

# Derivation of Upper Right Triangular Matrix

BCSF21M043

Row Major:

Upper - Right Triangle

$$\begin{bmatrix} A & B & C & D & E \\ & F & G & H & I \\ & & J & K & L \\ & & & M & N \\ & & & & O \end{bmatrix}$$

A B C D E F G H I J K L M N O

if  $i$  starts from "0"

$$(\text{size} * i) + \frac{i(i-1)}{2} + (j-i)$$

if  $i$  starts from "1"

$$\text{size} * (i-1) + \frac{(i-2)(i-1)}{2} + (j-i)$$

## Column Major:

Upper - Right - Triangle

A	B	C	D	E
	F	G	H	I
		J	K	L
			M	N
				O

A B F C G J D H K M E I L N O  
if i starts from "1".

$$= \frac{j(j-1)}{2} + (i-1)$$

if i starts from "0"

$$= \frac{j(j+1)}{2} + i$$

E