**Cryptography.** The science of developing secret codes has interested many people for centuries. Some of the simplest codes involve replacing a character, or a group of characters, with another character, or group of characters. To easily decode these messages, the decoder needs the “key” that shows the replacement characters. For your second project you will write two programs that do the following:

**1**. Write a program to implement a simple code that replaces each character by another character that is a fixed number of positions away in the collating sequence. For example, if each character is replaced by the character that is two characters to the right, then the letter ‘a’ is replaced by the letter ‘c’, the letter ‘b’ is replaced by the letter ‘d’, and so on. Your program should be able to read a text in a file (create your own, name it “message.txt”), and then generate a new file that contains the coded text using this encryption technique (name it “encryptMessage.txt”). Do not change the newline characters or the EOF character.

Your program should allow the user to choose the “key” for encryption, i.e. if the user enters 4 then each character is replaced by a character that is 4 characters to the right or if the user enters -4 then each character is replaced by 4 characters to the left. Use an ASCII character chart to make sure that you are replacing the characters properly.

Your program should also create a file called “key.txt” that contains the key used to encrypt the message.

**2.** Write a program that will decode the encryption scheme in problem 1. Test your program using the files generated in 1.

**What to turn in:** For this project you will only need to turn in the code (just like you have done for home works and project 1) and the text files used/generated for part 1. Your \*.c file must be well documented, i.e. you must include comments throughout the program. The code must readable i.e. user proper spacing and indentation. I will be testing your programs using the files you provide as well as my own message file.