U18CO018

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CNS

Lab Assignment 7

Write a program to implement Vigenère Cipher. Your program must work interactively asking the user to input the key and the plaintext/cipher text and the mode of operation (encrypt/decrypt). The program then must encrypt/decrypt the plaintext/cipher text and the display the output.

```
#include <bits/stdc++.h>

using namespace std;

string prepare(int n, string keyword) {
    int m = keyword.length();
    string key = "";
    for (int i = 0; i < n; i++) {
        key += keyword[i % m];
    }
    return key;
}

string encryption(string plainText, string keyword) {
    string cipherText = "";
    int n = plainText.length();
    string key = prepare(n, keyword);
    cout << "Key: " << key << endl;
    for (int i = 0; i < n; i++) {
        cipherText += (((plainText[i] - 'A') + (key[i] - 'A')) % 26 + 'A');
    }
    return cipherText;
}

string decryption(string cipherText, string keyword) {

    string plainText = "";
    int n = cipherText.length();
    string key = prepare(n, keyword);
    cout << "Key: " << key << endl;
    for (int i = 0; i < n; i++) {
        plainText += ((cipherText[i] - key[i] + 26) % 26 + 'A');
    }
```

```
    return plainText;
}

int main() {
    bool run = true;
    while (run) {
        cout << "\nPress 1 for encryption , 2 for decryption and 3 for exit\n"
;
        int input;
        cin >> input;
        cout << "\n";
        switch (input)
        {
            case 1:
            {

                string plainText;
                cout << "Enter Plain Text: ";
                cin >> plainText;

                string keyword;
                cout << "Enter keyword: ";
                cin >> keyword;

                transform(plainText.begin(), plainText.end(), plainText.begin(
), ::toupper);
                transform(keyword.begin(), keyword.end(), keyword.begin(), ::t
oupper);

                string cipherText = encryption(plainText, keyword);
                cout << "Cipher Text: " << cipherText << endl;
                break;
            }
            case 2:
            {
                string cipherText;
                cout << "Enter Cipher Text: ";
                cin >> cipherText;

                string keyword;
                cout << "Enter keyword: ";
                cin >> keyword;

                transform(cipherText.begin(), cipherText.end(), cipherText.beg
in(), ::toupper);
                transform(keyword.begin(), keyword.end(), keyword.begin(), ::t
oupper);
                string plain = decryption(cipherText, keyword);
```

```
                cout << "Plain Text : " << plain << endl;
                break;
            }
            case 3:
            {
                run = false;
                cout << "Thanks for running the program\n";
                break;
            }
            default:
            {
                cout << "Wrong input!!! Enter Again.\n";
            }
        }
    }
}
```

Output

```
E:\Asem7\CNS\Assignment7>g++ vigenere.cpp

E:\Asem7\CNS\Assignment7>a.exe

Press 1 for encryption , 2 for decryption and 3 for exit
1

Enter Plain Text: THISISPLAINTEXTWHICHISGOINGTOENCRYPT
Enter keyword: CIPHER
Key: CIPHERCIPHERCIPHERCIPHERCIPHERCIPHER
Cipher Text: VPXZMJRTPPRKGFIDLZEPXZKFKVVASVPKGFTK

Press 1 for encryption , 2 for decryption and 3 for exit
2

Enter Cipher Text: VPXZMJRTPPRKGFIDLZEPXZKFKVVASVPKGFTK
Enter keyword: CIPHER
Key: CIPHERCIPHERCIPHERCIPHERCIPHERCIPHER
Plain Text : THISISPLAINTEXTWHICHISGOINGTOENCRYPT

Press 1 for encryption , 2 for decryption and 3 for exit
3
```

```
Press 1 for encryption , 2 for decryption and 3 for exit
1

Enter Plain Text: GOODTOSEEYOU
Enter keyword: AYUSH
Key: AYUSHAYUSHAY
Cipher Text: GMIVAOQYWFOS

Press 1 for encryption , 2 for decryption and 3 for exit
2

Enter Cipher Text: GMIVAOQYWFOS
Enter keyword: AYUSH
Key: AYUSHAYUSHAY
Plain Text : GOODTOSEEYOU

Press 1 for encryption , 2 for decryption and 3 for exit
3
```