

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 . . .
```