Lecture 5

Vectors in MATLAB Prog.

In MATLAB prog. a vector can be defined as a row vector or as a column vector

To define the vector use :
[ ]   to represent the start and finish of the vector .

1)   Row Vector : comma or space separated values between brackets .

Example :

```
>> a = [1 2 3] ↵
a =
   1 2 3
```

```
or >> a = [1,2,3] ↵
a =
   1 2 3
```

2) Column Vector :
There are two ways to create a column vector:

(a) Semicolon (;) separated values between brackets.

Example:

```
>> b = [4;2;7;1]  ↵
b =
    4
    2
    7
    1
```

(b) Create a row vector then use single quotation mark (') to transpose it.

Example:

```
>> a = [1,2,3]  ;  ↵
>> A = a'  ↵
A =
    1
    2
    3
```

Note: a' represents the transpose of the value a.

```
or  >> a = [1,2,3]'  ↵
    a =
        1
        2
        3
```

We can determine the first, increase and last value of a row vector or a column vector as follows:

$$[First\ value\ :\ increment\ :\ last\ value]$$

Examples:

1) >> v1 = [3 : 2 : 11] ↵

   v1 =

     3 5 7 9 11

2) >> v2 = [3 : 7] ↵

   v2 =

     3 4 5 6 7

3) >> v3 = [3 : 6]' ↵

   v3 =

     3
     4
     5
     6

4) >> v4 = [5 : 2 : 11]' ↵

   v4 =

     5
     7
     9
     11

Lecture 6

Some Operations on Vectors in MATLAB Prog.

1) We can determine the value in vector we want to display it .

Example (1):

>> a = [6 5 7 2 4 3 10 -1] ; له

>> a(1) له   لاستدعاء العنصر الاول في المتجه الصفي a

ans = 6

>> a(5) له   لاستدعاء العنصر الخامس في المتجه الصفي a

ans = 4

>> a(1:4) له   لاستدعاء العناصر إبتداء من العنصر الاول

الى العنصر الرابع في المتجه الصفي a

ans =
6 5 7 2

Example (2) :

>> A = [6 ; 5 ; 7 ; 2 ; 4 ; 3 ; 10 ; -1] ; له

>> A(1) له   لاستدعاء العنصر الاول في المتجه العمودي A

ans = 6

>> A(5) له   لاستدعاء العنصر الخامس في المتجه العمودي A

ans = 4

>> A(3:6) له   لاستدعاء العناصر إبتداء من العنصر الثالث الى

العنصر السادس في المتجه العمودي A

ans = 7
2
4
3

>> A(end) له   لاستدعاء العنصر الاخير في المتجه العمودي A

ans = -1

لاستدعاء العناصر إبتداءً من العنصر السادس الى العنصر الاخير في المتجه العمودي A

>> A(6 : end) ↵   or//   >> A(6:8) ↵

ans = 3   ans = 3
       10   10
       -1   -1

2) To remove one or more than one element from the vector.

Example (1) :

>> C = [2 5 7 9 11];↵

>> C(3) = [ ] ↵   لحذف العنصر الثالث من المتجه الصفي C

C = 2 5 9 11

>> C(2:4) = [ ] ↵   لحذف العناصر من العنصر الثاني الى العنصر الرابع

C =   في المتجه الصفي C
  2   11

3) To find the sum of the elements of the vector.

Example (1) :

>> B = [3 5 4 2 1];↵

>> B1 = sum(B) ↵

B1 = 15

Example (2) :

>> C = [4; 2; 1; 7] ; ↵

>> C1 = sum(C) ↵

C1 = 14

4) To find the product of the elements of the vector.

Example (1):
```
>> D = [5 6 3 2 9]; ↵
>> d1 = prod (D) ↵
d1 =
    1620
```

Example (2):
```
>> E = [3;7;1]; ↵
>> e1 = prod (E) ↵
e1 =
    21
```

5) To find the addition of two vectors of the same size.

Example (1):
```
>> B = [3 5 4 2 1]; ↵
>> D = [5 6 3 2 9]; ↵
>> S = B + D ↵
S =
    8 11 7 4 10
```

Example (2):
```
>> a = [1;3;5]; ↵
>> b = [2;4;1]; ↵
>> S1 = a + b ↵
S1 =
    3
    7
    6
```