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## EE/CprE/SE 491 WEEKLY REPORT #3

Feb 13 – Feb 19

Group number: sddec23-15

Project title: Discord Bot Integration for Replit Teams for Education

Client &/Advisor: Joseph Zambreno

Team Members/Role: Cole Mullenbach, Kristen Nathan, Kyle Rooney, Patrick Demers, Sophie Waterman Hines

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- **Weekly Summary**

This week, the team began examining various design topics related to Discord bots. When building a bot, it is important to consider the user experience, cyber security, and software design. To ensure the team continues progressing forward, a Trello board was created. This will allow the team to commit to deliverables each week and plan for the future.

- **Past week accomplishments**

### **Kyle Rooney**

I have been researching last year's questions to develop ideas for our bot. Last week I mostly just noted as many questions as I could find in the CPRE 161 Discord. This week I added a few more questions and analyzed my research. After talking with Dr. Zambreno and analyzing recent questions, I was able to come up with some good ideas for our bot. I won't list them here, but can be seen at the bottom of this document:

<https://docs.google.com/document/d/1XpXBRI2zTLM0djbEO0CyzEVCSNTJXfUBb3eQjv1iiPw/edit?usp=sharing>

### **Kristen Nathan**

Last week, I did more research on developing a Discord bot. After meeting with Zambreno we decided to mock up how the bot would interact with a user on Discord. I started the process of going through students questions to pick one for the mock ups. There are multiple different types of questions a student could ask and I've been going through them all to prepare to create visual mock up.

### **Cole Mullenbach**

I was looking at the questions from the server this week and I also was still looking into where to really start with the discord bot. We had a very helpful meeting with Dr. Zambreno this week that got all of the questions I had answered.

### **Patrick Demers**

Last week, the error parser required an error message to be directly passed in. This is great for testing, but is not helpful when working with real code. This week, the program was extended to compile a C program at runtime and automatically return details about errors encountered. The code in the program is unit tested using the Python module "unittest."

In the meeting with Dr. Zambreno this week, the usefulness and feasibility of an error parser was discussed. It will be difficult to capture all error messages, but at least the very common messages may be supported. If an error message is not known, the Discord bot will still be able to return the error message, but no friendly message will be generated. The goal is for a student to learn what the compiler generated error message means.

### **Sophie Waterman Hines**

Last week I began to examine the importance of cybersecurity practices using Discord bots. Since adding a new Discord bot to a server gives it different permissions to access server information (i.e. Discord names, tokens, server administrative access, etc.) I started to look at which permissions our bot would require.

I also examined how the Discord API and Discord.py handle parameter sanitization and server to client communication. While I am unsure to the extent our bot will need to be secured now, I now have a solid understanding of the basics of Discord bot security.

- **Pending issues**
  - Some questions from the CPRE 161 Discord are very specific or logically which might lead to struggles in the foreseeable future.
  - Although the project is still in early stages, one foreseeable challenge is interacting with Repl.it as it does not offer an API. The proposed method at this point is using a web scraping tool or accessing file exports through Repl.it.
- **Individual contributions**

<b><u>NAME</u></b>	<b><u>Individual Contributions</u></b> (Quick list of contributions. This should be short.)	<b><u>Hours this week</u></b>	<b><u>HOURS cumulative</u></b>

Cole Mullenbach	Mostly looked at where to start with the project	3	8
Kristen Nathan	Looked through questions students asked to start to develop conversation mockups	2	6
Kyle Rooney	Researched and wrote down more questions from the CPRE E 161 Discord. Came up with a summary from my research the past 2 weeks.	3	8
Patrick Demers	Completed the pipeline that takes raw C code, compiles it, and generates a friendly error.	6	16
Sophie Waterman Hines	Researched Discord bot security practices and securing procedures.	3	9

- **Plans for the upcoming week**

- Sophie Waterman Hines: Help with bot development and begin work on team wiki.
- Patrick Demers: Document friendly error message parser. Help generate example Discord bot interactions.
- Kristen Nathan: continue researching python implementation of a Discord bot. I plan to complete the mockups of a Discord and student conversation. This will help us discuss and decide how we want to communicate and how we want students to frame their questions.
- Kyle Rooney: Start creating my own bot to understand the basics of Discord bots. Dr. Zambreno suggested we all create our own bots to play around with and test small things separately. I think it will be important that we all learn how to create bots from scratch.
- Cole Mullenbach: Start creating a prototype bot to start getting the basics down

- **Summary of weekly advisor meeting**

During the meeting, the team discussed progress from the past two weeks and inquired more about how interactions with the Discord bot may go. Patrick demonstrated his work on compiler error parsing. Kyle showed Dr. Zambreno his list of questions and asked about his thoughts on answering logic based questions. Kyle also brought up the idea of reacting to the reply of the Discord bot using emojis. Dr. Zambreno liked this idea but also stated he didn't want the bot to be a multi-step interaction. He just wants simple questions with simple replies.