

## Simple Combinational Logic Design:

(i) 2-bit comparator ( $>$ )

$$F(A, B) = A > B$$

Function

2 bit numbers  $\left\{ \begin{array}{l} A = A_1 A_0 \\ B = B_1 B_0 \end{array} \right.$

Truth Table

	$A_1$	$A_0$	$B_1$	$B_0$	$\underline{\underline{F}}$
{	0	0	0	0	0
	0	0	0	1	0
	⋮	⋮	⋮	⋮	⋮
	0	1	0	0	1
	⋮	⋮	⋮	⋮	⋮
	1	1	1	1	0

- $\Sigma_m()$   $\leftarrow$  (SOP) sum of products  $\rightarrow$  min terms  $\rightarrow$  when  $F = 1$   
So, we put 1 in the k-map.
- $\Pi_M \rightarrow$  Max terms  $\rightarrow$  (POS)  $\rightarrow$  when  $F = 0$   
So, we put 0 in the k-map.

$$F(A_1, A_0, B_1, B_0) = \sum_m(4, 8, 9, 12, 13, 14)$$

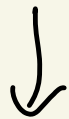
"sum of min terms"

$B_1 B_0 \backslash A_1 A_0$	00	01	11	10
00	0	1	2	2
01	4 1	5	7	6
11	12 1	13 1	15	14 1
10	8 1	9 1	11	10

$$F = A_1 \bar{B}_1 + A_0 \bar{B}_1 \bar{B}_0 + A_1 A_0 \bar{B}_0$$



Now, here, we got the simplified Boolean expression.



Now, code it!