

## Module 1

Q1

```
dsshrikannan@LAPTOP-4404  ×  +  ▾

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

dsshrikannan@LAPTOP-4404BL51:~$ mkdir Week1_Assignment
dsshrikannan@LAPTOP-4404BL51:~$ cd Week1_Assignment
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ mkdir Q1_executable_permission
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ cd Q1_executable_permission
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q1_executable_permission$ touch file1
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q1_executable_permission$ chmod a+x file1
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q1_executable_permission$ ls -l file1
-rwxr-xr-x 1 dsshrikannan dsshrikannan 0 Feb  5 21:42 file1
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q1_executable_permission$ cd ..
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ █
```

Q2

```
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ mkdir Q2_remove_group_write
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ cd Q2_remove_group_write
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q2_remove_group_write$ touch file2
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q2_remove_group_write$ chmod g-w file2
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q2_remove_group_write$ ls -l file2
-rw-r--r-- 1 dsshrikannan dsshrikannan 0 Feb  5 21:44 file2
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q2_remove_group_write$ cd ..
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ █
```

Q3

```
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ mkdir -p Q3_softlink/dir1/dir2
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ cd Q3_softlink
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q3_softlink$ touch dir1/dir2/file
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q3_softlink$ ln -s dir1/dir2/file dir1/file_link
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q3_softlink$ ls -l dir1
total 4
drwxr-xr-x 2 dsshrikannan dsshrikannan 4096 Feb  5 21:45 dir2
lrwxrwxrwx 1 dsshrikannan dsshrikannan  14 Feb  5 21:45 file_link -> dir1/dir2/file
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q3_softlink$ cd ..
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ █
```

## Q4

```
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ mkdir Q4_ps_command
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ cd Q4_ps_command
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q4_ps_command$ ps -ef > all_processes.txt
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q4_ps_command$ cat all_processes.txt
UID          PID    PPID  C  TIME  TTY          TIME CMD
root           1      0  0  21:26 ?        00:00:00 /sbin/init
root           2      1  0  21:26 ?        00:00:00 /init
root           7      2  0  21:26 ?        00:00:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root          61      1  0  21:26 ?        00:00:00 /lib/systemd/systemd-journald
root          86      1  0  21:26 ?        00:00:00 /lib/systemd/systemd-udevd
systemd+     90      1  0  21:26 ?        00:00:00 /lib/systemd/systemd-resolved
systemd+     91      1  0  21:26 ?        00:00:00 /lib/systemd/systemd-timesyncd
root        194      1  0  21:26 ?        00:00:00 /usr/sbin/cron -f -P
message+    196      1  0  21:26 ?        00:00:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-
only
root        201      1  0  21:26 ?        00:00:00 /usr/bin/python3 /usr/bin/networkd-dispatcher --run-startup-triggers
syslog      202      1  0  21:26 ?        00:00:00 /usr/sbin/rsyslogd -n -iNONE
root        208      1  0  21:26 ?        00:00:00 /lib/systemd/systemd-logind
root        215      1  0  21:26 hvc0     00:00:00 /sbin/agetty -o -p -- \u --noclear --keep-baud console 115200,38400,9600 vt220
root        222      1  0  21:26 tty1     00:00:00 /sbin/agetty -o -p -- \u --noclear tty1 linux
root        228      1  0  21:26 ?        00:00:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signa
l
root        300      2  0  21:26 pts/1    00:00:00 /bin/login -f
dsshrik+    341      1  0  21:26 ?        00:00:00 /lib/systemd/systemd --user
dsshrik+    342     341  0  21:26 ?        00:00:00 (sd-pam)
dsshrik+    358     300  0  21:26 pts/1    00:00:00 -bash
root        496      2  0  21:41 ?        00:00:00 /init
root        497     496  0  21:41 ?        00:00:00 /init
dsshrik+    502     497  0  21:41 pts/0    00:00:00 -bash
root        558      1  0  21:46 ?        00:00:00 /bin/sh /etc/update-motd.d/50-motd-news --force
root        578     558  0  21:46 ?        00:00:00 wget --timeout 60 -U wget/1.21.2-2ubuntu1.1 Ubuntu/22.04.5 LTS GNU/Linux/6.6.87.2-microsoft-
standard-WSL2/x86_64 12th/Gen/Intel(R)/Core(TM)/i7-12700H cload_id/unknown -O- --content-on-error https://motd.ubuntu.com
dsshrik+    579     502  0  21:46 pts/0    00:00:00 ps -ef
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q4_ps_command$ cd ..
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ █
```

## Q5

```
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ mkdir Q5_redirect_sorted_output
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment$ cd Q5_redirect_sorted_output
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q5_redirect_sorted_output$ mkdir dir1
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q5_redirect_sorted_output$ touch dir1/file1 dir1/file2 dir1/file3
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q5_redirect_sorted_output$ ls -lt dir1 > sorted_output.txt
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q5_redirect_sorted_output$ cat sorted_output.txt
total 0
-rw-r--r-- 1 dsshrikannan dsshrikannan 0 Feb  5 21:48 file1
-rw-r--r-- 1 dsshrikannan dsshrikannan 0 Feb  5 21:48 file2
-rw-r--r-- 1 dsshrikannan dsshrikannan 0 Feb  5 21:48 file3
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q5_redirect_sorted_output$ touch dir1/file4
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q5_redirect_sorted_output$ ls -lt dir1 > sorted_output.txt
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q5_redirect_sorted_output$ cat sorted_output.txt
total 0
-rw-r--r-- 1 dsshrikannan dsshrikannan 0 Feb  5 21:49 file4
-rw-r--r-- 1 dsshrikannan dsshrikannan 0 Feb  5 21:48 file1
-rw-r--r-- 1 dsshrikannan dsshrikannan 0 Feb  5 21:48 file2
dsshrikannan@LAPTOP-4404BL51:~/Week1_Assignment/Q5_redirect_sorted_output$ █
```

## Module 2

### Q1

```
dsshrikannan@LAPTOP-4404BL51:~$ mkdir Week2_Assignment
dsshrikannan@LAPTOP-4404BL51:~$ cd Week2_Assignment
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ mkdir Q1_large_files
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ cd Q1_large_files
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q1_large_files$ touch small.txt
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q1_large_files$ dd if=/dev/zero of=bigfile bs=1M count=2
2+0 records in
2+0 records out
2097152 bytes (2.1 MB, 2.0 MiB) copied, 0.00213447 s, 983 MB/s
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q1_large_files$ find . -type f -size +1M > large_files.txt
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q1_large_files$ cat large_files.txt
./bigfile
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q1_large_files$ cd ..
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$
```

### Q2

```
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ mkdir Q2_replace_text
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ cd Q2_replace_text
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q2_replace_text$ cat <<EOF > config.txt
> server=localhost
> db_host=localhost
> api_url=http://localhost:8080
> EOF
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q2_replace_text$ sed 's/localhost/127.0.0.1/g' config.txt > updated_config.txt
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q2_replace_text$ cat updated_config.txt
server=127.0.0.1
db_host=127.0.0.1
api_url=http://127.0.0.1:8080
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q2_replace_text$ cd ..
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$
```

### Q3

```
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ mkdir Q3_filter_logs
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ cd Q3_filter_logs
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q3_filter_logs$ cat <<EOF > app.log
> 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.
> EOF
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q3_filter_logs$ grep "ERROR" app.log | grep -v "DEBUG" > filtered_log.txt
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q3_filter_logs$ 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.
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q3_filter_logs$ cd ..
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$
```

### Q4

```
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ mkdir Q4_kill_highest_memory
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ cd Q4_kill_highest_memory
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q4_kill_highest_memory$ ps aux --sort=-%mem | head -n 2
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root        228  0.0  0.2 107164 21440 ?        Ssl   21:26   0:00 /usr/bin/python3 /usr/share/unattended-upgr
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q4_kill_highest_memory$ kill 228
```

## Q5

```
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ mkdir Q5_gateway_sorted
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$ cd Q5_gateway_sorted
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q5_gateway_sorted$ ip route | awk '/default/ {print $3}' | sort > gateways.txt
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q5_gateway_sorted$ cat gateways.txt
172.31.160.1
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment/Q5_gateway_sorted$ cd ..
dsshrikannan@LAPTOP-4404BL51:~/Week2_Assignment$
```

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## Module 3

Q1

```
dsshrikannan@LAPTOP-4404BL51:~$ mkdir Week3_Assignment
dsshrikannan@LAPTOP-4404BL51:~$ cd Week3_Assignment
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ touch backup_manager.sh
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ chmod +x backup_manager.sh
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ nano backup_manager.sh

dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ ls
backup_manager.sh
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ mkdir source_dir backup_dir
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ echo "file1" > source_dir/a.txt
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ echo "file2" > source_dir/b.txt
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ echo "file3" > source_dir/c.log
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ ./backup_manager.sh "source_dir" "backup_dir" ".txt"
Files to be backed up:
a.txt - 6 bytes
b.txt - 6 bytes
Backup completed successfully.
Report saved at backup_dir/backup_report.log
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$ cat backup_dir/backup_report.log
Backup Summary Report
-----
Total files processed: 2
Total size backed up: 12 bytes
Backup directory path: backup_dir
Backup completed on: Thu Feb  5 22:15:01 IST 2026
dsshrikannan@LAPTOP-4404BL51:~/Week3_Assignment$
```

## Module 4

```
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.906612000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.936831000 India Standard Time",  
"wlan.fc.type": "1",  
"wlan.fc.subtype": "2"  
"frame.time": "Dec 31, 2024 12:51:11.937145000 India Standard Time",  
"wlan.fc.type": "2",  
"wlan.fc.subtype": "12"  
"frame.time": "Dec 31, 2024 12:51:11.937153000 India Standard Time",  
"wlan.fc.type": "2",  
"wlan.fc.subtype": "12"  
"frame.time": "Dec 31, 2024 12:51:11.937157000 India Standard Time",  
"wlan.fc.type": "2",  
"wlan.fc.subtype": "12"  
"frame.time": "Dec 31, 2024 12:51:11.937160000 India Standard Time",  
"wlan.fc.type": "2",  
"wlan.fc.subtype": "12"  
"frame.time": "Dec 31, 2024 12:51:11.960615000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.961205000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.971335000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.972323000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
dsshrikannan@LAPTOP-4404BL51: ~/Week4_Assignment$ █
```

```
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.394573000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.448632000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.449097000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.459337000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.460322000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.496986000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.551235000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.551709000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.561336000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.562322000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.599370000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"  
"frame.time": "Dec 31, 2024 12:51:11.653417000 India Standard Time",  
"wlan.fc.type": "0",  
"wlan.fc.subtype": "8"
```

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## Module 5

```
dsshrikannan@LAPTOP-4404BL51:~$ mkdir Module5_Assignment
dsshrikannan@LAPTOP-4404BL51:~$ cd Module5_Assignment
dsshrikannan@LAPTOP-4404BL51:~/Module5_Assignment$ nano file_analyzer.sh
dsshrikannan@LAPTOP-4404BL51:~/Module5_Assignment$ chmod +x file_analyzer.sh
dsshrikannan@LAPTOP-4404BL51:~/Module5_Assignment$ ./file_analyzer.sh --help
Usage: ./file_analyzer.sh [options]

Options:
  -d <directory>  Directory to search recursively
  -k <keyword>     Keyword to search
  -f <file>       File to search directly
  --help          Display this help menu

Examples:
  ./file_analyzer.sh -d logs -k error
  ./file_analyzer.sh -f script.sh -k TODO
dsshrikannan@LAPTOP-4404BL51:~/Module5_Assignment$ ./file_analyzer.sh -d logs -k error
Directory does not exist: logs
dsshrikannan@LAPTOP-4404BL51:~/Module5_Assignment$ ./file_analyzer.sh -f script.sh -k TODO
File does not exist: script.sh
dsshrikannan@LAPTOP-4404BL51:~/Module5_Assignment$ cat errors.log
Directory does not exist: logs
File does not exist: script.sh
dsshrikannan@LAPTOP-4404BL51:~/Module5_Assignment$ ls
errors.log  file_analyzer.sh
dsshrikannan@LAPTOP-4404BL51:~/Module5_Assignment$ █
```