

# ASSIGNMENT #4

## SUBJECT & BASIC INFORMATION

➡ Writing down a C++ program that performs Vigenere encryption/decryption using the English alphabet for an entered password and message entered from the keyboard

✚ The program has two main functionality: encryption and decryption

✚ The program encrypts/decrypts the message using the following Vigenere Cipher table given below:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
B	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A
C	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B
D	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C
E	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D
F	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E
G	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F
H	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G
I	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H
J	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I
K	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J
L	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K
M	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L
N	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M
O	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N
P	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Q	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
R	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
S	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
T	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
U	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
V	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
W	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
X	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	W	X
Y	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	W	X	Y
Z	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	W	X	Y	Z

## ➡ CALCULATION OF THE ENCRYPTED MESSAGE FOR AN EXAMPLE PASSWORD AND MESSAGE

- ✚ Rows of the table represent the letters of the password and columns of the table represent the letters of the message
- ✚ First row of the matrix is the letters of the English alphabet and the other rows should be assigned after calculation depending on the rule of the Vigenere table.
- ✚ Let the message be "SAKARYA UNIVERSITY" and password "SWE".
- ✚ For example, for the first three letters of the message, the encrypted message is "KWO..."
- ✚ If the length of the password is shorter than the message, it is repeated over and over throughout the message
- ✚ If the message has space character(s), these char(s) is/are not be considered.

## ➡ SAMPLE SCREEN OUTPUT

```

ENTER A PASSWORD...: SWE
ENTER A MESSAGE....:SAKARYA UNIVERSITY
-----
PASSWORD           : SWE
MESSAGE            : SAKARYA UNIVERSITY
-----
ENCRYPTED MESSAGE   : SWOSNCS QRARIJOMLU
DECRYPTED MESSAGE   : SAKARYA UNIVERSITY
-----

```

## REQUIREMENTS

- ➡ Define a **message** variable and get the value of it from the user.
  - ✚ Enter a message that only contains the letters of the alphabet and the space character
- ➡ Define a **password** variable and get the value of it from the user.
  - ✚ Enter a password that only contains the letters of the alphabet
- ➡ Write a function named **encrypt()**
  - ✚ This function gets the entered message and the password
  - ✚ This function calculated the encrypted message
  - ✚ This function returns the encrypted message
- ➡ Write a function named **decrypt()**
  - ✚ This function gets the encrypted message and the entered password
  - ✚ This function calculated the decrypted message
  - ✚ This function returns the decrypted message

## RULES & EVALUATION

- ➡ Using a **goto** statement is strictly prohibited.
- ➡ Each C++ file should include this comment lines below at the beginning of the C++ file

```
//*****
//**
//**      STUDENT NAME.....:      **
//**      STUDENT NUMBER.....:    **
//*****
```

- ➡ You should compile your codes with MingGW or GCC. (NOTE: If you use another compiler, please test your codes with these compilers before uploading your homework on system)
- ➡ **Deadline:** Control SABIS system
- ➡ A report should be prepared for each assignment
  - ✚ First page of the report should be a cover page including student information (name, surname, number, lecturer, course name, ...)
  - ✚ The content of the assignment (a brief explanation of your program) should be included after the cover page
  - ✚ At the end of the report, there should be an **'honor code'** signed by yourself.
- ➡ You should upload only your C++ file (.cpp file) and your report (in pdf format) together before deadline.
- ➡ Evaluation Criteria
  - ✚ Comment lines (student information, explaining operations like variable names, if statements, loops, etc. )
  - ✚ Obeying the variable declaration rules
  - ✚ Being readable (intendation, comments, etc.)
  - ✚ Correct compilation of the code
  - ✚ Reporting (cover page, content, honor code, etc.)
  - ✚ ...