

Due: Monday, September 23, 2024, 11:59 PM

CSCI 356: Lab-C2

Encoder/Decoder

Program Specification

Objectives

This homework covers:

- Reading from a file
- Writing to a file
- Functions
- Logic

Program Specification

Please create a C program named Encoder.c that will consist of a main function that prompts the user to determine if they wish to encode or decode a file (no loop required). You will develop at least (you are encouraged to create additional functions) 2 functions an encoder function that reads a plain-text message from a file and "encodes" it by replacing each character with a number and writes the encoded message to a file, and a decoder which reads an encoded plain-text message from a file and reverses the encoding and writes the decoded message to a file. Please begin by creating a txt file with simple text. The mapping from characters to numbers is given in the table below:

A or a	10
B or b	11
C or c	12
D or d	13
E or e	14
F or f	15
G or g	16
H or h	17
I or i	18
J or j	19
K or k	20
L or l	21
M or m	22
N or n	23
O or o	24
P or p	25
Q or q	26
R or r	27
S or s	28
T or t	29
U or u	30
V or v	31



W or w	32
X or x	33
Y or y	34
Z or z	35
SPACE	36
.	37
?	38
!	39

For example, "Hello world!" becomes 17 14 21 21 24 36 32 24 27 21 13 39

Implementing this table using switch logic is recommended.

The encoder function should read a file (you create) named unencoded.txt to encode and write the decoded message to a file named encoded.txt. Your file should be capable of encoding any plain text, so I would suggest making several test files to check your implementation. When you encode, ignore case; i.e. R and r both map to 27.

The decoder function can only be selected after you have an encoded message. The decoder function should automatically decode the file named encoded.txt and decodes encoded text the back to plain text, and prints the message to the console (you don't have to write a new file from decoder) in either upper or lower case, your choice.

Honors section/Extra-credit: the program should offer a menu allowing the user to enter text to be encoded or decoded with the result being displayed on the console, and that can optionally be written to a file where the user would be prompted to specify the file to be written. Your program should offer a menu allowing both functionalities.

Sample Output:

Welcome to the Encoder / Decoder program!

Please select d for decode or e for encode: **e**

Encoding file...

Encoding complete, shutting down...

or...

Welcome to the Encoder / Decoder program!

Please select d for decode or e for encode: **f**

f is not a valid selection...

Please select d for decode or e for encode: **d**

Decoding file...

The decoded message is: hello world!

Files to upload:

- Encoder.c

As always, you should fill in the author and description of the program in a comment block at the top of your program, and the source code must be indented properly and contain comments that describe important parts of the algorithm. The use of proper indentation is considered good programming style, and you are expected to use good programming style.

