#include<iostream>

#include<string.h>

using namespace std;

int main(){

char msg[100];

char key[100];

//get input from user for msg

cout << "The program will encrypt and decrypt a message.\n";

cout << "Please enter the message you wish to encrypt: " ;

cin.getline(msg,100);

cout << endl;

cout<< msg << endl;

//get input from user for key

cout << "Please enter the key you wish to use: " ;

cin.getline(key,100);

cout << endl;

cout << msg << endl << key << endl;

int msgLen = strlen(msg), keyLen = strlen(key), i, j;

char newKey[msgLen], encryptedMsg[msgLen], decryptedMsg[msgLen];

//generating new key

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

if(j == keyLen)

j = 0;

newKey[i] = key[j];

}

newKey[i] = '\0';

//encryption

for(i = 0; i < msgLen; ++i)

{

encryptedMsg[i] = ((msg[i] + newKey[i]) % 26) + 'A';

}

encryptedMsg[i] = '\0';

//decryption

for(i = 0; i < msgLen; ++i)

{

decryptedMsg[i] = (((encryptedMsg[i] - newKey[i]) + 26) % 26) + 'A';

}

decryptedMsg[i] = '\0';

cout<<"Original Message: "<<msg;

cout<<"\nKey: "<<key;

cout<<"\nNew Generated Key: "<<newKey;

cout<<"\nEncrypted Message: "<<encryptedMsg;

cout<<"\nDecrypted Message: "<<decryptedMsg;

return 0;

}