**CS47: Section 1, Fall 2020**

**Program #4: Encryption Library (100 Points)**

**Due Date: Dec 3, 2020**

Description:

You are responsible to write an assembly function for an encryption library. This function will encrypt or decrypt a string of characters. It will use a simple ciphertext algorithm which do character shifting. This function will use the C function signature but everything within this function should be assembly code using the ASM block similar to the assembly example shown in class. This function should be built into a separate shared library (e.g. DLL). p4.cpp will contain the calling function and should not be modified.

Program Specification:

long s\_encrypt (char \*src, char\* dest, long en\_flag);

src – the original string

dest – the output string

en\_flag – 0 for encryption and 1 for decryption

This function returns the # of characters being changed in the string. If no change, it should return zero.

Additional Information:

* We only apply the change algorithm for (‘A’..‘Z’ to ‘a’..’z’). Other characters are left unchanged.
* All the alpha characters will toggle between upper and lower case.
* The input and output string are displayed on the screen.
* You MUST have detailed comments within the \_asm block for your algorithm.
* We will use a separate header file (key.h) for the default character shifting algorithm attributes.
* In key.h, you have 2 global variables within the DLL which can be updated via set/get functions.

long direction = 0; /\* 0 means forward, 1 means backward \*/

long shiftcount = 2; /\* number of character to shift \*/

Program Checklist:

You must submit files named encrypt.cpp and readme.p4 file. The rest of the files must be left unchanged or your program will fail our tests.