Estimation of LUT's using given function

Given function: **a &b | c ^ d & e| f ^ g & h**

Verilog code:

```
module EstimationOf_LUT_for_a_given_function(
   input a,b,c,d,e,f,g,h,
   output y
   );
   assign y = a&b|c^d&e|f^g&h;
endmodule
```

Schematics:

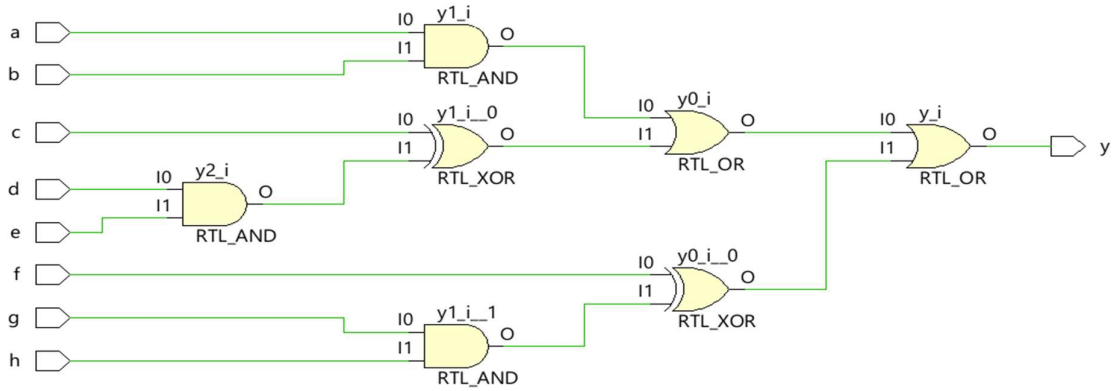

Figure 1: RTL Schematic

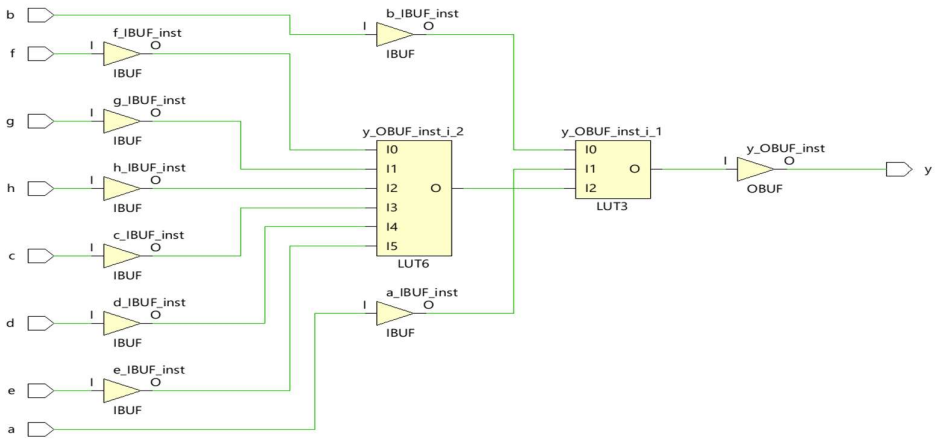

Figure 2: Sythesized schematic

Verilog code:

```
module EstimationOf_LUT_for_a_given_function(
   input a,b,c,d,e,f,g,h,
   output y
   );
   assign y = a&b|c^d&e|f^g&h;
endmodule
```

Two LUT's are being used – LUT3 and LUT6

LUT's:

	A	B	C	D	E	F	G
1	I5	I4	I3	I2	I1	I0	O=!I0 & I1 & I2 + !I3 & I4 & I5 + I0 & !I2 + I3 & !I5 + I0 & !I1 & I2 + I3 & !I4 & I5
2	0	0	0	0	0	0	0
3	0	0	0	0	0	1	1
4	0	0	0	0	1	0	0
5	0	0	0	0	1	1	1
6	0	0	0	1	0	0	0
7	0	0	0	1	0	1	1
8	0	0	0	1	1	0	1
9	0	0	0	1	1	1	0
10	0	0	1	0	0	0	1
11	0	0	1	0	0	1	1
12	0	0	1	0	1	0	1
13	0	0	1	0	1	1	1
14	0	0	1	1	0	0	1
15	0	0	1	1	0	1	1
16	0	0	1	1	1	0	1
17	0	0	1	1	1	1	1
18	0	1	0	0	0	0	0
19	0	1	0	0	0	1	1
20	0	1	0	0	1	0	0
21	0	1	0	0	1	1	1
22	0	1	0	1	0	0	0
23	0	1	0	1	0	1	1
24	0	1	0	1	1	0	1
25	0	1	0	1	1	1	0
26	0	1	1	0	0	0	1
27	0	1	1	0	0	1	1
28	0	1	1	0	1	0	1
29	0	1	1	0	1	1	1
30	0	1	1	1	0	0	1
31	0	1	1	1	0	1	1
32	0	1	1	1	1	0	1
33	0	1	1	1	1	1	1
34	1	0	0	0	0	0	0
35	1	0	0	0	0	1	1
36	1	0	0	0	1	0	0
37	1	0	0	0	1	1	1
38	1	0	0	1	0	0	0
39	1	0	0	1	0	1	1
40	1	0	0	1	1	0	1
41	1	0	0	1	1	1	0
42	1	0	1	0	0	0	1
43	1	0	1	0	0	1	1
44	1	0	1	0	1	0	1
45	1	0	1	0	1	1	1
46	1	0	1	1	0	0	1
47	1	0	1	1	0	1	1
48	1	0	1	1	1	0	1
49	1	0	1	1	1	1	1
50	1	1	0	0	0	0	1
51	1	1	0	0	0	1	1
52	1	1	0	0	1	0	1
53	1	1	0	0	1	1	1
54	1	1	0	1	0	0	1
55	1	1	0	1	0	1	1
56	1	1	0	1	1	0	1
57	1	1	0	1	1	1	1
58	1	1	1	0	0	0	0
59	1	1	1	0	0	1	1
60	1	1	1	0	1	0	0
61	1	1	1	0	1	1	1
62	1	1	1	1	0	0	0
63	1	1	1	1	0	1	1
64	1	1	1	1	1	0	1
65	1	1	1	1	1	1	0
66							

Figure 3: LUT6

y_OBUF_inst_i_1

I2	I1	I0	O=I0 & I1 + I2
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

Figure 4: LUT3

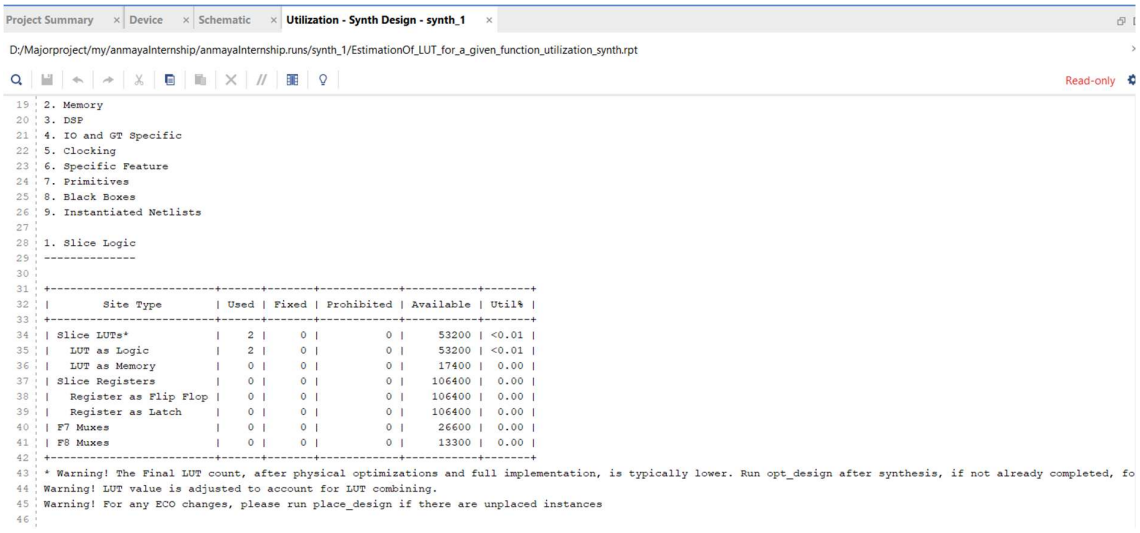

Figure 5: Slice usage

Total number of slice LUT's = 2