

Cloud-Based Discord Bot

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West Chester University

CSC-468-02: Introduction to Cloud Computing

Dr. Linh Ngo

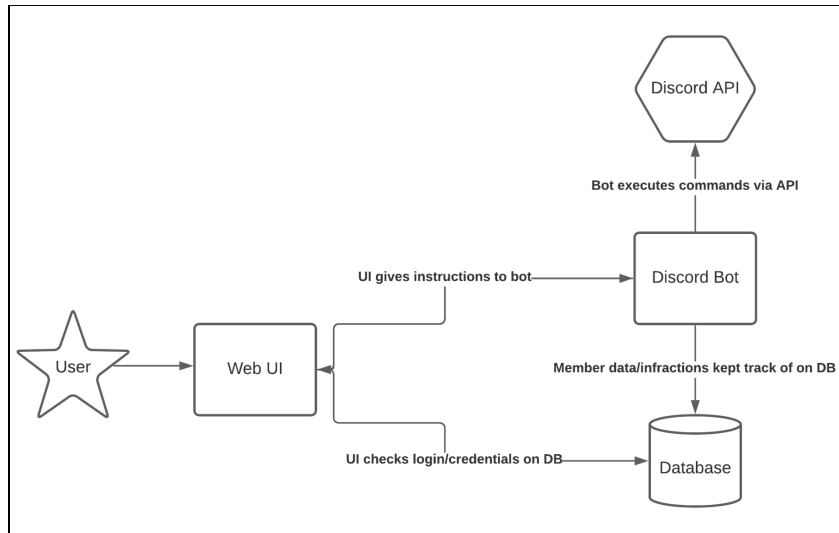
April 17th, 2022

Team Description

Overall, we all have experience with a lot of different programming languages, techniques, and medium-scale projects, so any new languages that may be a part of this project should not pose that much of an issue for us. Additionally, we are mostly balanced in our experiences as a whole, so we should all be able to contribute evenly and effectively without one person knowing a lot more than the rest. One of our team members has already created a Discord bot before, so we expect to use that bot as a template for creating a new, cloud-based one. Resumes can be found at the end of this report.

Technical Report

Chapter 1: Team Vision



Currently, our vision for this project is to fall within the A-level technical requirements. While creating the cloud-based Discord bot will be relatively straightforward, as we plan on following a similar front end model to most other discord bots, the challenging part of this project will be to get the Discord bot to properly talk to the Discord API and database.

As for the design of our project, we are adapting pre-conceived models of Discord bots to include Jenkins and CI/CD services, a docker image hub, a webui separate from Discord, and a kubernetes deployment converted from docker-compose infrastructure. Additionally, we will be replacing the traditional redis database service with MongoDB, which is known to work well with Discord's JavaScript services. In essence, our project focuses on the conversion of moderative Discord bots to a more user-friendly and cloud-based service.

Chapter 2: Addressing Technical Requirements

Keeping mostly in-line with the standard discord bot model, all services should work in a similar fashion, but with the addition of cloud services. First, the user will enter their username and password with the Web UI. The web UI will then send the credentials to the database. Once verified, the user will have access to all of the bots features, and be able to carry out commands with a single press of a button. The bot will then be able to execute commands given to it on the Discord server it is a part of through the Discord API. Any actions taken by the bot will be logged to the database for future reference.

Currently, with our limited knowledge of cloud computing, we expect to fulfill most of the technical requirements as we progress through this course. Doing the hands-on activities as a group and adding on to the project over the course of the semester will ensure that we meet all the C-level requirements in a reasonable timeframe. To address the A-level and B-level requirements, we will need to translate all we learn about redis into MongoDB, in order to

replace redis with MongoDB. Some of our team members have prior knowledge of MongoDB, so all that will need to be done is to have MongoDB provide roughly the same functionality as the redis database by translating redis's language into MongoDB.

Chapter 3: Intermediate Milestones

Initially our project was a B-level coin miner utilizing MySQL. Upon becoming more familiar with cloud computing, the expectations of the project, and learning more about the capabilities of our team members, we transitioned towards a cloud-based Discord bot while using MongoDB as a way to manage the structure of the database. This has resulted in time taken to assess the requirements needed to accomplish this project as some of our current ideas and tasks differ from our original project for the coin miner.

Thus far we have created a basic functioning Discord bot, and the implementation of MongoDB has started. The core planning for how the web UI will function and interact with the Discord bot has been decided, and with that the web UI has also begun being developed. Overall, assessing the project and what needs to be accomplished seems very feasible. The established skill sets of our team members should transition well into implementing MongoDB and understanding the functionality using the Discord API.

Upcoming challenges are the complete implementation of Kubernetes and Jenkins as well as the implementation of the Discord API to communicate between the bot, database and the web UI. We understand what goes into accomplishing these tasks conceptually, but currently taking what we know of these systems and implementing their framework into our current infrastructure may prove quite challenging. This is on top of ensuring our docker and yaml files are properly configured for their implementation.

Elijah Baldwin

Philadelphia, PA

Education

- West Chester University of Pennsylvania B.S. Computer Science(May 2022 Anticipated)
- GPA: 3.4

Relevant Coursework

- Software Engineering
- Data Communications and Networking
- Data Structures & Algorithms
- Computer Security & Ethics
- User Interfaces
- Digital Image Processing

Experience/Volunteer

Franklin Institute, PACTS Program, Robotics Explainer (2015-2018)

- Assisted students in building robots and understanding the fundamentals of robotics
- Assisted judges at the First Lego League Competition
- Explained and demonstrated the many functions of robots to visitors
- Designed robots to showcase at events

Skills

- Java
- C
- React-Bootstrap
- Python
- HTML
- CSS
- Google Products(Drive, Docs, Slides, Sheets, Forms)

Awards

- Dean's List Spring 2020 & Spring 2021 semesters at West Chester University of Pennsylvania
- Kappa Alpha Psi Scholarship
- McKee Scholarship

Sean Larkin

West Chester PA | 17slarkin@gmail.com | (484)-999-1900

Education

West Chester University

August 2019 - (Expected Graduation) May 2022

B.S. in Computer Science

Computer Security Certificate (*program certified by the NSA*)

GPA: 3.42

Penn State Brandywine

August 2017 - May 2018

Downingtown West High School

Graduated 2017

Skills

- Proficient in Microsoft Office
- C/C++ Experience
- Java Experience
- Effective Communicator
- Team-player
- Quick Learner
- Logical Thinking / Problem Solving

Shane J Maloney

Philadelphia, PA | (215) 373-9492 | shanejmaloney@gmail.com

Education

Delaware County Community College, Marple, PA

August 2016 - May 2018

Certificate: TestOut Network Pro

- GPA: 3.6

West Chester University of Pennsylvania, West Chester, PA

Bachelor of Science in Computer Science | December 2022 (Expected)

Certificate: Computer Security

- GPA: 3.7

Skills

- Help Desk Support
- Windows and Linux Operating Systems
- Networking and Security Protocols
- Java
- JavaScript
- C
- C++

Experience

Legal Secretary | July 2015 – present

Information Technology Assistant | November 2020 – present

- Providing and maintaining company networks and servers
- Troubleshooting and solving technology and system problems

Michael Pastorino

West Chester, PA + 484-947-7972 + Pastorino173@gmail.com

Education

- Expected Graduation Spring 2022 Bachelors degree in Computer Science / West Chester University, (PA) GPA 3.70
- 2018 Associates in Mathematics / Delaware County Community College (PA)

Projects

- Virtual ATM, a Virtual ATM that asks a user for a pin with a max number of attempts that then allows the user to check the balance, withdrawal, and deposit money into the account. It also has a set limit on the amount of money to be withdrawn in a transaction.
- Sudoku checker, which utilizes arrays and loops to run through a sudoku puzzle to check for any mistakes in that puzzle and if a mistake is found it reports back to the user where the puzzle fails.

Experience

February 2021 - present: Part time installation specialist / Castelli Flooring, Elsemere, DE

- Engages with prospective and current clients to install the solution requested on time and under budget.
- Performs comprehensive removal and installation services for tile flooring products with precision and
- Demonstrates focus and attention to detail to ensure a smooth installation.

March 2020 – present Part Time Shopper Assistant / Instacart, PA, DE, and NJ

- Performs grocery shopping for customers via list provided on Instacart App.
- Responsible for accuracy of selection, and offering suitable alternatives to customers for items not available
- Provides utmost customer service to ensure customer's needs are met

Program Languages

➤ Java, C, Python, javascript

Software

➤ J-Graphs, Eclipse, Visual Studios, ios Terminal, Anaconda, Java Script, Microsoft Office Suite.

General Skills

- Problem Solving
- Working in teams
- Learning new programing languages
- Both leading and following
- Multi Tasking
- Customer Service

Noah Winand

277 Edgehill Rd.

York, PA 17403

(717) 814-0195

nwinand128@gmail.com

Education: West Chester University of Pennsylvania

Bachelor's Degree in Computer Science -- Expected in 2022

Certificate in Computer Security (current overall GPA: 3.7)

Relevant Courses Taken:

- Operating Systems + Data Communications + Programming Paradigms
- Big Data Engineering + Modern Malware Analysis + Software Security

Work Experience: KioWare Kiosk Software

Custom Development Intern -- June 2021 - August 2021

- Created a Java GUI to automate the process of publishing companies to KioWare's SQL database from Excel spreadsheets
- Created two additional, reusable Java GUIs that allows the user to edit company information and publish/unpublish companies from the public website
- Modified a pre-existing trade show example by improving graphics and making it WCAG accessible up to level AA (HTML and JavaScript)

Awards

- ❖ Tri-M Music Honor Society - A high-level musical club that requires a solo tryout session, and only accepts a few members
- ❖ Achieved Dean's List during the Spring 2020 semester at West Chester University of Pennsylvania

Technical Skills

- **Programming languages Java, SQL, C, Haskell, HTML, and Python**
- The conversion of back-end code to easily readable front-end GUIs
- Experience with common computational tools such as ghci, podman, SQL Server Management Studio, MobaXterm, Eclipse, and Cisco Packet Tracer
- Conversion of assembly code into high-level programming languages
- Microsoft & Google Products (Word/Docs, Powerpoint/Slides, and Outlook)
- Adobe Photoshop & Illustrator