**Assignment 3: Report**

This assignment is written on Python 3.10.12 and uses json, pubnub, hashlib, threading, time and os modules.

Before running the program, ensure that the terminal is directed to the same path as where the Python program is located. Running the program would then start the mining process as shown below.

A computer screen shot of a black screen

Description automatically generated

The mining of each block would print the blocks in the order they are mined, and immediately after they are mined as well. The terminal then shows the time taken for Alice and Bob to mine the blocks (based on time.time() format) and determines who came first. An additional section is displayed on the terminal to indicate that the faster mined block is verified by both Alice and Bob.

A screenshot of a computer

Description automatically generatedAfter the completion of each block mining, the json.dumps of the block will be written into a .json file with the corresponding block number. Two copies of the file will be made for Alice and Bob. For example, after the 2nd block is mined and verified, it is written into ‘Alice2.json’ and ‘Bob2.json’ respectively.

Screenshots of ‘Alice2.json’ and ‘Bob2.json’, which contains the same contents of the verified block to be written

A screenshot of a computer

Description automatically generatedAfter all 11 blocks have been mined, the terminal would print a message of the completed process, then the program unsubscribes from all Pubnub channels and shuts down the process using os.exit().

Message indicating the end of the mining process