14.07 Challenge Program Ipshita Bhatnagar

3/23

Part 5: Evaluate the Process

1. **What difficulties did you run into writing the frequency analysis program? How did you resolve these problems?**

A difficulty I ran into while writing the frequency analysis program was when I had to print each letter to correspond with its percentage. I did not know how to print each letter without physically writing the 26 letters. To resolve this problem, I created an alphabet array that listed all 26 letters, so when I printed all I had to do was call the array’s corresponding index.

1. **How closely did the frequencies of letters in the plaintext and the ciphertext correspond? What could be done to improve the accuracy of the correspondence?**

The frequencies of letters in the plaintext and the ciphertext did not correspond well because I could not find the exact match of percentages and many were too far apart. To improve the accuracy of the correspondence, we should use a larger file of text data to decrypt.

1. **This assignment involved writing a program and then interpreting the results the old fashioned way. Propose an extension to this project that would allow the computer to do all the work so that you only have to evaluate whether the decoded message makes senses. You don’t need to actually write another program to do this, just consider how it could be done and clearly describe your solution in a well-written paragraph.**

The algorithm to use to create the decipher file, where each encrypted character is mapped to its decrypted character, is to arrange all the letters in the cipher text and plain text file in the ascending order of percentage occurrences. The matching can be created based on their location in the order. For example, the letter with the lowest percentage in ciphertext can be matched with the letter with lowest percentage in the plaintext file and similarly for all other letters in this manner. Then, read the provided data character by character and find its decipher value in the matching file and decrypt it accordingly.