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CSC 242

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28 Aug 2024

**Keyword Cipher Pseudocode**

This pseudocode describes how to encrypt or decrypt an input file into an output file using a keyword cipher.

Create constant string variable named ALPHABET with all uppercase letters

Create string function named create\_encrypted\_alphabet

Purpose: Create encrypted alphabet using keyword and remaining letters in reverse order

Parameter named keyword: keyword used for cipher

Return: a string containing the encrypted alphabet

Create string named encrypted\_alphabet

Create Boolean array of size 26 named used to hold used letters

For every character in keyword

Convert character to uppercase

If character is a letter and is not in the used array

Append character to encrypted\_alphabet

Update the element representing the current character in used to true

Create string named remaining\_letters

For every character in ALPHABET

If the character hasn’t been used yet

Append the character to remaining\_letters

Reverse remaining\_letters

Append remaining\_letters to encrypted\_alphabet

Return encrypted\_alphabet

Create void function named encrypt\_file

Purpose: Encrypt a file using an encrypted alphabet

Parameter named input: ifstream of input file

Parameter named output: ofstream of output file

Parameter named encrypted\_alphabet: string containing encrypted alphabet

Create string named line

For every line in input

Create string named encrypted\_line

For every character in line

If character is a letter

Convert character to uppercase

Find position of character in ALPHABET

Append encrypted\_alphabet[pos] to encrypted\_line

Else

Append character to encrypted\_line

Send encrypted\_line to output

Create void function named decrypt\_file

Purpose: Decrypt a file using an encrypted alphabet

Parameter named input: ifstream of input file

Parameter named output: ofstream of output file

Parameter named encrypted\_alphabet: string containing encrypted alphabet

Create string named line

For every line in input

Create string named decrypted\_line

For every character in line

If character is a letter

Convert character to uppercase

Find position of character in encrypted\_alphabet

Append ALPHABET[pos] to decrypted\_line

Else

Append character to decrypted\_line

Send decrypted\_line to output

Main Function:

If number of command line arguments does not equal 5

Output: “Usage: keywordcipher.cpp <-e|-d> -k<keyword> <input\_file> <output\_file>

Exit out of program

Create string named mode and set equal to argv[1]

Create Boolean variable named encryption\_mode and set equal to true

If mode is “-e”

Keep encryption\_mode equal to true

Else if mode is “-d”

Set encryption\_mode to false

Else

Output “Invalid mode: use ‘-e’ or ‘d’”

Exit out of program

Create string named keyword\_arg and set equal to argv[2]

Create string named keyword and set equal to substring of argv[2] after “-k”

If keyword\_arg doesn’t have “-k” or a keyword

Output “Invalid keyword: use -k<keyword>

Exit out of program

Create ifstream named in\_file

Open argv[3] in in\_file

If in\_file fails to open

Output “Unable to open input file”

Exit out of program

Create ofstream named out\_file

Open argv[4] in out\_file

If out\_file fails to open

Output “Unable to open output file”

Exit out of program

Create string named encrypted\_alphabet using the function create\_encrypted\_alphabet

If encryption\_mode is true

Use the function encrypt\_file

If encryption\_mode is false

Use the function decrypt\_file