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/*  
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Division: Junior  
Contest 3  
*/
```

```
#include <iostream>  
#include <vector>
```

```
using namespace std;
```

```
string HexToBin(char hexdec)
```

```
{  
    switch (hexdec) {  
        case '0':  
            return "0000";  
            break;  
        case '1':  
            return "0001";  
            break;  
        case '2':  
            return "0010";  
            break;  
        case '3':  
            return "0011";  
            break;  
        case '4':  
            return "0100";  
            break;  
        case '5':  
            return "0101";  
            break;  
        case '6':  
            return "0110";  
            break;  
        case '7':  
            return "0111";  
            break;  
        case '8':  
            return "1000";  
            break;  
        case '9':  
            return "1001";  
            break;  
        case 'A':  
            return "1010";
```

```

        break;
    case 'B':
        return "1011";
        break;
    case 'C':
        return "1100";
        break;
    case 'D':
        return "1101";
        break;
    case 'E':
        return "1110";
        break;
    case 'F':
        return "1111";
        break;
    default:
        return "err4";
    }
}

```

```

int main()
{//line1,line2,
    string line, tmp, tmp1,tmp2,tmp3,tmp4;
    string r[8]={"129","123","723","729","189","183","783","789"};
    int A=0,B=0,C=0,sum=0;
    char first, second;
    vector <string> b;
    bool flag=false;

    cin>>first>>second;

    line=HexToBin(first);
    line=line+HexToBin(second);
    //cout<<line<<endl;
    if(line=="11111111")
        cout<<"1";
    else if(line=="00000000")
        cout<<"0";
    else
    {
        for(int i=0;i<8;i++)
        {
            if(line[i]=='0')
            {
                r[i]="xxx";
            }
        }
    }
}

```

```

}

//group in 4 by row
sum=0;
for(int i=0;i<4;i++)
{
    sum+=line[i]-'0';
}
// cout<<sum<<endl;
if(sum==4)
{
    b.push_back("B");
    for(int i=0;i<4;i++)
    {
        r[i]="xxx";
    }
}
sum=0;
for(int i=4;i<8;i++)
{
    sum+=line[i]-'0';
}
if(sum==4)
{
    b.push_back("~B");
    for(int i=4;i<8;i++)
    {
        r[i]="xxx";
    }
}
//group in 4 by block
for(int i=0;i<3;i++)
{
    tmp1=r[i];
    tmp2=r[i+1];
    tmp3=r[i+4];
    tmp4=r[i+5];
    A=tmp1[0]-'0'+tmp2[0]-'0'+tmp3[0]-'0'+tmp4[0]-'0';
    B=tmp1[1]-'0'+tmp2[1]-'0'+tmp3[1]-'0'+tmp4[1]-'0';
    C=tmp1[2]-'0'+tmp2[2]-'0'+tmp3[2]-'0'+tmp4[2]-'0';

    if(A==4)
    {
        b.push_back("A");
        r[i]="xxx";
        r[i+1]="xxx";
        r[i+4]="xxx";
        r[i+5]="xxx";
    }
}

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else if(A==28)
{
    b.push_back("~A");
    r[i]="xxx";
    r[i+1]="xxx";
    r[i+4]="xxx";
    r[i+5]="xxx";
}
if(C==12)
{
    b.push_back("C");
    r[i]="xxx";
    r[i+1]="xxx";
    r[i+4]="xxx";
    r[i+5]="xxx";
}
}
//group end 4 blocks
tmp1=r[0];
tmp2=r[3];
tmp3=r[4];
tmp4=r[7];
C=tmp1[2]-'0'+tmp2[2]-'0'+tmp3[2]-'0'+tmp4[2]-'0';
if(C==36)
{
    r[0]="xxx";
    r[3]="xxx";
    r[4]="xxx";
    r[7]="xxx";
    b.push_back("~C");
}
//group in 2 by row
for(int i=0;i<7;i++)
{
    if(i!=3)
    {
        tmp1=r[i];
        tmp2=r[i+1];
        tmp="";
        A=tmp1[0]-'0'+tmp2[0]-'0';
        B=tmp1[1]-'0'+tmp2[1]-'0';
        C=tmp1[2]-'0'+tmp2[2]-'0';
        if(A==2)
        {
            tmp+="A";
        }
    }
    else if(A==14)
    {
        tmp+="~A";
    }
}

```

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}
if(B==4)
{
    tmp+="B";
}
else if(B==16)
{
    tmp+="~B";
}
if(C==6)
{
    tmp+="C";
}
else if(C==18)
{
    tmp+="~C";
}
if(tmp!="")
{b.push_back(tmp);
r[i]="xxx";
r[i+1]="xxx";
}
}
}
}
}

```

```

//group in 2 by col
for(int i=0;i<4;i++)
{
    tmp1=r[i];
    tmp2=r[i+4];
    tmp="";
    A=tmp1[0]-'0'+tmp2[0]-'0';
    B=tmp1[1]-'0'+tmp2[1]-'0';
    C=tmp1[2]-'0'+tmp2[2]-'0';
    if(A==2)
    {
        tmp+="A";
    }
    else if(A==14)
    {
        tmp+="~A";
    }
    if(B==4)
    {
        tmp+="B";
    }
    else if(B==16)

```

```

    {
        tmp+="~B";
    }
    if(C==6)
    {
        tmp+="C";
    }
    else if(C==18)
    {
        tmp+="~C";
    }
    if(tmp!="")
    {
        b.push_back(tmp);
        r[i]="xxx";
        r[i+4]="xxx";
    }
}

```

```

if(r[0]!="xxx" && r[3]!="xxx")
{
    r[0]="xxx";
    r[3]="xxx";
    b.push_back("B~C");
}

```

```

if(r[4]!="xxx" && r[7]!="xxx")
{
    r[4]="xxx";
    r[7]="xxx";
    b.push_back("~B~C");
}

```

```

for(int i=0;i<8;i++)
{
    tmp=r[i];
    tmp1="";
    if(tmp!="xxx")
    {
        tmp1="";
        if(tmp[0]=='1')
            tmp1+="A";
        else if(tmp[0]=='7')
            tmp1+="~A";

        if(tmp[1]=='2')
            tmp1+="B";
        else if(tmp[1]=='8')
            tmp1+="~B";
    }
}

```

```
        if(tmp[2]=='3')
            tmp1+="C";
        else if(tmp[2]=='9')
            tmp1+="~C";
        b.push_back(tmp1);
    }
}

for(int i=0; i < b.size(); i++)
{
    cout << b.at(i);
    if(i<b.size()-1)
        cout << '+';
}
}

return 0;
}
```