RED TEAM

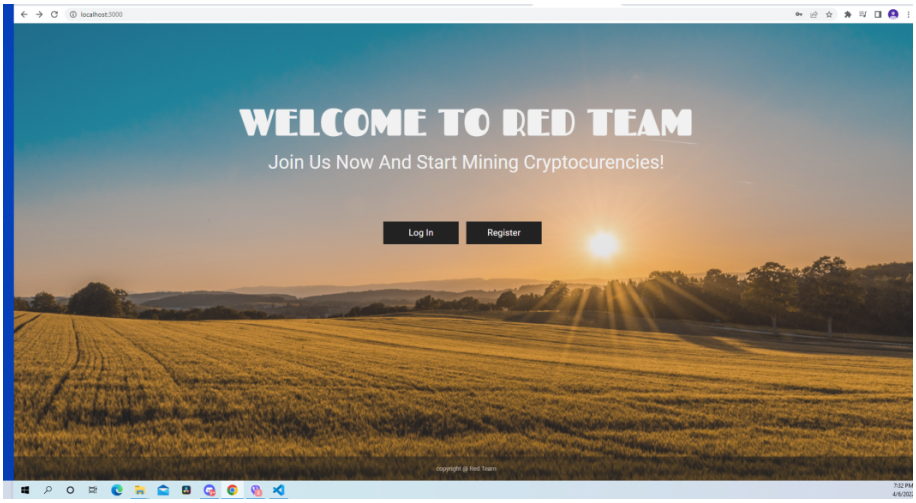
Ram Coin

Team Members: Girik Bangha, Farah Bokhari, Eric Gaspar-Acuna, Troy Sivick, Khup Tuang

Repository: https://github.com/TS935609/CSC-468-Group

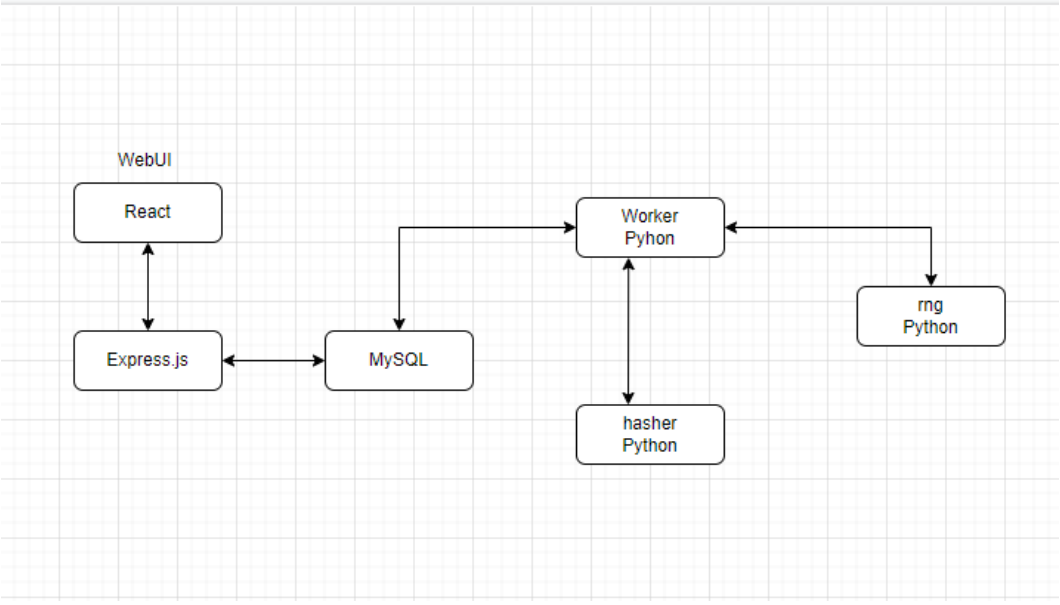
Chapter 1

The Red Group intends to build a Coin Miner application that provides cloud based service for mining coins, choosing from a variety to mine, and allowing the creation of multiple profiles. Our service intends to make consumer's experience with cryptocurrency easy to understand and perform. The webui will have multiple pages that the user will be able to use so they can have a comforting experience with our application. It will start with a starter page, welcoming the user to the Red Team and allowing the user to join in mining cryptocurrency. Two options are then left for the user to choose from, log back in as an existing user or register as a new user. This will then lead to either a page to enter in your credentials for an existing profile or a new one. Once logged in, the user will see a portfolio of their profile which includes their information such as name, wallet which contains the amount of coins mined, and which type of coin that is being mined. The database will collect and contain all the data being performed when logging in and mining. This data includes user information/portfolios and coins. This application hopefully gives users a simulated experience of coin mining and what to expect when really diving into the field of cryptocurrency. In the future, the team expects to add features that furthers the user's immersion in the application and produce better results adhering to realism.



Chapter 2

We will utilize React for webui due to its popularity among users and its cost efficiency in terms of handling data due to its real time updates which will be provided through CI/CD. Through the updates we can inform users of changes in their wallet, time, and coin being mined if a change does occur. To ensure that a connection between the webui and database is occurring, Express.js will be used to connect the two components and ensure that the data is transferred from one another. For the database we will use MySql due to the easy to understand syntax and our own preference to it. The database will store all the data of the user such as credentials, wallet, and coin being mined. The database will also communicate back and forth between the worker and webui to ensure that data is communicated back to the webui. Worker will use Python to issue the calls it needs to both hasher and rng. Hasher and rng will both use Python. The worker will be more of a backend asset since it will be communicating between rng and hasher to send forth data to the database for processing and storing. Worker will issue a get call to rng for a random number of bytes which then has worker issue a post call to hasher to hash the bytes to then report number to the database. The database will then store the data from the worker and send it through Express.js which then is reported back to the webui for the user to see.



Chapter 3 Intermediate Milestones

After much work on the project, the team have been able to implement components of the ram coin design through various degrees of success. As of right now, the webui has been created through React to display a starting page to either login as a returning user or create a new account that would be stored in our database. We intend to show a portfolio that will display the user's credentials, current coin being mined, wallet, and possibly real time updates of chosen coin. The database has been made with MySql and will be used to store important information such as login info for users as well as communicating between the worker and webui. The rng and hasher have been fully implemented with Python and are able to communicate with worker. Worker has been implemented to fill the needs of requesting information from both rng and hasher, however, communication between worker and the database is still being worked on.

With the work done so far, the team as a whole is quite happy with the progress being made and are glad to see constant communication and discussion between team members about current situations as well as future endeavors for the project. The future endeavors include possible cosmetic changes that could be implemented and the work for the CI/CD services and Kubernetes deployment. We find the pace we are going at to be steady and well suited for all team members.

The problems and struggles we did encounter were many. Prior to changing the course of the project, we found having the team meet and discuss/do work together was a bit troubling. This was the result of conflicting schedules that still do exist as well as holidays that prevent some staying for the entire meeting. What was also troubling was the complexity of the original project. While we had a firm structure and idea of where we wanted the project/application to

head towards as well as many interesting aspects to include, the group found the vision we had created to be too big for our group to handle. Parts that we found the most impeding for us were the two webuis, one for the customer and one for the employee, and the past order history. Combined with the inconsistent time frame the meetings of the team were held, made us realize that our vision for the project and road to completion was faltering. The change to ram coin was late into the course timeline, however the speed our team caught up for implementation was great and speedy. One current problem we do face for the project is the communication between the webui, the database, and the worker. We are still struggling to communicate the parts with each other through the database however, we are looking at many outside sources to understand and alleviate the problem at hand. This situation is mostly due to our inexperience with communicating between different languages; however, we do intend for these problems to be solved in a timely manner.

Over the course of this time period, the project we embarked on has seen numerous setbacks and various changes to it. As a group, we hope that the end product we deliver will fulfill the expectations that the project and course desires. Right now, the group intends to achieve the B-level requirements, but that may change in the future.

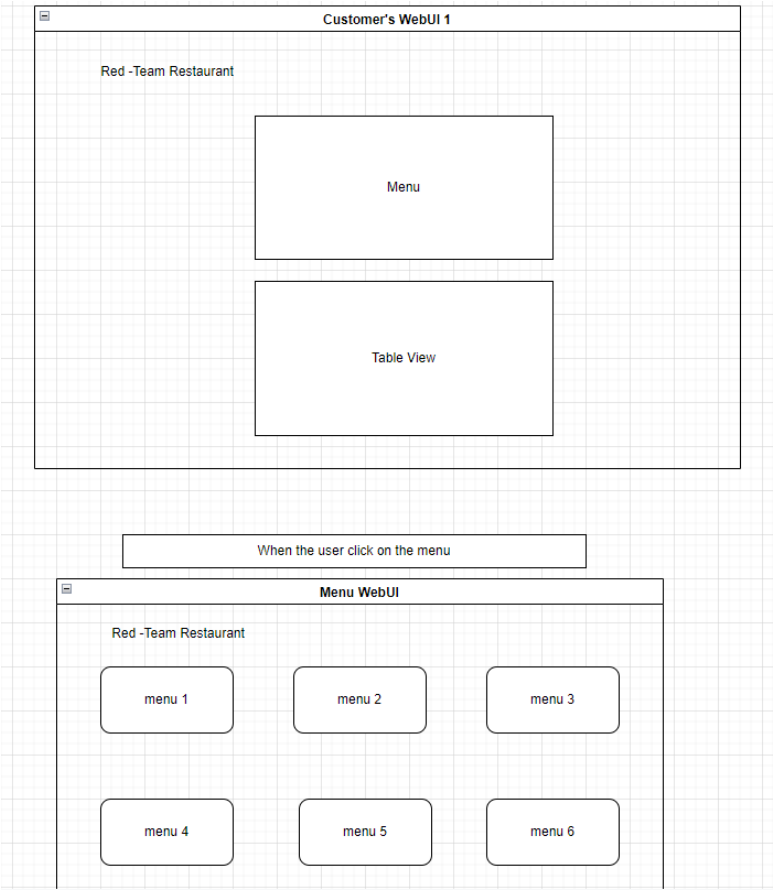
Restaurant Service Timeline

(Disclaimer: It should be noted that in the first few weeks of the project, the team originally wanted to create a restaurant service application. However, after a few weeks the team came together to meet and came to agreement that the feasibility of the project was becoming less and less everyday due to numerous factors. Eventually, we decided to change the direction of the project towards that of the coin miner to ensure that the project reaches some end goal. This timeline is mainly dedicated to the team's efforts concerning the restaurant service before changing.)

To begin development, we proceeded to start the development of the database by creating an image of it with mysql in docker. While creating the image the team discussed the components in greater detail. We decided to have the project divided into parts among us, Khup will take care of the two web UIs, Girik will manage the database through mySQL, and the remaining three parts, worker, hasher, and api, will be developed by Troy, Eric, and Farah individually. While Girik develops the base for the database, the team discussed the two web UIs in great depth. We specifically talked about the specific purposes the two web uis would serve for both the customer and the worker. We came up with three sections for both web uis. For the customer, they will have access to information on the menu, tables, and past orders/history. For the workers, they will be able to see the tables as well, what is currently in stock to order, and the total earnings of today's service. While discussing the possible routes to take with the web uis, we came to agree that the most likely difficult part of implementing the web uis is building the

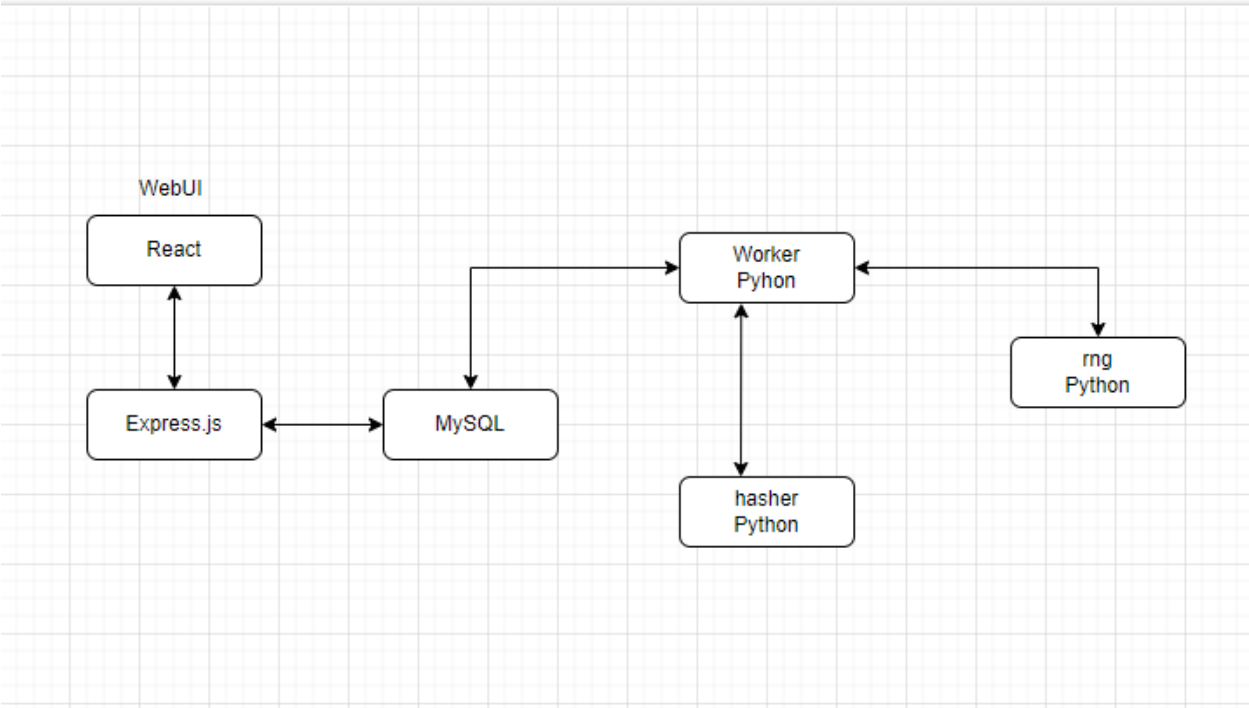
communicative aspects between the two and the database as well. The discussion soon ended after talking about potential possibilities for rng in terms of time such as time for food and time for availability of tables.

The team met during spring break to discuss the project, mainly the webuis and implementing them through docker. The team discussed which parts would be available to see for the customer side and the staff side. For the customer side, we agreed that the customer would see three options, 1. Menu, 2. Table View, 3. For the third option we were split on either ordering/order history or payment. For the staff side, 1. Stock, 2. Table View, 3. Payment (hasher included). Database was pondered upon, and we found that it should be used for the table capacity and availability, menus and stock of items, and payments. Afterwards, the team would individually configure their own webuis to better understand them. The picture below is a rough draft of the customer's webui.



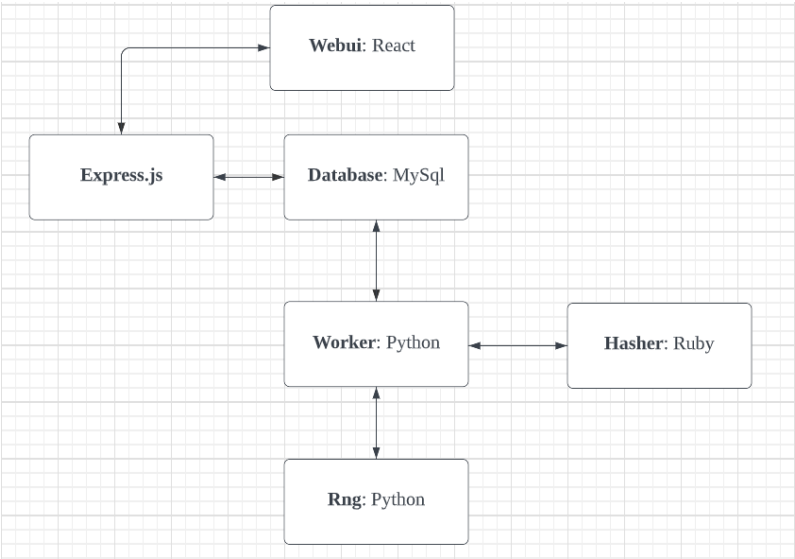
Ram Coin Timeline

After much discussion the group agreed to change the course of the project towards the coin miner instead. This decision was made due to numerous factors ranging from the complexity of the project to the differing schedules among team members. Through this change, we can all implement our specific parts without being hindered by meetings. Timing and the complexity of the app did not feel suitable for the time table of the course.



After much work and discussion, the team was able to create and implement certain components of the project accordingly. What troubled us the most was the connection between the webui, database, and worker to ensure that the application worked. For the webui and

database connection, we found it best to utilize Express.js to connect the frontend React UI to the backend.



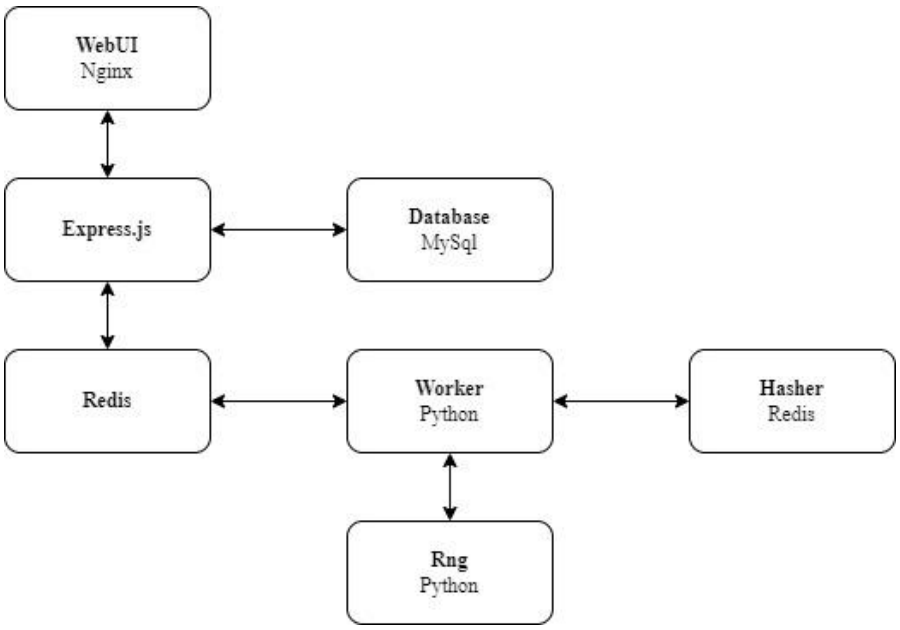
Eventually we came across the problem of hasher not returning anything back to the worker, this was most likely due to the change in language from Ruby to Python. Since the issue was impeding progress and the deadline was getting closer, we decided to use the original hasher from the original ram coin to alleviate the problem as soon as possible. This changed the design of the application, but ensured that it ran with no hitches.

To get the rest of the app to work and connect altogether, we still had the issue of the worker and database left. Since the connection between the two parts was still not working due to the difficulty of working with MySql, the team integrated Redis between both the express server and the worker to ensure that the connection is achieved and the data flows consistently.

Once the app was confirmed running locally, we then moved forward to both the docker compose and CI/CD pipelines. These two components were approached by dividing the group with one half doing the docker compose and the other doing the CI/CD pipelines so that we could make up for lost time.

While working on docker compose, the pipelines, and kubernetes, we also used JWT to make it easy for users to return to their portfolio; for example, if they clicked the home button instead of logging out. Sequelize was also used to assist with configuration with MySql. The team also changed the webui to be using Nginx instead of React originally. This was mostly done due to React not being the most applicable in a production environment, leading to the change.

After much configuration and many meetings, the team were able to have the project running on docker compose. Most aspects of the project are ready for Kubernetes deployment except for the database which is mainly due to MySql being frustrating to configure and work with for the project.



Chapter 4 Final State

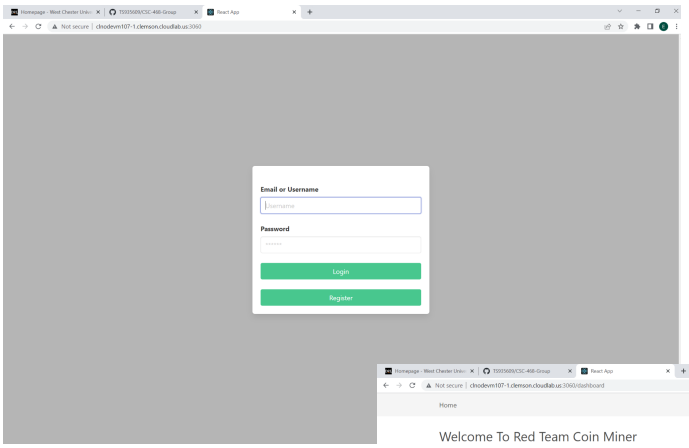
After much time spent on this project, we found the coin miner to be in a deployable and usable state; however, this can only be applied to both the local host and docker compose. We were unfortunately unable to integrate our project into Kubernetes and the pipelines. As reported previously in the timeline section, nearly all of the project was ready for Kubernetes deployment, except for the database due to MySql. Our inexperience with Jenkins and the little time left for the course made the possibility of creating the pipelines very low for us.

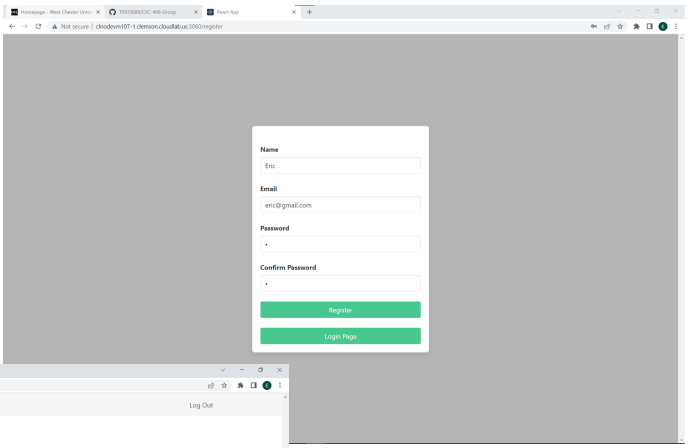
Some features we wished to achieve but did not make were the graph which was meant to be a physical representation of the mining process. The idea of mining different coins such as dogecoin and bitcoin was not met and the wallet function among different users was unfinished since when going from one user to another, the login credentials would be saved, however, the wallet would transfer between users instead of resetting from zero or continuing from the point the user left off at.

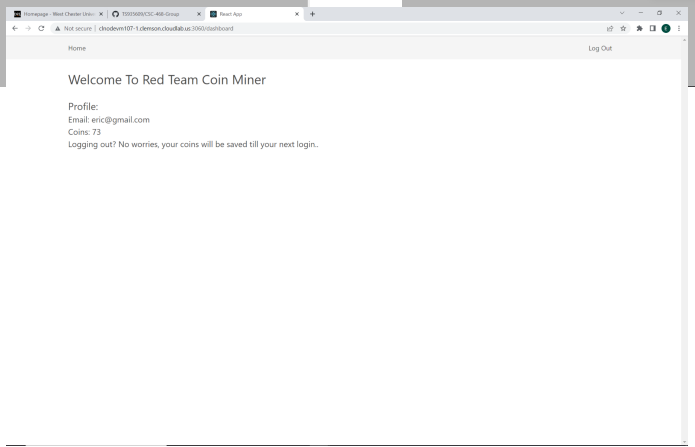
We as a group felt that there were many reasons these goals were not achieved and we hope to explain every reason as in depth as we can. One of the biggest reasons was the very late change from the original restaurant service to the coin miner application. Due to the change being many weeks into the project, the group would have to move quickly to make up for lost time which further impeded our progress indirectly. This loss of time would have the group scrap many features and ideas we envisioned the app to have and be focused primarily on making a working application and a working cloud deployment. Another reason was the use of MySql in the project. Out of all the parts of the project, the database, more specifically the implementation of MySql, proved to be the most annoying and hardest part to work with throughout the project.

Even prior to the change from the restaurant service, the group already had concerns regarding MySql. One of the biggest sources of conflict for us was having the webui and the worker actually work with the database. Much of the project was spent scouring the web for resources to assist and help with this issue. This further took more time out of the limited timeframe we had for the project, restricting development efforts for cloud deployment. While the project was able to be deployed via docker compose, MySql would once again impede progress in terms of integration with Kubernetes.

While the coin miner does indeed work and produce a simulation of coin mining, it is lacking the full potential we set out for it to achieve. Key features from previous deliverables and chapters are missing and much of the original figure we had for the project had undergone many changes through the time period of the course. Had we set out to make the coin miner from the beginning and start with the knowledge we now have regarding cloud, the project would most likely be in a much better state with many more features to use. Overall, while the process of creating the application was a difficult and arduous task, it was a learning experience that we all hope we can further apply to future careers and lessons we can teach to others.







Resume

Girik Bangha
2 Unity Way | Phoenixville, PA 19460
GB908614@wcupa.edu | 610.570.4077 |

EDUCATION

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

Bachelor of Science in Computer Science

Certification in Cyber Security **May 2022**

Relevant Projects:

- ***User Registration System- Java***

This project is broken up into 2 pieces. GUI Frontend which allows users to view/edit/create tables of students, faculty, and courses and Derby database which is the database system behind the Frontend - Derby/JDBC

- ***Inversion Counter- Java***

This project was created to test the number of inversions it takes of a constant data set to be in sorted form using different sorting algorithms. The project took it a step further to see the difference in the inversions if you write the algorithms iteratively or recursively. Implemented Bubble Sort, Quick Sort, and Merge Sort algorithms within this application

Activities

- **Computer Science Club, West Chester University of Pennsylvania**
  - **Member**
- **Cyber Security Club, West Chester University of Pennsylvania**
  - **Member**

WORK EXPERIENCE

SEI Investments

Corporate IT Intern- June 2021-August 2021

- **Collaborate with leaders to define and build new creative solutions for IT Asset tracking**
- **Transition business requirements into workflows and project backlogs required to define the scope of IT Asset Management project**
- **Collaborate with departments to identify, document, and communicate business needs and provide recommendations.**
- **Build out reports and automation using SQL & MS Excel to support IT Asset tracking activities.**
- **Review SCCM data discrepancies and recommend solutions**
- **Partner with the IT Hardware team and Client Services teams to identify process improvements in inventory tracking.**

Mehra Bros – Handicrafts Wholesaler

Inventory Analyst – May 2014 till present

- **Created Inventory tracking system using MS Excel**
- **Compile raw data and create reports on inventory projections**
- **Keep Management informed of incoming and outgoing products and adjust any shortcomings.**

Dicks Sporting Goods

Retail Associate- July 2019- March 2020

- **Operated cash registers, greeted customers, assisted people to find their desired merchandise**

- **Trained fellow employees in different aspects of retail POS which emphasized leadership skills**

SKILLS & LANGUAGES

- **Microsoft Applications: Excel, PowerPoint, Word**
- **Technology: Fluent in Java; Proficient in SQL**
- **Languages: English, Hindi**

Khup Taithul

Folcroft, PA 19032 | (484) 848-6928 | aatuang@gmail.com

Education

West Chester University of Pennsylvania, West Chester PA
Bachelor of Science in Computer Science, December 2022
GPA: 3.67

Professional Summary

Organized and dependable candidate successful at managing multiple priorities with a positive attitude. Willingness to take on added responsibilities to meet team goals. To seek and maintain a full-time position that offers professional challenges utilizing interpersonal skills, excellent time management, and problem-solving skills.

Skills

- Cloud computing with docker and kubernetes
- Proficient in Java, Python, JavaScript, and Bash Scripting
- Technical acumen
- Software improvements
- Teamwork and Collaboration
- Dependable and Responsible
- Self-Motivated

Work History

Youth President
Jan 2021 - Current
PMCC
Chester, Pennsylvania

- Serves on various council committees under pastor's supervision.
- Reports council plans and results to youth members.
- Manages youth department with 8 youth leaders, and 25 volunteers.

Sound, Media, and Music Director
Jan 2014 - Current
PMCC
Chester, Pennsylvania

- Planned, built, implemented, and managed complex sound systems and media equipment.
- Negotiates rates with sound systems and media sales companies to obtain the most competitive prices.
- Directs and trains 8 volunteers

Languages

Burmese: Native

English: Full Professional

Zomi: Native

Malay: Limited Working

Farah Bokhari

Phone: 267-466-8916
FB931302@wcupa.edu
Philadelphia, PA
https://www.linkedin.com/in/farah-bokhari/

Education

West Chester University — **West Chester, PA**
Bachelor of Science in Computer Science — May 2023
Cumulative GPA: 3.40

NSA Cyber Security Certificate — May 2023

Relevant Coursework

Discrete Mathematics
Data Structures & Algorithms
Computer Security & Ethics
Cloud Computing
Software Engineering
Computer Systems
Calculus I, II
Data Communications & Networking
Programming Language Concepts/Paradigms

Skills

Programming Languages: Java, Haskell, C, Python
Methodologies: Agile, Scrum
Tools: Linux Terminal, Git/GitHub, Microsoft Excel, Microsoft Word, Microsoft Powerpoint
Languages: Bangla, English, Spanish

Experience

Wedgewood Pharmacy — Swedesboro, NJ
IT Support Technician — November 2021– January 2022
• Provided professional and courteous end-user assistance for all computing devices and applications
• Troubleshooted and replaced hardware, hard drives, memory, and other networking peripherals
• Loaded specified software packages such as operating systems or spreadsheet programs into computers

West Chester University of Pennsylvania — West Chester, PA
IT Help Desk Intern — August 2021– December 2021
• Served as the first point of contact for faculty & staff technical issues
• Troubleshooted and facilitated solutions for hardware and software issues of PCs and MACs
• Performed remote troubleshooting through diagnostic techniques and pertinent questions

Masjid Al-Madina — Upper Darby, PA
Teaching Assistant — September 2015–January 2018
• Tutored students in certain concepts of algebra and pre-calculus
• Improve students' understanding of abstract concepts by giving demonstrations
• Grade exams, labs, and homework assignments for the students
• Held office hours for students who require further assistance

Technical Projects

Sudoku Puzzle — February 2021 – March 2021
Software Developer
• Designed a program that takes in a two-dimensional array of 9x9 integers from 1 to 9 using Java
• Implemented methods that verifies whether the input solves a particular Sudoku puzzle
• Maintained version control through GitHub
• Used Trello board to keep track of progress

Awards

Golden Ram Scholarship, 2019- Present
Society of Muslim Engineers, 2019–Present

Future City Engineering Competition 2015

TROY STEFEN R. SIVICK

105 Skyline Drive · 484-889-6503
troy.stefen@gmail.com

EXPERIENCE

JUNE 2020 – JANUARY 2022

CLOSING EXPERT, TARGET

At Target, I co-manage the closing of the store ensuring items are properly re-shopped and l
lined to planogram standard. I manage 2-3 departments a night regarding inventory
replenishment, assisting with guest needs, as well as organizing backstock in the warehouse
Teamwork is valued, but my ability to work independently is also important in the closing ta
am responsible for.

EDUCATION

JUNE 2019

HIGH SCHOOL DIPLOMA, KENNETT HIGH SCHOOL

My four years at Kennett High School were spent working on projects with many other stud
and completing tasks with demanding deadlines. I also fulfilled several volunteer hours with
events and charities. Upon graduation, I achieved Distinguished Honors with a 3.5 GPA.

IN PROGRESS

BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE, WEST CHESTER UNIVERSITY

I am currently in my Junior year. My GPA is 3.684 and I have made the Dean's List consistent
since Freshman year.

SKILLS

- Proficient in Java and C programming
- Worked with Net Beans, Windows PowerShell, Visual Studio, and iGRASP
- Proficient knowledge of Data Structures and Algorithms
- Proficient in Microsoft Office applications
- Highly adaptable to changing situations environments
- Detail oriented
- Fast Learner, effective teacher
- Great communicator
- Team player

REFERENCES

Furnished upon request

Eric Gaspar-Acuna

484 Pemberton Rd. • Kennett Square, PA 19348

Ericgaspar87@gmail.com • 610-355-5465

EDUCATION

West Chester University of Pennsylvania, West Chester, PA

Bachelor of Science, Computer Science, May 2023

- Cumulative GPA: 3.87

Delaware County Community College

Associate of Science, Computer Science, May 2021

- Cumulative GPA: 3.8

SKILLS

Programming Languages: (Proficient) Java, Python ; (Familiar): C

Frameworks and tools: (Intermediate) Microsoft Word, Microsoft Excel (Familiar); GitHub, Linux

Other: Great Communicator, Eager to Learn, Teamwork and Cooperation

GitHub: https://github.com/Eric1053

Technical Projects

Flight airline schedule – 2020

Final - Data Structures and Algorithms

- Designed a program that took airline schedules and made it more readable using Java
- Managed many different scenarios such as, flight cancellations, change schedules, delays, etc.
- Used multiple different Data structures

Job Experience

Applebee's, Kennett Square, PA

Line Cook, June/2018 – Now

- Neighborhood Expert- Became an integral part of the team because of certification.
- Required to train many different types of people to become part of the team.
- Did documentation for new trainees.

Goose Creek, West Chester, PA

Host/Busser/Cashier, May/2015 – April/2018

- Good communications skills between customers and the rest of staff.
- Coordinated and strategized seating customers to keep a solid flow of customers.

Additional Experience

Volunteered for Town Festival - Team Leader, March 2018

- Coordinated with the supervisor and led others to do jobs to keep the festival running.
- In charge of others to make sure the tasks were being completed.
- Reported and suggested possible solutions for said problems.