CS4348 Project 1 Write up

1. Approach to the project
   a. For this project I implemented the use of three programs a logger, an encryption program and the use of a driver which managed the interaction between those files. The key requirement from the project was the use of processes and pipes to allow the programs to communicate. The reason I chose java as the language was due to its reliable and extensive process class. This class is reliable and heavily documented which made the use of handling inter-process communication IPC straightforward

2. Project Organization
   a. Logger is the handling logging with a simple, timestamped format that shows all the interactions being well recorded, and this java file handles that
   b. Encrypt was used for the encryption and decryption of the password, using the specific cipher required which is the Vigenère cipher, using the user entered passkeys
   c. The driver key is used to coordinate the program using pipes to send commands to logger and encrypt. I specifically organized the driver code to manage user input, log interactions to be logged, and to handle encryption tasks using a simple command menu

3. Problems encountered
   a. The main challenge within this project was implementing the communication between processes using pipes. At the start I had issues where the encryption could not receive the commands in the expected behavior I had from the driver, this created a deadlock situation in which the encryption process awaited input forever. Another side issue was how the log entries were correctly formatted, and the format took time to correct and to make sure they were written in real time as the commands and events occurred.

4. Solutions
   a. To solve this specific communication issues, I made sure that the streams were flushed or cleared after every write operation this will prevent the buffering from the blocking important communication between the processes. And to fix the logging issue I then added the same flush kind of method for the leg writer after there a way a new log entry, this will then ensure the logs were recorded immediately without any delay

5. Lessons Learned
   a. Working on this project taught me a lot about managing the communication between processes and the usage of pipes. I gained a deeper knowledge in managing these multiple processes in java and using the specific process builder class and thus it will communicate effectively using streams. Also, I did improve my ability to debug by then working through issues within the stream communication and making sure the program is synchronized