

## Relational →

$$a = 5$$

$$b = 2$$

$$c = 10$$

$$a > b$$

$$a > b \rightarrow \text{True}$$

$$5 > 2 \rightarrow \text{True}$$

$$a > c \rightarrow \text{False}$$

$$b = 2$$

$$b == 2$$

✓

$$x \leq 5$$

less than or equal to

$$0, 1, 2, 3, 4, 5$$

$$2 < 5$$

$$0 - 4$$

$$b == 2 \rightarrow \text{True} \rightarrow 1$$

$$b == a \rightarrow \text{False} \rightarrow 0$$

$$\begin{aligned} &> \\ &>= \\ &< \\ &<= \\ &== \end{aligned}$$

$$(y \geq 6)$$

$$6 - \infty$$

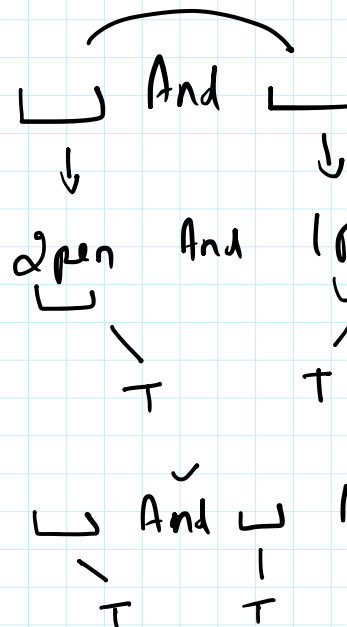
## Logical

AND, OR, NOT

AND \*

Condition

(1) T	(1) T	T (1)
(1) T	(0) F	F (0)
(0) F	(1) T	F (0)
(0) F	(0) F	F (0)



$\rightarrow \frac{1}{dy}$

$\rightarrow 0$

$\neq$

]

ensil

]

$\rightarrow T$

And  $\rightarrow$

$\frac{1}{T} \rightarrow \textcircled{T}$

✓ T ✓

2 p  
✓  
T  
F

$\begin{array}{r} + \\ \hline \end{array}$

11

✓  
T  
F



$$\begin{array}{l} \top \rightarrow F \\ F \rightarrow \top \end{array}$$

logical

$\uparrow$  of a largest

Not

OR

7) 101011000

## AND (\*)

OR

$$\frac{1}{T} \rightarrow \tau$$

$$\text{or } \frac{1}{\tau} \text{ (pendul)}$$

$$T/P \rightarrow T$$

$$T \rightarrow T$$

And

$$T \rightarrow 1(\tau)$$

$$\begin{array}{r} \text{OR} \rightarrow 1010111 \\ \rightarrow 1001100 \\ \hline 1011111 \end{array}$$

OR  
T  
T  
F  
T

$$\begin{array}{r} \text{NOT} \rightarrow 1010111 \\ \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \text{NOT} \\ \hline 0101000 \end{array}$$

EX-OR  $\Rightarrow$  Different (1)  
Same  $\rightarrow 0$

EX-OR

$$\begin{array}{r} 11011011 \\ 10010111 \\ \hline 01001100 \end{array}$$

Left shift

$$\begin{array}{r} a \ll 2 \leftarrow n \\ \begin{array}{c} 2^1 \quad 2^3 \quad 2^0 \\ a \rightarrow 11001 \end{array} \leftarrow 25 \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ \hline 1100100 \leftarrow \\ \begin{array}{c} 2^6 \quad 2^5 \quad 2^2 \\ 64 \quad 32 \quad 4 \end{array} \end{array} \rightarrow 100$$

$$\begin{array}{r} a \ll 1 \\ \begin{array}{c} 2^2 \quad 2^0 \\ a \rightarrow 101 \end{array} \rightarrow 5 \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ \hline 1010 \rightarrow 10 \\ \begin{array}{c} 2^3 \quad 2^1 \end{array} \end{array}$$

$$\begin{array}{l} 2^n * \text{Input} \\ 2^1 * 5 \\ 2 * 5 \\ \rightarrow 10 \end{array}$$

$$\begin{array}{l} \rightarrow 2^n * a(\text{Input}) \\ \rightarrow 2^2 * 25 \\ \rightarrow 4 * 25 \\ \rightarrow 100 \end{array}$$

Right

$$a \gg 2 \leftarrow \begin{array}{c} 2^5 \quad 2^3 \quad 2^1 \quad 2^0 \end{array} \dots \text{Right dec}$$

$$a \gg 1 \leftarrow \begin{array}{c} 2^1 \quad 2^0 \\ 11 \end{array}$$

$$F \rightarrow T$$

$$T \rightarrow T$$

$$F \rightarrow F$$

$$T \rightarrow T$$

$$21$$
$$n10 \rightarrow 26$$

$a \gg 2$   
 $a \rightarrow 101011 \rightarrow 43$  Right dec  
 $\rightarrow 001010 \rightarrow 10$   
 $2^3 \quad 2^1$

$\rightarrow \text{Input} \div 2^n$

$\rightarrow 43 \div 2^2$

$\rightarrow 43 \div 4$

$\rightarrow 10 \text{ Ans}$

## Increment & Decrement

$i++$

$n++$

$j++$

$j--$

$i--$

$i++$   
 $++i$

$i+1$

$i = 5$

$i++ \rightarrow 6$

$++i \rightarrow 6$

$a = i++$

$a = ++i$

$a = --i$

$a = i--$

$++i$   
 $i++$

$a = i++$

$a = ++i$

$a = i++$

$a = i$

$a = ++i$

$> 0 \downarrow$

$a = 5$

$i = 6$

$a = 6$

pre inc

post inc

pre dec

post dec

$$\begin{array}{r}
 2^1 \\
 010 \rightarrow 26 \\
 \hline
 110 \rightarrow 13 \\
 \hline
 2^3 \quad 2^2 \quad 2^0
 \end{array}$$

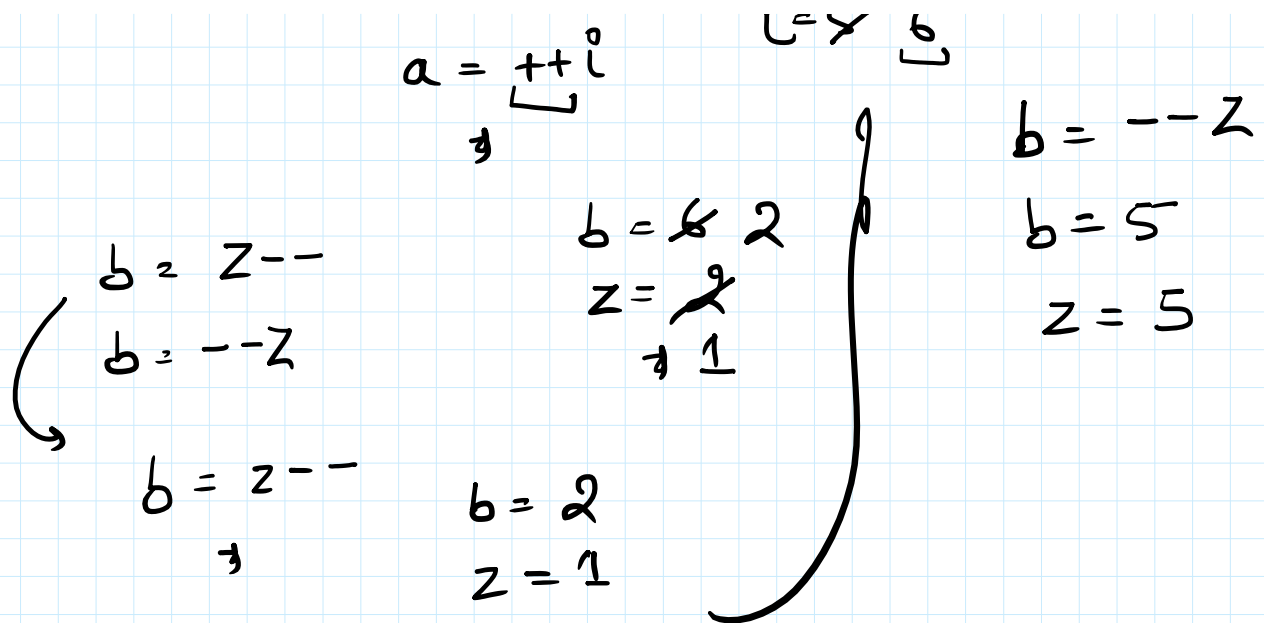
$$\div 2^n$$

$$\div 2^1$$

$$\div 2 \rightarrow \underline{13} \underline{\underline{Am}}$$

$$h = g = 5$$





int a, b, c

~~b = 10~~ 11  
a = 2

$c = ++b * a$   
 $\Rightarrow 10 * 2$   
 $= 20$

$c = 20$   
 $\Rightarrow b++$   
 $\Rightarrow$

$c = ++b * a$   
 $\Rightarrow 11 * 2$   
 $\Rightarrow 22$

~~b = 10~~ 11

$$b = 2 = 5$$

$$2 = \cancel{6} 5$$