

Q: Write a program to encrypt and decrypt Plain text using Vernam Cipher

Ans:

Source Code

```
#include<iostream>

#include <string>

using namespace std;

// function to encrypt the plain text
void Encrypt(string key, string &s){

    for(int i=0;i<s.length();i++){ // iterating over plain text
        // checking if character is an alphabet
        if(!((s[i]>='a' && s[i]<='z') || (s[i]>='A' && s[i]<='Z')))) continue;

        int first_char = islower(s[i]) ? 'a' : 'A',
            //converting range from ascii to 0-25
            rel_s = s[i]- first_char,
            rel_key = key[i]- first_char;

        //encrypting text
        rel_s+=rel_key;
        rel_s%=26;

        //changing range back to ascii and storing
        s[i]=rel_s + first_char;
    }
}
```

```

// function to decrypt the plain text
void Decrypt(string key,string &s){

    for(int i=0;i<key.length();i++){// iterating over plane text

        // checking if character is an alphabet
        if(!((s[i]>='a' && s[i]<='z') || (s[i]>='A' && s[i]<='Z')) continue;

        int first_char = islower(s[i]) ? 'a' : 'A',

            // decrypting text
            rel_s = s[i]- key[i];

            if(rel_s<0){
                rel_s+=26;
            }

            //changing range back to ascii and storing
            s[i]=rel_s + first_char;
        }
    }

int main(){

    string input, key;

    int choose;

    cout<<"Enter the plain test:\t";

    getline(cin, input); // taking plain text input

    cout<<"Enter Key of length "<<input.size()<<":\t";

    getline(cin,key); // taking key input

    cout<<"To Encrypt enter 1.\nTo Decrypt enter 2.\n";

    cin>>choose; // taking command to encrypt or decrypt

    if(choose==1){

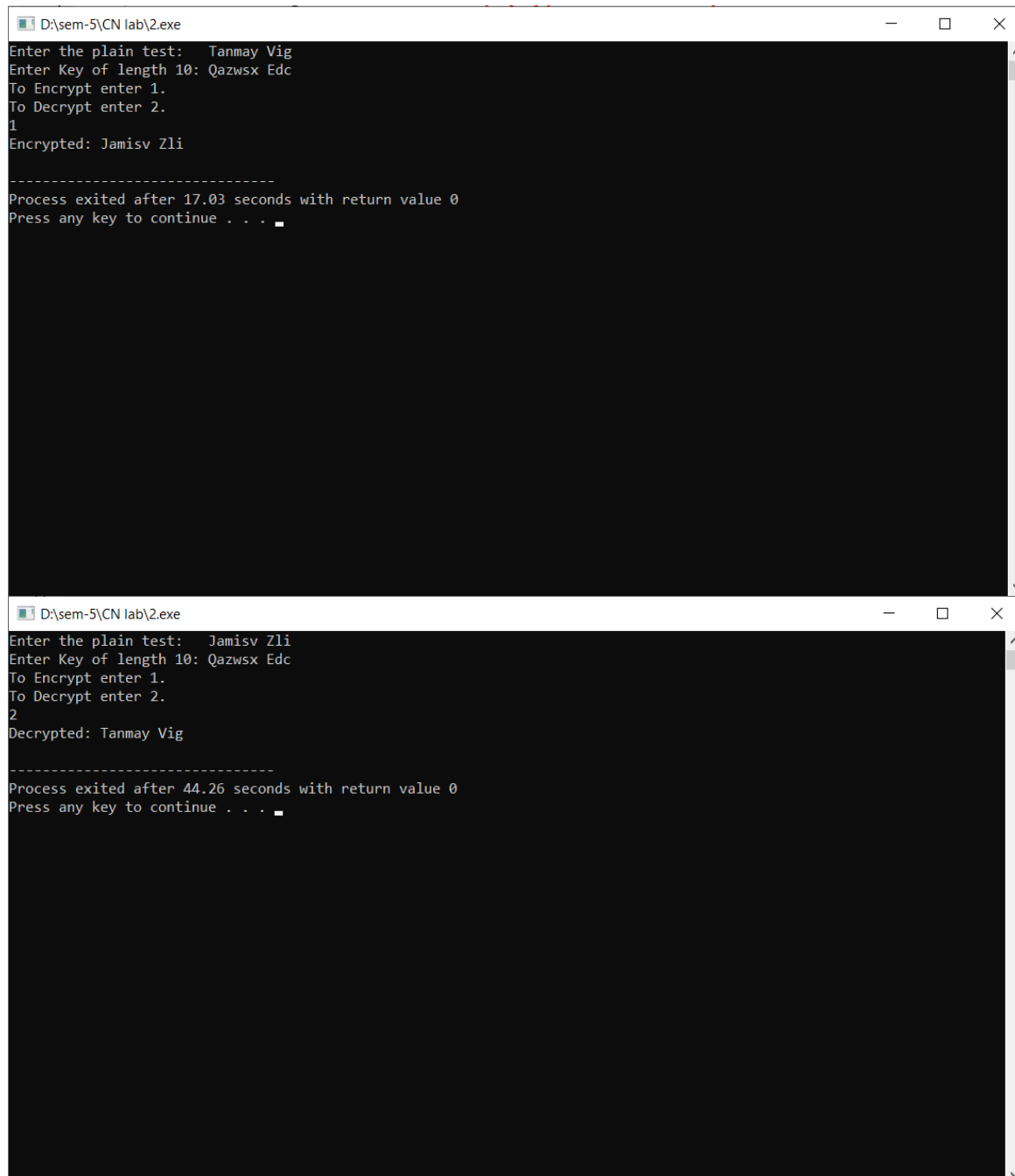
        Encrypt(key,input);

        cout<<"Encrypted: "<<input<<endl;
    }
}

```

```
}  
  
else{  
  
    Decrypt(key,input);  
  
    cout<<"Decrypted: "<<input<<endl;  
  
}  
  
return 0;  
  
}
```

Output:



```
D:\sem-5\CN lab\2.exe  
Enter the plain test:  Tanmay Vig  
Enter Key of length 10: Qazwsx Edc  
To Encrypt enter 1.  
To Decrypt enter 2.  
1  
Encrypted: Jamisv Zli  
  
-----  
Process exited after 17.03 seconds with return value 0  
Press any key to continue . . .  
  
D:\sem-5\CN lab\2.exe  
Enter the plain test:  Jamisv Zli  
Enter Key of length 10: Qazwsx Edc  
To Encrypt enter 1.  
To Decrypt enter 2.  
2  
Decrypted: Tanmay Vig  
  
-----  
Process exited after 44.26 seconds with return value 0  
Press any key to continue . . .
```