IS 371 - Blockchain Team

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# Intro:

Our project aims to create a web based accounting interface backed by a private blockchain database using HyperLedger in order to provide a platform for accounting students to learn accounting and understand how blockchain technology works.

# Background:

Our group’s clients were Professor Bailey and Professor Bergsma (from the Business Department), and the objectives and requirements given to us are as follows:

Professor Bailey:

1. A working model of a private blockchain using Hyperledger
2. A documented scenario of using that private blockchain
3. Documentation on the setup (annual refresh)
4. A presentation to the Business/Accounting and Computer Science Department explaining the setup.

Professor Bergsma

1. Objective
   1. A web based accounting system (interface) for a new shoe merchandise business
2. Requirements
   1. Allows a user to record journal entries (10 or more users)
      1. Record who made the journal entry
      2. Record when the journal entry was made
      3. Record which accounts were impacted
      4. Have 5 suppliers and 5 customers
   2. Produce the following financial statements
      1. Income Statement
      2. Balance Sheet
      3. Statement of Owner’s Equity

# Documentation on activities:

Our Blockchain project is to create a blockchain web based application that allows accounting students to create, read and print out blocks in the form of a ledger report.

## Work Cycle 1 (February to March 25th):

In the first work cycle, our team led by Jae Young Choi, researched firstly what a blockchain is and how it works. We used ([https://medium.com/coinmonks/blockchain-for-business-an-introduction-to-hyperledger-technologies-1db7b0b88880 and https://www.youtube.com/watch?v=J1RfcEzD9rw](https://medium.com/coinmonks/blockchain-for-business-an-introduction-to-hyperledger-technologies-1db7b0b88880%20and%20https://www.youtube.com/watch?v=J1RfcEzD9rw)) to help educate us. Chris Weirenga aided in setting up two remote servers in which we could run the blockchain environment using Hyperledger fabric. Jae Young was assigned and worked on server 1 and Josh on server 2.

We downloaded and used the bitvise server to access the remote serves. Our college ID were used to gain access to our servers and port 22 was used. We followed the (<https://medium.freecodecamp.org/how-to-build-a-blockchain-network-using-hyperledger-fabric-and-composer-e06644ff801d>) tutorial to begin our initial download of the Hyperledger fabric environment and begin building our Business network for launch. We changed the codes and permissions based on the specifications for our project. Following these tutorials created the development environment to start our blockchain program. Using (<https://medium.freecodecamp.org/how-to-build-a-blockchain-network-using-hyperledger-fabric-and-composer-e06644ff801d>) template, tweaked to match our project, we ran into a permission problem when trying to launch our network card. In order to try and by pass this, we have tried several troubleshoot actions. We coded the permissions code to specifically grant all privileges to the Participants but that did not help. We also looked online on StackOverflow for solutions but with no success. We completely uninstalled our HyperLedger Fabric environment and reinstalled it. In addition, Josh contacted others who have more experience with blockchain but with no fix found. During spring break, Jae Young was assigned to work on database design and a UML diagram while Josh was tasked with documentation and finding a solution in order to create our first working block.

## Work Cycle 2 (March 26th to April 30th):

Jae Young continued to work on the Database design and the UML diagram while Josh found a solution to launch the network card from the servers. The solution was to ensure that when creating Business Network Archive Definition (BNA) for your network card, the commands should be executed in the directory and the name of your identifier should match your original network card and its version. After Successfully launching our Business network named journal-network, we created demo scenarios in order to test some of our initial code. We are currently adding to the logic file of our Blockchain network to allow users to properly interact with the web application based on their needs. Be it to credit or debit from an account or to simply review inputted data. Josh is tasked with connecting both server 1 and 2 in order to make them two separate blockchain nodes. In addition he is to initialize the servers so that they are constantly running, allowing the web applications to always be active instead of having to waiting for either Josh or Jae Young to initialize the network command. Lastly Josh is working on permissions in order to allow the right users the required access levels. Jae Young is building the database structure based on the needs of an accounting journal with the help of Glory. In addition, Jae Young with the help of Josh, are adding to the logic code to make the Blockchain application fully functionally. A GitHub repository with the name “calvin-is371/Blockchain” is used to store and update all current work.

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