Suraj Raju Lokapure | 2020BTECS00081 | B5 batch

CNS lab | Experiment 05

Aim: To implement Vigenere cipher

Theory: The Vigenère Cipher is a polyalphabetic substitution cipher that uses a keyword to shift letters in the plaintext. The keyword is repeated to match the length of the message, and each letter of the keyword determines the shift value.

Code:

```
#include <bits/stdc++.h>
using namespace std;

string alpah_lower(string str) {
    for (char c : str) {
        if (isalpha(c)) {
            c+=tolower(c);
        }
    }
    return str;
}

string encrypt(string text, string key) {
    string cipher;
    for (int i = 0; i < text.size(); i++) {
        int val = text[i] - 'a' + key[i % (key.size())] - 'a';
        cipher+=('a' + (val % 26));
    }
    return cipher;
}

string decrypt(string cipher, string key) {
    string text;
    for (int i = 0; i < cipher.size(); i++) {
        int val = cipher[i] - 'a' - (key[i % (key.size())] - 'a');
        text += ('a' + (val + 26) % 26);
    }
    return text;
}

int main() {
    int choice;
    cout << "1. Encrypt\n2. Decrypt\nEnter your choice: ";
```

```
    cin >> choice;
    cin.get();

    if (choice == 1) {
        string plain, key;
        cout << "\nEnter plain text: ";
        getline(cin, plain);
        plain = alpah_lower(plain);

        cout << "\nEnter key: ";
        getline(cin, key);

        string cipher = encrypt(plain, key);

        cout << "\nEncrypted text is : " << cipher << endl;
    } else if (choice == 2) {
        string cipher, key;
        cout << "\nEnter cipher text: ";
        getline(cin, cipher);
        cipher = alpah_lower(cipher);

        cout << "\nEnter key: ";
        getline(cin, key);

        string plain = decrypt(cipher, key);

        cout << "\nDecrypted text is : " << plain << endl;
    }

    return 0;
}
```

Output:

```
PS C:\Users\shree\Documents\My workspace 2\CNS lab\Exp5> cd
e_cipher } ; if ($?) { .\vigenere_cipher }
1. Encrypt
2. Decrypt
Enter your choice: 1

Enter plain text: agentonthemission

Enter key: secret

Encrypted text is : skgexhfxjvqbkwkfr
PS C:\Users\shree\Documents\My workspace 2\CNS lab\Exp5> cd
e_cipher } ; if ($?) { .\vigenere_cipher }
1. Encrypt
2. Decrypt
Enter your choice: 2

Enter cipher text: skgexhfxjvqbkwkfr

Enter key: secret

Decrypted text is : agentonthemission
PS C:\Users\shree\Documents\My workspace 2\CNS lab\Exp5>
```