# EECE 71030 Assignment 3

**Caesar Cipher Encryption and Decryption using Arduino and C**

In this assignment, you will implement the Caesar Cipher encryption and decryption system using Arduino and C. The goal is to encrypt a character array using a predefined alphabet shift and then decrypt it back to its original form.

**Part 1: Arduino Encryption**

Your Task:

1. Create an Arduino program that reads a character array initialized in code and converts its contents into ciphertext using the predefined alphabet shift.
2. Convert each alphabet from lowercase to uppercase before encryption.
3. Punctuations, numbers and spaces should not be altered and printed as is.
4. Perform the encoding operation on each character in the array with the key.
5. Print the resulting ASCII integer value to the Serial Monitor of the Arduino.
6. Save the output of the Serial Monitor to a text file named "CipherText.txt."

**Part 2: C Decryption**

Your Task:

1. Write a C program that reads the "CipherText.txt" file generated by the Arduino.
2. Process each line in the file, with each line containing a single character as ciphertext.
3. Perform the decoding operation on the ciphertext to generate the plaintext character.
4. For each line, print the following:
   * CipherText (char)
   * CipherText (ASCII integer value)
   * PlainText (char)
   * PlainText (ASCII integer value)
5. Punctuations and spaces should not be altered and printed as is.

**Important**:

* Use of library functions such as isalpha(), toLower() are not allowed
* All steps must be done use pure mathematical operations.

**Submission:**

1. Submit the Arduino source code file.
2. Submit the C source code file.
3. Ensure that your code is well-commented, explaining major steps and logic.
4. A PowerPoint presentation on the Caesar Cipher and the XOR cipher last week.
   1. The pros and cons of each.
   2. Why use one over the other.
5. Q&A session over the last 2 submissions
6. Weekly individual engineering journal (PDF format).