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CS 31

1.

- Finding the algorithm to make the decoder

- Realizing that once you read in a file in a function and try reading it again ni another function, it will fail because it reached the end of the function in the beginning

-Having to pass so many C string arrays through functions in order to modify them and keep track which arrays are which

2.

SaveADoc() –

Just saves a document using the algorithm from the website

int findFirst(const char a[], int n, char target)

loop through the array to find the target

if the target is there, return the position

void rotateLeft(int positionToRemove, char array[])

loop through the array from the positionToRemove

move everything to the left

void removeMultipleSpaces(char noMoreSpaces[])

loop through the array

if the spot youre currently at is a space, and the spot after where youre at is a space, then rotateLeft to remove the space and stay at the spot youre at to check again

void cleanArray(char array[])

loop through an array and set everything to the ‘\0’ character to clean it

void normalizeCrib(char copiedCribToNormalize[])

if the copiedCribToNormalize is not a letter, then replace it by a space

Then call the removeMultipleSpaces to remove the multiple spaces

int moveToNextWord(int start, int row, char array[][81])

loop through starting from the start value until you hit a space

Everytime, increment some counter

Return the counter to add to something

bool mappingIsRight(char crib[], char cipherLine[], int decoding[27])

create an alphabet array that will be used for reference

initialize the decoding array to be -1 which means it is empty

if it is a character

if the position of the crib letter in the decode is -1 OR the value was there before OR the position of the cipher letter in the decoded is -1

then store the position of the letter of the crib into the decoded array position of the cipher letter

if 2 of the same letters map to 2 different things, then it cant be the crib and return false

bool cribNotFound(istream& cipherstream, const char crib[], int decoding[27], char unchanged[50][81])

make a copy of the crib

normalize the crib

if the normalized version of the crib is more than 80 letters, then return false

read in the cipher and sort it into a 2D array

if you see that the character is a newline or a null character, then put the null byte at the end and move to the next row and reset the column position to be at the beginning

copy the same 2D array into another 2D array. One will be fixed and the other one will be left alone in which you decode

normalize 1 of the 2D arrays let’s call it wordToCheck

loop through wordToCheck and compare it to the crib

if it matches, then put it the letters in the array and increase a count that you are going to compare with the size of the crib to see if the size of the arrays match and thus the size of the words match

If the size of the crib and the counter are the same, then call the mappingIsRight function to check to see if the letters only map to one other letter.

if there is a mismatch, then clean the array you are storing the matched word into and reset the position of the crib

You want to move onto the next word so increase your loop variable by the amount that the moveToNextWord function produces

bool decrypt(istream& cipherstream, const char crib[])

Get the unchanged array

Get your decoder index

Make an upper alphabet array and a lower alphabet array for reference

Go through the unchanged array and cout things that are a space or symbol

If it is a letter

If it is uppercase then make it lowercase and indicate whether or not you need to change it back to uppercase

Decode the letter if you can and cout the uppercase

If the decoder doesn’t have something to map the letter too, then just cout the letter as it originally was. If you need to change it back, change it back.

Test Cases:

If there are spaces in the beginning of the crib

If there are spaces at the end of the crib

If the crib is greater than 81 characters

If the crib is greater than 81 characters but it is less than 81 when you normalize it

If the crib is the empty character array

If the crib is exactly 81 characters

Seeing that 2 letters cannot map to the same thing