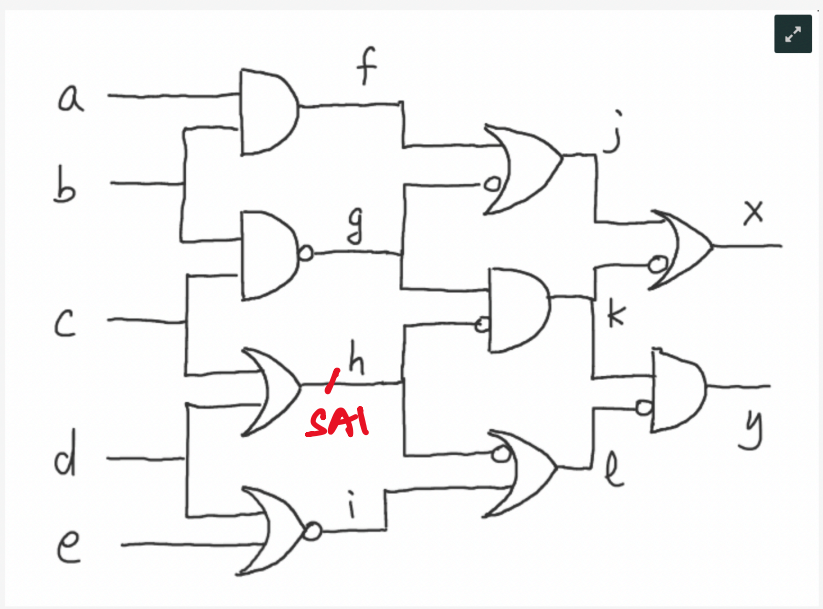
HW2

Sunday, September 8, 2024 9:49 AM



① Fault Activation :-

h - SA1

$\Rightarrow h = 0/1 = D'$

For $h = D' =$ $c = 0, d = 0$

$\Rightarrow g = 1/1 \Rightarrow g$ is 1 in both good and bad circuit

② Fault propogation :-

1.1 h → k → x

$h = D \Rightarrow c = 0, d = 0$

$\Rightarrow g = 1 \longrightarrow$ (1)

$\Rightarrow k = h'$ AND g

$\Rightarrow K = D' \text{ AND } 1$

$\Rightarrow \boxed{K = D}$

To propagate K to $X (i.e\ X = D')$:-

$j = 0$

$j = f \text{ or } g'$

$\Rightarrow f = 0, g' = 0 \text{ (or) } \boxed{g = 1}$

satisfies (1)

For $f = 0$, $\boxed{a = 0, b = X}$ (or)

$\boxed{b = 0, a = X}$

T.V = abcde = {0x00x U x000x}

Number of T.V's for $X = D'$ = 6

T.V's = { 00000, 00001, 01000, 01001

10000, 10001 }

(1.2) $h \rightarrow k \rightarrow y$

$h = D' \Rightarrow \boxed{c = 0, d = 0}$

To make $k = h' = D$,

$g = 1$

For $g = 1$, $c = 0$ (or) $b = 0$

For $k = h'$, c must be 0

$\therefore$ For $g = 1$, $\boxed{c = 0, b = X}$

To propogate k to y

$y = k$ AND l'

$k = D$, $l' = 1$ or $l = D$

$\Rightarrow l = 0$ or $\boxed{l = D'}$ → (2)

For $l = 0$ or $l = D'$

$\Rightarrow l = h'$ or i

$\Rightarrow l = 0$ not possible

$h = D' \Rightarrow h' = D$

To propogate h to l, $i = 0$

if $i = 0 \Rightarrow \boxed{l = D}$ → violates (2)

∴ propogation of h → k → y not possible

(1.3) h → l → y

To propogate $h \rightarrow l$, for $h = D'$, $\boxed{c = 0, d = 0}$

$l = h'$ or i

$h = D' \Rightarrow \boxed{l = D}$

i must be 0

For i to be 0, $d = 1$ or $e = 1$

$d = 1$ not possible

$\therefore \boxed{e = 1}$

To propogate l to y :-

$y = l'$ and k

For $y = l' \Rightarrow y = D'$, k must be 1

$k = h'$ and g

$h = D \Rightarrow k$ cannot be 1

$h \to l \to y$ is also not possible

$\therefore$ Neither D nor D' is possible at y.