

# Homework Week 3 Killercoda Lesson 1-10

## Lesson 1

Lesson 1: list files

8. Check your knowledge!

Check your knowledge!

Q1: What is the whole command to show long formatted list of the files in directory?

► Answer

Q2: The argument for sort files?

► Answer

Q3: I want to pass `color` argument. What I need to use?

1. `--`
2. `-`
3. `.`

► Answer

Q4: UID represents

1. Process identifier
2. User identifier
3. Group identifier
4. Internal system identifier

► Answer

Q5: I want to list the parent directory files. What I need to add to my `ls` command?

K L L K C O D A X [ ] # PLUS

Editor Tab1 +

ubuntu:~\$ echo "Question 1 Answer"

Question 1 Answer

ubuntu:~\$ ls -l

total 164

-rw-r--r-- 1 root root 146862 Oct 2 00:10 File-01.txt

-rw-r--r-- 1 root root 0 Oct 2 00:10 file-01

-rw-r--r-- 1 root root 18 Oct 2 00:10 file-01.txt

-rw-r--r-- 1 root root 0 Oct 2 00:10 file-02

lrwxrwxrwx 1 root root 1 Sep 19 18:23 filesystem -> /

-rw-r--r-- 1 testuser testuser 18 Oct 2 00:10 notmyfile

-rw-r--r-- 1 otheruser otheruser 19 Oct 2 00:10 notmyfile2

drwxr-xr-x 2 root root 4096 Oct 2 00:10 testDir

drwxr-xr-x 3 root root 4096 Oct 2 00:10 testdir

ubuntu:~\$ echo "Question 2 Answer"

Question 2 Answer

ubuntu:~\$ ls -ls

File-01.txt testDir testdir notmyfile2 file-01.txt notmyfile filesystem file-01 file-02

total 164

144 File-01.txt 0 file-01 4 file-01.txt 0 file-02 0 filesystem 4 notmyfile 4 notmyfile2 4 testDir 4 testdir

ubuntu:~\$ echo "Question 3 Answer"

Question 3 Answer

ubuntu:~\$ ls --color

File-01.txt file-01 file-01.txt file-02 filesystem notmyfile notmyfile2 testDir testdir

ubuntu:~\$ echo "Question 4 Answer"

Question 4 Answer

ubuntu:~\$ echo "User Identifier"

User Identifier

ubuntu:~\$ echo "Question 5 Answer"

Question 5 Answer

ubuntu:~\$ ls ..

bin boot etc lib lib64 media opt root sbin snap swapfile tmp var

bin usr-is-merged dev home lib usr-is-merged lost+found mnt proc run sbin usr-is-merged srv sys usr

ubuntu:~\$ echo "Question 6 Answer"

Question 6 Answer

ubuntu:~\$ ls -ltu

total 164

drwxr-xr-x 2 root root 4096 Oct 2 00:10 testDir

drwxr-xr-x 3 root root 4096 Oct 2 00:10 testdir

-rw-r--r-- 1 otheruser otheruser 19 Oct 2 00:10 notmyfile2

-rw-r--r-- 1 root root 0 Oct 2 00:10 file-02

-rw-r--r-- 1 testuser testuser 18 Oct 2 00:10 notmyfile

-rw-r--r-- 1 root root 146862 Oct 2 00:10 File-01.txt

-rw-r--r-- 1 root root 0 Oct 2 00:10 file-01

-rw-r--r-- 1 root root 18 Oct 2 00:10 file-01.txt

lrwxrwxrwx 1 root root 1 Oct 1 23:29 filesystem -> /

ubuntu:~\$ echo "Question 7 Answer"

Question 7 Answer

ubuntu:~\$ echo "Question 5 Answer"

Question 5 Answer

ubuntu:~\$ ls ..

bin boot etc lib lib64 media opt root sbin snap swapfile tmp var

bin usr-is-merged dev home lib usr-is-merged lost+found mnt proc run sbin usr-is-merged srv sys usr

ubuntu:~\$ echo "Question 6 Answer"

Question 6 Answer

ubuntu:~\$ ls -ltu

total 164

drwxr-xr-x 2 root root 4096 Oct 2 00:10 testDir

drwxr-xr-x 3 root root 4096 Oct 2 00:10 testdir

-rw-r--r-- 1 otheruser otheruser 19 Oct 2 00:10 notmyfile2

-rw-r--r-- 1 root root 0 Oct 2 00:10 file-02

-rw-r--r-- 1 testuser testuser 18 Oct 2 00:10 notmyfile

-rw-r--r-- 1 root root 146862 Oct 2 00:10 File-01.txt

-rw-r--r-- 1 root root 0 Oct 2 00:10 file-01

-rw-r--r-- 1 root root 18 Oct 2 00:10 file-01.txt

lrwxrwxrwx 1 root root 1 Oct 1 23:29 filesystem -> /

ubuntu:~\$ echo "Question 7 Answer"

Question 7 Answer

Question 7 Answer

ubuntu:~\$ ls -lh

total 164K

-rw-r--r-- 1 root root 144K Oct 2 00:10 File-01.txt

-rw-r--r-- 1 root root 0 Oct 2 00:10 file-01

-rw-r--r-- 1 root root 18 Oct 2 00:10 file-01.txt

-rw-r--r-- 1 root root 0 Oct 2 00:10 file-02

lrwxrwxrwx 1 root root 1 Sep 19 18:23 filesystem -> /

-rw-r--r-- 1 testuser testuser 18 Oct 2 00:10 notmyfile

-rw-r--r-- 1 otheruser otheruser 19 Oct 2 00:10 notmyfile2

drwxr-xr-x 2 root root 4.0K Oct 2 00:10 testDir

drwxr-xr-x 3 root root 4.0K Oct 2 00:10 testdir

ubuntu:~\$ echo "Question 8 Answer"

Question 8 Answer

ubuntu:~\$ ls --format=commas

File-01.txt, file-01, file-01.txt, file-02, filesystem, notmyfile, notmyfile2, testDir, testdir

ubuntu:~\$ echo "Question 9 Answer"

Question 9 Answer

ubuntu:~\$ ls -lq

"File-01.txt"

"file-01"

"file-01.txt"

"file-02"

"filesystem"

"notmyfile"

"notmyfile2"

"testDir"

"testdir"

ubuntu:~\$

Q4: UID represents

1. Process identifier
2. User identifier
3. Group identifier
4. Internal system identifier

► Answer

Q5: I want to list the parent directory files. What I need to add to my `ls` command?

► Answer

Q6: I have my `ls -lt` command. What argument I need to add in order to see the list ordered by modification of the content of the files?

► Answer

Q7: Provide the full command for long format and human readable size.

► Answer

Q8: Provide the full command (not -m) for short list with commas

► Answer

Q9: List files in short format, one file per line, with quotes.

► Answer

BACK

NEXT

Lesson 2

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Lesson 2: Your best friend - man

Congratulations

Now you can easily use `man`!

BACK

RESTART

SCENARIOS

FEEDBACK

Editor Tab1

ubuntu:~\$ man  
What manual page do you want?  
For example, try 'man man'.  
ubuntu:~\$ man man  
man: can't resolve man7/groff\_man.7  
ubuntu:~\$ man ls  
ubuntu:~\$ man 8 ls  
No manual entry for ls in section 8  
ubuntu:~\$ man -f ls  
ls: nothing appropriate.  
ubuntu:~\$ man -f intro  
intro: nothing appropriate.  
ubuntu:~\$ man ls  
ubuntu:~\$ man intro  
ubuntu:~\$ man 1 intro  
ubuntu:~\$ man 8 intro  
ubuntu:~\$ whatis ls  
ls: nothing appropriate.  
ubuntu:~\$ man man -f ls  
man: can't resolve man7/groff\_man.7  
No manual entry for -f  
--Man-- next: ls(1) [ view (return) | skip (Ctrl-D) | quit (Ctrl-C) ]  
man man -k ls  
ubuntu:~\$ man man -w ls  
man: can't resolve man7/groff\_man.7  
No manual entry for -w  
--Man-- next: ls(1) [ view (return) | skip (Ctrl-D) | quit (Ctrl-C) ]  
man -f  
ubuntu:~\$ man -k  
apropos what?  
ubuntu:~\$

Lesson 3

K L L K C O D A

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PLUS

Areas Account Creator Logout

Lesson 3: Work with directories

Congratulations

Directories don't have any mystery for you now!

BACK

RESTART

SCENARIOS

FEEDBACK

Editor Tab1

Question 1 Answer  
ubuntu:~\$ pwd  
/root  
ubuntu:~\$ echo "Question 2 Answer"  
Question 2 Answer  
ubuntu:~\$ cd /home/user2  
bash: cd: /home/user2: No such file or directory  
ubuntu:~\$ cd /home/user2  
bash: cd: /home/user2: No such file or directory  
ubuntu:~\$ echo "Question 3 Answer"  
Question 3 Answer  
ubuntu:~\$ ~ means home directory  
bash: /root: Is a directory  
ubuntu:~\$ echo "Question 4 doesn't exist so onto Question 5 Answer"  
Question 4 doesn't exist so onto Question 5 Answer  
ubuntu:~\$ cd, cd \$HOME and cd ~  
Command 'cd' not found, did you mean:  
 command 'cds' from deb cds (0.1-4)  
 command 'cdp' from deb lras (0.10-9)  
 command 'cde' from deb cde (0.14git9-g551e54d-1.2)  
 command 'cdu' from deb cdu (0.8.1-1)  
 command 'cdo' from deb cdo (2.3.0-1)  
 command 'cdb' from deb tinycdb (0.81-1)  
 command 'cdi' from deb cdi (2.3.0-1)  
Try: apt install `cd` names  
ubuntu:~\$ cd /\$HOME/app/tests  
bash: cd: //root/app/tests: No such file or directory  
ubuntu:~\$ echo "Question 6 Answer is above, i jumped the gun lol"  
Question 6 Answer is above, i jumped the gun lol  
ubuntu:~\$ echo "Question 7 Answer"  
Question 7 Answer  
ubuntu:~\$ mkdir hello{001..100}  
ubuntu:~\$ ls  
anotherparentdir hello005 hello011 hello017 hello023 hello029 hello035 hello041 hello047 hello053 hello059 hello065 hello071 hello077 hello083 hello089 hello095 maindir  
filesystem hello006 hello012 hello018 hello024 hello030 hello036 hello042 hello048 hello054 hello060 hello066 hello072 hello078 hello084 hello090 hello096  
hello001 hello007 hello013 hello019 hello025 hello031 hello037 hello043 hello049 hello055 hello061 hello067 hello073 hello079 hello085 hello091 hello097  
hello002 hello008 hello014 hello020 hello026 hello032 hello038 hello044 hello050 hello056 hello062 hello068 hello074 hello080 hello086 hello092 hello098  
hello003 hello009 hello015 hello021 hello027 hello033 hello039 hello045 hello051 hello057 hello063 hello069 hello075 hello081 hello087 hello093 hello099  
hello004 hello010 hello016 hello022 hello028 hello034 hello040 hello046 hello052 hello058 hello064 hello070 hello076 hello082 hello088 hello094 hello100  
ubuntu:~\$ echo "Question 8 Answer"  
Question 8 Answer  
ubuntu:~\$ rm -rf /directory/\*  
rm: failed to remove '/directory/\*': No such file or directory  
ubuntu:~\$ echo "Question 9 Answer"  
Question 9 Answer  
ubuntu:~\$ rm -rf mydir/\*  
ubuntu:~\$ rm -rf somedir/\*  
ubuntu:~\$

Lesson 4

K L L K C O D A

PLUS

Lesson 4: Create and delete files

Congratulations

This lesson was very short. There is nothing magical in create or delete files. Of course, touch, or vim are not only way to create files.

BACK

RESTART

SCENARIOS

FEEDBACK

Editor Tab1

ubuntu:~\$ touch testfile  
ubuntu:~\$ ls -l testfile  
-rw-r--r-- 1 root root 0 Oct 4 01:24 testfile  
ubuntu:~\$ touch my{01..100}.file  
ubuntu:~\$ ls my\*.file  
my001file my007file my013file my019file my025file my031file my037file my043file my049file my055file my061file my067file my073file my079file my085file my091file my097file  
my002file my008file my014file my020file my026file my032file my038file my044file my050file my056file my062file my068file my074file my080file my086file my092file my098file  
my003file my009file my015file my021file my027file my033file my039file my045file my051file my057file my063file my069file my075file my081file my087file my093file my099file  
my004file my010file my016file my022file my028file my034file my040file my046file my052file my058file my064file my070file my076file my082file my088file my094file my100file  
my005file my011file my017file my023file my029file my035file my041file my047file my053file my059file my065file my071file my077file my083file my089file my095file  
my006file my012file my018file my024file my030file my036file my042file my048file my054file my060file my066file my072file my078file my084file my090file my096file  
ubuntu:~\$ touch try1 try2 try01  
ubuntu:~\$ ls try\*  
try01 try1 try2  
ubuntu:~\$ ls try?  
try1 try2  
ubuntu:~\$ mkdir testdir  
ubuntu:~\$ touch testdir/mytest{01..1000} testdir/file{01..1000}  
ubuntu:~\$ rm try01  
ubuntu:~\$ rm try1 try2  
ubuntu:~\$ rm testdir/mytest{01..1000}  
rm: cannot remove 'testdir/mytest0001': No such file or directory  
rm: cannot remove 'testdir/mytest0002': No such file or directory  
rm: cannot remove 'testdir/mytest0003': No such file or directory  
rm: cannot remove 'testdir/mytest0004': No such file or directory  
rm: cannot remove 'testdir/mytest0005': No such file or directory  
rm: cannot remove 'testdir/mytest0006': No such file or directory  
rm: cannot remove 'testdir/mytest0007': No such file or directory  
rm: cannot remove 'testdir/mytest0008': No such file or directory  
rm: cannot remove 'testdir/mytest0009': No such file or directory  
rm: cannot remove 'testdir/mytest0010': No such file or directory  
rm: cannot remove 'testdir/mytest0011': No such file or directory  
rm: cannot remove 'testdir/mytest0012': No such file or directory  
rm: cannot remove 'testdir/mytest0013': No such file or directory  
rm: cannot remove 'testdir/mytest0014': No such file or directory  
rm: cannot remove 'testdir/mytest0015': No such file or directory  
rm: cannot remove 'testdir/mytest0016': No such file or directory  
rm: cannot remove 'testdir/mytest0017': No such file or directory  
rm: cannot remove 'testdir/mytest0018': No such file or directory  
rm: cannot remove 'testdir/mytest0019': No such file or directory  
rm: cannot remove 'testdir/mytest0020': No such file or directory  
rm: cannot remove 'testdir/mytest0021': No such file or directory  
rm: cannot remove 'testdir/mytest0022': No such file or directory  
rm: cannot remove 'testdir/mytest0023': No such file or directory  
rm: cannot remove 'testdir/mytest0024': No such file or directory  
rm: cannot remove 'testdir/mytest0025': No such file or directory  
rm: cannot remove 'testdir/mytest0026': No such file or directory  
rm: cannot remove 'testdir/mytest0027': No such file or directory

Lesson 5

K L L K C O D A

PLUS

Lesson 5: Pipes

Congratulations

You understand now the pipes and redirections functionalities. You will learn streams very soon! Please, be sure that you remember all about pipes, as it is a foundation for streams!

BACK

RESTART

SCENARIOS

FEEDBACK

Editor Tab1

Content of the line: 47  
Content of the line: 64  
Content of the line: 73  
Content of the line: 24  
Content of the line: 8  
Content of the line: 85  
Content of the line: 29  
Content of the line: 1  
Content of the line: 50  
Content of the line: 63  
Content of the line: 25  
Content of the line: 23  
Content of the line: 68  
ubuntu:~\$ echo "Question 1 Asnwer"  
Question 1 Asnwer  
ubuntu:~\$ pipe  
Command 'pipe' not found, did you mean:  
command 'wipe' from deb wipe (0.24-9)  
command 'pip' from deb python3-pip (24.0+dfsg-1ubuntu1.3)  
command 'piper' from deb piper (0.7-1)  
command 'pix' from deb pixp (1.4.0-1)  
command 'ipe' from deb ipe (7.2.28-2)  
command 'pip3' from deb python3-pip (24.0+dfsg-1ubuntu1.3)  
command 'vi' from deb moreutils (0.67-1)  
command 'cpipe' from deb cpipe (3.0.1-2.1)  
command 'spipe' from deb spiped (1.6.2-3)  
command 'dpipe' from deb vdeplug (4.0.1-5build1)  
command 'pipes' from deb pipes-sh (1.3.0-2)  
Try: apt install <deb name>  
ubuntu:~\$ echo "Question 2 Answer"  
Question 2 Answer  
ubuntu:~\$ Command1 | Command2  
Command1: command not found  
Command2: command not found  
ubuntu:~\$ echo "Question 3 Answer"  
Question 3 Answer  
ubuntu:~\$ cat file |sort|uniq|wc-1  
cat: file: No such file or directory  
wc-1: command not found  
ubuntu:~\$ echo "Question 4 Answer"  
Question 4 Answer  
ubuntu:~\$ >>  
bash: syntax error near unexpected token `newline'  
ubuntu:~\$ echo "Question 5 Answer"  
Question 5 Answer  
ubuntu:~\$ option 2  
option: command not found  
ubuntu:~\$

# Lesson 6

K L L R C O D A

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Lesson 6: Reading the file

Congratulations

After this short lab you know how to read the files!

BACK

RESTART

SCENARIOS

FEEDBACK

Editor Tab 1

```
2025-10-04T12:59:02.093409+00:00 ubuntu systemd[1]: sysstat-collect.service: Deactivated successfully.
2025-10-04T12:58:02.093526+00:00 ubuntu systemd[1]: Finished sysstat-collect.service - system activity accounting tool.
2025-10-04T12:51:12.084891+00:00 ubuntu systemd[1]: Starting fwupd-refresh.service - Refresh fwupd metadata and update motd...
2025-10-04T12:51:12.130839+00:00 ubuntu dbus-daemon[590]: [system] Activating via systemd: service name='org.freedesktop.fwupd' unit='fwupd.service' requested by ':1.33' (uid=990
comm="/usr/bin/fwupdgr refresh" label="unconfined")
2025-10-04T12:51:12.130175+00:00 ubuntu systemd[1]: Starting fwupd.service - Firmware update daemon...
2025-10-04T12:51:12.258442+00:00 ubuntu fwupd[2567]: 12:51:12.258 FwUdn fwupd 1.9.31 ready for requests (locale C.UTF-8)
2025-10-04T12:51:12.259326+00:00 ubuntu dbus-daemon[590]: [system] Successfully activated service 'org.freedesktop.fwupd'
2025-10-04T12:51:12.259850+00:00 ubuntu systemd[1]: Started fwupd.service - Firmware update daemon.
2025-10-04T12:51:12.204550+00:00 ubuntu systemd[1]: fwupd-refresh.service: Deactivated successfully.
2025-10-04T12:51:12.284882+00:00 ubuntu systemd[1]: Finished fwupd-refresh.service - Refresh fwupd metadata and update motd.
2025-10-04T12:55:01.614861+00:00 ubuntu CRON[2578]: (root) CMD (command -v debian-sa1 > /dev/null && debian-sa1 1 1)
2025-10-04T12:56:12.645693+00:00 ubuntu systemd[1]: fwupd.service: Deactivated successfully.
2025-10-04T13:00:22.081310+00:00 ubuntu systemd[1]: Starting sysstat-collect.service - system activity accounting tool...
2025-10-04T13:00:22.094145+00:00 ubuntu systemd[1]: sysstat-collect.service: Deactivated successfully.
2025-10-04T13:00:22.094280+00:00 ubuntu systemd[1]: Finished sysstat-collect.service - system activity accounting tool.
2025-10-04T13:02:22.082809+00:00 ubuntu systemd[1]: Starting motd-news.service - Message of the Day...
2025-10-04T13:02:22.090561+00:00 ubuntu systemd[1]: motd-news.service: Deactivated successfully.
2025-10-04T13:02:22.091044+00:00 ubuntu systemd[1]: Finished motd-news.service - Message of the Day.
2025-10-04T13:05:01.621977+00:00 ubuntu CRON[2599]: (root) CMD (command -v debian-sa1 > /dev/null && debian-sa1 1 1)
2025-10-04T13:05:04.332892+00:00 ubuntu systemd[1]: Starting fwupd-refresh.service - Refresh fwupd metadata and update motd...
2025-10-04T13:05:04.359781+00:00 ubuntu dbus-daemon[590]: [system] Activating via systemd: service name='org.freedesktop.fwupd' unit='fwupd.service' requested by ':1.35' (uid=990
comm="/usr/bin/fwupdgr refresh" label="unconfined")
2025-10-04T13:05:04.369233+00:00 ubuntu systemd[1]: Starting fwupd.service - Firmware update daemon...
2025-10-04T13:05:04.501961+00:00 ubuntu fwupd[2609]: 13:05:04.501 FwUdn fwupd 1.9.31 ready for requests (locale C.UTF-8)
2025-10-04T13:05:04.502855+00:00 ubuntu dbus-daemon[590]: [system] Successfully activated service 'org.freedesktop.fwupd'
2025-10-04T13:05:04.503301+00:00 ubuntu systemd[1]: Started fwupd.service - Firmware update daemon.
2025-10-04T13:05:04.528934+00:00 ubuntu systemd[1]: fwupd-refresh.service: Deactivated successfully.
2025-10-04T13:05:04.529057+00:00 ubuntu systemd[1]: Finished fwupd-refresh.service - Refresh fwupd metadata and update motd.
2025-10-04T13:09:01.639633+00:00 ubuntu CRON[2623]: (root) CMD ( [ -x /usr/lib/php/sessionclean ] && if [ ! -d /run/systemd/system ]; then /usr/lib/php/sessionclean; fi)
2025-10-04T13:09:22.002513+00:00 ubuntu systemd[1]: Starting phpsessionclean.service - Clean php session files...
2025-10-04T13:09:22.135147+00:00 ubuntu systemd[1]: phpsessionclean.service: Deactivated successfully.
2025-10-04T13:09:22.137600+00:00 ubuntu systemd[1]: Finished phpsessionclean.service - Clean php session files.
2025-10-04T13:10:02.083154+00:00 ubuntu systemd[1]: Starting sysstat-collect.service - system activity accounting tool...
2025-10-04T13:10:02.084767+00:00 ubuntu systemd[1]: sysstat-collect.service: Deactivated successfully.
2025-10-04T13:10:02.085131+00:00 ubuntu systemd[1]: Finished sysstat-collect.service - system activity accounting tool.
2025-10-04T13:10:04.639442+00:00 ubuntu systemd[1]: fwupd.service: Deactivated successfully.
2025-10-04T13:15:01.645035+00:00 ubuntu CRON[2667]: (root) CMD (command -v debian-sa1 > /dev/null && debian-sa1 1 1)
2025-10-04T13:17:01.638933+00:00 ubuntu CRON[2677]: (root) CMD (cd / && run-parts --report /etc/cron.hourly)
2025-10-04T13:20:22.088025+00:00 ubuntu systemd[1]: Starting sysstat-collect.service - system activity accounting tool...
2025-10-04T13:20:22.093244+00:00 ubuntu systemd[1]: sysstat-collect.service: Deactivated successfully.
2025-10-04T13:20:22.093374+00:00 ubuntu systemd[1]: Finished sysstat-collect.service - system activity accounting tool.
2025-10-04T13:25:01.644059+00:00 ubuntu CRON[2686]: (root) CMD (command -v debian-sa1 > /dev/null && debian-sa1 1 1)
2025-10-04T13:30:12.082406+00:00 ubuntu systemd[1]: Starting sysstat-collect.service - system activity accounting tool...
2025-10-04T13:30:12.097980+00:00 ubuntu systemd[1]: sysstat-collect.service: Deactivated successfully.
2025-10-04T13:30:12.098148+00:00 ubuntu systemd[1]: Finished sysstat-collect.service - system activity accounting tool.
ubuntu:~$ vim testfile
ubuntu:~$ ]
```

# Lesson 7

## Lesson 7: Copy and move files

### Congratulations

You successfully finished the copy and move lab.

[BACK](#)
[RESTART](#)
[SCENARIOS](#)
[FEEDBACK](#)

```
Editor Tab 1 +
total 4
drwxr-xr-x 3 root root 4096 Oct  4 13:48 sourcedir
ubuntu:~$ ls -l testdir/*
total 4
-rw-r--r-- 1 root root  0 Oct  4 13:48 one
drwxr-xr-x 2 root root 4096 Oct  4 13:48 sourcesubdir
-rw-r--r-- 1 root root  0 Oct  4 13:48 three01
-rw-r--r-- 1 root root  0 Oct  4 13:48 three02
-rw-r--r-- 1 root root  0 Oct  4 13:48 three03
-rw-r--r-- 1 root root  0 Oct  4 13:48 three04
-rw-r--r-- 1 root root  0 Oct  4 13:48 three05
-rw-r--r-- 1 root root  0 Oct  4 13:48 three06
-rw-r--r-- 1 root root  0 Oct  4 13:48 three07
-rw-r--r-- 1 root root  0 Oct  4 13:48 three08
-rw-r--r-- 1 root root  0 Oct  4 13:48 three09
-rw-r--r-- 1 root root  0 Oct  4 13:48 three10
-rw-r--r-- 1 root root  0 Oct  4 13:48 two01
-rw-r--r-- 1 root root  0 Oct  4 13:48 two02
ubuntu:~$ mkdir movedfiles
ubuntu:~$ ls -l sourcedir/one movedfiles
-rw-r--r-- 1 root root  0 Oct  4 13:41 sourcedir/one

movedfiles:
total 0
ubuntu:~$ ls -l sourcedir/one
-rw-r--r-- 1 root root 0 Oct  4 13:41 sourcedir/one
ubuntu:~$ ls -l movedfiles
total 0
ubuntu:~$ ls -l anotherdir/one
-rw-r--r-- 1 root root 0 Oct  4 13:48 anotherdir/one
ubuntu:~$ mv anotherdir/one movedfiles/another-one
ubuntu:~$ ls -l anotherdir/one
ls: cannot access 'anotherdir/one': No such file or directory
ubuntu:~$ ls -l movedfiles
total 0
-rw-r--r-- 1 root root 0 Oct  4 13:48 another-one
ubuntu:~$ mv file1 file2 file3 targetlocation
mv: target 'targetlocation': No such file or directory
ubuntu:~$ mv sourcedir/two01 sourcedir/two02 movedfiles
ubuntu:~$ ls -l movedfiles
total 0
-rw-r--r-- 1 root root 0 Oct  4 13:48 another-one
-rw-r--r-- 1 root root 0 Oct  4 13:41 two01
-rw-r--r-- 1 root root 0 Oct  4 13:41 two02
ubuntu:~$ mv anotherdir newdir
ubuntu:~$ ls -l anotherdir
ls: cannot access 'anotherdir': No such file or directory
ubuntu:~$
```

## Lesson 8

# Our first administrative command - top

At this moment we know a lot of commands. We are ready to look on some administrative side of the work with system. We will learn how to take a basic look on it. But don't be fooled, basic doesn't mean this command is very simple. It is not. The data collected is very vast and informative.

## top

We talk here about `top` command. Let's execute it and then we will go through the displayed information line by line.

```
top
```

## First line

```
top - 19:38:28 up 2 days, 20:47, 0 users, load average: 0.52, 0.58, 0.59
```

In the first line we see something similar to the example above. Let's go through it one by one.

`top` - program name

`19:38:28` - current hour, obvious :)

`up 2 days, 20:47` - uptime. Another words, the time from last start of the system.

`0 users` - number of *active* users. Here we can see similar information, like with command `who` . Let's try. First, we need to quit the `top` :

`q`

and now we can run `who` command:

`who`

The main purpose of `who` is to show who is logged in. We will touch this command in the future labs.

Let's come back to `top` screen.

`top`

The last part, the load average, is very important, yet very often misunderstood.

```
load average: 0.52, 0.58, 0.59
```

Let's go through it.

We see here three numbers. They are representing the load average for the system in last 1, 5 and 15 minutes. These shows the average number of processes **running** and **waiting for CPU** time.

It is **crucial** to understand, that these values need to be evaluated very closely with the number of CPUs, Cores, Threads. The number `10` means massive overload when your system has 1 core, but is quite ok when your system has 12 cores. We will learn how to see number of cores in `top` a little bit later. This is the most basic explanation of load average, and please, be sure, you understand it.

This first line is exactly the same like we have in `w` command. Let's see.

`q` for exit the `top` command,

`w`

This command shows logged users too, but the first line is exactly the same like in `top` .

Ok, let's come back to our `top` command.

top

## Second line

```
Tasks: 6 total, 1 running, 5 sleeping, 0 stopped, 0 zombie
```

Second line shows us information about processes in our system. What every type means?

- `total` - shows all processes in the system
- `running` - currently active processes. It means, these processes are using CPU right now
- `sleeping` - generally - process is waiting for something. It may be I/O operation for example.
- `stopped` - Stopped processes (for example by ctrl+z)
- `zombie` - Very important state to understand. It is a process which had finish his job but still has entry in the process table. In simple way, these processes are waiting for `exit()`. It may happen, when parent process deteriorated somehow. Sometimes we are able to kill zombie (by killing the parrent), but in may cases it will not work. But it is not a place to talk about it :)

You will notice very shortly, that `total` doesn't repesent all processes. For example, you will not find `idle` state here.

## Third line

So far so good. Now it is time for the third line.

```
%Cpu(s): 13.9 us, 9.5 sy, 0.0 ni, 76.3 id, 0.0 wa, 0.4 hi, 0.0 si, 0.0 st
```

This line shows the CPU(s) utilization, splitted to specific types. Let's go through them one by one.

- `us` - user - All user processes are combined in this number. So, our sessions too.
- `sy` - system - processes owned by system (kernel)
- `ni` - nice - this is important to understand. `nice` allows us to change the priority of the process. The standard value for processes is `0`, but we can modify it from 19 (lowest) to -20 (highest) priority. This statistic here shows all processes with the niceness set abow 0. So, the processes which will be executed by the system, when "systemm will have time for it".
- `id` - idle - idle time means that the system is bored and do nothing.
- `wa` - iowait - the number repsresents the time (which is a subset of idle time) when the process is waiting for input/output operation. This statistic is very important, because it may show the issue outside the CPU, in other hardware (but not only) components.

- `hi` - hardware interrupts. These are physical interrupts from hardware and are handled by CPU itself.
- `si` - software interrupts. These are generated by software and are handled by kernel.
- `st` - steal time - very important to understand, especially when we are working on virtualized environment. This number represents the time "stealed" from the virtual machine by hypervisor. Another words, how long our system needs to wait for resources from hypervisor.

## Fourth and fifth lines

```
MiB Mem : 16217.5 total, 6184.9 free, 9808.7 used, 224.0 buff/cache
MiB Swap: 49152.0 total, 48436.2 free, 715.8 used. 6278.3 avail Mem
```

We will go through these two lines together, as both represent the memory information. The only one difference is that the first line is about physical memory and second is about swap. We will talk about swap in future lesson.

`total`, `free` and `used` is obvious.

`buff/cache` is a combine value of *buffer* memory, used by kernel and *cache*, memory by page cache.

`available` simply means that the new starting program, application, etc can use max this size of memory for its to be run.

## Processes list

Below these five lines we have processes list. This list contains fields, so let's go through them to better understand the meaning.

- `PID` - Process ID number. It is unique number of the process in the system.
- `USER` - process' owner. The process is started by this user.
- `PR` - default priority of the process, scheduled by kernel when process was started.
- `NI` - nice. Shows the value, if nice was performed against the process.
- `VIRT` - total amount of memory used by the process.
- `RES` - RAM memory used by process.
- `SHR` - amount of memory shared with other processes.
- `S` - process state (we discussed it above).
- `%CPU` - what amount of available CPU is used by the process.
- `%MEM` - like for CPU, but this value represents memory usage.
- `TIME+` - total time of CPU usage by the process.



- COMMAND - quite obvious, this process is executed.

K L L K C O D A X IN PLUS

## Lesson 8: The top command

### Congratulations

During this rather lengthy and theoretical (especially on the first page) lesson, you learned what is `top` and how to use it!

There are many variation around `top`. We will learn some of them later.

BACK

RESTART

SCENARIOS

FEEDBACK

Editor Tab 1 +

```
top - 14:15:17 up 3:30, 0 user, load average: 0.00, 0.00, 0.00
Tasks: 121 total, 1 running, 120 sleeping, 0 stopped, 0 zombie
%Cpu0 :  0.0 us,  0.3 sy,  0.0 ni, 99.7 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem : 1903.4 total, 585.1 free, 457.6 used, 1053.8 buff/cache
MiB Swap: 1024.0 total, 1024.0 free,  0.0 used, 1445.8 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2291	root	39	19	835612	57200	29440	S	0.3	2.9	0:06.00	node
1	root	20	0	22240	13200	9488	S	0.0	0.7	0:02.78	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_release
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-rcu_g
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-rcu_p
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-slub
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-netns
10	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/0:0H-events_highpri
12	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-mm_pe
13	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_kthread
14	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_rude_kthread
15	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_trace_kthread
16	root	20	0	0	0	0	S	0.0	0.0	0:00.09	ksoftirqd/0
17	root	20	0	0	0	0	I	0.0	0.0	0:00.31	rcu_preempt
18	root	rt	0	0	0	0	S	0.0	0.0	0:00.08	migration/0
19	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_inject/0
20	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/0
21	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kdevtmpfs
22	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-inet
24	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kauditd
25	root	20	0	0	0	0	S	0.0	0.0	0:00.00	khungtaskd
26	root	20	0	0	0	0	S	0.0	0.0	0:00.00	oom_reaper
28	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-write
29	root	20	0	0	0	0	S	0.0	0.0	0:00.67	kcompactd0
30	root	25	5	0	0	0	S	0.0	0.0	0:00.00	ksmd
31	root	39	19	0	0	0	S	0.0	0.0	0:00.00	khugepaged
32	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-kinte
33	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-kbloc
34	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-blkcg
35	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	irq/9-acpi
36	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-tpm_d
37	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-ata_s
38	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-md
39	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-md_bi
40	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-edac-
41	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworkeR/R-devfr
42	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	watchdogd
43	root	0	-20	0	0	0	I	0.0	0.0	0:00.27	kworkeR/0:1H-kblockd
44	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kswapd0
45	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ecryptfs-kthread

## Lesson 9

K L L K C O D A X IN PLUS

## Lesson 9: The ps command

### Congratulations

You are ready to use `ps` in your daily work!

BACK

RESTART

SCENARIOS

FEEDBACK

Editor Tab 1 +

```
root 1858 1.2 2.7 832040 54212 ? SNI 14:16 0:06 \_ /opt/thela/node /opt/thela/node_modules/@thela/core/lib/node/messaging/ipc-bootstrap --nsfwOptions={}
```

PID	PPID	C	STIME	TTY	TIME	CMD
823	1	0	12:58	?	00:00:00	/usr/sbin/rsyslogd -n -iNONE

```
ubuntu:~$ ps -f -o syslog
```

PID	PPID	C	STIME	TTY	TIME	CMD
681	1	0	12:58	?	00:00:00	/usr/sbin/cron -f -p

```
ubuntu:~$ ps -f -p 1
```

PID	PPID	C	STIME	TTY	TIME	CMD
1	0	0	12:58	?	00:00:03	/sbin/init

```
ubuntu:~$ ps -f --ppid 1
```

PID	PPID	C	STIME	TTY	TIME	CMD
307	1	0	12:58	?	00:00:00	/usr/lib/systemd/systemd-journald
351	1	0	12:58	?	00:00:00	/sbin/multipathd -d -s
360	1	0	12:58	?	00:00:00	/usr/lib/systemd/systemd-udev
456	1	0	12:58	?	00:00:00	/usr/lib/systemd/systemd-networkd
590	1	0	12:58	?	00:00:00	@bus-daemon --system --address-systemd: --nofork --nopidfile --systemd-activation --syslog-only
606	1	0	12:58	?	00:00:00	/usr/lib/polkit-1/polkitd --no-debug
613	1	0	12:58	?	00:00:00	/usr/lib/systemd/systemd-logind
614	1	0	12:58	?	00:00:00	/usr/libexec/udisks2/udisksd
654	1	0	12:58	?	00:00:04	/usr/bin/containerd
674	1	0	12:58	?	00:00:00	/usr/bin/zygote /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
681	1	0	12:58	?	00:00:00	/usr/sbin/cron -f -p
721	1	0	12:58	ttys0	00:00:00	/sbin/agetty -o -p -- \u --keep-baud 115200,57600,38400,9600 - vt220
737	1	0	12:58	?	00:00:00	/usr/sbin/ModemManager
745	1	0	12:58	ttty1	00:00:00	/sbin/agetty -o -p -- \u --noclear - linux
791	1	0	12:58	?	00:00:00	dhcpcd: episo [ip4] [ip6]
823	1	0	12:58	?	00:00:00	/usr/sbin/rsyslogd -n -iNONE
862	1	0	12:58	?	00:00:01	/usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
1145	1	0	12:58	?	00:00:00	/usr/lib/systemd/systemd-timesyncd
1170	1	0	12:58	?	00:00:00	/usr/lib/systemd/systemd-resolved
1174	1	0	12:58	?	00:00:00	sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
1196	1	0	12:58	?	00:00:00	/bin/runtime-scenarios-service
1206	1	0	12:58	?	00:00:04	/opt/thela/node /opt/thela/browser-app/src-gen/backend/main.js /root --hostname=0.0.0.0 --port 40205
1243	1	0	12:59	?	00:00:13	/bin/runtime-info-service
1254	1	0	12:59	?	00:00:00	bash -c while true; do /bin/kc-terminal -p 40200 --writable -t disableLeaveAlert=true bash; done
1650	1	0	13:15	?	00:00:02	/usr/libexec/fuupd/fuupd
1675	1	0	13:15	?	00:00:00	gpg-agent --homedir /var/lib/fuupd/gnupg --use-standard-socket --daemon

```
ubuntu:~$ man ps
ubuntu:~$
```

Areas Account Creator

## Lesson 10

## Lesson 10: Create aliases

### Congratulations

You know now how to create aliases.

[BACK](#)[RESTART](#)[SCENARIOS](#)[FEEDBACK](#)

Editor Tab 1 +

```
# some more ls aliases
alias ll='ls -alF'
alias la='ls -A'
alias l='ls -CF'
# ~/.bash_aliases, instead of adding them here directly.
if [ -f ~/.bash_aliases ]; then
    . ~/.bash_aliases
alias lh='ls -alh'
ubuntu:~$ source ~/.bashrc
ubuntu:~$ alias
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias lh='ls -alh'
alias ll='ls -alF'
alias ls='ls --color=auto'
ubuntu:~$ cat ~/.bash_aliases
cat: ~/.bash_aliases: No such file or directory
ubuntu:~$ source ~/.bashrc
ubuntu:~$ alias
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias lh='ls -alh'
alias ll='ls -alF'
alias ls='ls --color=auto'
ubuntu:~$ lh1
Command 'lh1' not found, did you mean:
  command 'lha' from deb jlha-utils (0.1.6-5)
  command 'lha' from deb lhasa (0.4.0-1)
Try: apt install <deb name>
ubuntu:~$ echo "alias lh2='ls -alh'" >> /etc/profile.d/99-aliases.sh
ubuntu:~$ sudo -i
ubuntu:~$ alias
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias lh='ls -alh'
alias lh2='ls -alh'
alias ll='ls -alF'
alias ls='ls --color=auto'
ubuntu:~$
```

### Lesson 11