

```
/*  
Name: Emily Ma  
Team: STEMnArts  
Division: Junior  
Contest 3  
*/  
#include <math.h>  
#include <iostream>  
#include <string>  
  

```

```

        return "1010";
        break;
    case 'B':
    case 'b':
        return "1011";
        break;
    case 'C':
    case 'c':
        return "1100";
        break;
    case 'D':
    case 'd':
        return "1101";
        break;
    case 'E':
    case 'e':
        return "1110";
        break;
    case 'F':
    case 'f':
        return "1111";
        break;
    }
}
}

```

// driver code

```

int main()
{
    bool flag=true;
    char hexdec[2];
    cin >> hexdec;
    //int A = 1;
    //int NA = -1;
    //int B = 2;
    //int NB = -2;
    //int C = 3;
    //int NC = -3;
    string one = HexToBin(hexdec[0]);
    string two = HexToBin(hexdec[1]);
    string line = one + two;
    //cout << line<<endl;
    string arr[8]={"AB~C", "ABC", "~ABC", "~AB~C", "A~B~C", "A~BC",
    "~AB~C", "~A~B~C"};
    for (int i = 0; i<8; i++){
        if(line[i] == '0'){
            arr[i]="";
        }
    }
}

```

```

if (line == "00000000"){
    cout << "0";
}
if (line == "11111111"){
    cout << "1";
    arr[0] = "";
    arr[1] = "";
    arr[2] = "";
    arr[3] = "";
    arr[4] = "";
    arr[5] = "";
    arr[6] = "";
    arr[7] = "";
}
if (arr[0] != "" && arr[1] != "" && arr[4] != "" && arr[5] != ""){
    if(!flag)
    {
        cout << '+';
    }
    flag=false;
    cout << "A";
    arr[0] = "";
    arr[1] = "";
    arr[4] = "";
    arr[5] = "";
    flag=false;
    //cc
}
if (arr[0] != "" && arr[1] != "" && arr[2] != "" && arr[3] != ""){
    if(!flag)
    {
        cout << '+';
    }
    flag=false;
    cout << "B";
    arr[0] = "";
    arr[1] = "";
    arr[2] = "";
    arr[3] = "";
    //f0
}
if (arr[4] != "" && arr[5] != "" && arr[6] != "" && arr[7] != ""){
    if(!flag)
    {
        cout << '+';
    }
    flag=false;
    cout << "~B";
    arr[4] = "";
}

```

```

arr[5] = "";
arr[6] = "";
arr[7] = "";
}
if (arr[1] != "" && arr[2] != "" && arr[5] != "" && arr[6] != "") {
    if (!flag)
    {
        cout << '+';
    }
    flag = false;
    cout << "C";
    arr[1] = "";
    arr[2] = "";
    arr[5] = "";
    arr[6] = "";
}
//66

```

```

if (arr[2] != "" && arr[3] != "" && arr[6] != "" && arr[7] != "") {
    if (!flag)
    {
        cout << '+';
    }
    flag = false;
    cout << "~A";
    arr[2] = "";
    arr[3] = "";
    arr[6] = "";
    arr[7] = "";
}
//33
}

```

```

if (arr[0] != "" && arr[3] != "" && arr[4] != "" && arr[7] != "") {
    if (!flag)
    {
        cout << '+';
    }
    flag = false;
    cout << "~C";
    arr[0] = "";
    arr[3] = "";
    arr[4] = "";
    arr[7] = "";

}
//66

```

```

if (arr[0] != "" && arr[1] != "") {
    if (!flag)

```

```

        {
            cout<<'+';
        }
flag=false;
cout <<"AB";
arr[0] ="";
arr[1] ="";

}

if (arr[2]!=""&&arr[3]!=""){
    if(!flag)
    {
        cout<<'+';
    }
flag=false;
cout <<"~AB";
arr[2] ="";
arr[3] ="";
}

if (arr[4]!=""&&arr[5]!=""){
    if(!flag)
    {
        cout<<'+';
    }
flag=false;
cout <<"A~B";
arr[4] ="";
arr[5] ="";
}

if (arr[6]!=""&&arr[7]!=""){
    if(!flag)
    {
        cout<<'+';
    }
flag=false;
cout <<"~A~B";
arr[6] ="";
arr[7] ="";
}

if (arr[0]!=""&&arr[4]!=""){
    if(!flag)
    {
        cout<<'+';
    }
flag=false;

```

```
cout <<"A~C";
arr[0] ="";
arr[4] ="";
}
```

```
if (arr[1]!= ""&&arr[5]!= ""){
if(!flag)
{
cout<<'+';
}
flag=false;
cout <<"AC";
arr[1] ="";
arr[5] ="";
}
```

```
if (arr[2]!= ""&&arr[6]!= ""){
if(!flag)
{
cout<<'+';
}
flag=false;
cout<<"~AC";
arr[2] ="";
arr[6] ="";
}
```

```
if (arr[3]!= ""&&arr[7]!= ""){
if(!flag)
{
cout<<'+';
}
flag=false;
cout<<"~A~C";
arr[3] ="";
arr[7] ="";
}
```

```
if (arr[1]!= "" && arr[2]!= ""){
if(!flag)
{
cout<<'+';
}
flag=false;
cout<<"BC";
arr[1] ="";
arr[2] ="";
}
```

```

if (arr[5] != "" && arr[6] != ""){
    if(!flag)
    {
        cout<<'+';
    }
    flag=false;
    cout<<"~BC";
    arr[5] = "";
    arr[6] = "";
}

```

```

if (arr[0] != "" && arr[3] != ""){
    if(!flag)
    {
        cout<<'+';
    }
    flag=false;
    cout <<"B~C";
    arr[0] = "";
    arr[3] = "";
}

```

```

if (arr[4] != "" && arr[7] != ""){
    if(!flag)
    {
        cout<<'+';
    }
    flag=false;
    cout <<"~B~C";
    arr[4] = "";
    arr[7] = "";
}

```

```

for (int i = 0; i<8; i++){
    if (arr[i] != "" && i!=7){
        cout <<"+";}
    if(arr[i] != ""){
        cout << arr[i];
    }
}

```

```

// string answer = HexToBin(hexdec);

```

```

return 0;
}

```