

Cryptography and Note

The purpose of the program

The program is focusing on the information security and the way to hide information. It uses the Vigenere cipher is a method of encrypting alphabetic text by using a series of different Caesar ciphers based on the letters of a keyword. It is a simple form of polyalphabetic substitution. The program performs as note program that allows the user to write a note on a date and export note between dates. In addition, we know that the binary file is not readable but if we can the file type to .txt, it will be readable some of its information. Therefore, before saving the file, the program will decode all information and then save it.

Rules/guidelines

1. Superclass is accountOrganize
2. Subclasses are developTool and User
3. Export to a file with a structure
4. Binary tree search is used for search a word in a note and count how many time the word is repeated
5. SearchAbleVector is used for search and edit the word
6. Virtual function is used for print menu
7. Recursion is in binary tree search
8. Overload operators are used in many classes such as date class and accountOrganize class

9. The superclass and subclasses are created as pointers, so it allows the program to delete any time

10. Static variables are used in AccountOrganize class

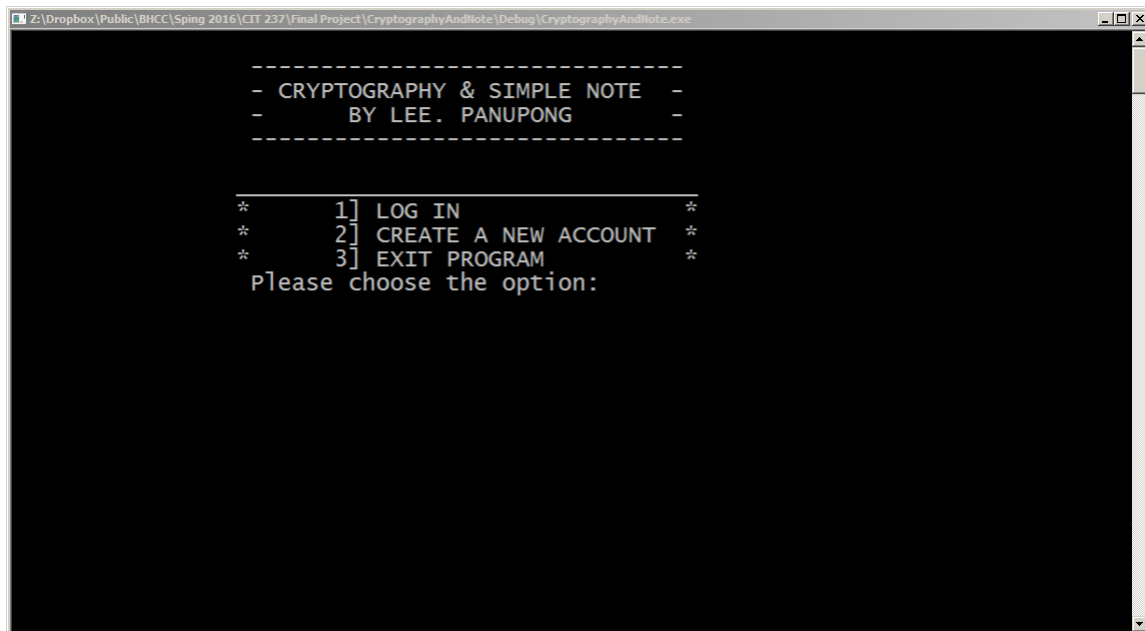
Vigenere Cipher Table (Use for decryption or encryption)

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

Testing screen

BEGIN SCREEN (choose 1-3)

1. Login - the input username and password must be matched
2. Create a new account - to create new account
3. Exit program



The screenshot shows a Windows command prompt window with the following text:

```
Z:\Dropbox\Public\BHCC\Sping 2016\CT 237\Final Project\CryptographyAndNote\Debug\CryptographyAndNote.exe

-----
- CRYPTOGRAPHY & SIMPLE NOTE -
- BY LEE. PANUPONG -
-----

*      1] LOG IN      *
*      2] CREATE A NEW ACCOUNT  *
*      3] EXIT PROGRAM *
Please choose the option:
```

USER SCREEN (choose 1-5)

- Display the user calendar

- Options:

1. View calendar - to view calendar on a specific month and view a note
2. Create new note - to create new note. In case, a note is already existed on the same day. Then it asks for replace it
3. View and export notes - the user can view a note or notes in a month and can export it or them.
4. Edit note - allow the user to edit the note
5. Logout (delete user's object)

```
Z:\Dropbox\Public\BHCC\Sping 2016\CTI 237\Final Project\CryptographyAndNote\Debug\CryptographyAndNote.exe

>Welcome!! Panuponglee Lee
Status: User

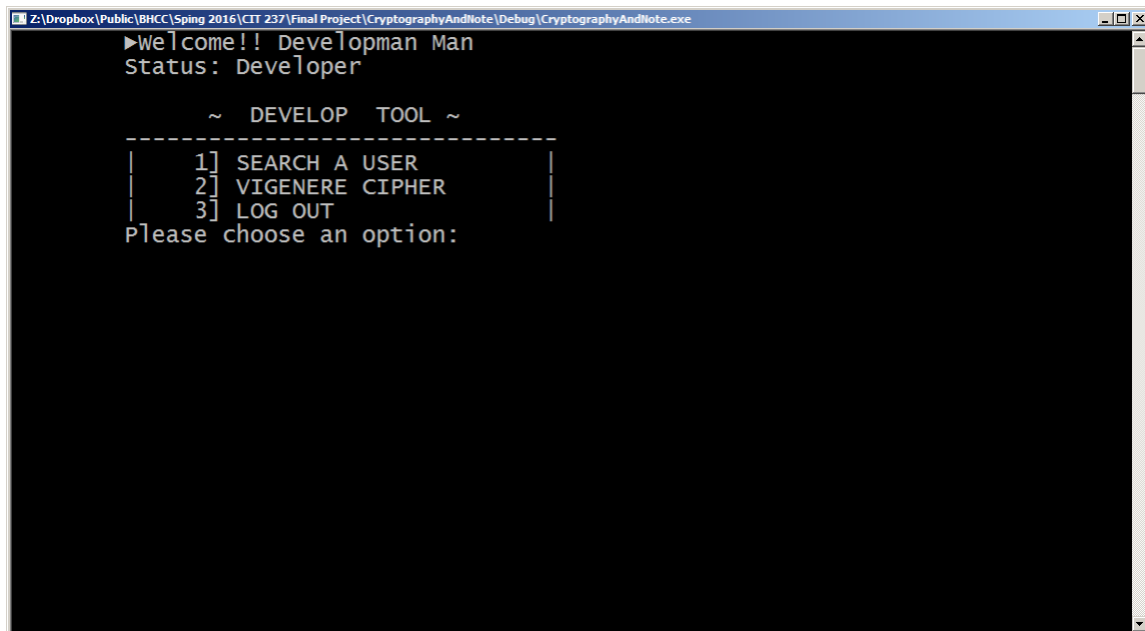
*****
*      May 2016      *
*****

  S      M      T      W      T      F      S
-----
  1      2      3      4      5      6      [ 7]
  8      9     10     11     12     13     14
 15     16     17     18     19     20     21
 22     23     24     25     26     27     28
 29     30     31

~  MAIN MENU  ~
-----
[ 1] VIEW CALENDAR
[ 2] CREATE NEW NOTE
[ 3] VIEW & EXPORT NOTE(S)
[ 4] EDIT NOTE
[ 5] LOG OUT
Please choose an option:
```

DEVELOP SCREEN (choose 1-3)

1. Search a user - to search a user's information by input the username which is been looking for.
2. Vigenere Cipher - it is a mini cryptography performance
3. logout



```
Z:\Dropbox\Public\BHCC\Sping 2016\CTI 237\Final Project\CryptographyAndNote\Debug\CryptographyAndNote.exe
>Welcome!! Developman Man
Status: Developer

      ~  DEVELOP  TOOL  ~
-----
| 1] SEARCH A USER |
| 2] VIGENERE CIPHER |
| 3] LOG OUT       |
Please choose an option:
```

Pseudocode

MAIN FUNCTION

- Create AccountOrganize's object as a pointer
- Create ValidateInput's object to get only valid input
- Create Date's object to get local date or setDate
- Calling printTitle() function to print Program's title
- Calling printMenu() in the account object to cout Print the account menu
- cin Get selection from input object
- switch to which case is matched the selection
 - case 1 Login
 - Clear screen
 - cout Display ask for username and password
 - cin stream to account object to set username and password
 - If the program cannot find the username, process it to cout display a message by calling isExistedAccount() in the account object to check
 - Else if the program found the username and password, process it
 - If the input account is user
 - Create User class's object as a pointer that can be deleted
 - cout Display user information
 - Display current calendar by calling printUserCalendar() in the User's object
 - Calling printMenu from the User class's object
 - Get a selection from the user
 - While the selection is greater than 0
 - Switch to the case which is matched with the selection
 - case 1 clear screen
 - Print Program's title
 - Calling getIntInRange() to get only number 1 – 12
 - Calling setMonth() in the date object to set the month and check it
 - Calling getIntInRange() to get only number 1900 – 2200
 - Calling setYear() in the date object to set the year and check it
 - Calling printUserCalendar() in the user object to print the calendar
 - case 2 clear screen
 - cout Print Program's title
 - Calling userCreateNote function in the User's object to create or
 - case 3 clear screen
 - Print Program's title
 - Calling userCreateNote function in the User's object to replace the
 - case 4 clear screen
 - cout Display the user note and allow the user to export them to a
 - cout Display the view and export options
 - Get the selection from validationInput's object
 - If the selection is not 3
 - Calling the viewAndExportNote() function from the User's object
 - case 5 clear screen
 - cout Display and let the user to confirm again
 - If a user hit enter, exit the program
 - Delete the User's object pointer
 - If the account is a developer
 - Create the developer's object as a pointer
 - cout Display the developer information
 - cout Display the printMenu() from the developer object
 - cin Get the selection from validationInput's object
 - While the selection is greater than zero
 - Switch to the case which matches the selection
 - case 1 clear the screen
 - Get a username for searching the user
 - Calling the searchUserInfo() function to search and
 - case 2 clear the screen
 - Mini Vigenere Cipher is a tool to try to decrypt and
 - replace the note
 - note
 - file
 - print out user's information
 - encrypt
 - cout Display ask for a text

- cout Display ask for a keyword
 - cout Print the final text either plain text or cipher text
- case 3 logout
 - cout Display and let the developer to confirm again
 - If a user hit enter, exit the program
 - Delete DevelopTool object
- case 2 Calling createAccount() function to create AccountOrganize's object to create new unexisted account
- case 3 Exit the program, let the user to confirm it again