variable, arrays and matrices

array

```
a=[1 2 3 4 5]
```

```
a = 1×5
     1     2     3     4     5
```

calculate the length of array

```
b = length(a)
```

```
b = 5
```

find the transpose of array a

```
c =a'
```

```
c = 5×1
     1
     2
     3
     4
     5
```

```
%array indexing
d = a(3)
```

```
d = 3
```

```
%replace the value at some index
a(3) = 10
```

```
a = 1×5
     1     2    10     4     5
```

```
%multiply each element by 3
e = a.*3
```

```
e = 1×5
     3     6    30    12    15
```

```
%devide elements of array by any no.
f = e/2
```

```
f = 1×5
    1.5000    3.0000   15.0000    6.0000    7.5000
```

```
a = (1:10)
```

```
a = 1×10
     1     2     3     4     5     6     7     8     9    10
```

```
b= (1:5:50)
```

```
b = 1×10
     1     6    11    16    21    26    31    36    41    46
```

matrix

2d array or matrix decleration

```
x = [1,2,3;4,5,6;7,8,9]
```

```
x = 3×3
     1     2     3
     4     5     6
     7     8     9
```

```
%get dimensions of matrix
[rows,cols]=size(x)
```

```
rows = 3
cols = 3
```

```
p= x(3,2)
```

```
p = 8
```

```
%get the transpose of the matrix
y=x'
```

```
y = 3×3
     1     4     7
     2     5     8
     3     6     9
```

```
z=y(:)
```

```
z = 9×1
     1
     2
     3
     4
     5
     6
     7
     8
     9
```

```
q= reshape(y, [3,3])
```

```
q = 3×3
     1     4     7
     2     5     8
     3     6     9
```

```
x=q'
```

```
x = 3×3
     1     2     3
     4     5     6
     7     8     9
```

```
r = max(x)
```

```
r = 1×3
```

```
     7     8     9
```

```
s = max(max(x))
```

```
s = 9
```