**CNS LAB**

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# Assignment 4

**Aim - Given the plain text, encrypt it using Vigenere Encryption Algorithm**

**Vigenere Cipher Encryption Algorithm**

It uses a simple form of polyalphabetic cipher

In this cipher we add the respective character of a key in the plain text and substitute the character.

**Code:**

#include<bits/stdc++.h>

using namespace std;

int main()

{

    int choice;

    cout << "Choose an option:\n";

    cout << "1. Encryption\n";

    cout << "2. Decryption\n";

    cout << "Enter your choice (1 or 2): ";

    cin >> choice;

    cin.ignore(); *// Clear the newline character from the input buffer*

    if (choice == 1)

    {

*// Encryption*

        string plainText, key, cipherText;

        cout << "\nEnter plain text: ";

        getline(cin, plainText);

        cout << "\nEnter key: ";

        getline(cin, key);

*// Removing spaces and converting to lowercase from plaintext*

        string temp = "";

        for (int i = 0; i < plainText.size(); i++)

        {

            if (plainText[i] != ' ')

                temp += plainText[i];

        }

        plainText = temp;

        for (int i = 0; i < plainText.size(); i++)

        {

            if (plainText[i] >= 'A' && plainText[i] <= 'Z')

                plainText[i] += 32; *// Convert to lowercase*

        }

*// Removing spaces and converting to lowercase from key*

        string temp2 = "";

        for (int i = 0; i < key.size(); i++)

        {

            if (key[i] != ' ')

                temp2 += key[i];

        }

        key = temp2;

        for (int i = 0; i < key.size(); i++)

        {

            if (key[i] >= 'A' && key[i] <= 'Z')

                key[i] += 32; *// Convert to lowercase*

        }

*// Encryption*

        for (int i = 0; i < plainText.size(); i++)

        {

            int val = plainText[i] - 'a' + key[i % key.size()] - 'a';

            cipherText += 'a' + (val % 26);

        }

        cout << "\nCipher Text: " << cipherText << endl;

    }

    else if (choice == 2)

    {

*// Decryption*

        string cipherText, key;

        cout << "\nEnter cipher text: ";

        getline(cin, cipherText);

        cout << "\nEnter key: ";

        getline(cin, key);

*// Removing spaces and converting to lowercase from key*

        string temp2 = "";

        for (int i = 0; i < key.size(); i++)

        {

            if (key[i] != ' ')

                temp2 += key[i];

        }

        key = temp2;

        for (int i = 0; i < key.size(); i++)

        {

            if (key[i] >= 'A' && key[i] <= 'Z')

                key[i] += 32; *// Convert to lowercase*

        }

*// Decryption*

        string decrypted = "";

        for (int i = 0; i < cipherText.size(); i++)

        {

            int val = cipherText[i] - 'a' - (key[i % key.size()] - 'a') + 26;

            decrypted += 'a' + (val % 26);

        }

        cout << "\nAfter decryption: " << decrypted << endl;

    }

    else

    {

        cout << "Invalid choice. Please choose 1 or 2." << endl;

    }

    return 0;

}

**Output:**

