

TUTORIAL - 2

1. Base address 1020 for $A[1200 \dots 1700]$
each element is of size 2 bytes.
 \therefore size of $A[1500]$
Address of $A[1500] = \underline{1020} + 300 \times 2 = \underline{1620}$

2. $ARR[-4 \dots 6, 3 \dots 8]$ Base address = 1430
Each element is of size 4 bytes
 \therefore Each row is of size 64 bytes
For row $ARR[3] - \cancel{1878} 1430 + 7(4) = \cancel{1878} 1598$
 \therefore For $ARR[3][6] - \cancel{1518} 1598 + 3(4) = \underline{1610}$

3. $X[4 \dots 7, -1 \dots 3]$ each element requires 2 bytes
Base address is 100.
Each row is of size = 10 bytes
 \therefore Row - 6 is at $100 + 2(10) = 120$
 $\therefore X[6, 2]$ is at $120 + 3(2) = \underline{126}$

4. $X[-20 \dots 20, 10 \dots 35]$, each element = 1 byte
Base = 500
Size of ~~column~~ ^{row} = ~~26~~ 41
0th row is at = ~~(26)20~~ + 500 = 1020
 $\therefore X[0, 30] = 1040$

address of $X[0, 30] = 500 + [(0+20) + 41(30-10)]$
 $= 500 + 840$
 $= \underline{1340}$

5. $X[-3..3, 2..5]$

a) Size of row = 74 bytes

Size of column = $\sqrt{74}$

Size of the array = 28 bytes.

b) ~~3m~~ For $x \in [1, 3]$

$-3, -2, -1, 0, 1$ 4^{th} row
 \uparrow

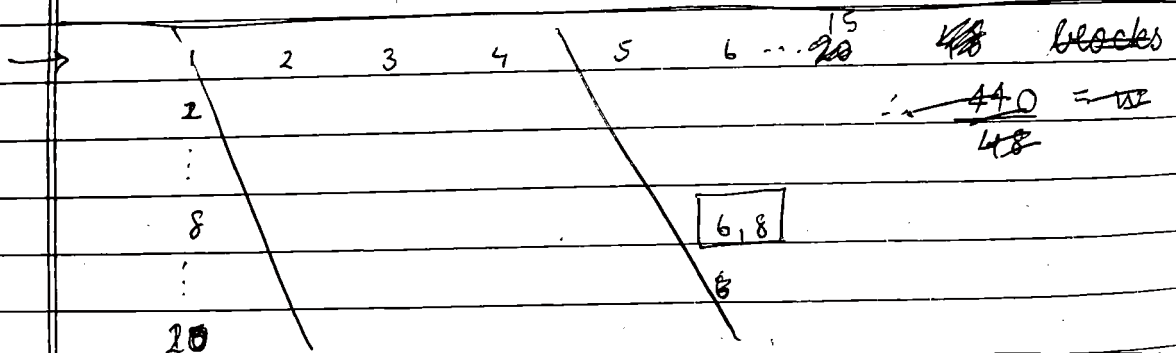
To reach 4th row = 16 bytes from base address

$$\therefore \text{For } x[1,3] = 5000 + 16 + 2 = 5018$$

A.6 Each element of $\text{arr}^{[15]}[20]$ requires w bytes

• address of `arr[7][8]` is 4440

- base address at `arr[1][1] = 4000`



20 blocks of 15 elements each
arr [6][8] is in 8th block 6th element

\therefore To reach 8th block = $7 \times 15 = 105$ ^{units}
 6th element = $105 + 5 = 110$

$$\therefore 440 = 110 W$$

$W = 4^{by}$

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array $A[1 \dots 8, 1 \dots 5, 1 \dots 7]$ address $A[5, 3, 6]$ Base address = 900 $\rightarrow A[1, 1, 1]$

\therefore To reach 5th part \rightarrow 5 Blocks of 7 Elements
4 times

$$\therefore 4 \times 5 \times 7 = 140 \text{ bytes}$$

To reach 3rd block of 5th part
 $= 140 + 2(7) = 154 \text{ bytes}$

To reach 6th element of 3rd block of 5th part
 $= 154 + 5 = 160 - 1 \text{ bytes}$

\therefore Final address = $900 + 160 - 1 = 1060 - 1 = 1059$

Amah