The purpose of this project was to build a simple blockchain network. The core objective of this was to build a system capable of mining blocks, maintaining a secure chain, and making sure that there is a seamless propagation of information across a peer-to-peer network. While the conceptual foundation of how blockchain works and building this out was pretty straight forward, I definitely faced my fair share of difficulties.

My first challenge was implementing the proof of work algorithm correctly to make sure the blocks were properly validated before being added to the chain. I overcame this by incorporating a validation mechanism that checks how correct each block is.

My second challenge was encountered when facing the task of broadcasting a newly mined block to all nodes in the network. In the current state of my project, the first node seems to act as a host, and everything else is based around it. However, . I am able to maintain all blocks and connections even after killing a node, as the rubric calls for. Here is an example: Screens screenshot of a computer screen

Description automatically generated

I did the best I could to address this, but in order to get to this point I implemented a mechanism that leverages sockets and ObjectStreams, making sure that each node should in theory receive and validate the new block efficiently.

I am confident with my understanding of blockchain technologies and implementing them, and I know I covered the logistics of this project, there are just some inconsistencies that occur with more than two nodes connected, and I cant exactly figure out why this is, but I hope to maybe discuss it in class. I did enjoy this, and never in a million years did I think I would create something like this, so I am happy with what I have thus far.