

WESTERN SYDNEY
UNIVERSITY



Module 3

Array Indexing

Indexed-location of numbers in an array

- Each number in an array is known as an element
- Each element in an array has a **row** and a **column** position.
- To reference a particular element, the correct syntax is to type:

variableName(**row**,**col**)

row is the **row** position of the element

col is the **column** position of the element

Indexed-location of numbers in an array

- Note, you may index using a single number only,
variableName(**num**)

this is method known linear indexing. [Click here](#) to learn more (*ctrl + f* for 'linear indexing')

Example

By typing `m(2,3)`

**ans =
21.3000**

		Columns		
		1	2	3
Rows	1	3.0	1.8	3.6
	2	4.6	-2.0	21.3
	3	0.0	-6.1	12.8
	4	2.3	0.3	-6.1

Retrieving Values in an Array

- Index – a number used to identify elements in an array
 - Retrieving a value from an array:

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

G =

1	2	3
4	5	6
7	8	9

G(2,1)

ans = 4

G(3,2)

ans = 8

Changing Values in an Array

- You can change a value in an element in an array with indexing:

```
A(2) = 5
```

```
A =
```

```
12    5    -3
```

- You can extend an array by defining a new element:

```
A(6) = 8
```

```
A =
```

```
12    5    -3    0    0    8
```

- Notice how undefined values of the array are filled with zeros

Extracting Data with the Colon Operator

- The colon represents an entire row or column when used as an array index in place of a particular number.

G =

1	2	3
4	5	6
7	8	9

G(:,1)

ans =

1
4
7

G(:,3)

ans =

3
6
9

G(2,:)

ans =

4 **5** **6**

Extracting Data with the Colon Operator Continued

- The colon operator can also be used to extract a range of rows or columns:

```
G =  
    1    2    3  
    4    5    6  
    7    8    9
```

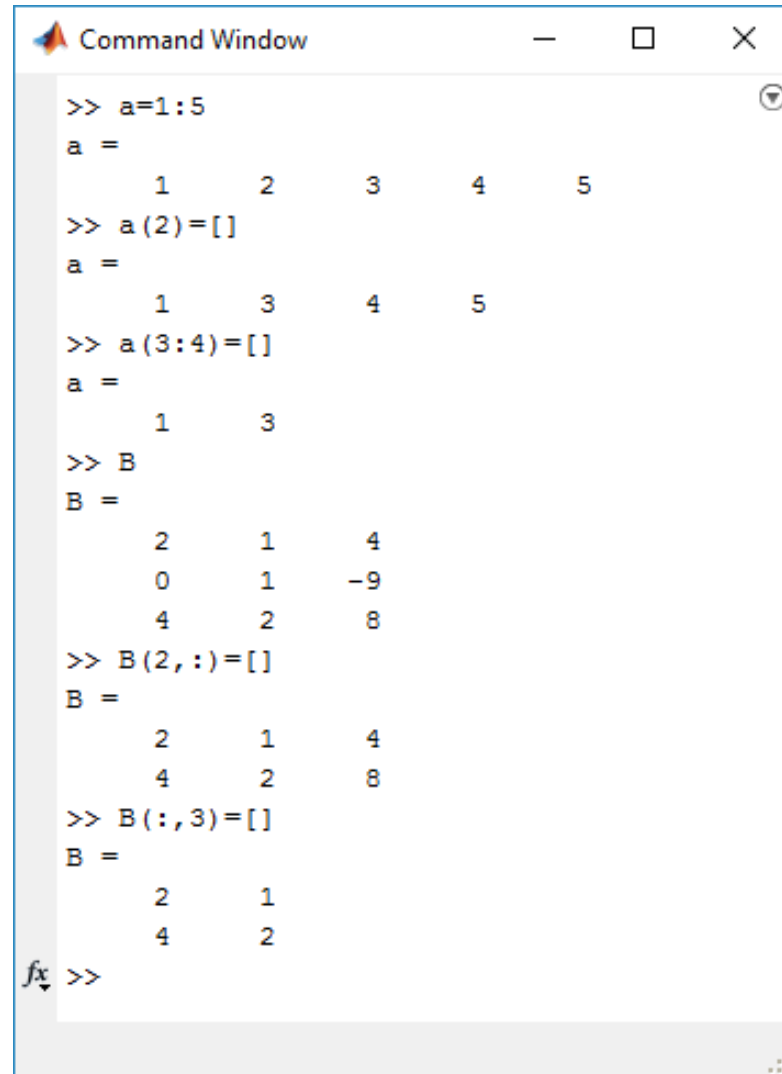
```
G(2:3, :)  
G =
```

```
    4    5    6  
    7    8    9
```

```
G(1, 2:3)  
ans =
```

```
    2    3
```

Deleting elements, rows and columns



```
Command Window
>> a=1:5
a =
     1     2     3     4     5
>> a(2)=[]
a =
     1     3     4     5
>> a(3:4)=[]
a =
     1     3
>> B
B =
     2     1     4
     0     1    -9
     4     2     8
>> B(2,:)=[]
B =
     2     1     4
     4     2     8
>> B(:,3)=[]
B =
     2     1
     4     2
fx >>
```