

# MATLAB Quick Reference

## Operators

| Matrix Operations |                                                 | Array or Element by Element |                                                               |
|-------------------|-------------------------------------------------|-----------------------------|---------------------------------------------------------------|
| +                 | Addition                                        |                             |                                                               |
| -                 | Subtraction                                     |                             |                                                               |
| *                 | Matrix Multiplication                           | .*                          | Element by Element Multiplication                             |
| /                 | Right Matrix Division $b/A = bA^{-1}$           | ./                          | Element by Element Right Division                             |
| \                 | Left Matrix Division $A \backslash b = A^{-1}b$ | .\                          | Element by Element Left Division<br>$A \backslash B = B ./ A$ |
| ^                 | Raise Matrix to a power                         | .^                          | Raise each Element to a power                                 |
| '                 | Transpose matrix (conjugate if complex)<br>$A'$ | .'                          | Transpose matrix (no complex conjugation) $A.'$               |

| Relational Operators |                       | Logical Operators |     |
|----------------------|-----------------------|-------------------|-----|
| <                    | Less Than             | &                 | And |
| <=                   | Less Than or Equal    |                   | Or  |
| >                    | Greater Than          | ~                 | NOT |
| >=                   | Greater Than or Equal |                   |     |
| ==                   | Equal                 |                   |     |
| ~=                   | Not Equal             |                   |     |

## Special Number Symbols

|     |                     |
|-----|---------------------|
| pi  | $\pi$               |
| inf | $\infty$            |
| NaN | Not a number ie 0/0 |

|   |             |
|---|-------------|
| i | $\sqrt{-1}$ |
| j | $\sqrt{-1}$ |

## Entering Matrices

|                                          |                                                                                                      |
|------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>x = [ 1 2 3; 4 5 6; 7 8 9]</b>        | Comma or space between elements.<br>Semicolon or return for new row.<br>Enclosed in square brackets. |
| <b>x = [ 1,2,3<br/>4,5,6<br/>7,8,9 ]</b> |                                                                                                      |
| <b>a = [ exp(0) sqrt(4) 1+2 ]</b>        | Each element can be an expression.                                                                   |
| <b>C = [ A B]</b>                        | A and B are matrices with the same number of rows.                                                   |
| <b>C = [ A ; B]</b>                      | A and B are matrices with the same number of columns.                                                |

## Indexing

| <b>Vector Indexing</b> |                                                    |
|------------------------|----------------------------------------------------|
| <b>variable(V)</b>     | <b>V is a vector of indexes</b>                    |
| <b>Examples</b>        |                                                    |
| <b>A(3)</b>            | The third element in vector A.                     |
| <b>A([3 8 11])</b>     | The third, eighth and eleventh elements of A.      |
| <b>A(3:11)</b>         | The third to eleventh elements of A.               |
| <b>A(11:end)</b>       | All elements from the eleventh to the last element |

| <b>Matrix Indexing</b> |                                                        |
|------------------------|--------------------------------------------------------|
| <b>variable(R,C)</b>   | <b>R is a vector of rows and C a vector of Columns</b> |
| <b>Examples</b>        |                                                        |
| <b>M(2,3)</b>          | The element in the second row and third column of M.   |
| <b>M(2, [3 8 11])</b>  | Second row, third, eighth and eleventh column.         |
| <b>M(4,3:11)</b>       | Forth row, third to eleventh column.                   |
| <b>M(11:end,2)</b>     | Eleventh to the last row, second column.               |
| <b>M(5,:)</b>          | Fifth row, all columns.                                |
| <b>M(11:end,:)</b>     | Eleventh to the last row, all columns.                 |

## Output Display Format

|                         |                                           |                        |                                            |
|-------------------------|-------------------------------------------|------------------------|--------------------------------------------|
| <b>format short</b>     | 4 decimal places                          | <b>format long</b>     | 15 decimal places                          |
| <b>format</b>           | Same as above                             |                        |                                            |
| <b>format short e</b>   | Scientific notation,<br>4 decimal places  | <b>format long e</b>   | Scientific notation,<br>15 decimal places  |
| <b>format short eng</b> | Engineering notation,<br>4 decimal places | <b>format long eng</b> | Engineering notation,<br>15 decimal places |

## Generating Vectors

|                                                                                              |                                                     |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <b>&lt;start&gt; : &lt;end&gt;</b>                                                           | <b>x = 1 : 5</b> generates x = [ 1 2 3 4 5]         |
| <b>&lt;start&gt; : &lt;separation&gt; : &lt;end&gt;</b>                                      | <b>y = 0:5:20</b> generates y = [ 0 5 10 15 20]     |
| <b>linspace(start,end,n)</b> n = number of elements                                          | <b>linspace(0,10,5)</b> generates [ 0 2.5 5 7.5 10] |
| <b>logspace(d1,d2,n)</b> n elements logarithmically spaced between $10^{d1}$ and $10^{d2}$ . | <b>logspace(-1,2,4)</b> generates [0.1 1 10 100]    |

## Utility Matrices

|                     |                                           |
|---------------------|-------------------------------------------|
| <b>zeros(n)</b>     | n by n matrix where each element is zero. |
| <b>zeros(m,n)</b>   | m by n matrix where each element is zero. |
| <b>zeros(a,b,c)</b> | 3 dimensional array, a by b by c.         |
| <b>ones(m,n)</b>    | m by n matrix where each element is one.  |
| <b>rand(m,n)</b>    | m by n matrix of random numbers.          |
| <b>eye(n)</b>       | n by n identity matrix.                   |

## Variable Control

|                               |                                          |
|-------------------------------|------------------------------------------|
| <b>who</b>                    | List all variables in memory.            |
| <b>whos</b>                   | Same as above but with more information. |
| <b>clear</b>                  | Remove all variables from memory.        |
| <b>clear &lt;variable&gt;</b> | Remove specified variables from memory.  |

## File Control Commands

|                                |                                                 |
|--------------------------------|-------------------------------------------------|
| <b>dir</b>                     | List contents of current directory.             |
| <b>ls</b>                      | List contents of current directory.             |
| <b>what</b>                    | List the Matlab files in the current directory. |
| <b>cd &lt;directory&gt;</b>    | Change the current directory.                   |
| <b>type &lt;filename&gt;</b>   | Display the contents of a text or .m file.      |
| <b>delete &lt;filename&gt;</b> | Delete a file.                                  |
| <b>diary &lt;filename&gt;</b>  | Record all commands and results to a file.      |
| <b>diary off</b>               | Stop above.                                     |

## Help

|                              |                                         |
|------------------------------|-----------------------------------------|
| <b>help</b>                  | Display help topics.                    |
| <b>help &lt;function&gt;</b> | Help on a particular function.          |
| <b>lookfor &lt;word&gt;</b>  | Look for word in function descriptions. |
| <b>doc &lt;function&gt;</b>  | Full documentation on function.         |

## In Built Functions

Hit *fx* icon next to prompt for function browser. Only selected functions shown here.

|                 |                                    |                 |                               |
|-----------------|------------------------------------|-----------------|-------------------------------|
| <b>abs(x)</b>   | The absolute value. Modulus        | <b>round(x)</b> | Round to the nearest integer. |
| <b>sqrt(x)</b>  | The square root.                   | <b>ceil(x)</b>  | Round up.                     |
| <b>exp(x)</b>   | The exponential base e. $e^x$      | <b>floor(x)</b> | Round down.                   |
| <b>log(x)</b>   | The natural logarithm. $\log_e(x)$ | <b>fix(x)</b>   | Round towards zero.           |
| <b>log10(x)</b> | The log base 10. $\log_{10}(x)$    | <b>rem(x,b)</b> | Remainder of x divided by b.  |

## Trigonometry

|                                                                      |                                             |               |           |
|----------------------------------------------------------------------|---------------------------------------------|---------------|-----------|
| <b>sin(x)</b>                                                        | Sine. x in radians.                         |               |           |
| <b>sind(x)</b>                                                       | Sine. x in degrees.                         |               |           |
| <b>asin(x)</b>                                                       | The arcsine. The inverse of sin(x). Radians |               |           |
| <b>asind(x)</b>                                                      | The arcsine. Degrees                        |               |           |
| <b>sinh(x)</b>                                                       | Hyperbolic Sine.                            |               |           |
| <b>asinh(x)</b>                                                      | The inverse Hyperbolic Sine.                |               |           |
| The above variations are also available for the following functions. |                                             |               |           |
| <b>cos(x)</b>                                                        | Cosine                                      |               |           |
| <b>tan(x)</b>                                                        | Tangent                                     | <b>cot(x)</b> | Cotangent |
| <b>sec(x)</b>                                                        | Secant                                      | <b>csc(x)</b> | Cosecant  |

## Complex Numbers

|                |                             |                 |                          |
|----------------|-----------------------------|-----------------|--------------------------|
| <b>real(z)</b> | The real part of z.         | <b>imag(z)</b>  | The imaginary part of z. |
| <b>abs(z)</b>  | The modulus of z.           | <b>angle(z)</b> | The phase angle of z.    |
| <b>conj(z)</b> | The complex conjugate of z. |                 |                          |

## Matrix

|                     |                                      |                 |                                |
|---------------------|--------------------------------------|-----------------|--------------------------------|
| <b>det(A)</b>       | Determinant                          | <b>sqrtm(A)</b> | The matrix square root.        |
| <b>norm(A)</b>      | Norm                                 | <b>expm(A)</b>  | The matrix exponential base e. |
| <b>inv(A)</b>       | Inverse                              | <b>logm(A)</b>  | The matrix natural logarithm.  |
| <b>[v,d]=eig(A)</b> | d = Eigenvalues,<br>v = Eigenvectors |                 |                                |

## Statistics

|               |         |                  |         |               |                    |
|---------------|---------|------------------|---------|---------------|--------------------|
| <b>max(x)</b> | Maximum | <b>median(x)</b> | Median  | <b>var(x)</b> | Variance           |
| <b>min(x)</b> | Minimum | <b>mean(x)</b>   | Average | <b>std(x)</b> | Standard Deviation |

## Polynomials

|                                                                                       |                                                                  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------|
| $p = [1 \ 2 \ 3 \ 4 \ 5]$ ; can represent the polynomial $x^4 + 2x^3 + 3x^2 + 4x + 5$ |                                                                  |
| <b>y = polyval(p,x)</b>                                                               | Evaluate polynomial for each value in x.                         |
| <b>roots(p)</b>                                                                       | Roots of polynomial.                                             |
| <b>p = poly( &lt;roots&gt;)</b>                                                       | Polynomial with given roots.                                     |
| <b>p = polyfit(x,y,n)</b>                                                             | Best fit of x,y data points to $n^{\text{th}}$ order polynomial. |

## Saving, Exporting and Importing Data

|                                                      |                                                                              |
|------------------------------------------------------|------------------------------------------------------------------------------|
| <b>save</b>                                          | Save all variable to the file matlab.mat                                     |
| <b>load</b>                                          | Load in variables from the file matlab.mat                                   |
| <b>save &lt;filename&gt;</b>                         | Save all variable to the file <i>filename</i> .mat                           |
| <b>load &lt;filename&gt;</b>                         | Load in variables from the file <i>filename</i> .mat                         |
| <b>save &lt;filename&gt; &lt;variable&gt;</b>        | Save only the variable <i>variable</i> to the file <i>filename</i> .mat      |
| <b>load &lt;filename&gt; &lt;variable&gt;</b>        | Load in only the variable <i>variable</i> from the file <i>filename</i> .mat |
| <b>save &lt;filename&gt; &lt;variable&gt; -ascii</b> | Save <i>variable</i> to the text file <i>filename</i>                        |
| <b>load &lt;filename&gt;.&lt;ext&gt;</b>             | Load from the text file, to a variable called <i>filename</i>                |

## Misc

|                                    |                                          |
|------------------------------------|------------------------------------------|
| <b>x = input( 'What is x ? ' )</b> | Ask the user for a number.               |
| <b>[x,y] = ginput(1)</b>           | Graph coordinates of a clicked on point. |
| <b>pause</b>                       | Wait for the user to press a key.        |
| <b>pause(5)</b>                    | Wait for 5 seconds                       |
| <b>! command</b>                   | Execute an operating system command      |
| <b>display(a)</b>                  | Suppose a = 5. This would print "a = 5"; |
| <b>disp(a)</b>                     | Same as above, but with out the "a = ".  |
| <b>fprintf(' x = %f \n',x)</b>     | Formatted print                          |

## fprintf Formatting

|           |                      |               |                     |           |                   |
|-----------|----------------------|---------------|---------------------|-----------|-------------------|
| <b>%d</b> | Integer              | <b>%5f</b>    | 5 characters wide   | <b>\n</b> | New line          |
| <b>%f</b> | Fixed point          | <b>%5.2f</b>  | 2 decimal places    | <b>\t</b> | Horizontal tab    |
| <b>%e</b> | Exponential Notation | <b>%-5.2f</b> | Left justify        | <b>\\</b> | Back slash        |
| <b>%s</b> | String of Characters | <b>%+5.2f</b> | Print sign (+ or -) | <b>%%</b> | Percent character |

## Graph Commands

|                                    |                                                        |
|------------------------------------|--------------------------------------------------------|
| <b>plot(y)</b>                     | Plot y against index number.                           |
| <b>plot(x,y)</b>                   | Plot y against x                                       |
| <b>plot(x1,y1,x2,y2)</b>           | Plot y1 against x1 and y2 against x2.                  |
| <b>plot(x,y,'r+')</b>              | Plot y against x using red plus signs.                 |
| <b>plot(x1,y1,'r+',x2,y2,'go')</b> | Red plus signs for x1 and y1, Green circles for x2 y2. |

| Symbol   | Line Type or Mark | Symbol   | Colour  |
|----------|-------------------|----------|---------|
| .        | Point             | <b>r</b> | Red     |
| <b>o</b> | Circle            | <b>g</b> | Green   |
| <b>x</b> | X mark            | <b>b</b> | Blue    |
| <b>+</b> | Plus sign         | <b>y</b> | Yellow  |
| <b>*</b> | Stars             | <b>m</b> | Magenta |
| -        | Solid line        | <b>c</b> | Cyan    |
| :        | Dotted line       | <b>w</b> | White   |
| -.       | Dash dot line     | <b>k</b> | Black   |
| --       | Dash Line         |          |         |

| Other Types of Plot   |                  |
|-----------------------|------------------|
| <b>fill(x,y,'r')</b>  | Red filled graph |
| <b>bar(x,y)</b>       | Bar graph        |
| <b>stem(x,y)</b>      | Stem plot        |
| <b>loglog(x,y)</b>    | x & y log scale  |
| <b>semilogx(x,y)</b>  | x log, y linear  |
| <b>semilogy(x,y)</b>  | x linear, y log  |
| <b>polar(theta,r)</b> | Polar plot       |
| <b>surf(x,y,z)</b>    | 3D surface       |
| <b>mesh(x,y,z)</b>    | 3D mesh          |
| <b>plot3(x,y,z)</b>   | 3D line plot     |

| Other Graphics Commands                  |                                                                 |                |                |
|------------------------------------------|-----------------------------------------------------------------|----------------|----------------|
| <b>title('Title')</b>                    | Graph title.                                                    |                |                |
| <b>xlabel('X axis')</b>                  | Label the x-axis.                                               |                |                |
| <b>ylabel('Y axis') zlabel('Z axis')</b> | Label y and z axis.                                             |                |                |
| <b>text(x,y,'My Text')</b>               | Place text at coordinates x,y.                                  |                |                |
| <b>grid</b>                              | Place a grid on the graph.                                      |                |                |
| <b>hold on</b>                           | Add any new plot to the current graph.                          |                |                |
| <b>hold off</b>                          | Replace current plot with any new plot.                         |                |                |
| <b>subplot(r,c,n)</b>                    | Split figure into r rows by c columns of subplots.              |                |                |
|                                          | subplot(2,3,1)                                                  | subplot(2,3,2) | subplot(2,3,3) |
|                                          | subplot(2,3,4)                                                  | subplot(2,3,5) | subplot(2,3,6) |
| <b>axis([minX maxX minY maxY])</b>       | Set the limits of the graph in X and Y. (Note 4 element vector) |                |                |
| <b>h = figure</b>                        | New graphics window.                                            |                |                |
| <b>figure(h)</b>                         | Change to plotting in figure h.                                 |                |                |
| <b>delete(h)</b>                         | Delete figure h.                                                |                |                |
| <b>clf</b>                               | Clear current figure.                                           |                |                |
| <b>drawnow</b>                           | Force the graph to update now.                                  |                |                |

# Programming

## Enumerated Loops (for)

The general form of a **for** loop is :-

```
for <variable> = <vector>
    <statement>
    <statement>
    etc
end
```

Examples

```
A = rand(1,5);
for a = A
    disp(a)
end
```

```
for k = [ 1 7 3 pi i]
    disp(k)
end
```

## Precondition Loops (while)

Below is the general form of a **while** loop.

```
while(<condition>)
    <statement>
    <statement>
    etc
end
```

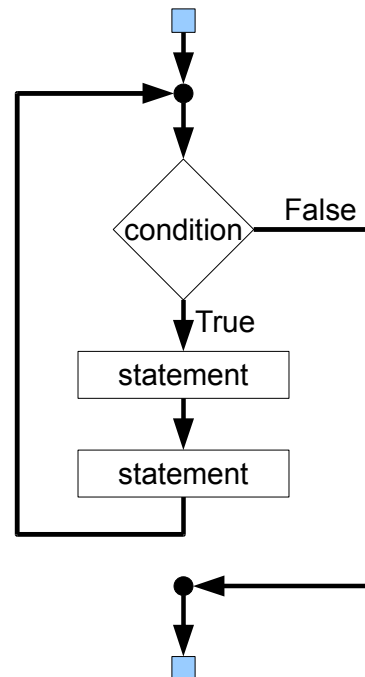
Example

```
A = 7;      %Find the square root of A.
x=1;       %First guess
err=1;     %Set error to get started
```

Newton Raphson Iteration

```
while(err>0.0001)
    x = (x.^2+A) ./ (2*x);
    % calculate the error
    err = abs(A-x.^2);
end
```

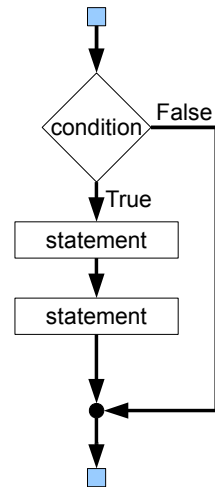
```
disp(x);
```



## Conditional Execution (if)

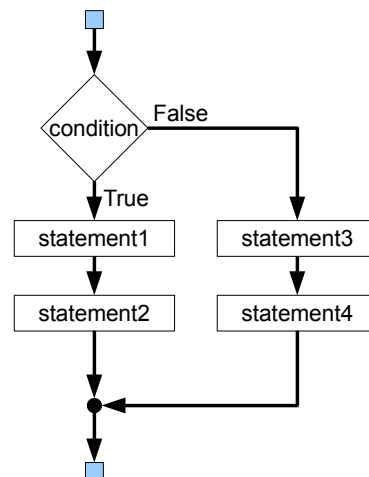
General form of a simple **if** statement.

```
if <condition>
  <statement>
  <statement>
  etc
end
```



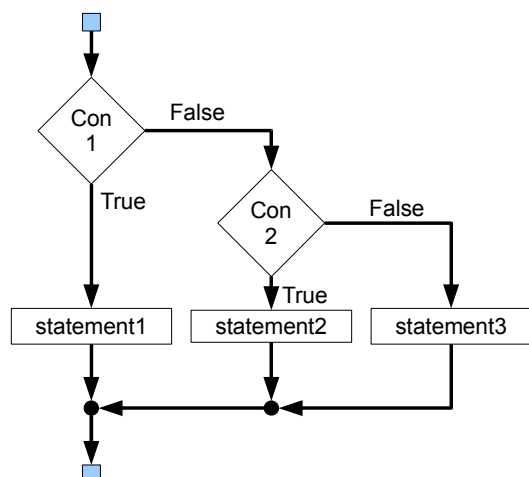
The form of **if** statement with **else**

```
if <condition>
  <statement1>
  <statement2>
  etc
else
  <statement3>
  <statement4>
  etc
end
```



You can also have as many **elseif** parts as you like.

```
if <condition1>
  <statement1>
  etc
elseif <condition2>
  <statement2>
  etc
else
  <statement3>
  etc
end
```



## Switch

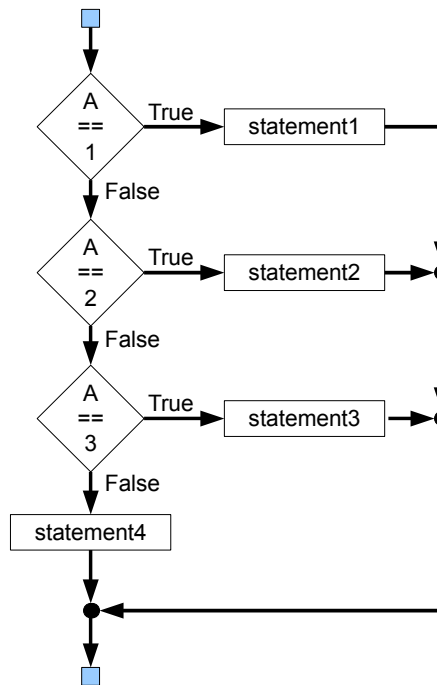
Execution depends on the value of a variable.

```
switch <variable>
case 1
    <statement1>
    etc
case 2
    <statement2>
    etc
case 3
    <statement3>
    etc
otherwise
    <statement4>
    etc
end
```

The case values can be any value that the switch variable can take. You can also put multiple values after the case.

```
case {1,2,3,4,5}
    <statement>
    etc
```

On the right A is the switch variable.



## Functions

| Function Definition                                                                                                                                                      | Using the Function                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <pre>function sum = myadd(a,b)  % The first block of comments % defines what is printed out when % you type    help myadd  % Comment not part of help sum = a + b;</pre> | <p><b>s = myadd(&lt;expression&gt;,&lt;expression&gt;)</b></p>       |
| <pre>function [sum,diff] = add_sub(a,b)  sum = a + b; diff = a - b;</pre>                                                                                                | <p><b>[s,d] = add_sub(&lt;expression&gt;,&lt;expression&gt;)</b></p> |

## Unix Commands

Linux and MAC OSX operating systems are both based on UNIX.

### File and Directory Paths

|                              |                                               |                         |
|------------------------------|-----------------------------------------------|-------------------------|
| <b>/var/tmp</b>              | Absolute path from root                       |                         |
| <b>p5computing/exercise1</b> | Relative path from current working directory. |                         |
| <b>.</b>                     | The current directory                         | <b>cp /tmp/myfile .</b> |
| <b>..</b>                    | The directory above.                          | <b>cd ../exercise2</b>  |
|                              |                                               | <b>cd ../../..</b>      |
| <b>~</b>                     | Your home directory                           | <b>cp /tmp/myfile ~</b> |
|                              |                                               | <b>cd ~/p5Computing</b> |

### Commands

|                                                    |                                                        |
|----------------------------------------------------|--------------------------------------------------------|
| <b>ls</b>                                          | List the contents of the current directory.            |
| <b>ls -a</b>                                       | List current directory, showing hidden files.          |
| <b>ls -l</b>                                       | List current directory, long format. More information. |
| <b>ls &lt;directory path&gt;</b>                   | List the contents of the specified directory.          |
| <b>ls -al &lt;directory path&gt;</b>               | As above showing hidden files and long format.         |
| <b>mkdir &lt;directory name&gt;</b>                | Make a new directory with the given name.              |
| <b>cd &lt;directory path&gt;</b>                   | Change the current working directory.                  |
| <b>pwd</b>                                         | Print the current working directory.                   |
| <b>cp &lt;file path&gt; &lt;new file name&gt;</b>  | Copy a file to a new file.                             |
| <b>cp &lt;file path&gt; &lt;directory path&gt;</b> | Copy a file into the specified directory.              |
| <b>mv &lt;file path&gt; &lt;new file name&gt;</b>  | Change the name of a file to a new file name.          |
| <b>mv &lt;file path&gt; &lt;directory path&gt;</b> | Move a file into the specified directory.              |
| <b>rm &lt;list of files&gt;</b>                    | Remove all files in the list.                          |
| <b>rm -i &lt;list of files&gt;</b>                 | Remove all files in the list, asking for confirmation. |
| <b>rm -R &lt;directory path&gt;</b>                | Remove a directory and its contents.                   |
| <b>rmdir &lt;directory path&gt;</b>                | Remove an empty directory.                             |
| <b>cat &lt;file path&gt;</b>                       | Type file to screen.                                   |
| <b>more &lt;file path&gt;</b>                      | Type file to screen a page at a time.                  |
| <b>man &lt;command&gt;</b>                         | Display manual pages for the command.                  |

### Wild Cards

|          |                    |                           |                                          |
|----------|--------------------|---------------------------|------------------------------------------|
| <b>?</b> | A single character | <b>rm prog?.m</b>         | Remove prog1.m, prog2.m etc              |
| <b>*</b> | A character string | <b>cp *.m MatlabFiles</b> | Copy all files ending .m to a directory. |

## DOS Commands

The commands you can use in a windows command prompt.

### File and Directory Paths

| <b>Drive:&lt;path&gt;&lt;filename&gt;</b> For Example C:\TEMP\mydirectory\myfile.txt |                                                                                                                                                                                                                                                                          |                     |                            |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------|
| <b>Drive:</b>                                                                        | For example                                                                                                                                                                                                                                                              |                     |                            |
|                                                                                      | <b>A:</b>                                                                                                                                                                                                                                                                | Floppy drive        | <b>D:</b> DVD              |
|                                                                                      | <b>C:</b>                                                                                                                                                                                                                                                                | The main hard disc. | <b>F:</b> USB Memory Stick |
|                                                                                      | If omitted, use the current drive.                                                                                                                                                                                                                                       |                     |                            |
| <b>&lt;path&gt;</b>                                                                  | Absolute path from the root of the drive. \TEMP\mydirectory\<br>or the path from the current directory. p5computing\exercise2\myfunction.m<br>If directory names contain spaces, use double quotes. "Program Files\MATLAB"<br>If omitted, use current working directory. |                     |                            |
| .                                                                                    | The current working directory                                                                                                                                                                                                                                            |                     |                            |
| ..                                                                                   | The directory above.                                                                                                                                                                                                                                                     |                     |                            |

### Commands

|                                                      |                                                        |
|------------------------------------------------------|--------------------------------------------------------|
| <b>dir</b>                                           | List the contents of the current directory.            |
| <b>dir /w</b>                                        | List current directory using wide format.              |
| <b>dir &lt;directory path&gt;</b>                    | List the contents of the specified directory.          |
| <b>mkdir &lt;directory name&gt;</b>                  | Make a new directory with the given name.              |
| <b>cd &lt;directory path&gt;</b>                     | Change the current working directory.                  |
| <b>copy &lt;file path&gt; &lt;new file name&gt;</b>  | Copy a file to a new file.                             |
| <b>ren &lt;file path&gt; &lt;new file name&gt;</b>   | Rename a file to a new file name.                      |
| <b>move &lt;file path&gt; &lt;directory path&gt;</b> | Move a file into the specified directory.              |
| <b>del &lt;list of files&gt;</b>                     | Delete all files in the list.                          |
| <b>del &lt;list of files&gt; /P</b>                  | Delete all files in the list, asking for confirmation. |
| <b>rmdir &lt;directory path&gt;</b>                  | Remove an empty directory.                             |
| <b>type &lt;file path&gt;</b>                        | Type file to screen.                                   |
| <b>help &lt;command&gt;</b>                          | Display help on command.                               |

### Wild Cards

|          |                    |                         |                                            |
|----------|--------------------|-------------------------|--------------------------------------------|
| <b>?</b> | A single character | <b>del prog?.m</b>      | Remove prog1.m, prog2.m etc                |
| <b>*</b> | A character string | <b>move *.xls mydir</b> | Copy all files ending .xls to a directory. |

Note: In windows, directories are also called folders.

