

0x02. Shell, I/O Redirections and filters

DevOpsShellBash

- By: Julien Barbier
- Weight: 1
- Project over - took place from Mar 4, 2022 6:00 AM to Mar 9, 2022 6:00 AM
- An auto review will be launched at the deadline

In a nutshell...

- **Auto QA review:** 116.0/116 mandatory & 18.0/18 optional
- **Altogether: 200.0%**
 - Mandatory: 100.0%
 - Optional: 100.0%
 - Calculation: $100.0\% + (100.0\% * 100.0\%) == 200.0\%$

About Bash projects

Unless stated, all your projects will be auto-corrected with Ubuntu 20.04 LTS.

Resources

Read or watch:

- [Shell, I/O Redirection](#)
- [Special Characters](#)

man or help:

- `echo`
- `cat`
- `head`
- `tail`
- `find`
- `wc`
- `sort`
- `uniq`
- `grep`
- `tr`
- `rev`
- `cut`
- `passwd (5)` (i.e. `man 5 passwd`)

Learning Objectives

At the end of this project, you are expected to be able to **explain to anyone, without the help of Google:**

Shell, I/O Redirection

- What do the commands `head`, `tail`, `find`, `wc`, `sort`, `uniq`, `grep`, `tr` do
- How to redirect standard output to a file
- How to get standard input from a file instead of the keyboard
- How to send the output from one program to the input of another program
- How to combine commands and filters with redirections

Special Characters

- What are special characters
- Understand what do the white spaces, single quotes, double quotes, backslash, comment, pipe, command separator, tilde and how and when to use them

Other Man Pages

- How to display a line of text
- How to concatenate files and print on the standard output
- How to reverse a string
- How to remove sections from each line of files
- What is the `/etc/passwd` file and what is its format
- What is the `/etc/shadow` file and what is its format

Copyright - Plagiarism

- You are tasked to come up with solutions for the tasks below yourself to meet with the above learning objectives.
- You will not be able to meet the objectives of this or any following project by copying and pasting someone else's work.
- You are not allowed to publish any content of this project.
- Any form of plagiarism is strictly forbidden and will result in removal from the program.

Requirements

General

- Allowed editors: `vi`, `vim`, `emacs`
- All your scripts will be tested on Ubuntu 20.04 LTS
- All your scripts should be exactly two lines long (`$ wc -l file` should print 2)
- All your files should end with a new line (why?)
- The first line of all your files should be exactly `#!/bin/bash`
- A `README.md` file, at the root of the folder of the project, describing what each script is doing
- You are not allowed to use backticks, `&&`, `||` or `;`
- All your files must be executable
- You are not allowed to use `sed` or `awk`

More Info

Read your `/etc/passwd` and `/etc/shadow` files.

Note: You do not have to learn about `fmt`, `pr`, `du`, `gzip`, `tar`, `lpr`, `sed` and `awk` yet.

Quiz questions

Great! You've completed the quiz successfully! Keep going! ([Show quiz](#))

Tasks

0. Hello World

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that prints “Hello, World”, followed by a new line to the standard output.

```
julien@ubuntu:/tmp/h$ ./0-hello_world
Hello, World
julien@ubuntu:/tmp/h$ ./0-hello_world | cat -e
Hello, World$
julien@ubuntu:/tmp/h$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`

- Directory: `0x02-shell_redirections`
- File: `0-hello_world`

Done! Help Check your code Get a sandbox QA Review

1. Confused smiley

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that displays a confused smiley `"(ôo)"`.

```
julien@ubuntu:/tmp/h$ ./1-confused_smiley
"(ôo)"
julien@ubuntu:/tmp/h$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `1-confused_smiley`

Done! Help Check your code Get a sandbox QA Review

2. Let's display a file

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display the content of the `/etc/passwd` file.

Example:

```
$ ./2-hellofile
##
# User Database
#
# Note that this file is consulted directly only when the system is running
# in single-user mode. At other times this information is provided by
# Open Directory.
#
# See the opendirectoryd(8) man page for additional information about
# Open Directory.
##
nobody:*:-2:-2:Unprivileged User:/var/empty:/usr/bin/false
```

```
root:*:0:0:System Administrator:/var/root:/bin/sh
daemon:*:1:1:System Services:/var/root:/usr/bin/false
_uucp:*:4:4:Unix to Unix Copy Protocol:/var/spool/uucp:/usr/sbin/uucico
_taskgated:*:13:13:Task Gate Daemon:/var/empty:/usr/bin/false
_networkd:*:24:24:Network Services:/var/networkd:/usr/bin/false
_installassistant:*:25:25:Install Assistant:/var/empty:/usr/bin/false
_lp:*:26:26:Printing Services:/var/spool/cups:/usr/bin/false
_postfix:*:27:27:Postfix Mail Server:/var/spool/postfix:/usr/bin/false
_scsd:*:31:31:Service Configuration Service:/var/empty:/usr/bin/false
_ces:*:32:32:Certificate Enrollment Service:/var/empty:/usr/bin/false
_mcxalr:*:54:54:MCX AppLaunch:/var/empty:/usr/bin/false
_krbfast:*:246:-2:Kerberos FAST Account:/var/empty:/usr/bin/false
$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `2-hellofile`

Done! Help Check your code Get a sandbox QA Review

3. What about 2?

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display the content of `/etc/passwd` and `/etc/hosts`

Example:

```
$ ./3-twofiles
##
# User Database
#
# Note that this file is consulted directly only when the system is running
# in single-user mode. At other times this information is provided by
# Open Directory.
#
# See the opendirectoryd(8) man page for additional information about
```

```
# Open Directory.
##
nobody:*:-2:-2:Unprivileged User:/var/empty:/usr/bin/false
root:*:0:0:System Administrator:/var/root:/bin/sh
daemon:*:1:1:System Services:/var/root:/usr/bin/false
##
# Host Database
#
# localhost is used to configure the loopback interface
# when the system is booting. Do not change this entry.
##
127.0.0.1    localhost
255.255.255.255 broadcasthost
::1 localhost
$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `3-twofiles`

Done! Help Check your code Get a sandbox QA Review

4. Last lines of a file

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display the last 10 lines of `/etc/passwd`

Example:

```
$ ./4-lastlines
_assetcache*:235:235:Asset Cache Service:/var/empty:/usr/bin/false
_coremediaiod*:236:236:Core Media IO Daemon:/var/empty:/usr/bin/false
_launchservicesd*:239:239:_launchservicesd:/var/empty:/usr/bin/false
_iconservices*:240:240:IconServices:/var/empty:/usr/bin/false
_distnote*:241:241:DistNote:/var/empty:/usr/bin/false
_nsurlsessiond*:242:242:NSURLSession Daemon:/var/db/nsurlsessiond:/usr/bin/false
```

```
_nurlstoraged:*:243:243:NSURLStorage Daemon:/var/empty:/usr/bin/false
_displaypolicyd:*:244:244:Display Policy Daemon:/var/empty:/usr/bin/false
_astris:*:245:245:Astris Services:/var/db/astris:/usr/bin/false
_krbfast:*:246:-2:Kerberos FAST Account:/var/empty:/usr/bin/false
```

Tips: “Thinks of it as a cat, what is at the end of it?”

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `4-lastlines`

Done! Help Check your code Get a sandbox QA Review

5. I'd prefer the first ones actually

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display the first 10 lines of `/etc/passwd`

Example:

```
$ ./5-firstlines
##
# User Database
#
# Note that this file is consulted directly only when the system is running
# in single-user mode. At other times this information is provided by
# Open Directory.
#
# See the opendirectoryd(8) man page for additional information about
# Open Directory.
##
$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`

- File: `5-firstlines`

Done! Help Check your code Get a sandbox QA Review

6. Line #2

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that displays the third line of the file `iacta`.

The file `iacta` will be in the working directory

- You're not allowed to use `sed`

```
julien@ubuntu:/tmp/h$ cat iacta
```

```
Alea iacta est
```

Alea iacta est ("The die is cast") is a Latin phrase attributed by Suetonius (as `iacta alea est`) to Julius Caesar on January 10, 49 BC as he led his army across the Rubicon river in Northern Italy. With this step, he entered Italy at the head of his army in defiance of the Senate and began his long civil war against Pompey and the Optimates. The phrase has been adopted in Italian (`Il dado è tratto`), Romanian (`Zarurile au fost aruncate`), Spanish (`La suerte está echada`), French (`Les dés sont jetés`), Portuguese (`A sorte está lançada`), Dutch (`De teerling is geworpen`), German (`Der Würfel ist gefallen`), Hungarian (`A kocka el van vetve`) and many other languages to indicate that events have passed a point of no return.

Read more: https://en.wikipedia.org/wiki/Alea_iacta_est

```
julien@ubuntu:/tmp/h$ ./6-third_line
```

```
Alea iacta est ("The die is cast") is a Latin phrase attributed by Suetonius
```

```
julien@ubuntu:/tmp/h$
```

Note: The output will differ, depending on the content of the file `iacta`.

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `6-third_line`

Done! Help Check your code Get a sandbox QA Review

7. It is a good file that cuts iron without making a noise

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a shell script that creates a file named exactly `*\\"Best School"*\$\\?*****:.)` containing the text `Best School` ending by a new line.

```
julien@ubuntu:~/shell$ ls && ./7-file && ls -l && cat -e \*\*
0-mac_and_cheese 7-file 7-file~ Makefile
total 20
-rwxrw-r-- 1 julien julien 79 Jan 20 06:24 0-mac_and_cheese
-rwxrw-r-- 1 julien julien 90 Jan 20 06:40 7-file
-rwxrw-r-- 1 julien julien 69 Jan 20 06:37 7-file~
-rw-rw-r-- 1 julien julien 14 Jan 20 06:38 Makefile
-rw-rw-r-- 1 julien julien 17 Jan 20 06:40 '\*\\"Best School"\*\$\\?\*\*\*\*\*:.)'
Best School$
julien@ubuntu:~/shell$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `7-file`

Done! Help Check your code Get a sandbox QA Review

8. Save current state of directory

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that writes into the file `ls_cwd_content` the result of the command `ls -la`. If the file `ls_cwd_content` already exists, it should be overwritten. If the file `ls_cwd_content` does not exist, create it.

```
julien@ubuntu:/tmp/h$ ls -la
total 20
drwxrwxr-x 2 julien julien 4096 Sep 20 18:18 .
drwxrwxrwt 13 root root 4096 Sep 20 18:18 ..
-rwxrw-r-- 1 julien julien 36 Sep 20 18:18 8-cwd_state
-rw-rw-r-- 1 betty julien 23 Sep 20 14:25 hello
```

```

-rw-rw-r-- 1 julien julien 926 Sep 20 17:52 iacta
julien@ubuntu:/tmp/h$ ./8-cwd_state
julien@ubuntu:/tmp/h$ ls -la
total 24
drwxrwxr-x 2 julien julien 4096 Sep 20 18:18 .
drwxrwxrwt 13 root root 4096 Sep 20 18:18 ..
-rwxrw-r-- 1 julien julien 36 Sep 20 18:18 8-cwd_state
-rw-rw-r-- 1 betty julien 23 Sep 20 14:25 hello
-rw-rw-r-- 1 julien julien 926 Sep 20 17:52 iacta
-rw-rw-r-- 1 julien julien 329 Sep 20 18:18 ls_cwd_content
julien@ubuntu:/tmp/h$ cat ls_cwd_content
total 20
drwxrwxr-x 2 julien julien 4096 Sep 20 18:18 .
drwxrwxrwt 13 root root 4096 Sep 20 18:18 ..
-rwxrw-r-- 1 julien julien 36 Sep 20 18:18 8-cwd_state
-rw-rw-r-- 1 betty julien 23 Sep 20 14:25 hello
-rw-rw-r-- 1 julien julien 926 Sep 20 17:52 iacta
-rw-rw-r-- 1 julien julien 0 Sep 20 18:18 ls_cwd_content
julien@ubuntu:/tmp/h$

```

Repo:

- GitHub repository: [alx-system_engineering-devops](#)
- Directory: [0x02-shell_redirections](#)
- File: [8-cwd_state](#)

Done! Help Check your code Get a sandbox QA Review

9. Duplicate last line

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that duplicates the last line of the file `iacta`

- The file `iacta` will be in the working directory

```

julien@ubuntu:/tmp/h$ cat iacta
Alea iacta est

```

Alea iacta est ("The die is cast") is a Latin phrase attributed by Suetonius (as iacta alea est) to Julius Caesar on January 10, 49 BC as he led his army across the Rubicon river in Northern Italy. With this step, he entered Italy at the head of his army in defiance of the Senate and began his long civil war against Pompey and the Optimates. The phrase has been adopted in Italian (Il dado è tratto), Romanian (Zarurile au fost aruncate), Spanish (La suerte está echada), French (Les dés sont jetés), Portuguese (A sorte está lançada), Dutch (De teerling is geworpen), German (Der Würfel ist gefallen), Hungarian (A kocka el van vetve) and many other languages to indicate that events have passed a point of no return.

Read more: https://en.wikipedia.org/wiki/Alea_iacta_est

```
julien@ubuntu:/tmp/h$ ./9-duplicate_last_line
```

```
julien@ubuntu:/tmp/h$ cat iacta
```

```
Alea iacta est
```

Alea iacta est ("The die is cast") is a Latin phrase attributed by Suetonius (as iacta alea est) to Julius Caesar on January 10, 49 BC as he led his army across the Rubicon river in Northern Italy. With this step, he entered Italy at the head of his army in defiance of the Senate and began his long civil war against Pompey and the Optimates. The phrase has been adopted in Italian (Il dado è tratto), Romanian (Zarurile au fost aruncate), Spanish (La suerte está echada), French (Les dés sont jetés), Portuguese (A sorte está lançada), Dutch (De teerling is geworpen), German (Der Würfel ist gefallen), Hungarian (A kocka el van vetve) and many other languages to indicate that events have passed a point of no return.

Read more: https://en.wikipedia.org/wiki/Alea_iacta_est

Read more: https://en.wikipedia.org/wiki/Alea_iacta_est

```
julien@ubuntu:/tmp/h$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `9-duplicate_last_line`

Done! Help Check your code Get a sandbox QA Review

10. No more javascript

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that deletes all the regular files (not the directories) with a `.js` extension that are present in the current directory and all its subfolders.

```
julien@ubuntu:/tmp/h$ ls -lR
.:
total 24
-rwxrw-r-- 1 julien julien  49 Sep 20 18:29 10-no_more_js
drwxrwxr-x 2 julien julien 4096 Sep 20 18:23 dir1
drwxrwxr-x 2 julien julien 4096 Sep 20 18:24 dir.js
-rw-rw-r-- 1 betty  julien  23 Sep 20 14:25 hello
-rw-rw-r-- 1 julien julien  982 Sep 20 18:21 iacta
-rw-rw-r-- 1 julien julien  329 Sep 20 18:18 ls_cwd_content
-rw-rw-r-- 1 julien julien    0 Sep 20 18:23 main.js

./dir1:
total 0
-rw-rw-r-- 1 julien julien 0 Sep 20 18:23 code.js

./dir.js:
total 0
julien@ubuntu:/tmp/h$ ./10-no_more_js
julien@ubuntu:/tmp/h$ ls -lR
.:
total 24
-rwxrw-r-- 1 julien julien  49 Sep 20 18:29 10-no_more_js
drwxrwxr-x 2 julien julien 4096 Sep 20 18:29 dir1
```

```
drwxrwxr-x 2 julien julien 4096 Sep 20 18:24 dir.js
-rw-rw-r-- 1 betty julien 23 Sep 20 14:25 hello
-rw-rw-r-- 1 julien julien 982 Sep 20 18:21 iacta
-rw-rw-r-- 1 julien julien 329 Sep 20 18:18 ls_cwd_content
```

```
./dir1:
```

```
total 0
```

```
./dir.js:
```

```
total 0
```

```
julien@ubuntu:/tmp/h$
```

Repo:

- GitHub repository: [alx-system_engineering-devops](#)
- Directory: [0x02-shell_redirections](#)
- File: [10-no_more_js](#)

Done! Help Check your code Get a sandbox QA Review

11. Don't just count your directories, make your directories count

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that counts the number of directories and sub-directories in the current directory.

- The current and parent directories should not be taken into account
- Hidden directories should be counted

```
julien@production-503e7013:~/shell/fun_with_the_shell$ ls -lRa
.:
total 32
drwxrwxr-x 3 julien julien 4096 Jan 20 03:53 .
drwxrwxr-x 3 julien julien 4096 Jan 20 02:58 ..
-rwxr--r-- 1 julien julien 43 Jan 20 02:59 0-commas
-rwxr--r-- 1 julien julien 47 Jan 20 02:50 1-empty_casks
-rwxrw-r-- 1 julien julien 68 Jan 20 03:35 2-gifs
-rwxrw-r-- 1 julien julien 47 Jan 20 03:53 3-directories
```

```
-rw-rw-r-- 1 julien julien 14 Jan 20 03:35 Makefile
drwxrwxr-x 4 julien julien 4096 Jan 20 03:42 test_dir

./test_dir:
total 16
drwxrwxr-x 4 julien julien 4096 Jan 20 03:42 .
drwxrwxr-x 3 julien julien 4096 Jan 20 03:53 ..
-rw-rw-r-- 1 julien julien 0 Jan 20 03:40 .horrible_selfie.gif
-rw-rw-r-- 1 julien julien 0 Jan 20 03:23 README.md
-rw-rw-r-- 1 julien julien 0 Jan 20 03:17 docker.gif
-rw-rw-r-- 1 julien julien 0 Jan 20 03:17 file.sh
drwxrwxr-x 2 julien julien 4096 Jan 20 03:23 photos
drwxrwxr-x 2 julien julien 4096 Jan 20 03:23 rep.gif

./test_dir/photos:
total 8
drwxrwxr-x 2 julien julien 4096 Jan 20 03:23 .
drwxrwxr-x 4 julien julien 4096 Jan 20 03:42 ..
-rw-rw-r-- 1 julien julien 0 Jan 20 03:23 cat.gif
-rw-rw-r-- 1 julien julien 0 Jan 20 03:22 index.html
-rw-rw-r-- 1 julien julien 0 Jan 20 03:23 main.gif
-rw-rw-r-- 1 julien julien 0 Jan 20 03:23 rudy_rigot.gif

./test_dir/rep.gif:
total 8
drwxrwxr-x 2 julien julien 4096 Jan 20 03:23 .
drwxrwxr-x 4 julien julien 4096 Jan 20 03:42 ..
julien@production-503e7013:~/shell/fun_with_the_shell$ ./11-directories
3
julien@production-503e7013:~/shell/fun_with_the_shell$
```

Repo:

- GitHub repository: [alx-system_engineering-devops](#)
- Directory: [0x02-shell_redirections](#)

- File: `11-directories`

Done! Help Check your code Get a sandbox QA Review

12. What's new

mandatory

Score: 100.0% (Checks completed: 100.0%)

Create a script that displays the 10 newest files in the current directory.

Requirements:

- One file per line
- Sorted from the newest to the oldest

```
alex@ubuntu:/tmp$ ls -l
total 7
-rwxr-xr-x 1 501 dialout 32 Sep 27 23:51 0-hello_world
-rwxr-xr-x 1 501 dialout 46 Sep 28 11:09 10-no_more_js
-rwxr-xr-x 1 501 dialout 43 Sep 28 11:19 11-directories
-rwxr-xr-x 1 501 dialout 30 Sep 29 13:43 12-newest_files
-rwxr-xr-x 1 501 dialout 28 Sep 27 23:54 1-confused_smiley
-rwxr-xr-x 1 501 dialout 28 Sep 27 23:58 2-hellofile
-rwxr-xr-x 1 501 dialout 39 Sep 27 23:58 3-twofiles
-rwxr-xr-x 1 501 dialout 33 Sep 27 23:59 4-lastlines
-rwxr-xr-x 1 501 dialout 33 Sep 28 00:00 5-firstlines
-rwxr-xr-x 1 501 dialout 28 Sep 28 00:25 6-third_line
-rwxr-xr-x 1 501 dialout 110 Sep 28 00:34 7-file
-rwxr-xr-x 1 501 dialout 36 Sep 28 00:34 8-cwd_state
-rwxr-xr-x 1 501 dialout 35 Sep 28 00:35 9-duplicate_last_line
-rw-r--r-- 1 501 dialout 19 Sep 27 23:51 README.md
alex@ubuntu:/tmp$ ./12-newest_files
12-newest_files
11-directories
10-no_more_js
9-duplicate_last_line
7-file
8-cwd_state
```

```
6-third_line
5-firstlines
4-lastlines
3-twofiles
alex@ubuntu:/tmp$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `12-newest_files`

Done! Help Check your code Get a sandbox QA Review

13. Being unique is better than being perfect

mandatory

Score: 100.0% (Checks completed: 100.0%)

Create a script that takes a list of words as input and prints only words that appear exactly once.

- Input format: One line, one word
- Output format: One line, one word
- Words should be sorted

```
julien@ubuntu:/tmp/0x02$ cat list
C#
C
Javascript
Perl
PHP
PHP
ASP
R
Go
C#
C++
R
Perl
Javascript
```



```
Javascript
Python
Javascript
Javascript
Javascript
Java
Java
Python
Javascript
Javascript
Javascript
ASP
julien@ubuntu:/tmp/0x02$ cat list | ./13-unique
C
C++
Go
julien@ubuntu:/tmp/0x02$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `13-unique`

Done! Help Check your code Get a sandbox QA Review

14. It must be in that file

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display lines containing the pattern “root” from the file `/etc/passwd`

```
$ ./14-findthatword
root:*:0:0:System Administrator:/var/root:/bin/sh
daemon:*:1:1:System Services:/var/root:/usr/bin/false
_cvmsroot:*:212:212:CVMS Root:/var/empty:/usr/bin/false
$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `14-findthatword`

Done! Help Check your code Get a sandbox QA Review

15. Count that word

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display the number of lines that contain the pattern “bin” in the file `/etc/passwd`

```
$ ./15-countthatword
81
$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `15-countthatword`

Done! Help Check your code Get a sandbox QA Review

16. What's next?

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display lines containing the pattern “root” and 3 lines after them in the file `/etc/passwd`.

```
$ ./16-whatsnext
root:*:0:0:System Administrator:/var/root:/bin/sh
daemon:*:1:1:System Services:/var/root:/usr/bin/false
_uucp:*:4:4:Unix to Unix Copy Protocol:/var/spool/uucp:/usr/sbin/uucico
_taskgated:*:13:13:Task Gate Daemon:/var/empty:/usr/bin/false
_networkd:*:24:24:Network Services:/var/networkd:/usr/bin/false
--
_cvmsroot:*:212:212:CVMS Root:/var/empty:/usr/bin/false
_usbmuxd:*:213:213:iPhone OS Device Helper:/var/db/lockdown:/usr/bin/false
_dovecot:*:214:6:Dovecot Administrator:/var/empty:/usr/bin/false
```

```
_dpaudio*:215:215:DP Audio:/var/empty:/usr/bin/false
$
```

Repo:

- GitHub repository: [alx-system_engineering-devops](#)
- Directory: [0x02-shell_redirections](#)
- File: [16-whatsnext](#)

Done! Help Check your code Get a sandbox QA Review

17. I hate bins

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display all the lines in the file `/etc/passwd` that do not contain the pattern “bin”.

```
$ ./17-hidethisword
##
# User Database
#
# Note that this file is consulted directly only when the system is running
# in single-user mode. At other times this information is provided by
# Open Directory.
#
# See the opendirectoryd(8) man page for additional information about
# Open Directory.
##
$
```

Repo:

- GitHub repository: [alx-system_engineering-devops](#)
- Directory: [0x02-shell_redirections](#)
- File: [17-hidethisword](#)

Done! Help Check your code Get a sandbox QA Review

18. Letters only please

mandatory

Score: 100.0% (Checks completed: 100.0%)

Display all lines of the file `/etc/ssh/sshd_config` starting with a letter.

- include capital letters as well

```
$ ./18-letteronly
SyslogFacility AUTHPRIV
AuthorizedKeysFile .ssh/authorized_keys
UsePrivilegeSeparation sandbox # Default for new installations.
AcceptEnv LANG LC_*
Subsystem sftp /usr/libexec/sftp-server
$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `18-letteronly`

Done! Help Check your code Get a sandbox QA Review

19. A to Z

mandatory

Score: 100.0% (Checks completed: 100.0%)

Replace all characters `A` and `c` from input to `Z` and `e` respectively.

```
julien@ubuntu:/tmp/0x02$ echo 'Replace all characters `A` and `c` from input to `Z` a
nd `e`.`' | ./19-AZ
Replaee all eharaeters `Z` and `e` from input to `Z` and `e`.
julien@ubuntu:/tmp/0x02$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `19-AZ`

Done! Help Check your code Get a sandbox QA Review

20. Without C, you would live in hiago

mandatory

Score: 100.0% (Checks completed: 100.0%)

Create a script that removes all letters `c` and `C` from input.

```
julien@ubuntu:/tmp/0x02$ echo Chicago | ./20-hiago
hiago
julien@ubuntu:/tmp/0x02$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `20-hiago`

Done! Help Check your code Get a sandbox QA Review

21. esreveR

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that reverse its input.

```
julien@ubuntu:/tmp/0x02$ echo "Reverse" | ./21-reverse
esreveR
julien@ubuntu:/tmp/0x02$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `21-reverse`

Done! Help Check your code Get a sandbox QA Review

22. DJ Cut Killer

mandatory

Score: 100.0% (Checks completed: 100.0%)

Write a script that displays all users and their home directories, sorted by users.

- Based on the the `/etc/passwd` file

```
julien@ubuntu:/tmp/0x02$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
```

```
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-timesync:x:100:102:systemd Time Synchronization,,,:/run/systemd:/bin/false
systemd-network:x:101:103:systemd Network Management,,,:/run/systemd/netif:/bin/false
systemd-resolve:x:102:104:systemd Resolver,,,:/run/systemd/resolve:/bin/false
systemd-bus-proxy:x:103:105:systemd Bus Proxy,,,:/run/systemd:/bin/false
syslog:x:104:108:./home/syslog:/bin/false
_apt:x:105:65534:./nonexistent:/bin/false
messagebus:x:106:110:./var/run/dbus:/bin/false
uidd:x:107:111:./run/uidd:/bin/false
lightdm:x:108:114:Light Display Manager:/var/lib/lightdm:/bin/false
whoopsie:x:109:116:./nonexistent:/bin/false
avahi-autoipd:x:110:119:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/bin/false
avahi:x:111:120:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/bin/false
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/bin/false
colord:x:113:123:colord colour management daemon,,,:/var/lib/colord:/bin/false
speech-dispatcher:x:114:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false
hplip:x:115:7:HPLIP system user,,,:/var/run/hplip:/bin/false
kernoops:x:116:65534:Kernel Oops Tracking Daemon,,,:/bin/false
pulse:x:117:124:PulseAudio daemon,,,:/var/run/pulse:/bin/false
rtkit:x:118:126:RealtimeKit,,,:/proc:/bin/false
```

```
saned:x:119:127:./var/lib/saned:/bin/false
usbmux:x:120:46:usbmux daemon,,,:/var/lib/usbmux:/bin/false
julien:x:1000:1000:Julien Barbier,,,:/home/julien:/bin/bash
guillaume:x:1001:1001:,,,:/home/guillaume:/bin/bash
betty:x:1002:1002:./home/betty:
julien@ubuntu:/tmp/0x02$
julien@ubuntu:/tmp/0x02$ ./22-users_and_homes
_apt:/nonexistent
avahi-autoipd:/var/lib/avahi-autoipd
avahi:/var/run/avahi-daemon
backup:/var/backups
betty:/home/betty
bin:/bin
colord:/var/lib/colord
daemon:/usr/sbin
dnsmasq:/var/lib/misc
games:/usr/games
gnats:/var/lib/gnats
guillaume:/home/guillaume
hplip:/var/run/hplip
irc:/var/run/ircd
julien:/home/julien
kernoops:/
lightdm:/var/lib/lightdm
list:/var/list
lp:/var/spool/lpd
mail:/var/mail
man:/var/cache/man
messagebus:/var/run/dbus
news:/var/spool/news
nobody:/nonexistent
proxy:/bin
pulse:/var/run/pulse
```

```
root:/root
rtkit:/proc
saned:/var/lib/saned
speech-dispatcher:/var/run/speech-dispatcher
sync:/bin
sys:/dev
syslog:/home/syslog
systemd-bus-proxy:/run/systemd
systemd-network:/run/systemd/netif
systemd-resolve:/run/systemd/resolve
systemd-timesync:/run/systemd
usbmux:/var/lib/usbmux
uucp:/var/spool/uucp
uuid:/run/uuid
whoopsie:/nonexistent
www-data:/var/www
julien@ubuntu:/tmp/0x02$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `22-users_and_homes`

Done! Help Check your code Get a sandbox QA Review

23. Empty casks make the most noise

#advanced

Score: 100.0% (Checks completed: 100.0%)

Write a command that finds all empty files and directories in the current directory and all sub-directories.

- Only the names of the files and directories should be displayed (not the entire path)
- Hidden files should be listed
- One file name per line
- The listing should end with a new line
- You are not allowed to use `basename`, `grep`, `egrep`, `fgrep` or `rgrep`

```
ubuntu@ip-172-31-63-244:~/0x02-shell_redirections$ ls -laR
```


..:

total 64

```
drwxrwxr-x 5 ubuntu ubuntu 4096 Oct  7 00:48 .
drwxrwxr-x 7 ubuntu ubuntu 4096 Sep 29 21:36 ..
-rwxrwxr-x 1 ubuntu ubuntu  56 Feb  8 2016 0-commas
drwxrwxr-x 2 ubuntu ubuntu 4096 Feb  8 2016 0-commas-checks
-rwxrwxr-x 1 ubuntu ubuntu  48 Feb  8 2016 1-empty_casks
-rwxrwxr-x 1 ubuntu ubuntu  68 Feb  8 2016 2-gifs
-rwxrwxr-x 1 ubuntu ubuntu  47 Feb  8 2016 3-directories
-rwxrwxr-x 1 ubuntu ubuntu  41 Feb  8 2016 4-zeros
-rwxrwxr-x 1 ubuntu ubuntu  43 Feb  8 2016 5-rot13
-rwxrwxr-x 1 ubuntu ubuntu  25 Feb  8 2016 6-odd
-rwxrwxr-x 1 ubuntu ubuntu  73 Feb  8 2016 7-sort_rot13
-rw-rw-r-- 1 ubuntu ubuntu   0 Oct  7 00:46 .....gif
-rw-rw-r-- 1 ubuntu ubuntu   0 Oct  7 00:47 ..hello.gif
drwxrwxr-x 2 ubuntu ubuntu 4096 Oct  7 00:41 javascript
-rw-rw-r-- 1 ubuntu ubuntu   0 Oct  7 00:48 Kris_is_awesome :)
-rw-rw-r-- 1 ubuntu ubuntu  14 Feb  8 2016 Makefile
-rw-rw-r-- 1 ubuntu ubuntu  69 Feb  8 2016 quote
-rw-rw-r-- 1 ubuntu ubuntu   0 Oct  7 00:24 Rona_napping.gif
-rw-rw-r-- 1 ubuntu ubuntu   0 Oct  6 23:59 root.gif
-rw-rw-r-- 1 ubuntu ubuntu   0 Mar 24 2016 ..something
drwxrwxr-x 3 ubuntu ubuntu 4096 Feb  8 2016 test_dir
-rwxrwxr-x 1 ubuntu ubuntu  54 Feb  8 2016 test.var
```

./0-commas-checks:

total 16

```
drwxrwxr-x 2 ubuntu ubuntu 4096 Feb  8 2016 .
drwxrwxr-x 5 ubuntu ubuntu 4096 Oct  7 00:48 ..
-rw-rw-r-- 1 ubuntu ubuntu 1361 Feb  8 2016 28-check.php
-rw-rw-r-- 1 ubuntu ubuntu  481 Feb  8 2016 28-check.php~
```

./javascript:

```
total 8
drwxrwxr-x 2 ubuntu ubuntu 4096 Oct  7 00:41 .
drwxrwxr-x 5 ubuntu ubuntu 4096 Oct  7 00:48 ..

./test_dir:
total 12
drwxrwxr-x 3 ubuntu ubuntu 4096 Feb  8 2016 .
drwxrwxr-x 5 ubuntu ubuntu 4096 Oct  7 00:48 ..
-rw-rw-r-- 1 ubuntu ubuntu  0 Feb  8 2016 docker.gif
-rw-rw-r-- 1 ubuntu ubuntu  0 Feb  8 2016 file.sh
-rw-rw-r-- 1 ubuntu ubuntu  0 Feb  8 2016 .horrible_selfie.gif
drwxrwxr-x 2 ubuntu ubuntu 4096 Feb  8 2016 photos
-rw-rw-r-- 1 ubuntu ubuntu  0 Feb  8 2016 README.md

./test_dir/photos:
total 8
drwxrwxr-x 2 ubuntu ubuntu 4096 Feb  8 2016 .
drwxrwxr-x 3 ubuntu ubuntu 4096 Feb  8 2016 ..
-rw-rw-r-- 1 ubuntu ubuntu  0 Feb  8 2016 cat.gif
-rw-rw-r-- 1 ubuntu ubuntu  0 Feb  8 2016 index.html
-rw-rw-r-- 1 ubuntu ubuntu  0 Feb  8 2016 main.gif
-rw-rw-r-- 1 ubuntu ubuntu  0 Feb  8 2016 rudy_rigot.gif
ubuntu@ip-172-31-63-244:~/0x02-shell_redirections$ ./100-empty_casks
Rona_napping.gif
javascript
root.gif
..something
Kris_is_awesome :)
..hello.gif
file.sh
docker.gif
README.md
index.html
```

```
main.gif
cat.gif
rudy_rigot.gif
.horrible_selfie.gif
.....gif
ubuntu@ip-172-31-63-244:~/0x02-shell_redirections$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `100-empty_casks`

Done! Help Check your code Get a sandbox QA Review

24. A gif is worth ten thousand words

#advanced

Score: 100.0% (Checks completed: 100.0%)

Write a script that lists all the files with a `.gif` extension in the current directory and all its sub-directories.

- Hidden files should be listed
- Only regular files (not directories) should be listed
- The names of the files should be displayed without their extensions
- The files should be sorted by byte values, but case-insensitive (file `aaa` should be listed before file `bbb`, file `.b` should be listed before file `a`, and file `Rona` should be listed after file `jay`)
- One file name per line
- The listing should end with a new line
- You are not allowed to use `basename`, `grep`, `egrep`, `fgrep` or `rgrep`

```
julien@production-503e7013:~/shell/fun_with_the_shell$ ls -Rla
.:
total 28
drwxrwxr-x 3 julien julien 4096 Jan 20 03:35 .
drwxrwxr-x 3 julien julien 4096 Jan 20 02:58 ..
-rwxr--r-- 1 julien julien 43 Jan 20 02:59 0-commas
-rwxr--r-- 1 julien julien 47 Jan 20 02:50 1-empty_casks
-rwxrw-r-- 1 julien julien 68 Jan 20 03:35 2-gifs
-rw-rw-r-- 1 julien julien 14 Jan 20 03:35 Makefile
drwxrwxr-x 4 julien julien 4096 Jan 20 03:42 test_dir
```

```
./test_dir:
total 16
drwxrwxr-x 4 julien julien 4096 Jan 20 03:42 .
drwxrwxr-x 3 julien julien 4096 Jan 20 03:35 ..
-rw-rw-r-- 1 julien julien 0 Jan 20 03:40 .horrible_selfie.gif
-rw-rw-r-- 1 julien julien 0 Jan 20 03:23 README.md
-rw-rw-r-- 1 julien julien 0 Jan 20 03:17 docker.gif
-rw-rw-r-- 1 julien julien 0 Jan 20 03:17 file.sh
drwxrwxr-x 2 julien julien 4096 Jan 20 03:23 photos
drwxrwxr-x 2 julien julien 4096 Jan 20 03:23 rep.gif

./test_dir/photos:
total 8
drwxrwxr-x 2 julien julien 4096 Jan 20 03:23 .
drwxrwxr-x 4 julien julien 4096 Jan 20 03:42 ..
-rw-rw-r-- 1 julien julien 0 Jan 20 03:23 cat.gif
-rw-rw-r-- 1 julien julien 0 Jan 20 03:22 index.html
-rw-rw-r-- 1 julien julien 0 Jan 20 03:23 main.gif
-rw-rw-r-- 1 julien julien 0 Jan 20 03:23 Electra_napping.gif

./test_dir/rep.gif:
total 8
drwxrwxr-x 2 julien julien 4096 Jan 20 03:23 .
drwxrwxr-x 4 julien julien 4096 Jan 20 03:42 ..
julien@production-503e7013:~/shell/fun_with_the_shell$ ./101-gifs
.horrible_selfie
cat
docker
Electra_napping
main
julien@production-503e7013:~/shell/fun_with_the_shell$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `101-gifs`

Done! Help Check your code Get a sandbox QA Review

25. Acrostic

#advanced

Score: 100.0% (Checks completed: 100.0%)

An acrostic is a poem (or other form of writing) in which the first letter (or syllable, or word) of each line (or paragraph, or other recurring feature in the text) spells out a word, message or the alphabet. The word comes from the French acrostiche from post-classical Latin acrostichis). As a form of constrained writing, an acrostic can be used as a mnemonic device to aid memory retrieval. [Read more](#).

Create a script that decodes acrostics that use the first letter of each line.

- The 'decoded' message has to end with a new line
- You are not allowed to use `grep`, `egrep`, `fgrep` or `rgrep`

```
julien@ubuntu:/tmp/0x02$ cat An\ Acrostic
Elizabeth it is in vain you say
Love not"—thou sayest it in so sweet a way:
In vain those words from thee or L.E.L.
Zantippe's talents had enforced so well:
Ah! if that language from thy heart arise,
Breath it less gently forth—and veil thine eyes.
Endymion, recollect, when Luna tried
To cure his love—was cured of all beside—
His follie—pride—and passion—for he died.
julien@ubuntu:/tmp/0x02$ ./102-acrostic < An\ Acrostic
ELIZABETH
julien@ubuntu:/tmp/0x02$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x02-shell_redirections`
- File: `102-acrostic`

Done! Help Check your code Get a sandbox QA Review

26. The biggest fan

#advanced

Score: 100.0% (Checks completed: 100.0%)

Write a script that parses web servers logs in TSV format as input and displays the 11 hosts or IP addresses which did the most requests.

- Order by number of requests, most active host or IP at the top
- You are not allowed to use `grep`, `egrep`, `fgrep` or `rgrep`

Format:

```
host      When possible, the hostname making the request. Uses the IP address if the ho
stname was unavailable.
logname    Unused, always -
time       In seconds, since 1970
method     HTTP method: GET, HEAD, or POST
url        Requested path
response   HTTP response code
bytes      Number of bytes in the reply
```

Here is an example with one day of logs of the NASA website (1995).

```
julien@ubuntu:/tmp/0x02$ wget https://s3.amazonaws.com/alx-intranet.hbtn.io/public/na
sa_19950801.tsv

--2022-03-08 11:08:26--  https://s3.amazonaws.com/alx-intranet.hbtn.io/public/nasa_19
950801.tsv

Resolving s3.amazonaws.com (s3.amazonaws.com)... 52.217.171.144
Connecting to s3.amazonaws.com (s3.amazonaws.com)|52.217.171.144|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 782913 (765K) [binary/octet-stream]
Saving to: 'nasa_19950801.tsv'

nasa_19950801.tsv  100%[=====>] 764.56K  --.-KB/s    in 0.008s

2022-03-08 11:08:26 (98.4 MB/s) - 'nasa_19950801.tsv' saved [782913/782913]

julien@ubuntu:/tmp/0x02$ head nasa_19950801.tsv
host      logname time      method url          response      bytes
```

```

in24.inetnebr.com      -      807249601      GET      /shuttle/missions/sts-68/news
/sts-68-mcc-05.txt 200      1839

uplherc.upl.com -      807249607      GET      /      304      0

uplherc.upl.com -      807249608      GET      /images/ksclogo-medium.gif      304
0

uplherc.upl.com -      807249608      GET      /images/MOSAIC-logosmall.gif      304
0

uplherc.upl.com -      807249608      GET      /images/USA-logosmall.gif      304
0

ix-esc-ca2-07.ix.netcom.com      -      807249609      GET      /images/launch-logo.g
if 200      1713

uplherc.upl.com -      807249610      GET      /images/WORLD-logosmall.gif      304
0

slppp6.intermind.net      -      807249610      GET      /history/skylab/skylab.html
200      1687

piweba4y.prodigy.com      -      807249610      GET      /images/launchmedium.gif
200      11853

julien@ubuntu:/tmp/0x02$ ./103-the_biggest_fan < nasa_19950801.tsv

www-relay.pa-x.dec.com

piweba3y.prodigy.com

www.thyssen.com

130.110.74.81

ix-min1-02.ix.netcom.com

uplherc.upl.com

reggae.iinet.net.au

seigate.sumiden.co.jp

ircgate1.rcc-irc.si

s150.phxslip4.indirect.com

torben.dou.dk

julien@ubuntu:/tmp/0x02$

```

Repo:

- GitHub repository: [alx-system_engineering-devops](#)
- Directory: [0x02-shell_redirections](#)
- File: [103-the_biggest_fan](#)

Done! Help Check your code Get a sandbox QA Review

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