Shell scripting

Exercise Answers

1. Create a subdirectory of your home directory called *somejunk*

   `mkdir somejunk`

2. Create a file named *junk* in *somejunk* with the following contents:

   ```
   This file contains no useful information
   ```

   `echo "This file contains no useful information" > somejunk/junk`

3. Make *somejunk* the current working directory

   `cd somejunk`

4. What access rights do you have to the file *junk*?

   Use `ls -l` to see access permissions (e.g. if `-rw-------`, you have read and write access)

5. What is the group associated with the file *junk*, and what permissions do users in that group have for this file?

   Again, from the output of `ls -l`. Use the description at the beginning of the prac to help interpret the output (on *turing*, it's probably in a group with the same name as your logon, with no access rights).

6. What access rights do all other users have to the file *junk*?

   Again, from the output of `ls -l`. Use the description at the beginning of the prac to help interpret the output (on *turing*, they probably have no access rights).

7. Use `chmod` to set the access permissions on *junk* so no user (including you) can read it

   `chmod a-r junk`

8. Try to list the contents of the file *junk*

   `cat junk`

9. Change the access permissions so only you can read the file *junk*. Confirm that you can list its contents

   `chmod u+r junk && cat junk`

10. Change the access permissions so all users can read the file *junk*

    `chmod a+r junk`

11. Remove *junk* and *somejunk* from your home directory

    `rm junk; cd; rmdir somejunk`

12. Use wildcards to write a command to list all the files/directories with the prefix *prac* in your home directory, with one entry per line (you may need to create some directories to test this)

    `ls -1d prac*`

13. Use output redirection to redirect the output of the previous command to a file named *pracDirs*

    `ls -1d prac* > pracDirs`

14. Use a pipe from the `ls` command to the `wc` command to count the number of files/directories with the prefix *prac* in your home directory

    `ls -1d prac* | wc -l`

15. Write a single command using pipes that does everything required for the last three exercises (hint: use the `tee` command)

    `ls -1d prac* | tee pracDirs | wc -l`

16. Write a bash program called *hello.sh* which prints "Hello World" to standard output. Use an editor to write your script, and don't forget to make the file executable before you run it:

    ```
    nano hello.sh
    chmod u+x hello.sh
    ./hello.sh
    ```

    ```
    #!/bin/bash
    echo "Hello World"
    ```

17. **[Advanced]** Write a program called *sumInt.sh* which reads two integers from standard input, calculates the sum, and prints the result to standard output

    ```
    #!/bin/bash
    read -p "Enter first number: " x
    read -p "Enter second number: " y
    sum=$((x + y))
    echo "$x + $y = $sum"
    ```

18. **[Advanced]** Modify *sumInt.sh* so that, if the user enters a negative number, the script loops to ask the user to enter the value again

```
#!/bin/bash
read -p "Enter first number: " x
while [[ x -lt 0 ]]
do
  read -p "Enter first number (must be non-negative): " x
done
read -p "Enter second number: " y
while [[ y -lt 0 ]]
do
  read -p "Enter second number (must be non-negative): " y
done
sum=$((x + y))
echo "$x + $y = $sum"
```

19. You may wish to try some of the exercises at https://cmdchallenge.com for more practice. Or, for a more detailed of bash commands, have a look at Bash Notes for Professionals.

20. **[This exercise should be submitted through the Assessments section of Moodle for Tutorial Exercise 1]** This exercise is designed to introduce you to the Python Automarker tool. You should click on the Tutorial Exercise 1 Submission link in the Assessment section of COSC110's Moodle page to launch the tool. Familiarise yourself with the tool. For this exercise, the code you require is already provided (there is no need for you to understand it yet), so ensure you can correctly submit your grade after running all the tests successfully.

Last modified: Thursday, 1 February 2024, 10:43 AM