Exercise 4 – Bash - Your Interpreter

1. Review questions
2. How does the shell tokenise the command line (i.e. splits the command line into words) ?

Splits the comms into tokens which are separated by the fixed set of metacharacters.

1. What is globbing ?

Using and expanding wildcards to generate filenames.

1. Why is the **$(cmd)** syntax recommended over the **`cmd`** notation ?

Back ticks are harder to read.

1. What is the difference (when used on the command line) between the single and double quotes ?

Single quotes disable recognition of special characters, whereas, double quotes protect most special characters, with few exceptions.

1. In Bash, what does the **!ls<**Enter**>** command achieve ?

Ls -help

1. Experiment with globbing

In this exercise we will use the filename generation ("wildcards") features of the shell to find all files and directories under ***/etc*** whose names match the criteria given below.

To test your patterns, use one of the commands:

**echo <***pattern>* *OR*  **ls -d <***pattern>*where *<pattern>* stands for the search string you will type, for example, for filenames beginning with **m**, type:

**echo m\*** *OR* **ls –d m\***

1. Change to the **/etc** directory, and display files whose names:
2. Begin with **p**

**ls –d p\***

1. End with **y**

**ls –d \*y**

iii) Begin with **m** and end with **d**

**ls –d m\*d**

iv) Begin with either **e** or **g** or **m**

**ls –d [egm]\***

v) Contain an **o** followed (not necessarily immediately) by a **p**

**ls –d \*o\*p\***

vi) Contain the string **conf**

**ls –d ????conf\***

vii) Begin with **s** and contain an **n**

**ls –d s\*n\***

viii) Contain exactly 4 characters

**ls –d ????**

ix) Contain a digit anywhere in the filename

**ls –d \*[[:digit:]]\***

1. What will the   
   **echo \* \***   
   command display? Run it, and comment.

**Displays all filenames**

1. Creating and manipulating user-defined variables

Simple variable assignment is not difficult. However, using quotes to correctly create (and expand) variables that contain non-alphanumerics as their values is a bit more involving. This is what we will practice in this exercise.

1. Create a new variable, called **name** and assign to it the value: **Joe**

**Name = Joe**

1. Create a new variable, called **address** and assign to it the value:

*<4 spaces>***22 Acacia Avenue** (i.e. address line to be indented by four spaces).

**Address *=’*****22 Acacia Avenue’**

1. Check the values of the two new variables you have created above.

Hint: How are you going to force the shell to show the spaces belonging to **address**?

**Echo $name**

**Echo $address**

1. Using command substitution

Command substitution is invaluable in scripts as well as in log file generating.

We will practice the technique here, using mostly the $(cmd) notation as one that provides more readable characters and better nesting capability.

1. Create a new variable, called **now** and assign to it the current date and time.

Hint: **date +%c** formats the output of date to display date and time only. Now that we are substituting a command into the variable, we will need to use brackets and a dollar sign.

1. Test the assignment (check the value of **now**).

**now=$(date +%D)**

1. Create a new variable, called **here** and assign to it the terminal being used for the current session. Hint use the **tty** command.

**Here =$(tty)**

1. Test the assignment (check the value of **here**).

**Echo $here**

1. Incorporate the two variables into a single **echo** command line, just as a program or a script might do to create a meaningful log file entry.   
     
   Your resulting line should look something like this:

This line was created on Wed Nov 4 18:02:41 2009, whilst working on the /dev/pts/1 screen.

**Echo “This line was created on $now, whilst working on the $here”**

If time allows

1. Practice using BASH ability to recall and edit command line
2. First place the commands shown below into the history file by executing them.   
   Note: the only significance in typing the commands shown below is to ensure a known content of the history file for us to explore in a moment.

$ **cd**

$ **w**

$ **pwd**

$ **ls –l**

$ **less helloworld.txt** (press q to exit)

$ **less /etc/passwd** (press q to exit)

$ **wc –l helloworld.txt /etc/passwd**

$ **history**

1. Now enter the following commands and observe the results:

$ **!ls**

$ **!wc**

$ **!less** Which **less** command was run?

$ **!ls:s/-l/../** What has this done?

$ **!!**

$ **!***n* For *n*, enter any number from history