

## Lab 6 – Linux Processes and Services Systems Administration

### Instructions

The web development team is having trouble working with some of the services that you have previously installed on their server.

Check to make sure the following services are started and enabled on the system:

Samba (There are two services, smb and nmb)

Apache (The service name is httpd)

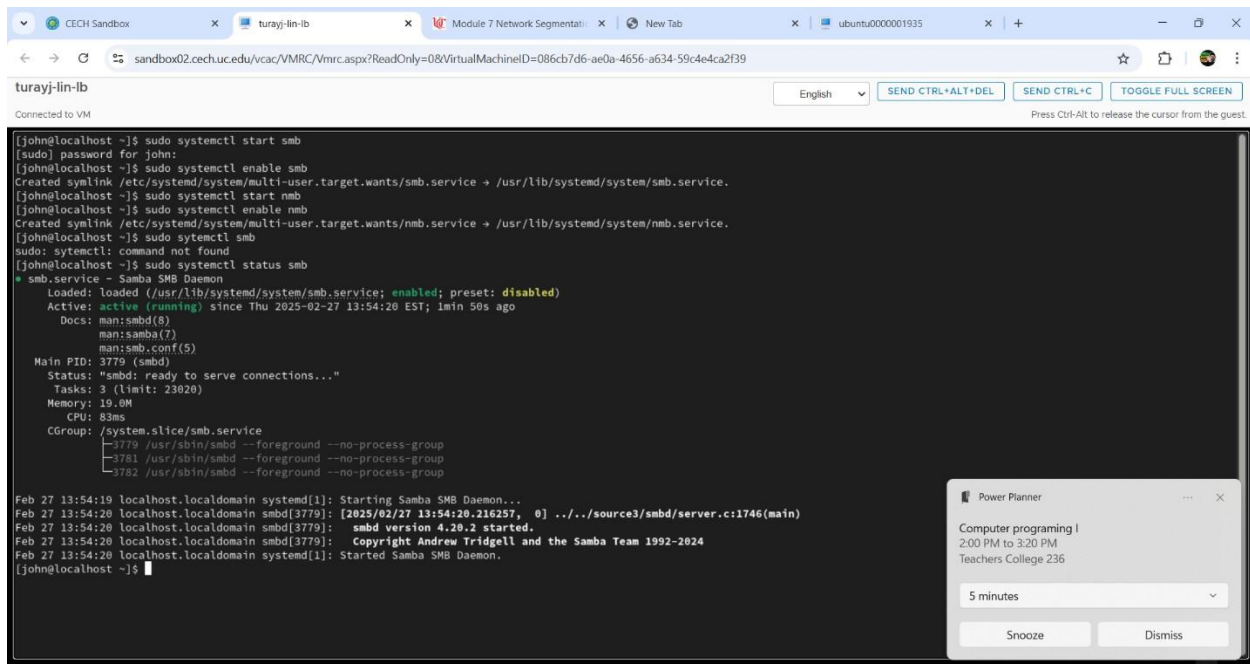
SSH (The service name is sshd)

They would also like to monitor the CPU usage on the system. They request that you create a log file that displays the all running processes sorted by CPU usage. They would like this log to record this data every weekday at noon. Please be sure to include timestamps in the log file.

### Screenshots

Paste the required screen shots under each description.

1. Paste a screen shot showing the status of each of requested services (4 total)
  - a. Smb



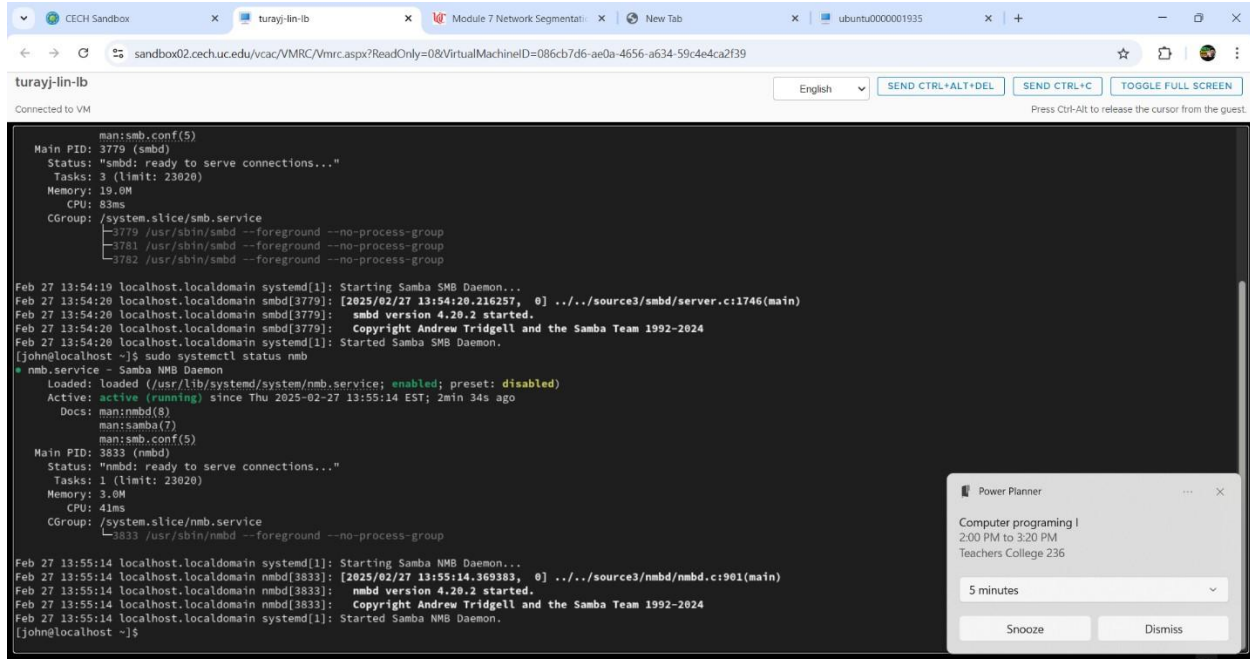
The screenshot shows a terminal window titled "turayji-lin-lb" connected to a VM. The user runs the command `sudo systemctl start smb`, followed by `sudo systemctl enable smb`. Then, they run `sudo systemctl start nmb` and `sudo systemctl enable nmb`. Finally, they run `sudo systemctl status smb`, which displays the status of the Samba SMB Daemon service. The service is loaded, active (running), and enabled. It was started on Thu 2025-02-27 13:54:20 EST, 1min 50s ago. The main PID is 3779 (smbd). The status is "smbd: ready to serve connections...". The tasks are 3 (limit: 23020). The memory is 19.0M. The CPU is 83ms. The CGroup is /system.slice/smb.service. The terminal also shows logs for the service starting and running.

```
[john@localhost ~]$ sudo systemctl start smb
[sudo] password for john:
[john@localhost ~]$ sudo systemctl enable smb
Created symlink /etc/systemd/system/multi-user.target.wants/smb.service → /usr/lib/systemd/system/smb.service.
[john@localhost ~]$ sudo systemctl start nmb
[john@localhost ~]$ sudo systemctl enable nmb
Created symlink /etc/systemd/system/multi-user.target.wants/nmb.service → /usr/lib/systemd/system/nmb.service.
[john@localhost ~]$ sudo systemctl status smb
sudo: systemctl: command not found
[john@localhost ~]$ sudo systemctl status smb
* smb.service - Samba SMB Daemon
   Loaded: loaded (/usr/lib/systemd/system/smb.service; enabled; preset: disabled)
   Active: active (running) since Thu 2025-02-27 13:54:20 EST; 1min 50s ago
     Docs: man:smbd(8)
           man:samba(7)
           man:smb.conf(5)
  Main PID: 3779 (smbd)
    Status: "smbd: ready to serve connections..."
     Tasks: 3 (limit: 23020)
    Memory: 19.0M
       CPU: 83ms
    CGroup: /system.slice/smb.service
            └─3779 /usr/sbin/smbd --foreground --no-process-group
              └─3781 /usr/sbin/smbd --foreground --no-process-group
                └─3782 /usr/sbin/smbd --foreground --no-process-group

Feb 27 13:54:19 localhost.localdomain systemd[1]: Starting Samba SMB Daemon...
Feb 27 13:54:20 localhost.localdomain smbd[3779]: [2025/02/27 13:54:20.216257. 0] ../../source3/smbd/server.c:1746(main)
Feb 27 13:54:20 localhost.localdomain smbd[3779]:      smbd version 4.20.2 started.
Feb 27 13:54:20 localhost.localdomain smbd[3779]:      Copyright Andrew Tridgell and the Samba Team 1992-2024
Feb 27 13:54:20 localhost.localdomain systemd[1]: Started Samba SMB Daemon.
[john@localhost ~]$
```

- b. Nmb

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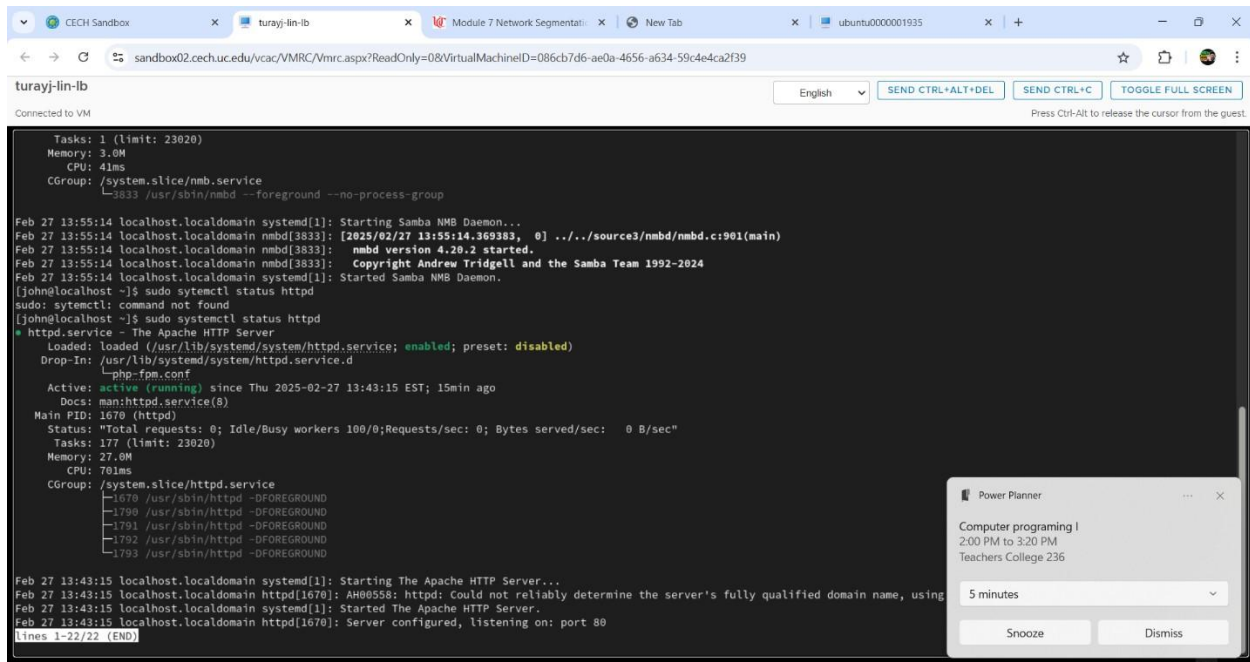


```
man:smb.conf(5)
Main PID: 3779 (smbd)
Status: "smbd: ready to serve connections..."
Tasks: 3 (limit: 23820)
Memory: 19.8M
CPU: 83ms
CGroup: /system.slice/smb.service
├─3779 /usr/sbin/smbd --foreground --no-process-group
├─3781 /usr/sbin/smbd --foreground --no-process-group
└─3782 /usr/sbin/smbd --foreground --no-process-group

Feb 27 13:54:19 localhost.localdomain systemd[1]: Starting Samba SMB Daemon...
Feb 27 13:54:20 localhost.localdomain smbd[3779]: [2025/02/27 13:54:20.216257, 0] ../../source3/smbd/server.c:1746(main)
Feb 27 13:54:20 localhost.localdomain smbd[3779]: smbd version 4.20.2 started.
Feb 27 13:54:20 localhost.localdomain smbd[3779]: Copyright Andrew Tridgell and the Samba Team 1992-2024
Feb 27 13:54:20 localhost.localdomain systemd[1]: Started Samba SMB Daemon.
[john@localhost ~]$ sudo systemctl status nmb
● nmb.service - Samba NMB Daemon
   Loaded: loaded (/usr/lib/systemd/system/nmb.service; enabled; preset: disabled)
   Active: active (running) since Thu 2025-02-27 13:55:14 EST; 2min 34s ago
     Docs: man:nmbd(8)
           man:samba(7)
   Main PID: 3833 (nmbd)
   Status: "nmbd: ready to serve connections..."
     Tasks: 1 (limit: 23820)
    Memory: 3.6M
       CPU: 41ms
    CGroup: /system.slice/nmb.service
            └─3833 /usr/sbin/nmbd --foreground --no-process-group

Feb 27 13:55:14 localhost.localdomain systemd[1]: Starting Samba NMB Daemon...
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: [2025/02/27 13:55:14.369383, 0] ../../source3/nmbd/nmbd.c:901(main)
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: nmbd version 4.20.2 started.
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: Copyright Andrew Tridgell and the Samba Team 1992-2024
Feb 27 13:55:14 localhost.localdomain systemd[1]: Started Samba NMB Daemon.
[john@localhost ~]$
```

### c. Httpd



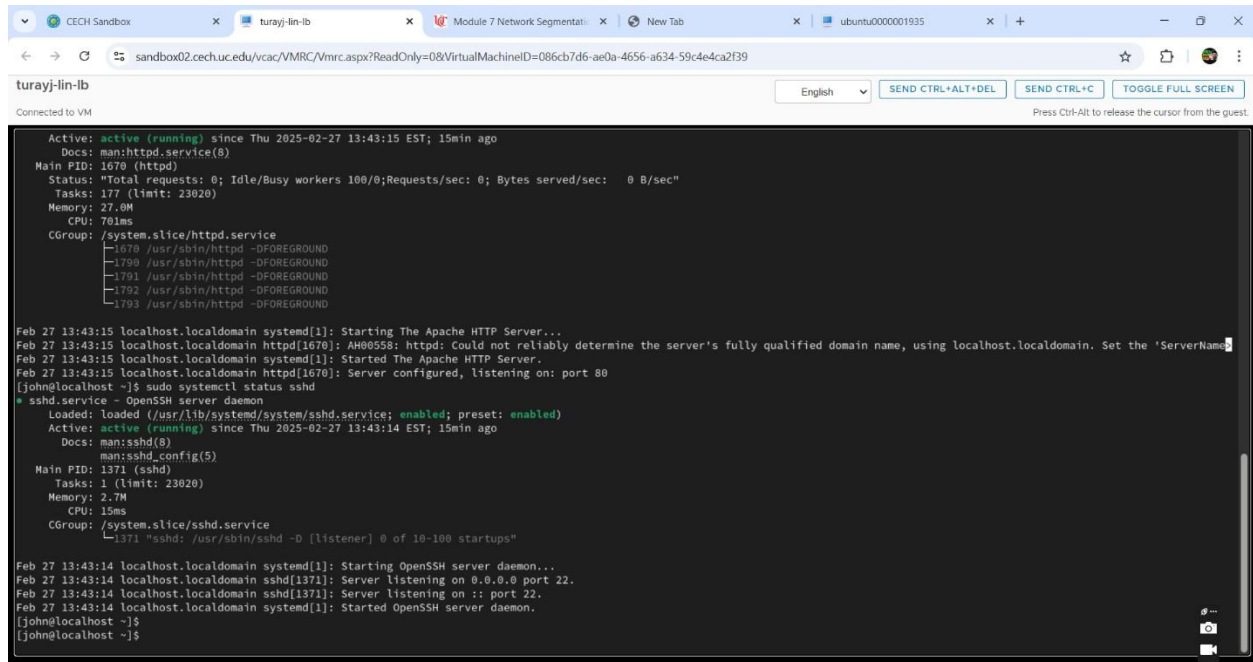
```
Tasks: 1 (limit: 23820)
Memory: 3.6M
CPU: 41ms
CGroup: /system.slice/nmb.service
└─3833 /usr/sbin/nmbd --foreground --no-process-group

Feb 27 13:55:14 localhost.localdomain systemd[1]: Starting Samba NMB Daemon...
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: [2025/02/27 13:55:14.369383, 0] ../../source3/nmbd/nmbd.c:901(main)
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: nmbd version 4.20.2 started.
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: Copyright Andrew Tridgell and the Samba Team 1992-2024
Feb 27 13:55:14 localhost.localdomain systemd[1]: Started Samba NMB Daemon.
[john@localhost ~]$ sudo systemctl status httpd
sudo: systemctl: command not found
[john@localhost ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
   Drop-In: /usr/lib/systemd/system/httpd.service.d
            └─php-fpm.conf
   Active: active (running) since Thu 2025-02-27 13:43:15 EST; 15min ago
     Docs: man:httpd.service(8)
   Main PID: 1670 (httpd)
   Status: "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes served/sec: 0 B/sec"
     Tasks: 177 (limit: 23820)
    Memory: 27.8M
       CPU: 701ms
    CGroup: /system.slice/httpd.service
            └─1670 /usr/sbin/httpd -DFOREGROUND
              └─1799 /usr/sbin/httpd -DFOREGROUND
                └─1791 /usr/sbin/httpd -DFOREGROUND
                  └─1792 /usr/sbin/httpd -DFOREGROUND
                    └─1793 /usr/sbin/httpd -DFOREGROUND

Feb 27 13:43:15 localhost.localdomain systemd[1]: Starting The Apache HTTP Server...
Feb 27 13:43:15 localhost.localdomain httpd[1670]: AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using
Feb 27 13:43:15 localhost.localdomain systemd[1]: Started The Apache HTTP Server.
Feb 27 13:43:15 localhost.localdomain httpd[1670]: Server configured, listening on: port 80
lines 1-22/22 (END)
```

### d. Sshd

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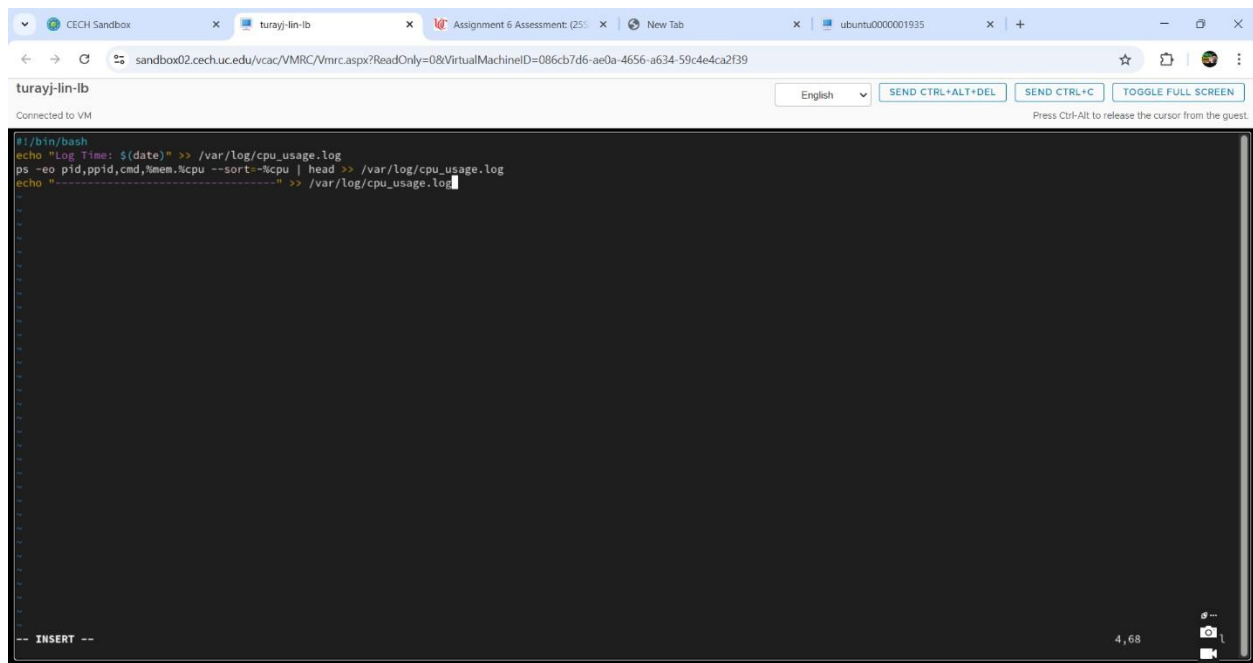
The screenshot shows a terminal window titled "turayj-lin-lb" connected to a VM. The terminal displays the output of the command `systemctl status httpd` and `systemctl status sshd`. The `httpd.service` is shown as active (running) since Thu 2025-02-27 13:43:15 EST; 15min ago. The `sshd.service` is also shown as active (running) since Thu 2025-02-27 13:43:14 EST; 15min ago. The terminal also shows the output of `systemctl status sshd` and `systemctl status httpd` for the `sshd` service.

```
Active: active (running) since Thu 2025-02-27 13:43:15 EST; 15min ago
Docs: man:httpd.service(8)
Main PID: 1670 (httpd)
Status: "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes served/sec: 0 B/sec"
Tasks: 177 (limit: 23020)
Memory: 27.0M
CPU: 701ms
CGroup: /system.slice/httpd.service
├─1670 /usr/sbin/httpd -DFOREGROUND
├─1700 /usr/sbin/httpd -DFOREGROUND
├─1701 /usr/sbin/httpd -DFOREGROUND
├─1702 /usr/sbin/httpd -DFOREGROUND
└─1703 /usr/sbin/httpd -DFOREGROUND

Feb 27 13:43:15 localhost.localdomain systemd[1]: Starting The Apache HTTP Server...
Feb 27 13:43:15 localhost.localdomain httpd[1670]: AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using localhost.localdomain. Set the 'ServerName'
Feb 27 13:43:15 localhost.localdomain systemd[1]: Started The Apache HTTP Server.
Feb 27 13:43:15 localhost.localdomain httpd[1670]: Server configured, listening on: port 80
[john@localhost ~]$ sudo systemctl status sshd
* sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-02-27 13:43:14 EST; 15min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
   Main PID: 1371 (sshd)
     Tasks: 1 (limit: 23020)
    Memory: 2.7M
       CPU: 15ms
    CGroup: /system.slice/sshd.service
           └─1371 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Feb 27 13:43:14 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Feb 27 13:43:14 localhost.localdomain sshd[1371]: Server listening on 0.0.0.0 port 22.
Feb 27 13:43:14 localhost.localdomain sshd[1371]: Server listening on :: port 22.
Feb 27 13:43:14 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
[john@localhost ~]$
[john@localhost ~]$
```

### 2. Paste a screen shot of the script you created to run the log file



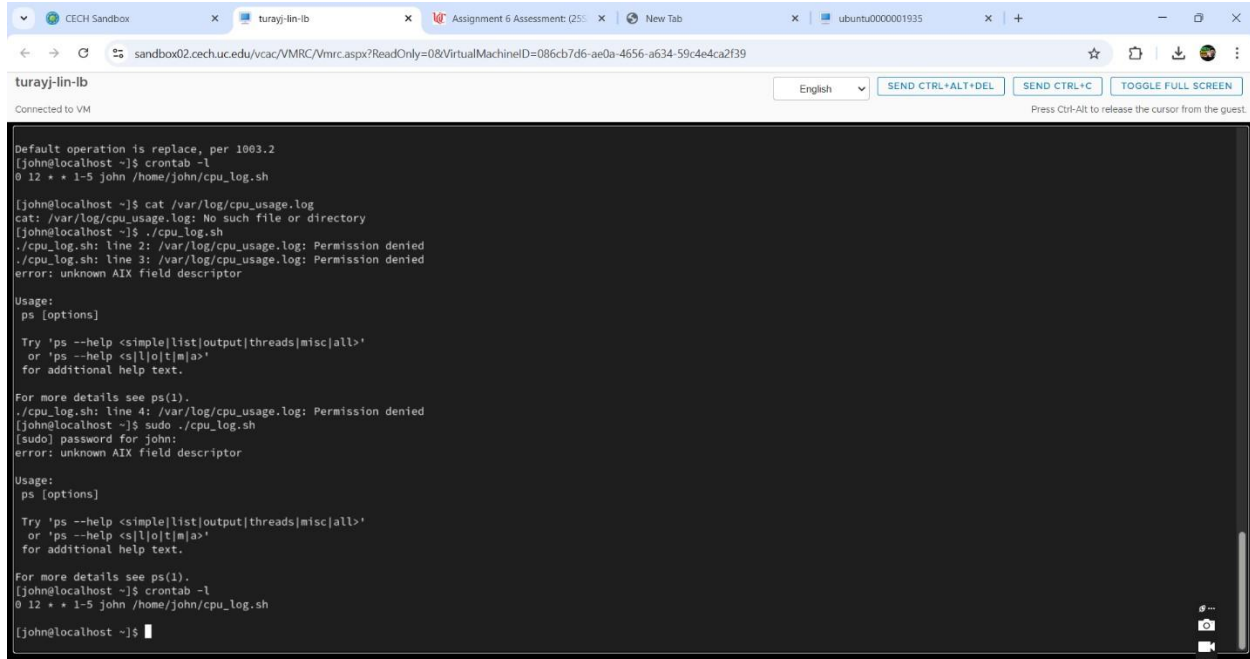
The screenshot shows a terminal window titled "turayj-lin-lb" connected to a VM. The terminal displays the output of the command `cat /var/log/cpu_usage.log`. The output shows the contents of the `/var/log/cpu_usage.log` file, which contains a list of processes and their CPU usage.

```
#!/bin/bash
echo "Log Time: $(date)" >> /var/log/cpu_usage.log
ps -eo pid,ppid,cmd,%mem,%cpu --sort=-%cpu | head >> /var/log/cpu_usage.log
echo "-----" >> /var/log/cpu_usage.log

-- INSERT --
```

### 3. Paste a screen shot of the crontab file showing the schedule for the script to run

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```
Default operation is replace, per 1003.2
[john@localhost ~]$ crontab -l
0 12 * * 1-5 john /home/john/cpu_log.sh

[john@localhost ~]$ cat /var/log/cpu_usage.log
cat: /var/log/cpu_usage.log: No such file or directory
[john@localhost ~]$ ./cpu_log.sh
./cpu_log.sh: line 2: /var/log/cpu_usage.log: Permission denied
./cpu_log.sh: line 3: /var/log/cpu_usage.log: Permission denied
error: unknown AIX field descriptor

Usage:
ps [options]

Try 'ps --help <simple|list|output|threads|misc|all>'
or 'ps --help <s|l|o|t|m|a>'
for additional help text.

For more details see ps(1).
./cpu_log.sh: line 4: /var/log/cpu_usage.log: Permission denied
[john@localhost ~]$ sudo ./cpu_log.sh
[sudo] password for john:
error: unknown AIX field descriptor

Usage:
ps [options]

Try 'ps --help <simple|list|output|threads|misc|all>'
or 'ps --help <s|l|o|t|m|a>'
for additional help text.

For more details see ps(1).
[john@localhost ~]$ crontab -l
0 12 * * 1-5 john /home/john/cpu_log.sh

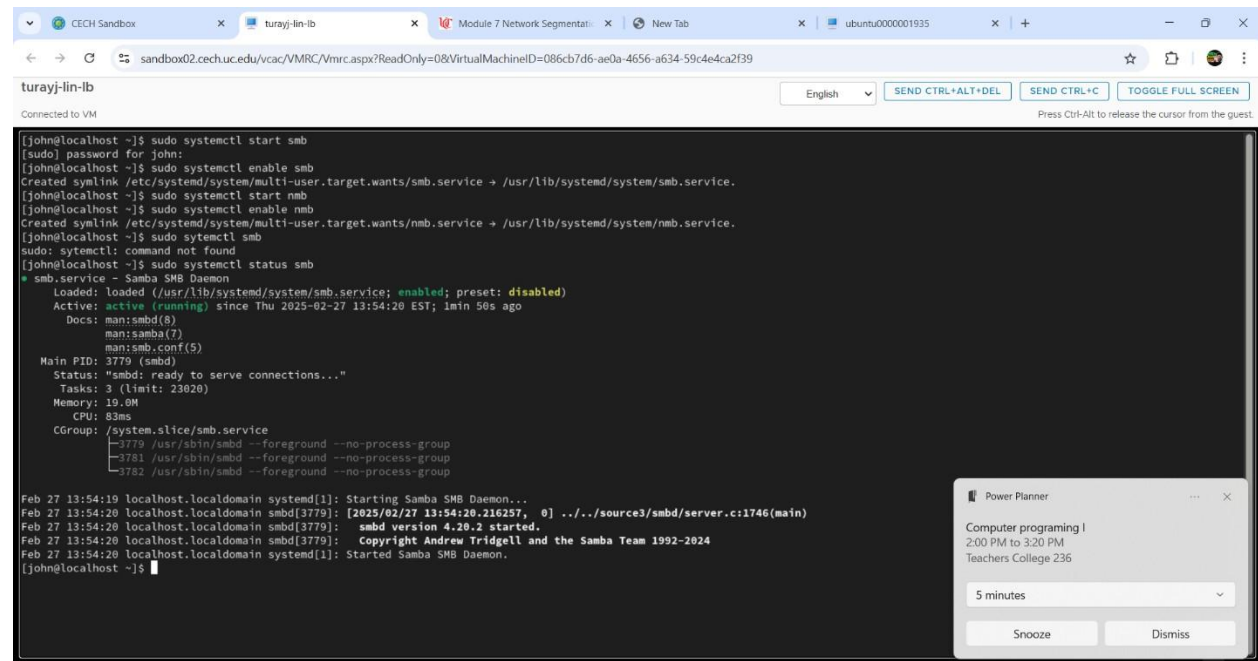
[john@localhost ~]$
```

## Documentation

Record and explain all the steps you took to complete the task. Include any commands used, screen shots showing GUI interfaces, or any other information that would help you recreate the task.

**Note:** You will be allowed to use this documentation to help you complete future assignments.

So first I started by checking the status of all four services :

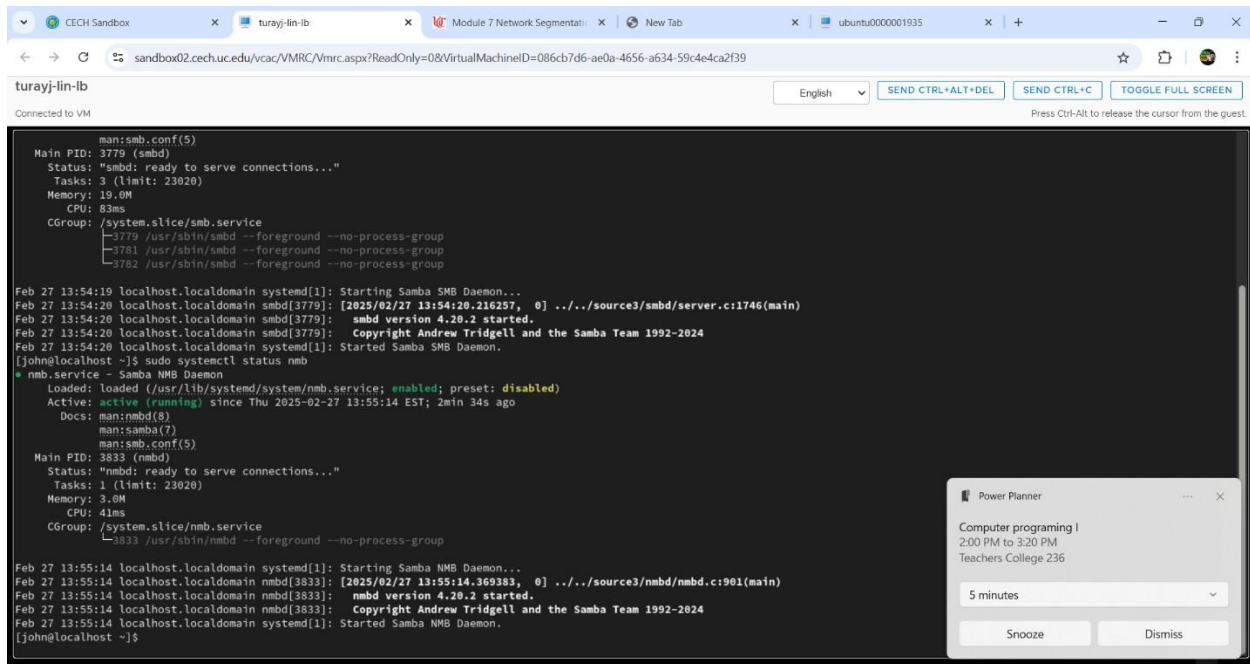


```
[john@localhost ~]$ sudo systemctl start smb
[sudo] password for john:
[john@localhost ~]$ sudo systemctl enable smb
Created symlink /etc/systemd/system/multi-user.target.wants/smb.service + /usr/lib/systemd/system/smb.service.
[john@localhost ~]$ sudo systemctl start nmb
[john@localhost ~]$ sudo systemctl enable nmb
Created symlink /etc/systemd/system/multi-user.target.wants/nmb.service + /usr/lib/systemd/system/nmb.service.
[john@localhost ~]$ sudo systemctl smb
sudo: systemctl: command not found
[john@localhost ~]$ sudo systemctl status smb
* smb.service - Samba SMB Daemon
   Loaded: loaded (/usr/lib/systemd/system/smb.service; enabled; preset: disabled)
   Active: active (running) since Thu 2025-02-27 13:54:20 EST; 1min 50s ago
     Docs: man:smbd(8)
           man:samba(7)
           man:smb.conf(5)
    Main PID: 3779 (smbd)
      Status: "smbd: ready to serve connections..."
        Tasks: 3 (limit: 23020)
      Memory: 19.0M
         CPU: 83ms
    CGroup: /system.slice/smb.service
            └─3779 /usr/sbin/smbd --foreground --no-process-group
              └─3781 /usr/sbin/smbd --foreground --no-process-group
                └─3782 /usr/sbin/smbd --foreground --no-process-group

Feb 27 13:54:19 localhost.localdomain systemd[1]: Starting Samba SMB Daemon...
Feb 27 13:54:20 localhost.localdomain smbd[3779]: [2025/02/27 13:54:20.216257, 0] ../../source3/smbd/server.c:1746(main)
Feb 27 13:54:20 localhost.localdomain smbd[3779]: smbd version 4.20.2 started.
Feb 27 13:54:20 localhost.localdomain smbd[3779]: Copyright Andrew Tridgell and the Samba Team 1992-2024
Feb 27 13:54:20 localhost.localdomain systemd[1]: Started Samba SMB Daemon.
[john@localhost ~]$
```

Power Manager  
Computer programing I  
2:00 PM to 3:20 PM  
Teachers College 236  
5 minutes  
Snooze Dismiss

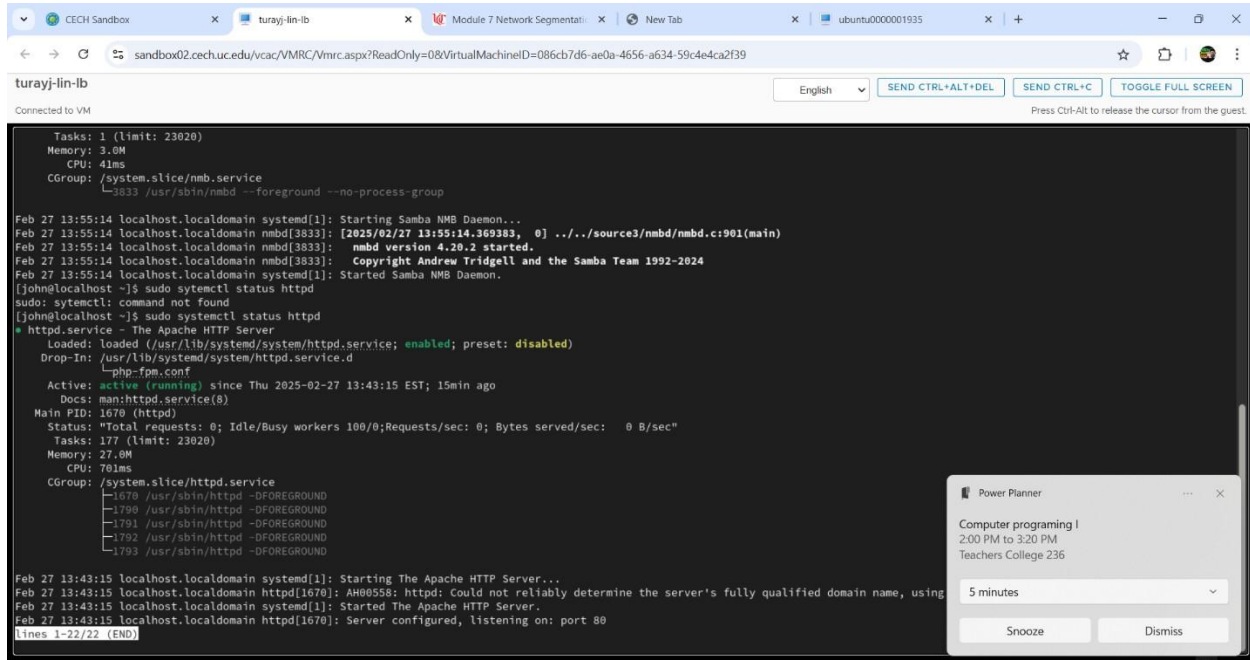
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```
man:smb.conf(5)
Main PID: 3779 (smbd)
Status: "smbd: ready to serve connections..."
Tasks: 3 (limit: 23020)
Memory: 19.0M
CPU: 83ms
CGroup: /system.slice/smb.service
├─3779 /usr/sbin/smbd --foreground --no-process-group
├─3781 /usr/sbin/smbd --foreground --no-process-group
└─3782 /usr/sbin/smbd --foreground --no-process-group

Feb 27 13:54:19 localhost.localdomain systemd[1]: Starting Samba SMB Daemon...
Feb 27 13:54:20 localhost.localdomain smbd[3779]: [2025/02/27 13:54:20.216257, 0] ../../source3/smbd/server.c:1746(main)
Feb 27 13:54:20 localhost.localdomain smbd[3779]: smbd version 4.20.2 started.
Feb 27 13:54:20 localhost.localdomain smbd[3779]: Copyright Andrew Tridgell and the Samba Team 1992-2024
Feb 27 13:54:20 localhost.localdomain systemd[1]: Started Samba SMB Daemon.
[john@localhost ~]$ sudo systemctl status nmb
nmb.service - Samba NMB Daemon
Loaded: loaded (/usr/lib/systemd/system/nmb.service; enabled; preset: disabled)
Active: active (running) since Thu 2025-02-27 13:55:14 EST; 2min 34s ago
Docs: man:nmbd(8)
      man:samba(7)
      man:smb.conf(5)
Main PID: 3833 (nmbd)
Status: "nmbd: ready to serve connections..."
Tasks: 1 (limit: 23020)
Memory: 3.6M
CPU: 41ms
CGroup: /system.slice/nmb.service
├─3833 /usr/sbin/nmbd --foreground --no-process-group

Feb 27 13:55:14 localhost.localdomain systemd[1]: Starting Samba NMB Daemon...
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: [2025/02/27 13:55:14.369383, 0] ../../source3/nmbd/nmbd.c:901(main)
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: nmbd version 4.20.2 started.
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: Copyright Andrew Tridgell and the Samba Team 1992-2024
Feb 27 13:55:14 localhost.localdomain systemd[1]: Started Samba NMB Daemon.
[john@localhost ~]$
```



```
Tasks: 1 (limit: 23020)
Memory: 3.0M
CPU: 41ms
CGroup: /system.slice/httpd.service
├─3833 /usr/sbin/nmbd --foreground --no-process-group

Feb 27 13:55:14 localhost.localdomain systemd[1]: Starting Samba NMB Daemon...
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: [2025/02/27 13:55:14.369383, 0] ../../source3/nmbd/nmbd.c:901(main)
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: nmbd version 4.20.2 started.
Feb 27 13:55:14 localhost.localdomain nmbd[3833]: Copyright Andrew Tridgell and the Samba Team 1992-2024
Feb 27 13:55:14 localhost.localdomain systemd[1]: Started Samba NMB Daemon.
[john@localhost ~]$ sudo systemctl status httpd
sudo: systemctl: command not found
[john@localhost ~]$ sudo systemctl status httpd
httpd.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
Drop-In: /usr/lib/systemd/system/httpd.service.d
        -php-fpm.conf
Active: active (running) since Thu 2025-02-27 13:43:15 EST; 15min ago
Docs: man:httpd.service(8)
Main PID: 1670 (httpd)
Status: "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes served/sec: 0 B/sec"
Tasks: 177 (limit: 23020)
Memory: 27.0M
CPU: 701ms
CGroup: /system.slice/httpd.service
├─1670 /usr/sbin/httpd -DFOREGROUND
├─1790 /usr/sbin/httpd -DFOREGROUND
├─1791 /usr/sbin/httpd -DFOREGROUND
├─1792 /usr/sbin/httpd -DFOREGROUND
└─1793 /usr/sbin/httpd -DFOREGROUND

Feb 27 13:43:15 localhost.localdomain systemd[1]: Starting The Apache HTTP Server...
Feb 27 13:43:15 localhost.localdomain httpd[1670]: AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using
Feb 27 13:43:15 localhost.localdomain systemd[1]: Started The Apache HTTP Server.
Feb 27 13:43:15 localhost.localdomain httpd[1670]: Server configured, listening on: port 80
Lines 1-22/22 (END)
```



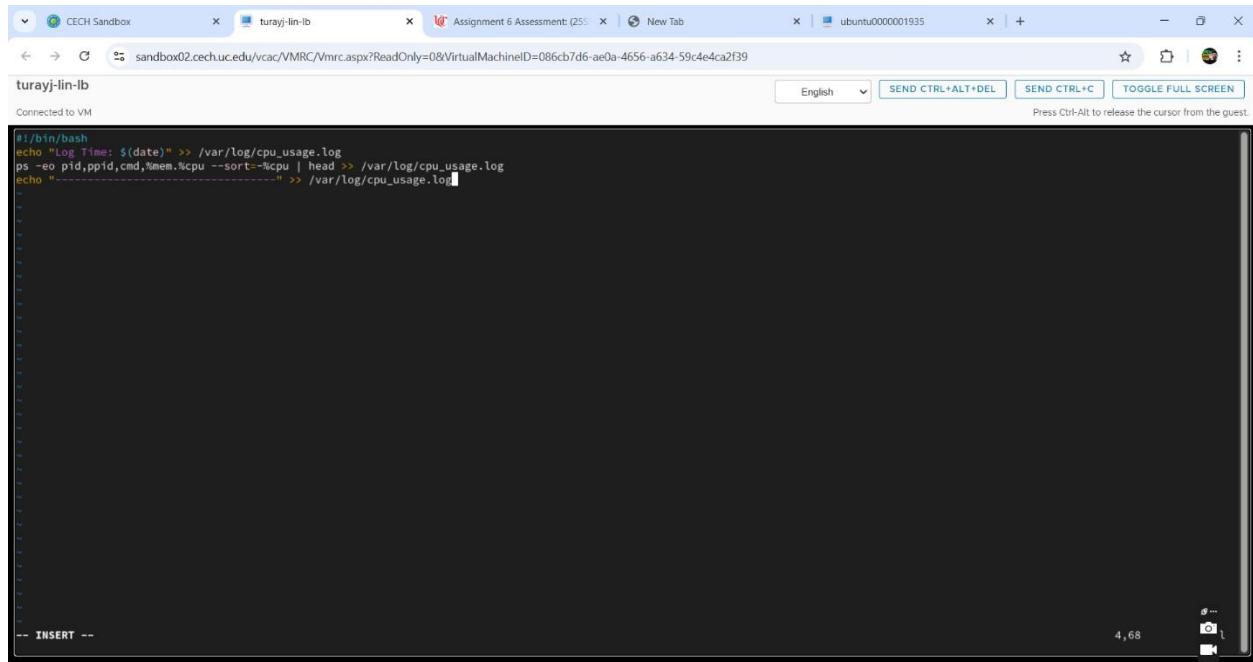
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The screenshot shows a terminal window titled "turayj-lin-lb" connected to a VM. The terminal displays the output of the command `systemctl status httpd` and `systemctl status sshd`. The `httpd` service is active (running) since Thu 2025-02-27 13:43:15 EST; 15min ago. It is managed by `man:httpd.service(8)` and has a Main PID of 1670 (httpd). The status shows "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes served/sec: 0 B/sec". The tasks are 177 (limit: 23020). The memory is 27.0M and CPU is 701ms. The CGroup is `/system.slice/httpd.service` and it lists several child processes: `1670 /usr/sbin/httpd -DFOREGROUND`, `1790 /usr/sbin/httpd -DFOREGROUND`, `1791 /usr/sbin/httpd -DFOREGROUND`, `1792 /usr/sbin/httpd -DFOREGROUND`, and `1793 /usr/sbin/httpd -DFOREGROUND`. The terminal also shows logs for the `httpd` service starting and listening on port 80. The `sshd` service is also active (running) since Thu 2025-02-27 13:43:14 EST; 15min ago. It is managed by `man:sshd(8)` and has a Main PID of 1371 (sshd). The status shows "Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)". The tasks are 1 (limit: 23020). The memory is 2.7M and CPU is 15ms. The CGroup is `/system.slice/sshd.service` and it lists a child process: `1371 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"`. The terminal also shows logs for the `sshd` service starting and listening on port 22.

Next I created the script to run the log file:

The screenshot shows a terminal window titled "turayj-lin-lb" connected to a VM. The terminal displays the output of the command `systemctl status httpd` and `systemctl status sshd`. The `httpd` service is active (running) since Thu 2025-02-27 13:43:15 EST; 15min ago. It is managed by `man:httpd.service(8)` and has a Main PID of 1670 (httpd). The status shows "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes served/sec: 0 B/sec". The tasks are 177 (limit: 23020). The memory is 27.0M and CPU is 701ms. The CGroup is `/system.slice/httpd.service` and it lists several child processes: `1670 /usr/sbin/httpd -DFOREGROUND`, `1790 /usr/sbin/httpd -DFOREGROUND`, `1791 /usr/sbin/httpd -DFOREGROUND`, `1792 /usr/sbin/httpd -DFOREGROUND`, and `1793 /usr/sbin/httpd -DFOREGROUND`. The terminal also shows logs for the `httpd` service starting and listening on port 80. The `sshd` service is also active (running) since Thu 2025-02-27 13:43:14 EST; 15min ago. It is managed by `man:sshd(8)` and has a Main PID of 1371 (sshd). The status shows "Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)". The tasks are 1 (limit: 23020). The memory is 2.7M and CPU is 15ms. The CGroup is `/system.slice/sshd.service` and it lists a child process: `1371 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"`. The terminal also shows logs for the `sshd` service starting and listening on port 22. At the bottom of the terminal, the user runs the command `vi cpu_log.sh` and then `sudo vi cpu_log.sh`.

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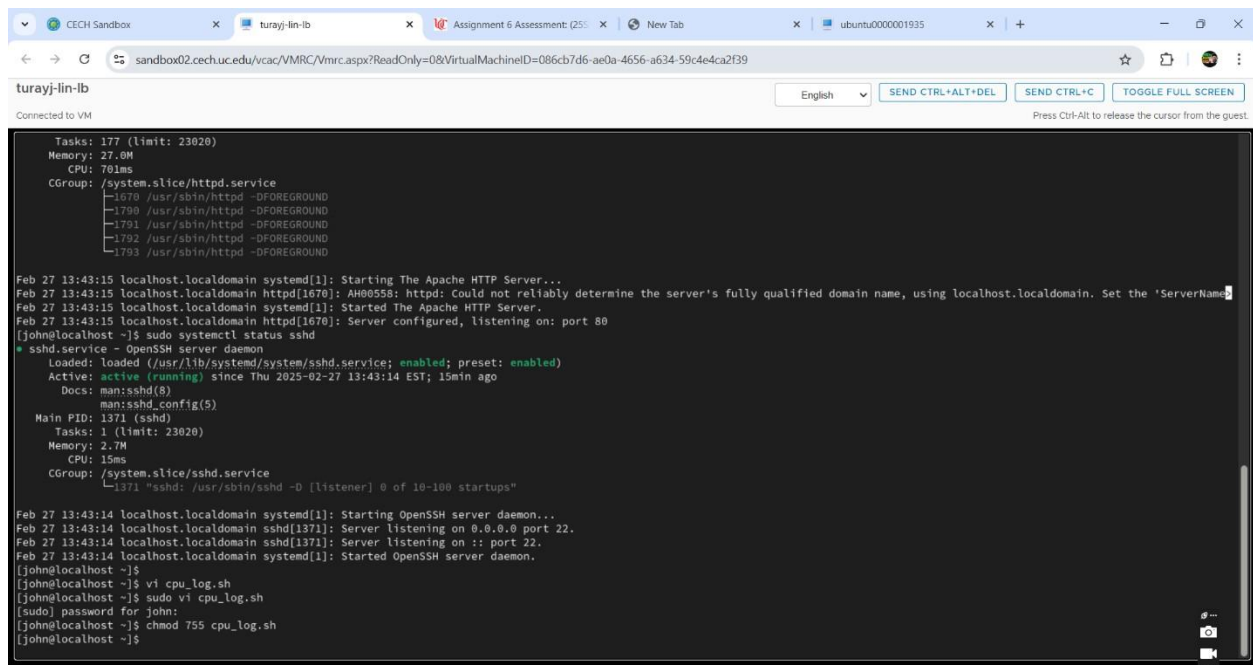


The screenshot shows a terminal window titled "turayj-lin-lb" connected to a VM. The user is in a bash shell. They run the following commands:

```
#!/bin/bash
echo "Log Time: $(date)" >> /var/log/cpu_usage.log
ps -eo pid,ppid,cmd,%mem,%cpu --sort=-%cpu | head >> /var/log/cpu_usage.log
echo "-----" >> /var/log/cpu_usage.log
```

The terminal shows the output of the first command, which is the current date and time. The second command is also executed, and the output is shown. The third command is also executed, and the output is shown. The terminal shows the output of the first command, which is the current date and time. The second command is also executed, and the output is shown. The third command is also executed, and the output is shown.

Then I made the file executable:



The screenshot shows a terminal window titled "turayj-lin-lb" connected to a VM. The user is in a bash shell. They run the following commands:

```
Tasks: 177 (limit: 23020)
Memory: 27.0M
CPU: 701ms
CGroup: /system.slice/httpd.service
├─1670 /usr/sbin/httpd -DFOREGROUND
├─1790 /usr/sbin/httpd -DFOREGROUND
├─1791 /usr/sbin/httpd -DFOREGROUND
├─1792 /usr/sbin/httpd -DFOREGROUND
└─1793 /usr/sbin/httpd -DFOREGROUND

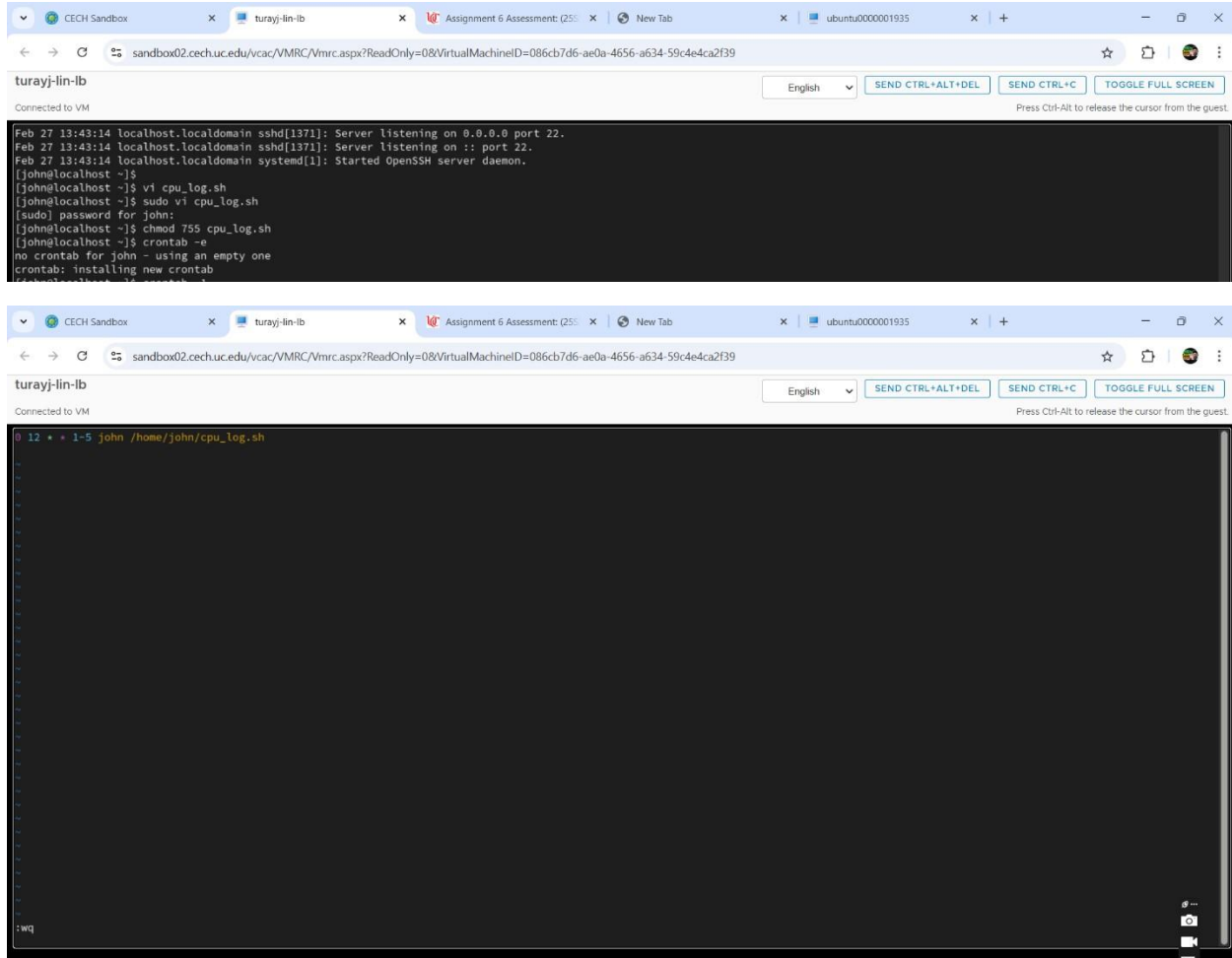
Feb 27 13:43:15 localhost.localdomain systemd[1]: Starting The Apache HTTP Server...
Feb 27 13:43:15 localhost.localdomain httpd[1670]: AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using localhost.localdomain. Set the 'ServerName'
Feb 27 13:43:15 localhost.localdomain systemd[1]: Started The Apache HTTP Server.
Feb 27 13:43:15 localhost.localdomain httpd[1670]: Server configured, listening on: port 80
[john@localhost ~]$ sudo systemctl status sshd
sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-02-27 13:43:14 EST; 15min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
   Main PID: 1371 (sshd)
     Tasks: 1 (limit: 23020)
    Memory: 2.7M
       CPU: 15ms
    CGroup: /system.slice/ssh.service
           └─1371 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Feb 27 13:43:14 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Feb 27 13:43:14 localhost.localdomain sshd[1371]: Server listening on 0.0.0.0 port 22.
Feb 27 13:43:14 localhost.localdomain sshd[1371]: Server listening on :: port 22.
Feb 27 13:43:14 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
[john@localhost ~]$
[john@localhost ~]$ vi cpu_log.sh
[sudo] password for john:
[john@localhost ~]$ chmod 755 cpu_log.sh
[john@localhost ~]$
```

The terminal shows the output of the first command, which is the current date and time. The second command is also executed, and the output is shown. The third command is also executed, and the output is shown. The terminal shows the output of the first command, which is the current date and time. The second command is also executed, and the output is shown. The third command is also executed, and the output is shown.

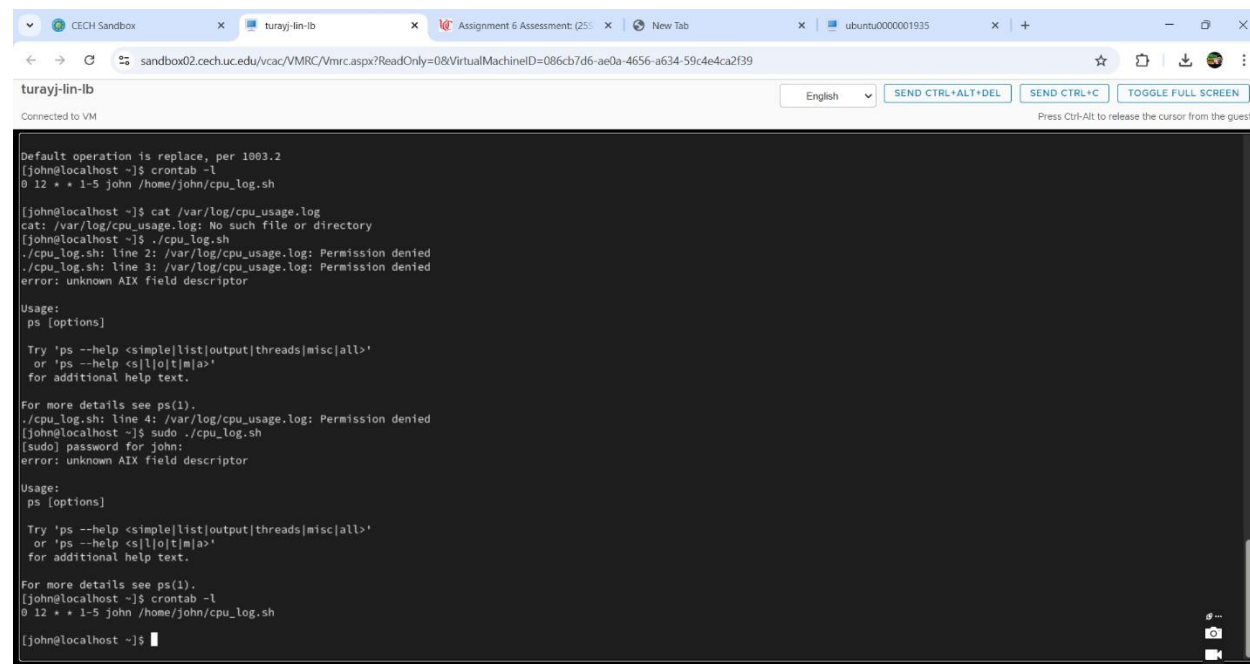
Then I created the crontab file:

## Lab 6 – Linux Processes and Services Systems Administration



```
Feb 27 13:43:14 localhost.localdomain sshd[1371]: Server listening on 0.0.0.0 port 22.
Feb 27 13:43:14 localhost.localdomain sshd[1371]: Server listening on :: port 22.
Feb 27 13:43:14 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
[john@localhost ~]$
[john@localhost ~]$ vi cpu_log.sh
[john@localhost ~]$ sudo vi cpu_log.sh
[sudo] password for john:
[john@localhost ~]$ chmod 755 cpu_log.sh
[john@localhost ~]$ crontab -e
no crontab for john - using an empty one
crontab: installing new crontab
[john@localhost ~]$
```

Then I verified the file by showing the output of the schedule:



```
Default operation is replace, per 1003.2
[john@localhost ~]$ crontab -l
0 12 * * 1-5 john /home/john/cpu_log.sh

[john@localhost ~]$ cat /var/log/cpu_usage.log
cat: /var/log/cpu_usage.log: No such file or directory
[john@localhost ~]$ ./cpu_log.sh
./cpu_log.sh: line 2: /var/log/cpu_usage.log: Permission denied
./cpu_log.sh: line 3: /var/log/cpu_usage.log: Permission denied
error: unknown AIX field descriptor

Usage:
ps [options]

Try 'ps --help <simple|list|output|threads|misc|all>'
or 'ps --help <s|l|o|t|m|a>'
for additional help text.

For more details see ps(1).
./cpu_log.sh: line 4: /var/log/cpu_usage.log: Permission denied
[john@localhost ~]$ sudo ./cpu_log.sh
[sudo] password for john:
error: unknown AIX field descriptor

Usage:
ps [options]

Try 'ps --help <simple|list|output|threads|misc|all>'
or 'ps --help <s|l|o|t|m|a>'
for additional help text.

For more details see ps(1).
[john@localhost ~]$ crontab -l
0 12 * * 1-5 john /home/john/cpu_log.sh

[john@localhost ~]$
```



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