

# Hezuo: Collaborative Coding

Michael Tran, Jacob Fung, Markus Sadowski, Daniel Bowden, Hunter Nauman, Derek Taylor  
University of Arkansas, College of Engineering: Computer Science, Computer Engineering

## Introduction

The goal of our project is to make an application that provides a good all-around solution to collaborative programming. It utilizes a peer-to-peer structure where whoever starts the session will act as the server, and a custom command framework to queue and resolve edits. We based our application in Python (specifically PyQt5), and connect the peers to each other through websockets. When our project is finished, it will allow users to easily and effectively work with each other in real time as well as utilize synchronized terminals.

## Purpose

Hezuo's purpose is to provide a streamlined collaborative coding environment for new developers without the setup hassle of typical synchronized text editing programs and to also provide a much more reliable form of synchronization. When completed, this would allow for a more user friendly and interactive experience than other synchronized text editors.

## Method

We used PyQt5 to implement the GUI and websockets to provide the means for the server-client communication. For the GUI, we took influence from many other text editors as we realized that most text editors support a wide array of similar features. We primarily focused on essential features such as the ability to open, save, and create new files. We also focused incorporating a system terminal into the GUI that can be used to compile and run files as well as any other system commands that the user may need to enact.

The screenshot displays the Hezuo application window. The title bar reads 'Hézuò'. The menu bar includes 'File', 'Edit', 'Selection', 'View', 'Go', and 'Terminal'. There are two tabs: 'New File 1' and 'rand\_text'. The code editor shows the following C++ code:

```

1 // Your First C++ Program
2
3 #include <iostream>
4
5 int main() {
6     std::cout << "Hello World!";
7     return 0;
8 }

```

Below the code editor is a terminal window with the title 'Terminal'. The terminal prompt is 'hunter@hunter-desktop:~/School/Capstone/Hezuo\$ S'. The status bar at the bottom right indicates 'Ln 7, Col 1'.

## Results

Hezuo has a fully functional GUI that operates as a text editor that can access a terminal via system commands to run and compile files. Aside from the GUI, we were also able to implement functional server-client communication via the terminal using websockets. Given more time, we would have ported the server-client code into the GUI and we would have implemented more features into the GUI as well.

## Conclusion

The objective of Hezuo was to create a collaborative programming application. We used websockets for one-way communication, and completed most of our goals on the interface. Hezuo functions as a text editor that can utilize terminals on Linux and MAC operating systems.