```
rng

using namespace std;

#define REP(i,n) for((i)=0;(i)<(int)(n);(i)++)
#define foreach(c,itr) for(__typeof((c).begin()) itr=(c).begin();itr!=(c).end();itr++)

int A,B,C;
int a[10],b[10],c[10];
bool dp[30][2][10][10][10]; // pos, carry, a, b, c
vector <int> prev[30][2][10][10][10];

bool func(int alen, int blen, int clen){
    int i,j,c,x,y,z;

    int L = max(alen,max(blen,clen));

    REP(i,L+1) REP(c,2) REP(x,A+1) REP(y,B+1) REP(z,C+1) dp[i][c][x][y][z] = false;
    dp[0][0][0][0][0] = true;

    REP(i,L) REP(c,2) REP(x,A+1) REP(y,B+1) REP(z,C+1) if(dp[i][c][x][y][z]){
        int x2,y2,z2,c2;
        REP(x2,10) REP(y2,10){
            z2 = x2+y2+c; c2 = 0;
            if(z2 >= 10) {z2 -= 10; c2++;}
            if(i >= alen && x2 != 0) continue;
            if(i >= blen && y2 != 0) continue;
            if(i >= clen && z2 != 0) continue;

            int x3 = x + ((x < A && a[x] == x2) ? 1 : 0);
            int y3 = y + ((y < B && b[y] == y2) ? 1 : 0);
            int z3 = z + ((z < C && ::c[z] == z2) ? 1 : 0);

            dp[i+1][c2][x3][y3][z3] = true;
            int st[] = {i, c, x, y, z, x2, y2, z2};
            vector <int> state(8);
            REP(j,8) state[j] = st[j];
            prev[i+1][c2][x3][y3][z3] = state;
        }
    }

    return dp[L][0][A][B][C];
}

void print(int alen, int blen, int clen){
    int L = max(alen,max(blen,clen));
    int i=L,c=0,x=A,y=B,z=C;
    string sa,sb,sc;

    while(i > 0){
        vector <int> st = prev[i][c][x][y][z];
        i = st[0]; c = st[1]; x = st[2]; y = st[3]; z = st[4];
        if(i < alen) sa += (char)(’0’ + st[5]);
        if(i < blen) sb += (char)(’0’ + st[6]);
        if(i < clen) sc += (char)(’0’ + st[7]);
    }

    cout << sa << ’+’ << sb << ’=’ << sc << endl;
}

int main(void){
    int i,alen,blen,clen,sum;

    string s,sa,sb,sc;
    cin >> s;
    REP(i,s.length()) if(s[i] == ’+’ || s[i] == ’=’) s[i] = ’ ’;
    istringstream ss(s);
    ss >> sa >> sb >> sc;
    A = sa.length(); REP(i,A) a[A-1-i] = sa[i] - ’0’;
    B = sb.length(); REP(i,B) b[B-1-i] = sb[i] - ’0’;
    C = sc.length(); REP(i,C) c[C-1-i] = sc[i] - ’0’;

    for(sum=0;;sum++) REP(alen,sum+1) REP(blen,sum+1) REP(clen,sum+1)
```

```
if(alen+blen+clen == sum){
        int tmp = clen - max(alen,blen);
        if(tmp != 0 && tmp != 1) continue;
        if(alen < A || blen < B || clen < C) continue;
        if(func(alen,blen,clen)) {print(alen,blen,clen); return 0;}
    }

    return 0;
}
```

watashi

```
using namespace std;

const int MAXN = 10;
const int INF = 1000;

int na, nb, nc;
int a[MAXN], b[MAXN], c[MAXN];
int dp[MAXN][MAXN][MAXN][2];
pair<string, string> ans[MAXN][MAXN][MAXN][2];

void read(int& n, int a[]) {
      int x;
```

```
    scanf(″%*[ˆ0-9]″);
    scanf(″%d″, &x);
    n = 0;
    while (x > 0) {
        a[n++] = x % 10;
        x /= 10;
    }
    a[n] = -1;
}

int main() {
    read(na, a);
    read(nb, b);
    read(nc, c);
    for (int i = 0; i <= na + 1; ++i) {
        for (int j = 0; j <= nb + 1; ++j) {
            for (int k = 0; k <= nc; ++k) {
                dp[i][j][k][0] = dp[i][j][k][1] = INF;
            }
        }
    }

    dp[0][0][0][0] = 0;
    for (int i = 0; i <= na + 1; ++i) {
        for (int j = 0; j <= nb + 1; ++j) {
            for (int k = 0; k <= nc; ++k) {
                for (int l = 0; l <= 1; ++l) {
                    if (dp[i][j][k][l] == INF) {
                        continue;
                    }
                    if (i == na && dp[i + 1][j][k][l] > dp[i]
[j][k][l]) {
                        dp[i + 1][j][k][l] = dp[i][j][k][l];
                        ans[i + 1][j][k][l] = ans[i][j][k]
[l];
                    }
                    if (j == nb && dp[i][j + 1][k][l] > dp[i]
[j][k][l]) {
                        dp[i][j + 1][k][l] = dp[i][j][k][l];
                        ans[i][j + 1][k][l] = ans[i][j][k]
[l];

                    }
                    //  if (k == nc && dp[i][j][k + 1][l] >
dp[i][j][k][l]) {
                    //      dp[i][j][k + 1][l] = dp[i][j]
[k][l];
                    //      ans[i][j][k + 1][l] = ans[i]
[j][k][l];
                    //  }

                    for (int x = 0; x < (i <= na ? 10 : 1);
++x) {
                        for (int y = 0; y < (j <= nb ? 10 :
1); ++y) {
                            int ii = i + (i <= na && x ==
a[i] ? 1 : 0);
                            int jj = j + (j <= nb && y ==
b[j] ? 1 : 0);
                            int kk = k + ((x + y + l) %
10 == c[k] ? 1 : 0);
                            int ll = (x + y + l) / 10;
                            if (dp[ii][jj][kk][ll] >
dp[i][j][k][l] + (i <= na ? 1 : 0) + (j <= nb ? 1 : 0) + 1) {
                                dp[ii][jj][kk][ll] =
dp[i][j][k][l] + (i <= na ? 1 : 0) + (j <= nb ? 1 : 0) + 1;
                                ans[ii][jj][kk][ll] =
ans[i][j][k][l];
                                if (i <= na) {
                                    ans[ii][jj][kk]
[ll].first += ’0’ + x;
                                }
                                if (j <= nb) {
                                    ans[ii][jj][kk]
[ll].second += ’0’ + y;
                                }
                            }
                        }
                    }
                }
            }
        }
    }
```

```
	pair<string, string> ab = ans[na + 1][nb + 1][nc][0];
	reverse(ab.first.begin(), ab.first.end());
	long long va = strtoll(ab.first.c_str(), NULL, 0);
	reverse(ab.second.begin(), ab.second.end());
	long long vb = strtoll(ab.second.c_str(), NULL, 0);
//	printf("%lld+%lld=%lld\n", va, vb, va + vb);
	printf("%I64d+%I64d=%I64d\n", va, vb, va + vb);

	return 0;
}
```

yeputons

```
using namespace std;

#define eprintf(...) fprintf(stderr, __VA_ARGS__)
#define pb push_back
#define mp make_pair
#define sz(x) ((int)(x).size())

typedef long long ll;

typedef vector<ll> vll;
typedef vector<int> vi;
typedef vector<vi> vvi;
typedef vector<bool> vb;
typedef vector<vb> vvb;

struct St {
  int a, b, c;
  int add;
  St() : a(0), b(0), c(0), add(0) {}
  St(int _a, int _b, int _c, int _add) : a(_a), b(_b), c(_c), add(_add) {}
};

bool eq(int d, const string &s, int pos) {
  if (pos >= s.length() + 1) {
    if (d != -1) throw 0;
    return false;
  }
  if (pos == s.length()) return (d == -1);
  if (d < 0) throw 0;
  return d == s[pos] - ’0’;
}

const int MAXL = 7;
char buf[1024];
int d[MAXL + 2][MAXL + 2][MAXL + 2][2];
vector<string> ans[MAXL + 2][MAXL + 2][MAXL + 2][2];
```

```
int main() {
  #ifdef DEBUG
  freopen("std.in", "r", stdin);
  freopen("std.out", "w", stdout);
  #endif

  while (scanf("%s", buf) >= 1) {
    string s1 = "", s2 = "", s3 = "";
    int mode = 2;
    for (int i = strlen(buf) - 1; i >= 0; i--) {
      if (buf[i] == '+' || buf[i] == '=') mode --;
      else {
        switch (mode) {
        case 0: s1 += buf[i]; break;
        case 1: s2 += buf[i]; break;
        case 2: s3 += buf[i]; break;
        }
      }
    }
    int l1 = s1.length();
    int l2 = s2.length();
    int l3 = s3.length();

    deque<St> q;
```

```
memset(d, 0x3F, sizeof d);
d[0][0][0][0] = 0;
ans[0][0][0][0] = vector<string>(3);
q.pb(St(0, 0, 0, 0));

while (!q.empty()) {
  int a = q.front().a;
  int b = q.front().b;
  int c = q.front().c;
  int add = q.front().add;
  int v = d[a][b][c][add];

  bool pr = (a == 1 && b == 1 && c == 0 && add == 0);
  q.pop_front();

  for (int d1 = -1; d1 < 10; d1++)
  for (int d2 = -1; d2 < 10; d2++) {
    int res = max(d1, 0) + max(d2, 0) + add;
    int cd3 = res % 10;
    int nadd = res / 10;

    vi d3s(1, cd3);

    if (d1 < 0 && d2 < 0 && !cd3) {
      d3s.pb(-1);
      }

      for (int i = 0; i < d3s.size(); i++) {
        int d3 = d3s[i];
        try {
          int na = a + eq(d1, s1, a);
          int nb = b + eq(d2, s2, b);
          int nc = c + eq(d3, s3, c);
          int nv = v + 3 - (d1 == -1) - (d2 == -1) - (d3 == -1);

          if (d[na][nb][nc][nadd] > nv) {
            d[na][nb][nc][nadd] = nv;
            vector<string> &cans = ans[na][nb][nc][nadd] = ans[a][b][c][add];
            if (d1 != -1) cans[0] = string(1, ’0’ + d1) + cans[0];
            if (d2 != -1) cans[1] = string(1, ’0’ + d2) + cans[1];
            if (d3 != -1) cans[2] = string(1, ’0’ + d3) + cans[2];
            q.pb(St(na, nb, nc, nadd));
          }
        } catch (...) {}
      }
    }
  }
  eprintf(″%d\n″, d[l1 + 1][l2 + 1][l3 + 1][0]);
  vector<string> cans = ans[l1 + 1][l2 + 1][l3 + 1][0];
  printf(″%s+%s=%s\n″, cans[0].c_str(), cans[1].c_str(),
cans[2].c_str());


    break;

    #ifndef DEBUG

    break;

    #endif

  }

  return 0;

}
```

ashmelev

```
#define re return

#define fi first

#define se second

#define mp make_pair

#define pb push_back

#define all(x) (x).begin(), (x).end()

#define sz(x) ((int) (x).size())

#define rep(i, n) for (int i = 0; i < (n); i++)

#define rrep(i, n) for (int i = (n) - 1; i >= 0; i--)

#define y0 y32479

#define y1 y95874

#define fill(x, y) memset(x, y, sizeof(x))

#define sqr(x) ((x) * (x))
```

```
#define prev prev239

#define next next239

#define hash hash239

#define rank rank239


using namespace std;


typedef vector<int> vi;

typedef vector<vi> vvi;

typedef pair<int, int> ii;

typedef vector<ii> vii;

typedef vector<string> vs;

typedef long long ll;

typedef double D;

typedef long double LD;

typedef pair<ii, ii> iiii;


template<class T> T abs(T x) {return x > 0 ? x : -x;}


int n;

int m;


int ans[10][10][10][2][8];

int was[10][10][10][2][8];

iiii prev[10][10][10][2][8];
```

```
int pflag[10][10][10][2][8];

int ppa[10][10][10][2][8], ppb[10][10][10][2][8], ppc[10][10][10][2][8];


int len1, len2, len3;

int mas1[10], mas2[10], mas3[10];


int parse(int x, int *mas) {

    int n = 0;

    if (!x) {

        mas[0] = 0;

        re 1;

    }

    while (x) {

        mas[n++] = x % 10;

        x /= 10;

    }

    //reverse(mas, mas + n);

    re n;

}


ll aa, bb, cc;




void out(int cp1, int cp2, int cp3, int cf, int cflag) {

//  cout << cp1 << ' ' << cp2 << ' ' << cp3 << ' ' << cf << ' ' << cflag
<< endl;
```

```
    if (!cp1 && !cp2 && !cp3 && !cf && cflag == 7)
        re;

    iiii o = prev[cp1][cp2][cp3][cf][cflag];
    int p1 = o.fi.fi;
    int p2 = o.fi.se;
    int p3 = o.se.fi;
    int f = o.se.se;
    int flag = pflag[cp1][cp2][cp3][cf][cflag];

/*  int zlo = 0;

    for (int a = 0; a < 10 && zlo == 0; a++)
    rep(b, 10) {
        int c = (a + b + f) % 10;
        int nf = (a + b + f) / 10;

        int np1 = p1, np2 = p2, np3 = p3;
        if (p1 < len1 && a == mas1[p1])
            np1++;
        if (p2 < len2 && b == mas2[p2])
            np2++;
        if (p3 < len3 && c == mas3[p3])
            np3++;
        if (np1 == cp1 && np2 == cp2 && np3 == cp3 && nf == cf) {
            aa = aa * 10 + a;
            bb = bb * 10 + b;
            cc = cc * 10 + c;
            zlo = 1;
            break;
        }
    }
*/
    int a = ppa[cp1][cp2][cp3][cf][cflag];
    int b = ppb[cp1][cp2][cp3][cf][cflag];
    int c = ppc[cp1][cp2][cp3][cf][cflag];

    aa = aa * 10 + a;
    bb = bb * 10 + b;
    cc = cc * 10 + c;

    out(p1, p2, p3, f, flag);
}


void go(int p1, int p2, int p3, int f, int flag) {
    was[p1][p2][p3][f][flag] = 1;
    if (p1 >= len1 && p2 >= len2 && p3 >= len3 && f == 0 && flag == 0)
        re;

    int d = ans[p1][p2][p3][f][flag];
    int o1 = flag & 1;
    int o2 = (flag >> 1) & 1;
    int o3 = (flag >> 2) & 1;
    rep(a, 10)
    rep(b, 10) {
        int c = (a + b + f) % 10;
        int nf = (a + b + f) / 10;
        if (a && !o1 || b && !o2 || c && !o3)
            continue;

        int np1 = p1, np2 = p2, np3 = p3;
        if (p1 < len1 && a == mas1[p1])
            np1++;
        if (p2 < len2 && b == mas2[p2])
            np2++;
        if (p3 < len3 && c == mas3[p3])
            np3++;

        int len = o1 + o2 + o3;
        rep(nflag, 8) {
            if ((nflag & flag) != nflag)
                continue;
            int no1 = nflag & 1;

            int no2 = (nflag >> 1) & 1;

            int no3 = (nflag >> 2) & 1;

            if (!no1 && np1 < len1 || !no2 && np2 < len2 || !no3 && np3
< len3)

                continue;

            if (ans[np1][np2][np3][nf][nflag] == -1 || ans[np1][np2][np3]
[nf][nflag] > d + len) {

                ans[np1][np2][np3][nf][nflag] = d + len;

                prev[np1][np2][np3][nf][nflag] = mp(mp(p1, p2), mp(p3, f));

                pflag[np1][np2][np3][nf][nflag] = flag;

                ppa[np1][np2][np3][nf][nflag] = a;

                ppb[np1][np2][np3][nf][nflag] = b;

                ppc[np1][np2][np3][nf][nflag] = c;

            }

        }

    }

}


void hate() {

    while (1) {

        int ff = 0;

        int ba, bb, bc, bf, bflag;

        int bd = 1000000000;

        rep(a, len1 + 1) rep(b, len2 + 1) rep(c, len3 + 1) rep(f, 2)
rep(flag, 8) {

            if (ans[a][b][c][f][flag] != -1 && ans[a][b][c][f][flag] < bd
&& !was[a][b][c][f][flag]) {
                bd = ans[a][b][c][f][flag];
                ba = a;
                bb = b;
                bc = c;
                bf = f;
                bflag = flag;
                ff = 1;
            }
        }

        if (ff)
            go(ba, bb, bc, bf, bflag);
        else
            break;
    }
}

int main() {
#ifndef ONLINE_JUDGE
    freopen("input.txt", "r", stdin);
    //freopen("output.txt", "w", stdout);
#endif

    string s;
    cin >> s;
    replace(all(s), ’+’, ’ ’);
    replace(all(s), ’=’, ’ ’);
    istringstream sin(s);
    int a, b, c;
    sin >> a >> b >> c;
    len1 = parse(a, mas1);
    len2 = parse(b, mas2);
    len3 = parse(c, mas3);

    //cout << len1 << ’ ’ << len2 << ’ ’ << len3 << endl;

    fill(ans, -1);
    ans[0][0][0][0][7] = 0;

    hate();

    int d = ans[len1][len2][len3][0][0];
    //cout << d << endl;
    out(len1, len2, len3, 0, 0);
    cout << aa << ″+″ << bb << ″=″ << cc << endl;

    re 0;
}
```

Komaki

```
using namespace std;

#define li          long long

#define rep(i,to)   for(li i=0;i<((li)to);i++)

#define pb          push_back

#define sz(v)       ((li)(v).size())




string str,sa,sb,sc;

bool dp[30][2][20][20][20];

struct _before{

       int pos,carry,a,b,c;

};

struct _ans{

       int a,b,c;

};

_before before[30][2][20][20][20];

_ans ans[30][2][20][20][20];


bool cal(li la,li lb,li lc){

       rep(i,30)rep(j,2)rep(k,20)rep(l,20)rep(m,20) dp[i][j][k][l]
[m]=false;

       dp[0][0][0][0][0]=true;

       li maxi=max(sz(sa)+la,sz(sb)+lb);

       li longest=max(maxi,sz(sc)+lc);
```

```
    if(sz(sc)+lc!=maxi && sz(sc)+lc!=maxi+1) return false;
    {
        rep(pos,longest)rep(carry,2)
        rep(a,min(pos+1,la+1))rep(b,min(pos+1,lb+1))rep(c,min(pos+1,lc+1)){
            if(!dp[pos][carry][a][b][c]) continue;
            if(sz(sa)-1-(pos-a)<-1 && la!=a) continue;
            if(sz(sb)-1-(pos-b)<-1 && lb!=b) continue;
            li na=(0<=sz(sa)-1-(pos-a))?(sa[sz(sa)-1-(pos-a)]-’0’):0;
            li nb=(0<=sz(sb)-1-(pos-b))?(sb[sz(sb)-1-(pos-b)]-’0’):0;
            li nc=(0<=sz(sc)-1-(pos-c))?(sc[sz(sc)-1-(pos-c)]-’0’):0;
            {
                dp[pos+1][0][a+1][b+1][c]=true;
                before[pos+1][0][a+1][b+1][c]=(_before){pos,carry,a,b,c};
                ans[pos+1][0][a+1][b+1][c]=(_ans){0,nc,nc};
            }
            if(nc<9){
                dp[pos+1][1][a+1][b+1][c]=true;
                before[pos+1][1][a+1][b+1][c]=(_before){pos,carry,a,b,c};
                ans[pos+1][1][a+1][b+1][c]=(_ans){9,nc+1,nc};
            }
            if(na+carry<=nc){
                dp[pos+1][0][a][b+1][c]=true;
                before[pos+1][0][a][b+1][c]=(_before)
{pos,carry,a,b,c};
                ans[pos+1][0][a][b+1][c]=(_ans){na,nc-na-
carry,nc};
            }else{
                dp[pos+1][1][a][b+1][c]=true;
                before[pos+1][1][a][b+1][c]=(_before)
{pos,carry,a,b,c};
                ans[pos+1][1][a][b+1][c]=(_ans){na,nc+10-na-
carry,nc};
            }
            if(nb+carry<=nc){
                dp[pos+1][0][a+1][b][c]=true;
                before[pos+1][0][a+1][b][c]=(_before)
{pos,carry,a,b,c};
                ans[pos+1][0][a+1][b][c]=(_ans){nc-nb-
carry,nb,nc};
            }else{
                dp[pos+1][1][a+1][b][c]=true;
                before[pos+1][1][a+1][b][c]=(_before)
{pos,carry,a,b,c};
                ans[pos+1][1][a+1][b][c]=(_ans){nc+10-nb-
carry,nb,nc};
            }
            if(na!=10 && nb!=10 && nc!=10){
                li sum=na+nb+carry;
                li tmp=0;
                if(10<=sum) tmp++,sum-=10;
                {
                    dp[pos+1][tmp][a][b][c+1]=true;
                    before[pos+1][tmp][a][b][c+1]=(_before){pos,carry,a,b,c};
                    ans[pos+1][tmp][a][b][c+1]=(_ans){na,nb,sum};
                }
                if(sum==nc){
                    dp[pos+1][tmp][a][b][c]=true;
                    before[pos+1][tmp][a][b][c]=(_before){pos,carry,a,b,c};
                    ans[pos+1][tmp][a][b][c]=(_ans){na,nb,nc};
                }
            }
        }
    }
    return dp[longest][0][la][lb][lc];
}

void print(li la,li lb,li lc){
    string ra=””,rb=””,rc=””;
    li longest=max(sz(sa)+la,max(sz(sb)+lb,sz(sc)+lc));
    li carry=0;
    while(longest){
        _ans answer=ans[longest][carry][la][lb][lc];
        ra+=answer.a+’0’; if(ra==″0″) ra=″″;
        rb+=answer.b+’0’; if(rb==″0″) rb=″″;
        rc+=answer.c+’0’; if(rc==″0″) rc=″″;
        _before bef=before[longest][carry][la][lb][lc];
        la=bef.a; lb=bef.b; lc=bef.c; carry=bef.carry;
longest=bef.pos;
    }
    cout<<ra<<″+″<<rb<<″=″<<rc<<endl;
}

int main(){
    stringstream ss;
    cin>>str;
    rep(i,sz(str))if(str[i]==’+’ || str[i]==’=’) str[i]=’ ’;
    ss<<str; ss>>sa; ss>>sb; ss>>sc;
    rep(i,1000)rep(a,i+1)rep(b,i+1-a)if(cal(a,b,i-a-b)){
        print(a,b,i-a-b);
        return 0;
    }
    cout<<″nothing″<<endl;
}
```

I_love_natalia

```
using namespace std;
string s1,s2,s3;
```

```
int mtrx[2000][2000];

int pi1[2000][2000];

int pi2[2000][2000];

int pi3[2000][2000];


const int inf = 1000000000;


int pack(int bOver, int x, int y, int z)

{

    return bOver * 1000 + x * 100 + y * 10 + z;

}


void addPath(int p1, int p2, int c,int w1, int w2, int w3)

{

    if (mtrx[p1][p2] > c)

    {

        mtrx[p1][p2] = c;

        pi1[p1][p2] = w1;

        pi2[p1][p2] = w2;

        pi3[p1][p2] = w3;

    }

}


void addPathFrom(int bOver, int x, int y, int z)
```

```
{
    for (int i=0;i<=9;i++)
        for (int j=0;j<=9;j++)
            for (int k=0;k<=9;k++)
            {
                int xn = x,yn = y,zn = z;
                if (x >= 2)
                    xn = (s1[x - 2] - ’0’ == i ? -1 : 0) + x;
                if (y >= 2)
                    yn = (s2[y - 2] - ’0’ == j ? -1 : 0) + y;
                if (z >= 2)
                    zn = (s3[z - 2] - ’0’ == k ? -1 : 0) + z;
                int c = 3 + xn - x + yn - y + zn - z;

                if (x == 0)
                {
                    if (i == 0)
                        --c;
                    else
                        c = inf;
                }
                if (y == 0)
                {
                    if (j == 0)
                        --c;
                    else
                        c = inf;
                }
                if (z == 0)
                {
                    if (k == 0)
                        --c;
                    else
                        c = inf;
                }

                if ( (i + j + bOver) % 10 == k)
                {
                    int bOvern = (i + j + bOver) / 10;
                    for (int dx = 0; dx <= 1 ; dx++)
                        for (int dy = 0; dy <= 1 ; dy++)
                            for (int dz = 0; dz <= 1 ; dz++)
                                if ( (dx == 0 || xn == 1) && (dy == 0 || yn
== 1) && (dz == 0 || zn == 1))
                                {

addPath(pack(bOver,x,y,z),pack(bOvern,xn - dx,yn - dy,zn - dz),c,i,j,k);
                                }
                }
            }
}
```

```
int dist[2000];
bool visit[2000];
int pi[2000];

void dijkstra(int f)
{
    for (int i=0;i<2000;i++)
        dist[i] = inf;
    dist[f] = 0;
    pi[f] = -1;
    while (!visit[0])
    {
        int mx = inf;
        int mxv = -1;
        for (int i=0;i<2000;i++)
            if (!visit[i] && dist[i] < mx)
            {
                mx = dist[i];
                mxv = i;
            }

        if (mxv == -1)
            throw 0;
        visit[mxv] = true;
        for (int j=0;j<2000;j++)
            if (dist[j] > mtrx[mxv][j] + dist[mxv])
            {
                dist[j] = dist[mxv] + mtrx[mxv][j];
                pi[j] = mxv;
            }
    }
}


int main()
{
    string s;
    cin>>s;
    for (int i=0;i<(int)s.length();i++)
        if (s[i] == ’+’ || s[i] == ’=’)
            s[i] = ’ ’;

    istringstream sin(s);
    sin>>s1>>s2>>s3;

    for (int i=0;i<2000;i++)
        for (int j=0;j<2000;j++)
```

```
            mtrx[i][j] = inf;


    for (int a = 0;a <= 1;a++)
        for (int i=0;i<=s1.length() + 1;i++)
            for (int j=0;j<=s2.length() + 1;j++)
                for (int k=0;k<=s3.length() + 1;k++)
                    addPathFrom(a,i,j,k);
    int startState = pack(0, s1.length() + 1, s2.length() + 1, s3.length()
+ 1);


/*  for (int i=0;i<2000;i++)
        for (int j=0;j<2000;j++)
            if (mtrx[i][j] != inf)
                cout<<i<<’ ’<<j<<’ ’<<mtrx[i][j]<<endl;
    return 0;*/


    dijkstra(startState);
    string sa,sb,sc;
    int state = 0;
    while (state != startState)
    {
        int ns = pi[state];
        sa += char(’0’ + pi1[ns][state]);
        sb += char(’0’ + pi2[ns][state]);
        sc += char(’0’ + pi3[ns][state]);
        state = ns;
    }
    while (sa[0] == ’0’) sa.erase(0,1);
    while (sb[0] == ’0’) sb.erase(0,1);
    while (sc[0] == ’0’) sc.erase(0,1);
    cout<<sa << ’+’ << sb << ’=’ << sc;
    if (sa.length() + sb.length() + sc.length() != s1.length() + s2.length() + s3.length() + dist[0])
        throw 0;


    return 0;
}
```

maksay

```
using namespace std;
#define rp(i,n) for(int (i)=0;(i)<(n);++(i))
#define pb push_back
#define L(s) (int)s.size()
#define mp make_pair
#define pii pair<int,int>
#define x first
#define y second
#define inf 1000000000
#define VI vector<int>
```

```
#define ll long long
#define all(s) (s).begin(),(s).end()
#define C(u) memset((u),0,sizeof((u)))
#define ull unsigned ll
const int len=22;
string f[8][8][8][len][2][3];
int fnd[8][8][8][len][2];
string a,b,c;

void dfs(int s1,int s2,int s3,int tot,int p1,int lm1,int lm2,int lm3)
{
	if (fnd[s1][s2][s3][tot][p1]!=0)
		return;
	if (s1>tot||s2>tot||s3>tot)
	{
		fnd[s1][s2][s3][tot][p1]=-1;
		return;
	}
	string &a1=f[s1][s2][s3][tot][p1][0];
	string &a2=f[s1][s2][s3][tot][p1][1];
	string &a3=f[s1][s2][s3][tot][p1][2];
	if (tot==0)
	{
		if (s1||s2||s3||p1)
			fnd[s1][s2][s3][tot][p1]=-1;
```

```
    else
    {
        a1=a2=a3=””;
        fnd[s1][s2][s3][tot][p1]=1;
    }
    return;
}
if (tot==1&&s1==0&&s2==1&&s3==1&&!p1)
    tot=tot;
fnd[s1][s2][s3][tot][p1]=-1;
rp(l1,11)
    if (l1<11||s1)
        if (tot<=lm1||!l1)
    rp(l2,11)
    if (l2<11||s2)
        if (tot<=lm2||!l2)
    rp(l3,11)
    if (l3<11||s3)
        if (tot<=lm3||!l3)
    {
        if (l1==1&&l2==10&&l3==10)
            l1=l1;
        int i1=l1,ns1=s1;if (l1==10) i1=a[s1]-’0’,ns1--;
        int i2=l2,ns2=s2;if (l2==10) i2=b[s2]-’0’,ns2--;
        int i3=l3,ns3=s3;if (l3==10) i3=c[s3]-’0’,ns3--;
```

```
            if ((i1+i2)%10!=i3&&(i1+i2+1)%10!=i3)
                continue;
            if ((i1+i2)%10==i3)
            {
                if (p1&&i1+i2==i3) continue;
                if (!p1&&i1+i2!=i3) continue;
                dfs(ns1,ns2,ns3,tot-1,0,lm1,lm2,lm3);
                if (fnd[ns1][ns2][ns3][tot-1][0]==-1)
                    continue;
                a1=””;a1+=(char)(i1+’0’);a1+=f[ns1][ns2][ns3]
[tot-1][0][0];
                a2=””;a2+=(char)(i2+’0’);a2+=f[ns1][ns2][ns3]
[tot-1][0][1];
                a3=””;a3+=(char)(i3+’0’);a3+=f[ns1][ns2][ns3]
[tot-1][0][2];
                fnd[s1][s2][s3][tot][p1]=1;
                return;
            }
            else
            {
                if (p1&&i1+i2+1==i3) continue;
                if (!p1&&i1+i2+1!=i3) continue;
                dfs(ns1,ns2,ns3,tot-1,1,lm1,lm2,lm3);
                if (fnd[ns1][ns2][ns3][tot-1][1]==-1)
                    continue;
                a1=””;a1+=(char)(i1+’0’);a1+=f[ns1][ns2][ns3]
[tot-1][1][0];
```

```
                a2=″″;a2+=(char)(i2+’0’);a2+=f[ns1][ns2][ns3][tot-1][1][1];
                a3=″″;a3+=(char)(i3+’0’);a3+=f[ns1][ns2][ns3][tot-1][1][2];
                fnd[s1][s2][s3][tot][p1]=1;
                return;
            }
        }

}
inline string solve(int tot)
{
    for(int lm1=L(a)-1;lm1<=tot&&lm1<=len;++lm1)
        for(int lm2=L(b)-1;lm2<=tot&&lm2<=len;++lm2)
            {
                int lm3=tot-lm1-lm2;
                if (lm3>len||lm3<L(c)-1) continue;
                memset(fnd,0,sizeof(fnd));
                rp(i,L(a))
                    rp(j,L(b))
                    rp(k,L(c))
                    rp(sum,len)
                    rp(aa,2)
                    rp(bb,3)
                    f[i][j][k][sum][aa][bb]=″″;
                dfs(L(a)-1,L(b)-1,L(c)-1,len-1,0,lm1,lm2,lm3);
                if (fnd[L(a)-1][L(b)-1][L(c)-1][len-1][0]!=-1)
                {
                    string s1=f[L(a)-1][L(b)-1][L(c)-1][len-1][0][0];
                    string s2=f[L(a)-1][L(b)-1][L(c)-1][len-1][0][1];
                    string s3=f[L(a)-1][L(b)-1][L(c)-1][len-1][0][2];
                    while(s1[0]==’0’) s1.erase(0,1);
                    while(s2[0]==’0’) s2.erase(0,1);
                    while(s3[0]==’0’) s3.erase(0,1);
                    return s1+″+″+s2+″=″+s3;
                }
            }
    return ″″;
}
string ss;
string ans=″″;
int main()
{
    cin>>ss;
    rp(i,L(ss))
        if (ss[i]==’+’||ss[i]==’=’)
            ss[i]=’ ’;
    istringstream iss(ss);
    iss>>a>>b>>c;
    reverse(all(a));
    reverse(all(b));
    reverse(all(c));
    a=″!″+a;
    b=″!″+b;
    c=″!″+c;
    int high=3*len;
    int low=L(a)-1+L(b)-1+L(c)-1;
    while(high-low>1)
    {
        string cur=solve((high+low)/2);
        if (cur==””)
            low=(high+low)/2;
        else
            high=(high+low)/2;
    }
    ans=solve(low);
    if (ans==””)
        ans=solve(high);
    cout<<ans<<endl;
    /*DO NOT DELETE THIS*/
    return 0;
}
```

KrK

```
using namespace std;

const int Inf = 1000000000;
const int Maxn = 8;

struct parent {
	int x, y, z, t1, t2, t3, t;
	parent(int x = 0, int y = 0, int z = 0, int t1 = 0, int t2 = 0, int t3 = 0, int t = 0): x(x), y(y), z(z), t1(t1), t2(t2), t3(t3), t(t) { }
};

struct with {
	int a, b, c;
	with(int a = 0, int b = 0, int c = 0): a(a), b(b), c(c) { }
};

int a, b, c;
string sa, sb, sc;
int dp[Maxn][Maxn][Maxn][2][2][2][2];
parent par[Maxn][Maxn][Maxn][2][2][2][2];
with wth[Maxn][Maxn][Maxn][2][2][2][2];
string ra, rb, rc;

string toString(int num)
```

```
{
    stringstream ss; ss << num;
    string res; ss >> res;
    return res;
}

int getVal(int a, int b, int c, int t1, int t2, int t3, int t)
{
    if (a == 0 && b == 0 && c == 0) return t? (t3? 1: Inf): 0;
    if (dp[a][b][c][t1][t2][t3][t] == Inf) {
        dp[a][b][c][t1][t2][t3][t]--;
        int res = Inf - 1; parent p; with w;
        for (int mask = 0; mask < 8; mask++) {
            int cost = t1 + t2 + t3;
            int na = a, nb = b, nc = c;
            if (mask & 1 << 2) { if (a == 0) continue; na = a -
1; }
            if (mask & 1 << 1) { if (b == 0) continue; nb = b -
1; }
            if (mask & 1 << 0) { if (c == 0) continue; nc = c -
1; }
            for (int ta = 0; ta < 10; ta++) if ((!(mask & 1 << 2)
|| ta == sa[a - 1] - ’0’) && (t1 || !ta))
                for (int tb = 0; tb < 10; tb++) if ((!(mask & 1
<< 1) || tb == sb[b - 1] - ’0’) && (t2 || !tb)) {
                    int tc = (ta + tb + t) % 10;
                    if (mask & 1 << 0 && tc != sc[c - 1] - ’0’
|| t3 == 0 && tc) continue;
                    int nt = (ta + tb + t) / 10;
                    for (int nt1 = 0; nt1 <= t1; nt1++) if (nt1 || na == 0)
                        for (int nt2 = 0; nt2 <= t2; nt2++) if (nt2 || nb == 0)
                            for (int nt3 = 0; nt3 <= t3; nt3++) if (nt3 || nc == 0) {
                                int cand = getVal(na, nb, nc, nt1, nt2, nt3, nt) + cost;
                                if (cand < res) { res = cand; p = parent(na, nb, nc, nt1, nt2, nt3, nt); w = with(ta, tb, tc); }
                            }
                }
        }
        dp[a][b][c][t1][t2][t3][t] = res; par[a][b][c][t1][t2][t3][t] = p; wth[a][b][c][t1][t2][t3][t] = w;
    }
    return dp[a][b][c][t1][t2][t3][t];
}

void Collect(int a, int b, int c, int t1, int t2, int t3, int t)
{
    if (a == 0 && b == 0 && c == 0) {
        if (t) rc += "1";
        return;
    }
    parent p = par[a][b][c][t1][t2][t3][t]; with w = wth[a][b][c][t1]
```

```
[t2][t3][t];
        Collect(p.x, p.y, p.z, p.t1, p.t2, p.t3, p.t);
        if (t1) ra += string(1, ’0’ + w.a);
        if (t2) rb += string(1, ’0’ + w.b);
        if (t3) rc += string(1, ’0’ + w.c);
}

int main()
{
        scanf(″%d+%d=%d″, &a, &b, &c);
        sa = toString(a), sb = toString(b), sc = toString(c);
        fill((int*)dp, (int*)dp + Maxn * Maxn * Maxn * 2 * 2 * 2 * 2, Inf);
        getVal(sa.length(), sb.length(), sc.length(), 1, 1, 1, 0);
        Collect(sa.length(), sb.length(), sc.length(), 1, 1, 1, 0);
        printf(″%s+%s=%s\n″, ra.c_str(), rb.c_str(), rc.c_str());
        return 0;
}
```

Jiang Kai

```
using namespace std;

using LL = long long;
using TPL = tuple<LL,LL,LL,int>;
const LL INF = 99999999999999999911;
```

```
int L(LL x){
    return x<=9?1:L(x/10)+1;
}

class Expression{
public:
    LL x,y,z;
    void add(int p, int q, int r){
        x=x*10+p;
        y=y*10+q;
        z=z*10+r;
    }
    bool operator <(const Expression& rhs) const{
        return L(x)+L(y)+L(z)<L(rhs.x)+L(rhs.y)+L(rhs.z);
    }
};

map<TPL,Expression> dp;

Expression gao(LL a, LL b, LL c, int u){
    Expression ret={INF,INF,INF},tmp;
    int sw=a>b;
    if(sw) swap(a,b);
    TPL x(a,b,c,u);
```

```
if(dp.count(x)) ret=dp[x];
else{
    if(!a && !b && !c && !u) return dp[x]={0,0,0};
    if((a+b+u)%10==c%10){
        ret=gao(a/10,b/10,c/10,(a%10+b%10+u)/10);
        ret.add(a%10,b%10,c%10);
    }else{
        if(a || b || u){
            tmp=gao(a/10,b/10,c,(a%10+b%10+u)/10);
            tmp.add(a%10,b%10,(a+b+u)%10);
            ret=min(ret,tmp);
        }
        if(a || c){
            int t=(20+c-u-a%10)%10;
            tmp=gao(a/10,b,c/10,(a%10+t+u)/10);
            tmp.add(a%10,t,c%10);
            ret=min(ret,tmp);
        }
        if(b || c){
            int t=(20+c-u-b%10)%10;
            tmp=gao(a,b/10,c/10,(t+b%10+u)/10);
            tmp.add(t,b%10,c%10);
            ret=min(ret,tmp);
        }
    }
```

```
        dp[x]=ret;
    }
    if(sw) swap(ret.x,ret.y);
    return ret;
}

int main(){
    int a,b,c;
    scanf("%d+%d=%d",&a,&b,&c);
    Expression ans=gao(a,b,c,0);
    printf("%I64d+%I64d=%I64d\n",ans.x,ans.y,ans.z);
}
```

mR.ilchi

```
using namespace std;

typedef long long ll;
typedef pair<int,int> pii;
typedef pair<ll,ll> pll;
typedef complex<double> point;
typedef long double ldb;

int lena,lenb,lenc;
int dp[25][25][25][25][2][2];
string s,a,b,c,A,B,C;

int go (int pos, int pa, int pb, int pc, int key, int sh){
    int &ret = dp[pos][pa][pb][pc][key][sh];
    if (ret!=-1)
        return ret;
    if (pa==(int)a.size() && pb==(int)b.size() && pc==(int)c.size() &&
key==0)
        return ret=true;
    ret = false;
    for (int i=0; i<10; i++) if (i==0 || pos<lena){
        for (int j=0; j<10; j++) if (j==0 || pos<lenb){
            int k = (i+j+key)%10;
            if (k!=0 && pos>=lenc)
                continue;
            bool f1= (pa<(int)a.size() && a[pa]-’0’ == i);
            bool f2= (pb<(int)b.size() && b[pb]-’0’ == j);
            bool f3= (pc<(int)c.size() && c[pc]-’0’ == k);
            if (sh & !f1 && !f2 && !f3)
                continue;
            if (go(pos+1,pa+f1,pb+f2,pc+f3,(i+j+key)>9,!f1 && !f2
&& !f3))
                return ret=true;
        }
    }
    return ret = false;
}


void print (int pos, int pa, int pb, int pc, int key, int sh){
    int &ret = dp[pos][pa][pb][pc][key][sh];
    if (pa==(int)a.size() && pb==(int)b.size() && pc==(int)c.size() &&
key==0)
        return;
    ret = false;
    for (int i=0; i<10; i++) if (i==0 || pos<lena){
        for (int j=0; j<10; j++) if (j==0 || pos<lenb){
            int k = (i+j+key)%10;
            if (k!=0 && pos>=lenc)
                continue;
            bool f1= (pa<(int)a.size() && a[pa]-’0’ == i);
            bool f2= (pb<(int)b.size() && b[pb]-’0’ == j);
            bool f3= (pc<(int)c.size() && c[pc]-’0’ == k);
            if (sh & !f1 && !f2 && !f3)
                continue;
            if (go(pos+1,pa+f1,pb+f2,pc+f3,(i+j+key)>9,!f1 && !f2
&& !f3)){
                if (pos<lena) A = char(i+’0’) + A;
                if (pos<lenb) B = char(j+’0’) + B;
                if (pos<lenc) C = char(k+’0’) + C;
                print(pos+1,pa+f1,pb+f2,pc+f3,(i+j+key)>9,!f1
&& !f2 && !f3);
```

```
                                        return;
                                }
                        }
                }
        }

int main(){
        cin >> s;
        for (int i=0; i<(int)s.size(); i++) if (!isdigit(s[i])) s[i] = ' ';
        stringstream inp(s);
        inp >> a >> b >> c;
        reverse(a.begin(),a.end());
        reverse(b.begin(),b.end());
        reverse(c.begin(),c.end());
        string ans(100,'#');
        for (lena=(int)a.size(); lena<=20; lena++){
                for (lenb=(int)b.size(); lenb<=20; lenb++){
                        for (lenc=(int)c.size(); lenc<=20; lenc++) if
(lena+lenb+lenc+2<(int)ans.size() && lena+lenb+lenc<(int)a.size()+(int)
b.size()+(int)c.size()+16){
                                memset(dp,-1,sizeof dp);
                                if (go(0,0,0,0,0,0)){
                                        A=B=C="";
                                        print(0,0,0,0,0,0);
                                        ans = A + "+" + B + "=" + C;
                                }
```

```
            }
        }
    }
    cout << ans << endl;
    return 0;
}
```

havaliza

```
using namespace std;

#define FOREACH(i, c) for(__typeof((c).begin()) i = (c).begin(); i != (c).end(); ++i)
#define FOR(i, a, n) for (int i = (a); i < int(n); ++i)
#define error(x) cout << #x << ″ = ″ << (x) << endl;
#define all(n) (n).begin(), (n).end()
#define Size(n) ((int)(n).size())
#define mk make_pair
#define pb push_back
#define F first
#define S second
#define X real()
#define Y imag()

typedef long long ll;
typedef pair<int, int> pii;
typedef pair<ll, ll> pll;
typedef complex<double> point;

template <class P, class Q> void smin(P &a, Q b) { if (b < a) a = b; }
template <class P, class Q> void smax(P &a, Q b) { if (b > a) a = b; }
template <class T> bool by_second(T a, T b) { return a.S < b.S; }

const int LEN = 9, CAR = 3;

struct answer {
	basic_string<int> a, b, c;
	void print(basic_string<int> a) {
		reverse(all(a));
		FOREACH(it, a) cout << *it;
	}
	void print() {
		print(a); cout << "+";
		print(b); cout << "=";
		print(c); cout << endl;
	}
} ans[LEN][LEN][LEN][CAR][3];

void add(answer &p, const answer &q, int a, int b, int c) {
	p.a = q.a; if (a != -1) p.a += a;
```

```
        p.b = q.b; if (b != -1) p.b += b;
        p.c = q.c; if (c != -1) p.c += c;
}

int d1[LEN], d2[LEN], d3[LEN], l1, l2, l3;
int dp[LEN][LEN][LEN][CAR][3];
bool mark[LEN][LEN][LEN][CAR][3];

int main() {
        ios::sync_with_stdio(false);
        memset(d1, -1, sizeof d1);
        memset(d2, -1, sizeof d2);
        memset(d3, -1, sizeof d3);
        int a, b, c; char del;
        cin >> a >> del >> b >> del >> c;
        while (a) d1[l1++] = a%10, a /= 10;
        while (b) d2[l2++] = b%10, b /= 10;
        while (c) d3[l3++] = c%10, c /= 10;
        memset(dp, 63, sizeof dp);
        dp[0][0][0][0][0] = 0;
        while (1) {
                int best = -1;
                int x = -1, y = -1, z = -1, car = -1, sleep = -1;
                FOR(i, 0, l1+1) FOR(j, 0, l2+1) FOR(k, 0, l3+1) FOR(l, 0, CAR) FOR(m, 0, 3) if (!mark[i][j][k][l][m] && (best == -1 || best > dp[i][j][k][l][m])) {
```

```
            best = dp[i][j][k][l][m];

            x = i, y = j, z = k, car = l, sleep = m;

        }

        if (best == -1) break;

        mark[x][y][z][car][sleep] = true;

        if (sleep == 0) {

            if (d1[x] == -1 && dp[x][y][z][car][1] > dp[x][y][z]
[car][0]) dp[x][y][z][car][1] = dp[x][y][z][car][0], ans[x][y][z][car][1] =
ans[x][y][z][car][0];

            if (d2[y] == -1 && dp[x][y][z][car][2] > dp[x][y][z]
[car][0]) dp[x][y][z][car][2] = dp[x][y][z][car][0], ans[x][y][z][car][2] =
ans[x][y][z][car][0];

        }

        if (d1[x] == -1 && d2[y] == -1 && car == d3[z] && d3[z+1]
== -1 && dp[x][y][z][car][sleep] < dp[11][12][13][0][sleep]) {

            dp[11][12][13][0][sleep] = dp[x][y][z][car][sleep];

            add(ans[11][12][13][0][sleep], ans[x][y][z][car]
[sleep], -1, -1, car);

        }

        if (d1[x] == -1 && d2[y] == -1 && d3[z] == -1 && car > 0 &&
dp[x][y][z][car][sleep] < dp[11][12][13][0][sleep]) {

            dp[11][12][13][0][sleep] = dp[x][y][z][car][sleep];

            add(ans[11][12][13][0][sleep], ans[x][y][z][car]
[sleep], -1, -1, car);

        }

        FOR(a, 0, 10) FOR(b, 0, 10) {

            if (sleep == 1 && a) continue;

            if (sleep == 2 && b) continue;
            int c = (a+b+car)%10;
            int nx = d1[x]==a?x+1:x;
            int ny = d2[y]==b?y+1:y;
            int nz = d3[z]==c?z+1:z;
            int ncar = (a+b+car)/10;
            int cost = int(nx==x)+int(ny==y)+int(nz==z)-int(sleep>0);
            if (dp[x][y][z][car][sleep]+cost < dp[nx][ny][nz][ncar][sleep]) {
                dp[nx][ny][nz][ncar][sleep] = dp[x][y][z][car][sleep]+cost;
                add(ans[nx][ny][nz][ncar][sleep], ans[x][y][z][car][sleep], sleep!=1?a:-1, sleep!=2?b:-1, c);
            }
        }
    }
    int mn = 0;
    FOR(i, 1, 3) if (dp[l1][l2][l3][0][i] < dp[l1][l2][l3][0][mn]) mn = i;
    ans[l1][l2][l3][0][mn].print();
    return 0;
}
```

I-juice

```
using namespace std;
```

```
#define mp make_pair

#define forn(i,n) for(int i=0;i<(int)n;i++)

#define X first

#define Y second


typedef long long int64;


int a,b,c,la,lb,lc;

char A[12],B[12],C[12],d;


map<int,int>was;

map<int,int>to;

map<int,pair<pair<int,int>,int> >tr;


inline int pcalc(const int &da, const int &la, char *A, const int &i, int
&add)

{

  if (da==la)

    {

      if (i==0)

        add--;

      return da;

    }

  if (A[da]==i)

  {

    add--;
    return da+1;
  }
  return da;
}

inline int zcalc(const int &da, const int &la, const int &za, const int &i,
int &add)
{
  if (da==la)
  {
    if (i>0)
    {
      add+=za;
      return 0;
    }
    return za+1;
  }
  return 0;
}


inline int hash(const int &da,const int &db,const int &dc,const int
&p,const int &za,const int &zb,const int &zc,int last)
{return (zc+(zb+(za+(p+(dc+(db+da*20)*20)*2)*20)*20)*20)*2+last;}

inline void dehash(int h, int &da, int &db, int &dc, int &p, int &za, int
&zb, int &zc, int &ok)
{
  ok=h%2;    h/=2;
  zc=h%20;  h/=20;
  zb=h%20;  h/=20;
  za=h%20;  h/=20;
  p=h%2;     h/=2;
  dc=h%20;  h/=20;
  db=h%20;  h/=20;
  da=h%20;  h/=20;
}

int get_ans(int da, int db, int dc, int p, int za, int zb, int zc, bool last)
{
  if (da==la && db==lb && dc==lc && p==0)
    return 0;
  int key=hash(da,db,dc,p,za,zb,zc,last);
  if (was.count(key))
    return was[key];
  int best=1<<30;
  forn(i,10)
    forn(j,10)
      {
        int k=(i+j+p)%10,add=3;
        int nda = pcalc(da,la,A,i,add);
        int ndb = pcalc(db,lb,B,j,add);

        int ndc = pcalc(dc,lc,C,k,add);


        int np = (i+j+p)>=10?1:0;


        int nza = zcalc(da,la,za,i,add);

        int nzb = zcalc(db,lb,zb,j,add);

        int nzc = zcalc(dc,lc,zc,k,add);




        bool ok = true;

        if (nda==da && ndb==db && ndc==dc)

          ok=false;


        if (!last && !ok)

          continue;


        int g = get_ans(nda,ndb,ndc,np,

                        nza,nzb,nzc,ok);

        if (best>g+add)

          {

            best=g+add;

            to[key]=hash(nda,ndb,ndc,np,

                         nza,nzb,nzc,ok);

            tr[key]=mp(mp(i,j),k);
```

```
          }
      }
  return was[key]=best;
}
void to_char(int a, int &la, char*A)
{
  while (a>0)
  {
    A[la++]=a%10;
    a/=10;
  }
}
int main()
{
  cin>>a>>d>>b>>d>>c;

  to_char(a,la,A);
  to_char(b,lb,B);
  to_char(c,lc,C);

  get_ans(0,0,0,0,0,0,0,true);
  int da=0,db=0,dc=0,p=0,za=0,zb=0,zc=0,ok=true;
  int64 aa=0,bb=0,cc=0,t=1;
  while (!(da==la && db==lb && dc==lc && p==0))
  {
     int h=hash(da,db,dc,p,za,zb,zc,ok);
     aa=aa+t*tr[h].X.X;
     bb=bb+t*tr[h].X.Y;
     cc=cc+t*tr[h].Y;
     t*=10;
     int g = to[h];
     dehash(g,da,db,dc,p,za,zb,zc,ok);
  }
  printf(″%I64d+%I64d=%I64d\n″,aa,bb,cc);
  return 0;
}
```

liympanda

TLE on test 8

```
using namespace std;

vector<int> a1,a2,a3;
int d[20][2];
pair<int,pair<int,int> > dd[20][2];
int n1,n2,n3;
string s1,s2,s3;

int solve()
{
```

```
int n,i,st1,st2,ed1,ed2,tmp,j,k,st3,ed3,jin,rem;

vector<int> aa1,aa2,aa3;

n=a3.size();

if (a1.size()>n) return 0;

if (a2.size()>n) return 0;

aa1.clear();

aa2.clear();

aa3.clear();

tmp=0;

for (i=0;i<a1.size();i++)

        if (a1[i]==-1) aa1.push_back(-1);

        else

        {

                aa1.push_back(s1[tmp]-’0’);

                tmp++;

        }

tmp=0;

for (i=0;i<a2.size();i++)

        if (a2[i]==-1) aa2.push_back(-1);

        else

        {

                aa2.push_back(s2[tmp]-’0’);

                tmp++;

        }

tmp=0;
```

```
for (i=0;i<a3.size();i++)
       if (a3[i]==-1) aa3.push_back(-1);
       else
       {
              aa3.push_back(s3[tmp]-’0’);
              tmp++;
       }
memset(d,0,sizeof(d));
d[0][0]=1;
for (i=0;i<n;i++)
{
       if (i<aa1.size())
       {
              if (aa1[i]==-1)
              {
                     st1=0;ed1=9;
                     if (i+1==aa1.size()) st1=1;
              }
              else
              {
                     st1=aa1[i];ed1=aa1[i];
              }

       }
       else
```

```
{
        st1=0;ed1=0;
}
if (i<aa2.size())
{
        if (aa2[i]==-1)
        {
                st2=0;ed2=9;
                if (i+1==aa2.size()) st2=1;
        }
        else
        {
                st2=aa2[i];ed2=aa2[i];
        }
}
else
{
        st2=0;ed2=0;
}
if (i<aa3.size())
{
        if (aa3[i]==-1)
        {
                st3=0;ed3=9;
                if (i+1==aa3.size()) st3=1;
```

```
    }
    else
    {
        st3=aa3[i];ed3=aa3[i];
    }
}
else
{
    st3=0;ed3=0;
}
for (j=st1;j<=ed1;j++)
{
    if ((d[i+1][0]==1)&&(d[i+1][1]==1)) break;
    for (k=st2;k<=ed2;k++)
    {
        if ((d[i+1][0]==1)&&(d[i+1][1]==1)) break;
        tmp=j+k;
        if (d[i][0]==1)
        {
            if (tmp>=10)
            {
                jin=1;
                rem=tmp-10;
            }
            else
            {
                jin=0;
                rem=tmp;
            }
            if ((st3<=rem)&&(rem<=ed3))
                d[i+1][jin]=1;
        }
        if (d[i][1]==1)
        {
            tmp++;
            if (tmp>=10)
            {
                jin=1;
                rem=tmp-10;
            }
            else
            {
                jin=0;
                rem=tmp;
            }
            if ((st3<=rem)&&(rem<=ed3))
                d[i+1][jin]=1;
        }
    }
}
```

```
}
if (d[n][0]==0) return 0;
for (i=0;i<=n;i++)
    for (j=0;j<2;j++)
    {
        dd[i][j].first=0;
        dd[i][j].second.first=0;
        dd[i][j].second.second=0;
    }
dd[0][0].first=1;
for (i=0;i<n;i++)
{
    if (i<aa1.size())
    {
        if (aa1[i]==-1)
        {
            st1=0;ed1=9;
            if (i+1==aa1.size()) st1=1;
        }
        else
        {
            st1=aa1[i];ed1=aa1[i];
        }

    }
```

```
else
{
        st1=0;ed1=0;
}
if (i<aa2.size())
{
        if (aa2[i]==-1)
        {
                st2=0;ed2=9;
                if (i+1==aa2.size()) st2=1;
        }
        else
        {
                st2=aa2[i];ed2=aa2[i];
        }
}
else
{
        st2=0;ed2=0;
}
if (i<aa3.size())
{
        if (aa3[i]==-1)
        {
                st3=0;ed3=9;
        if (i+1==aa3.size()) st3=1;
    }
    else
    {
        st3=aa3[i];ed3=aa3[i];
    }
}
else
{
    st3=0;ed3=0;
}
for (j=st1;j<=ed1;j++)
    for (k=st2;k<=ed2;k++)
    {
        tmp=j+k;
        if (dd[i][0].first!=0)
        {
            if (tmp>=10)
            {
                jin=1;
                rem=tmp-10;
            }
            else
            {
                jin=0;
                rem=tmp;
        }
        if ((st3<=rem)&&(rem<=ed3))
        {
                dd[i+1][jin].first=-1;
                dd[i+1][jin].second=make_pair(j,k);
        }
}
if (dd[i][1].first!=0)
{
        tmp++;
        if (tmp>=10)
        {
                jin=1;
                rem=tmp-10;
        }
        else
        {
                jin=0;
                rem=tmp;
        }
        if ((st3<=rem)&&(rem<=ed3))
        {
                dd[i+1][jin].first=1;
                dd[i+1][jin].second=make_pair(j,k);
                }
            }
        }
}
i=n;j=0;
while (i>0)
{
    if (i-1<a1.size())
    {
        aa1[i-1]=dd[i][j].second.first;
    }
    if (i-1<a2.size())
    {
        aa2[i-1]=dd[i][j].second.second;
    }
    aa3[i-1]=dd[i][j].second.first+dd[i][j].second.second;
    if (dd[i][j].first==1) aa3[i-1]++;
    aa3[i-1]%=10;
    if (dd[i][j].first==-1)
    {
        i--;
        j=0;
    }
    else
    {
```

```
                i--;
                j=1;
            }
        }
        for (i=aa1.size()-1;i>=0;i--)
            printf("%d",aa1[i]);
        printf("+");
        for (i=aa2.size()-1;i>=0;i--)
            printf("%d",aa2[i]);
        printf("=");
        for (i=aa3.size()-1;i>=0;i--)
            printf("%d",aa3[i]);
        printf("\n");
        return 1;
}

int main()
{
        //freopen("pa.in","r",stdin);
        char s[1000];
        int i,j,k,l,tot,ans;
        string ss;
        scanf("%s",s);
        ss=s;
        n1=ss.find_first_of('+');
```

```
s1=ss.substr(0,n1);
ss.erase(0,n1+1);
n2=ss.find_first_of('=');
s2=ss.substr(0,n2);
ss.erase(0,n2+1);
n3=ss.length();
s3=ss;
reverse(s1.begin(),s1.end());
reverse(s2.begin(),s2.end());
reverse(s3.begin(),s3.end());
for (ans=0;ans<=9;ans++)
{
        tot=n1+n2+n3+ans;
        a1.clear();
        for (l=0;l<n1;l++)
                a1.push_back(1);
        for (i=n1;i+n2+n3<=tot;i++)
        {
                sort(a1.begin(),a1.end());
                do
                {
                        a2.clear();
                        for (l=0;l<n2;l++)
                                a2.push_back(1);
                        for (j=n2;i+j+n3<=tot;j++)
                {
                    sort(a2.begin(),a2.end());
                    do
                    {
                        a3.clear();
                        for (l=0;l<n3;l++)
                            a3.push_back(1);
                        k=tot-i-j-n3;
                        for (l=0;l<k;l++)
                            a3.push_back(-1);
                        {
                            sort(a3.begin(),a3.end());
                            do
                            {
                                if (solve()==1)
                                {
                                    return 0;
                                }
                            }while
(next_permutation(a3.begin(),a3.end()));
                        }
                    }while
(next_permutation(a2.begin(),a2.end()));
                    a2.push_back(-1);
                }
            }while (next_permutation(a1.begin(),a1.end()));
```

```
                        a1.push_back(-1);
                }
        }
        return 0;
}
```