Senior Project Proposal: Discord Chat Bot

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March 22, 2017

1   Objective

On a whim, I decided to try my hand at making a bot for the voice and text chat service Discord. I became absorbed with it and started spending a lot of my free time on it. My goal is to create a dynamic, interactive chat experience through my bot. I would like it to be able to find images from search engines, look up weather, local time in any time zone, save arbitrary text and images, transform text to ASCII art or block emojis, play games, create and vote on polls, and more.

2   What I want to learn

I hope to become more familiar with PHP (especially PHP 7, which is new to me, having used 5.4 extensively). I would also like to improve the style of my code to meet the PHP Style Recommendations (PSRs). Namespacing and dependency management is also an important part of modern PHP development, so I would like to learn how to leverage Composer to manage dependencies, namespaces, and class autoloading.

It's very important that a piece of software like a chat bot not be blocked by longer-running tasks. To solve this problem, I will use the Promises paradigm to write asynchronous code.

I will need to set up and maintain a server for my bot, so I hope to learn how to create a stable, reliable, self-healing management system for the main bot process. I want to learn more about security in terms of both keeping my API tokens secure and sending HTTP requests and data over WebSockets with SSL.

I'd like to improve my skills at source control (Git). I'm comfortable with most aspects of working with Git apart from a usable branching model and dealing with merge conflicts.

3   Technologies

- Discord Bot API (RESTful)

- DiscordPHP (client for interacting with the API)

- Ubuntu Server

  - API proxy and static file serving
  - SSL Security: LetsEncrypt
  - Store Tokens Securely

– Process Management

- PHP 7.1

- Asynchronous functions through Promises interface

- Git

4 Proposed Features and Points

- Get User Info [1 pts]

- Get Profile Photo for arbitrary User [1 pts]

- Get Server Info [2 pts]

- Display Bot Status/Uptime [1 pts]

- Send direct message to any user [1 pts]

- Permissions for commands based on user's permissions [2 pts]

- Talk to Cleverbot [3 pts]

- Save images and retrieve them later [5 pts]

- Save text and retrieve it later [2 pts]

- Send me a text message [2 pts]

- Send emails to a saved address for a user [2 pts]

- Internet lookups

  – Weather for any city [3 pts]
  – Time for any city (by looking up timezone) and formatting correctly [3 pts]
  – Save a preferred city for each user for time and weather [2 pts]
  – Look up a random joke [2 pts]
  – Send an image from Google Image Search Results [5 pts]
  – Stream music from YouTube to a voice channel [10 pts]

- Create and vote on polls [5 pts]

- Chat games (TicTacToe, Hangman, or both) [10 pts]

- Text transform (block emojis, unicode fonts, and ASCII art) [3 pts]

- Roll an n-sided die [1 pts]

- 8-Ball style fortunes [2 pts]

5 Grading Scale

70 points total.

    63+ => A
    56+ => B
    49+ => C
    42+ => D
    35+ => F

The items that have a higher point value are the features that I am least familiar with and will require the most effort/learning on my part.