

Tutorial-3

$$(1) \text{ Base Address} = 200, [W + A \cdot B] = [11101010]$$

$$W = 40/20 = 2 \text{ bytes}$$

$$A[i] = B \cdot A + (i - l) \cdot W$$

$$A[3] = 200 = BA$$

$$A[10] = 200 + (10 - 3) \cdot 2$$

$$= 200 + 7 \cdot 2$$

$$= 214$$

$$(2) B \cdot A = 3000, W = 120/30 = 4 \text{ byte}$$

$$l=0, i=13$$

$$A[i] = B \cdot A + (i - l) \cdot W$$

$$A[13] = 3000 + (13 - 0) \cdot 4$$

$$= 3000 + 42 = 3042$$

$$[= 3042] + (E - 5) \cdot 4 = 3042 + 4 \cdot 0 = [3042]A$$

$$(3) B \cdot A = 2100, W = 120/30 = 4 \text{ bytes}$$

$$i=2, j=4, LR=0, LC=0$$

Row Major $\rightarrow N = 6$

$$A[i][j] = [B \cdot A + W[N(i-LR) + (j-LC)]]$$

$$= 2100 + 4[6(2-0) + (4-0)]$$

$$= 2100 + 4[16]$$

$$= \underline{\underline{2164}}$$

Column major : $\rightarrow N = 5$

$$\begin{aligned}
 A[i][j] &= B \cdot A + w[(i-LR) + N(j-LC)] \\
 &= 2100 + 4[2 + 5(4)] \\
 &= 2100 + 88 \\
 &= \underline{\underline{2188}} + A \cdot 8 = [i]A \\
 AB &= 002 = [e]A
 \end{aligned}$$

4. $A = [-3:7, 6:14]$

$$B \cdot A = 3220 \quad ex(e-01) + 002 = [0]A$$

$$LR = -3$$

$$LC = 6$$

$$i=2, j=10$$

$$w(j-i) + A \cdot 8 = [i]A \quad 002 = A \cdot 8 \quad (c)$$

Column major :

$$w(j-i) + A \cdot 8 = [i]A$$

$$A[i][j] = B \cdot A + w[i - LR + 1] N[j - LC]$$

$$N = UR - LR + 1 = 7 - (-3) + 1 = 11$$

$$A[2][10] = 3220 + 4[2 - (-3) + (10 - 6) \times 11]$$

$$= 3220 + 4[5 + 44]$$

$$= 3220 + 4[49] = 00180 = w \quad 0018 = A \cdot 8 \quad (c)$$

$$= 3220 + 1960 = 5180 = [0]A \quad i=2, j=10$$

$$= \underline{\underline{3416}}$$

$i=N$ \leftarrow row major

Dimension = $[N][M]$

$$= [0] [(UR - LR + 1) \times (UC - LC + 1)] [i][j]A$$

$$= [0] - [(7 - (-3) + 1)] [(14 - 6 + 1)]$$

$$= 11 \times 9$$

$$\underline{\underline{101} \times 9 + 0018 = 0018 = [0]A}$$

(5)

$$B \cdot A = 4000$$

Location of $A[6][8] = 4440$ Distance of memory to memory

$$L_r = 1, L_c = 1$$

$$U_r = 15, U_c = 20$$

$$801 = P \times C = 15 \times 20 \times 8$$

$$N = U_r - L_r + 1 = 15 - 1 + 1 = 15$$

column major wise.

$$A[6][8] = 4440 = 4000 + W[(6-1) + 15(8-1)]$$

$$440 = W[5 + 15 \times 7]$$

$$W = \frac{440}{110} = 4 \text{ bytes}$$

$$\underline{W = 4 \text{ bytes}}$$

(6)

$$W = 4 \text{ bytes.}$$

$$A[1][1] = 1500$$

$$L_r = 1; L_c = 1$$

$$A[4][5] \Rightarrow 1608 = 1500 + [(4-1) + (5-1)m]4$$

$$108 = [3 + 4m]4$$

$$27 - 3 = 4m$$

$$\boxed{m=6}$$

7 Dimensions of matrix = 6×6 $000H = A$ (2)
Total bytes needed = $36 \times 4 = 144$ bytes
By tuple = 9×3

$$\text{Bytes needed} = 27 \times 4 = 108$$

$$\text{Bytes saved} = 144 - 108 = 36 \text{ Bytes}$$

$$[(1-8)(21+(-1-3))](0) + 000H = 000H \stackrel{?}{=} [278]A$$

$$6 [(F \times 21 + 2) 6] 0 = 000H \stackrel{?}{=} 8$$

$$29 + 00H \stackrel{?}{=} 000H \stackrel{?}{=} 0$$

$$0 0 15$$

$$0 3 22$$

$$0 5 -15$$

$$1 1 11$$

$$1 2 3$$

$$2 3 -6$$

$$3 0 19$$

$$[41(-1-2) + (-1-4) 2 000 28] [2]A$$

$$4 [m + 3] = 80$$

$$mp = 8 - Fc$$

$$[a = m]$$