# Objective

Practice the cumulative sum and char data type.

# Problem

You want to create an app to encrypt the text messages that you send to your friends. Once your friend gets the message, the message should be decrypted so that your friend understands it. To implement this app Caesar cipher algorithm should be used. Caesar Cipher text is formed by rotating each letter by a given amount. For example, if you rotate the letter ‘A’ by 3 you should get ‘D’. rotate ‘B’ by 3 you should get ‘E’. Toward the end of the alphabet you wrap around, for example if you rotate ‘X’ by 3 you should get ‘A’. rotate ‘Y’ by 3 you should get ’B’

# Important note

* The pseudocode for the most of the methods is provided. Please read each line carefully and convert it to a java line of code.
* Do incremental programming, implement one method at a time, compile it then go to the next method.

# Methods

**Public static void main (String[] args)**

* Create a scanner object
* Call the method run

**public static void go (Scanner kb)**

* Ask the user how many times they want to use the app
* Create a for loop
* //for loop begins
  + Call the method menu
  + Ask the user’s choice and store it in a variable. Use the following code but use your own variable name:
    - Prompt the user to enter the choice
    - String word = kb.nextLine();
    - char choice = word.charAt(0); (must change the names s and choice)
  + If the user ‘s choice is ‘e’ means decrypting the message

If(choice == ‘e’)

{

* + - Ask the user to enter a message
    - Ask the user to enter a key
    - Call the method encrypt
    - Display the encrypted and decrypted message

}//end if

* + else if the user’s choice is ‘d’

{

* + - Ask the user to enter a message
    - Ask the user to enter a key
    - Call the method decrypt
    - Display the decrypted

} //end if/else

* + else
    - Display invalid choice

} //end for loop

**Public static void menu ()**

* Display the menu for the user (see the output)

**Public static String encrypt (String message, int key)**

**{**

* Convert the message to uppercase using the method toUpperCase from the String class
* Declare a variable of type string called encrypted to hold the encrypted message, initialize it to “”;

Create a for loop to go through each letter of the message

{

Get each letter and store it in a variable of type char called letter , use the charAt method: char letter = message.charAt(i)

If the letter is between ‘A’ and ‘Z’

{

Add the key to the letter: letter = cletter + key;

}//end if

//checking for wrap around

If letter is greater than ‘Z’

{

Subtract 26 from letter

}//end if

else

{

Add 26 to letter

}//end else

Add the content of the variable letter to the variable encrypted (cumulative sum)

}//end of the loop

return encrypted

}//end of the method

**Public static String decrypt (String message, int key):**

{

Declare a variable of type String called decrypted and initialize it to “”

Create a for loop to go through each letter of the string variable message

{

Get the character at each index char letter = message.charAt(i)

If ( the letter is : )

{

decrypted = decrypted + “ “;

Continue;

}

If( the variable letter is between ‘A’ and ‘Z’)

{

Subtract the value of the variable key from the variable letter

}

If (the content of the variable letter is less than ‘A’) //check for wrap around

{

Find the difference between the letter ‘A’ and the variable letter :

int difference = ‘A’ – letter;

letter = (char)(‘Z’ – difference + 1)

}

else if letter > ‘Z’ //

{

Int difference = ‘Z’ - letter

letter = (char)((‘A’ + difference + 1)

}

Concatenate the variable c to the variable decrypted

}//end for

Return decrypted

}//end of the method

# Requirements

* Must provide all the methods
* Must generate the given output
* Must follow the naming rules, and conventions
* Must follow the indentation rules
* Must change all the variable names to your own choice.

# Sample output:

How many times to you want to use the app: 5  
  
 \*\*\*\*\*\*\*\*   
Enter e to encrypt your message  
Enter d to decrypt your message  
 \*\*\*\*\*\*\*\*   
Enter your choice ---> e  
Your message? ddddeeee  
Encoding key? 9  
The encrypted message is : MMMMNNNN  
 \*\*\*\*\*\*\*\*   
Enter e to encrypt your message  
Enter d to decrypt your message  
 \*\*\*\*\*\*\*\*   
Enter your choice ---> e  
Your message? hi dr smith i need to make am appointmnet to talk about my health issues  
Encoding key? 5  
The encrypted message is : MN:IW:XRNYM:N:SJJI:YT:RFPJ:FR:FUUTNSYRJSY:YT:YFQP:FGTZY:RD:MJFQYM:NXXZJX  
 \*\*\*\*\*\*\*\*   
Enter e to encrypt your message  
Enter d to decrypted your message  
 \*\*\*\*\*\*\*\*   
Enter your choice ---> d  
Your message? MN:IW:XRNYM:N:SJJI:YT:RFPJ:FR:FUUTNSYRJSY:YT:YFQP:FGTZY:RD:MJFQYM:NXXZJX  
Encoding key? 5  
The decrypted message is:   
HI DR SMITH I NEED TO MAKE AM APPOINTMENT TO TALK ABOUT MY HEALTH ISSUES  
 \*\*\*\*\*\*\*\*   
Enter e to encrypt your message  
Enter d to decrypted your message  
 \*\*\*\*\*\*\*\*   
Enter your choice ---> e  
Your message? here is my information  
Encoding key? 12  
The encrypted message is : TQDQ:UE:YK:UZRADYMFUAZ  
 \*\*\*\*\*\*\*\*   
Enter e to encrypt your message  
Enter d to decrypted your message  
 \*\*\*\*\*\*\*\*   
Enter your choice ---> d  
Your message? TQDQ:UE:YK:UZRADYMFUAZ  
Encoding key? 12  
The decrypted message is:   
HERE IS MY INFORMATION