Class: Fall 2022 - CS 4348.502
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Project 1 - Write-up

1) **Question**: How did you approach the project?

   Answer:
   Since the purpose of this project to demonstrate the understanding of how multiple programs can communicate with each other through pipes to fulfill some goal or purpose, I first made a research on how multiple subprocesses can communicate with their parent processes back and forth through pipes, the language and the libraries I wanted to use to implement the project during the first week of its assignment to the class.

   On the second week, I created a design diagram, in which I have used to implement the project later on. The design diagram contained the required workflow of each of the commands that has a possibility of selection by the user.

   On the third week, I implemented the project, test it with different user inputs. To add on, I also implemented some basic level of input validation.

2) **Question:** How did you organize the project? Why?

   Answer:
   I organized the project by determining which action I should take in each step through the process of implementing the project in order to complete it with as minimum confusion and stress as possible.

   I started off creating the subprocesses from the driver program and testing that the standard input/output connections from the logger and encryption programs work as intended. After that I shifted my focus on implementing the logger program and testing its functionality individually.

   Once I completed the requirements of how the logger program should operate, I moved on to the encryption program. I first made a quick research about how/why Vigenere Cypher works the way it does. From there, I implemented the logic for the encryption program and tested its functionality individually.

   Lastly, I implemented the driver program and tested the entire project by executing the driver program.

   I think working on the logger and encryption programs and making sure that they work as they are supposed to prior moving on to the driver program made the entire process of implementing the project a lot simpler to follow and execute.

3) **Question:** What problems did you encounter?

   Answer:
   1 - I initially planned on implementing the project in Java instead of Python. However, I encountered a problem with Java VM that broke the pipe connections at random times.
   2 - I did encounter any other problems except some typos and python-related exceptions in my code.

4) **Question:** How did you fix them?

   Answer:
   1 - I tried to fix the problem and talked to friends who may have experienced the same problem in their code since the professor mentioned that Java is a tricky programming language to work with when it comes to process. At the end, I decided to implement the project in Python instead.
   2 - I fixed the python-related exceptions by reading documentation and understanding the limitations of the in-built library functions I used in my code.

5) **Question:** What did you learn doing this project?

   Answer:
   1 - I did not have any prior experience coding in Python. Thus, this project became a great opportunity to learn how to code in Python.
   2 - I learned about how different programs can communicate between each other through pipes.
   3 - I learned about parent/child relationship between multiple processes and how they are dependent on each other.
   4 - I learned about Vigenere Cypher encryption/decryption algorithm, which I was very interested in. Thus, I read about its limitations and the math behind. To add on, I researched how it can also be extended to encrypt/decrypt strings containing not only characters from the alphabet, but also numerals.

6) **Question:** If you did not complete some feature of the project, why not?

   Answer: I did complete all of the requirement the project asks for.