Module – 2

Assignment Submission – embedUR Linux Course

01.02.2026

Baalamurugan S P

baalamurugan.sp@gmail.com

Question – 1

Use the appropriate command to list all files larger than 1 MB in the current directory and save the output to a file.

```
baala@ItsB-Laptop:~$ ls -lh /usr/bin | awk '$5 ~ /M/ && $5+0>1 {print $9}' > binLargeFiles.txt
baala@ItsB-Laptop:~$ cat binLargeFiles.txt
bash
git
gpg
perl
perl5.38.2
python3.12
snap
systemctl
tcpdump
tmux
udevadm
vim.basic
vim.tiny
x86_64-linux-gnu-dwp
x86_64-linux-gnu-ld.bfd
x86_64-linux-gnu-ld.gold
```

Commands used:

ls -lh : Lists the detailed information about the files and directories in the current working directory, and h shows the sizes in human readable form (K,M,G etc)

awk : Scans for a specific pattern, here "$5" indicates the 5th column (i.e) size of the file, "$5 ~ /M/" searches for rows with 'M' in them (or sizes with MB) and "$5+0 >1" is comparing the file size (as a number, hence +0) if its greater than 1 and print $9 is printing column with file name.

>filename.txt : redirect output to a text file.

I have used the ls command in /usr/bin, as I don't have much files in my WSL system.

Question 2

Replace all occurrences of "localhost" with "127.0.0.1" in a configuration file named config.txt, and save the updated file as updated_config.txt.

```
baala@ItsB-Laptop: $ ls
assignments   binLargeFiles.txt
baala@ItsB-Laptop: $ cd assignments/module2
baala@ItsB-Laptop:~/assignments/module2$ ls
baala@ItsB-Laptop:~/assignments/module2$ cat>config.txt
server=localhost
db_host=localhost
api_url=http://localhost:8080

baala@ItsB-Laptop:~/assignments/module2$ cat config.txt
server=localhost
db_host=localhost
api_url=http://localhost:8080

baala@ItsB-Laptop:~/assignments/module2$ sed 's/localhost/127.0.0.1/g' config.txt > updated_config.txt
baala@ItsB-Laptop:~/assignments/module2$ cat updated_config.txt
server=127.0.0.1
db_host=127.0.0.1
api_url=http://127.0.0.1:8080

baala@ItsB-Laptop:~/assignments/module2$
```

Commands used:

cat>config.txt : Concatenates text onto a new file called config.txt (created for question)

sed 's/localhost/127.0.0.1/g' config.txt > updated_config.txt' : sed (Stream editor) is a text manipulation command, used for substitution of text local host (old) onto 127.0.0.1 (new) g is for replacement of all occurances in config.txt and save it to updated_config.txt cat filename.txt : View Content of the file

Question 3

Use the appropriate command to search for lines containing the word "ERROR" in a log file but exclude lines containing "DEBUG". Save the results to a file named filtered_log.txt.

```
baala@ItsB-Laptop:~/assignments/module2$ cat>log.txt
DEBUG: Starting the application initialization.
ERROR: Unable to connect to the database.
INFO: User 'admin' logged in successfully.
DEBUG: Fetching configuration settings from the server.
ERROR: DEBUG - Configuration settings could not be applied.
INFO: Scheduled job 'backup' completed successfully.
DEBUG: Connection to server timed out. Retrying...
ERROR: Failed to fetch data from API endpoint '/users'.
INFO: Maintenance mode activated.
ERROR: DEBUG - Query execution failed due to a syntax error.
DEBUG: Reloading application modules.
ERROR: Missing required parameter in the request.
INFO: Shutting down the system gracefully.
DEBUG: Closing unused network connections.
ERROR: DEBUG - Unexpected server response received.
baala@ItsB-Laptop:~/assignments/module2$ cat log.txt
DEBUG: Starting the application initialization.
ERROR: Unable to connect to the database.
INFO: User 'admin' logged in successfully.
DEBUG: Fetching configuration settings from the server.
ERROR: DEBUG - Configuration settings could not be applied.
INFO: Scheduled job 'backup' completed successfully.
DEBUG: Connection to server timed out. Retrying...
ERROR: Failed to fetch data from API endpoint '/users'.
INFO: Maintenance mode activated.
ERROR: DEBUG - Query execution failed due to a syntax error.
DEBUG: Reloading application modules.
ERROR: Missing required parameter in the request.
INFO: Shutting down the system gracefully.
DEBUG: Closing unused network connections.
ERROR: DEBUG - Unexpected server response received.
baala@ItsB-Laptop:~/assignments/module2$ grep "ERROR" log.txt | grep -v "DEBUG" > filtered_log.txt
baala@ItsB-Laptop:~/assignments/module2$ cat filtered_log.txt
ERROR: Unable to connect to the database.
ERROR: Failed to fetch data from API endpoint '/users'.
ERROR: Missing required parameter in the request.
baala@ItsB-Laptop:~/assignments/module2$
```

Commands used:

cat>log.txt : creates a file called log.txt. grep "Error"

log.txt: Scans all lines with the word ERROR.

grep -v "DEBUG" > filtered_log.txt: Removes all instances with DEBUG in it and pushes to a file named filtered_log.txt.

Question 4

Write a code to identify the process with the highest memory usage and then terminate it.

```
baala@ItsB-Laptop:~/assignments/module2$ ps aux --sort=-%mem
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         269  0.0  0.2 107024 21760 ?        Ssl  07:00   0:00 /usr/bin/python3 /usr/share/unattended-up
root          45  0.0  0.1  50428 15488 ?        S<s  07:00   0:00 /usr/lib/systemd/systemd-journald
root        2753  0.0  0.1 1830352 12672 ?       Ssl  08:02   0:00 /usr/libexec/wsl-pro-service
root           1  0.0  0.1  21872 12112 ?        Ss   07:00   0:01 /sbin/init
systemd+     107  0.0  0.1  21456 11904 ?        Ss   07:00   0:00 /usr/lib/systemd/systemd-resolved
baala        428  0.0  0.1  20304 11136 ?        Ss   07:00   0:00 /usr/lib/systemd/systemd --user
root         194  0.0  0.1  17968  8192 ?        Ss   07:00   0:00 /usr/lib/systemd/systemd-logind
systemd+     108  0.0  0.0  91024  7552 ?        Ssl  07:00   0:00 /usr/lib/systemd/systemd-timesyncd
baala        692  0.0  0.0 382812  7296 ?        Ssl  07:02   0:00 /usr/libexec/at-spi-bus-launcher
root          92  0.1  0.0  25272  6144 ?        Ss   07:00   0:04 /usr/lib/systemd/systemd-udevd
syslog       224  0.0  0.0 222508  5632 ?        Ssl  07:00   0:00 /usr/sbin/rsyslogd -n -iNONE
baala        379  0.0  0.0   6072  5120 pts/0    Ss   07:00   0:00 -bash
baala        453  0.0  0.0   6072  4992 pts/1    S+   07:00   0:00 -bash
baala        630  0.0  0.0   9448  4864 ?        Ss   07:02   0:00 /usr/bin/dbus-daemon --session --address=
message+     172  0.0  0.0   9640  4736 ?        Ss   07:00   0:00 @dbus-daemon --system --address=systemd:
root         380  0.0  0.0   6692  4352 pts/1    Ss   07:00   0:00 /bin/login -f
baala       2976 33.3  0.0   8284  4096 pts/0    R+   08:11   0:00 ps aux --sort=-%mem
root        2975  0.0  0.0  25276  3712 ?        S    08:11   0:00 (udev-worker)
baala        430  0.0  0.0  21148  3516 ?        S    07:00   0:00 (sd-pam)
root         171  0.0  0.0   4236  2432 ?        Ss   07:00   0:00 /usr/sbin/cron -f -P
root           2  0.0  0.0   3120  1920 ?        Sl   07:00   0:00 /init
root         228  0.0  0.0   3160  1920 hvc0     Ss+  07:00   0:00 /sbin/agetty -o -p -- \u --noclear --keep
root           6  0.0  0.0   3120  1792 ?        Sl   07:00   0:00 plan9 --control-socket 7 --log-level 4 --
root         231  0.0  0.0   3116  1792 tty1     Ss+  07:00   0:00 /sbin/agetty -o -p -- \u --noclear - linu
baala       2807  0.0  0.0   3272  1536 pts/0    T    08:04   0:00 cat
root         378  0.0  0.0   3144  1160 ?        S    07:00   0:00 /init
root         376  0.0  0.0   3128   896 ?        Ss   07:00   0:00 /init
baala@ItsB-Laptop:~/assignments/module2$ kill -9 2807
baala@ItsB-Laptop:~/assignments/module2$ ps aux | grep cat
root           6  0.0  0.0   3120  1792 ?        Sl   07:00   0:00 plan9 --control-socket 7 --log-level 4 --
server-fd 8 --pipe-fd 10 --log-truncate
baala       3014  0.0  0.0   4092  1920 pts/0    S+   08:12   0:00 grep --color=auto cat
[1]+  Killed                  cat > log.txt
baala@ItsB-Laptop:~/assignments/module2$
```

The process using the highest memory is root, and termination of a root process is not advisable, hence I have terminated the 'cat' process which is safe user process to terminate.

Commands used :

ps aux: All processes will be displayed in order with all the details and human readable

format. --sort = -%mem : Sorting of the process in decending order of memory usage.

kill -9 PID : Killing a specific process with its process ID. -9 for SIGKILL or forceful termination ps aux | grep cat : Used to check if the process 'cat' is terminated.

Question 5

Use the networking tool command and print all the gateway available in a sorted manner

```
baala@ItsB-Laptop:~/assignments/module2$ ip route
default via 172.19.176.1 dev eth0 proto kernel
172.19.176.0/20 dev eth0 proto kernel scope link src 172.19.186.187
baala@ItsB-Laptop:~/assignments/module2$ ip route | grep default
default via 172.19.176.1 dev eth0 proto kernel
baala@ItsB-Laptop:~/assignments/module2$ ip route | grep default | awk '{print $3}'
172.19.176.1
baala@ItsB-Laptop:~/assignments/module2$ ip route | grep default | awk '{print $3}'| sort
172.19.176.1
baala@ItsB-Laptop:~/assignments/module2$ █
```

Commands used:

ip route: Traces entry in kernel routing tables.

grep default: scans for default – The Gateway.

awk '{print $3}': prints the IP address column

sort: Sorts the output in ascending order.