

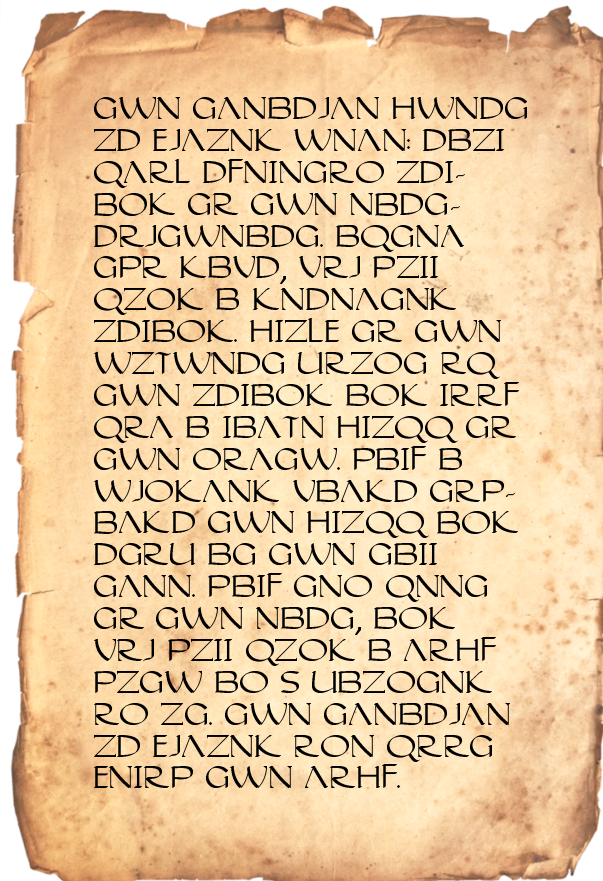
# Network Security

## Homework Assignment 1

CS4285

2016 Fall

**Problem 1: Treasure Hunt (6 points)** You have come across a mysterious old document, which is rumored to be the key to finding the fabled treasure of the pirate Captain Blackbeard (worth 6 points). Decrypt the text to learn the location of the treasure chest (and to successfully solve the problem)!



Hints:

- Most 17th century pirates have not taken any network security classes and, thus, have not learnt that *affine ciphers* can easily be broken.
- The plaintext is written in contemporary English. Note that punctuation marks and spaces are not encrypted.

Tasks:

1. Complete the source to calculate the frequencies of the letters in the ciphertext, and find at least two pairs of corresponding plain and cipher characters! (2 points)
2. Express the decryption of a character as an affine transformation in modulo 26 arithmetic! (2 points)
3. Complete the source code to decrypt the ciphertext! (2 points)