18CS2064 - Open Source technologies Lab | URK17CS114

Ex 1 ADVANCED LINUX COMMANDS
Date: 18.08.20

Aim:

To study and implement the Linux commands

Description:

Sl. No.	Command Name	Meaning	options
1.	**ls**	List files and/or directories.	-a, --all do not ignore entries starting with. -A, --almost-all do not list implied. and. --author with -l, print the author of each file -b, --escape print C-style escapes for nongraphic characters --block-size=SIZE
2.	**Who am i**	This command reveals the user who is currently logged in.	-a, --all =same as -b -d --login -p -r -t -T -u -b, --boot time of last system boot -d, --dead print dead processes -H, --heading print line of column headings -l, --login print system login processes --lookup attempt to canonicalize hostnames via DNS
3.	**pwd**	prints the absolute path to the current working directory	-L, --logical use PWD from the environment, even if it contains symlinks

			-P, --physical avoid all symlinks
4.	**cal**	Displays the calendar of the current month	-1, --one Display single month output. (This is the default.) -3, --three Display prev/current/next month output. -s, --Sunday Display Sunday as the first day of the week. -m, --Monday Display Monday as the first day of the week. -j, --Julian Display Julian dates (days one-based, numbered from January 1). -y, --year
5.	**echo**	This command will echo whatever you provide it.	-n do not output the trailing newline -e enable interpretation of backslash escapes -E disable the interpretation of backslash escapes (default)
6.	**date**	Displays current time and date.	-d, --date=STRING display time described by STRING, not 'now' -f, --file=DATEFILE

			like --date once for each line of DATAFILE
7.	**tty**	Displays the current terminal.	
8.	**id**	This command prints user and groups (UID and GID) of the current user.	-a ignore, for compatibility with other versions -Z, --context print only the security context of the current user -g, --troup print only the effective group ID -G, --groups print all group IDs -n, --name print a name instead of a number, for -ugG
9.	**clear**	This command clears the screen.	
10.	**man**	To show manual page	
11.	**cd**	Change the current working directory to the directory provided as an argument.	
12.	**mkdir**	To create a directory, the ‘mkdir’ command is used.	
13.	**touch**	For creating an empty file, use the touch command.	
14.	**cp**	Copy files and directories	
15.	**mv**	Move files or directories. The 'mv' command works like	

		'cp' command, except that the original file is removed. But, the mv command can be used to rename the files (or directories).	
16.	**rmdir**	the command removes any empty directories, but cannot delete a directory if a file is present in it.	
17.	**file**	The file command determines the file type of a given file.	
18.	**cat**	The 'cat' command is actually a concatenator but can be used to view the contents of a file.	
19.	**head**	Displays the first few lines of a file. By default, the ‘head’ command displays the first 10 lines of a file.	
20.	**tail**	the ‘tail’ command shows the last 10 lines by default	-c, --bytes=[-]K print the first K bytes of each file -n, --lines=[-]K print the first K lines instead of the first 10 -q, --quiet, --silent never print headers giving file names
21.	**wc**	This command counts lines, words, and letters of the input given to it.	
22.	**grep**	The ‘grep’ command searches for a pattern in a file (or standard input).	
23.	**vi**	Visual editor	
24.	**alias**	The ‘alias’ is another name for a command.	

25.	**history**	shows the commands you have entered on your terminal so far.	
26.	**passwd**	To change your password	
27.	**help**	With almost every command, '--help' option shows usage summary for that command.	
28.	**chmod**	The *chmod* command lets you change access permissions for a file.	
29.	**stat**	To check the status of a file. This provides more detailed information about a file than 'ls -l' output.	-L, --dereference follow links -f, --file-system display file system status instead of file status -c --format=FORMAT use the specified FORMAT instead of the default; output a newline after each use of FORMAT --printf=FORMAT
30.	**ln**	The ln command is used in Linux to create links.	

Exercise

1. List the contents of user's home directory including the hidden files

```
[urk17cs114@code ~]$ ls -a
.               2b.c        5c.cpp      9b.cpp      anm                .emacs          ex51.sh         exp71.sh        filefruits.txt  .sa.cpp.swp
..              2b.cpp      5.cpp       9c.cpp      a.out              employee        ex51.txt        exp71.txt       first.c         sample.txt
??@             2.c         5d.cpp      9.cpp       ar                 enum.c          ex52.sh         exp72           fourth.c        s.cpp
10a.cpp         2.cpp       6.1.sh      a           as                 er              ex53.sh         exp72.c         fourth.cy       sd
10b.cpp         35.cpp      6.2.sh      abc         asc.cpp            ert             ex54.sh         exp72.cpp       fruit.txt       sdf
10.c            36.cpp      62.sh       abn         ascending.cpp      ex1             ex54.txt        exp72.sh        .k5login        second.c
10c.cpp         3a.c        67.cpp      acac        ascending.cpp.save ex1.sh          ex55.sh         exp72.txt       ko              sed2YtRt3
10c.cpp.save    3a.cpp      6a.c        acv         asd                ex22.sh         ex56.sh         exp73.c         ls              server1.conf.f
iles
111.cpp         3a.cpp?     6a.cpp      ad          asdf               ex2.sh          ex5.sh          exp73.cpp       ls-error        sever1.conf.fi
les
11a1.cpp        3b.c        6A.cpp      add.cpp     ax                 ex31.1          ex5.txt         .exp73.c.swp    ls-out          sortby.c
11a2.cpp        3b.cpp      6A.cpp.save add.cpp.save az                ex31.sh         ex6.sh          exp73.sh        .mozilla        square.c.save
11a.cpp         3b.c.save   6b.cpp      af          azx                ex32.sh         ex84.cpp        exp73.txt       myfifo123       string.c
11.c            3c.c        6b.cpp.save ag          banking.txt        .ex32.sh.swp    exer1.lex       exp74.txt       net-config      stud.cpp
11f.cpp         3c.cpp      6.c         ak          bank.txt           ex33.sh         .exer1.lex.swp  exp81.c         nm              swap.cpp
12.c            3.1         6c.cpp      ak1         .bash_history      ex34.sh         exp1.sh         exp81.cpp       nmb             tee.out
1a.c            4a.c        6c.cpp.save ak10        .bash_logout       ex35.sh         exp31.sh        .exp81.cpp.swp  nmj             third.c
1a.cpp          4a.cpp      6.cpp       ak1.txt     .bash_profile      ex36.sh         exp33.c         exp82.cpp       noel            tr
1a.cpp.save     4a.c.save   7a.cpp      ak2         .bashrc            ex3a.1          exp3a.c         exp82.cppvi     one             triangle.c
1b.c            4b.c        7b.cpp      .ak2.txt    bitwise.c          ex3b.1          exp3a.save      exp83_1.cpp     palindrome.c    two
1b.cpp          4b.cpp      7.c         ak3         bn                 .ex3b.1.swp     exp3c.c         exp83.cpp       pattern.sh      tyu
1c.c            4c.cpp      7c.cpp      ak4         books.txt          ex3c.1          exp51.sh        .exp83.cpp.swo  patterns.sh     unix_commands_
used_today.txt
1c.cpp          4.cpp       7.cpp       ak5         borrowed.txt       ex3d.1          exp55.sh        .exp83.cpp.swp  prdata          urk17cs114
1.cpp           4ex2.cpp    7d.cpp      ak6         b.out              ex3.1           exp61.sh        exp84.c         prdata.c        users.txt
1d.cpp          4ex.cpp     7e.cpp      ak7         condition.c        ex3.sh          .exp61.sh.swn   exp84.cpp       project         vb
1f.cpp          50          7f.cpp      ak8         .config            ex41            .exp61.sh.swo   exp91.c         project1        vbn
1f.cpp?         51.sh       7f.cpp.save ak9         cv                 ex41.sh         .exp61.sh.swp   exp91.cpp       q               wer
1f.cpp.save     52.sh       8a.cpp      aka         cvb                ex42.sh         exp61.txt       .exp91.cpp.swo  qwe             word1.txt
```

2. List the content of /var directory?

```
[urk17cs114@code ~]$ cd /var
[urk17cs114@code var]$ ls
adm    centrify    centrifydc  db     games   kerberos  local  log   nis  preserve  spool  yp
cache  centrifyda  crash       empty  gopher  lib       lock   mail  opt  run       tmp
[urk17cs114@code var]$
```

3. Create two directories named dir1 & dir2

```
[urk17cs114@code ~]$ mkdir dir1 dir2
[urk17cs114@code ~]$
```

4. Create a hidden directory with your name?

```
[urk17cs114@code ~]$ mkdir .anil
[urk17cs114@code ~]$ cd .anil
```

5. Display the content of a hidden directory.

```
[urk17cs114@code .anil]$ ls
text1.txt  text2.txt
[urk17cs114@code .anil]$
```

6. Display the calendar of 2020.

```
[urk17cs114@code ~]$ cal 2020
                                2020

       January               February                March
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
          1  2  3  4                      1      1  2  3  4  5  6  7
 5  6  7  8  9 10 11    2  3  4  5  6  7  8    8  9 10 11 12 13 14
12 13 14 15 16 17 18    9 10 11 12 13 14 15   15 16 17 18 19 20 21
19 20 21 22 23 24 25   16 17 18 19 20 21 22   22 23 24 25 26 27 28
26 27 28 29 30 31      23 24 25 26 27 28 29   29 30 31
                       30

       April                  May                   June
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
          1  2  3  4                   1  2      1  2  3  4  5  6
 5  6  7  8  9 10 11    3  4  5  6  7  8  9    7  8  9 10 11 12 13
12 13 14 15 16 17 18   10 11 12 13 14 15 16   14 15 16 17 18 19 20
19 20 21 22 23 24 25   17 18 19 20 21 22 23   21 22 23 24 25 26 27
26 27 28 29 30         24 25 26 27 28 29 30   28 29 30
                       31

       July                  August                September
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
          1  2  3  4                      1         1  2  3  4  5
 5  6  7  8  9 10 11    2  3  4  5  6  7  8    6  7  8  9 10 11 12
12 13 14 15 16 17 18    9 10 11 12 13 14 15   13 14 15 16 17 18 19
19 20 21 22 23 24 25   16 17 18 19 20 21 22   20 21 22 23 24 25 26
26 27 28 29 30 31      23 24 25 26 27 28 29   27 28 29 30
                       30 31

       October               November              December
```

7. Copy the file /etc/passwd file to current directory with sample.txt as the filename

```
[urk17cs114@code ~]$ cat /etc/passwd > sample.txt
[urk17cs114@code ~]$
```

8. Create a file test1.txt using Vim editor with the following contents to it

```
name    Regno   ResearchIntrest
anil    1213    Grid Computing
melvin  1214    cloud computing
shikar  1215    Image Processing
rohit   1216    networking
king k  1217    Grid Computing
raina   1217    Image Processing
yuvi    1218    machine learning
msd     1219    deep learning
```

Answer the following questions

a) Display the student names who are having Research Interest as GridComputing

```
[urk17cs114@code ~]$ grep Grid test1.txt | cut -f 1
anil
king k
[urk17cs114@code ~]$
```

b) List all the student names & RegNo in the class

```
[urk17cs114@code ~]$ cut -f 1,2 test1.txt
name    Regno
anil    1213
melvin  1214
shikar  1215
rohit   1216
king k  1217
raina   1217
yuvi    1218
msd     1219
```

c) List the count of students who have an interest as ImageProcessing and store the result in another file.

```
[urk17cs114@code ~]$ grep Image test1.txt | wc -l > test2.txt
[urk17cs114@code ~]$ cat test2.txt
2
[urk17cs114@code ~]$
```

d) Display the first two rows and last two and store them into another file.

```
[urk17cs114@code ~]$ cat anil.txt
name    Regno   ResearchIntrest
anil    1213    Grid Computing
yuvi    1218    machine learning
msd     1219    deep learning

[urk17cs114@code ~]$
```

9. Display the contents of the file test1.txt without any blank lines

```
[urk17cs114@code ~]$ grep -v '^$' test1.txt
name    Regno   ResearchIntrest
anil    1213    Grid Computing
melvin  1214    cloud computing
shikar  1215    Image Processing
rohit   1216    networking
king k  1217    Grid Computing
raina   1217    Image Processing
yuvi    1218    machine learning
msd     1219    deep learning
[urk17cs114@code ~]$
```

10. Move the file sample.txt from dir1 directory to dir2 directory

```
[urk17cs114@code ~]$ mv sample.txt dir2
[urk17cs114@code ~]$ cd dir2
[urk17cs114@code dir2]$
```

11. Change directory into dir2 directory

```
[urk17cs114@code ~]$ mv sample.txt dir2
[urk17cs114@code ~]$ cd dir2
[urk17cs114@code dir2]$
```

12. Check whether the file sample.txt is present their

```
[urk17cs114@code dir2]$ ls
sample.txt
```

13. Rename the file sample.txt to new.txt and check whether sample.txt is there or not?

```
[urk17cs114@code dir2]$ mv sample.txt new.txt
[urk17cs114@code dir2]$ ls
new.txt
[urk17cs114@code dir2]$
```

14. Remove the directory dir1

```
[urk17cs114@code dir2]$ cd
[urk17cs114@code ~]$ rm -r dir1
[urk17cs114@code ~]$
```

15. Display last 3 lines of the file test1.txt

```
[urk17cs114@code ~]$ tail -3 test1.txt
yuvi    1218    machine learning
msd     1219    deep learning

[urk17cs114@code ~]$
```

16. Display all the commands you have executed so far and save the list into a file named todayshistory.txt

```
[urk17cs114@code ~]$ history > todayhistory.txt
[urk17cs114@code ~]$ cat todayhistory.txt
   72  g++ exp81.cpp
   73  ./a.out
   74  vi exp82.cpp
   75  g++ exp82.cpp
   76  ./a.out
   77  vi exp82.cpp
   78  g++ exp82.cpp
   79  ./a.out
   80  g++ exp83.cpp
   81  ./a.out
   82  vi exp83.cpp
   83  vi exp84.cpp
   84  vi ex84.cpp
   85  g++ ex84.cpp
```

17. How many files are present under your home directory?

```
[urk17cs114@code ~]$ ls -A | wc -l
341
[urk17cs114@code ~]$
```

18. Perform the sorting of three files and store the sorted file in the fourth file.

```
[urk17cs114@code ~]$ sort file1.txt file2.txt file3.txt > file4.txt
[urk17cs114@code ~]$ cat file4.txt
first
second
third
[urk17cs114@code ~]$
```

19. Change the permission of your newly created file such that the group users and others don't access any type of access.

```
[urk17cs114@code ~]$ chmod 700 file5.txt
[urk17cs114@code ~]$ ls -l file5.txt
-rwx------ 1 urk17cs114 urk17cs114 0 Aug 22 12:18 file5.txt
[urk17cs114@code ~]$
```

20. Display the network status on the shell.

```
[urk17cs114@code ~]$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 code.karunya.edu:nfs    192.168.0.32:ftps-data  ESTABLISHED
tcp        0      0 code.karunya.edu:58124  192.168.2.27:msft-gc    ESTABLISHED
tcp        0      0 code.karunya.edu:nfs    192.168.0.34:790        ESTABLISHED
tcp        0      0 code.karunya.edu:39984  192.168.2.27:ldap       ESTABLISHED
tcp        0      0 code.karunya.edu:52066  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52212  ESTABLISHED
tcp        0      0 code.karunya.edu:https  162.158.50.196:46918    ESTABLISHED
tcp        0     48 code.karunya.edu:https  162.158.166.87:22784    ESTABLISHED
tcp        0      0 code.karunya.edu:52308  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:https  162.158.31.133:37022    ESTABLISHED
tcp        0      0 code.karunya.edu:https  162.158.50.221:49642    ESTABLISHED
tcp        0      0 code.karunya.edu:52212  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:52048  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52066  ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52048  ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52428  ESTABLISHED
tcp        0      0 code.karunya.edu:nfs    192.168.0.33:814        ESTABLISHED
tcp        0      0 code.karunya.edu:52428  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52308  ESTABLISHED
tcp        0      0 code.karunya.edu:nfs    192.168.0:owamp-control ESTABLISHED
tcp        0     46 code.karunya.edu:https  162.158.31.162:32884    ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  3      [ ]         DGRAM                    36       /run/systemd/notify
```

21. Compares any two files and search for both common and exclusive features

```
[urk17cs114@code ~]$ diff first.txt second.txt
1c1
< anil
---
> ak
[urk17cs114@code ~]$
```

22. Display the user ID, process ID, and parent process ID.

```
[urk17cs114@code ~]$ ps -f
UID          PID  PPID  C STIME TTY          TIME CMD
urk17cs+    3516  3506  0 11:06 pts/0    00:00:00 -bash
urk17cs+    6768  3516  0 11:49 pts/0    00:00:00 tail -3
urk17cs+    6828  3516  0 11:51 pts/0    00:00:00 tail -3
urk17cs+    6860  3516  0 11:51 pts/0    00:00:00 tail -3
urk17cs+    7140  3516  0 11:54 pts/0    00:00:00 tail -3
urk17cs+    7228  3516  0 11:56 pts/0    00:00:00 tail -3
urk17cs+    8518  3516  0 12:14 pts/0    00:00:00 cat
urk17cs+    8530  3516  0 12:14 pts/0    00:00:00 cat
urk17cs+    8538  3516  0 12:14 pts/0    00:00:00 cat
urk17cs+    8591  3516  0 12:15 pts/0    00:00:00 cat
urk17cs+    8644  3516  0 12:16 pts/0    00:00:00 cat
urk17cs+    8734  3516  0 12:18 pts/0    00:00:00 cat
urk17cs+    8924  3516  0 12:21 pts/0    00:00:00 cat
urk17cs+    8935  3516  0 12:21 pts/0    00:00:00 cat
urk17cs+    8947  3516  0 12:21 pts/0    00:00:00 cat
urk17cs+    9035  3516  0 12:22 pts/0    00:00:00 cat
urk17cs+    9130  3516  0 12:22 pts/0    00:00:00 ps -f
```

23. Report disk usages of the file system.

```
[urk17cs114@code ~]$ du -h
0       ./.mozilla/plugins
0       ./.mozilla/extensions
0       ./.mozilla
16K     ./.config/neofetch
16K     ./.config
0       ./akpkvk
0       ./urk17cs114
0       ./.anil
0       ./dir3
24K     ./employee
0       ./project
0       ./project1
0       ./one
0       ./two
0       ./.anilkr
4.0K    ./dir2
1.4M    .
[urk17cs114@code ~]$
```

24. Display the statistics of all ports connected to a network.

```
[urk17cs114@code ~]$ netstat -l
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 0.0.0.0:nfs             0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:46053           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:sunrpc          0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:http            0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:mountd          0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:34067           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:ssh             0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:hbci            0.0.0.0:*               LISTEN
tcp        0      0 localhost:smtp          0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:https           0.0.0.0:*               LISTEN
tcp6       0      0 [::]:nfs                [::]:*                  LISTEN
tcp6       0      0 [::]:sunrpc             [::]:*                  LISTEN
tcp6       0      0 [::]:http               [::]:*                  LISTEN
tcp6       0      0 [::]:mountd             [::]:*                  LISTEN
tcp6       0      0 [::]:ssh                [::]:*                  LISTEN
tcp6       0      0 [::]:57431              [::]:*                  LISTEN
tcp6       0      0 localhost:smtp          [::]:*                  LISTEN
tcp6       0      0 [::]:https              [::]:*                  LISTEN
tcp6       0      0 [::]:39228              [::]:*                  LISTEN
udp        0      0 0.0.0.0:39547           0.0.0.0:*
udp        0      0 0.0.0.0:mountd          0.0.0.0:*
udp        0      0 0.0.0.0:sunrpc          0.0.0.0:*
udp        0      0 0.0.0.0:49440           0.0.0.0:*
```

25. Display the uptime of the system.

```
[urk17cs114@code ~]$ uptime
 12:24:31 up 10 days, 44 min, 140 users,  load average: 0.01, 0.02, 0.05
[urk17cs114@code ~]$
```

26. Julian day.

```
[urk17cs114@code ~]$ date +%j
235
[urk17cs114@code ~]$
```

27. IP information.

```
[urk17cs114@code ~]$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens32: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:50:56:93:66:93 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.29/24 brd 192.168.0.255 scope global noprefixroute ens32
       valid_lft forever preferred_lft forever
    inet6 fe80::1450:18ba:187f:1f02/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
[urk17cs114@code ~]$
```

28. Display only the free space in the system.

```
[urk17cs114@code ~]$ df
Filesystem                     1K-blocks     Used Available Use% Mounted on
devtmpfs                         3992636        0   3992636   0% /dev
tmpfs                            4004520        0   4004520   0% /dev/shm
tmpfs                            4004520   402584   3601936  11% /run
tmpfs                            4004520        0   4004520   0% /sys/fs/cgroup
/dev/mapper/centos_kitscode-root  68066844  3014188  65052656   5% /
/dev/sda1                         1942528   334256   1608272  18% /boot
/dev/mapper/centos_kitscode-home  24404336    32992  24371344   1% /home
/dev/mapper/centos_kitscode-data  97609148 26097344  71511804  27% /data
/dev/mapper/centos_kitscode-var   10004480  9316320    688160  94% /var
tmpfs                              800908        0    800908   0% /run/user/1010875317
tmpfs                              800908        0    800908   0% /run/user/1010875240
tmpfs                              800908        0    800908   0% /run/user/1010883183
tmpfs                              800908        0    800908   0% /run/user/1010883450
tmpfs                              800908        0    800908   0% /run/user/1010875237
[urk17cs114@code ~]$
```

29. Linux platform is infected over the network.

30. Display the configuration information of your network.

```
[urk17cs114@code ~]$ netstat -nr
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
0.0.0.0         192.168.0.254   0.0.0.0         UG        0 0          0 ens32
192.168.0.0     0.0.0.0         255.255.255.0   U         0 0          0 ens32
[urk17cs114@code ~]$
```

Video Link : https://youtu.be/AoLAFwlMRJg

Results:

The Linux commands are studied and executed.