

What is digital logic

Tuesday, January 20, 2009

9:52 AM

Digital logic is about the study and application of 0s and 1s.

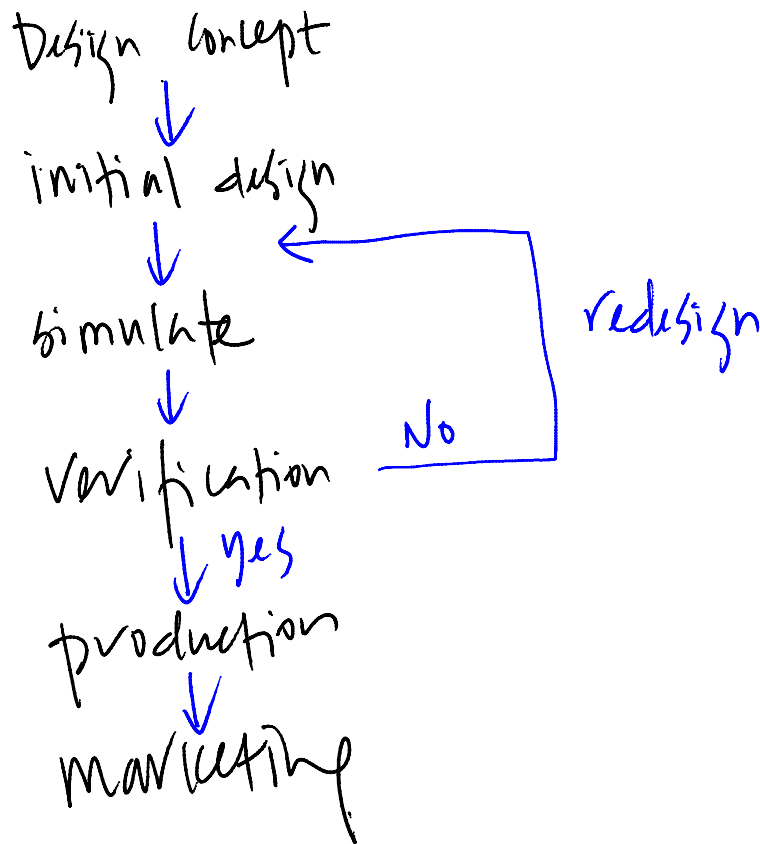
| | |
|---|-------|
| 0 | - on |
| 1 | - off |

positive logic

Digital logic is the fundamental of modern electronics and computing devices.

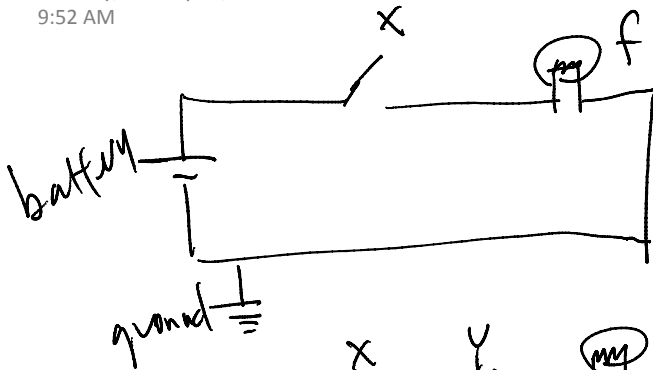
Whether it is your cellphone, computer, or music player, digital logic has a huge role in them!

Since this is a digital design course, let's talk about design process (which you will do a lot in this course and in the lab).



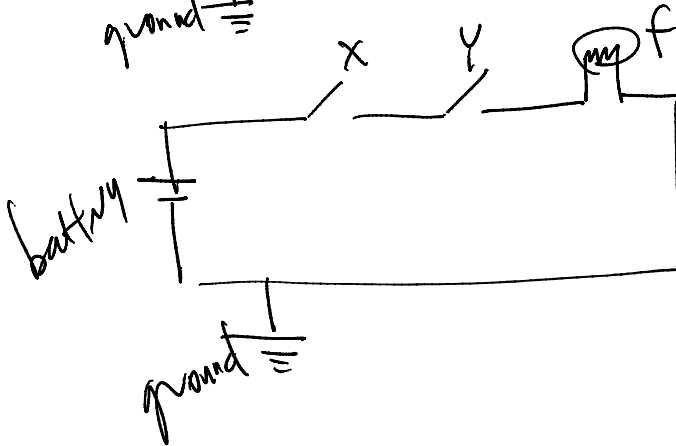
And, or, and combination

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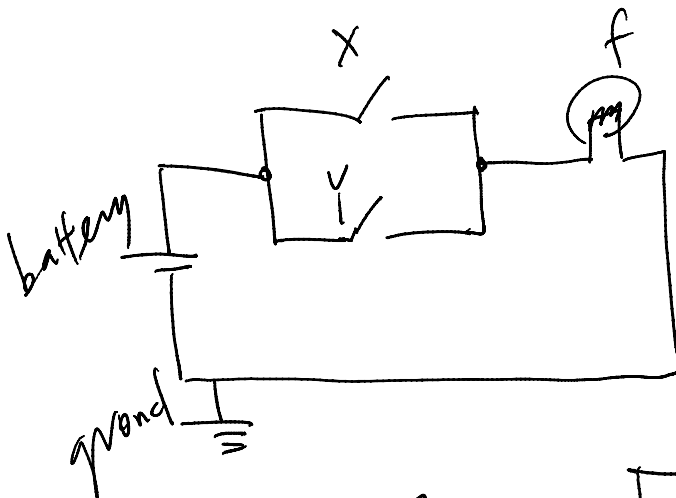
$$f = X$$

X can be on or off



$f = X \cdot Y$ or $f = xy$
only
f is ON when X AND Y are true (ON position)

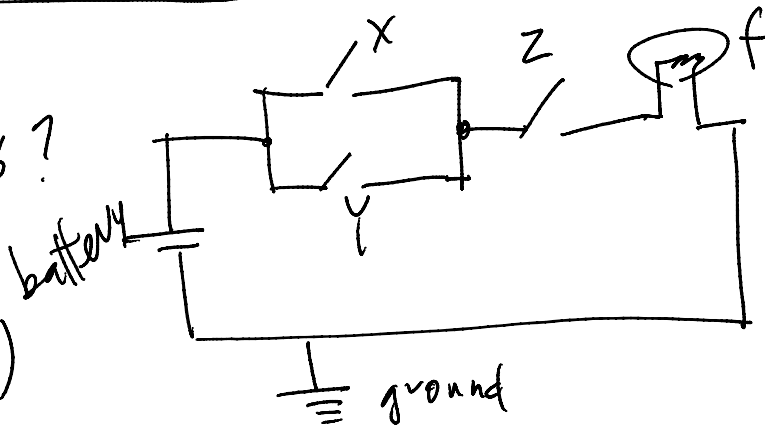
| X | Y | f |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |



f is ON when either X OR Y is at ON position

What about this?

$$\text{So! } f = Z(X + Y)$$



Symbol

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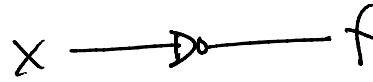
We have $f = x$, $f = xy$, $f = x + y$

what about $f = \bar{x}$

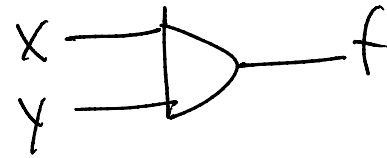
$f = x$ just a wire



$f = \bar{x}$



$f = xy$, $f = x \cdot y$, $f = x \text{ and } y$



$f = x + y$, $f = x \text{ or } y$

