

2. Find OS version, kernel version, uptime, memory, cores, and swap details of Linux machine.
  - a. Be ready to explain what is free & available memory.
  - b. Release all cache memory & how do you manage the same in a prod env.
  - c. Increase the ulimit for the current user to 1028.
  - d. Change the timezone to IST

Answer:

For finding the

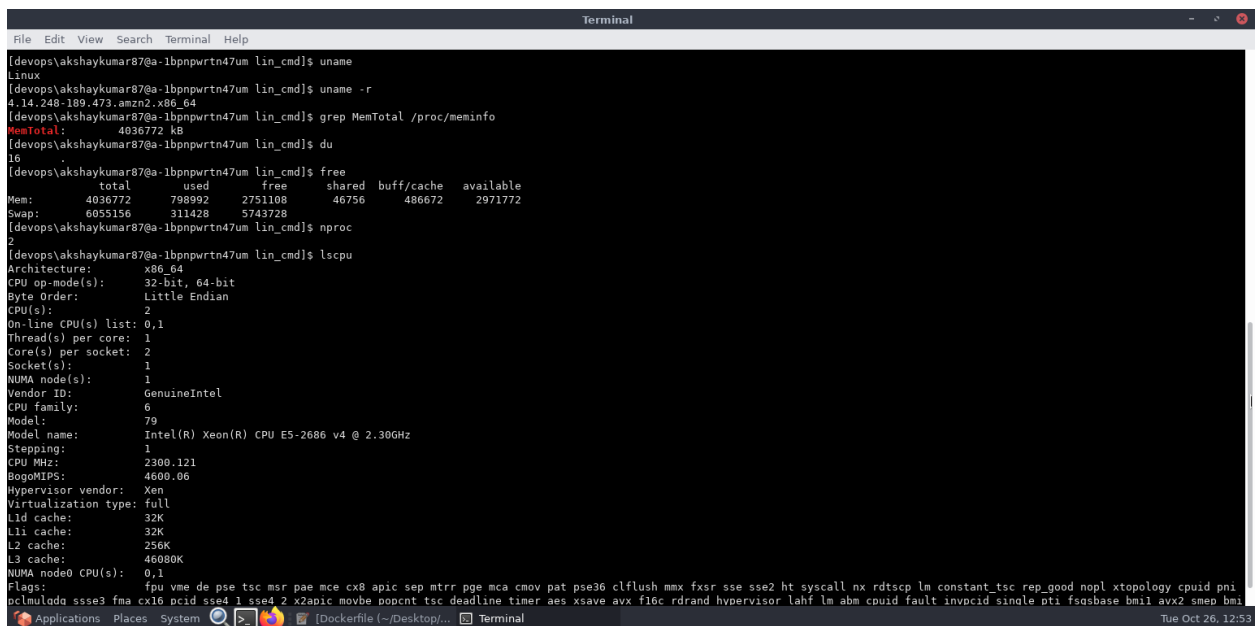
OS version: - `uname`

Kernel version:- `uname -r`

Memory: - `grep MemTotal /proc/meminfo`

Cores:- `nproc`

Also in support of the answer giving the executed commands screenshots.

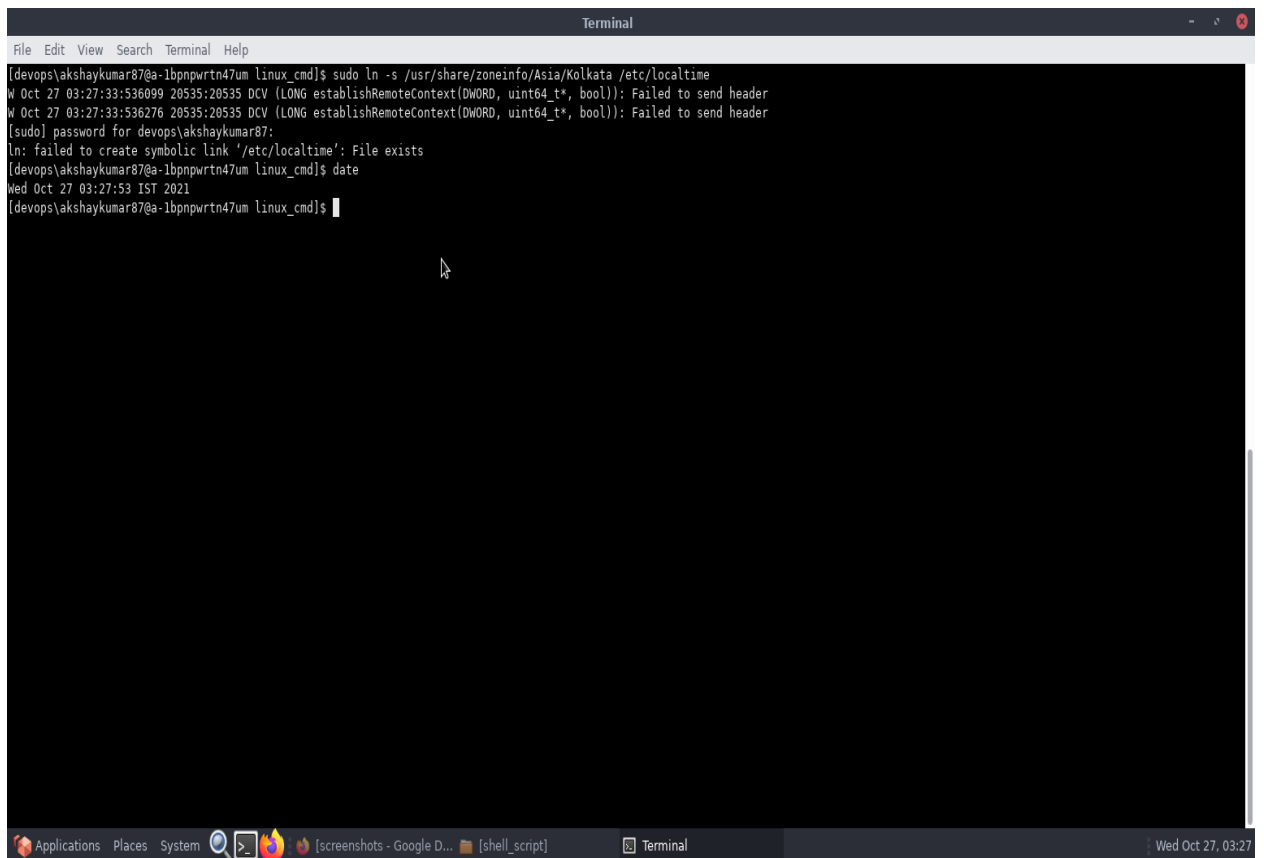


```
File Edit View Search Terminal Help
[devops\akshaykumar87@a-1bpnpwrtn47um lin_cmd]$ uname
Linux
[devops\akshaykumar87@a-1bpnpwrtn47um lin_cmd]$ uname -r
4.14.248-189.473.amzn2.x86_64
[devops\akshaykumar87@a-1bpnpwrtn47um lin_cmd]$ grep MemTotal /proc/meminfo
MemTotal: 4036772 kB
[devops\akshaykumar87@a-1bpnpwrtn47um lin_cmd]$ du
16
[devops\akshaykumar87@a-1bpnpwrtn47um lin_cmd]$ free
              total        used        free      shared  buff/cache   available
Mem:    4036772    798992    2751108    46756    486672    2971772
Swap:   6055156    311428    5743728
[devops\akshaykumar87@a-1bpnpwrtn47um lin_cmd]$ nproc
2
[devops\akshaykumar87@a-1bpnpwrtn47um lin_cmd]$ lscpu
Architecture:            x86_64
CPU op-mode(s):          32-bit, 64-bit
Byte Order:               Little Endian
CPU(s):                   2
On-line CPU(s) list:     0,1
Thread(s) per core:      1
Core(s) per socket:      2
Socket(s):                1
NUMA node(s):            1
Vendor ID:                GenuineIntel
CPU family:               6
Model:                    79
Model name:               Intel(R) Xeon(R) CPU E5-2686 v4 @ 2.30GHz
Stepping:                  1
CPU MHz:                  2300.121
BogoMIPS:                  4600.06
Hypervisor vendor:        Xen
Virtualization type:      full
L1d cache:                32K
L1i cache:                32K
L2 cache:                 256K
L3 cache:                 46080K
NUMA node0 CPU(s):        0,1
Flags:                    fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx rdtscp lm constant_tsc rep_good nopl xtopology cpuid pni
ocmulddo ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt tsc deadline timer aes xsave avx f16c rdrand hypervisor lahf_lm abm cquid fault_invariant single_pti fsqbase bmi1 avx2 smep bmi
Tue Oct 26, 12:53
```

```
File Edit View Search Terminal Help
2720 root 20 0 218296 2668 2436 S 0.3 0.1 0:35.44 wsp.control.ser
3416 pcoip 20 0 1197428 8312 5776 S 0.3 0.2 2:30.91 pcoip-agent
3522 devops+ 20 0 588480 23164 10728 S 0.3 0.6 0:24.36 marco
4262 root 20 0 259484 9028 8580 S 0.3 0.2 0:04.53 rsyslogd
25412 root 20 0 713592 2220 0 S 0.3 0.1 0:00.90 containerd-shim
1 root 20 0 191312 4604 3012 S 0.0 0.1 0:05.19 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.01 kthreadd
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 mm_percpu_wq
7 root 20 0 0 0 0 S 0.0 0.0 0:00.43 ksoftirqd/0
8 root 20 0 0 0 0 I 0.0 0.0 0:04.24 rcu_sched
9 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_bh
10 root rt 0 0 0 S 0.0 0.0 0:00.01 migration/0
11 root rt 0 0 0 S 0.0 0.0 0:00.09 watchdog/0
12 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0
13 root 20 0 0 0 0 S 0.0 0.0 0:00.01 cpuhp/1
14 root rt 0 0 0 S 0.0 0.0 0:00.14 watchdog/1
15 root rt 0 0 0 S 0.0 0.0 0:00.35 migration/1
16 root 20 0 0 0 0 S 0.0 0.0 0:00.30 ksoftirqd/1
18 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H
20 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kdevtmpfs
21 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 netns
101 root 20 0 0 0 0 S 0.0 0.0 0:00.03 khungtaskd
124 root 20 0 0 0 0 S 0.0 0.0 0:00.00oom_reaper
150 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 writeback
179 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kcompactd0
204 root 25 5 0 0 0 S 0.0 0.0 0:00.00 ksmd
205 root 39 19 0 0 0 S 0.0 0.0 0:00.00 khugepaged
206 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 crypto
[devops\akshaykumar87@a-lbnpwrtn47um lin_cnd]$ swapon -s
Filename Type Size Used Priority
/dev/zram0 partition 6055156 310916 16383
[devops\akshaykumar87@a-lbnpwrtn47um lin_cnd]$ free -m
total used free shared buff/cache available
Mem: 3942 806 2660 45 475 2875
Swap: 5913 303 5609
[devops\akshaykumar87@a-lbnpwrtn47um lin_cnd]$ cat /proc/swaps
Filename Type Size Used Priority
/dev/zram0 partition 6055156 310916 16383
[devops\akshaykumar87@a-lbnpwrtn47um lin_cnd]$
```

```
File Edit View Search Terminal Help
[devops\akshaykumar87@a-lbnpwrtn47um lin_cnd]$ ulimit -u 1028
[devops\akshaykumar87@a-lbnpwrtn47um lin_cnd]$ ulimit -a
core file size (blocks, -c) unlimited
data seg size (kbytes, -d) unlimited
scheduling priority (-e) 0
file size (blocks, -f) unlimited
pending signals (-i) 15658
max locked memory (kbytes, -l) 64
max memory size (kbytes, -m) unlimited
open files (-n) 1024
pipe size (512 bytes, -p) 8
POSIX message queues (bytes, -q) 819200
real-time priority (-r) 0
stack size (kbytes, -s) 8192
cpu time (seconds, -t) unlimited
max user processes (-u) 1028
virtual memory (kbytes, -v) unlimited
file locks (-x) unlimited
[devops\akshaykumar87@a-lbnpwrtn47um lin_cnd]$ timedatectl list-timezones | grep -i Asia
Asia/Aden
Asia/Almaty
Asia/Amman
Asia/Anadyr
Asia/Aqttau
Asia/Aqtobe
Asia/Ashgabat
Asia/Atyrau
Asia/Baghdad
Asia/Bahrain
Asia/Baku
Asia/Bangkok
Asia/Barnaul
Asia/Beirut
Asia/Bishkek
Asia/Brunei
Asia/Chita
Asia/Choibalsan
Asia/Colombo
Asia/Damascus
```

Figure showing the up limiting the user process

A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows a user running a command to create a symbolic link for the Asia/Kolkata timezone. The command is: `[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo ln -s /usr/share/zoneinfo/Asia/Kolkata /etc/localtime`. The output shows two failed attempts to send a header, followed by a password prompt for the user. The user enters the password, and the terminal shows: `ln: failed to create symbolic link '/etc/localtime': File exists`. The user then runs the `date` command, which shows the current date and time: `Wed Oct 27 03:27:53 IST 2021`. The terminal window is part of a desktop environment with a taskbar at the bottom showing various icons and the system clock.

```
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo ln -s /usr/share/zoneinfo/Asia/Kolkata /etc/localtime
W Oct 27 03:27:33:536099 20535:20535 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 03:27:33:536276 20535:20535 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops\akshaykumar87:
ln: failed to create symbolic link '/etc/localtime': File exists
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ date
Wed Oct 27 03:27:53 IST 2021
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$
```

Figure showing the changing of timezone.

### 3. Install nginx

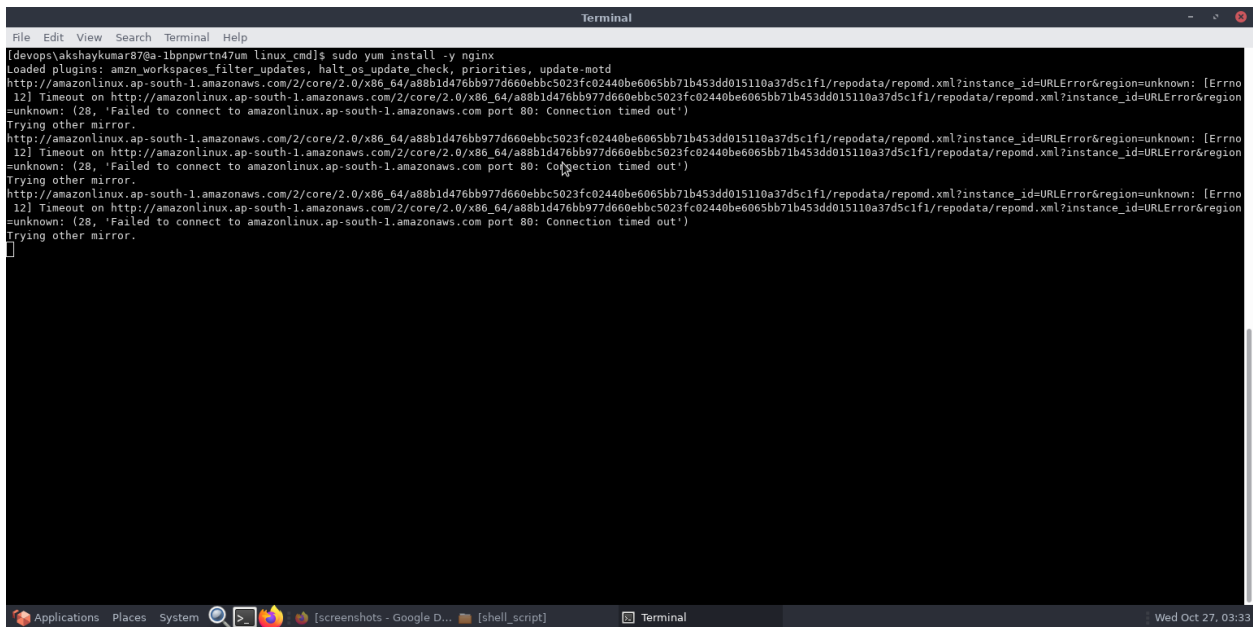
a. Configure the web server. Change the default location

b. Route all the requests to port 8080.

c. Configure the web server which shows files/directories and make them downloadable from the web page.

Answer:

Showing the problem with the work space but the commands are clear and the way it is being started.



```
Terminal
File Edit View Search Terminal Help
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo yum install -y nginx
Loaded plugins: amzn_workspaces_filter_updates, halt_os_update_check, priorities, update-motd
http://amazonlinux.ap-south-1.amazonaws.com/2/core/2.0/x86_64/a88b1d476bb977d660ebbc5023fc02440be6065bb71b453dd015110a37d5c1f1/repodata/repomd.xml?instance_id=URL&region=unknown: [Errno
12] Timeout on http://amazonlinux.ap-south-1.amazonaws.com/2/core/2.0/x86_64/a88b1d476bb977d660ebbc5023fc02440be6065bb71b453dd015110a37d5c1f1/repodata/repomd.xml?instance_id=URL&region
=unknown: (28, 'Failed to connect to amazonlinux.ap-south-1.amazonaws.com port 80: Connection timed out')
Trying other mirror.
http://amazonlinux.ap-south-1.amazonaws.com/2/core/2.0/x86_64/a88b1d476bb977d660ebbc5023fc02440be6065bb71b453dd015110a37d5c1f1/repodata/repomd.xml?instance_id=URL&region=unknown: [Errno
12] Timeout on http://amazonlinux.ap-south-1.amazonaws.com/2/core/2.0/x86_64/a88b1d476bb977d660ebbc5023fc02440be6065bb71b453dd015110a37d5c1f1/repodata/repomd.xml?instance_id=URL&region
=unknown: (28, 'Failed to connect to amazonlinux.ap-south-1.amazonaws.com port 80: Connection timed out')
Trying other mirror.
http://amazonlinux.ap-south-1.amazonaws.com/2/core/2.0/x86_64/a88b1d476bb977d660ebbc5023fc02440be6065bb71b453dd015110a37d5c1f1/repodata/repomd.xml?instance_id=URL&region=unknown: [Errno
12] Timeout on http://amazonlinux.ap-south-1.amazonaws.com/2/core/2.0/x86_64/a88b1d476bb977d660ebbc5023fc02440be6065bb71b453dd015110a37d5c1f1/repodata/repomd.xml?instance_id=URL&region
=unknown: (28, 'Failed to connect to amazonlinux.ap-south-1.amazonaws.com port 80: Connection timed out')
Trying other mirror.
```

4. Create a job in crontab to create zip of system logs every last day of the month and keep only the last 30 days' logs.

**Answer:**

For this we can create four different separate jobs. They are:

```
55 23 30 4,6,9,11 *myjob.sh
```

```
55 23 31 1,3,5,7,8,10,12 *myjob.sh
```

```
55 23 28 2 *myjob.sh
```

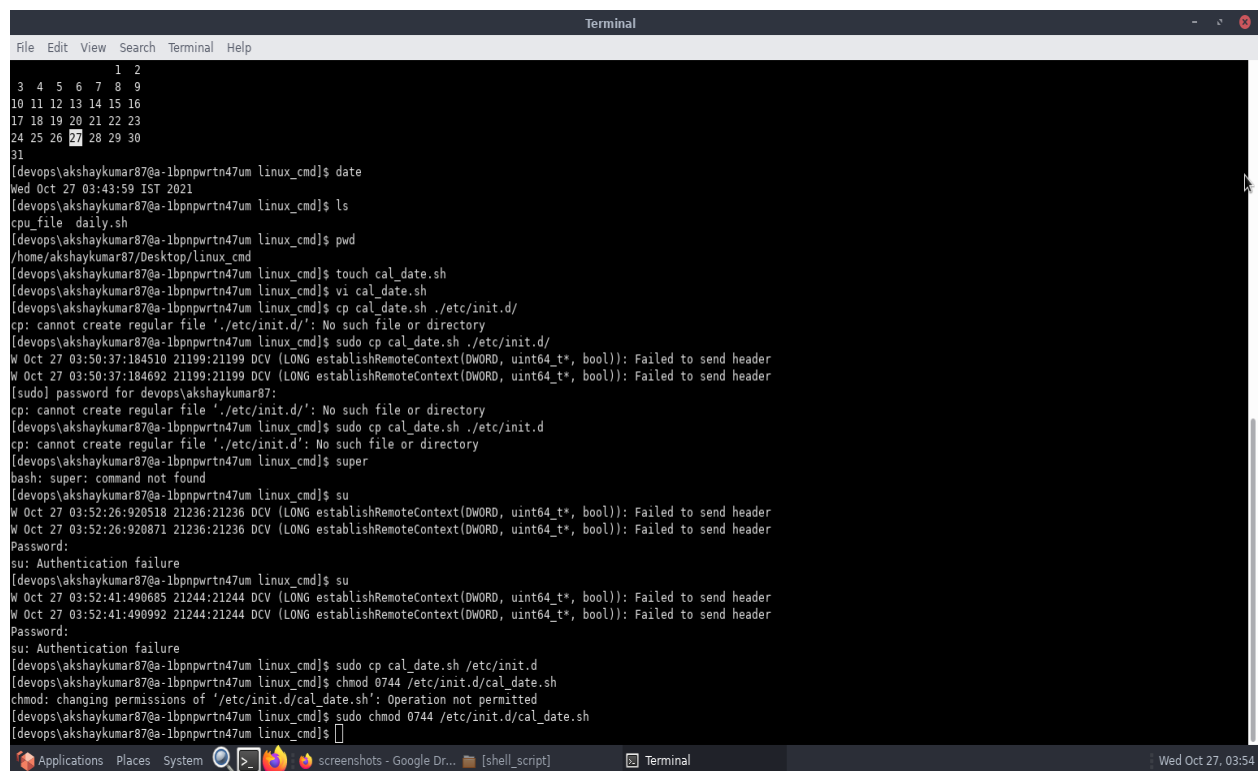
```
55 23 29 2 *myjob.sh
```

## 5. Date and Calendar should print whenever I open the terminal

**Answer:**

For this I added .sh file in the /etc/init.d with the commands for cal and date

Screenshots showing the required output.



```
File Edit View Search Terminal Help
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ date
Wed Oct 27 03:43:59 IST 2021
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ ls
cpu_file  daily.sh
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ pwd
/home/akshaykumar87/Desktop/linux_cmd
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ touch cal_date.sh
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ vi cal_date.sh
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ cp cal_date.sh /etc/init.d/
cp: cannot create regular file '/etc/init.d/': No such file or directory
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo cp cal_date.sh /etc/init.d/
W Oct 27 03:50:37:184510 21199:21199 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 03:50:37:184692 21199:21199 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops\akshaykumar87:
cp: cannot create regular file '/etc/init.d/': No such file or directory
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo cp cal_date.sh /etc/init.d
cp: cannot create regular file '/etc/init.d/': No such file or directory
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ super
bash: super: command not found
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ su
W Oct 27 03:52:26:920518 21236:21236 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 03:52:26:920871 21236:21236 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
Password:
su: Authentication failure
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ su
W Oct 27 03:52:41:490685 21244:21244 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 03:52:41:490992 21244:21244 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
Password:
su: Authentication failure
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo cp cal_date.sh /etc/init.d
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ chmod 0744 /etc/init.d/cal_date.sh
chmod: changing permissions of '/etc/init.d/cal_date.sh': Operation not permitted
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo chmod 0744 /etc/init.d/cal_date.sh
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$
```

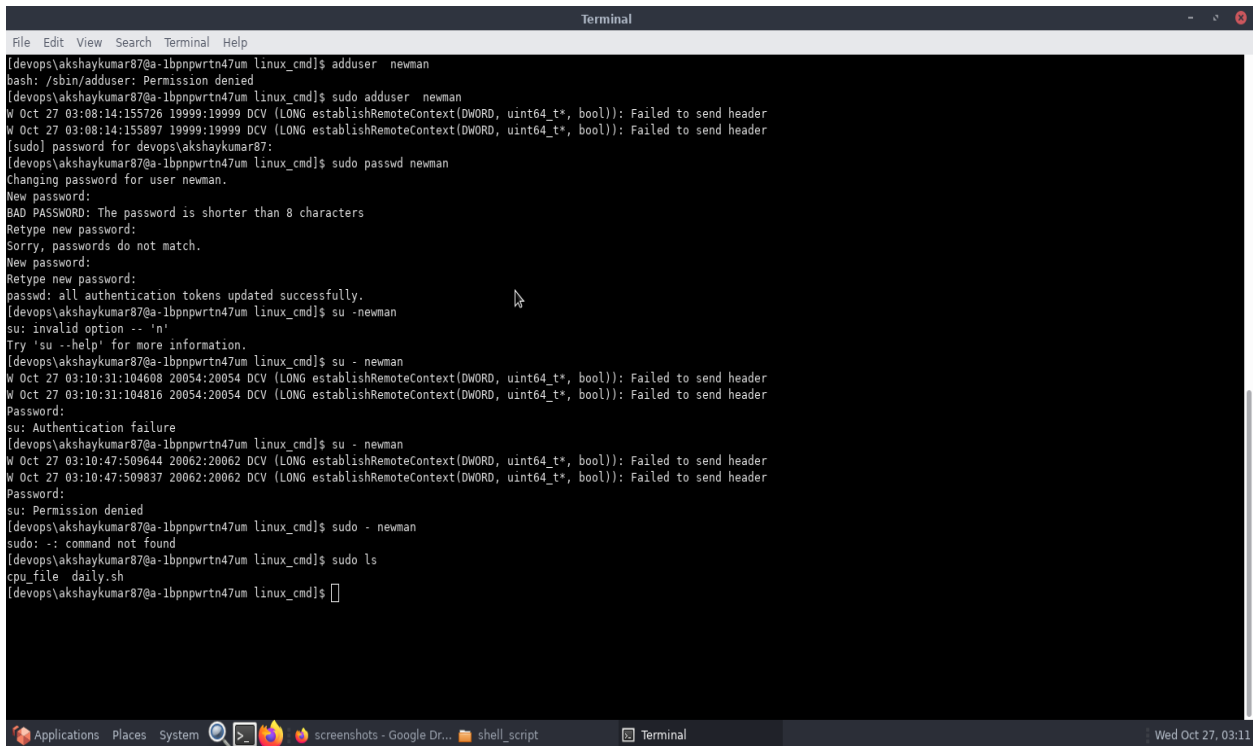
Showing the date and time when the terminal is opened.

```
Terminal
File Edit View Search Terminal Help
(devops\akshaykumar87@a-lbnpwrtn47um etc)$ ls
acpi          cron.weekly      fuse.conf        idmapd.conf      login.defs       oddjobd.conf     purple          services         trusted-key.key
adjtime       csh.cshrc        gconf            image-id          logrotate.conf   oddjobd.conf.d   python         sestatus.conf    udev
aliases       csh.login         gcrypt           ImageMagick-6     logrotate.d      openldap         rc0.d          sgml             udisks2
aliases.db    dbus-1            geoclue          init.d            lsb-release.d    opensc.conf      rc1.d          shadow           update-motd.d
alsa          dconf             GeoIP.conf       inittab           machine-id        opencsc-x86_64.conf rc2.d          shadow-          UPower
alternatives  default           GeoIP.conf.default inputrc           machine-info      opt              rc3.d          shells           vconsole.conf
amazon        depmod.d          ghostscript      iproute2          magic             PackageKit       rc4.d          skel             vimrc
anacrontab    dhcp             glvnd            issue             mail.rc           pan.d            rc5.d          ssh             virc
asound.conf   DIR_COLORS        gnupg            issue.net         man_db.conf       pam.d            rc6.d          ssl             wgetrc
at.deny       DIR_COLORS.256color GREP_COLORS      java              mate-settings-daemon pan_pkcs11      rc.d            statetab        X11
audisp        DIR_COLORS.lightbgcolor groff            jvm               maven             papersize        rc.local        statetab.d      xdg
audit         dleyna-server-service.conf group            krb5.conf         krb5.conf.1635069039 modules-load.d   request-key.conf subuid          xinetd.d
bash_completion.d docker            grub2.cfg        krb5.conf.d       motd              modprobe.d      request-key.d   sudo.conf       xal
bashrc        docker-runtimes.d grub2-efi.cfg    krb5.conf.pre-join mtab              networkd         request-key.d   sudoers         xrdp
bzftmt.d      dracut.conf       grub.d           krb5.keytab       multipath         nfs.conf         resolv.conf     sudo-ldap.conf yum.conf
chkconfig.d   dracut.conf.d     gshadow          ld.so.cache       my.cnf            nftables         rsyncd.conf    sysconfig       yum.repos.d
chrony.conf   e2fsck.conf       gshadow-         ld.so.conf        my.cnf.d          nfs.conf         rsyslog.conf   sysctl.conf     zlogin
chrony.keys   egl               gss              ld.so.conf.d      netconfig         nfs.mount.conf   rsyslog.d      sysctl.d        zlogout
cloud         environment       gssproxy         ld.so.conf.d      NetworkManager   nfs.mount.conf   systemd        systemd         zprofile
cni           ethertypes        highlight        libaudit.conf     libblockdev       nsswitch.conf    rpm            systemd         zshenv
containerd    exports           host.conf        libpaper.d        libuser.conf      nsswitch.conf    pki            system-lsb      zshrc
cron.d        fileystems        hostname         libblockdev       libuser.conf      nsswitch.conf    pm             samba           system-release
cron.daily    firefox           hosts            libblockdev       libuser.conf      nsswitch.conf    pm             samba           system-release-cpe
cron.deny     flatpak           hosts.allow      localtime          locale.conf       oddjob           polkit-1       sasl2           tcscd.conf
cron.hourly   fonts             hosts.deny       localtime          locale.conf       oddjob           polkit-1       sasl2           terminfo
cron.monthly  fstab             hosts.orig       localtime          locale.conf       oddjob           polkit-1       sasl2           terminfo
crontab       fstab             hosts.orig       localtime          locale.conf       oddjob           polkit-1       sasl2           terminfo
/devops\akshaykumar87@a-lbnpwrtn47um etc)$ cd init.d
/devops\akshaykumar87@a-lbnpwrtn47um init.d)$ ls
cal_date.sh functions netconsole network README
/devops\akshaykumar87@a-lbnpwrtn47um init.d)$ sudo ./cal_date.sh
bash: ./cal_date.sh: Permission denied
/devops\akshaykumar87@a-lbnpwrtn47um init.d)$ sudo ./cal_date.sh
W Oct 27 03:56:42:417307 21439:21439 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 03:56:42:417485 21439:21439 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops\akshaykumar87:
October 2021 Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Wed Oct 27 03:56:50 IST 2021
/devops\akshaykumar87@a-lbnpwrtn47um init.d)$
```

## 6. Create a User, and give it sudo privileges. But remove the power of rm.

Answer:

In support of this providing the screenshot:



```
Terminal
File Edit View Search Terminal Help
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ adduser newman
bash: /sbin/adduser: Permission denied
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo adduser newman
W Oct 27 03:08:14:155726 19999:19999 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 03:08:14:155897 19999:19999 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops\akshaykumar87:
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo passwd newman
Changing password for user newman.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
Sorry, passwords do not match.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ su -newman
su: invalid option -- 'n'
Try 'su --help' for more information.
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ su - newman
W Oct 27 03:10:31:104608 20054:20054 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 03:10:31:104816 20054:20054 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
Password:
su: Authentication failure
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ su - newman
W Oct 27 03:10:47:509644 20062:20062 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 03:10:47:509837 20062:20062 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
Password:
su: Permission denied
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo - newman
sudo: -: command not found
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo ls
cpu_file daily.sh
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$
```



**7. Change the default port number for RDP to 8339 and document on the same.**

**Answer:**

**Following are the steps for the above:**

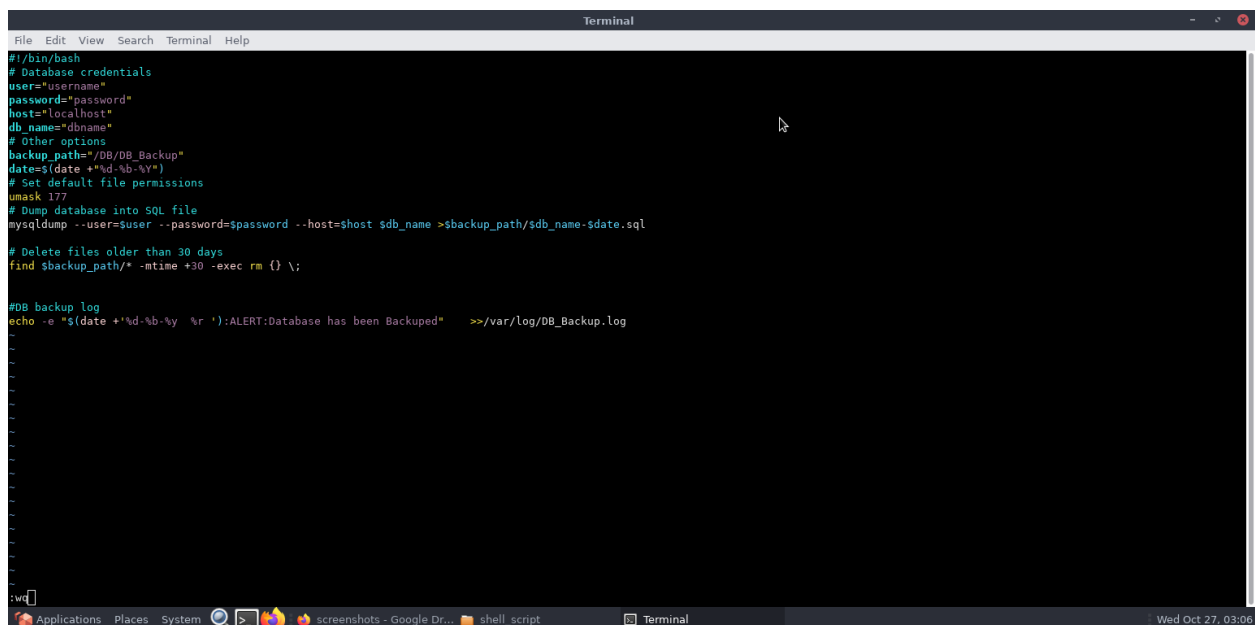
- a) Open Gnome Configuration Editor - gconf-editor (can use ALT-F2 for quick access.**
- b) Open Folder Desktop.**
- c) Open Folder Gnome.**
- d) Open Folder remote\_access.**
- e) In right hand pane.**
- f) Right Click on alternative\_port and click on edit key.**
- g) Enter 8339 port number.**
- h) Click OK.**

8. Create a script to take regular backup of the database(MySql & Postgres), say every day at 11PM

Answer:

For its execution made a .sh file where the backup will be done.

Here providing the screenshot:



```
Terminal
File Edit View Search Terminal Help
#!/bin/bash
# Database credentials
user="username"
password="password"
host="localhost"
db_name="dbname"
# Other options
backup_path="/DB/DB_Backup"
date=$(date +%d-%b-%Y)
# Set default file permissions
umask 177
# Dump database into SQL file
mysqldump --user=$user --password=$password --host=$host $db_name >$backup_path/$db_name-$date.sql
# Delete files older than 30 days
find $backup_path/* -mtime +30 -exec rm {} \;

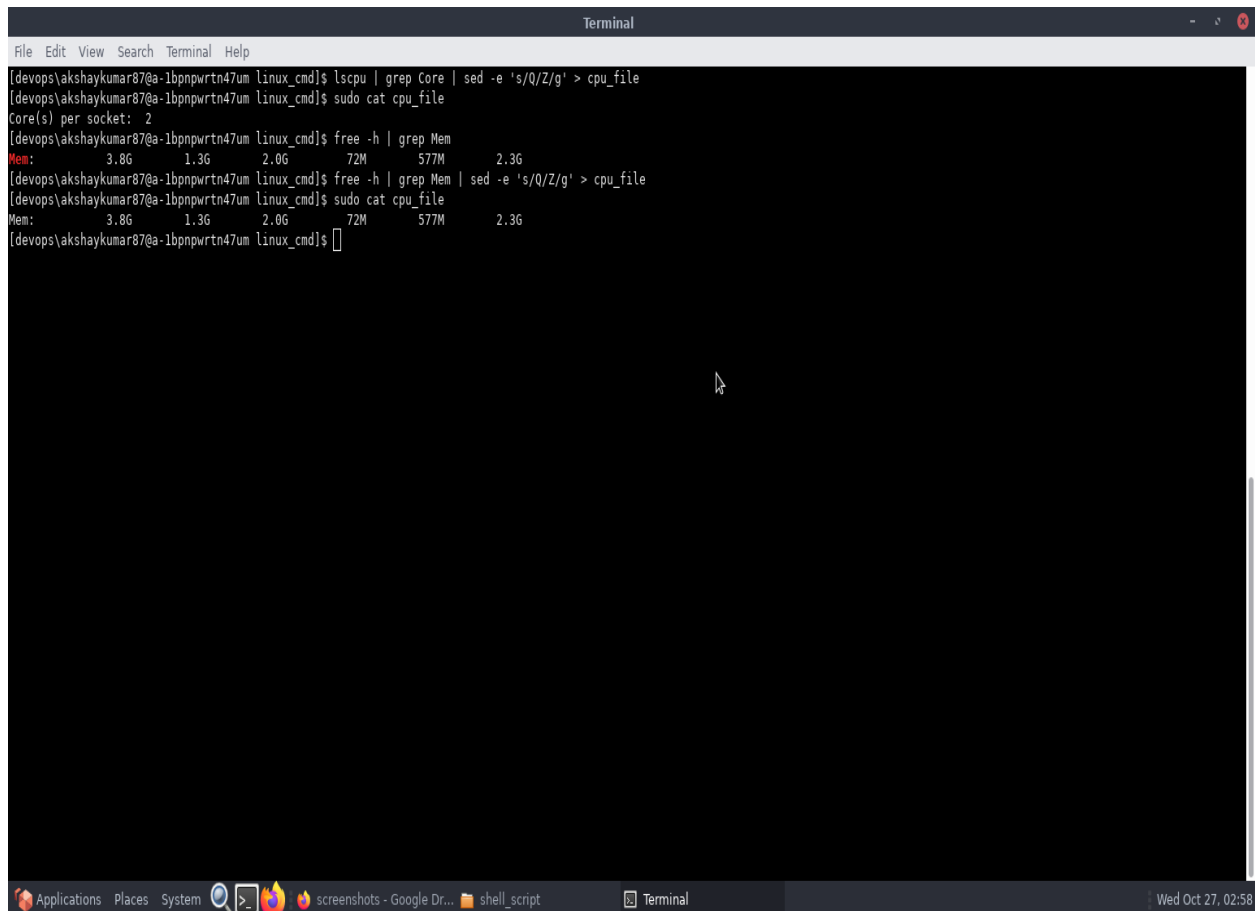
#DB backup log
echo -e "$(date +%d-%b-%y %r ):ALERT:Database has been Backuped" >>/var/log/DB_Backup.Log
```

9. Create a file that contains memory usage and the number of cpu in linux using the sed command.

**Answer:**

**Created a file for storing the details of memory use and number of cpu.**

**Here the picture showing the above:**



```
Terminal
File Edit View Search Terminal Help
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ lscpu | grep Core | sed -e 's/Q/Z/g' > cpu_file
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo cat cpu_file
Core(s) per socket: 2
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ free -h | grep Mem
Mem: 3.8G 1.3G 2.0G 72M 577M 2.3G
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ free -h | grep Mem | sed -e 's/Q/Z/g' > cpu_file
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo cat cpu_file
Mem: 3.8G 1.3G 2.0G 72M 577M 2.3G
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$
```

The screenshot shows a terminal window with the following commands and output:

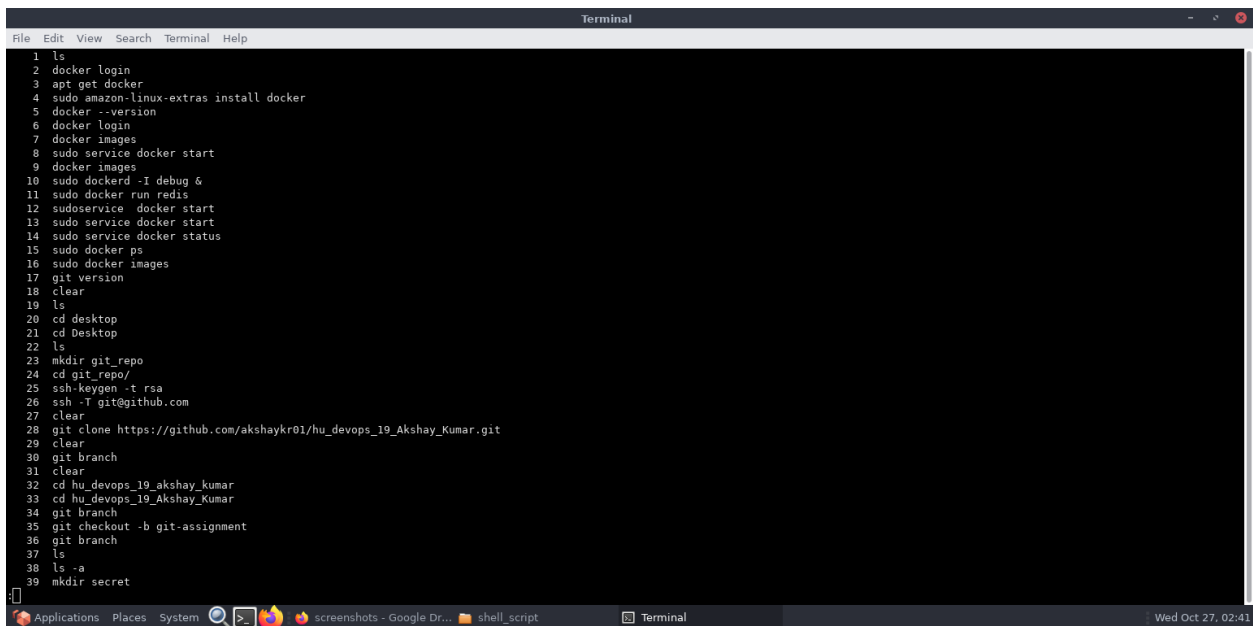
- `lscpu | grep Core | sed -e 's/Q/Z/g' > cpu_file`: This command extracts the number of cores per socket from the `lscpu` output and saves it to `cpu_file`.
- `sudo cat cpu_file`: This command displays the contents of `cpu_file`, which is `Core(s) per socket: 2`.
- `free -h | grep Mem`: This command displays the memory usage in human-readable format, showing `Mem: 3.8G 1.3G 2.0G 72M 577M 2.3G`.
- `free -h | grep Mem | sed -e 's/Q/Z/g' > cpu_file`: This command extracts the memory usage details from the `free` output and saves it to `cpu_file`.
- `sudo cat cpu_file`: This command displays the updated contents of `cpu_file`, which now includes both the core count and memory usage details: `Mem: 3.8G 1.3G 2.0G 72M 577M 2.3G`.

## 10. Find a file with all command line history and Delete the Complete Command line History.

**Answer:**

The required file is `.bash_history`.

Commands for finding and clearing it can be easily seen in the screenshot below:



```
1 ls
2 docker login
3 apt-get docker
4 sudo amazon-linux-extras install docker
5 docker --version
6 docker login
7 docker images
8 sudo service docker start
9 docker images
10 sudo dockerd -l debug &
11 sudo docker run redis
12 sudo service docker start
13 sudo service docker status
14 sudo docker ps
15 sudo docker images
16 git version
17 clear
18 ls
19 cd desktop
20 cd Desktop
21 ls
22 mkdir git_repo
23 cd git_repo/
24 ssh-keygen -t rsa
25 ssh -T git@github.com
26 clear
27 git clone https://github.com/akshaykr01/hu_devops_19_Akshay_Kumar.git
28 clear
29 git branch
30 clear
31 cd hu_devops_19_akshay_kumar
32 cd hu_devops_19_Akshay_Kumar
33 git branch
34 git checkout -b git-assignment
35 git branch
36 ls
37 ls -a
38 mkdir secret
```

```
Terminal
File Edit View Search Terminal Help
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ ls -a | grep .bash_history
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ sudo ls -a | grep .bash_history
W Oct 27 02:40:22:250960 19093:19093 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 02:40:22:251117 19093:19093 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops\akshaykumar87:
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ sudo ls -a | grep .bash_history
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ history | less
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ sudo ls -a . . . .bash_history
ls: cannot access .bash_history: No such file or directory
.:
.:
..
.:
.:
doc2_3.png doc_5_3.png git_1_1.png git_5_1.png git_7_2.png lib_1_4.png lin_3.png linux_10_1.png linux_14.png shell_4.png shell.png
doc_3_1.png doc_5_4.png git_2_1.png git_5_2.png git_7_3.png lib_2.png lin_4.png linux_11.png linux_cmd shell_5.png shell_script
doc1_1.png doc_3_2.png doc_5_5.png git_2_2.png git_5_4.png git_8.png lin_1_2.png lin_5.png linux_12_1.png shell_1.png shell_6.png
doc_2_1.png doc_4_1.png Docker_proj git_3_1.png git_6_1.png git_9_1.png lin_1_5.png lin_6.png linux_12_2.png shell_2.png shell_8.png
doc2_2.png doc_5_2.png git_10_1.png git_4_1.png git_7_1.png hu_devops_19_akshay_kumar lin_1.png lin_cmd linux_13.png shell_3.png shell_9.png
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$
```

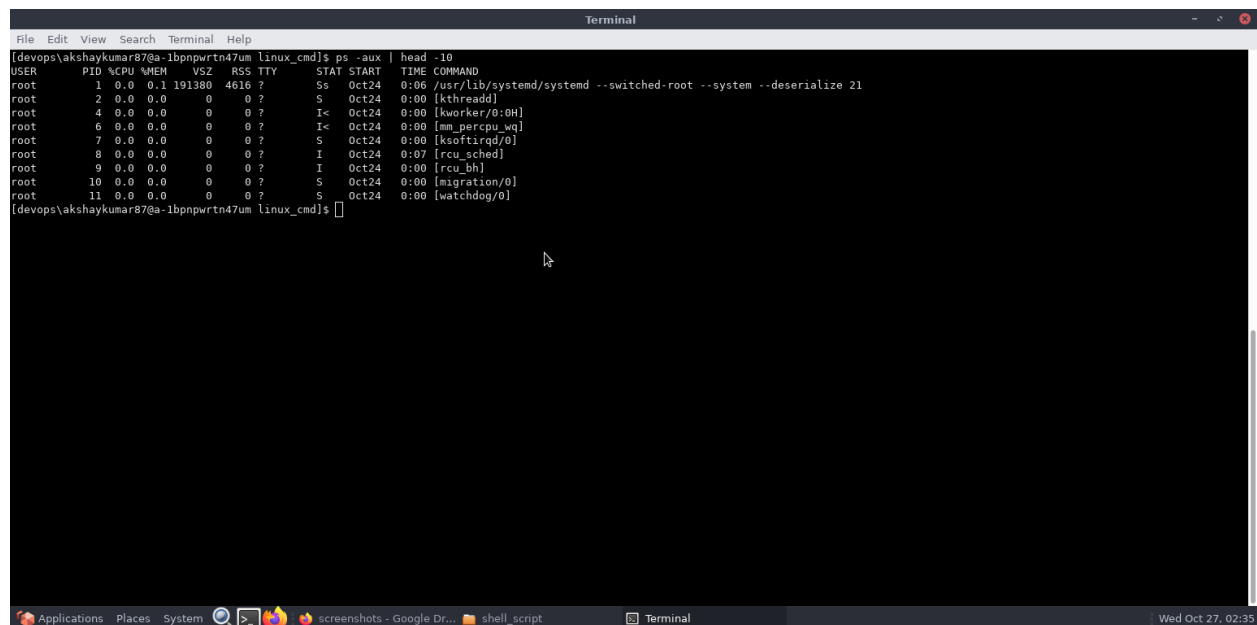
```
Terminal
File Edit View Search Terminal Help
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ ls -a | grep .bash_history
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ sudo ls -a | grep .bash_history
W Oct 27 02:40:22:250960 19093:19093 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 02:40:22:251117 19093:19093 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops\akshaykumar87:
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ sudo ls -a | grep .bash_history
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ history | less
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ sudo ls -a . . . .bash_history
ls: cannot access .bash_history: No such file or directory
.:
.:
..
.:
.:
doc2_3.png doc_5_3.png git_1_1.png git_5_1.png git_7_2.png lib_1_4.png lin_3.png linux_10_1.png linux_14.png shell_4.png shell.png
doc_3_1.png doc_5_4.png git_2_1.png git_5_2.png git_7_3.png lib_2.png lin_4.png linux_11.png linux_cmd shell_5.png shell_script
doc1_1.png doc_3_2.png doc_5_5.png git_2_2.png git_5_4.png git_8.png lin_1_2.png lin_5.png linux_12_1.png shell_1.png shell_6.png
doc_2_1.png doc_4_1.png Docker_proj git_3_1.png git_6_1.png git_9_1.png lin_1_5.png lin_6.png linux_12_2.png shell_2.png shell_8.png
doc2_2.png doc_5_2.png git_10_1.png git_4_1.png git_7_1.png hu_devops_19_akshay_kumar lin_1.png lin_cmd linux_13.png shell_3.png shell_9.png
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ sudo rm .bash_history
rm: cannot remove '.bash_history': No such file or directory
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ suod history -c
bash: suod: command not found
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ sudo history -c
sudo: history: command not found
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ history -c
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$ cat /dev/null > ~/.bash_history && history -c
[devops\akshaykumar87@-1bpnpwrtn47um linux_cmd]$
```

11. Detecting which process has the highest priority in the system. Now find out what its purpose is.

Answer:

For this the executable command is: `ps -aux | head -10`

Easily seen below:



```
File Edit View Search Terminal Help
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ ps -aux | head -10
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.1 191380 4616 ?        Ss   Oct24   0:06 /usr/lib/systemd/systemd --switched-root --system --deserialize 21
root         2  0.0  0.0      0     0 ?        S    Oct24   0:00 [kthreadd]
root         4  0.0  0.0      0     0 ?        I<   Oct24   0:00 [kworker/0:0H]
root         6  0.0  0.0      0     0 ?        I<   Oct24   0:00 [mm_percpu_wq]
root         7  0.0  0.0      0     0 ?        S    Oct24   0:00 [ksoftirqd/0]
root         8  0.0  0.0      0     0 ?        I    Oct24   0:07 [rcu_sched]
root         9  0.0  0.0      0     0 ?        I    Oct24   0:00 [rcu_bh]
root        10  0.0  0.0      0     0 ?        S    Oct24   0:00 [migration/0]
root        11  0.0  0.0      0     0 ?        S    Oct24   0:00 [watchdog/0]
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$
```

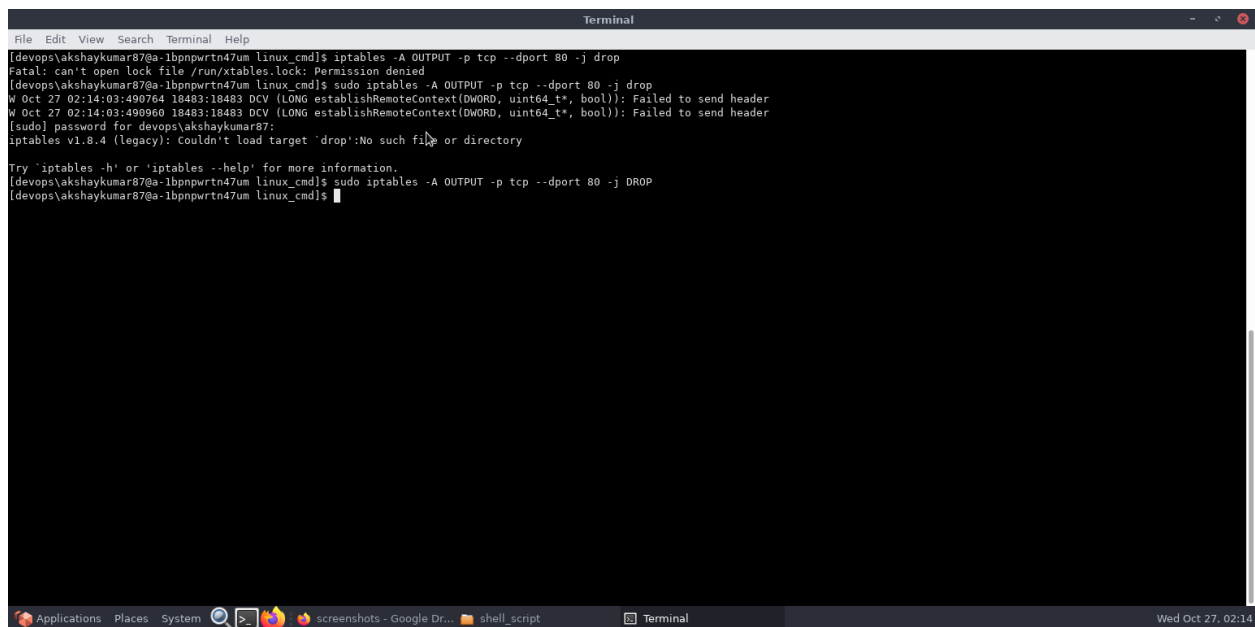
**12. Perform the below tasks on the firewall using iptables:**

- a. Block outgoing connections on port 80**
- b. Allow incoming connections on port 3306**
- c. Allow both incoming and connections on port 80, 443 and 22**
- d. Block Facebook on Iptable firewall**

**Answer:**

All are summarized in using 2 screenshots. In the first one it is doing the dropping part using iptables.

**Commands shown:**



```
Terminal
File Edit View Search Terminal Help
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ iptables -A OUTPUT -p tcp --dport 80 -j drop
Fatal: can't open lock file /run/xtables.lock: Permission denied
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo iptables -A OUTPUT -p tcp --dport 80 -j drop
W Oct 27 02:14:03:490764 18483:18483 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops\akshaykumar87:
iptables v1.8.4 (legacy): Couldn't load target 'drop':No such file or directory
Try 'iptables -h' or 'iptables --help' for more information.
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$ sudo iptables -A OUTPUT -p tcp --dport 80 -j DROP
[devops\akshaykumar87@a-1bpnpwrtn47um linux_cmd]$
```

Here showing the Redirection part and showing the iptables for the details.

```
Terminal
File Edit View Search Terminal Help
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo iptables -A OUTPUT -p tcp --dport 80 -j DROP
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo iptables -A INPUT -p tcp --dport 3306 -j ACCEPT
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo iptables -A PREROUTING -t nat -p tcp --dport 443 22 -m comment --comment "# A repo #" -j REDIRECT --to-port 80
W Oct 27 02:26:32:312794 18748:18748 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 02:26:32:312952 18748:18748 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops\akshaykumar87:
Bad argument 'tcp'
Try 'iptables -h' or 'iptables --help' for more information.
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo iptables -A PREROUTING -t nat -i eth0 -p tcp --dport 443 22 -m comment --comment "# A repo #" -j REDIRECT --to-port 80
Bad argument '22'
Try 'iptables -h' or 'iptables --help' for more information.
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo iptables -A PREROUTING -t nat -i eth0 -p tcp --dport 443 -m comment --comment "# A repo #" -j REDIRECT --to-port 80
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo iptables -A PREROUTING -t nat -i eth0 -p tcp --dport 22 -m comment --comment "# A repo #" -j REDIRECT --to-port 80
[devops\akshaykumar87@a-lbnpwrtn47um linux_cmd]$ sudo iptables -L -n
Chain INPUT (policy ACCEPT)
target prot opt source destination
ACCEPT tcp -- 0.0.0.0/0 0.0.0.0/0 tcp dpt:3306

Chain FORWARD (policy DROP)
target prot opt source destination
DOCKER-USER all -- 0.0.0.0/0 0.0.0.0/0
DOCKER-ISOLATION-STAGE-1 all -- 0.0.0.0/0 0.0.0.0/0
ACCEPT all -- 0.0.0.0/0 0.0.0.0/0 ctstate RELATED,ESTABLISHED
DOCKER all -- 0.0.0.0/0 0.0.0.0/0
ACCEPT all -- 0.0.0.0/0 0.0.0.0/0
ACCEPT all -- 0.0.0.0/0 0.0.0.0/0
ACCEPT all -- 0.0.0.0/0 0.0.0.0/0 ctstate RELATED,ESTABLISHED
DOCKER all -- 0.0.0.0/0 0.0.0.0/0
ACCEPT all -- 0.0.0.0/0 0.0.0.0/0
ACCEPT all -- 0.0.0.0/0 0.0.0.0/0

Chain OUTPUT (policy ACCEPT)
target prot opt source destination
DROP tcp -- 0.0.0.0/0 0.0.0.0/0 tcp dpt:80
DROP tcp -- 0.0.0.0/0 0.0.0.0/0 tcp dpt:80

Chain DOCKER (2 references)
target prot opt source destination
ACCEPT tcp -- 0.0.0.0/0 172.17.0.2 tcp dpt:99
```

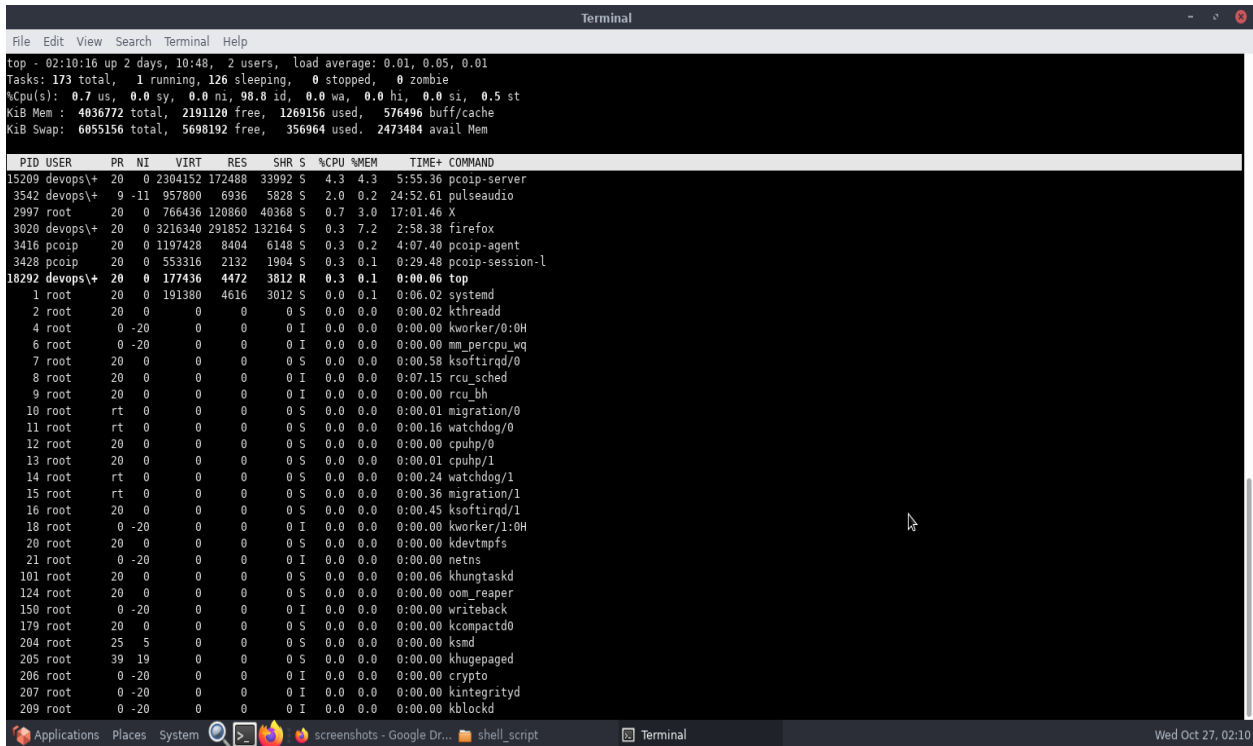


### 13. Get Tasks, Threads, Running Processes, Load Average and Uptime using htop command.

Answer:

This can be done using htop command.

Showing using the screenshots:



```
top - 02:10:16 up 2 days, 10:48, 2 users, load average: 0.01, 0.05, 0.01
Tasks: 173 total, 1 running, 126 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.7 us, 0.0 sy, 0.0 ni, 98.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.5 st
KiB Mem : 4836772 total, 2191120 free, 1269156 used, 576496 buff/cache
KiB Swap: 6855156 total, 5698192 free, 356964 used, 2473484 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM    TIME+  COMMAND
15209 devops+  20   0 2304152 172488 33992 S   4.3   4.3   5:55.36 pcoop-server
3542  devops+  9  -11  957800   6936   5828 S   2.0   0.2  24:52.61 pulseaudio
2997  root     20   0  766436 120860 40368 S   0.7   3.0  17:01.46 X
3020  devops+  20   0 3216340 291852 132164 S   0.3   7.2  2:58.38 firefox
3416  pcoop    20   0 1197428   8404   6148 S   0.3   0.2   4:07.40 pcoop-agent
3428  pcoop    20   0  553316   2132   1904 S   0.3   0.1   0:29.48 pcoop-session-l
18292 devops+  20   0 177436  4472  3812 R   0.3   0.1   0:00.06 top
  1 root     20   0  191380   4616   3012 S   0.0   0.1   0:06.02 systemd
  2 root     20   0      0      0      0 S   0.0   0.0   0:00.02 kthreadd
  4 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H
  6 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
  7 root     20   0      0      0      0 S   0.0   0.0   0:00.58 ksoftirqd/0
  8 root     20   0      0      0      0 I   0.0   0.0   0:07.15 rcu_sched
  9 root     20   0      0      0      0 I   0.0   0.0   0:00.00 rcu_bh
 10 root     rt    0      0      0      0 S   0.0   0.0   0:00.01 migration/0
 11 root     rt    0      0      0      0 S   0.0   0.0   0:00.16 watchdog/0
 12 root     20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
 13 root     20   0      0      0      0 S   0.0   0.0   0:00.01 cpuhp/1
 14 root     rt    0      0      0      0 S   0.0   0.0   0:00.24 watchdog/1
 15 root     rt    0      0      0      0 S   0.0   0.0   0:00.36 migration/1
 16 root     20   0      0      0      0 S   0.0   0.0   0:00.45 ksoftirqd/1
 18 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/1:0H
 20 root     20   0      0      0      0 S   0.0   0.0   0:00.00 kdevtmpfs
 21 root     0 -20      0      0      0 I   0.0   0.0   0:00.00 netns
101  root     20   0      0      0      0 S   0.0   0.0   0:00.06 khungtaskd
124  root     20   0      0      0      0 S   0.0   0.0   0:00.00 oom_reaper
150  root     0 -20      0      0      0 I   0.0   0.0   0:00.00 writeback
179  root     20   0      0      0      0 S   0.0   0.0   0:00.00 kcompactd0
204  root     25   5      0      0      0 S   0.0   0.0   0:00.00 ksm
205  root     39  19      0      0      0 S   0.0   0.0   0:00.00 khugepaged
206  root     0 -20      0      0      0 I   0.0   0.0   0:00.00 crypto
207  root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kintegrityd
209  root     0 -20      0      0      0 I   0.0   0.0   0:00.00 kblockd
```

14. Using netstat command, perform the below operations
- To display all the active list of listening port connections.
  - To display only the active listening TCP ports.
  - Netstat command in Linux will help to display all the active UNIX port connections.

Answer:

Following are the commands used for the above:

Netstat -tnlp

```
[devops@akshaykumar87@-ibpnprtn47um ~]$ cd Desktop
[devops@akshaykumar87@-ibpnprtn47um Desktop]$ ls
doc1.1.png  doc3.1.png  doc5.3.png  git10.1.png  git3.1.png  git5.4.png  git7.3.png  lib1.4.png  lin1.png  lin6.png  shell2.png  shell6.png  shell_script
doc2.1.png  doc3.2.png  doc5.4.png  git11.1.png  git4.1.png  git6.1.png  git8.png    lib2.png   lin3.png  lin_cmd  shell3.png  shell8.png
doc2.2.png  doc4.1.png  doc5.5.png  git2.1.png  git5.1.png  git7.1.png  git9.1.png  lin1.2.png  lin4.png  linux_cmd  shell4.png  shell9.png
doc2.3.png  doc5.2.png  Docker_proj  git2.2.png  git5.2.png  git7.2.png  hu_devops_19_akshay_kumar  lin1.5.png  lin5.png  shell1.png  shell5.png  shell.png
[devops@akshaykumar87@-ibpnprtn47um Desktop]$ cd linux_cmd
[devops@akshaykumar87@-ibpnprtn47um linux_cmd]$ ls
[devops@akshaykumar87@-ibpnprtn47um linux_cmd]$ sudo netstat -tnlp
W Oct 27 02:05:41:039273 18150:18150 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
W Oct 27 02:05:41:039443 18150:18150 DCV (LONG establishRemoteContext(DWORD, uint64_t*, bool)): Failed to send header
[sudo] password for devops@akshaykumar87:
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 198.19.64.131:8200      0.0.0.0:*               LISTEN      4260/skylight
tcp        0      0 0.0.0.0:4172           0.0.0.0:*               LISTEN      3416/pcoip-agent
tcp        0      0 0.0.0.0:9999           0.0.0.0:*               LISTEN      2720/wsp.control.se
tcp        0      0 0.0.0.0:1111           0.0.0.0:*               LISTEN      2719/rpcbnd
tcp        0      0 0.0.0.0:8080           0.0.0.0:*               LISTEN      25307/docker-proxy
tcp        0      0 0.0.0.0:22             0.0.0.0:*               LISTEN      4266/sshd
tcp        0      0 127.0.0.1:25           0.0.0.0:*               LISTEN      3532/master
tcp        0      0 0.0.0.0:443            0.0.0.0:*               LISTEN      3416/pcoip-agent
tcp        0      0 0.0.0.0:60443          0.0.0.0:*               LISTEN      3416/pcoip-agent
tcp        0      0 0.0.0.0:8221           0.0.0.0:*               LISTEN      2720/wsp.control.se
tcp        0      0 127.0.0.1:33439        0.0.0.0:*               LISTEN      6761/containerd
tcp6       0      0 :::1111                :::*                    LISTEN      2719/rpcbnd
tcp6       0      0 :::8080                 :::*                    LISTEN      25307/docker-proxy
tcp6       0      0 :::22                   :::*                    LISTEN      4266/sshd
[devops@akshaykumar87@-ibpnprtn47um linux_cmd]$
```

THANK YOU!