

2D Array

	0	1	2	3	4	
0	10	20	30	40	50	✓
1	60	70	80	90	100	✓
2	110	120	130	140	150	✓
3	160	170	180	190	200	✓
	✓	✓	✓	✓		

array  $\Rightarrow$  { 0, 1, 2, 3 }

Row Num  $\uparrow$  array[3][4] Column Num

$\uparrow$  4x5

array[0][0]  $\rightarrow$  Base address  $\rightarrow$  1000

Row major form

$n_r = 4$   
 $n_c = 5$

**# Elements need to skip**

$$\text{Loc}(\text{array}[i][j]) \Rightarrow 1000 + \left[ (i - \text{LB}_r) * \underline{5} + (j - \text{LB}_c) \right] * 2$$

$$\Rightarrow 1000 + (15 + 4) * 2$$

$$\Rightarrow 1000 + 38$$

$$\Rightarrow \underline{\underline{1038}}$$

Row major form

$$\text{Loc}(\text{array}[i][j]) \Rightarrow \text{Base address} + \left[ (i - \text{LB}_r) * n_c + (j - \text{LB}_c) \right] * \text{size of each element}$$

size of each element

Column major form

$$\text{Loc}(\text{array}[i][j]) \Rightarrow \text{Base address} + \left[ (j - \text{LB}_c) * n_r + (i - \text{LB}_r) \right] * \text{size of each element}$$

size of each element