Subarrays and the *end* function

```
A = [5 7 9 2 4 6 8]
length(A)        = ? (7)
B = A(3)         = ? (9)
C = A(3:6)       = ? (9 2 4 6)
D = A(3:end)     = ? (9 2 4 6 8)
E = A(1:2:end)= ? (5 9 4 8)
F = A(2:2:end)= ? (7 2 6)
G = A([1 5 7])= ? (5 4 8)

A(1:2) = [0 0]          A = 0 0 9 2 4 6 8
A(1:2:end) = -1         A = -1 0 -1 2 -1 6 -1
```

Subarrays and the *end* and *diag* functions

H = [3 1 2 1; 1 4 2 2; 0 1 2 0; 1 2 3 4]

J = diag(H)' =? *(3 4 2 4)*

K = H(2,:) =? *(1 4 2 2)*

L = H(:,1:2:end) =?

M =H(2:end,2:end) =?

N = zeros(4)

N(1:2,1:2) = H(1:2,1:2)

N(3:4,3:4) = M(1:2,1:2)

$$H = \begin{bmatrix} 3 & 1 & 2 & 1 \\ 1 & 4 & 2 & 2 \\ 0 & 1 & 2 & 0 \\ 1 & 2 & 3 & 4 \end{bmatrix}$$

$$L = \begin{bmatrix} 3 & 2 \\ 1 & 2 \\ 0 & 2 \\ 1 & 3 \end{bmatrix}$$

$$M = \begin{bmatrix} 4 & 2 & 2 \\ 1 & 2 & 0 \\ 2 & 3 & 4 \end{bmatrix}$$

$$N = \begin{bmatrix} 3 & 1 & 0 & 0 \\ 1 & 4 & 0 & 0 \\ 0 & 0 & 4 & 2 \\ 0 & 0 & 1 & 2 \end{bmatrix}$$

Array operations

Clear your command window and all your variables.

$$A = \begin{bmatrix} 4 & 1 & 0 \\ 1 & 3 & 1 \\ 0 & 1 & 2 \end{bmatrix} \quad B = \begin{bmatrix} 2 & 0 & -1 \\ -1 & 3 & 1 \\ 2 & 0 & 4 \end{bmatrix} \quad C = \begin{bmatrix} 2 & 0 & 3 \end{bmatrix} \quad D = 2$$

E = A – B *E = [2 1 1;2 0 0; -2 1 -2]*

F = A + D *F = [6 3 2;3 5 3; 2 3 2]*

G = A + C ?

H = A*B *H = [7 3 -3;1 9 6;3 3 9]* Matrix multiplication

J = A.*B *J = [8 0 0;-1 9 1;0 0 8]* Element by element mult.

K = A*C ?

L = A*C' *L = [8;5;6]*

M = C*A *M = [8 5 6]*

Array operations

$$A = \begin{bmatrix} 4 & 1 & 0 \\ 1 & 3 & 1 \\ 0 & 1 & 2 \end{bmatrix} \quad B = \begin{bmatrix} 2 & 0 & -1 \\ -1 & 3 & 1 \\ 2 & 0 & 4 \end{bmatrix} \quad C = \begin{bmatrix} 2 & 0 & 3 \end{bmatrix} \quad D = 2$$

N = inv(A) N= ?

O = A*N

$$O = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

A/B = A*inv(B) *verify*

A\B = inv(A)*B *verify*

Array operations

$$A = \begin{bmatrix} 4 & 1 & 0 \\ 1 & 3 & 1 \\ 0 & 1 & 2 \end{bmatrix} \quad B = \begin{bmatrix} 2 & 0 & -1 \\ -1 & 3 & 1 \\ 2 & 0 & 4 \end{bmatrix} \quad C = \begin{bmatrix} 2 & 0 & 3 \end{bmatrix} \quad D = 2$$

P = A./B

$$P = \begin{bmatrix} 2 & Inf & 0 \\ -1 & 1 & 1 \\ 0 & Inf & 0.5 \end{bmatrix}$$

$$R = \begin{bmatrix} 16 & 2 & 1 \\ 2 & 8 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

Q = D./B

$$Q = \begin{bmatrix} 1 & Inf & -2 \\ -2 & 2/3 & 2 \\ 1 & Inf & 0.5 \end{bmatrix}$$

$$S = \begin{bmatrix} 16 & 1 & 0 \\ 1 & 9 & 1 \\ 0 & 1 & 4 \end{bmatrix}$$

R = D.^A

S = A.^D

Solving simultaneous linear equations

4X + 2Y + 5Z = 12

2X + 3Y = 0

-2Y + 6Z = -4

$$A = \begin{bmatrix} 4 & 2 & 5 \\ 2 & 3 & 0 \\ 0 & -2 & 6 \end{bmatrix} \quad B = \begin{bmatrix} X \\ Y \\ Z \end{bmatrix} \quad C = \begin{bmatrix} 12 \\ 0 \\ -4 \end{bmatrix}$$

AB=C

$A^{-1}AB=A^{-1}C$

$B=A^{-1}C$

In Matlab: Enter the arrays A and C, and then solve for B:

B = inv(A)*C or B = A\C

Solving simultaneous linear equations

Resolver el siguiente sistema de ecuaciones en Matlab:

$4A + 2D = 8$

$3B - 2C = -6$

$A - B + 3C - 2D = 0$

$A + 10D = -10$

Escriba un programa que le pregunte al usuario un numero entero N mayor que 1 y genere un vector con los factoriales de todos los números menores o iguales que N