# CIS7 Project Documentation Guide

In the documentation, provide at least 2 pages (single-space) that contains the following components of your course project:

1. Team name, members.
2. Project Information and details: (30 points)

* What problems are you solving in this project?
* What solutions are you implementing in the project?
* Provide explanation of calculations and algorithm implementation.
* What is the program objectives? Explain how your program is interacting with the user and its purpose.
* How is discrete structures implemented in the C++ program?
* What are the limitations of the program?
* Provide recommendation on improving the limitations of the program.

1. Flowchart OR Pseudocode. (30 points)

* Write the pseudocode for the program, from start to finish. Be sure to include decision-making branching.
* If you choose to do flowchart, use standard shapes for flowchart, be sure to include decision-making branching. You can use web-based tool such as Draw.io to build your flowchart.

Project Documentation

1. Beethoven Nguyen
2. The Course Project I have chosen is Case III, the Vigenere Cipher. For this project, I must create a C++ program that encrypts and decrypts a message of the user’s choices. I’ll be using the string “BEETHOVEN” as the message I’ll be encrypting and the keyword I’ll use for the decryption is ‘ERICA.” So far, I know that I will be making three string functions that will generate the key, encrypting the message, and then use the key to decrypt the message itself. I know I’ll be using “Ei=(Pi+Ki)%26” as the the encryption formula and the decryption formula will be “Di=(Ei-Ki+26)%26.” For the Keygen function, I’m thinking of using a WHILE loop since, I’m more familiar with it due to my recent Python class. I know that a FOR loop would work as well, but I find that the while loops helps me keep things more organized and simple for myself.

I’ll be specifically looking at my notes, labs and the in class assignment on Cryptography to help me with coding this. I had originally thought of doing the Casino Blackjack Case, but the cipher project had come a lot more natural to me when it came to understanding how the code worked. One of the algorithms that are simple enough for me to implement and understand is to have the key and string both use said formulas that were already described. I’m thinking of something like:

(string[alpha] + keygen)%26

which would be the code for the encryption algorithm. The decryption algorithm would look something like:

(encrypted text[alpha] – keygen +26)%26, which is essentially, the formulas that were already provided but in a slight pseudocode format. My main concern is getting the keygen to work. It should look something liks this:

while (key.size() …..)

key.push\_back(key[alpha])

++alpha

if …

I’m struggling to see what goes pass my if line but (x==1) or alpha = 0 should be the lines I choose to use. I might have to add both in to make it work but I will test them with one or the other first.

I believe my program will be wrote very one dimensionally. Each function will serve it’s main purpose but when it comes to their improvements maybe the while loop could just be replaced with a more simple for loop. I prefer the while loop since my Python class helped me become more familiar with it.

1. FlowChart:
   1. My flow chart may contain shapes that don’t match so it can fit within one – two pages:
   2. I had just tried to make the flowchart using the MS word provided shapes but for the most part I believe this shows my pathing when it comes to what I want the direction of my code to look like.

Driver Function/ main() function

string = BEETHOVEN

keyword = ERICA

DECLARING THE MAIN FUNCTIONS

Di=(Ei-Ki+26)%26

wrote as a for() loop as well

Ei=(Pi+Ki)%26

wrote as a for() loop

while() loop

Decryption Function

Encryption Function

Key Generator AKA \*keygen\*

START