1. To implement the Vigenere Cipher substitution technique using C program.

**Program:**

#include <stdio.h>

#include <string.h>

#include <ctype.h>

void encrypt(char \*plaintext, char \*key) {

int i, j;

int plaintextLen = strlen(plaintext);

int keyLen = strlen(key);

for (i = 0, j = 0; i < plaintextLen; i++, j++) {

if (j == keyLen) {

j = 0;

}

if (isalpha(plaintext[i])) {

if (isupper(plaintext[i])) {

plaintext[i] = 'A' + (plaintext[i] - 'A' + key[j] - 'A') % 26;

} else {

plaintext[i] = 'a' + (plaintext[i] - 'a' + key[j] - 'a') % 26;

}

}

}

}

void decrypt(char \*ciphertext, char \*key) {

int i, j;

int ciphertextLen = strlen(ciphertext);

int keyLen = strlen(key);

for (i = 0, j = 0; i < ciphertextLen; i++, j++) {

if (j == keyLen) {

j = 0;

}

if (isalpha(ciphertext[i])) {

if (isupper(ciphertext[i])) {

ciphertext[i] = 'A' + (ciphertext[i] - 'A' - (key[j] - 'A') + 26) % 26;

} else {

ciphertext[i] = 'a' + (ciphertext[i] - 'a' - (key[j] - 'a') + 26) % 26;

}

}

}

}

int main() {

char plaintext[100], key[100];

printf("Enter plaintext: ");

scanf("%s", plaintext);

printf("Enter key: ");

scanf("%s", key);

encrypt(plaintext, key);

printf("Encrypted Text: %s\n", plaintext);

decrypt(plaintext, key);

printf("Decrypted Text: %s\n", plaintext);

return 0;

}

