Team HMKG

Project : StockWatch

Members : Mike Hutz, Mitch Moir,
Corah Krantz, and Jordan Gumby

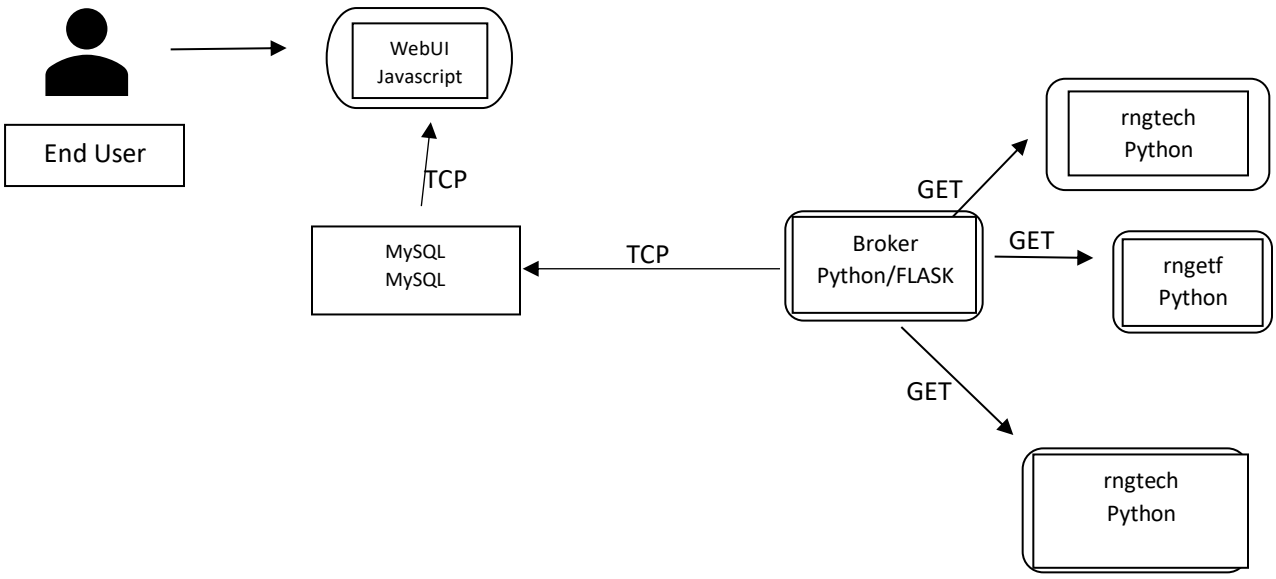
Who is StockWatch?

Summary:

Our team has decided to create a web-based application called StockWatch. StockWatch is intended to provide a platform for customers to monitor current values in individual stock sectors and allow for customization of their dashboard for which stocks they are viewing. Using the cloud, we will be able to keep a safe location and record of the stock's current and previous values in a constant stream, provide a stable and effective monitoring tool, and store the stocks historic values from a given timeframe. This cloud-based system will also allow us to update the values of each stock consistently and quickly on the backend, to ensure we provide the customer with the most up to date information. StockWatch will provide customers with fast results, accurate information, and easy to read line charts of the stocks history. With efficient deployment and easy use, our program will be an easy to use and set up program for everyone.

For our demo, we intend to utilize a few set stocks running on a simulation style value generator. This simulation will be used on a small scale and may utilize a hard coded database for proof of concept. We also intend to try and create a timed execution that runs on the cloud to allow updates to happen at regular intervals. We at HMKG look forward to bringing you a polished product.

Chapter 1: Design



Chapter 2: Proposal

Our project StockWatch intends to create a quick interface for customers to monitor, track, and research historic values of individual stocks in a live updating setting. We intend to use the cloud to ensure that the most up to date information can constantly be available to the customer at their request.

We are utilizing MySQL as our DBMS to ensure we can track and report the most up to date information while saving the historic values. We chose this option due to group familiarity with this technology and the ability to interface and run a remote server. Our Broker API will take on the bulk of the work. It will be running GET to three separate random number generation programs to obtain the weight of change for the stock. Each random number generator is tailored for the three types of stocks that will be available in the technical demo. These will each hold a different weight of change. The change will then be calculated, and the new value sent to the broker, and then passed to update the value of the stock in the database and in turn the WebUI.

The bulk of our program will be written in Python for both the Broker and RNG functions. This is a result of the groups familiarity with the programming language. This consistency will allow us to be more thorough in our code and ensure that the entire team will be able to manage the cloud server.

For the deployment of the application, we intend to utilize Kubernetes and Jenkins for a pipeline. This will allow for an easy set up and deployment of all services and components of the

program. We intend to have a pod that contains the random number elements of the program from our initial deployment. We will then include our API to utilize those programs to allow for the constant updates We will then be connecting Jenkins into the mix for a full Kubernetes deployment. This will allow for a smooth deployment from our GitHub repository. We don't feel there is a need to run too many separate pods, since our programs are very similar and only contain minor changes. Our three random number programs also utilize the same exact services, meaning it can be used across them from a single build..

The original intention for our data and subjects was to use web scraping to ensure the most up to date information, but we have chosen to remove that in the meantime until a final production program would be launched. We intend for proof of concept to utilize a simulation that could easily be converted to a real-world implementation. We also have the intention to build the program in a way, that when it is time for the product to scale up into a larger sample and using real world information, it would be easy to make those changes.

We look forward to bringing forward a polished technical demo and providing the best experience for our future StockWatch users.

Chapter 3: Intermediate Milestone

Our team has been hard at work on developing StockWatch to ensure we have a fully functioning and secure application. The development process has been particularly tricky due to the need to learn frontend development from the ground up, as no team member had prior experience in that area. We have taken a large amount of time to develop our skills in JavaScript and CSS to ensure we are able to deliver a visually pleasing and functional WebUI. Currently, we have been able to practice and run a test demo and sandbox to test and practice our JS skills and are working on getting a functioning front end to link to our program.

On the backend development, we also needed some time to get up to speed with the development process and how to get a fully functioning API. We have currently finished the design of our three random number generation programs, which will allow us to calculate weight of change and apply the change to the current stock values. They utilize a random number generator that uses separate ranges for each time of stock to simulate various levels of volatility. The programs are relatively simple at their core and will be utilized by the API, or Broker, as it will be named, to update and process the information to be sent back to the WebUI. We are also utilizing an array for our test format to store historical values. These values will allow for the user to view the trends and changes to the stock's price. In production, these values will be store in an individual table for each stock and allow for the customer to look up ranges of information to get the most detailed historical values. We have also begun creation of the API, which plans to utilize a loop to constantly run the GET requests for new values at a timed interval and will continue to run until the process is interrupted. We intend for this to be a visual dashboard for keeping track of stock prices. We have also built our MySQL database and are intending to work through that DBMS but are also building the program in parallel using Redis in the event it does not work. As a team we discussed and feel Redis is a better program for the scale we are running at, but that MySQL would be a better program for future iterations of StockWatch.

One of the larger tasks that our team is still working through is getting a sounder understanding of the Kubernetes and Jenkins deployment process. We have begun working on building the YAML files and necessary configurations for the deployment, but it is still too early in development to be able to do a test build of a deployment environment. We as a team are moving quickly towards this phase and will soon be able to get a framework built and test to ensure that our program is able to build successfully.

I have mentioned briefly through this chapter about a few of the challenges our team has faced, but we wanted to detail them further. Upon beginning development of StockWatch, our team did not have any prior front end development experience. This required a significant investment in learning JavaScript and the surrounding utilities and has cut into development time. We have also run into an issue with one of our intended services. We initially began development with MySQL and intend to still utilize it in the final product, but due to configuration issues we have not been able to create a successful connection to the service. To fix this temporarily, we have switched to our Redis system to test our proof of concept. These are two of the larger challenges we have faced so far in the development process, but there are many others we have come across as well such as time constraints and scheduling. We believe that we will be able to overcome these challenges to deliver a functional project.

We have been able to accomplish a successfully launching webpage and web server and have been able to create a mock website for the program. The test site we have made is a simpler version of the final product, but we have managed to integrate a live updating line graph. We have also successfully created the framework for the calculations and updating of values for the stock pricing and are working on integrating into the WebUI. The API is also finished and ready for testing once we have our functional WebUI program running. Progress has been made and we are nearly on track based on the milestones we had set last month.

We have not been able to make too much progress on creating our pipeline due to some configuration issues in our Kubernetes settings in the GitHub repository. We have been working to resolve the issues and get our project build in Docker in the meantime to allow for a live demo. Once the pipeline is running, we will be able to start working to add a few bonus features such as user profiles and extra settings for layout.

The beginning of development was a slow process, but as the team has begun to fully get up to speed, we are moving much quicker towards getting a working demo ready for presentation. We look forward to providing more updates and truly bringing StockWatch to life.

JORDAN GUMBY
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EDUCATION

West Chester University **West Chester, PA**
Department of Computer Science *Anticipated Graduation: May 2022*
Bachelor of Science in Computer Science, Computer Security Certificate
Term GPA: 3.59

TECHNICAL SKILLS

Java, C#, Web Design, Amazon Web Services, Python, Microsoft Office

WORK EXPERIENCE

Cisco
Remote
Technical Sales Engineer Intern *June 2021-August 2021*

- Developing key insights into Cisco technologies.
- Working efficiently in teams to present key initiatives to System engineers.
- Participated in Hackathon to develop a custom security solution for a mock company.
- Led a discovery meeting in a roleplay scenario.
- Worked alongside with a field team to come up with a challenge project for high school students.

Self Employed **Royersford, PA**
Science & Math Tutor *August 2020 – May 2021*

- Assist students with Math assignments, mentor students on math skills needed for successful class completion.
- Utilizing creative approaches to assists students in finding solutions in an open and inclusive environment.
- Responsible for making sure student achieves learning outcomes.

YMCA **Phoenixville, PA**
Camp Counselor *June 2019 – August 2020*

- Planned and supervised activities associated with the assigned camps.
- Provided instruction to campers used in daily routines including wrap up activities.

RELEVANT COURSE WORK

- Computer Science I, II, III
- Data Structures and Algorithms 241
- Computer Security and Ethics 301, Malware Analysis
- Discrete Mathematics, Foundations of Computer Science
- Software Engineering

PROJECTS

DOE Challenge Project

- This summer I worked with the public sector state and local education-NYC. We presented a challenge project to high school students where we asked them to present to us a smart classroom using IoT devices. I helped other people on the team come up with a set of questions for the project as a guideline for the students. I am also in WebEx spaces with the kids for them to ask any questions and to provide any feedback needed.
- Reference: Carlos Aued caued@cisco.com

INTERPERSONAL SKILLS

Teamwork, Problem Solving, Leadership, Collaboration, Effective Social Skills, Responsible, Focused

Michael B. Hutz

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EDUCATION:

West Chester University of Pennsylvania – West Chester, Pennsylvania
Graduation: Expected May 2022

- Bachelor of Science – Computer Science
- Computer Security Certificate
- GPA: 3.87
- Honors: Summa Cum Laude

University of Delaware – Newark, Delaware
Graduation: May 2018

Bachelor of Arts in Communications

- GPA: 3.52
- Minors: History and Advertising

Relevant University Coursework: Computer Science III, Data Structures & Algorithms, Systems & Design, Database Management, Cloud Computing, and Software Engineering

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PROFESSIONAL EXPERIENCE:

Travelers – TLDP Intern June 2021 – August 2021
Hunt Valley, Maryland

- Leading backend development of a tool designed to search and pull XML documents from an existing database
- Designing and building troubleshooting technical documentation to assist my team in current setup processes and for future employees
- Gaining experience in a variety of technical tools such as SQL, React, Angular, node.JS, Python, AWS, and Databricks
- Assisted in teaching fellow interns in various technical areas such as Git, CLI Interfaces, and Python.
- Took part in a hackathon and assisted in developing an updated contact directory for the company.

Apple Inc. – Technical Expert August 2019 – Present
Newark, Delaware

- Provide hardware and software support and troubleshooting for customers of iPhones, Mac computers, iPads, and other Apple devices
- Received recognition from management as an exceptional team member for Q4 of 2020
- Have consistently maintained an evaluation score of 90 out of 100 over the last 5 quarters.
- Received a promotion to Technical Expert because of teamwork, leadership, and production in the store.
- Maintained inventory of existing repairs and necessary parts to complete future repairs.

Encore Capital Group – Corp. Communications Intern June 2017-August 2017
San Diego, CA

- Helped to manage Internal communications of a global company over a three-month span of time
- Led an audit of company's social media and media presence to ensure compliance restrictions were being followed
- Repaired portions of the website including broken links, UI upgrades, and content flaws
- Managed social media presence through web-based applications and platforms

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PROJECTS:

Lexical Analyzer – Java

- Created a Lexical Analyzer to read a file and break the contents into readable components
- Analyzer utilized an arbitrary syntax framework to determine which symbols and patterns to read
- Utilized Linked List structure to read in and process characters from the input file

Insurance Database Search Engine – Python/SQL

- Utilizing an existing database in S3, created a web application to search for information using key search criteria and return the valid entries.
- Collaborative program written utilizing Python and Athena for the backend and Flask for the front end.
- Valid entries returned as a list view on the web application with an option to download the entry in an XML format.
- Individual contribution to the team was the lead backend designer. Developed the code to execute the database search, filter tool, and XML conversion.

Go Game – Java

- Java program utilizing Map structures to create a game board for Go, a strategy game where the goal is to surround your opponent's pieces.
- Game board automatically processes pieces and scoring locations to provide a final tally and winner of the game.
- Originally was created as a project in Data Structures lecture, shifted over into a personal project.

SKILLS

- Programming: Java, Python, React, SQL, Angular, Flask,
- Operating Systems: Windows (10,8,7), Mac OS, Linux, Powershell/Console
- Technical: Computer Hardware & Repairs, IT Servicing, Troubleshooting, Networks
- Data: SPSS Statistics
- General: Microsoft Word, Microsoft Excel, Microsoft Powerpoint

CORAH KRANTZ

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EDUCATION

West Chester University, West Chester, PA **May 2022**
Bachelor of Science in Computer Science – *Security Certificate* **GPA: 3.8/4.0**

WORK EXPERIENCE

Cisco Systems June 2021 – Aug 2021
Technical Sales Engineering Intern – Global Enterprise Premier, Remote

- Interviewed each account team within the Premier Organization, created account specific technology heat maps and identified overall trends, presented findings to engineering leadership
- Learned about Cisco's solutions through technology trainings and shadowing opportunities
- Researched and presented concepts such as Kubernetes, Azure, and Terraform to Systems Engineers
- Developed key sales skills such as communication and active listening though simulated customer meetings

Justus Home and Garden June 2019 – Aug 2020
Customer Service Representative, Justus, PA

- Consulted with customers to determine their needs and direct them to products or services
- Coordinated with team members from different departments to ensure timely delivery of services

PROJECT EXPERIENCE

Cyber Security Blog Sept 2020 – May 2020

- Designed and maintained website using Wix, providing bi-weekly updates on cybersecurity trends
- Documented how cyber-attacks have increased with the onset of pandemic induced work from home policies
- Provided easy to read articles for my class to keep them informed on security incidents

Data Collection Research Project Sept 2020 – Nov 2020

- Collaborated with teammates to research and present how businesses can use social media and other methods to collect data from customers and their motives behind it
- Researched data mining, cookies, and collaboration between companies and positive and negative impacts for both the business and the end user
- Group received a grade of 100% for our efforts, and educated the class on data collection

Business Plan Project Oct 2019 – Dec 2019

- Determined a need for parking solutions due to congested student lots and brainstormed solutions with teammates
- Designed a high-level application to meet needs with teammates, acting as CTO for the duration of the project

INVOLVMENT & ACCOMPLISHMENTS

Varsity Sports Teams Spring 2017 – Current

- Led Varsity Girls Track as a Team Captain for two years, encouraging a fun and respectful environment for all team members - 2 time state medalist in Pole Vault
- Current member of West Chester University Women's Track and Field team - Silver medalist in Pole Vault at 2020 PSAC Indoor Championship – Bronze medalist in Pole Vault at 2021 PSAC Outdoor Championship
- Participated in volunteer work with the track team by working other sports team events, completing tasks like running the concession stand and checking event tickets

INTERESTS & SKILLS

Technical Skills: Java, Python, Intellij, PyCharm, Azure, Terraform, Kubernetes, Excel, Security, Malware Analysis, Cisco Packet Tracer

Mitchel Moir

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Objective and Personal Statement:

I am seeking a fulltime position in the IT field where I can leverage and grow my technical skills, knowledge, and passion. I am dedicated, motivated, and persistent, having worked fulltime while taking classes and paying for my own education.

Education:

West Chester University of Pennsylvania, West Chester, PA

- **Degree:** Bachelor of Science in Computer Science (with a Certificate in Computer Security)
- **GPA:** 3.81
- **Expected Graduation Date:** May 2022

Delaware County Community College, Media, PA

- **Degree:** Associate of Science in Computer Science
- **GPA:** 3.57
- **Graduated:** December 2019

Relevant Coursework:

COMPLETED
Data Structures & Algorithms
Software Engineering
Data Communications and Networking
Security
Software Security
Computer Science I, II & III
Statistics I & II
Calculus I & II
Intro to Discrete Mathematics

IN PROGRESS
Intro to Cloud Computing
Modern Malware Analysis
Database Management Systems Computer

Work Experience:

Wolff's Apple House, Media, PA **2008-Present**
Position: Shift Manager, Heavy Equipment Operator

- Initially hired as a cashier and now a member of the management team for this local business
- Key contributor performing many functions including weekend shift manager, forklift operator, tractor operator, and commercial motor vehicle driver
- Responsible for traveling and procuring product for the business, vendor relationships
- Involved with reception, display, and inventory of seasonal product
- Significant sales/customer service experience

Technical Skills:

- **Programming Languages:** Java, C++, C, Python
- **Operating Systems:** Windows 10, Windows 7, Linux (Ubuntu)
- **Relevant Software:** GDB Debugger, Wireshark, MATLAB, Microsoft Office
- **Other Languages:** Spanish (intermediate conversational)