

DISCORD BOT INTEGRATION

for Replit Teams for Education

Team 15

Client: Dr. Zambreno

Members: Patrick Demers, Kyle Rooney, Sophie Waterman Hines, Kristen Nathan, and Cole Mullenbach

INTRODUCTION

Summary: A Discord bot which answers queries of students in introductory programming courses.

Problem: ISU's beginner programming students frequently ask repetitive questions about their assignments. Often facing delayed professor responses, these delays cause learning disruptions.

Solution: The Discord Bot aims to address these queries by offering immediate, independent student assistance to minimize learning interruptions.

Users

- CPR E 161 Instructors
- CPR E 161 Students

Uses

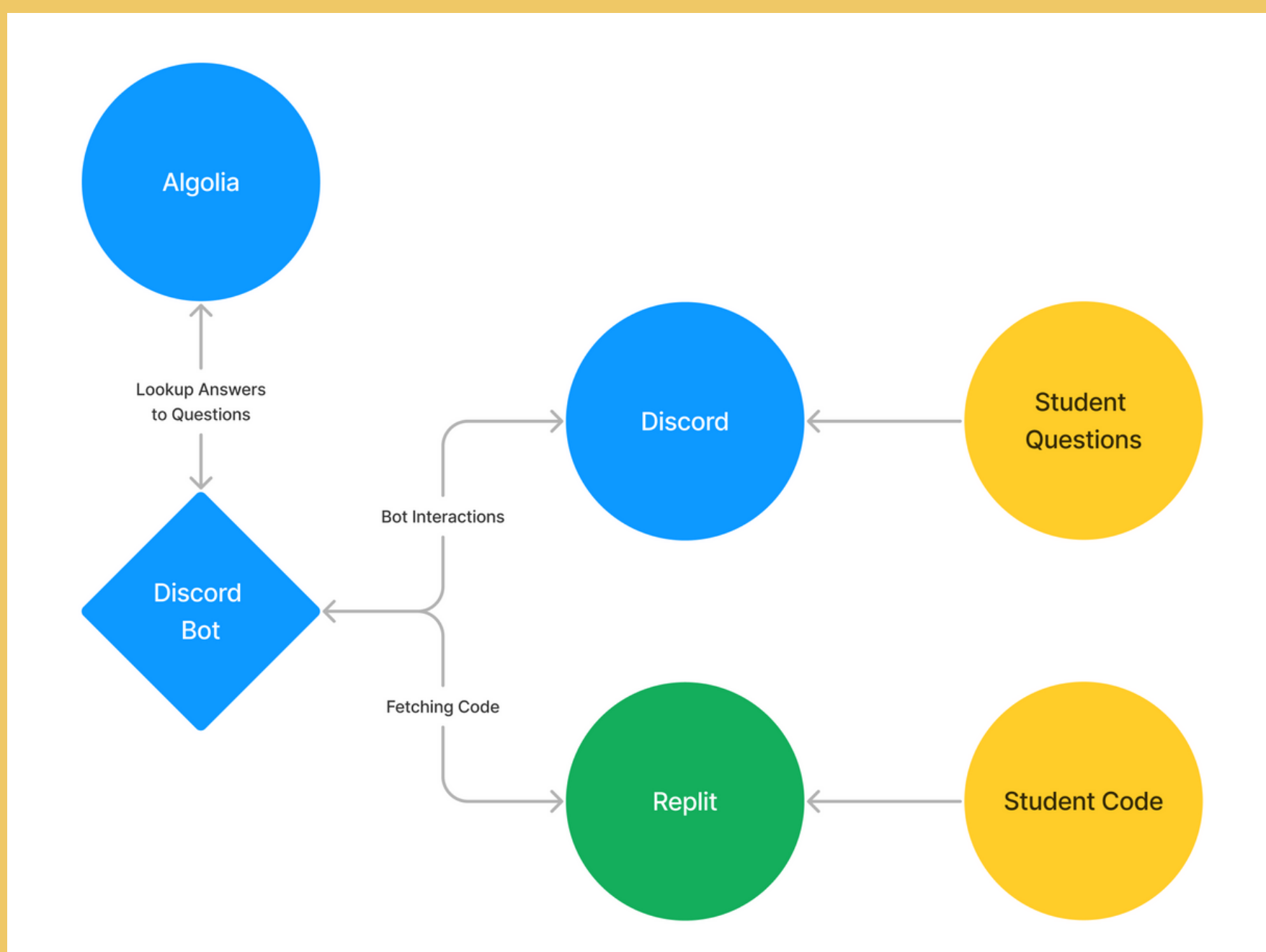
- Answer repetitive assignment questions.
- 24/7 immediate assistance.
- Provide quick code compilation with simple output.
- Organizes and manages an online class environment.
- Serves as an initial point of contact before reaching out to the professor.
- Eliminates time spent answering duplicated questions.

DESIGN APPROACH

The Bot is designed to tie the platforms students already use together in an easy-to-use interface.

The Discord Bot integrates with three external systems:

- **Discord:** to interact with students
- **Replit:** to grab student code
- **Algolia:** a free text search database which stores answers to student queries.



Security Concerns

- Users could link their Replit account to someone else's.
- Countermeasure:** the bot never reveals someone's code.

DESIGN REQUIREMENTS

Functional Requirements

- Be configurable on a class and assignment basis.
- The bot shall provide feedback on up-to-date student code from Replit.
- The bot shall provide helpful hints to students based on compiler error messages.
- The bot shall forward student interaction to teaching staff if the bot is unable to answer the query.
- The bot shall only show its response to the student asking the question.

Non-Functional Requirements

- The bot shall respond to students within 5 seconds for 95% of questions.
- The bot shall accommodate users with visual impairments.
- Comply with Discord's API usage guidelines and terms of service.

Engineering Constraints

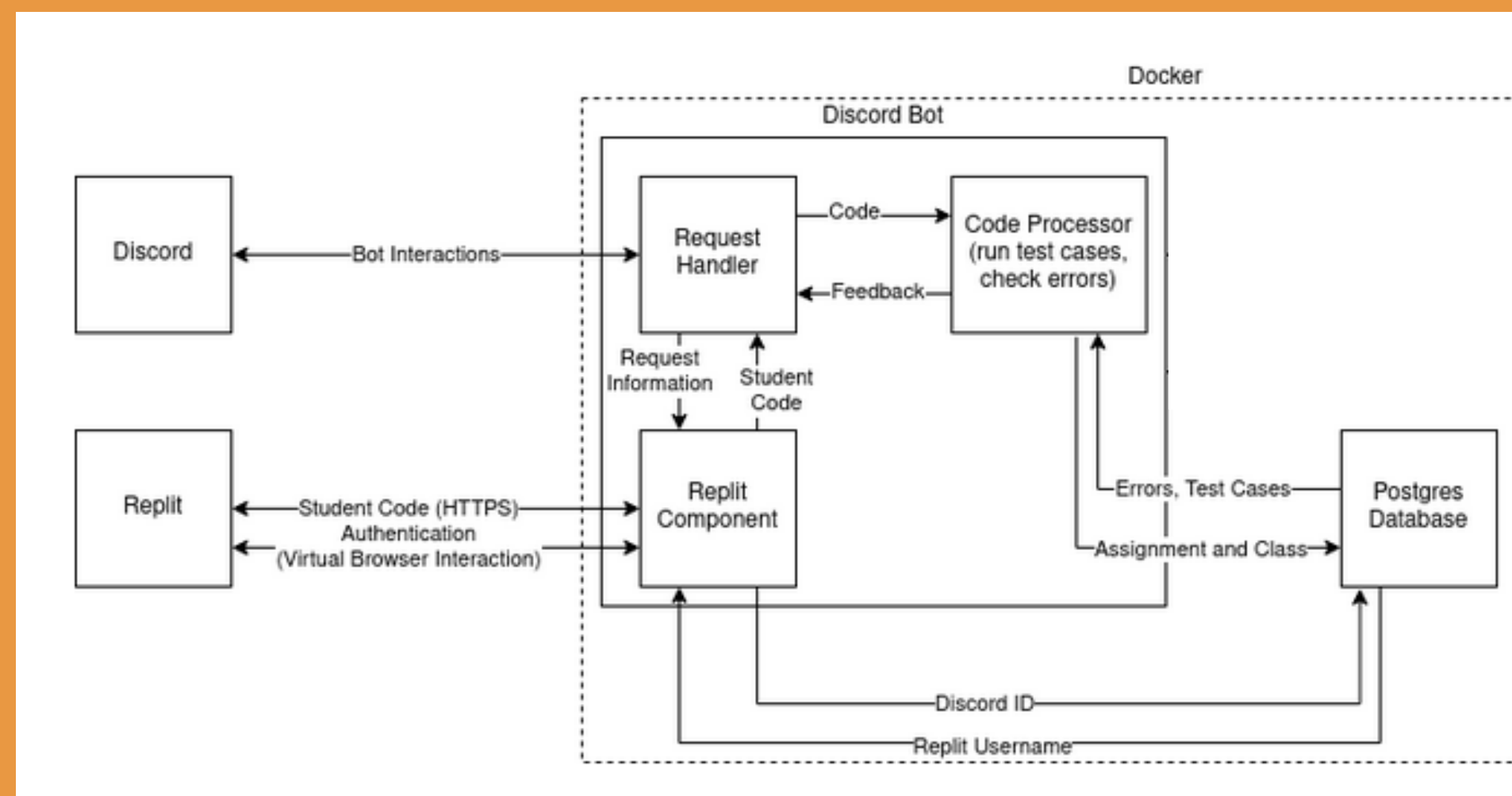
- The bot shall be written in Python.
- The bot shall integrate with Replit.

Operating Environment

- The bot shall be containerized and able to run on any host.
- The bot shall be hosted on an ETG virtual machine.

Relevant Standards

- Design and development of information for users
- Testing: General Concepts
- Testing: Keyword Driven Testing



TECHNICAL DETAILS

Functional Modules:

- Programming Language: Python
- Discord API Interaction: Utilizes Discord.py library for seamless integration with Discord's API.
- Role-Based Access: Manages specific commands and actions based on roles: TA, Instructor, Admin.
- Thread Management: Implements private threads for personalized assistance between users.
- Code Compilation: Executes code compilation for students; feedback generated based on Algolia's coverage.
- Discord-Replit Interaction via Selenium: Facilitates linking Replit accounts with Discord IDs for smooth interaction.
- Question Assistance using Algolia: Utilizes Algolia's coverage to provide answers to student queries.

Development Tools and Environments:

- Docker Integration: Docker used for easy deployment and running of the bot.
- Environment Setup: .env file configuration for personal development settings.
- Virtual Machine via ETG: Used to host the bot.

Concerns and Considerations:

- Dependency on Discord API: Relies on stability and functionality of Discord's API.
- Algolia Coverage Limitation: Feedback based on the scope covered by Algolia's indexing.
- Targeting Relevance: Strive for the bot to address assignment-specific queries effectively, ensuring its utilization instead of users resorting solely to ChatGPT.

TEST PLAN

Input Commands

Tested using pytest.
Used MagicMock to mock Algolia.

Interaction testing

Resolve simple questions without professor interaction.
Create a help thread for the student and professor.

Replit-Discord account linking

Manual test that account linking and unlinking process is working as desired.

CI/CD pipeline

Automated tests will be conducted to ensure previous functionality is not broken.

DEMO

why do I need to use return 0?

why do I need to use return 0?

return 0 is the program's way of saying "I completed successfully". If a different number is returned, it means something went wrong.

[Learn more](#)

👍 Problem Solved

👎 I need help from the teacher



test-bot-2 BOT Today at 3:38 PM

Welcome to the thread. @Instructor and @pdd

Student Question: why do I need to use return 0?