C_55 → Two Dimensional Arrays

Accessing and Memory Representation

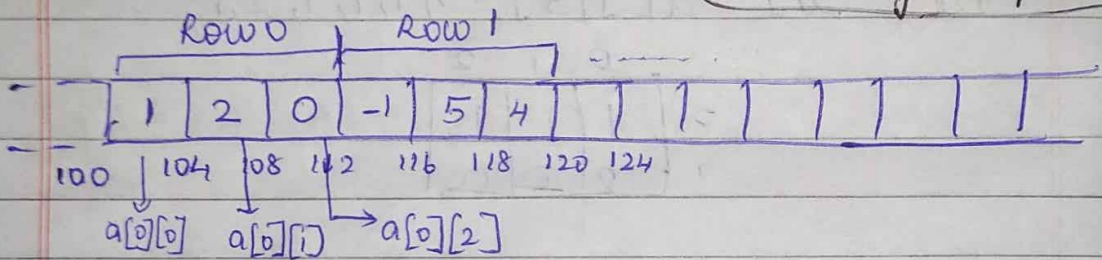$$\text{int } a[2][3] = \{\ \{1, 2\ \}, \{-1, 5, 4\}\ \};$$

Row 0 | Row 1

	0	1	2
0	1	2	0
1	-1	5	4

2 × 3.

But in memory, (Row major representa)

Row 0 | Row 1

1	2	0	-1	5	4						

100 104 108 112   116   118   120 124

a[0][0]   a[0][1]   → a[0][2]

* So in memory arrays are stored in continuous memory location.

How to access :-

(0,2) → a[0][2]

   printf ("%d", a[0][2]);

(1,1) → a[1][1]

   printf ("%d", a[1][1]);

address:-

Base address calculation is,

$$address \Rightarrow Base\ address + \left[\frac{(i \times n) + j}{(\text{~~offset~~})} \right] \times \text{size of int})$$