**Herman Mann**

**CMSC 203**

**Assignment 3**

**Cryptography Implementation**

**Graphical user interface, text, application, email

Description automatically generatedGITHUB SCREENSHOTS OF ASSIGNMENT 3**

***Graphical user interface, application

Description automatically generated***

Graphical user interface, text, application, email

Description automatically generatedScreen shots of Caesar and Bellaso ciphers (total 4)

Graphical user interface, text, application, email

Description automatically generated

Bellaso Cipher Screenshots

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Reflection Paragraphs

Throughout the completion of Assignment 3, I learned about how we can use a variety of different methods to make it useful for a successful project implementation like this one. Using the ASCII chart and implementing the use of the different ASCII codes with the use of for loops showed me that programming is so advanced, and it gets advanced each and every day. I learnt the use of for loops and while loops provide a better flow within each of the methods I implemented, for example the encryptCaesar, encryptBellaso, decryptCaesar, and decryptBellaso, and the stringInBounds methods. I learnt that having smaller modularized methods creates more easier code to be produced and helps another programmer to easier read any code you want them to read. The concept of String and character processing made me realize the true importance of programming, that it affects so many different parts of a project not just one important, but many other important pieces/factors come into play as well.

In this assignment the parts I really struggled with were the encrypt and decrypt bellaso on how to really make these two methods work. I was implementing these methods the same exact way I was doing for the encrypt and decrypt Caesar, and it didn’t work at all because I was running the encrypt Bellaso and decrypt Bellaso methods through the crypto manager test and the major CryptoJunit test and it outputted two very different values for each of the methods’ outputs itself. So, then I decided to use the remainder operation of each character of the bellaso str, the bellaso string key word that was supposed to be added to the plaintext string for the appropriate offset of each character according to the bellaso string. So what solved my problem was I did something like this… bellasoStr.charAt(bel%bellasostr.length()); I solved the problem and it produced the correct exact same output as the Junit test runs and as well as the other tests as well. I struggled with the wrapping around part, which was so difficult for me to solve where I had to subtract the key of the individual character by the RANGE which was 64 to be within the bounds of 32-95 ASCII character values. I eventually solved the problem by doing a while loop and including the individual character of plaintext and adding it to the key and subtracting it by the RANGE if it was higher than the Upper Bound of ASCII character number 95.

I would create more modularized methods with a lot of repetition structure and as well as decision structures to make my code look more cleaner and with more transitional objects instead of variables to make my future projects look more Object-oriented. I was successful in the encryption and decryption of the Caesar successfully and then adding the decision structure if the stringInBounds method was within the range of ASCII character values between 32-95 and would then successfully run the two methods without any exceptions and errors of logic or syntax. Mainly, struggling with the encrypt Bellaso and decrypt Bellaso helped me realize that spending more time on this provides a better background knowledge of Computer Science and how to solve its problems with no problem and does not matter how much the time would take in doing this. Be patient, keeping trying different things to make a program work helped me solve this Assignment’s problems and for future assignments/projects I will use this way of thinking it’s phenomenal.