The Validator

Assignment:
Create a program which can test the validity of propositional logic. Remember, a propositional logical statement is invalid should you find any combination of input where the PROPOSITIONAL statements are ALL true, while the CONCLUSION statement is false.

Propositional Statements:

If someone has a rocket, that implies they're an astronaut.
If someone is an astronaut, that implies they're highly trained.
If someone is highly trained, that implies they're educated.

Conclusion Statement:

A person is educated, that implies they have a rocket.

Your output should declare the statement to either be valid or invalid. If it's invalid, it needs to state which combination of inputs yielded the statement invalid. MAKE SURE IT POINTS OUT EVERY TIME THE STATEMENT IS INVALID IF IT IS INDEED INVALID. (50pts code, 50pts for output)

Code:

```
// Name: Dawlat Hamad
// ID: GV5450
// Lab 3 - Validator
// Repurposed a majority of Lab 2 changed what need to be changed

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

int main ()
{
   //Declare Variables
   int r[16] = {0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 1};
   int a[16] = {0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0, 1, 1, 1, 1};
   int h[16] = {0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 1, 1};
   int e[16] = {0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1};


   //List the Functions
   cout << "P1 = If someone has a rocket, that implies they are an astronaut.\t" << endl;
   cout << "P2 = If someone is an astronaut, that implies they are highly trained.\t" << endl;
   cout << "P3 = If someone is highly trained, that implies they are educated.\t" << endl;
   cout << "C1 = A person is educated, that implies they have a rocket.\t" << endl << endl;
   cout << "R = rocket, A = astronaut, H = highly trained, E = educated" << endl << endl;

   //Print the Header
   cout << "R\tA\tH\tE\tP1\tP2\tP3\tC1" << endl;

   //Output the answers
   for (int i = 0; i < 16; i++)
   {
```

```
        //
        cout << r[i] << "\t" << a[i] << "\t" << h[i] << "\t" << e[i] << "\t";
        cout << ((!r[i])|| a[i]) << "\t";
        cout << ((!a[i])|| h[i]) << "\t";
        cout << ((!h[i])|| e[i]) << "\t";
        cout << ((!e[i])|| r[i]) << "\t";


        if (((!r[i])|| a[i]) == 1 && ((!a[i])|| h[i]) == 1 && ((!h[i])|| e[i]) == 1 && ((!e[i])|| r[i]) == 0)
        {
            cout << "Invalid" << endl;
        }
        else
        {
            cout << endl;
        }

    }
    return 0;
}
```

Output:

```
[Running] cd "/Users/Dawlat/Desktop/CSC 1500/Lab/3/" && g++ lab3.cpp -o lab3
P1 = If someone has a rocket, that implies they are an astronaut.
P2 = If someone is an astronaut, that implies they are highly trained.
P3 = If someone is highly trained, that implies they are educated.
C1 = A person is educated, that implies they have a rocket.

R = rocket, A = astronaut, H = highly trained, E = educated

R   A   H   E   P1  P2  P3  C1
0   0   0   0   1   1   1   1
0   0   0   1   1   1   1   0   Invalid
0   0   1   0   1   1   0   1
0   0   1   1   1   1   1   0   Invalid
0   1   0   0   1   0   1   1
0   1   0   1   1   0   1   0
0   1   1   0   1   1   0   1
0   1   1   1   1   1   1   0   Invalid
1   0   0   0   0   1   1   1
1   0   0   1   0   1   1   1
1   0   1   0   0   1   0   1
1   0   1   1   0   1   1   1
1   1   0   0   1   0   1   1
1   1   0   1   1   0   1   1
1   1   1   0   1   1   0   1
1   1   1   1   1   1   1   1

[Done] exited with code=0 in 1.33 seconds
```