**Project 2**

**Source code:**

#include <iostream>

#include <fstream>

#include <cstdlib>

#include <string>

using namespace std;

string decrypt(string code\_to\_decrypt, int letter){

    string decrypted\_text = "";

    char character;

    int index=0;

    while(index<code\_to\_decrypt.length()){

        character = code\_to\_decrypt[index];

        if (character <= 90  && character >= 65){

            character -= letter;

            if (character < 65){

                character += 26;

            }

            decrypted\_text += character;

        }

        else if (character <= 122  && character >= 97){

            character -= letter;

            if (character < 97){

                character += 26;

            }

            decrypted\_text += character;

        }

        else {

            decrypted\_text += character;

        }

        index++;

    }

    return decrypted\_text;

}

int main(){

    string fileName = "code.txt";

    ifstream input(fileName.c\_str());

    ofstream output("output.txt");

    string code\_to\_decrypt;

    getline(input, code\_to\_decrypt);

    int letter=1;

    while(letter<=26){

        output << "Shift value: " << letter<<endl;

        output << "The decrypted text:" <<endl<<decrypt(code\_to\_decrypt, letter) << endl<<endl;

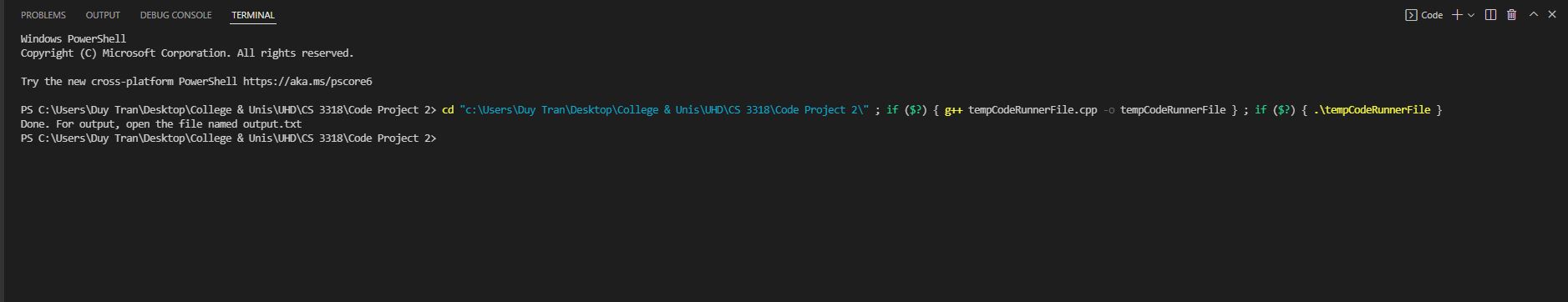
        letter++;

    }

    cout << "Done. For output, open the file named output.txt";

    return 0;

}

**Execution**:

**The correct offset value is 11.**

**Output plaintext file:**

Shift value: 1

The decrypted text:

Sx mbizdyqbkzri, oxmbizdsyx sc dro zbymocc yp dbkxcpybwsxq sxpybwkdsyx (bopobbon dy kc zvksxdohd) ecsxq kx kvqybsdrw (mkvvon mszrob) dy wkuo sd exboknklvo dy kxiyxo ohmozd dryco zyccoccsxq czomskv uxygvonqo, ecekvvi bopobbon dy kc k uoi. Dro bocevd yp dro zbymocc sc oxmbizdon sxpybwkdsyx (sx mbizdyqbkzri, bopobbon dy kc mszrobdohd).

Shift value: 2

The decrypted text:

Rw lahycxpajyqh, nwlahycrxw rb cqn yaxlnbb xo cajwboxavrwp rwoxavjcrxw (anonaanm cx jb yujrwcngc) dbrwp jw jupxarcqv (ljuunm lryqna) cx vjtn rc dwanjmjkun cx jwhxwn nglnyc cqxbn yxbbnbbrwp bynlrju twxfunmpn, dbdjuuh anonaanm cx jb j tnh. Cqn anbduc xo cqn yaxlnbb rb nwlahycnm rwoxavjcrxw (rw lahycxpajyqh, anonaanm cx jb lryqnacngc).

Shift value: 3

The decrypted text:

Qv kzgxbwozixpg, mvkzgxbqwv qa bpm xzwkmaa wn bzivanwzuqvo qvnwzuibqwv (zmnmzzml bw ia xtiqvbmfb) caqvo iv itowzqbpu (kittml kqxpmz) bw uism qb cvzmilijtm bw ivgwvm mfkmxb bpwam xwaamaaqvo axmkqit svwetmlom, cacittg zmnmzzml bw ia i smg. Bpm zmactb wn bpm xzwkmaa qa mvkzgxbml qvnwzuibqwv (qv kzgxbwozixpg, zmnmzzml bw ia kqxpmzbmfb).

Shift value: 4

The decrypted text:

Pu jyfwavnyhwof, lujyfwapvu pz aol wyvjlzz vm ayhuzmvytpun pumvythapvu (ylmlyylk av hz wshpualea) bzpun hu hsnvypaot (jhsslk jpwoly) av thrl pa buylhkhisl av hufvul lejlwa aovzl wvzzlzzpun zwljphs ruvdslknl, bzbhssf ylmlyylk av hz h rlf. Aol ylzbsa vm aol wyvjlzz pz lujyfwalk pumvythapvu (pu jyfwavnyhwof, ylmlyylk av hz jpwolyalea).

Shift value: 5

The decrypted text:

Ot ixevzumxgvne, ktixevzout oy znk vxuikyy ul zxgtyluxsotm otluxsgzout (xklkxxkj zu gy vrgotzkdz) ayotm gt grmuxozns (igrrkj iovnkx) zu sgqk oz atxkgjghrk zu gteutk kdikvz znuyk vuyykyyotm yvkiogr qtucrkjmk, ayagrre xklkxxkj zu gy g qke. Znk xkyarz ul znk vxuikyy oy ktixevzkj otluxsgzout (ot ixevzumxgvne, xklkxxkj zu gy iovnkxzkdz).

Shift value: 6

The decrypted text:

Ns hwduytlwfumd, jshwduynts nx ymj uwthjxx tk ywfsxktwrnsl nsktwrfynts (wjkjwwji yt fx uqfnsyjcy) zxnsl fs fqltwnymr (hfqqji hnumjw) yt rfpj ny zswjfifgqj yt fsdtsj jchjuy ymtxj utxxjxxnsl xujhnfq pstbqjilj, zxzfqqd wjkjwwji yt fx f pjd. Ymj wjxzqy tk ymj uwthjxx nx jshwduyji nsktwrfynts (ns hwduytlwfumd, wjkjwwji yt fx hnumjwyjcy).

Shift value: 7

The decrypted text:

Mr gvctxskvetlc, irgvctxmsr mw xli tvsgiww sj xverwjsvqmrk mrjsvqexmsr (vijivvih xs ew tpemrxibx) ywmrk er epksvmxlq (geppih gmtliv) xs qeoi mx yrviehefpi xs ercsri ibgitx xlswi tswwiwwmrk wtigmep orsapihki, ywyeppc vijivvih xs ew e oic. Xli viwypx sj xli tvsgiww mw irgvctxih mrjsvqexmsr (mr gvctxskvetlc, vijivvih xs ew gmtlivxibx).

Shift value: 8

The decrypted text:

Lq fubswrjudskb, hqfubswlrq lv wkh surfhvv ri wudqviruplqj lqirupdwlrq (uhihuuhg wr dv sodlqwhaw) xvlqj dq dojrulwkp (fdoohg flskhu) wr pdnh lw xquhdgdeoh wr dqbrqh hafhsw wkrvh srvvhvvlqj vshfldo nqrzohgjh, xvxdoob uhihuuhg wr dv d nhb. Wkh uhvxow ri wkh surfhvv lv hqfubswhg lqirupdwlrq (lq fubswrjudskb, uhihuuhg wr dv flskhuwhaw).

Shift value: 9

The decrypted text:

Kp etarvqitcrja, gpetarvkqp ku vjg rtqeguu qh vtcpuhqtokpi kphqtocvkqp (tghgttgf vq cu rnckpvgzv) wukpi cp cniqtkvjo (ecnngf ekrjgt) vq ocmg kv wptgcfcdng vq cpaqpg gzegrv vjqug rquuguukpi urgekcn mpqyngfig, wuwcnna tghgttgf vq cu c mga. Vjg tguwnv qh vjg rtqeguu ku gpetarvgf kphqtocvkqp (kp etarvqitcrja, tghgttgf vq cu ekrjgtvgzv).

Shift value: 10

The decrypted text:

Jo dszquphsbqiz, fodszqujpo jt uif qspdftt pg usbotgpsnjoh jogpsnbujpo (sfgfssfe up bt qmbjoufyu) vtjoh bo bmhpsjuin (dbmmfe djqifs) up nblf ju vosfbebcmf up bozpof fydfqu uiptf qpttfttjoh tqfdjbm lopxmfehf, vtvbmmz sfgfssfe up bt b lfz. Uif sftvmu pg uif qspdftt jt fodszqufe jogpsnbujpo (jo dszquphsbqiz, sfgfssfe up bt djqifsufyu).

Shift value: 11

The decrypted text:

In cryptography, encryption is the process of transforming information (referred to as plaintext) using an algorithm (called cipher) to make it unreadable to anyone except those possessing special knowledge, usually referred to as a key. The result of the process is encrypted information (in cryptography, referred to as ciphertext).

Shift value: 12

The decrypted text:

Hm bqxosnfqzogx, dmbqxoshnm hr sgd oqnbdrr ne sqzmrenqlhmf hmenqlzshnm (qdedqqdc sn zr okzhmsdws) trhmf zm zkfnqhsgl (bzkkdc bhogdq) sn lzjd hs tmqdzczakd sn zmxnmd dwbdos sgnrd onrrdrrhmf rodbhzk jmnvkdcfd, trtzkkx qdedqqdc sn zr z jdx. Sgd qdrtks ne sgd oqnbdrr hr dmbqxosdc hmenqlzshnm (hm bqxosnfqzogx, qdedqqdc sn zr bhogdqsdws).

Shift value: 13

The decrypted text:

Gl apwnrmepynfw, clapwnrgml gq rfc npmacqq md rpylqdmpkgle gldmpkyrgml (pcdcppcb rm yq njyglrcvr) sqgle yl yjempgrfk (ayjjcb agnfcp) rm kyic gr slpcybyzjc rm ylwmlc cvacnr rfmqc nmqqcqqgle qncagyj ilmujcbec, sqsyjjw pcdcppcb rm yq y icw. Rfc pcqsjr md rfc npmacqq gq clapwnrcb gldmpkyrgml (gl apwnrmepynfw, pcdcppcb rm yq agnfcprcvr).

Shift value: 14

The decrypted text:

Fk zovmqldoxmev, bkzovmqflk fp qeb molzbpp lc qoxkpclojfkd fkclojxqflk (obcbooba ql xp mixfkqbuq) rpfkd xk xidlofqej (zxiiba zfmebo) ql jxhb fq rkobxaxyib ql xkvlkb buzbmq qelpb mlppbppfkd pmbzfxi hkltibadb, rprxiiv obcbooba ql xp x hbv. Qeb obpriq lc qeb molzbpp fp bkzovmqba fkclojxqflk (fk zovmqldoxmev, obcbooba ql xp zfmeboqbuq).

Shift value: 15

The decrypted text:

Ej ynulpkcnwldu, ajynulpekj eo pda lnkyaoo kb pnwjobkniejc ejbkniwpekj (nabannaz pk wo lhwejpatp) qoejc wj whcknepdi (ywhhaz yeldan) pk iwga ep qjnawzwxha pk wjukja atyalp pdkoa lkooaooejc olayewh gjkshazca, qoqwhhu nabannaz pk wo w gau. Pda naoqhp kb pda lnkyaoo eo ajynulpaz ejbkniwpekj (ej ynulpkcnwldu, nabannaz pk wo yeldanpatp).

Shift value: 16

The decrypted text:

Di xmtkojbmvkct, zixmtkodji dn ocz kmjxznn ja omvinajmhdib diajmhvodji (mzazmmzy oj vn kgvdiozso) pndib vi vgbjmdoch (xvggzy xdkczm) oj hvfz do pimzvyvwgz oj vitjiz zsxzko ocjnz kjnnznndib nkzxdvg fijrgzybz, pnpvggt mzazmmzy oj vn v fzt. Ocz mznpgo ja ocz kmjxznn dn zixmtkozy diajmhvodji (di xmtkojbmvkct, mzazmmzy oj vn xdkczmozso).

Shift value: 17

The decrypted text:

Ch wlsjnialujbs, yhwlsjncih cm nby jliwymm iz nluhmzilgcha chzilguncih (lyzyllyx ni um jfuchnyrn) omcha uh ufailcnbg (wuffyx wcjbyl) ni guey cn ohlyuxuvfy ni uhsihy yrwyjn nbimy jimmymmcha mjywcuf ehiqfyxay, omouffs lyzyllyx ni um u eys. Nby lymofn iz nby jliwymm cm yhwlsjnyx chzilguncih (ch wlsjnialujbs, lyzyllyx ni um wcjbylnyrn).

Shift value: 18

The decrypted text:

Bg vkrimhzktiar, xgvkrimbhg bl max ikhvxll hy mktglyhkfbgz bgyhkftmbhg (kxyxkkxw mh tl ietbgmxqm) nlbgz tg tezhkbmaf (vteexw vbiaxk) mh ftdx bm ngkxtwtuex mh tgrhgx xqvxim mahlx ihllxllbgz lixvbte dghpexwzx, nlnteer kxyxkkxw mh tl t dxr. Max kxlnem hy max ikhvxll bl xgvkrimxw bgyhkftmbhg (bg vkrimhzktiar, kxyxkkxw mh tl vbiaxkmxqm).

Shift value: 19

The decrypted text:

Af ujqhlgyjshzq, wfujqhlagf ak lzw hjguwkk gx ljsfkxgjeafy afxgjeslagf (jwxwjjwv lg sk hdsaflwpl) mkafy sf sdygjalze (usddwv uahzwj) lg escw al mfjwsvstdw lg sfqgfw wpuwhl lzgkw hgkkwkkafy khwuasd cfgodwvyw, mkmsddq jwxwjjwv lg sk s cwq. Lzw jwkmdl gx lzw hjguwkk ak wfujqhlwv afxgjeslagf (af ujqhlgyjshzq, jwxwjjwv lg sk uahzwjlwpl).

Shift value: 20

The decrypted text:

Ze tipgkfxirgyp, vetipgkzfe zj kyv giftvjj fw kirejwfidzex zewfidrkzfe (ivwviivu kf rj gcrzekvok) ljzex re rcxfizkyd (trccvu tzgyvi) kf drbv zk leivrurscv kf repfev votvgk kyfjv gfjjvjjzex jgvtzrc befncvuxv, ljlrccp ivwviivu kf rj r bvp. Kyv ivjlck fw kyv giftvjj zj vetipgkvu zewfidrkzfe (ze tipgkfxirgyp, ivwviivu kf rj tzgyvikvok).

Shift value: 21

The decrypted text:

Yd shofjewhqfxo, udshofjyed yi jxu fhesuii ev jhqdivehcydw ydvehcqjyed (huvuhhut je qi fbqydjunj) kiydw qd qbwehyjxc (sqbbut syfxuh) je cqau yj kdhuqtqrbu je qdoedu unsufj jxeiu feiiuiiydw ifusyqb adembutwu, kikqbbo huvuhhut je qi q auo. Jxu huikbj ev jxu fhesuii yi udshofjut ydvehcqjyed (yd shofjewhqfxo, huvuhhut je qi syfxuhjunj).

Shift value: 22

The decrypted text:

Xc rgneidvgpewn, tcrgneixdc xh iwt egdrthh du igpchudgbxcv xcudgbpixdc (gtutggts id ph eapxcitmi) jhxcv pc pavdgxiwb (rpaats rxewtg) id bpzt xi jcgtpspqat id pcndct tmrtei iwdht edhhthhxcv hetrxpa zcdlatsvt, jhjpaan gtutggts id ph p ztn. Iwt gthjai du iwt egdrthh xh tcrgneits xcudgbpixdc (xc rgneidvgpewn, gtutggts id ph rxewtgitmi).

Shift value: 23

The decrypted text:

Wb qfmdhcufodvm, sbqfmdhwcb wg hvs dfcqsgg ct hfobgtcfawbu wbtcfaohwcb (fstsffsr hc og dzowbhslh) igwbu ob ozucfwhva (qozzsr qwdvsf) hc aoys wh ibfsoropzs hc obmcbs slqsdh hvcgs dcggsggwbu gdsqwoz ybckzsrus, igiozzm fstsffsr hc og o ysm. Hvs fsgizh ct hvs dfcqsgg wg sbqfmdhsr wbtcfaohwcb (wb qfmdhcufodvm, fstsffsr hc og qwdvsfhslh).

Shift value: 24

The decrypted text:

Va pelcgbtencul, rapelcgvba vf gur cebprff bs genafsbezvat vasbezngvba (ersreerq gb nf cynvagrkg) hfvat na nytbevguz (pnyyrq pvcure) gb znxr vg haernqnoyr gb nalbar rkprcg gubfr cbffrffvat fcrpvny xabjyrqtr, hfhnyyl ersreerq gb nf n xrl. Gur erfhyg bs gur cebprff vf rapelcgrq vasbezngvba (va pelcgbtencul, ersreerq gb nf pvcuregrkg).

Shift value: 25

The decrypted text:

Uz odkbfasdmbtk, qzodkbfuaz ue ftq bdaoqee ar fdmzeradyuzs uzradymfuaz (dqrqddqp fa me bxmuzfqjf) geuzs mz mxsadufty (omxxqp oubtqd) fa ymwq uf gzdqmpmnxq fa mzkazq qjoqbf ftaeq baeeqeeuzs ebqoumx wzaixqpsq, gegmxxk dqrqddqp fa me m wqk. Ftq dqegxf ar ftq bdaoqee ue qzodkbfqp uzradymfuaz (uz odkbfasdmbtk, dqrqddqp fa me oubtqdfqjf).

Shift value: 26

The decrypted text:

Ty ncjaezrclasj, pyncjaetzy td esp acznpdd zq eclydqzcxtyr tyqzcxletzy (cpqpccpo ez ld awltyepie) fdtyr ly lwrzctesx (nlwwpo ntaspc) ez xlvp te fycplolmwp ez lyjzyp pinpae eszdp azddpddtyr dapntlw vyzhwporp, fdflwwj cpqpccpo ez ld l vpj. Esp cpdfwe zq esp acznpdd td pyncjaepo tyqzcxletzy (ty ncjaezrclasj, cpqpccpo ez ld ntaspcepie).