Table of Contents

[Project Overview 2](#__RefHeading___Toc4258_1370385848)

[Top Level Functions 3](#__RefHeading___Toc4260_1370385848)

[CodeDirT (Enumeration) 6](#__RefHeading___Toc2147_279954108)

# Project Overview

This program will encode and decode messages encrypted using a number of different ciphers. All messages to be encrypted are stored in the file codes.dat and all processing is done in batch mode.

This program will use an enumeration type to represent the direction to shift letters in the message.

**Structure Chart**

**

# Top Level Functions

The program works by calling one of two encryption routines. They share a common underlying shift routine. In general the commands are decided in Execute, the parameters are configured the next level down and the individual lines are encrypted the next level down. (Do\* vs \*Code in the structure chart.)

All routines eventually call shift, which assures characters are properly shifted.

**Main**

Narrative: Mostly responsible for reading in a command and executing it.

Open datafile

Get command from datafile

while command is valid

 Execute the command

 Get command from datafile

close the datafile

**Function:** Execute

Narrative: This function performs the high level execution of the command

Input: Command to execute (only command, not the rest of the input)

 Datafile

Output: none

Get the code type

Read in the key

Shift the key to lower case and strip all non alphabetic letters.

Based on the command and code type

 read in appropriate parameters

 execute the encoding

 DoShift

 DoCombine

**Function:** DoCombine

Narrative: Execute all of the combine encryption techniques.

Input: input file

 key

 direction of encryption

 type of combine

Output: none

Get lines to encode

Print coding type and lines to encode

compute the shift amount based on the type and direction.

Call CombineCode with correct parameters for each line of code.

**Function:** CombineCode

Narrative: This function does the actual encoding based on the parameters

Input: The string to encode

 The Key

 The direction to Encode

Output: The encoded string

For each character in the messages

 If the character is alpha

 Save if the letter is uppercase

 shift the lower case version of the letter based on the direction.

 If the letter was upper case, change the shifted letter to upper case

 add the shifted letter to the encoded message

 else

 add the character to the encoded message

return the encoded message

**Function:** StripKey

Narrative: This will change a string to all lower case letters, removing all non alphabetic characters.

Input: A string

Output: A string in the proper format

For each character in the input string

 if it is alphabetic

 add lower case version to output string

return output string

**Function:** DoShift

Narrative: Do the high level computations involved in a shift encryption

Input: The input file

 Shift amount

Output: none

Get lines to encode

Print encryption and lines to encrypt information

for each line in the messages

 read the line

 encrypt the line

 print out the encrypted line

**Function:** ShiftCode

Narrative: Encrypt an individual line

Input: The line to encrypt

 The amount to shift by

Output: The encrypted line

for each character in the message

 if the character is a letter

 Add the shift of the letter to the message

 else

 Add the unshifted letter to the message

return the encrypted message

**Function:** Shift

Narrative: This function shifts an individual character by a given amount.

Input: The lower case character to shift

 The amount to shift the character by.

Output: A shifted character remapped into the range a-z

Compute the current character position

Add the shift amount to the character position

If the position < 0 or > 26 bring back into that range.

Return the appropriate character.

# CodeDirT (Enumeration)

This is used by the program to communicate the ways characters are shifted.

Properties

FORWARD, REVERSE, ALTFORWARD, ALTREVERSE

Behaviors

This enumeration has no behaviors.

Discussion:

 CodeDirT is used to describe the direction to shift individual characters. There is no behavior.