Banha University

Faculty of Engineering at Shoubra

Electrical Engineering Department

Computer Aided Design

3rd Year Communications

(2015-2016)

Sheet 3

Exercise 1

Explain the operation of the Matlab commands

a-
```
>> X = [3,4,8,12;2,5,7,11;1,6,9,10];
>> F = X(end: -1:end-2,end: -1:end-2)
```

b-
```
>> X = [3,4,8,12;2,5,7,11;1,6,9,10];
>> f = X(1:5);
```
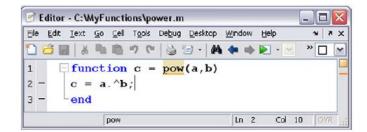
Exercise 2
Write a Matlab command to flip the array

a-
$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \text{ horizontally as follows } B = \begin{bmatrix} 3 & 2 & 1 \\ 6 & 5 & 4 \\ 9 & 8 & 7 \end{bmatrix}$$

b-
$$C = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \text{ vertically as follows } D = \begin{bmatrix} 7 & 8 & 9 \\ 4 & 5 & 6 \\ 1 & 2 & 3 \end{bmatrix}$$

Exercise 3
Give two reasons why naming the function below power.m would be wrong.


```
Editor - C:\MyFunctions\power.m
File  Edit  Text  Go  Cell  Tools  Debug  Desktop  Window  Help

1    function c = pow(a,b)
2      c = a.^b;
3    end
```

Exercise 4

Write a Matlab function that has four input arguments and returns one value. This function calculates the addition of the values of its input arguments and returns the result of their addition. This function must use the add2 and add3 functions to perform the addition process. Name this function add4.

Exercise 5

It is possible that the function add_sub could be called from the Command Window using the following syntax.

$$> > t = add\_sub(5, 3);$$

Determine the value of the variable t, and explain the results of running this command using this form of syntax for the function call.

Exercise 6
Find the values of r and c that Matlab displays after running the following code:

a)
```
» r = 1;
» c = foo(1,2);
» r
» c
function c = foo(a,b)
r = 3;
c = r*(a + b);
end
```

b)
```
» clear
» c = foo(1,2);
» r
» c
function c = foo(a,b)
r = 3;
c = r*(a + b);
end
```

Exercise 7

Find the value of c that Matlab displays after running the following code:

```
» c = foo1(1,2);
» c
```

```
function c = foo1(a,b)    function c = foo2(e)
c = 2*a + foo2(b);        c = e^2;
end                       end
```

b)
```
» c = 1
» foo5();
» c
function c = foo5()
c = 2;
c = c + 1;
end
```

Exercise 8

Explain why the following code does not run correctly in Matlab.

a)
```
» clear
» r = 1;
» c = foo3(1,2);
function c = foo3(a,b)
c = r*(a + b);
end
```

b)
```
» c = foo4(1,2);
» c
function c = foo4(a,b)
clear
r = 3;
c = r*(a + b);
end
```