
// Project: General Substitution Ciphers

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#include <iostream>

#include <fstream>

#include <string>

#include <map>

using namespace std;

int main()

{

 // variables needed

 map<char, char> keycode;

 char key[150], value[150];

 string user_input;

 int i = 0, j = 0;

 // allow the user to decide what one wants to do

 int choice;

 cout << "Options\n\n";

 cout << "1. Encryption\n";

 cout << "2. Decryption\n\n";

 cout << "Enter your choice: ";

 cin >> choice;

 // open the key file

 string keyfname = "key.txt";

 ifstream keyfile;

 keyfile.open(keyfname.c_str());

 if (keyfile.fail())

 {

 cout << endl << "Key file (key.txt) not found\n";

 exit(1);

 }

 else

 {

 // key file found, populate array of keys and values

 char ch;

 bool in_bottom_row = false;

 while (keyfile.get(ch))

```
{
    if( ch == '\n' )
    {
        in_bottom_row = true;
    }
    if ( !in_bottom_row )
    {
        key[i] = ch;
        i++;
    }
    else
    {
        if ( j < (i+1) )
        {
            value[j] = ch;
            j++;
        }
    }
}

// open output file
string outfname = "output.txt";
ofstream outfile;
outfile.open (outfname.c_str());

// open the input file
string infname;
cout << "Enter the input file name: ";
cin >> infname;
ifstream infile;
infile.open(infname.c_str());
if (infile.fail())
{
    cout << endl << "Input file (p1.txt) not found\n";
    exit(1);
}
else
{
    while( getline(infile, user_input) )
    {
        // get user choice
```

```
    if (choice == 1)
    {
        // perform encryption
        for( int m=0; m<i; m++ )
        {
            keycode[ key[m] ] = value[(m+1)];
        }
    }
    else
    {
        // perform decryption
        for( int n=0; n<i; n++ )
        {
            keycode[ value[(n+1)] ] = key[n];
        }
        // write to output.txt
    }
    // write to output.txt
    for( int n=0; n<user_input.length(); n++)
    {
        // any character not listed in the key should remain unchanged
        if( keycode.find( user_input[n] ) == keycode.end() )
        {
            outfile << user_input[n];
        }
        else
        {
            outfile << keycode[ user_input[n] ];
        }
    }
}

infile.close();
keyfile.close();
outfile.close();

cout << "\nOutput.txt generated\n";

return 0;
}
```