everything from using docker to troubleshooting with Kubernetes. This project gave us a great full-stack experience that we will all use as we progress into our post-graduation careers.



# Michael Hutelmyer

Phoenixville, PA 19460 | (610) 613-9781 | [michaelhutelmyer@gmail.com](mailto:michaelhutelmyer@gmail.com)

## EDUCATION

**West Chester University**, West Chester, PA

**2019 to May 2022**

- *Bachelor of Science in Computer Science, with Computer Security Certificate* **GPA: 3.8**
- *Relevant coursework: Data Structures and Algorithms, Programming Language Concepts/Paradigms, Cloud Computing, Software Security, Software Engineering, Computer Systems, Data Comm & Networking, Discrete Mathematics, Malware Analysis*

**East Stroudsburg University**, Stroudsburg, PA

**1998 to 2002**

- *Major: Business Management*

## COMPUTER AND SOFTWARE PROJECT EXPERIENCE

- Java, Python, OCaml, SQL and C++
- Microsoft Office - very efficient in Excel & Word
- Created a Lexical Analyzer
- Software Development Process Project
- Docker Container and CloudLab
- Track-It! and Brightree
- Mac Terminal and Ubuntu
- Change Healthcare, Navinet, Availity
- Computer Security and Ethics Blog
- Virtual Machine

## ACHIEVEMENTS AND AWARDS

- Adapt. Believe. Compete. Award winner at ABC Medical 3x
- Six Sigma Yellow Belt Certified
- Upsilon Pi Epsilon International Computer Science Honor Society
- West Chester University Dean's List 4x
- AT&T STEM Scholarship Award Winner 2x
- Unisys Scholarship for Student Success

## PROFESSIONAL EXPERIENCE

**ABC Home Medical Supply Inc.**, DME Provider, Exton, PA/Port St. Lucie, FL

**3/2018 - Present**

### Application Support Supervisor

- Manage support team of 4 direct reports, supporting 100+ users in 3 major U.S. offices.
- Communicate regularly with support team at Brightree, the software platform that runs the business.
- Supervise implementation and management of Validation Rules based on specific insurance billing guidelines.
- Oversee support on user requests for the production, management and delivery of services.
- Lead a team that handles all database updates for new items added to inventory.
- Manage special projects on mass updates for item allowables housed in database.
- Oversee support team responsible for creating and maintaining portal access for users.
- Developed process for payer updating, involving large data set manipulation.
- Analyze adjustment reports from Reimbursement dept to identify trends where pricing updates are needed.
- Collaborate with Finance and Contracting departments on price table allowable reporting.
- Organize and run weekly department meeting.
- Directed project to completion with goal to eliminate a non-profitable part of the business.
- Assist Finance department on bank consolidation data.
- Collaborate with VP of Systems & IT establishing department budgeting.
- Used relevant work responsibilities/tasks in Fall 2020 to fulfill Internship credits at WCU.

# Michael Hutelmyer

---

Phoenixville, PA 19460 | (610) 613-9781 | [michaelhutelmyer@gmail.com](mailto:michaelhutelmyer@gmail.com)

**ABC Home Medical Supply Inc.,** DME Provider, Exton, PA

**1/2017 – 3/2018**

**Application Support Specialist**

- Managed master spreadsheet as Lead Specialist of 8000 unique items on 250+ price tables in database.
- Used vast knowledge of payer rules to manage user requests for system set up so services could be delivered.
- Handled special projects like annual Medicare pricing update or item reclassification.
- Was point person for department in multiteam process for adding new items to database.
- Configured and maintained new and existing payers in our system.
- Trained reimbursement team on software and all SOPs when department was transitioned to Florida office.
- Managed all system process needs for returned orders.
- Created and maintained portal access for users.

**ABC Home Medical Supply Inc.,** DME Provider, Exton, PA

**1/2013 – 1/2017**

**Billing Coordinator**

- Ran weekly reporting on company-wide revenue and Reimbursement team productivity.
- Managed all Blue Cross receivables and Illinois Medicaid receivables (Approx. 675 patients monthly).
- Oversaw billing reps responsible for all other state Medicaid receivables (Approx. 250 patients monthly).
- Created resolutions to nationwide Blue Cross billing and claims filing change for DME supplies.
- Confirmed orders and performed billing review for monthly orders.
- Trained new employees on billing procedures and software.
- Analyzed denial trends and claim rejections and created resolutions.
- Coordinated Commercial appeals.

**Medical Supply Cabinet, dba: Aesbar Medical LLC,** DME Provider, Horsham, PA

**4/2012 to 10/2012**

**Senior Billing Representative**

- Assisted with supervision of the billing department.
- Reviewed total AR, determined most efficient way to collect open receivables.
- Assigned and worked remittance and receivable reports.
- Entered, confirmed, and submitted electronic claims.
- Analyzed claim denial trends and created spreadsheets for resubmission.
- Coordinated Medicare and Commercial appeals.
- Reviewed patient files ensuring they meet medical necessity guidelines.
- Trained new employees on software and procedures.

# Isabella Bedore

Computer Science Student

25 Gladiola Drive  
Howell, NJ

732-908-0487

[bellabedore@gmail.com](mailto:bellabedore@gmail.com)

## PROGRAMMING LANGUAGES —

- Java
- Python
- OCaml
- C++

## ADDITIONAL SKILLS —

- Organized
- Compassionate
- Hardworking
- Detail Oriented
- Proficient in all G-Suite applications
- Extensive experience with Microsoft Word and Excel

## EDUCATION

### *Aug 2019-Present*

**West Chester University of Pennsylvania**, West Chester, PA

- GPA: 3.86/4.00
- Minor in Philosophy
- Certification of Computer Security
- Dean's List Fall 2019, Spring 2020, Spring 2021, and Fall 2021
- Relevant Coursework: Data Structures and Algorithms, Programming Language Concepts and Paradigms, Computer Security, Cloud Computing, Malware Analysis, Computer Systems, Networking, Discrete Mathematics

### *Sept. 2018- Dec.2020*

**Brookedale Community College**, Lincroft, NJ

## TECHNICAL EXPERIENCE

### Projects

- **Lexical Analyzer** (2021)- Java Based Program. Breaks down and analyzes each lexeme of a program to be parsed into the syntactical analyzer. Enhanced my understanding of compilation process.
- **Instrument Alphabetizer** (2020)- Java and Python based program. Added, sorted, searched, and removed items from a doubly linked list. Helped in the understanding of DLL data structure and sorting/searching algorithms
- **Left Right Center** (2017- Java Based Program. Utilized randomizing algorithms that allowed the program driver to play against multiple "computers"

## LEADERSHIP

- Secretary of High Street Harmonix (Fall 2020- Present)
- Uniform Coordinator for West Chester Marching Band (Fall 2021- Present)
- Sisterhood Coordinator for Tau Beta Sigma-Zeta Upsilon Chapter (Fall 2021- Present)
- Member of Computer Security Club, Computer Science Club, Women in Computer Science Club, and A Moment of Magic
- Girl Scouts of the Jersey Shore-Girl Representative (Sept. 2018- June. 2019)

# Emily Miller

emilymmiller1@outlook.com | (443) 617-2141 | [www.linkedin.com/in/emilymiller913278](http://www.linkedin.com/in/emilymiller913278)

**Area of Focus:** cybersecurity | geographical information systems | software engineering | software development

## Education:

Major: Bachelor of Science in Computer Science - West Chester University of Pennsylvania, Honors College | West Chester, PA 19383

Concentration: Cybersecurity | Minors: Geographical Information Systems

Cumulative GPA: 3.36 | Anticipated Graduation: May 2022

Extracurricular Activities: Honors Student Association; Cybersecurity Club; Women in Computer Science

## Languages and Technologies:

Programming Skills: Java; Python; C; SQL; OCaml; HTML/CSS; JavaScript; Object Oriented Programming

Software Skills: Microsoft Office Suite; Final Cut Pro; QuickBooks; ArcGIS Pro; Visual Studio; Virtual Box; Linux

## Relevant Coursework:

Malware Analysis	Software Security	User Interfaces	Data Structures and Algorithms	Cloud Computing
Computer Security and Ethics	Digital Image Processing	Computer Cartography	Geodatabase System	

## Professional Experience:

Argo Consultant - Argo | Belcamp, MD 21017 | May 2020 - Present

- Implemented and updated a back-end dashboard utilizing Linux database and bootstrap components
- Attended weekly meetings with developers to discuss app progress and updates
- Gathered lake bathymetry data to create 2D arrays of coordinates

Office Administrator - B. E. Miller and Son | Street, MD 21154 | May 2019 - Present

- Maintain detailed records of customers' transactions and customer information
- Utilize QuickBooks to maintain company records
- Communicate with customers regarding payments and billing information

Sales Associate - American Eagle | Bel Air, MD 21014 | August 2017 – December 2020

- Leverage company tools and technology to confidently provide the customer with product knowledge to enhance customer engagement and maximize sales
- Proactively resolve customer concerns in a manner consistent with company policy, and with customer satisfaction in mind, partner with store leadership team on elevated customer issues
- Consistently provide support to fellow employees through sharing of knowledge, helping to complete tasks and/or assisting in customer interactions

Research Intern - Flowers by Bauers | Jarrettsville, MD 21050 | August 2016 - May 2018

- Created and implemented various research projects on the manufacturing of plants within the parameters of a greenhouse
- Constructed a new action plan to enhance the effectiveness of growth within the greenhouse to improve productivity and sales
- Analyzed data to determine the effects of variants on different species of plants

## Technical Experience:

Lexical Analyzer (2021) – Java program that analyzes lexemes contained within a program to be parsed into the syntactical analyzer to enhance understanding of the java compilation process.

Argo Dashboard (2021- Present) – Python based program that analyzes back-end user data to display real-time user behavior in the form of graphs and statistical projections.

WCUPA Honors College Mobile Application (2021-Present) – React Native mobile application that utilizes JavaScript. Created front-end and back-end utilizing firebase.

---

**Awards & Honors:**

Honors Award Scholarship

2018 - Present

Academic Excellence Scholarship

2018 - Present

Dean's List

Fall, Spring 2020; Fall 2021

---

## EMPLOYMENT

---

<b>Systems Administrator</b>	<b>Analytical Biological Services</b>	<b>Aug 2020 - Present</b>
------------------------------	---------------------------------------	---------------------------

- Designed, implemented, and administrated numerous policies (networking, security, other IT related procedures)
- Administration of Microsoft 365, Active Directory, Azure, NetSuite
- Physically manipulate hardware across all computers, servers, and other machines on the domain/network
- Maintain and organize technology
- Responsible for new and existing employee IT & Security training
- Proficiently troubleshoot and resolve IT requests through a ticketing platform

---

## EDUCATION

---

<b>West Chester, PA</b>	<b>West Chester University of Pennsylvania</b>	<b>Fall 2018 – May 2022</b>
-------------------------	--	-----------------------------

- B.Sc. in Computer Science with Minor in Computer Security, May 2022. In-major GPA: 3.8
- Undergraduate Coursework: Data Structures; Algorithms; Programming Languages; Comp. Architecture; Malware Analysis; Software Security; Cloud Computing; Full-Stack Development; Agile Processes;
- Extracurricular: Computer Science Club; Cybersecurity Club; Competitive Programming Club;

---

<b>Poconos, PA</b>	<b>Monroe County Technical Institute</b>	<b>Fall 2009– May 2013</b>
--------------------	--	----------------------------

- Studied Computer & Information Science, May 2013. GPA: 4.0
- Various certifications in Computer Security, Networking, and Repair
- Coursework: OSI/TCP Model; Communication Protocols; Transmission Technologies; Cloud Computing; Databases; System Development Lifecycle; Documentation Procedures;

---

## TECHNICAL EXPERIENCE

### Projects

- **Lexical Analyzer** (2021). Takes the lexical structure of a program as input and analyzes each lexeme to be parsed into the syntactical analyzer. Created with Java to deepen my understanding of the compilation process.
- **Personal Blogfolio** (2020). Website built to act as both a Computer Security blog and a portfolio of various projects; Created with Ruby and Jekyll.
- **Full-Stack Project** (2020) Website built to demonstrate proficiencies with APIs, Databases, Authentication, Front/Back-end, and more. Created with JavaScript, MongoDB, Express, Angular, and Node.
- **Advanced Keylogger** (2019) When running in the background, this program creates a .txt, translates and stores keystrokes. Then, periodically sends the log file to an email, deletes the sent file, and starts over.

---

### Languages and Technologies

- Java; Python; OCaml; JavaScript; HTML/CSS; Ruby; MEAN; Full-Stack;
- Visual Studio; Object-Oriented Programming; Functional Programming; AWS;
- Linux; Active Directory; Azure; Virtual Box; Windows Server 2008-2016; JIRA;
- SQL; Spark; Hadoop; Kafka; Airflow; PySpark;

# Cade Uhlin

207 S Walnut St, West Chester, PA 19382 • ctuhlin@gmail.com • 717-639-1803

## EXPERIENCE

---

### Communications Intern

May. 2021 – August 2021

IQVIA | Plymouth Meeting, PA (Remote)

- Applied various Python libraries (Pandas, NumPy, Selenium) to generate automated scripts for daily functions.
- Created useful automation scripts to handle the combinations of Excel files that exceed multiple gigabytes.
- Helped to develop and deploy an automated system over several platforms to assign users a new soft-phone.
- Redirected **200+** routers from a closing data center to a more permanent location.

### IT Support Analyst

October 2020 – Feb. 2021

West Chester University of Pennsylvania | West Chester, PA

- Provided technical assistance and support related to computer systems, hardware, software, or networking to over 18,000 active users.
- Managed, maintained, and stored data of in-person and phone query help tickets.
- Connected with 30+ customers per day, supporting troubleshooting, providing product information, and building customer loyalty.

## EDUCATION

---

### West Chester University of Pennsylvania

August 2018 - May 2022 (Expected)

Bachelor of Science, Major in Computer Science, Minor in Mathematics

- GPA: 3.6/4.0
- Relevant Coursework: Big-Data Engineering; Database Management; Artificial Intelligence; Introduction to Cloud Computing; Data Structure & Algorithms; Software Security; Software Development
- Clubs and Activities: West Chester Men's Swimming & Diving, Computer Science Club

## PROJECTS

---

### Collaborative Music Playing App (2022) - Django, Python, Javascript

- In this project, I used Python and Javascript to create a full-stack web app. The purpose of this project was to learn how Javascript and Django worked together to develop a full-stack web application. After I finished setting up my web app I integrated it with the Spotify API to link the two together.

### Lexical Analyzer (2021) – Java

- Takes the lexical structure of a program as an input and analyzes each lexeme to be parsed into the syntactical analyzer. The goal of this project was to further my understanding of the compilation process

### Yelp User Review (2021) – Python, Spark, SQL

- With three datasets, one for users, restaurants, and Yelp reviews, I was able to find the most influential within the dataset based on the size of their audience and how well their reviews were received. Based on the locations of the reviews I was able to narrow down a general area of where the users were located.

### Personal Website (2020) - Python, Flask, HTML&CSS

- I created a personal website to showcase my work and to explain a little about myself. I did this using the Python library Flask to handle the backend of the website and used HTML & CSS to create the front end. I created and added a database of some of my friends to understand how websites link to databases.

## SKILLS

---

Languages: Python, SQL, Java, JavaScript, CSS, HTML, OCaml

Frameworks: Flask, Django

Tools: MS Office, Linux, Spark, Hadoop, Git

Databases: MySQL, SQLite

IDEs: Visual Studio Code, PyCharm, Eclipse, Jupyter Notebook