PROG2007 - Programming II

Assignment 4

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Operating with Bits, the PreProcessor and Enumerated Types

Write a C program that implements a magic decoder ring using bit operations and encryption.

TASK REQUIREMENTS:

- Build a program that can encrypt and decrypt text using bit masks and XOR operations
- Implement a substitution cipher with the following table:

Start	A	B	C	D	E	F	G	H	I	J
Sub	Y	Z	A	B	C	D	E	F	G	H
Start	K	L	M	N	O	P	Q	R	S	T
Sub	I	J	K	L	M	N	O	P	Q	R
Start	U	V	W	X	Y	Z	!	@	#	$
Sub	S	T	U	V	W	X	.	>	!	"
Start	%	&	(	)	:	;	?	.	/	
Sub	#	$	&	'	?	@	=	,	-	
Start	0	1	2	3	4	5	6	7	8	9
Sub	8	9	0	1	2	3	4	5	6	7

    - Convert all input to uppercase before processing
- Use enumerated types for encrypt/decrypt modes
- Implement with proper file organization (separate .h and .c files)

SAMPLE OUTPUTS

NOTE: Your cipher shift is randomized - your output will differ from these examples

Encrypting a message:

```
C:\PROG2007\ASSIGN4\cmake-build-debug\ASSIGN4.exe
What operation would you like to perform (1 - Encrypt, 2 - Decrypt)?

1

So, you want to encrypt the message!
Please enter your message:
This is a top secret message that nobody should see.

The encrypted message is:
235 231 230 232 133 230 232 133 145 133 235 236 239 133 232 157 147 233 157 235 133 226 157 232 232 145 228 157 133 235
231 145 235 133 237 236 144 236 146 246 133 232 231 236 234 227 146 133 232 157 157 131

Process finished with exit code 0
```

Decrypting a message:

```
C:\PROG2007\ASSIGN4\cmake-build-debug\ASSIGN4.exe
What operation would you like to perform (1 - Encrypt, 2 - Decrypt)?
2

So, you want to decrypt the message!
Please enter your message:
235 231 230 232 133 230 232 133 145 133 235 236 239 133 232 157 147 233 157 235 133 226 157 23

The decrypted message is:
THIS IS A TOP SECRET MESSAGE THAT NOBODY SHOULD SEE.

Process finished with exit code 0
```

Bad input example:

```
What operation would you like to perform (1 - Encrypt, 2 - Decrypt)?
4

So, you do not know what you want!

Process finished with exit code 1
```

Submission Instructions

Submit via video recording demonstrating your working program as outlined in Brightspace.