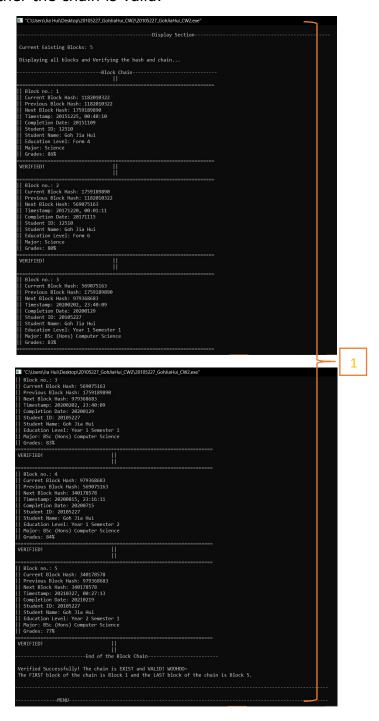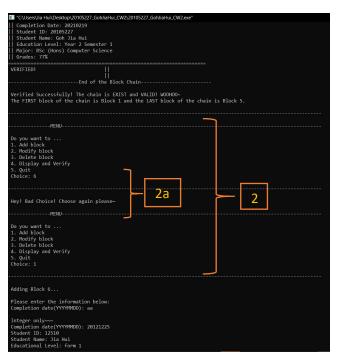# Screenshots of Significant output

1. Start: When the program starts, all data will be obtained from a text file named data.txt and added to the blockchain, and then the program will automatically display the details on the screen and verify all existing blocks to check whether the chain is valid.
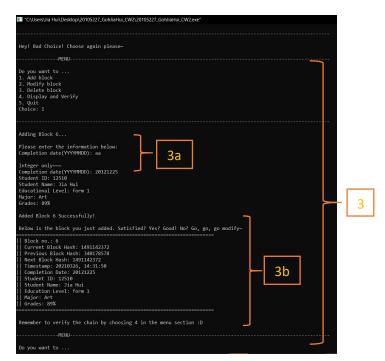

2. Menu: After displaying the existing blocks and the chain, program will show a menu for user to choose what to do next.

a) If user entered an invalid value, it would inform user and let user enters again.

3. Add block: If user choose to add block, the program will detect which block is going to add and let user enters the information.
   a) If user entered invalid value, the program would inform user and let user to enter again.
   b) After user finished entering, the program will display the added block with the details. Menu will show up to user again to choose what to do next again.
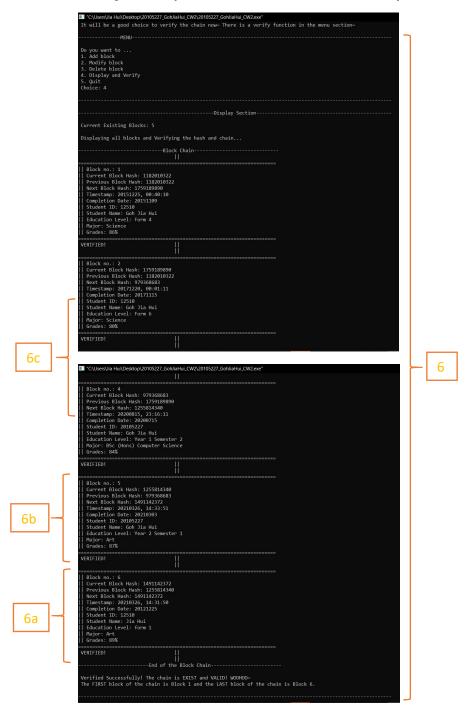
4. Modify block: If user choose to modify block, the program will allow user to enter the block number to be modified.
   a) If the block user entered does not exist or invalid, program will inform user and let user enter again.
   b) After entered the existing block number, program will display the current information of the block and let user enters the new information.
   c) When user finished entering the new data, program will automatically display the new details of the block and menu will also show up for user again. The hash of the block will get regenerated if the new data is entered and the program will update other affected blocks also.

5. Delete block: If user choose to delete block, the program will allow user to enter the block number to be deleted.
   a) If the block user entered does not exist or invalid, program will inform user and let user enter again.
   b) After entered the existing block number, program will display the information of the block and inform user that this block is deleted from the chain. Inside the system, it will automatically re-join and update the blockchain after a block is deleted. Menu will also show up for user again after the deletion.

6. Display and Verify: If user choose display and verify in the menu, it will first show how many blocks are available and then display the latest block chain with the details of all blocks. It will also verify the hash every time it shows a block. When successfully verified all blocks, it will inform user the chain is valid and which block is the first and last block.
   a) New added block (See Details in 3. Add Block)
   b) Modified block (See Details in 4. Modify Block)
   c) Block 3 is deleted, Block 2 and Block 4 are connected and the whole blockchain is re-joined. (See Details in 5. Delete Block)

7. Quit: User can choose to exit the program anytime the menu shows up.

8. Running time of the program: The program will continue to display the menu to the user, so if the user does not choose to exit the program, the execution time will continue running.