

Ram Coin Miner

Technical Report

CSC468

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Version 1.0
May 6, 2022



https://github.com/Trexragg/Ram_Coin.git

Summary

First off we had to troubleshoot most, if not all, of the components we were working with including redis and the backend as well as webui and other frontend pieces. Once we felt comfortable with our decision to revamp the ram coin, we then began utilizing and implementing these along with the docker hub. We originally had issues at this stage because we had to familiarize ourselves with how pods, containers, and other components work and interact with each other. A common issue we kept running into at this stage was issues getting the docker build to build and actually run. With some teamwork and troubleshooting we were able to figure out the error and proceed to the next steps of the project.

Next, we began the Jenkins process and this was certainly our largest obstacle. This consisted of issues with our ports not being opened, or sometimes every component of the backend was online except for one and vice versa. We never got to the bottom of why those errors were occurring, but we theorize it was an issue with a yaml file. After troubleshooting Jenkins for a week we decided to redo the whole Jenkins component and reconfigure our github in case there was an issue in github causing our dilemma. After this we were able to have Jenkins up and running with the skeleton of the ram coin miner.

With the backend done and the CI/CD services up and running we were ready to redesign the front end. Alas, we were met with challenges at this stage as well. None of us were very familiar with html, css, and js in terms of designing a webui / website. Luckily, we found some very useful websites and tools that allowed us to preview what our web page would look like in real time while coding html, one of these being codepen.io. We still needed to read up and watch videos to understand html more, but after some time we were able to redesign our webui and make it more visually appealing and smooth as well as making the “tweet this” button redirect a web page to twitter.

In conclusion, the core components included a webui, rng, hasher, worker, and redis. CI/CD services were included in order to demonstrate a live update of the webui. We used docker hub to manage and control our containers, Jenkins and Kubernetes for the deployment and overall management console of the coin miner, and a new and improved front end web ui that we utilized html to deliver. Our ram coin miner is now alive and well at <http://155.98.37.78:30088/index.html>

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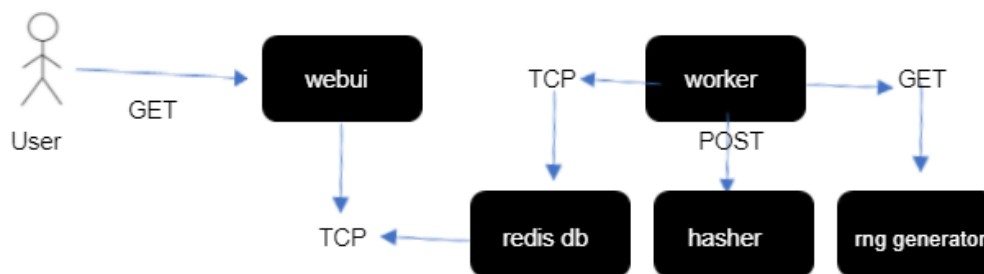
Team Description

Our team is composed of fellow students enrolled in the Computer Science program at West Chester University. We come from various backgrounds but share a common interest in pursuing a career in a multitude of categories ranging from software development and IT, to cyber security and network management. Due to our unique backgrounds we will be able to solve abstract problems using our intuitive abilities and acquire feedback from each other when knowledge gaps occur.

1. Introduction

1.1 Vision

The team vision for the coin miner is to not only ensure stability and a smooth deployment, but to also minimize problematic areas of the project. Ideally, we want our coin miner to be composed of three groups to keep the program simple and reduce complexity. The three groups will be the front-end, back-end, and database with the front-end containing the webui, the back-end containing the worker, hasher, rng, and the database using redis. The following diagram is a visual representation of how this would work in our internet architecture.



2. Technical Requirements

The team has come up with a variety of ideas to address the technical requirements of the project. Firstly, we are going to have our well established core components interconnected to form our full stack coin miner. Secondly, we will utilize CI/CD services so we can update our webui in real time. Next, we will polish the webui to make it more modern and appealing to consumers using html. As well as the basic foundation components, the team will be utilizing efficient services such as redis and will be using ruby for our hasher. Finally, discussion will occur to contemplate a more complex redesign of the entire protocol if the team feels it is necessary.

3. Intermediate Milestones

3.1 Progress

The team has made great progress since the start of this project. We have integrated our core components for our Ram Coin. The core components include a webui, rng generator, hasher, and worker pod. Currently we have the base Ram Coin Miner connected using Kubernetes. It is also built and runs smoothly on Jenkins. Our goal for the end of this project deadline is to have a completely redesigned

webui that runs on Jenkins. Once we reach that goal and depending on the time of completion, we will look into using our hasher coded in ruby and use redis for our database.

3.2 Accomplishments

Our main accomplishment includes getting the Ram Coin Miner connected with Kubernetes and running on Jenkins for real time updates. Some minor accomplishments we have made as a team are being able to interpret and edit new coding languages. These new languages include ruby and html. We not only had accomplishments relating to the project itself, but also as a team. We were able to recognize each other's strengths and assigned specific tasks related to those strengths. The team overall worked very well with each other.

3.3 Challenges

3.3.1 Major

Our main challenge that our team is working on is creating a new and improved webui using html, and being able to integrate that into our repository. Preventing any merge conflicts is also a major challenge. Sometimes we will be tasked with pushing and pulling from the same branch and that can be an issue when it comes to merge conflicts. Another Major challenge was when we struggled with getting Ram Coin Miner working with Jenkins. We would get a port number build error with Jenkins. We were confused as to what this error was since everything was working fine with docker compose. We soon found out that the error was being caused by the jenkins-service.yaml. With that being said, we are on track to successfully finish this project by the time deliverable 3 comes around.

3.3.2 Minor

Some minor challenges we overcame included not having much or any experience with the resources we were using. For example, none of us had ever programmed in ruby before. Another example is never having worked with Kubernetes or Jenkins. Furthermore, we've polished our github repository as well as beginning to research how to replace the hasher with a different coding language. This may be another challenge in the future as we don't know much about the api in ruby or how to transfer from ruby to python. We do plan to get the base Ram Coin Miner up and running with a new webui before attempting this challenge.

4. Final State

The end result of our Ram Coin Miner is up and running using Kubernetes and Jenkins. The currency graph is continuously updating in real time for the user to keep track of. We made sure to update the webui in order for it to look new and refreshing. Ram Coin Miner also consists of 3 other main components. These components include a hasher built using ruby, a database using redis, and an rng generator. Our worker node will help run each of these applications so that Ram Coin Miner is fully functional.

4.1 Self-Evaluation Vision

The vision for Ram Coin Miner was to get the base components up and running while also having a smooth and stable deployment process. The base for Ram Coin Miner included the webui, worker pod, hasher, database, and the rng generator. The user will be able to view their crypto currency graph in real time with continuous updates using Jenkins. The finished product meets all of these requirements.

4.2 Self-Evaluation Technical Requirements

The technical requirements for Ram Coin Miner were to first establish our core components. The core components are the webui written in html, database using redis, hasher using ruby, and the rng generator. We were able to meet these requirements by creating our repository and getting everything into one space. Once we cleaned up our repository, we were then able to get everything connected using kubernetes. Kubernetes will help each of our pods communicate with each other in order for the user to get the full Ram Coin Miner experience. After kubernetes was incorporated into our project, the team started working on getting our pipeline running using Jenkins. Jenkins helps allow the user to identify their crypto currency graph being updated in real time. We were finally able to add the updated webui using html. This new and improved webui comes with the addition of stunning visuals created by the front-end.

Shane Michael Krause

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OBJECTIVE

My priorities and goals are to create long standing solutions, utilize my passion for improvement, and to enhance my knowledge and skill set in technical expertise. Another objective is to be involved in developmental activities such as one-on-one feedback sessions, industry tips, and performing in a dynamic work environment. I am experienced in a variety of technologies that allows me to be more intuitive when solving complicated technical issues and implementing impactful solutions.

EDUCATION

West Chester University, West Chester, PA

– *Computer Science BS (3.2 cumulative GPA, overall)*

– *Computer Security Certificate (NSA endorsed)*

September 2018 - May 2022 anticipated graduation date

Boyertown Area Senior High, Boyertown, PA

– *High School Diploma*

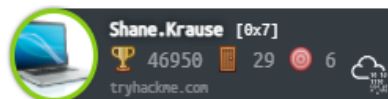
September 2014 - June 2018

Graduated with Honors (3.2 GPA)

SOFTWARE AND PROGRAM SKILLS

At a young age, I knew my career would involve computers after building my own desktop PC at the age of 14. This created my attention to detail and focus to develop at a young age, which in turn boosted my work ability. My interest only increased resulting in my never-ending mission to learn as much as I possibly could about the inner and outer mechanisms of computers. In Computer Systems, I learned how to manipulate and represent information. After taking data structures & algorithms coursework, I was much more capable of working with large data sets. As a result of Computer Security and Ethics class, I started implementing extra security and a VPN on my devices. Other software/programs I am skilled in include but are not limited to:

- | | | | |
|--------------|---------|-------------------------|----------|
| • Kali Linux | CLI | MS Access | MS Excel |
| • SQL Query | VS Code | Tryhackme.com Profile - | |



EXTRACURRICULAR

Executive member and Recording Secretary of Phi Gamma Delta Chapter - Chi Kappa

- Attended leadership academy in St. Louis at the HQ
- Constant coordination with other executive members to plan and finalize events
- Organized, attended, and spoken at both philanthropy and community service



WORK EXPERIENCE

West Chester Golf & Country Club, West Chester, PA - Server and Event Planner

December 2020 - October 2021

Organized and setup for large golf outings and other high-end events

Took drink and food orders while maintaining customer service and delivering the requested items to the customer

Assumed other positional roles when those employees needed the extra assistance

Bon Bon Sushi, West Chester, PA - Delivery Driver

June 2020 - November 2020

Delivered a wide variety of items to different addresses and different routes

Followed specific delivery routes in a fast-paced working environment, adhering to company standards of established timeframes

Loaded, unloaded, prepared, inspected and operated a delivery vehicle

Assisted in resolution of any client complaints or issues

Banana Republic, Limerick, PA - Sales Associate

April 2017 - August 2018

Responsible for the training and development of new junior sales associates

Implemented company up-selling strategies which included: recommending accessories and complementary purchases which aided the company to boost revenue streams.

Maintained oversight and financial accountability of assigned register

Maintained 100% reconciliation between the register amounts and daily income ledger with zero findings

Provided clear and consistent communication to supervisor and team during set meeting time frames

Our Place, Gilbertsville, PA - Kitchen / Prep

September 2015 - April 2017

Responsible for maintaining a clean and organized working environment in accordance with company standards

Assisted in ensuring the safety of food delivered to customers

Michael Barto

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PROFESSIONAL SUMMARY

6+ years of computer networking and programming education

EDUCATION

Computer Science. BS

West Chester University of Pennsylvania, West Chester, PA

08/2020 – Present

- Current GPA – 3.3
- Expected graduation: May 2022

Computer Science. AS

Delaware County Community College, Media, PA

09/2017 – 05/2020

Computer Networking & Digital Forensics

Delaware County Technical High School, Aston, PA

09/2015 – 05/2017

High School

Garnet Valley High School, Glen Mills, PA

09/2013 – 05/2017

WORK EXPERIENCE

Mr. Wizard Car Wash • Chadds Ford, PA
Shift Supervisor

03/2016 – 08/2021

- Supervise attendants
- Manage network maintenance and outages
- Assist with equipment maintenance
- Train new hires
- Reconcile end of day financial status

Attendant

- Maintain facility cleanliness
- Assist with customer purchases
- Prepare vehicles for car wash entry

SKILLS

Hard

- MS Office Proficiency
- Programming Language Knowledge
 - (Java | Python | C | C# | UML | ML)
- Source Control
 - (Git | Github)

Soft

- Relationship Building
- Change Management
- Presentation Skills
- Problem Solver

Tanner Ragghianti
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Downingtown, PA 19335
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Profile:

I am a detail-oriented computer science major currently attending West Chester University. Aiming to leverage technical, problem-solving, and organizational skills to successfully find a job as an IT System Administrator.

Education:

Delaware County Community College
Associates in Computer Science
Graduation: May 2020
G.P.A.: 3.28

Related Coursework: Java Programming, C++ Programming, Data Structures & Algorithms

West Chester University
Bachelor's in computer science
Graduation: December 2022
G.P.A.: 2.91

Related Coursework: Computer Systems, Program Lang Concepts/Paradigm

Experience:

Darden Restaurants, Downingtown, PA May 2018-October 2021

Certified trainer

Train new hires for their applied job to an ability level where they are competent enough to perform their daily tasks

Delaware County Community College, Media, PA October 2019-Current

Peer Tutor/Professional Tutor

Assess student skill weakness, design and implement strategies to support understanding

Informal job experience

Experience helping other classmates in the past with understanding the material and with classwork.

Experience setting up and diagnosing small scale networks for personal projects

Skills & Abilities

Programming skills in C++ and Java

Experience with Hardware diagnostics

Microsoft office (Word, Excel, PowerPoint)

Ian Lewis

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Education

West Chester University of Pennsylvania, West Chester, PA

Bachelor of Science in Computer Science | December 2022

- GPA 3.4

Related Courses:

Data Structures & Algorithms

Computer Science III

Calculus II

Computer Systems

Computer Security & Ethics

Software Engineering

Work Experience

Watson & Allard, P.C. | Information Technology Intern | August - December 2019

- Maintained a database and internal network
- Solved network and connection issues
- Assisted in creation of programs

Watson & Allard, P.C. | Legal Assistant | October 2016 - Present

- Communicates with clients to inform them on legal standings
- Collaborates with a team to achieve our goals
- Increased monthly profit

Activities

- Member, West Chester University Computer Science Club Fall 2019 - Present

Technical Skills

- Experience in Java and C programming languages
- Knowledge in operating systems Windows and Linux
- Experience in building computers
- Proficient in Microsoft Excel, Microsoft Powerpoint, Microsoft Word