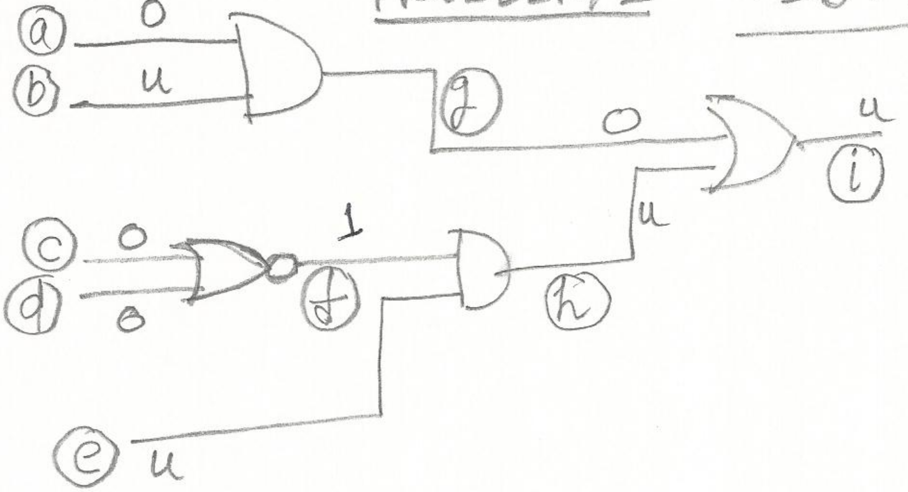
PROBLEM 1 TEST 1 SOLUTIONS



$L_a^1 = \{a_1\}$

$L_a^u = \{\phi\}$

$L_b^1 = \{b_1\}$

$L_b^0 = \{b_0\}$

$L_c^1 = \{c_1\}$

$L_c^u = \{\phi\}$

$L_d^1 = \{d_1\}$

$L_d^u = \{\phi\}$

$L_e^1 = \{e_1\}$

$L_e^0 = \{e_0\}$

$L_f^0 = L_c^1 \cup L_d^1 = \{c_1, d_1\}$

$$L_f^u = \overline{L_c^1} \cap \overline{L_d^1} - \overline{(L_c^1 \cup L_c^u)} \cap \overline{(L_d^1 \cup L_d^u)}$$
$$= \overline{\{c_1\}} \cap \overline{\{d_1\}} - \overline{\{c_1\}} \cap \overline{\{d_1\}}$$
$$= \{\phi\}$$

$L_g^1 = L_a^1 \cap L_b^1 = \{\phi\}$

$$L_g^u = (L_a^1 \cup L_a^u) \cap \overline{L_b^0} - (L_a^1 \cap L_b^1)$$
$$= \{a_1\}$$

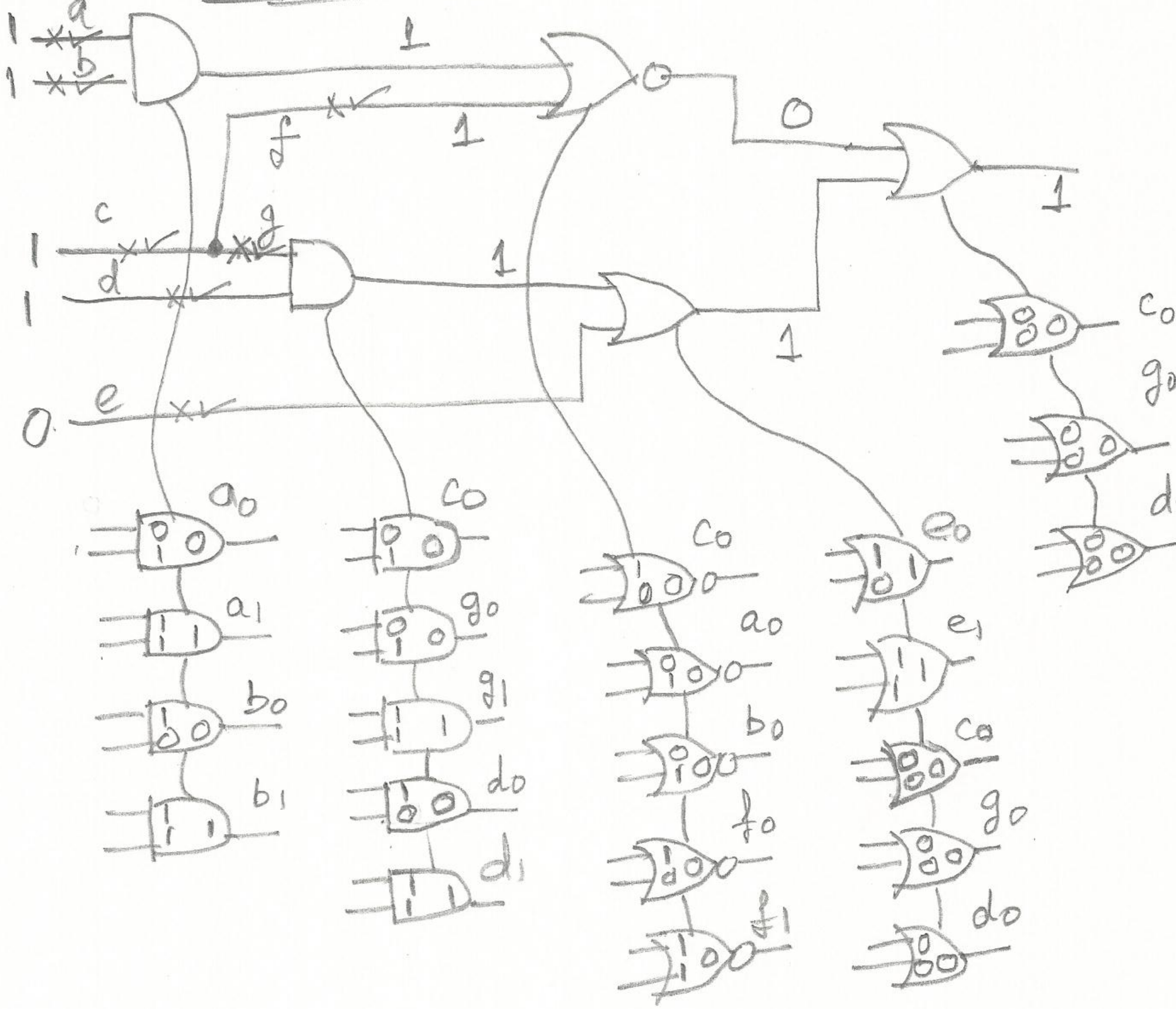
$L_h^1 = \overline{L_f^0 \cap L_f^u} \cap L_e^1 = \{e_1\}$

$L_h^0 = L_f^0 \cup L_e^0 = \{c_1, d_1, e_0\}$

$L_i^1 = L_g^1 \cup L_h^1 = \{e_1\}$

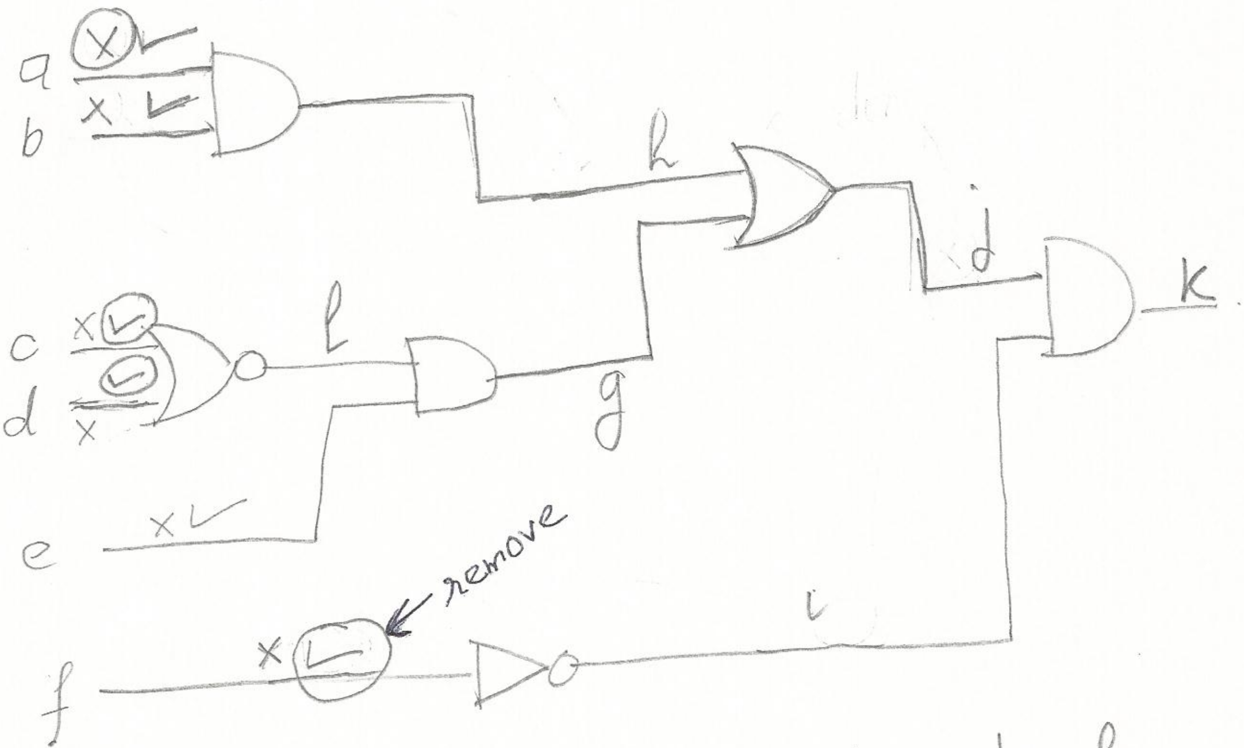
$$L_i^0 = \overline{(L_g^u \cup L_g^1)} \cap L_h^0$$
$$= \overline{\{a_1\}} \cap \{c_1, d_1, e_0\}$$
$$= \{c_1, d_1, e_0\}.$$

TEST PROBLEM 2



Detected: c_0, g_0, d_0.

PROBLEM 3 TEST 1.



1. $f_1 = i_0 = j_0$, $h_0 = a_0 = b_0$ — but j_0 dominates h_0 so remove j_0

Removing $j_0 \Leftrightarrow$ removing f_1.

$h_0 = b_0$ keep b_0, remove a_0.

2. $c_1 = d_1 = l_0 = e_0$. So remove c_1 and d_1.

So list of faults =

$= \{a_1, b_1, b_0, c_0, d_0, e_0, e_1, f_0\}$

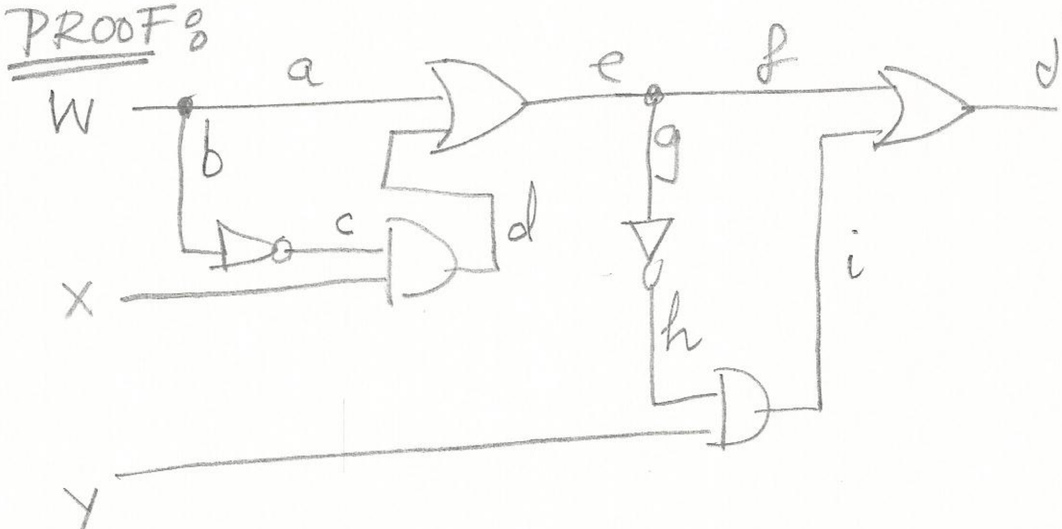
PROBLEM 4 TEST 1.

$$e = W + \bar{W}X = W + X$$

$$j = e + \bar{e}Y = e + Y$$

$\{b_0, g_0\}$ or $\{b_0, h_1\}$ are undetectable

PROOF:



Hint: $e = W + X$ is obtained by setting $c = 1$. $\Leftrightarrow$ c_1 is undectable

but $c_1 = b_0$, so b_0 is undetectable.

Similarly $j = e + Y$ is obtained by setting $h = 1$.

$\Rightarrow h_1$ is undectable $= g_0$ is undetectable