

# Stock Trader Aider

Group 8



Owen Guo

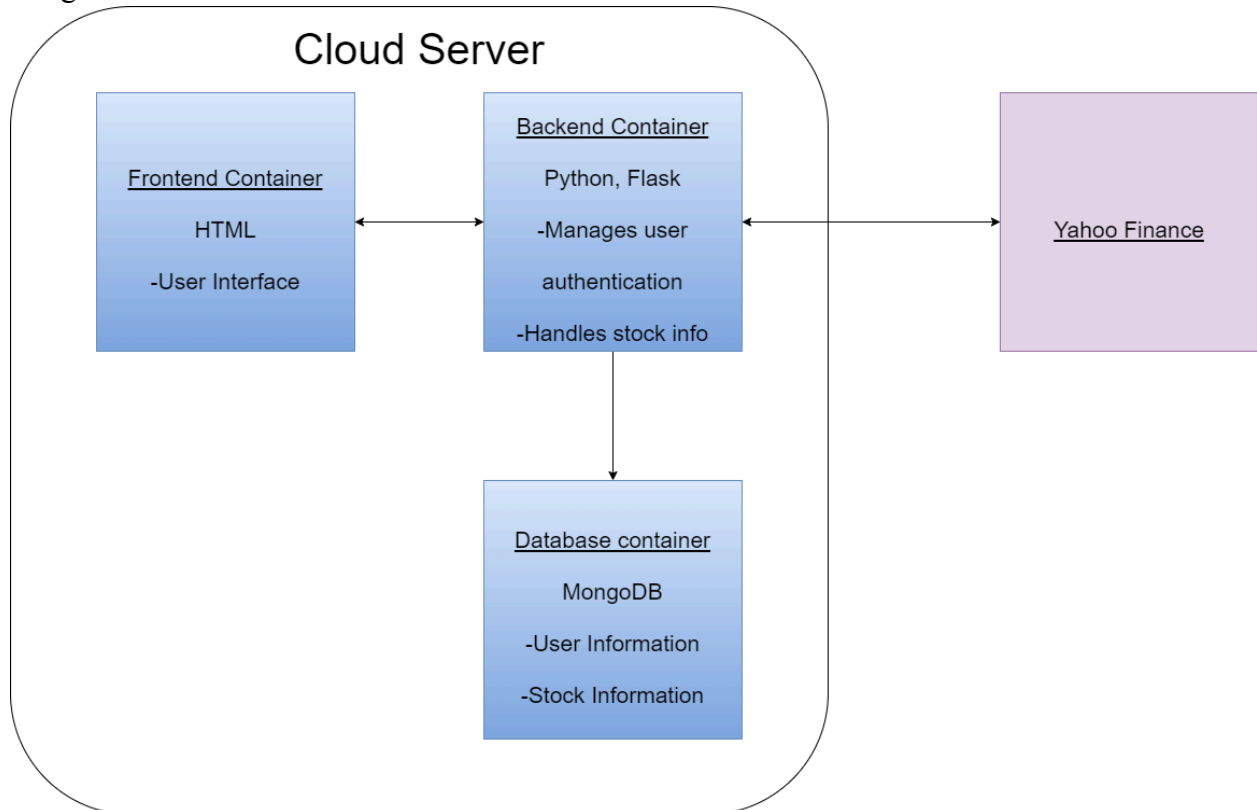
Justin Kerr

Sammy Mbazang

Michael Myers

# Chapter 1: Vision

The field of finance is an inviting endeavor, and a popular means to succeed in the field is investing. A problem one may face is the abundance of undesirable information within a stock market platform. This is an inconvenience to people just trying to track their stocks. Our goal is to provide a clean, cloud based website in which one can view their stock information without being bombarded with ads or irrelevant information.



Our project has 3 parts: The frontend, backend, and database. Our goal is simple, so we don't need too many more containers.

The frontend container is responsible for the user interface. There are 3 different web pages we have in development: Login, Signup, and Portfolio. User privacy is important, and so is knowing who the program is dealing with, hence the authentication system.

The backend container is responsible for all of the api routing, api pulls, and logic. It will handle the login/signup process, management of user's stocks, and access to a stock market platform in order to accurately judge a user's invested stocks.

The database container is to store our important data. It stores account information for the user, as well as information regarding all stocks that have been added by any given user.

## Chapter 2: Proposal

*There are a number of technical requirements we are to fulfill. Of the ones assumed, we will definitely **utilize containerization**. We will also **finalize the project in CloudLab**. However, there are a couple of other concerns to address.*

### ***C-level technical requirements***

- *Only two components*
- *Minimal customization/installation of these components.*
- *Simple Docker compose setup with no external volume mounting*
- *Detailed documentation*

### ***B-level technical requirements***

- *Everything from the C-level requirements*
- *Creation of more than one Docker image and upload them into the infrastructure's Docker registry.*
- *Deployment of more than one service component*
- *Inclusion of CI/CD services with demonstrated live update of more than one component, and these components are connected.*

### ***A-level technical requirements***

- *Creation of all Docker images and upload them into the infrastructure's Docker registry.*
- *Deployment of all service components*
- *Inclusion of CI/CD services with demonstrated live update of more than one component, and these components are connected.*
- *I want this project to be something that will wow your technical interviewers.*

We aim to fulfill all of the C-level requirements. We will have more than 2 containers, and each part will be fairly complex. We aim to make sure it is well documented as well.

We also desire to satisfy the B-level requirements. Having a system that scans the stock market should be updating frequently. In addition, we will want to generate an image, due to interactions between multiple components and the backend API.

We will also strive to satisfy the A-level requirement. Our goal is to build a well-structured and solid system. Implementing security authentication for users and a portfolio management for users to track their progress. Moreover, use CI/CD for live updates and real-time pricings for a more smooth and accurate experience.

## Chapter 3: Progress

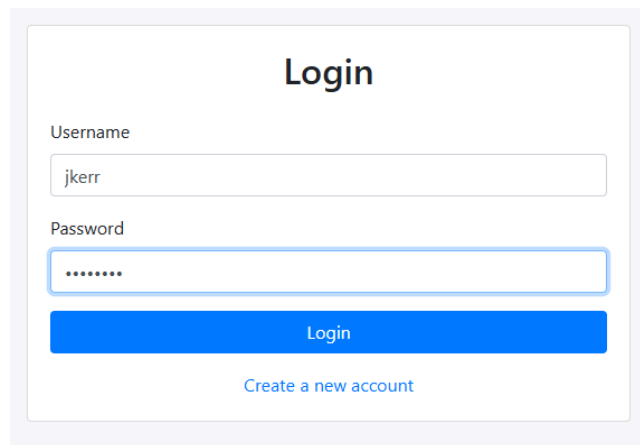
Note the UML diagram for reference with our structure. It helps visualize our current technical plan. We have 3 containers, one working for each part of the project. For each container, there will be a substantial amount of complexity. For the frontend and backend, the code is rich. In the database, a lot of the complexity comes from the collections. Each accessible file will be documented properly.

In discussing each container, we'll start with the Frontend. The container is based on a Dockerfile which draws on the code of 3 different HTML files: Login, Signup, and index. Login is the makeup of the login page. Signup is the makeup of the sign in page. Index is the portfolio page. It utilizes nginx for the web page technology.

Next is the Backend. It is a container based off of a Dockerfile that draws on code from the `stock_monitor.py` file. There is a list of dependencies in a `requirements.txt` folder so that the Dockerfile can identify them.

Finally, there is the database. It is a container run off of the latest MongoDB image, and it is established in the docker-compose file.

As of right now, the project is in a buggy state. The functionality was loosely figured out through the development of a locally running program. It works as we want it to minus a couple convenience features that don't hugely matter. It is capable of handling a login system, as well as adding stocks and fetching current stock prices.



**Login**

Username  
jkerr

Password  
.....

Login

[Create a new account](#)

# Welcome to Your Portfolio

Logout

Add Stock

Stock Symbol	Purchase Price (\$)	Current Price (\$)	Alert Percentage (%)	Status
LOGI	10.0	91.0199966430664	0.0	Monitoring

# Welcome to Your Portfolio

Logout

Add Stock

Stock Symbol	Purchase Price (\$)	Current Price (\$)	Alert Percentage (%)	Status
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In the process of containerization, we've made strides. At first, we managed to get the project running perfectly in one container. Currently, there are 3. Unfortunately, the current project isn't very functional. We are able to launch the website.

```
C:\Users\jaye\OneDrive\Desktop\Visual Studio\Stock Trader Aider\CSC468Group8\docker-compose up --build
time="2025-03-27T19:31:06-04:00" level=warning msg="C:\\Users\\jaye\\OneDrive\\Desktop\\Visual Studio\\Stock Trader Aider\\CSC468Group8\\docker-compose.yml: the attribute `version` is
s obsolete, it will be ignored, please remove it to avoid potential confusion"
Compose now can delegate build to bake for better performances
Just set COMPOSE_BAKE=true
[+] Building 20.0s (21/21) FINISHED
=> [backend internal] load build definition from Dockerfile
=> => transferring dockerfile: 423B
=> [backend internal] load metadata for docker.io/library/python:3.10-slim
=> [backend auth] library/python:pull token for registry-1.docker.io
=> [backend internal] load .dockerignore
=> => transferring context: 2B
=> [backend 1/5] FROM docker.io/library/python:3.10-slim@sha256:06f6d69d229bb55fab83dded514e54eede977e33e92d855ba3f97ce0e3234abc
=> => resolve docker.io/library/python:3.10-slim@sha256:06f6d69d229bb55fab83dded514e54eede977e33e92d855ba3f97ce0e3234abc
=> [backend internal] load build context
=> => transferring context: 586B
=> CACHED [backend 2/5] WORKDIR /app
=> CACHED [backend 3/5] COPY requirements.txt
=> CACHED [backend 4/5] RUN pip install --no-cache-dir -r requirements.txt
=> CACHED [backend 5/5] COPY
=> [backend] exporting to image
=> => exporting layers
=> => exporting manifest sha256:5c6e039699d73b1098151bf5ca511c551f37b52ad54f37b8307ad9c082b7ef32
=> => exporting config sha256:7f29c79abcc71c6ca2c4d2e6274ca06c0b0dd0f0bab9f61d66e313701ef76bde
=> => exporting attestation manifest sha256:575681606eda77c8c916a6b1de9732c8feaa15f4bee41c77b19ba471b448dbaf
=> => exporting manifest list sha256:9ba1b5559fcd0f05caf7dedicabc2c0c2771ef0c3b79082f97bce30772cc8e
=> => naming to docker.io/library/csc468group8-backend:latest
=> => unpacking to docker.io/library/csc468group8-backend:latest
=> [backend] resolving provenance for metadata file
=> [frontend internal] load build definition from Dockerfile
=> => transferring dockerfile: 254B
=> [frontend internal] load metadata for docker.io/library/nginx:alpine
=> [frontend auth] library/nginx:pull token for registry-1.docker.io
=> [frontend internal] load .dockerignore
=> => transferring context: 2B
=> [frontend internal] load build context
=> => transferring context: 226B
=> [frontend 1/2] FROM docker.io/library/nginx:alpine@sha256:4ff102c5d78d254a6f0da062b3cf39eaf07f01eec0927fd21e219d0af8bc0591
=> => resolve docker.io/library/nginx:alpine@sha256:4ff102c5d78d254a6f0da062b3cf39eaf07f01eec0927fd21e219d0af8bc0591
=> CACHED [frontend 2/2] COPY ./frontend /usr/share/nginx/html
=> [frontend] exporting to image
=> => exporting layers
=> => exporting manifest sha256:83cdc3a7976c0d794c76b04fdb8f22bed13b5c9aa63f7d063d743699ad3ecc63
=> => exporting config sha256:32cebd3537cec9af19276934e671b16b04602b1642f86b2290e9700bb86df7a6
=> => exporting attestation manifest sha256:23af6fa040774952bed4fd0e6b35d428bc7a3269078f258afea893b605f6bd5b
=> => exporting manifest list sha256:719778f95f572813e5f771b0d2b16908a2aefeb6bbaab91bc706b9962b96d2b
=> => naming to docker.io/library/csc468group8-frontend:latest
=> => unpacking to docker.io/library/csc468group8-frontend:latest
=> [frontend] resolving provenance for metadata file
[+] Running 5/5
  backend      Built
  frontend     Built
  Container: csc468group8-db-1 Running
  Container: csc468group8-frontend-1 Recreated
```

Launching the website results in being directed to the portfolio page though, instead of the Login page.

## Welcome to Your Portfolio

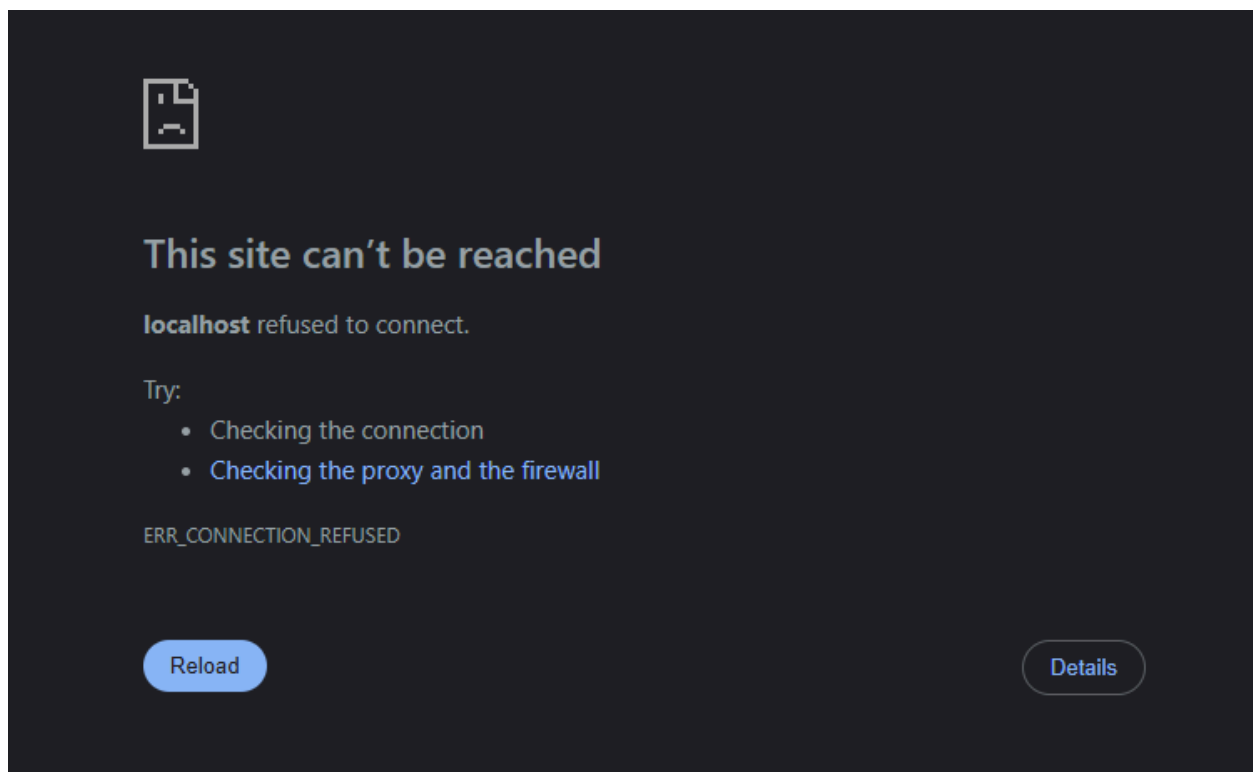
Logout

Add Stock

{% for symbol, info in stocks.items() %} {% endfor %}

Stock Symbol	Purchase Price (\$)	Current Price (\$)	Alert Percentage (%)	Status
{{ symbol }}	{{ info.purchase_price }}	{{ info.current_price or 'N/A' }}	{{ info.alert_percentage }}	{{ info.status }}

Trying to log out or add a stock to one’s portfolio results in this error:



Fortunately, a lot of these issues are just from the process of moving the local project into 3 containers. Soon, we will have the project running smoothly using containerization.

There are a couple of features we still need to work on in lieu of the 3 container system. Most notably, the MongoDB database and the 3 HTML files being integrated properly.

## Chapter 4: Final Results

The project has concluded, and the design we set out to complete was finished. Looking back, the structure of the project was different from what we envisioned. Part of that came with not understanding how a program like this would've turned out, and part of it was from the development of our project into something well-designed. Firstly, the branding changed. We adopted a new logo and color scheme that gives off a more fleshed-out and put-together vibe. Secondly, the structure of the program changed to be more. This UML aims to give more context to both of the prior statements. We are utilizing a Flask application, which serves as a driving force for both the frontend and backend. It is connected to the MongoDB database to store stock information and user information. Now, what's the deal with the price\_scheduler container?



In addition to being able to let the user add, view, and delete stocks, we have a system in place to prevent hitting the rate limit of Yahoo Finance. This is enforced by the price\_scheduler container. This makes it so that between 9:30 AM and 4:00 PM, the program will only update stocks every 30 minutes, starting from the first login attempt. We've also expanded upon the stock price viewing feature. As in, we can more elaborately explain the difference between a stock's bought price and its current value, as well as how much the user's investment has changed. This makes the process of managing stocks more fluid. The user can bear witness to the gain/loss percentage of their stock and its current value. There's even a feature to make note of if the stock has exceeded the alert percentage initially entered. Besides being fully functional locally, the program can be run in a cloudlab experiment with no issue, and with ease of access due to the profile.py design. When starting the experiment, you just need to enter 3 commands in to get the program running. It's a nice cherry on top to give the program more ease of access, which is the ultimate goal of the project.



## Chapter 5: Conclusion

Development for this project has been strange, and we've had our issues communicating. That's been our biggest issue. There isn't much to say about it other than our progress has been disorganized and sporadic. Fortunately, towards the end of the project, we were able to come together and get the program fully functional and ready for presentation.

Looking back, we've learned a great deal about communication. Being able to confide with one another and work together is extremely important in projects like this, and this has been a good opportunity to learn the advantages of doing so, as well as the downsides of not doing that. Clear understanding of roles and holding each other accountable for our actions would have greatly helped.

We've also learned a solid deal about web development and cloud computing. We made a simple website which gives us the backbone to build future web pages and websites in the future. In addition to just being able to build a website, we have the idea of how a web server runs utilizing cloudlab.

It's worth noting that Justin had ended up buying a cloud computing service on his own: Linode. He utilized it to run a video game server and miscellaneous systems surrounding that server.

Our project definitely has room to grow. We can add more user friendly features such as security around a given profile and AI integration for giving suggestions to the user. Stuff like making sure the user doesn't delete important parts of their profile, permanently changing something that they don't want to change, or forgetting about something later. An AI integration would be much more beneficial, as that's another way to reduce user trouble. AI usage has also become prevalent in the field of computer science, so all the more reason to incorporate it. The inclusion of AI will help the app to make it more competitive with the many others out there as it is a crucial feature needed to stay alive in any market nowadays. Ways to include it in the app are using it to help the user with their data analysis, trading and executions, and making predictions through the patterns it has learned.

# Resumes

OWEN GUO

[owenguo343@gmail.com](mailto:owenguo343@gmail.com)

[www.linkedin.com/in/owen-guo-a2a2b2255](https://www.linkedin.com/in/owen-guo-a2a2b2255)

267-616-6505

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Enthusiastic and versatile college senior majoring in Computer Science with a minor in Chinese. I am actively seeking opportunities to apply my diverse background in Management, Investments, Marketing, and Computer Science to make a meaningful contribution to organizations that value diverse and passionate individuals.

## EDUCATION

West Chester University of Pennsylvania, West Chester, PA  
Bachelor of Science in Computer Science. Chinese Minor, May 2025  
GPA: 3.4/4.0

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## Relevant Courses

- |                                 |   |                              |
|---------------------------------|---|------------------------------|
| - Data Structures and Algorithm | - Software Engineering                    | - Search Engine Optimization |
| - Java Programming              | - Programming Language Concepts/Paradigms | - Algorithmic Trading        |
| - Python Programming            | - Computer Systems                        | - Digital Marketing          |

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## Skills

- |   |  |   |
|---|--|---|
| - Java, Python, HTML, CSS, and JavaScript | - Teams, Microsoft Office              | - Multilingual: English, Mandarin, Fuzhounese; Beginner level Spanish |
| - Team Collaboration                      | - Digital Marketing with the use of AI | - Web Design  |
| - Search Engine Optimization              | - Detailed Research                    | - Public Speaking   |
|   | - Algorithmic Trading                  |   |

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## Experience

<b>Website Designer/SEO Specialist</b>	<b>Self Employed</b>	<b>05/2024-Present</b>
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- Designed and developed visually compelling, responsive websites using Adobe Photoshop, Squarespace, Wix, and Figma, tailored to meet diverse client objectives and enhance user experience.
- Engaged directly with clients to gather requirements, translating business goals into strategic design and UX solutions.
- Executed comprehensive SEO strategies including in-depth keyword research, on-page optimization, metadata structuring, and content refinement, significantly boosting search engine visibility and organic traffic.
- Maintained exceptional attention to detail while managing multiple projects, consistently meeting tight deadlines without compromising quality..

<b>AI Marketing Intern</b>	<b>Saggio Technology</b>	<b>08/2023 - 01/2024</b>
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- Leveraged AI-powered tools to create and optimize content across multiple platforms including Twitter, LinkedIn, Pinterest, Facebook, and Instagram, driving a 20% increase in overall audience engagement.
- Developed visually engaging graphics and multimedia assets using Canva and Adobe Photoshop, strengthening the brand's visual identity and cohesion across digital channels.
- Tracked and evaluated key social media metrics to measure campaign performance, generating actionable insights to enhance future marketing strategies.
- Collaborated closely with the marketing team to align content creation and design initiatives, ensuring consistent delivery of brand messaging and tone.

<b>Building Manager</b>	<b>Sykes Student Union, West Chester, PA</b>	<b>08/2022-Present</b>
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- Supervise day-to-day building operations, proactively identifying and resolving maintenance issues to minimize facility downtime and ensure a safe, functional environment.

- Train, mentor, and support a team of staff members, promoting professional development and fostering a collaborative, high-performing work culture.
- Collaborate with a diverse team to align operational procedures with organizational goals, optimize workflow efficiency, and enhance overall facility performance.

**Equity Portfolio Manager** **Self Employed** **06/2020-Present**

- Manage investment portfolios for six clients, overseeing approximately \$16,000 in assets and consistently delivering an average annual return on investment (ROI) of 20%–25%.
- Apply financial modeling, technical analysis, and market research to develop data-driven investment strategies aligned with clients' risk tolerance and long-term goals.
- Prepare and present comprehensive performance reports, market updates, and tailored recommendations, fostering transparency and supporting informed client decision-making.

**Residence Life Assistant** **West Chester University of Pennsylvania, West Chester, PA** **05/2023-08/2023**

- Coordinated the logistics and execution of on-campus summer camps and conferences, ensuring smooth operations and a positive experience for participants.
- Supported the Associate Director of Housing with administrative responsibilities and special projects, enhancing departmental efficiency and ensuring compliance with university policies.
- Collaborated with residence life staff and university departments to plan and implement student-focused initiatives, fostering a welcoming and inclusive campus environment.

**Quality Assurance Specialist** **Giorgio Foods Inc, Blandon PA** **06/2021-08/2021**

- Conducted routine inspections and quality audits across all stages of mushroom production and packaging to ensure compliance with company-specific food safety standards.
- Monitored sanitation procedures, environmental conditions, and product quality metrics, promptly addressing deviations to maintain product integrity and regulatory compliance.
- Collaborated with production and sanitation teams to implement corrective actions and continuous improvement initiatives, resulting in enhanced operational efficiency and reduced quality incidents.
- Maintained detailed documentation of quality control activities, including test results, non-conformance reports, and compliance logs, supporting traceability and audit readiness.

**Math and English Tutor** **Self Employed, Philadelphia, PA** **08/2018-11//2019**

- Provided individualized instruction in Math and English to elementary school students, reinforcing classroom learning and supporting academic growth.
- Developed customized lesson plans and practice exercises tailored to each student's learning style, strengths, and areas for improvement.
- Assessed student progress regularly through informal assessments and feedback, adjusting instructional strategies to optimize comprehension and retention.
- Fostered a positive and encouraging learning environment, helping students build confidence, improve performance, and develop effective study habits.

**Retail Associate** **South Philadelphia/Northeast Philadelphia, PA** **07/2009-02/2018**

- Operated as a multi-functional team member handling cashier duties, deli service, janitorial responsibilities, and shelf stocking to support daily store operations.
- Performed inventory control, including tracking stock levels, organizing backroom storage, and assisting with stock rotation to ensure freshness and reduce waste.
- Procured inventory by visiting wholesale suppliers, selecting and transporting goods to maintain consistent stock availability and meet customer demand.
- Delivered excellent customer service by addressing inquiries, assisting with product selection, and maintaining a clean, organized shopping environment.

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**Languages:**

- English (Native)
- Mandarin (Native)
- Fuzhounese (Conversational)
- Spanish (Beginner)
- Russian (Beginner)

# JUSTIN KERR

West Chester, PA 19382 | (484) 991-4132 | justindkerr2003@gmail.com

## EDUCATION

**Bachelors of Science in Computer Science**, West Chester University of Pennsylvania

Minor in Applied Statistics, West Chester University of Pennsylvania

GPA: 3.52

*ONGOING*

December 2025

**Associates of Science in Computer Science**, Montgomery County Community College

GPA: 3.43

December 2023

**High School Diploma**, Methacton High School

June 2021

## RELEVANT COURSES COMPLETED

### Computer Science:

Foundations of Computer Science: <https://catalog.wcupa.edu/search/?P=CSC+220>

Computer Systems: <https://catalog.wcupa.edu/search/?P=CSC+231>

Computer Science III: <https://catalog.wcupa.edu/search/?P=CSC+240>

Data Structures & Algorithms: <https://catalog.wcupa.edu/search/?P=CSC+241>

Computer Security & Ethics: <https://catalog.wcupa.edu/search/?P=CSC+301>

### Mathematics:

Statistics II: <https://catalog.wcupa.edu/search/?P=STA+200>

Introduction to Discrete Mathematics: <https://catalog.wcupa.edu/search/?P=MAT+151>

Calculus I: <https://catalog.wcupa.edu/search/?P=MAT+161>

### Communications:

Public Speaking: <https://catalog.wcupa.edu/search/?P=SPK+208>

Business and Organizational Writing: <https://catalog.wcupa.edu/search/?P=ENG+368>

## INCOMPLETE RELEVANT COURSES

### Computer Science:

Programming Language Concepts/Paradigms: <https://catalog.wcupa.edu/search/?P=CSC+345>

Introduction to Cloud Computing, *ONGOING*: <https://catalog.wcupa.edu/search/?P=CSC+468>

Software Engineering, **ONGOING**: <https://catalog.wcupa.edu/search/?P=CSC+402>  
Big Data Engineering: <https://catalog.wcupa.edu/search/?P=CSC+467>  
Topics in Complex Systems: <https://catalog.wcupa.edu/search/?P=CSC+496>  
Digital Image Processing: <https://catalog.wcupa.edu/search/?P=CSC+317>  
Database Management Systems, **ONGOING**: <https://catalog.wcupa.edu/search/?P=CSC+321>  
Operating Systems: <https://catalog.wcupa.edu/search/?P=CSC+331>  
Data Communications & Networking: <https://catalog.wcupa.edu/search/?P=CSC+335>  
Intro Statistical Computing & Data Management, **ONGOING**:  
<https://catalog.wcupa.edu/search/?P=STA+311>

#### Mathematics:

Statistics for the Behavioral Sciences: <https://catalog.wcupa.edu/search/?P=PSY+245>

## **PRIMARY SOFTWARE / LANGUAGES**

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Microsoft Office

Java

SQL

## **JOB EXPERIENCE**

...

### Target

August 2022 - January 2024

*Checkout Advocate, Service Advocate, Front-of-store Attendant*

Phoenixville, PA

- Ran a checkout line, tended to customers in a fast and consistent way
- Worked at the service desk, which requires tending to
  - Returns, Questions, Order Pickup, Drive-Up Pickup, and Restocking items
- Worked as the cart attendant, which entails
  - Stocking the front of the store with carts, Keeping the premises (parking lot and store interior) free of carts, baskets, and trash, Keeping trash cans at front of store empty, and Tending to cleanliness at the front of the store and clean up all spills

### Collegeville Italian Bakery

October 2017 - August 2022

*Dining Room Attendant, Pizzeria Attendant, Drive Thru Head*

Collegeville, PA

- Engaged face-first with customers: taking orders, serving food, and tending to their needs
- Prepared a couple of food items, which primarily included Pizzas and Deserts
- Ran the drive thru, tending to customers in a smooth and quick manner
- Restocked areas all throughout the building, for all branches
- Retrieved supplies from secondary locations

## **PROVEN SKILLS FROM WORK EXPERIENCE**

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Public Speaking

Customer Satisfaction

Competence under pressure

Management / Maintenance

# Sammy Mbazang

(202) 390-8611  
smbazang@gmail.com

## EDUCATION

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

August 2022 - Present

Bachelors of Science in Computer Science  
GPA - 2.7

### **McKinley Technology HS, Washington, D.C.**

August 2018 - June 2022

Courses taken:

- JROTC LET 1,2,3
- learned discipline and leadership
- Networking
- Cybersecurity
- Tenacity training

### **Relevant Courses**

- Computer Systems
- Computer Science III
- Data Structure & Algorithms
- Computer Security & Ethics
- Foundation of Computer Science

### **Relevant Courses**

## EXPERIENCE

### **Enlightened, On Ramps Washington DC - Internship**

July 2022 - August 2022

- Practiced public speaking
- Learned how to configure a network
- Worked on Spreadsheets
- Learned how to install printers
- Enhance programming skills in Python and Java

## **Virginia Tech Thinkabit, On Ramps Washington DC — Internship**

February 2022 - May 2022

- Learned programming languages
- Practiced time management
- Experience with Excel Documents

## **Virtual Enterprise Architect, On Ramps Washington DC — Internship**

June 2021 - August 2021

- Learned Web Development
- Created a tutorial on how to navigate a website
- Hosted a golfing tournament fundraiser

## **Citiwide, Washington DC — Internship**

June 2020 - August 2020

- Professional Development
- Learned about financial literacy
- Collaborated with other interns to practice team building exercises

## **SKILLS**

Teamwork/ Collaboration

Problem-solving

Quick learner

Customer service

## **Michael Myers**

Michaelxmyers15@gmail.com • (610) 328-8009

### **Education**

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

Bachelor of Science in Computer Science, May 2025

Certificate: Computer Security Certificate

- GPA: 3.82

### **Relevant Coursework**

Software Security, Computer Security, Computer Security Ethics, Computer Systems, Software Engineering, Data Structures and Algorithms

### **Related Experience**

**A&K Community Homes**, Exton, PA

IT Intern, May 2023 – August 2023

- Troubleshoot tech issues on company devices
- Coached employees on how to use company software
- Coordinated with managers to make sufficient computer-based training packages
- Installed content restrictions onto company devices

### **Additional Experience**

**Wegmans Food Market**, Glen Mills, PA

Cashier March 2022 - Present

- Teamed up with other departments to help manage busy hours
- Provided friendly customer service, and resolved customer's questions and request efficiently



- Trained new employees on how to use store equipment such as registers and self checkout machines

## **Personal Projects**

### **Security Policy-**

- Collaborated with classmates to organize a security policy for a mock university
- Established policies for acceptable use, network configuration, and data security
- Adhered to NIST cyber security framework and followed CIA triad

### **Multi-stage Exploit-**

- Identified program vulnerabilities in C source code
- Crafted a payload using python to hack into a remote server and gain shell accesses
- Utilize resources such as GDB debugger and pwntools library to understand memory layout of the C file
- Used strategies to bypass common protections such as ASLR and NX

## **Skills**

Programming languages: proficient in Java; familiar with C and Python, exposed to JavaScript, HTML, CSS and Bash

Operating Systems: Windows, Linux

Software: Microsoft Office