

Linux Bash

Dev Club - Assignment 5

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Deadline : 5 PM, 18th December 2017

Introduction

This assignment is aimed at making you familiar with the linux bash and to basic shell scripting.

You are expected to write bash scripts. Please strictly follow to the input and output instructions, as your scripts will be evaluated automatically by a shell script :P

References

Here are a few links to help you out and get you started:-

- <http://linuxcommand.org/>
- <https://ryanstutorials.net/bash-scripting-tutorial/>
- <https://www.shellscript.sh/>

Script 1

Write a script named *countFiles.sh* that takes two parameters as described:

1. PATH Of Directory — This argument tells the script to search for files in the given directory PATH. This is a compulsory argument.
2. File Extension — This argument tells the script to search only for files ending with the given extension. This is an optional argument.

The aim of this script is to output the number of files in the directory that have the given extension to stdout. Your script should exit with error code -1, if the directory is not readable or if it encounters any error.

NOTE: The script should only report the number of files that are present only in the root of the directory path given, and not any subdirectories of it.

Example

```
aman@aman:/tmp/tempdir> tree
```

```
.
- 1.pdf
- 1.txt
- 2.pdf
- 2.txt
- 3.pdf
- 3.txt
- 4.txt
- 5.txt
'-- subdir
    - 1.txt
    - 2.txt
    - 3.txt
```

```
aman@aman:/tmp/tempdir> ./countFiles.sh /tmp/tempdir
8
```

```
aman@aman:/tmp/tempdir> ./countFiles.sh /tmp/tempdir .pdf
3
```

```
aman@aman:/tmp/tempdir> ./countFiles.sh /tmp/tempdir .txt
5
```

Script 2

The file `/etc/passwd` contains all the login information (not passwords) for users on a linux system. The description of each line is explained below.

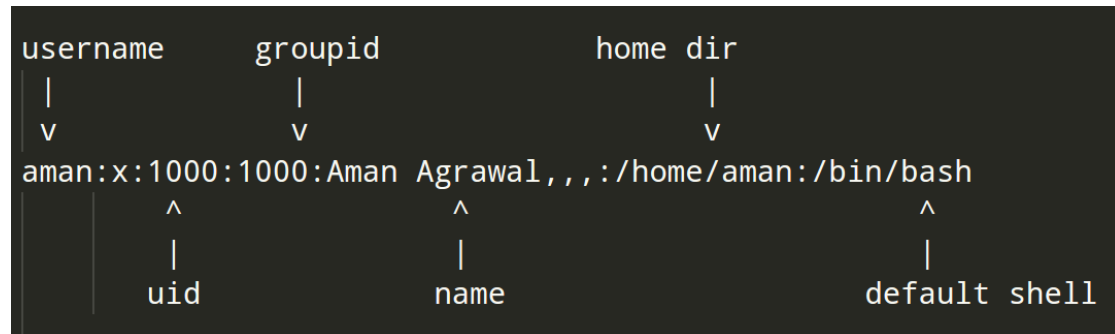


Figure 1: Expaliation of each line in the inout file

Write a script `uname.sh` that takes two parameters, the username of the user and a txt file with the contents as present in the `/etc/passwd` file and returns the full name of the user.

NOTE: The script should exit with error code -1 if both the parameters are not given or if the input file is not in the prescribed format.

Example

Suppose the input file contains the following lines :

```
aman@aman:~$ cat input.txt
root:x:0:0:root:/root:/bin/bash
hplip:x:114:7:HPLIP system user,,,:/var/run/hplip:/bin/false
pulse:x:115:122:PulseAudio daemon,,,:/var/run/pulse:/bin/false
aman:x:1000:1000:Aman Agrawal,,,:/home/aman:/bin/bash
sshd:x:118:65534:::/var/run/sshd:/usr/sbin/nologin
```

```
aman@aman:~$ ./uname.sh input.txt aman
Aman Agrawal,,,
```

```
aman@aman:~$ ./uname.sh input.txt pulse
PulseAudio daemon,,,
```

Script 3

The aim of this script is to make you familiar with arithmetic operators and expressions in bash.

Write a script *eval.sh*, that takes an input file as an argument and returns the value after arithmetic operations.

For more information refer to the example below.

Example

Suppose the input file contains the following lines :

```
aman@aman:~> cat input.txt
```

```
100 +
```

```
20 +
```

```
40 -
```

```
10 /
```

```
60 *
```

```
aman@aman:~> ./eval.sh input.txt
```

```
480
```

Explanation: The scripts starts with 0 and then performs the operations as follows

```
0 + 100 = 100
```

```
100 + 20 = 120
```

```
120 - 40 = 80
```

```
80 / 10 = 8
```

```
8 * 60 = 480
```

```
Thus the answer is 480
```

Script 4 (Bonus)

Write a script *backup.sh* that takes two directory paths as input and syncs the files present in them recursively taking care of the sub-directories. Your script should output informational messages as shown below.

For more information refer to the example below.

Example

```
aman@aman:/dir1> tree
```

```
.
- 1.txt
- 2.txt
- 3.pdf
- 3.txt
- 4.txt
- 5.txt
'-- subdir
    - 2.txt
    - 3.txt
```

```
aman@aman:/dir2> tree
```

```
.
- 1.pdf
- 2.pdf
- 2.txt
- 3.txt
- 5.txt
'-- subdir
    - 1.txt
    - 3.txt
```

```
aman@aman:> ./backup.sh /dir1 /dir2
Files copied from /dir1 to /dir2 are:
1.txt
4.txt
subdir/2.txt
Files copied from /dir2 to /dir1 are:
1.pdf
2.pdf
subdir/1.txt
```

Submission Instructions

- Create a new git repo with the name DevClubAssignment5.
- Write your scripts to respective problems with the respective names of the scripts as mentioned earlier.
- Keep committing on every major milestone into the assignment. We will look at the stagewise commits also(not only the final result).
- Submit your github repo link at <https://goo.gl/forms/ownhVCM0l2yfsNy82>.