

Row and Column Major Order

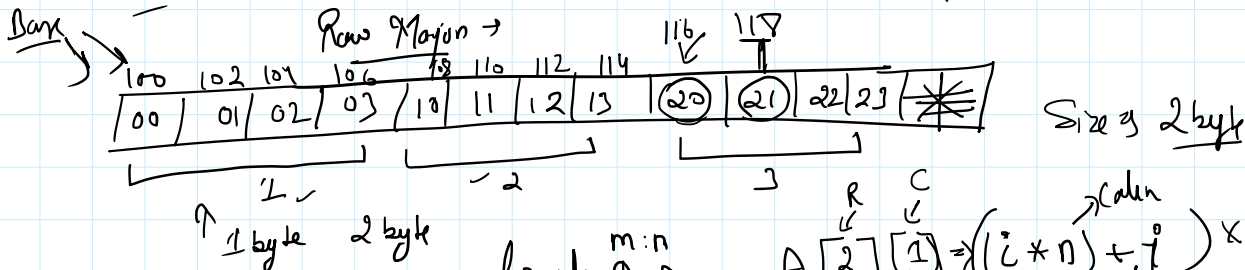
Row Major ✓

Column Major ✓

$A = 3 \times 4$
 Row ↑ Column

j	0	1	2	3
i → 0	00	01	02	03
→ 1	10	11	12	13
→ 2	20	21	22	23
	C1	C2	C3	C4

← R1
 R2
 R3



Formula
 Row ↑ Column

$$A \begin{bmatrix} i \\ j \end{bmatrix} \Rightarrow ((i * n) + j) * \text{Size} + \text{Base}$$

$$\Rightarrow ((2 * 4) + 1) * 2 + 100$$

$$\Rightarrow (8 + 1) * 2 + 100 = 118$$

0 → 99
 1 → 99

Row position ↑ Array n Columns
 Column position

$$\Rightarrow ((i * n) + j) * \text{Size} + \text{Base}$$

Base → 200

Size → 4 M N

location → 213

$B[2][3]$

$$\Rightarrow ((i * n) + j) * \text{Size} + \text{Base} \quad \text{Case Row 0,0}$$

$$\Rightarrow ((i-1) * n) + (j-1) * \text{Size} + \text{Base}$$

$$\Rightarrow ((2-1) * 3) + (3-1) * 4 + 200$$

$$\Rightarrow (3 + 2) * 4 + 200$$

$$5 * 4 + 200 \Rightarrow 204 + 200 = 220$$

3-4

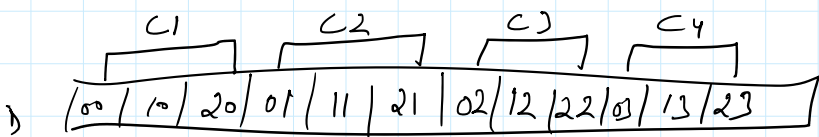
3-4

	1	2	3
0 → 1	11	12	13
2 →	21	22	23
3 →	31	32	33

200	204	208	212	216	220			
11	12	13	21	22	23	31	32	33

↑ An

Column Major ORDER



$$VI[i][j] \Rightarrow ((j * N) + i) * \text{Size} + \text{Base} \Rightarrow$$

VI

	0	1	2	3
0	00	01	02	03
1	10	11	12	13
2	20	21	22	23

← R
 ← R
 ← R

↑ C
 ↑ C
 ↑ C
 ↑ C

✓

GATE

$$\begin{aligned}
 & \text{VI}[i][j] \rightarrow ((j * N) + i) * \text{size} + \text{base} \Rightarrow \\
 & \text{start} + [(j-1) * N + (i-1)] * \text{size} + \text{base} \\
 & 2 * \text{start} + [(j-2) * N + (i-2)] * \text{size} + \text{base}
 \end{aligned}$$

$\rightarrow 1, 3, 4$
GATE
GATE