# Computer Architecture and Technology Convergence Assignment

Table of Contents

[Computer Architecture and Technology Convergence Assignment 1](#_Toc39236217)

[Q1: Binary Arithmetic: 1](#_Toc39236218)

[Q 1.1 1](#_Toc39236219)

[Q 1.2 1](#_Toc39236220)

[Q 1.3 1](#_Toc39236221)

[Q 1.4 1](#_Toc39236222)

[Q 1.5 2](#_Toc39236223)

[Q2: Linux Assignment 2](#_Toc39236224)

[Q 2.1 2](#_Toc39236225)

[Q 2.2 4](#_Toc39236226)

[Q 2.3.1 24](#_Toc39236227)

[Q 2.3.2 24](#_Toc39236228)

[Q 2.4 25](#_Toc39236229)

## Q1: Binary Arithmetic:

### Q 1.1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 1 | 1 | 0 | 1 | 1 |
| + |  |  |  | 1 | 0 | 1 | 1 |
| Carry line |  |  | 1 | 0 | 1 | 1 | 0 |
| Result |  | 1 | 0 | 0 | 1 | 1 | 0 |

### Q 1.2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Decimal Value |  | Binary Value | | | | | | | |
| -31 |  | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| -59 |  | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |

### Q 1.3

11101001

As the 8 bits start with a 1, this is a negative value. We can then invert the 1s and 0s to get the value

11101001 becomes 00010110 which equals to 2+4+16 = 22.

We then add 1 and a minus sign which gives us -23.

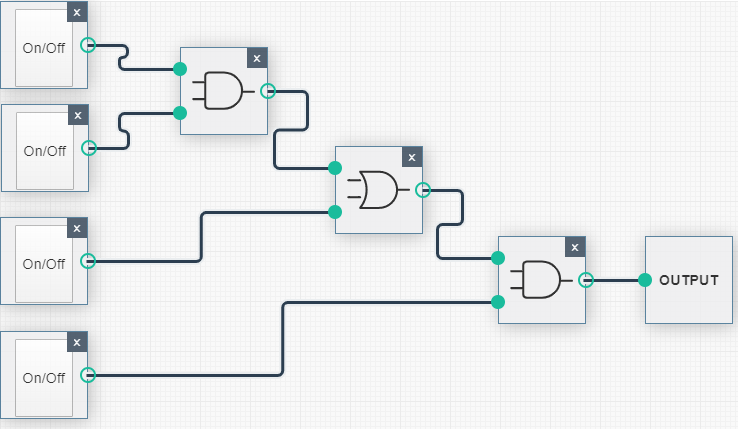
11101001 is the two’s compliment of -23.

### Q 1.4

|  |  |  |  |
| --- | --- | --- | --- |
| **X** | **Y** | **D** | **Bout** |
| 0 | 0 | 0 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 |

This circuit represents a half subtractor circuit where D represents the difference and Bout represents the carry.

### Q 1.5

****

## Q2: Linux Assignment

### Q 2.1

#### Description of the commands

1. **echo hello word** is used to output hello word into the console.
2. **passwd** is used to change the active user’s password.
3. **date** shows the current UTC time and date.
4. **hostname** displays or set the system’s host name and DNS name.
5. **arch** shows the computer architecture.
6. **uname -a** shows all of the system information.
7. **dmesg | more** dmesg is used to analyse the kernel ring buffer and | more is used to allow the user to go through the output line by line.
8. **uptime** shows how long the VM has been up.
9. **whoami** outputs the current user.
10. **who** shows currently logged in users on the VM.
11. **last** shows the last logged in users on the VM.
12. **finger** shows information about the currently logged in users.
13. **w** shows information about the currently users as well as their processes.
14. **top** shows the current Linux processes.
15. **echo $SHELL** shows the shell that the user is currently using, bash in this case.
16. **echo {con,pre}{sent,fer}{s,ed}** outputs each combination of the values inside the curly brackets.
17. **man ls** shows the manual for the ls function which lists the information about the files in a directory.
18. **man who** shows the manual for the who function which shows currently logged in users on the VM.
19. **clear** clears the terminal screen.
20. **cal 2000** shows the calendar for the year 2000
21. **cal 9 1752** shows the calendar for September 1752. There are 12 days missing in this month which is due to the change from the Julian to the Gregorian calendar.
22. **yes please** repeats the word please until the process is killed.
23. **time sleep 5** time runs the program COMMAND with any given arguments, in this case sleep which pauses a program and 5 which is the duration in seconds. Thus, it will output the command function after a period of 5 seconds
24. **history** shows the history of the commands the user ran in the terminal.

#### Screenshot of history command

### Q 2.2

#### Output of script to lucMcAuley.txt

this is the output for the following commands for the CATC course

------------------------------

output for date

------------------------------

Fri May 1 13:45:02 UTC 2020

------------------------------

output for hostname

------------------------------

ip-172-31-3-33

------------------------------

output for arch

------------------------------

x86\_64

------------------------------

output for uname -a

------------------------------

Linux ip-172-31-3-33 4.4.0-1101-aws #112-Ubuntu SMP Thu Jan 9 11:27:02 UTC 2020 x86\_64 x86\_64 x86\_64 GNU/Linux

------------------------------

output for uptime

------------------------------

13:45:02 up 60 days, 16:26, 10 users, load average: 0.00, 0.00, 0.00

------------------------------

output for whoami

------------------------------

lucmcauley

------------------------------

output for who

------------------------------

aleksanderdziki pts/0 2020-05-01 12:10 (37.228.226.85)

ivankacosic pts/1 2020-05-01 12:38 (77.107.198.66)

elenamartinlopez pts/2 2020-05-01 10:48 (37.228.241.247)

diarmaidtoomey pts/3 2020-05-01 09:51 (109.79.82.38)

adedotunadekeye pts/4 2020-05-01 10:56 (37.228.228.173)

lucmcauley pts/5 2020-05-01 13:43 (37.228.254.39)

leanneboyd pts/6 2020-05-01 10:23 (89.124.19.3)

aronnutley pts/7 2020-05-01 12:46 (80.233.45.127)

emmetmccourt pts/8 2020-05-01 13:00 (80.233.56.101)

leanneboyd pts/9 2020-05-01 13:15 (89.124.19.3)

------------------------------

output for finger

------------------------------

Login Name Tty Idle Login Time Office Office Phone

adedotunadekeye pts/4 May 1 10:56 (37.228.228.173)

aleksanderdziki pts/0 May 1 12:10 (37.228.226.85)

aronnutley pts/7 May 1 12:46 (80.233.45.127)

diarmaidtoomey pts/3 3:53 May 1 09:51 (109.79.82.38)

elenamartinlopez pts/2 18 May 1 10:48 (37.228.241.247)

emmetmccourt pts/8 May 1 13:00 (80.233.56.101)

ivankacosic pts/1 51 May 1 12:38 (77.107.198.66)

leanneboyd pts/6 May 1 10:23 (89.124.19.3)

leanneboyd pts/9 1 May 1 13:15 (89.124.19.3)

lucmcauley pts/5 May 1 13:43 (37.228.254.39)

------------------------------

output for w

------------------------------

13:45:02 up 60 days, 16:26, 10 users, load average: 0.00, 0.00, 0.00

USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT

aleksand pts/0 37.228.226.85 12:10 45.00s 0.07s 0.07s -bash

ivankaco pts/1 77.107.198.66 12:38 51:34 0.04s 0.04s -bash

elenamar pts/2 37.228.241.247 10:48 18:36 0.13s 0.13s -bash

diarmaid pts/3 109.79.82.38 09:51 3:53m 0.04s 0.04s -bash

adedotun pts/4 37.228.228.173 10:56 5.00s 2.07s 2.03s vim

lucmcaul pts/5 37.228.254.39 13:43 6.00s 0.06s 0.00s w

leannebo pts/6 89.124.19.3 10:23 6.00s 0.54s 0.09s vim while.sh

aronnutl pts/7 80.233.45.127 12:46 6.00s 0.23s 0.16s vim aronNutleyTea2.sh

emmetmcc pts/8 80.233.56.101 13:00 54.00s 0.54s 0.10s -bash

leannebo pts/9 89.124.19.3 13:15 1:19 0.04s 0.04s -bash

------------------------------

output for top -bn1

------------------------------

top - 13:45:02 up 60 days, 16:26, 10 users, load average: 0.00, 0.00, 0.00

Tasks: 177 total, 1 running, 172 sleeping, 4 stopped, 0 zombie

%Cpu(s): 0.1 us, 0.1 sy, 0.0 ni, 99.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

KiB Mem : 1014424 total, 131088 free, 181936 used, 701400 buff/cache

KiB Swap: 0 total, 0 free, 0 used. 596564 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND

1 root 20 0 185180 5344 3576 S 0.0 0.5 1:11.17 systemd

2 root 20 0 0 0 0 S 0.0 0.0 0:00.03 kthreadd

3 root 20 0 0 0 0 S 0.0 0.0 0:53.02 ksoftirqd/0

5 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 kworker/0:0H

7 root 20 0 0 0 0 S 0.0 0.0 0:58.71 rcu\_sched

8 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu\_bh

9 root rt 0 0 0 0 S 0.0 0.0 0:00.00 migration/0

10 root rt 0 0 0 0 S 0.0 0.0 0:25.57 watchdog/0

11 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kdevtmpfs

12 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 netns

13 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 perf

14 root 20 0 0 0 0 S 0.0 0.0 0:00.00 xenwatch

15 root 20 0 0 0 0 S 0.0 0.0 0:00.00 xenbus

17 root 20 0 0 0 0 S 0.0 0.0 0:01.27 khungtaskd

18 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 writeback

19 root 25 5 0 0 0 S 0.0 0.0 0:00.00 ksmd

20 root 39 19 0 0 0 S 0.0 0.0 0:08.27 khugepaged

21 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 crypto

22 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 kintegrityd

23 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

24 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 kblockd

25 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 ata\_sff

26 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 md

27 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 devfreq\_wq

30 root 20 0 0 0 0 S 0.0 0.0 0:02.06 kswapd0

31 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 vmstat

32 root 20 0 0 0 0 S 0.0 0.0 0:00.00 fsnotify\_ma+

33 root 20 0 0 0 0 S 0.0 0.0 0:00.00 ecryptfs-kt+

49 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 kthrotld

50 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

51 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

52 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

53 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

54 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

55 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

56 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

57 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

58 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

59 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

60 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

61 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

62 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

63 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

64 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

65 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

66 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

67 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

68 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

69 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

70 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

71 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

72 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

73 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

74 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 nvme

75 root 20 0 0 0 0 S 0.0 0.0 0:00.00 scsi\_eh\_0

76 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 scsi\_tmf\_0

77 root 20 0 0 0 0 S 0.0 0.0 0:00.00 scsi\_eh\_1

78 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 scsi\_tmf\_1

83 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 ipv6\_addrco+

84 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

97 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 deferwq

249 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 raid5wq

279 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 bioset

301 root 20 0 0 0 0 S 0.0 0.0 0:15.74 jbd2/xvda1-8

302 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 ext4-rsv-co+

372 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 iscsi\_eh

380 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 ib\_addr

386 root 20 0 28432 2708 2344 S 0.0 0.3 9:49.04 systemd-jou+

388 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 ib\_mcast

390 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 ib\_nl\_sa\_wq

391 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 ib\_cm

394 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 iw\_cm\_wq

396 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 rdma\_cm

405 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kauditd

421 root 20 0 102964 792 608 S 0.0 0.1 0:00.00 lvmetad

541 root 0 -20 0 0 0 S 0.0 0.0 0:00.88 kworker/0:1H

919 root 20 0 16116 2448 1592 S 0.0 0.2 0:01.72 dhclient

1069 root 20 0 5216 112 0 S 0.0 0.0 2:20.15 iscsid

1070 root 10 -10 5716 3512 2428 S 0.0 0.3 10:42.96 iscsid

1072 root 20 0 4392 1284 1200 S 0.0 0.1 0:00.00 acpid

1075 syslog 20 0 260624 3484 2060 S 0.0 0.3 2:51.75 rsyslogd

1077 root 20 0 274228 5152 3128 S 0.0 0.5 5:21.54 accounts-da+

1078 message+ 20 0 43012 3376 2752 S 0.0 0.3 0:10.85 dbus-daemon

1090 root 20 0 637048 3628 1392 S 0.0 0.4 0:21.77 lxcfs

1100 daemon 20 0 26040 1900 1708 S 0.0 0.2 0:00.05 atd

1110 root 20 0 26064 2360 2096 S 0.0 0.2 0:06.14 cron

1118 root 20 0 28612 2924 2552 S 0.0 0.3 0:06.64 systemd-log+

1145 root 20 0 277176 3760 3084 S 0.0 0.4 0:01.71 polkitd

1159 root 20 0 171704 12228 4140 S 0.0 1.2 0:00.08 unattended-+

1173 root 20 0 13368 140 0 S 0.0 0.0 0:00.29 mdadm

1228 root 20 0 14652 1548 1412 S 0.0 0.2 0:00.04 agetty

1243 root 20 0 12836 1556 1428 S 0.0 0.2 0:00.01 agetty

1678 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 loop1

12475 root 0 -20 0 0 0 S 0.0 0.0 0:00.01 loop4

12977 root 20 0 65508 3820 3104 S 0.0 0.4 2:53.73 sshd

14895 root 20 0 42300 3208 2616 S 0.0 0.3 0:02.81 systemd-ude+

15578 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 loop0

15595 root 20 0 302024 21600 9796 S 0.0 2.1 0:16.39 snapd

19966 systemd+ 20 0 100320 1956 1748 S 0.0 0.2 0:03.39 systemd-tim+

24497 diarmai+ 20 0 45164 4484 3764 S 0.0 0.4 0:00.12 systemd

24503 diarmai+ 20 0 208632 1876 0 S 0.0 0.2 0:00.00 (sd-pam)

24945 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 xfsalloc

24946 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 xfs\_mru\_cac+

27714 root 20 0 92828 6928 6000 S 0.0 0.7 0:00.01 sshd

27777 diarmai+ 20 0 92828 4472 3532 S 0.0 0.4 0:00.01 sshd

27778 diarmai+ 20 0 21472 5256 3272 S 0.0 0.5 0:00.04 bash

28169 root 20 0 92828 6704 5776 S 0.0 0.7 0:00.01 sshd

28171 leanneb+ 20 0 45164 4660 3944 S 0.0 0.5 0:00.02 systemd

28173 leanneb+ 20 0 208632 1880 0 S 0.0 0.2 0:00.00 (sd-pam)

28217 leanneb+ 20 0 93032 4532 3296 S 0.0 0.4 0:14.38 sshd

28218 leanneb+ 20 0 21488 5500 3432 S 0.0 0.5 0:00.15 bash

28638 leanneb+ 20 0 52792 8312 5088 T 0.0 0.8 0:00.16 vim

28690 root 20 0 92828 6680 5752 S 0.0 0.7 0:00.01 sshd

28692 elenama+ 20 0 45164 4528 3820 S 0.0 0.4 0:00.02 systemd

28694 elenama+ 20 0 208632 1880 0 S 0.0 0.2 0:00.00 (sd-pam)

28737 elenama+ 20 0 92828 3600 2676 S 0.0 0.4 0:00.15 sshd

28738 elenama+ 20 0 21464 5424 3388 S 0.0 0.5 0:00.13 bash

28848 root 20 0 92828 6936 6004 S 0.0 0.7 0:00.00 sshd

28850 adedotu+ 20 0 45164 4556 3840 S 0.0 0.4 0:00.01 systemd

28852 root 20 0 0 0 0 S 0.0 0.0 0:00.12 kworker/0:1

28853 adedotu+ 20 0 208632 1880 0 S 0.0 0.2 0:00.00 (sd-pam)

28918 adedotu+ 20 0 93188 4928 3532 S 0.0 0.5 0:05.86 sshd

28919 adedotu+ 20 0 21464 5280 3260 S 0.0 0.5 0:00.04 bash

29034 root 20 0 92828 6940 6016 S 0.0 0.7 0:00.00 sshd

29075 elenama+ 20 0 92828 4488 3532 S 0.0 0.4 0:00.01 sshd

29076 elenama+ 20 0 12876 2036 1880 S 0.0 0.2 0:00.00 sftp-server

29529 root 0 -20 0 0 0 S 0.0 0.0 0:00.00 loop3

29669 root 20 0 284096 3784 2316 S 0.0 0.4 0:38.26 amazon-ssm-+

29760 adedotu+ 20 0 53004 8992 5552 S 0.0 0.9 0:02.03 vim

29864 root 20 0 92828 6676 5748 S 0.0 0.7 0:00.01 sshd

29868 aleksan+ 20 0 45164 4632 3916 S 0.0 0.5 0:00.01 systemd

29871 aleksan+ 20 0 208632 1880 0 S 0.0 0.2 0:00.00 (sd-pam)

29936 aleksan+ 20 0 92828 3604 2680 S 0.0 0.4 0:00.16 sshd

29937 aleksan+ 20 0 21464 5240 3228 S 0.0 0.5 0:00.07 bash

30229 leanneb+ 20 0 52792 8720 5508 T 0.0 0.9 0:00.14 vim

30441 root 20 0 92828 6664 5736 S 0.0 0.7 0:00.01 sshd

30444 ivankac+ 20 0 45164 4584 3872 S 0.0 0.5 0:00.00 systemd

30446 ivankac+ 20 0 208632 1880 0 S 0.0 0.2 0:00.00 (sd-pam)

30492 ivankac+ 20 0 92828 3480 2556 S 0.0 0.3 0:00.01 sshd

30493 ivankac+ 20 0 21464 5272 3256 S 0.0 0.5 0:00.04 bash

30549 root 20 0 0 0 0 S 0.0 0.0 0:00.41 kworker/u30+

30579 root 20 0 92828 6928 5996 S 0.0 0.7 0:00.01 sshd

30581 aronnut+ 20 0 45164 4616 3904 S 0.0 0.5 0:00.00 systemd

30584 aronnut+ 20 0 208632 1880 0 S 0.0 0.2 0:00.00 (sd-pam)

30627 aronnut+ 20 0 92828 4356 3404 S 0.0 0.4 0:00.32 sshd

30628 aronnut+ 20 0 21464 5280 3264 S 0.0 0.5 0:00.07 bash

30706 root 20 0 92828 6920 5988 S 0.0 0.7 0:00.00 sshd

30708 emmetmc+ 20 0 45164 4624 3904 S 0.0 0.5 0:00.00 systemd

30711 emmetmc+ 20 0 208632 1880 0 S 0.0 0.2 0:00.00 (sd-pam)

30754 emmetmc+ 20 0 92828 4364 3396 S 0.0 0.4 0:00.29 sshd

30755 emmetmc+ 20 0 21464 5472 3444 S 0.0 0.5 0:00.10 bash

30861 emmetmc+ 20 0 53048 9068 5640 T 0.0 0.9 0:00.41 vim

30869 emmetmc+ 20 0 52828 8752 5584 T 0.0 0.9 0:00.03 vim

30875 root 20 0 92828 6952 6024 S 0.0 0.7 0:00.01 sshd

30939 leanneb+ 20 0 92828 3556 2632 S 0.0 0.4 0:00.00 sshd

30940 leanneb+ 20 0 21472 5296 3272 S 0.0 0.5 0:00.04 bash

30991 root 20 0 0 0 0 S 0.0 0.0 0:00.34 kworker/u30+

31017 root 20 0 92828 6976 6048 S 0.0 0.7 0:00.00 sshd

31059 aleksan+ 20 0 92828 3560 2632 S 0.0 0.4 0:00.00 sshd

31060 aleksan+ 20 0 12876 2040 1880 S 0.0 0.2 0:00.00 sftp-server

31067 root 20 0 92828 6636 5712 S 0.0 0.7 0:00.00 sshd

31108 aleksan+ 20 0 92828 4320 3340 S 0.0 0.4 0:00.00 sshd

31109 aleksan+ 20 0 12876 1992 1836 S 0.0 0.2 0:00.00 sftp-server

31120 root 20 0 298492 26596 5076 S 0.0 2.6 11:50.23 fail2ban-se+

31259 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kworker/0:0

31343 aronnut+ 20 0 53152 8840 5500 S 0.0 0.9 0:00.16 vim

31353 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kworker/0:2

31356 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kworker/0:3

31358 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kworker/0:4

31360 leanneb+ 20 0 52792 8852 5632 S 0.0 0.9 0:00.09 vim

31367 root 20 0 92828 6900 5968 S 0.0 0.7 0:00.00 sshd

31369 lucmcau+ 20 0 45164 4628 3912 S 0.0 0.5 0:00.00 systemd

31373 lucmcau+ 20 0 208632 1880 0 S 0.0 0.2 0:00.00 (sd-pam)

31415 lucmcau+ 20 0 92828 3500 2572 S 0.0 0.3 0:00.01 sshd

31417 lucmcau+ 20 0 21472 5280 3260 S 0.0 0.5 0:00.04 bash

31442 lucmcau+ 20 0 21284 5000 3144 S 0.0 0.5 0:00.02 FinalCATC.sh

31464 lucmcau+ 20 0 40528 3652 3084 R 0.0 0.4 0:00.00 top

------------------------------

output for history

------------------------------

1 cd ls

2 ls cd

3 ls

4 cd

5 ls

6 pwd

7 mkdir Music

8 pwd

9 ls

10 cd music

11 cd Music

12 mkdir RuPaul

13 mkdir Corey Feldman

14 mkdir Li Dicky

15 rm Li Dicky

16 ls

17 rm -rLi Dicky

18 rm -r Li Dicky

19 ls

20 rm -r Corey Feldman

21 ls

22 mkdir "Corey Feldman"

23 mkdir "Lil Dicky"

24 cd RuPul

25 mkdir "Corey Feldman", "Lil Dicky", "RuPaul"

26 rm -r "Corey Feldman", "Lil Dicky", "RuPaul"

27 ls

28 mkdir "Corey Feldman", "Lil Dicky", "RuPaul"

29 ls

30 rm -r "Corey Feldman", "Lil Dicky", "RuPaul"

31 ls

32 rm -r dir "Corey Feldman", "Lil Dicky", "RuPaul"

33 cd

34 rm -r Music

35 ls

36 mkdir Music

37 cd Music

38 mkdir RuPaul

39 mkdir "Corey Feldman"

40 mkdir "Lil Dicky"

41 ls

42 tree

43 cd Music/Corey Feldman

44 cd Music/RuPaul

45 cd RuPaul

46 mkdir "Glamazon"

47 mkdir "Champion"

48 mkdir "American"

49 ls

50 cd Music

51 cd

52 cd Music/ Corey Feldman

53 cd Music/Corey Feldman

54 cd directory\ name

55 cd directory\ Corey Feldman

56 cd Music\ Corey Feldman

57 pwd

58 cd Music\Corey Feldman

59 ls

60 cd Music\"Corey Feldman"

61 cd Music/Corey\ Feldman

62 cd Corey\ Feldman

63 mkdir "Angelic 2 The Core"

64 mkdir "Former Child Actor"

65 cd

66 cd Music/Lil\Dicky

67 cd Music/Lil\ Dicky

68 mkdir "Professional Rapper"

69 mkdor "So Hard"

70 mkdr "So Hard"

71 mkdir "So Hard"

72 cd

73 cd Music

74 cd Rupaul

75 cd RuPaul

76 ls

77 rm -r American

78 ls

79 cd

80 clear

81 tree

82 pwd

83 .

84 cd.

85 sudp apt get-updates

86 sudo apt get-updates

87 tree

88 rmdir /music.rupaul/glamazon

89 rmdir /music/rupaul/glamazon

90 rmdir ./music/rupaul/glamazon

91 rmdir ./Music/RuPaul/Glamazon

92 tree

93 cd music

94 cd Music

95 rmdir RuPaul

96 rmdir RuPaul -force

97 rmdir RuPaul -f

98 rmdir -man

99 rmdir man

100 rmdir --help

101 rmdir -rf RuPaul

102 rmdir -r /RuPaul

103 rmdir -rm /RuPaul

104 rmdir -rf /RuPaul

105 rm -rf /RuPaul

106 tree

107 rm -rfv /RuPaul

108 tree

109 rm -rf /RuPaul

110 tree

111 rm -r /RuPaul

112 ls

113 rmdir -rf /RuPaul

114 rmdir -rf ./RuPaul

115 rm -rf ./RuPaul

116 tree

117 mkdir Test\ Directory

118 tree

119 cp ./Test \Directory ./Lil\ Dicky/So\ Hard

120 cp ./Test\ Directory ./Lil\ Dicky/So\ Hard

121 ls

122 tree

123 rmdir -rf ./\*

124 rm -rf ./\*

125 cd.

126 cd

127 tree

128 cd Music

129 mkdir TestReceive

130 mkdir TestSend

131 mkdir ThirdDirectory

132 vim

133 date

134 arch

135 uname -a

136 man uname

137 man dmesg

138 man more

139 dmesg | more

140 uptime

141 whoami

142 man whoami

143 who

144 man who

145 lasy

146 last

147 man lasy

148 man las

149 ma last

150 man last

151 man finger

152 finger

153 man

154 man w

155 w

156 man top

157 top

158 echo $SHELL

159 echo {con,pre} {sent,fer} {s,ed}

160 man echo

161 echo {con,pre}{sent,fer}{s,ed}

162 man ls

163 clear

164 clear 2000

165 cal 2000

166 cal 9 1752

167 cal8 982

168 cal 8 982

169 yes pleasse

170 yes please |more

171 man yes

172 man time

173 man time -sleep

174 man sleeop

175 man sleep

176 time sleep 5

177 man history

178 history

179 man history

180 man vim

181 tree

182 rm music

183 rm Music

184 rm /Music

185 rm ./Music

186 rm -f ./Music

187 rm -rf ./Music

188 tree

189 mkdir Tutorial

190 tree

191 cd Tutorial

192 vim HelloWorld.java

193 tree

194 cd -ls

195 cd -l

196 vim HelloWorld.java

197 tree

198 vim HellloWorld.java

199 vim HelloWorld.java

200 vim GoodbyeWorld.java

201 cd ./Tutorial

202 vim HelloWorld.java

203 tree

204 vim Script

205 Script

206 chmod 750 Script

207 Script -ls

208 vim Script

209 mv ./Script ./FinalAssignment

210 tree

211 FinalAssignmment

212 ./FinalAssignment

213 vim FinalAssignment

214 ./FinalAssignment

215 vim FinalAssignment

216 ./FinalAssignment

217 vim FinalAssignment

218 man top

219 top -q

220 top -hv

221 top

222 top -lp

223 top -0

224 top -n 0

225 top -n 1

226 tree

227 vim FinalAssignnment

228 vim ./FinalAssignnment

229 vim ./FinalAssignment

230 ./FinalAssignment

231 vim ./FinalAssignment

232 history

233 vim ./FinalAssignment

234 pwd

235 cd /Tutorial

236 cd ./Tutorial

237 -ls

238 ls

239 touch lucMcAuley.txt

240 ls

241 ./FinalAssignment >> lucMcAuley.txt

242 ./lucMcAuley.txt

243 chmod 750 ./lucMcAuley.txt

244 ./lucMcAuley.txt

245 vim lucMcAuley.txt

246 FinalAssignment -ls

247 ./FinalAssignment -ls

248 cd..

249 cd ..

250 tree

251 ./lucmcauley

252 cd ./lucmcauley

253 pwd

254 ls-l

255 /home/lucmcauley ls-l

256 cd /Tutorial

257 cd ./Tutorial

258 FinalAssignment ls l-

259 ./FinalAssignment ls l-

260 mv ./FinalAssignment ./FinalAssignment.sh

261 ls

262 ls -l

263 cd..

264 cd ..

265 ls -l

266 pwd

267 ls -l

268 cd.

269 cd ..

270 ls -l

271 lynx www.google.com

272 cd ./lucmauley/Tutorial

273 pwd

274 cd ./lucmcauley/Tutorial

275 vim WhileLoop.sh

276 ./WhileLoop.sh

277 ./WhileLoop.sh ls -l

278 ls-l

279 ls -l

280 chmod 700 ./WhileLoop.sh

281 ./WhileLoop.sh

282 tree

283 WhileLoop.sh

284 ./WhileLoop.sh

285 ls-l

286 ls -l

287 chmod 777 ./WhileLoop.sh

288 ./WhileLoop.sh

289 ls -l

290 ./FinalAssignment.sh

291 vim WhileLoop.sh

292 ./WileLoop.sh

293 ./WhileLoop.sh

294 vim WhileLoop.sh

295 ./WhileLoop.sh

296 vim WhileLoop.sh

297 ./WhileLoop.sh

298 vim WhileLoop.sh

299 ./WhileLoop.sh

300 vim WhileLoop.sh

301 ./WhileLoop.sh

302 vim WhileLoop.sh

303 ./WhileLoop.sh

304 vim WhileLoop.sh

305 ./WhileLoop.sh

306 vim WhileLoop.sh

307 ./WhileLoop.sh

308 count=1

309 echo $count

310 while [ count < 3 ]; echo "Hello"; done

311 while [ count < 3 ]; echo "Hello"; $count=$((count+1)); done

312 while [ count < 3 ]; echo "Hello"; $count=$(( count+1 )); done

313 echo $count

314 while [ count < 3]; echo Hello; $count = $(( count + 1 )); done

315 while [ count < 3]; do; echo Hello; $count = $(( count + 1 )); done

316 while [ count < 3] do; echo Hello; $count = $(( count + 1 )); done

317 echo $count

318 while [count < 3]; do echo Hello; $count = $((count+1)); done

319 while [count < 3]; do echo "Hello"; $count = $((count+1)); done

320 # set n to 1

321 n=1

322 # continue until $n equals 5

323 while [ $n -le 5 ]; do echo "Welcome $n times."; n=$(( n+1 )) # increments $n; done

324 vim ./WhileLoop.sh

325 ./WhileLoop.sh

326 vim ./WhileLoop.sh

327 ./WhileLoop.sh

328 vim ./WhileLoop.sh

329 ./WhileLoop.sh

330 vim ./WhileLoop.sh

331 ./WhileLoop.sh

332 vim ./WhileLoop.sh

333 ./WhileLoop.sh

334 vim ./WhileLoop.sh

335 ./WhileLoop.sh

336 vim ./WhileLoop.sh

337 ./WhileLoop.sh

338 vim ./WhileLoop.sh

339 ./WhileLoop.sh

340 vim ./WhileLoop.sh

341 ./WhileLoop.sh

342 vim ./WhileLoop.sh

343 ./WhileLoop.sh

344 vim ./WhileLoop.sh

345 ./WhileLoop.sh

346 vim ./WhileLoop.sh

347 ./WhileLoop.sh

348 vim ./WhileLoop.sh

349 ./WhileLoop.sh

350 vim ./WhileLoop.sh

351 d

352 a

353 vim ./WhileLoop.sh

354 ./WhileLoop.sh

355 vim ./WhileLoop.sh

356 ./WhileLoop.sh

357 vim ./WhileLoop.sh

358 tree

359 vim ./Tutorial/WhileLoop.sh

360 rm ./Tutorial/.WhileLoop.sh.swp

361 vim ./Tutorial/WhileLoop.sh

362 ./Tutorial/WhileLoop.sh

363 vim ./Tutorial/WhileLoop.sh

364 ./Tutorial/WhileLoop.sh

365 vim ./Tutorial/WhileLoop.sh

366 rm ./Tutorial/WhileLoop.sh.swp

367 vim ./Tutorial/WhileLoop.sh

368 rm ./Tutorial/WhileLoop.sh.swp

369 vim ./Tutorial/WhileLoop.sh

370 rm ./Tutorial/WhileLoop.sh.swp

371 ./Tutorial/WhileLoop.sh

372 vim ./Tutorial/WhileLoop.sh

373 w

374 vim ./Tutorial/WhileLoop.sh

375 ./Tutorial/WhileLoop.sh

376 vim ./Tutorial/WhileLoop.sh

377 ./Tutorial/WhileLoop.sh

378 vim ./Tutorial/WhileLoop.sh

379 ./Tutorial/WhileLoop.sh

380 vim ./Tutorial/WhileLoop.sh

381 ./Tutorial/WhileLoop.sh

382 vim ./Tutorial/WhileLoop.sh

383 ./Tutorial/WhileLoop.sh

384 n

385 vim ./Tutorial/WhileLoop.sh

386 ./Tutorial/WhileLoop.sh

387 vim ./Tutorial/WhileLoop.sh

388 ./Tutorial/WhileLoop.sh

389 vim ./Tutorial/WhileLoop.sh

390 ./Tutorial/WhileLoop.sh

391 vim ./Tutorial/WhileLoop.sh

392 ./Tutorial/WhileLoop.sh

393 vim ./Tutorial/WhileLoop.sh

394 ./Tutorial/WhileLoop.sh

395 vim ./Tutorial/WhileLoop.sh

396 ./Tutorial/WhileLoop.sh

397 vim ./Tutorial/WhileLoop.sh

398 ./Tutorial/WhileLoop.sh

399 vim ./Tutorial/WhileLoop.sh

400 ./Tutorial/WhileLoop.sh

401 vim ./Tutorial/WhileLoop.sh

402 ./Tutorial/WhileLoop.sh

403 vim ./Tutorial/WhileLoop.sh

404 ./Tutorial/WhileLoop.sh

405 vim ./Tutorial/WhileLoop.sh

406 ./Tutorial/WhileLoop.sh

407 vim ./Tutorial/WhileLoop.sh

408 ./Tutorial/WhileLoop.sh

409 vim ./Tutorial/WhileLoop.sh

410 ./Tutorial/WhileLoop.sh

411 vim ./Tutorial/WhileLoop.sh

412 ./Tutorial/WhileLoop.sh

413 vim ./Tutorial/WhileLoop.sh

414 tree

415 vim FinalAssignment.sh

416 vim ./Tutorial/FinalAssignment.sh

417 ./Tutorial/FinalAssignment.sh

418 vim ./Tutorial/FinalAssignment.sh

419 tree

420 mkdir Temp

421 cp ./Tutorial/FinalAssignment.sh ./Temp

422 tree

423 cd ./Temp

424 vim FinalAssignment.sh

425 ./temp/FinalAssignment.sh

426 ./Temp/FinalAssignment.sh

427 ./FinalAssignment.sh

428 vim ../Tutorial/lucMcAuley.txt

429 man history

430 ./FinalAssignment.sh

431 vim FinalAssignment.sh

432 ./FinalAssignment.sh

433 vim lucmcauley.txt

434 rm lucmcauley.txt

435 tree

436 vim FinalAssignment.sh

437 ./FinalAssignment.sh

438 man top

439 vim FinalAssignment.sh

440 top -n 1

441 vim FinalAssignment.sh

442 ./FinalAssignment.sh

443 rm lucmcauley.txt

444 ./FinalAssignment.sh

445 vim ./lucmcauley.txt

446 echo hello

447 tree

448 whoami

449 dmesg

450 dmesg man

451 man dmesg

452 who

453 finger

454 man finger

455 man w

456 top

457 echo $shell

458 echo $Shell

459 echo $SHELL

460 man echo

461 man ls

462 cal 2000

463 cal 9 1752

464 man time

465 time sleep 5

466 time

467 man time

468 vim

469 tree

470 .temp

471 cd .temp

472 cd .Temp

473 cd Temp

474 vim FinalAssignment.sh

475 FinalAssigtnment.sh

476 FinalAssignment.sh

477 vim lucmcauley.txt

478 cd .

479 .

480 cd

481 cd Tutorial

482 vim WhileLoop.sh

483 vim FinalCATC.sh

484 vim WhileLoop.sh

485 vim FinalCATC.sh

486 FinalCATC.sh

487 run FinalCatC.sh

488 bash FinalCATC.sh

489 vim FinalCATC.sh

490 bash FinalCATC.sh

491 vim FinalCATC.sh

492 bash FinalCATC.sh

493 vim FinalCATC.sh

494 bash FinalCATC.sh

495 vim FinalCATC.sh

496 bash FinalCATC.sh

497 vim FinalCATC.sh

498 bash FinalCATC.sh

499 vim FinalCATC.sh

500 tree

501 vim FinalAssignment.sh

502 cd.

503 cd

504 tree

505 cd Temp

506 vim FinalAssignment.sh

507 cd ./Tutorial

508 cd

509 cd Tutorial

510 vim FinalCATC.sh

511 tree

512 vim ./Tutorial/FinalCATC.sh

513 ./Tutorial/FinalCATC.sh

514 tree

515 vim ./Temp/FinalAssignment.sh

516 ./Tutorial/FinalCATC.sh

517 vim ./Tutorial/FinalCATC.sh

518 ./Tutorial/FinalCATC.sh

519 vim ./Tutorial/FinalCATC.sh

520 tree

521 vim ./Tutorial/output.txt

522 vim ./Tutorial/FinalCATC.sh

523 ./Tutorial/FinalCATC.sh

524 vim ./Tutorial/output.txt

525 rm ./Tutorial/output.txt

526 ./Tutorial/FinalCATC.sh

527 vim ./Tutorial/output.txt

528 rm ./Tutorial/output.txt

529 vim ./Tutorial/FinalCATC.sh

530 whoami

531 vim ./Tutorial/FinalCATC.sh

532 ./Tutorial/FinalCATC.sh

533 vim ./Tutorial/output.txt

534 rm ./Tutorial/output.txt

535 vim ./Tutorial/FinalCATC.sh

536 ./Tutorial/FinalCATC.sh

537 vim ./Tutorial/output.txt

538 rm ./Tutorial/output.txt

539 vim ./Tutorial/FinalCATC.sh

540 vim ./Tutorial/output.txt

541 ./Tutorial/FinalCATC.sh

542 vim ./Tutorial/output.txt

543 rm ./Tutorial/output.txt

544 vim ./Tutorial/FinalCATC.sh

545 ./Tutorial/FinalCATC.sh

546 vim ./Tutorial/output.txt

547 rm ./Tutorial/output.txt

548 vim ./Tutorial/FinalCATC.sh

549 ./Tutorial/FinalCATC.sh

550 rm ./Tutorial/output.txt

551 vim ./Tutorial/FinalCATC.sh

552 ./Tutorial/FinalCATC.sh

553 vim ./Tutorial/FinalCATC.sh

554 rm ./Tutorial/output.txt

555 ./Tutorial/FinalCATC.sh

556 man top

557 top -d 0

558 top -d 1

559 man top

560 top -bn 1

561 vim ./Tutorial/FinalCATC.sh

562 rm ./Tutorial/output.txt

563 ./Tutorial/FinalCATC.sh

564 vim ./Tutorial/output.txt

565 rm ./Tutorial/output.txt

566 vim ./Tutorial/FinalCATC.sh

567 ./Tutorial/FinalCATC.sh

568 man history

569 echo $BASH\_VERSION

570 vim ./Tutorial/FinalCATC.sh

571 ./Tutorial/FinalCATC.sh

572 vim ./Tutorial/FinalCATC.sh

573 rm ./Tutorial/output.txt

574 ./Tutorial/FinalCATC.sh

575 vim ./Tutorial/FinalCATC.sh

576 rm ./Tutorial/output.txt

577 ./Tutorial/FinalCATC.sh

578 rm ./Tutorial/output.txt

579 vim ./Tutorial/FinalCATC.sh

580 ./Tutorial/FinalCATC.sh

581 vim ./Tutorial/output.txt

582 tree

583 vim ./Tutorial/FinalCATC.sh

584 ./Tutorial/FinalCATC.sh

585 chmod -R 777 ./Tutorial/FinalCATC

586 chmod -R 777 ./Tutorial/FinalCATC.sh

587 ./Tutorial/FinalCATC.sh

588 vim ./Tutorial/FinalCATC.sh

589 ./Tutorial/FinalCATC.sh

590 tree

591 man touch

592 vim ./Tutorial/FinalCATC.sh

593 finger

594 tree

595 vim ./Tutorial/FinalCATC.sh

596 ./Tutorial/FinalCATC.sh

597 vim ./Tutorial/output.txt

598 rm ./Tutorial/output.txt

599 vim ./Tutorial/FinalCATC.sh

600 ./Tutorial/FinalCATC.sh

601 vim ./Tutorial/output.txt

602 rm ./Tutorial/output.txt

603 vim ./Tutorial/FinalCATC.sh

604 ./Tutorial/FinalCATC.sh

605 vim ./Tutorial/output.txt

606 rm ./Tutorial/output.txt

607 vim ./Tutorial/FinalCATC.sh

608 ./Tutorial/FinalCATC.sh

609 vim ./Tutorial/output.txt

610 ls -l

611 cd

612 ls -l

613 cd /

614 ls-l

615 ls -l

616 pwd

617 cd

618 pwd

619 cd /home

620 ls-l

621 ls -l

622 ls -l | grep lucmcauley

623 lynx googl.com

624 tree

625 cd ./lucmcauley

626 pwd

627 tree

628 mv ./Tutorial/FinalCATC.sh ./Temp/FinalCATC.sh

629 tree

630 cd ./Temp

631 vim FinalCATC

632 vim FinalCATC.sh

633 FinalCATC.sh

634 ./FinalCATC.sh

635 tree

636 cp ./Temp/FinalCATC.sh ./Tutorial/FinalCATC.sh

637 tree

638 vim ./Tutorial/FinalCATC.sh

639 exit

640 tree

641 vim ./FinalCATC.sh

642 vim ./Tutorial/FinalCATC.sh

643 cd ./Toturial

644 cd ./Tutorial

645 rm output.txt

646 tree

647 FinalCATC.sh

648 ./FinalCATC.sh

649 vim ./output.txt

650 exit

651 tree

652 cd ./Tutorial

653 vim ./WhileLoop

654 vim ./WhileLoop.sh

655 ./WhileLoop.sh

656 vim ./WhileLoop.sh

657 ./WhileLoop.sh

658 vim ./WhileLoop.sh

659 ./WhileLoop.sh

660 vim ./WhileLoop.sh

661 ./WhileLoop.sh

662 vim ./WhileLoop.sh

663 ./WhileLoop.sh

664 vim ./WhileLoop.sh

665 ./WhileLoop.sh

666 vim ./WhileLoop.sh

667 ./WhileLoop.sh

668 vim ./WhileLoop.sh

669 ./WhileLoop.sh

670 exit

671 ./WhileLoop.sh

672 cd ./Tutorial/WhileLoop.sh

673 cd ./Tutorial

674 ./WhileLoop.sh

675 echo hello

676 man passwd

677 uname -a

678 uptime

679 who

680 finger

681 w

682 tree

683 rm ./Tutorial/output.txt

684 tree

685 ./Tutorial./FinalCATC.sh

686 ./Tutorial/FinalCATC.sh

687 ./Tutorial/output.txt

688 vim./Tutorial/output.txt

689 vim ./Tutorial/output.txt

690 vim ./Tutorial/FinalCATC.sh

691 rm ./Tutorial/output.txt

692 ./Tutorial/FinalCATC.sh

693 vim ./Tutorial/output.txt

694 rm ./Tutorial/output.txt

695 vim ./Tutorial/FinalCATC.sh

696 ./Tutorial/FinalCATC.sh

697 vim ./Tutorial/output.txt

698 tree

699 vim ./Tutorial/output.txt

700 vim ./Tutorial/FinalCATC.sh

701 ./Tutorial/FinalCATC.sh

702 tree

703 vim ./Tutorial/lucMcAuley.txt

704 vim ./Tutorial/WhileLoop.txt

705 vim ./Tutorial/WhileLoop.sh

706 ./Tutorial/WhileLoop.sh

707 vim ./Tutorial/WhileLoop.sh

708 ./Tutorial/WhileLoop.sh

709 vim ./Tutorial/WhileLoop.sh

710 ./Tutorial/WhileLoop.sh

711 vim ./Tutorial/WhileLoop.sh

712 ./Tutorial/WhileLoop.sh

713 vim ./Tutorial/WhileLoop.sh

714 ./Tutorial/WhileLoop.sh

715 history

716 clear

717 echo hello world

718 passwd

719 who

720 w

721 finger

722 man ls

723 date

724 arch

725 uname -a

726 dmesg | more

727 uptime

728 whoami

729 who

730 finger

731 w

732 top

733 echo $SHELL

734 echo {con,pre}{sent,fer}{s,d}

735 echo {con,pre}{sent,fer}{s,ed}

736 man ls

737 man who

738 clear

739 cal 2000

740 cal 9 1752

741 yes please

742 time sleep 5

743 history

744 last

745 man last

746 history

747 hostname

748 man hostname

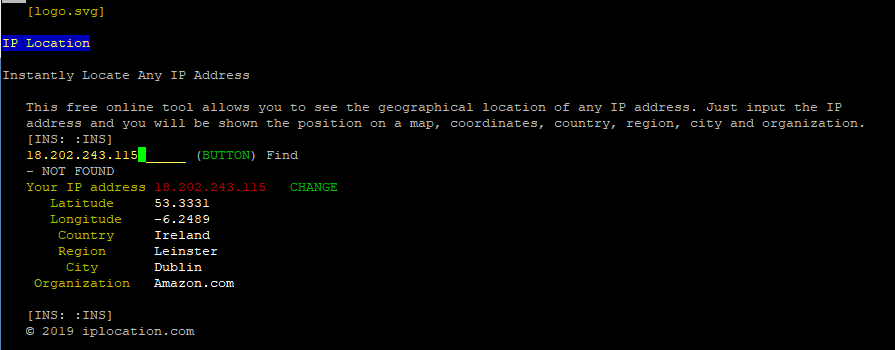
749 history

750 exit

### Q 2.3.1

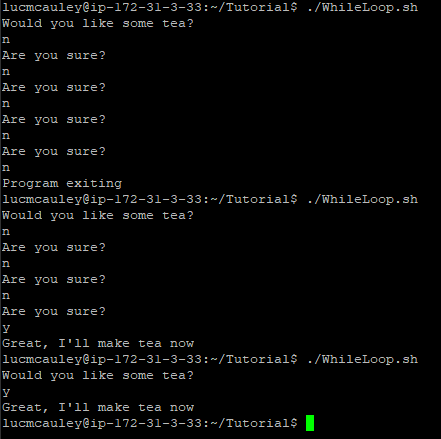


### Q 2.3.2



### Q 2.4

#### Screenshot of output of shell script

****

#### Shell script for the tea exercise

#!/bin/bash

#Initialise values

counter=1

input=n

##While Loop

echo Would you like some tea?

read input

while (($counter<5))

do

if [ $input == "N" ] || [ $input == "n" ]

then

echo "Are you sure?"

read input

counter=$((counter+1))

elif [ $input == "Y" ] || [ $input == "y" ]

then

echo "Great, I'll make tea now"

exit

else

echo Invalid response

echo please try again

read input

fi

done

echo Program exiting

exit