Steven Swanson

CSC 242 - Signature Assignment 3

Program: p8.7.cpp

Program will accept a key and any additional arguments as input. It will implicitly encrypt or decrypt the input and print the result on the console.

1. Prepare variables/constants:
   1. Alphabet - for use in cipher - this will be missing j to be synonomous with i
   2. Cipher 5x5 array
   3. boolean cipher\_built flag
   4. string data - Used as input..
2. For each argument, starting index 1 (skipping program name)
   1. if argument starts with “-k”, use remaining characters as a seed to generate the cipher, by first creating string with seed + alphabet, then starting at index 0, remove any duplicate characters. This will result in a 25 character string. Loop over the index, filling the 5x5 cipher array with each character in the string.  
      Finally, set cipher\_build to true
   2. if argument doesn’t start with “-k”, append it to data
3. Confirm Cipher is built and there was input to en/de crypt, otherwise print usage and exit with error code 1
4. create integer i for tracking position in input string
5. create output string.
6. if input data is not even, append “z” to the end of the input to ensure that entire input will be encrypted.
7. while I is less than the size of data input:
   1. extract first character, save if character is uppercase, it’s row position and column position in cipher.
   2. increment i
   3. extract second character, save if character is uppercase, it’s row position and column position in cipher.
   4. increment i
   5. determine first swap character:
      1. if first and second character’s row or column is the same position, return the second character.
      2. return the character in the same row as first, but in the column as second.
   6. determine second swap character:
      1. if first and second character’s row or column is the same position, return the firstcharacter.
      2. return the character in the same row as second, but in the column as first.
   7. If first and/or second was uppercase, conver character to uppercase.
   8. Create out\_a and out\_b strings converting first and second characters to string.
   9. append out\_a and out\_b to output string.
8. Write the result to the console.