Brute Force Code Cracker

Assignment:
For this assignment you'll be making a Brute Force Code Cracker. It will take a cipher for input, and run through all possible shift-cipher keys for it. Keep in mind there are only 26 possible keys for a shift cipher. After taking in a cipher input, you'll need to, one-by-one, convert the characters that make up the string into numbers, shift them based on the key you're currently testing, then shift them back to characters. Characters, when converting to numbers, always take their ASCII values. Lower-case 'a' is 97, while lower-case 'z' is 122. Upper-case 'A' is 65, while upper-case 'Z' is 90. All the letters between them, have the numbers ranging between them.
Also keep in mind that you'll need to use modulo to take into account letters that might shift past the end of the group, such as trying to shift 'y' five letters to the right. The following cipher decodes as 'Testing the System' and may be used to verify your code.

Whvwlqj wkh Vbvwhp

You'll need to deliver a screenshot for EACH of the five ciphers below. Do note that there is an English phrase decryption of each of them.

1: Wkh qljkw lv orqj dqg zh doo suhwhqg wr vohhs
2: F xrfqq hnyd mfx gjjs inxhtajwji zsijw ymj gtbqnsl fqqjd
3: Yx Drebcnki dro vslbkbi gsvv lo exuxygklvo
4: Epht bsf opu bmmpxfe jo uif eph qbsl
5: Jrypbzr gb Avtug Inyr

(100 pts total: 50 points for code, 10 points for each output)

Code:

```
// Name: Dawlat Hamad
// ID: GV5450
// Lab 7 - Brute Force
// Source 1: https://www.khanacademy.org/computing/computer-science/cryptography/ciphers/a/shift-cipher
// Source 2: https://www.geeksforgeeks.org/isupper-islower-application-c/
// Source 3: https://www.geeksforgeeks.org/modulo-operator-in-c-cpp-with-examples/
// This is my second method, I'm still figuring out how to get my method from the test to work. Until then I'll submit this.

#include <iostream>
#include <string>
using namespace std;

int main()
{
   //declare variables
   int i;
   int key;
   string cipher;
   string ch;
```

```
    //prompt for input
    cout << endl;
    cout << "Enter cipher to decode: ";
    getline(cin, cipher);


    //loop
        for(key = 1; key <= 26; key++)
        {
            ch = "";
            cout << key << ") ";

            for(int i = 0; i < cipher.size(); i++)
            {
                //Lower Letters
                if(isupper(cipher[i]))
                {
                    ch += char (int (cipher[i] + key - 'A') % 26 + 'A');
                }

                //Upper Letters
                else if(islower(cipher[i]))
                {
                    ch += char (int (cipher[i] + key - 'a') % 26 + 'a');
                }

                //Non-Letters
                else
                {
                    ch += cipher[i];
                }
            }

            //Print Output
            cout << ch << endl;
        }
    cout << endl;
    return 0;
}
```

Output:

```
Enter cipher to decode: Wkh qljkw lv orqj dqg zh doo suhwhqg wr vohhs
1) Xli rmklx mw psrk erh ai epp tvixirh xs wpiit
2) Ymj snlmy nx qtsl fsi bj fqq uwjyjsi yt xqjju
3) Znk tomnz oy rutm gtj ck grr vxkzktj zu yrkkv
4) Aol upnoa pz svun huk dl hss wylaluk av zsllw
5) Bpm vqopb qa twvo ivl em itt xzmbmvl bw atmmx
6) Cqn wrpqc rb uxwp jwm fn juu yancnwm cx bunny
7) Dro xsqrd sc vyxq kxn go kvv zbodoxn dy cvooz
8) Esp ytrse td wzyr lyo hp lww acpepyo ez dwppa
9) Ftq zustf ue xazs mzp iq mxx bdqfqzp fa exqqb
10) Gur avtug vf ybat naq jr nyy cergraq gb fyrrc
11) Hvs bwuvh wg zcbu obr ks ozz dfshsbr hc gzssd
12) Iwt cxvwi xh adcv pcs lt paa egtitcs id hatte
13) Jxu dywxj yi bedw qdt mu qbb fhujudt je ibuuf
14) Kyv ezxyk zj cfex reu nv rcc givkveu kf jcvvg
15) Lzw fayzl ak dgfy sfv ow sdd hjwlwfv lg kdwwh
16) Max gbzam bl ehgz tgw px tee ikxmxgw mh lexxi
17) Nby hcabn cm fiha uhx qy uff jlynyhx ni mfyyj
18) Ocz idbco dn gjib viy rz vgg kmzoziy oj ngzzk
19) Pda jecdp eo hkjc wjz sa whh lnapajz pk ohaal
20) Qeb kfdeq fp ilkd xka tb xii mobqbka ql pibbm
21) Rfc lgefr gq jmle ylb uc yjj npcrclb rm qjccn
22) Sgd mhfgs hr knmf zmc vd zkk oqdsdmc sn rkddo
23) The night is long and we all pretend to sleep
24) Uif ojhiu jt mpoh boe xf bmm qsfufoe up tmffq
25) Vjg pkijv ku nqpi cpf yg cnn rtgvgpf vq unggr
26) Wkh qljkw lv orqj dqg zh doo suhwhqg wr vohhs
```

```
Enter cipher to decode: Yx Drebcnki dro vslbkbi gsvv lo exuxygklvo
1) Zy Esfcdolj esp wtmclcj htww mp fyvyzhlmwp
2) Az Ftgdepmk ftq xundmdk iuxx nq gzwzaimnxq
3) Ba Guhefqnl gur yvoenel jvyy or haxabjnoyr
4) Cb Hvifgrom hvs zwpfofm kwzz ps ibybckopzs
5) Dc Iwjghspn iwt axqgpgn lxaa qt jczcdlpqat
6) Ed Jxkhitqo jxu byrhqho mybb ru kdademqrbu
7) Fe Kylijurp kyv czsirip nzcc sv lebefnrscv
8) Gf Lzmjkvsq lzw datjsjq oadd tw mfcfgostdw
9) Hg Manklwtr max ebuktkr pbee ux ngdghptuex
10) Ih Nbolmxus nby fcvluls qcff vy ohehiquvfy
11) Ji Ocpmnyvt ocz gdwmvmt rdgg wz pifijrvwgz
12) Kj Pdqnozwu pda hexnwnu sehh xa qjgjkswxha
13) Lk Qeropaxv qeb ifyoxov tfii yb rkhkltxyib
14) Ml Rfspqbyw rfc jgzpypw ugjj zc slilmuyzjc
15) Nm Sgtqrczx sgd khaqzqx vhkk ad tmjmnvzakd
16) On Thursday the library will be unknowable
17) Po Uivstebz uif mjcsbsz xjmm cf volopxbcmf
18) Qp Vjwtufca vjg nkdtcta yknn dg wpmpqycdng
19) Rq Wkxuvgdb wkh oleudub zloo eh xqnqrzdeoh
20) Sr Xlyvwhec xli pmfvevc ampp fi yrorsaefpi
21) Ts Ymzwxifd ymj qngwfwd bnqq gj zspstbfgqj
22) Ut Znaxyjge znk rohxgxe corr hk atqtucghrk
23) Vu Aobyzkhf aol spiyhyf dpss il buruvdhisl
24) Wv Bpczalig bpm tqjzizg eqtt jm cvsvweijtm
25) Xw Cqdabmjh cqn urkajah fruu kn dwtwxfjkun
26) Yx Drebcnki dro vslbkbi gsvv lo exuxygklvo
```

```
Enter cipher to decode: F xrfqq hnyd mfx gjjs inxhtajwji zsijw ymj gtbqnsl fqqjd
1) G ysgrr ioze ngy hkkt joyiubkxkj atjkx znk hucrotm grrke
2) H zthss jpaf ohz illu kpzjvclylk bukly aol ivdspun hsslf
3) I auitt kqbg pia jmmv lqakwdmzml cvlmz bpm jwetqvo ittmg
4) J bvjuu lrch qjb knnw mrblxenanm dwmna cqn kxfurwp juunh
5) K cwkvv msdi rkc loox nscmyfobon exnob dro lygvsxq kvvoi
6) L dxlww ntej sld mppy otdnzgpcpo fyopc esp mzhwtyr lwwpj
7) M eymxx oufk tme nqqz pueoahqdqp gzpqd ftq naixuzs mxxqk
8) N fznyy pvgl unf orra qvfpbirerq haqre gur objyvat nyyrl
9) O gaozz qwhm vog pssb rwgqcjsfsr ibrsf hvs pckzwbu ozzsm
10) P hbpaa rxin wph qttc sxhrdktgts jcstg iwt qdlaxcv paatn
11) Q icqbb syjo xqi ruud tyiseluhut kdtuh jxu rembydw qbbuo
12) R jdrcc tzkp yrj svve uzjtfmvivu leuvi kyv sfnczex rccvp
13) S kesdd ualq zsk twwf vakugnwjwv mfvwj lzw tgodafy sddwq
14) T lftee vbmr atl uxxg wblvhoxkxw ngwxk max uhpebgz teexr
15) U mguff wcns bum vyyh xcmwipylyx ohxyl nby viqfcha uffys
16) V nhvgg xdot cvn wzzi ydnxjqzmzy piyzm ocz wjrgdib vggzt
17) W oiwhh yepu dwo xaaj zeoykranaz qjzan pda xkshejc whhau
18) X pjxii zfqv exp ybbk afpzlsboba rkabo qeb yltifkd xiibv
19) Y qkyjj agrw fyq zccl bgqamtcpcb slbcp rfc zmujgle yjjcw
20) Z rlzkk bhsx gzr addm chrbnudqdc tmcdq sgd anvkhmf zkkdx
21) A small city has been discovered under the bowling alley
22) B tnbmm djuz ibt cffo ejtdpwfsfe voefs uif cpxmjoh bmmfz
23) C uocnn ekva jcu dggp fkueqxgtgf wpfgt vjg dqynkpi cnnga
24) D vpdoo flwb kdv ehhq glvfryhuhg xqghu wkh erzolqj doohb
25) E wqepp gmxc lew fiir hmwgszivih yrhiv xli fsapmrk eppic
26) F xrfqq hnyd mfx gjjs inxhtajwji zsijw ymj gtbqnsl fqqjd
```

```
Enter cipher to decode: Epht bsf opu bmmpxfe jo uif eph qbsl
1) Fqiu ctg pqv cnnqygf kp vjg fqi rctm
2) Grjv duh qrw doorzhg lq wkh grj sdun
3) Hskw evi rsx eppsaih mr xli hsk tevo
4) Itlx fwj sty fqqtbji ns ymj itl ufwp
5) Jumy gxk tuz grruckj ot znk jum vgxq
6) Kvnz hyl uva hssvdlk pu aol kvn whyr
7) Lwoa izm vwb ittweml qv bpm lwo xizs
8) Mxpb jan wxc juuxfnm rw cqn mxp yjat
9) Nyqc kbo xyd kvvygon sx dro nyq zkbu
10) Ozrd lcp yze lwwzhpo ty esp ozr alcv
11) Pase mdq zaf mxxaiqp uz ftq pas bmdw
12) Qbtf ner abg nyybjrq va gur qbt cnex
13) Rcug ofs bch ozzcksr wb hvs rcu dofy
14) Sdvh pgt cdi paadlts xc iwt sdv epgz
15) Tewi qhu dej qbbemut yd jxu tew fqha
16) Ufxj riv efk rccfnvu ze kyv ufx grib
17) Vgyk sjw fgl sddgowv af lzw vgy hsjc
18) Whzl tkx ghm teehpxw bg max whz itkd
19) Xiam uly hin uffiqyx ch nby xia jule
20) Yjbn vmz ijo vggjrzy di ocz yjb kvmf
21) Zkco wna jkp whhksaz ej pda zkc lwng
22) Aldp xob klq xiiltba fk qeb ald mxoh
23) Bmeq ypc lmr yjjmucb gl rfc bme nypi
24) Cnfr zqd mns zkknvdc hm sgd cnf ozqj
25) Dogs are not allowed in the dog park
26) Epht bsf opu bmmpxfe jo uif eph qbsl
```

```
Enter cipher to decode: Epht bsf opu bmmpxfe jo uif eph qbsl
1) Fqiu ctg pqv cnnqygf kp vjg fqi rctm
2) Grjv duh qrw doorzhg lq wkh grj sdun
3) Hskw evi rsx eppsaih mr xli hsk tevo
4) Itlx fwj sty fqqtbji ns ymj itl ufwp
5) Jumy gxk tuz grruckj ot znk jum vgxq
6) Kvnz hyl uva hssvdlk pu aol kvn whyr
7) Lwoa izm vwb ittweml qv bpm lwo xizs
8) Mxpb jan wxc juuxfnm rw cqn mxp yjat
9) Nyqc kbo xyd kvvygon sx dro nyq zkbu
10) Ozrd lcp yze lwwzhpo ty esp ozr alcv
11) Pase mdq zaf mxxaiqp uz ftq pas bmdw
12) Qbtf ner abg nyybjrq va gur qbt cnex
13) Rcug ofs bch ozzcksr wb hvs rcu dofy
14) Sdvh pgt cdi paadlts xc iwt sdv epgz
15) Tewi qhu dej qbbemut yd jxu tew fqha
16) Ufxj riv efk rccfnvu ze kyv ufx grib
17) Vgyk sjw fgl sddgowv af lzw vgy hsjc
18) Whzl tkx ghm teehpxw bg max whz itkd
19) Xiam uly hin uffiqyx ch nby xia jule
20) Yjbn vmz ijo vggjrzy di ocz yjb kvmf
21) Zkco wna jkp whhksaz ej pda zkc lwng
22) Aldp xob klq xiiltba fk qeb ald mxoh
23) Bmeq ypc lmr yjjmucb gl rfc bme nypi
24) Cnfr zqd mns zkknvdc hm sgd cnf ozqj
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