

Comprehensive Linux Operations

Project Overview

This project spans various aspects of Linux system administration, including file management, user and group management, service control, process handling, and more. You will be completing tasks that simulate real-world scenarios, providing hands-on experience with Linux commands and configurations.

Project Breakdown

Part 1: Creating and Editing Text Files (20 minutes)

Scenario: You are tasked with documenting the configurations and settings for a new server. You'll use different text editors to create and update these documents.

1. Using Nano

Create a file `server_config.txt` using Nano:

```
nano server_config.txt
```

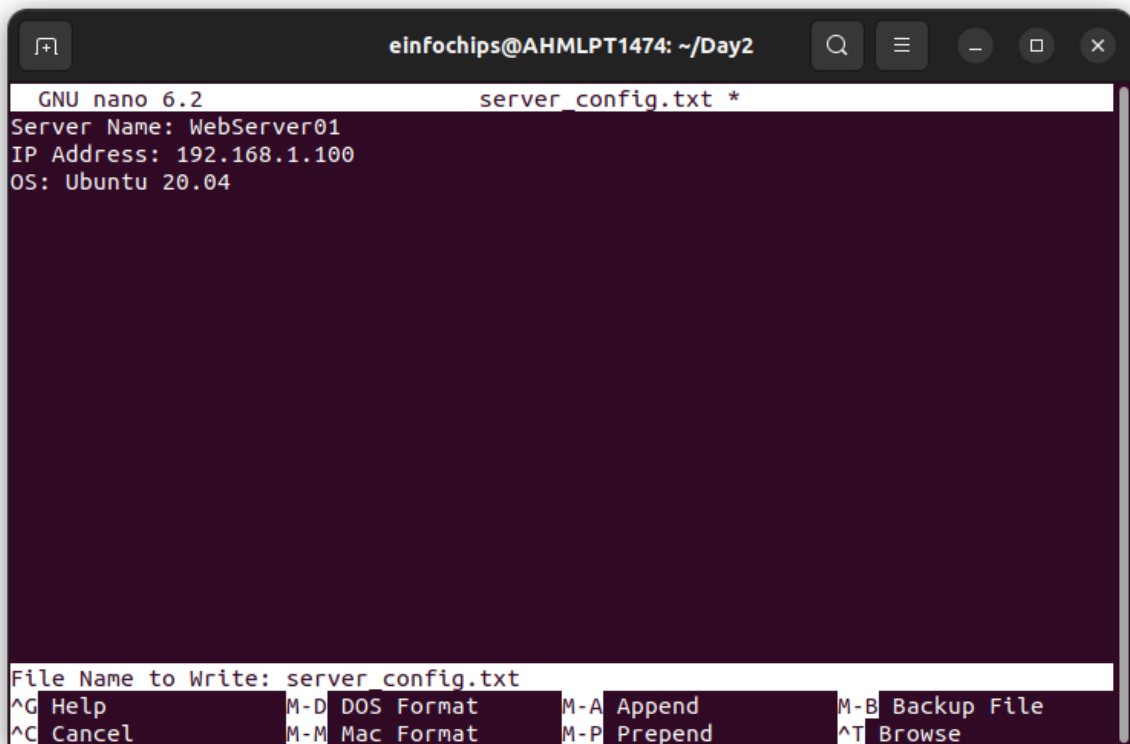
Add the following content:

```
Server Name: WebServer01
```

```
IP Address: 192.168.1.100
```

```
OS: Ubuntu 20.04
```

- Save and exit (Ctrl+O, Enter, Ctrl+X).



```
einfochips@AHMLPT1474: ~/Day2
GNU nano 6.2 server_config.txt *
Server Name: WebServer01
IP Address: 192.168.1.100
OS: Ubuntu 20.04

File Name to Write: server_config.txt
^G Help      M-D DOS Format  M-A Append     M-B Backup File
^C Cancel    M-M Mac Format  M-P Prepend    ^T Browse
```

2. Using Vi

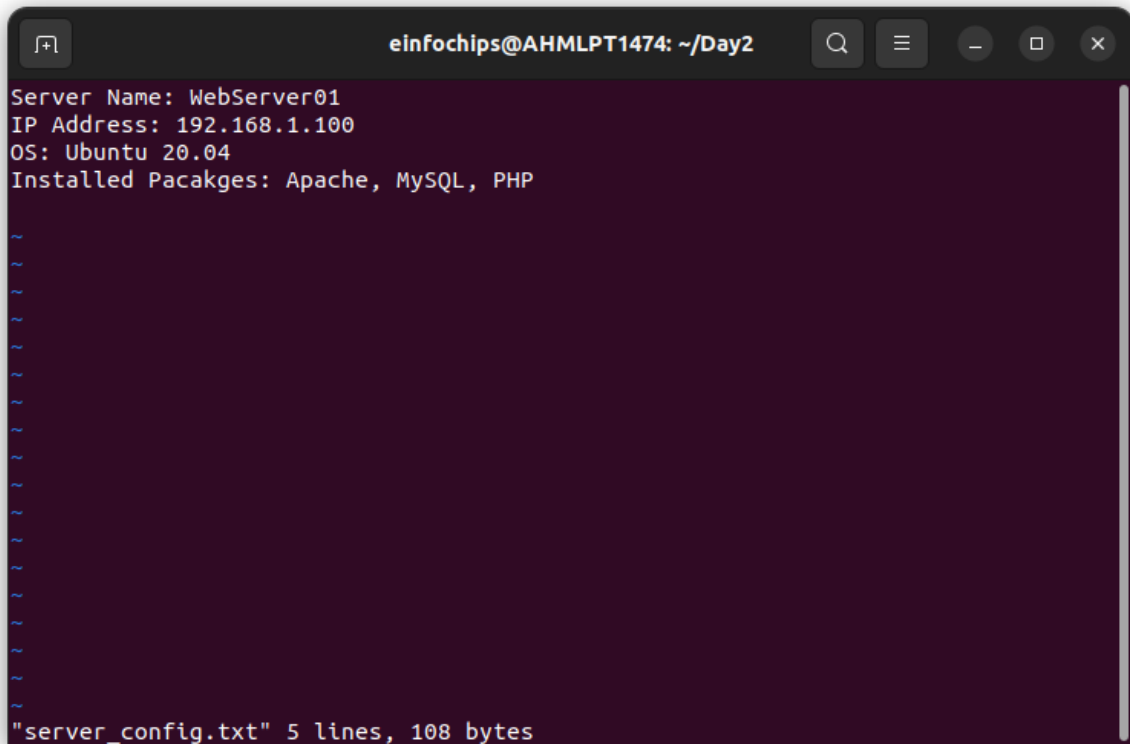
Edit the same file with Vi:

```
vi server_config.txt
```

Append the following text:

```
Installed Packages: Apache, MySQL, PHP
```

- Save and exit (Esc, :wq).



The image shows a terminal window with a dark background. The title bar at the top reads "einfochips@AHMLPT1474: ~/Day2". The terminal content displays the following information:

```
Server Name: WebServer01
IP Address: 192.168.1.100
OS: Ubuntu 20.04
Installed Pacakges: Apache, MySQL, PHP
```

Below this, there are several lines of tilde (~) characters, representing a Vim editor interface. At the bottom, a status line indicates: `"server_config.txt" 5 lines, 108 bytes`.

3. Using Vim

Further edit the file with Vim:

```
vim server_config.txt
```

Add the following text:

```
Configuration Complete: Yes
```

- Save and exit (Esc, `:wq`).


```
einfochips@AHMLPT1474: ~/Day2
einfochips@AHMLPT1474:~/Day2$ sudo adduser developer
Adding user `developer' ...
Adding new group `developer' (1001) ...
Adding new user `developer' (1001) with group `developer' ...
Creating home directory `/home/developer' ...
Copying files from `/etc/skel' ...
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: password updated successfully
Changing the user information for developer
Enter the new value, or press ENTER for the default
    Full Name []: A
    Room Number []: 9
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
einfochips@AHMLPT1474:~/Day2$
```

Remove the user `developer`:

```
sudo deluser developer
```

2. Managing Groups

Create a group `devteam`:

```
sudo groupadd devteam
```

Add the user `developer` to the `devteam` group:

```
sudo usermod -aG devteam developer
```

```
einfochips@AHMLPT1474: ~/Day2
Adding new group `developer' (1001) ...
Adding new user `developer' (1001) with group `developer' ...
Creating home directory `/home/developer' ...
Copying files from `/etc/skel' ...
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: password updated successfully
Changing the user information for developer
Enter the new value, or press ENTER for the default
    Full Name []: A
    Room Number []: 9
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
einfochips@AHMLPT1474:~/Day2$ sudo groupadd devteam
einfochips@AHMLPT1474:~/Day2$ sudo usermod -aG devteam developer
einfochips@AHMLPT1474:~/Day2$ groups developer
developer : developer devteam
einfochips@AHMLPT1474:~/Day2$
```

Remove the user **developer** from the **devteam** group:

```
sudo gpasswd -d developer devteam
```

```
einfochips@AHMLPT1474: ~/Day2
Adding user `developer' ...
Adding new group `developer' (1001) ...
Adding new user `developer' (1001) with group `developer' ...
The home directory `/home/developer' already exists. Not copying from `/etc/skel'.
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for developer
Enter the new value, or press ENTER for the default
    Full Name []: A
    Room Number []: 3
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
einfochips@AHMLPT1474:~/Day2$ sudo usermod -aG devteam developer
einfochips@AHMLPT1474:~/Day2$ groups developer
developer : developer devteam
einfochips@AHMLPT1474:~/Day2$ sudo gpasswd -d developer devteam
Removing user developer from group devteam
einfochips@AHMLPT1474:~/Day2$ groups developer
developer : developer
einfochips@AHMLPT1474:~/Day2$
```

Delete group:

```
einfochips@AHMLPT1474: ~/Day2
einfochips@AHMLPT1474:~/Day2$ sudo usermod -aG devteam developer
einfochips@AHMLPT1474:~/Day2$ groups developer
developer : developer devteam
einfochips@AHMLPT1474:~/Day2$ sudo gpasswd -d developer devteam
Removing user developer from group devteam
einfochips@AHMLPT1474:~/Day2$ groups developer
developer : developer
einfochips@AHMLPT1474:~/Day2$ sudo deluser developer
Removing user `developer' ...
Warning: group `developer' has no more members.
Done.
einfochips@AHMLPT1474:~/Day2$ sudo groupdel devteam
einfochips@AHMLPT1474:~/Day2$ cut -d: -f1,4 /etc/group
root:
daemon:
bin:
sys:
adm:syslog,einfochips
tty:
disk:
lp:
mail:
news:
uucp:
```

Part 3: File Permissions Management (20 minutes)

Scenario: Ensure that only the appropriate users have access to specific files and directories.

1. Understanding File Permissions

View permissions for `server_config.txt`:

```
ls -l server_config.txt
```

- Discuss the output (e.g., `-rw-r--r--`).

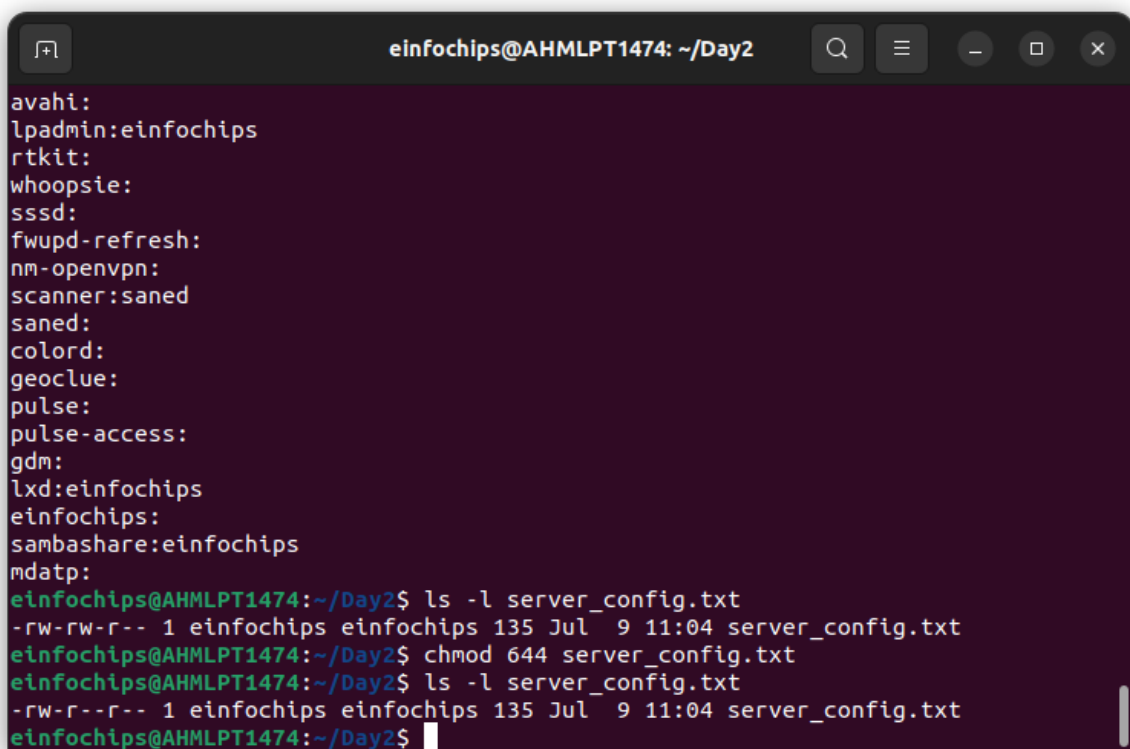
2. Changing Permissions and Ownership

Change permissions to read/write for the owner and read-only for others:

```
chmod 644 server_config.txt
```

Verify the change:

```
ls -l server_config.txt
```



```
einfochips@AHMLPT1474: ~/Day2
avahi:
lpadmin:einfochips
rtkit:
whoopsie:
sssd:
fwupd-refresh:
nm-openvpn:
scanner:saned
saned:
colord:
geoclue:
pulse:
pulse-access:
gdm:
lxd:einfochips
einfochips:
smbshare:einfochips
mdatp:
einfochips@AHMLPT1474:~/Day2$ ls -l server_config.txt
-rw-rw-r-- 1 einfochips einfochips 135 Jul  9 11:04 server_config.txt
einfochips@AHMLPT1474:~/Day2$ chmod 644 server_config.txt
einfochips@AHMLPT1474:~/Day2$ ls -l server_config.txt
-rw-r--r-- 1 einfochips einfochips 135 Jul  9 11:04 server_config.txt
einfochips@AHMLPT1474:~/Day2$
```

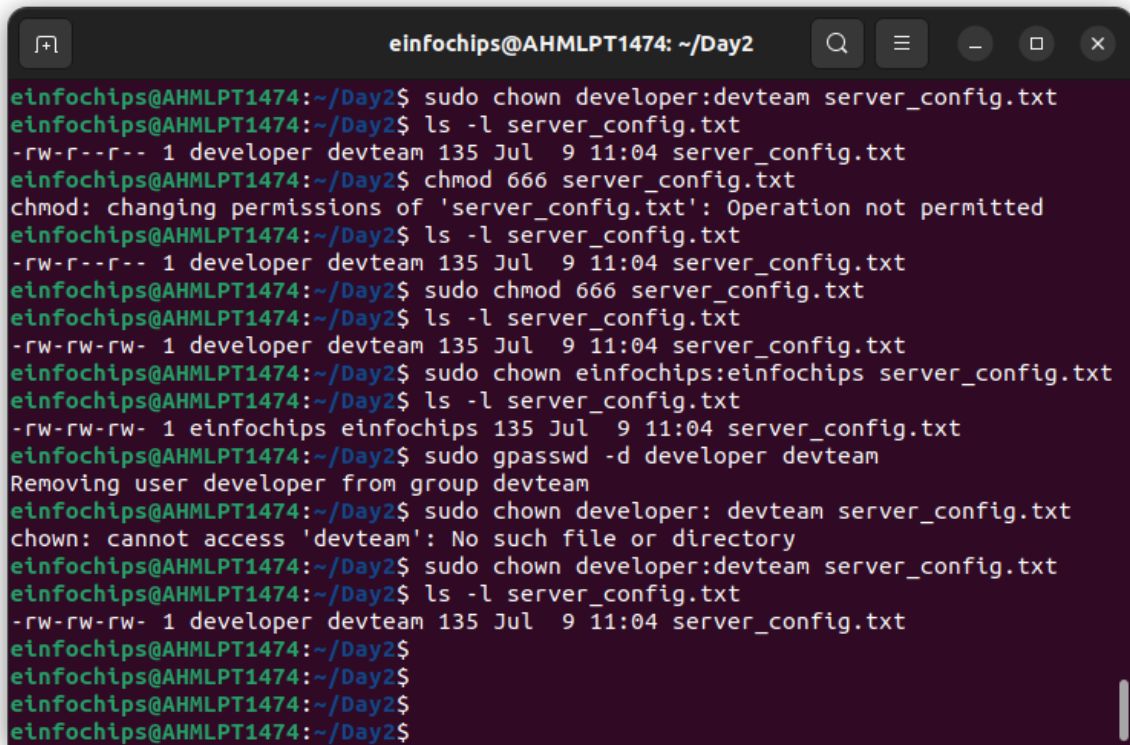
Change the owner to `developer` and the group to `devteam`:

```
sudo chown developer:devteam server_config.txt
```


○

Verify the change:

```
ls -l server_config.txt
```

A terminal window titled 'einfochips@AHMLPT1474: ~/Day2' showing a series of commands and their outputs. The commands are: 'sudo chown developer:devteam server_config.txt', 'ls -l server_config.txt' (output: '-rw-r--r-- 1 developer devteam 135 Jul 9 11:04 server_config.txt'), 'chmod 666 server_config.txt' (output: 'chmod: changing permissions of 'server_config.txt': Operation not permitted'), 'ls -l server_config.txt' (output: '-rw-r--r-- 1 developer devteam 135 Jul 9 11:04 server_config.txt'), 'sudo chmod 666 server_config.txt', 'ls -l server_config.txt' (output: '-rw-rw-rw- 1 developer devteam 135 Jul 9 11:04 server_config.txt'), 'sudo chown einfochips:einfochips server_config.txt', 'ls -l server_config.txt' (output: '-rw-rw-rw- 1 einfochips einfochips 135 Jul 9 11:04 server_config.txt'), 'sudo gpasswd -d developer devteam' (output: 'Removing user developer from group devteam'), 'sudo chown developer: devteam server_config.txt' (output: 'chown: cannot access 'devteam': No such file or directory'), 'sudo chown developer:devteam server_config.txt', 'ls -l server_config.txt' (output: '-rw-rw-rw- 1 developer devteam 135 Jul 9 11:04 server_config.txt'), and three empty prompts.

```
einfochips@AHMLPT1474: ~/Day2
einfochips@AHMLPT1474:~/Day2$ sudo chown developer:devteam server_config.txt
einfochips@AHMLPT1474:~/Day2$ ls -l server_config.txt
-rw-r--r-- 1 developer devteam 135 Jul 9 11:04 server_config.txt
einfochips@AHMLPT1474:~/Day2$ chmod 666 server_config.txt
chmod: changing permissions of 'server_config.txt': Operation not permitted
einfochips@AHMLPT1474:~/Day2$ ls -l server_config.txt
-rw-r--r-- 1 developer devteam 135 Jul 9 11:04 server_config.txt
einfochips@AHMLPT1474:~/Day2$ sudo chmod 666 server_config.txt
einfochips@AHMLPT1474:~/Day2$ ls -l server_config.txt
-rw-rw-rw- 1 developer devteam 135 Jul 9 11:04 server_config.txt
einfochips@AHMLPT1474:~/Day2$ sudo chown einfochips:einfochips server_config.txt
einfochips@AHMLPT1474:~/Day2$ ls -l server_config.txt
-rw-rw-rw- 1 einfochips einfochips 135 Jul 9 11:04 server_config.txt
einfochips@AHMLPT1474:~/Day2$ sudo gpasswd -d developer devteam
Removing user developer from group devteam
einfochips@AHMLPT1474:~/Day2$ sudo chown developer: devteam server_config.txt
chown: cannot access 'devteam': No such file or directory
einfochips@AHMLPT1474:~/Day2$ sudo chown developer:devteam server_config.txt
einfochips@AHMLPT1474:~/Day2$ ls -l server_config.txt
-rw-rw-rw- 1 developer devteam 135 Jul 9 11:04 server_config.txt
einfochips@AHMLPT1474:~/Day2$
einfochips@AHMLPT1474:~/Day2$
einfochips@AHMLPT1474:~/Day2$
einfochips@AHMLPT1474:~/Day2$
```

Part 4: Controlling Services and Daemons (20 minutes)

Scenario: Manage the web server service to ensure it is running correctly and starts on boot.

1. Managing Services with systemctl

Start the Apache service:

```
sudo systemctl start apache2
```

Enable the Apache service to start on boot:

```
sudo systemctl enable apache2
```

Disable the Apache service:

```
sudo systemctl disable apache2
```

```
einfochips@AHMLPT1474: ~/Day2
einfochips@AHMLPT1474:~/Day2$ sudo systemctl start apache2
einfochips@AHMLPT1474:~/Day2$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable apache2
einfochips@AHMLPT1474:~/Day2$ sudo systemctl disable apache2
Synchronizing state of apache2.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install disable apache2
Removed /etc/systemd/system/multi-user.target.wants/apache2.service.
einfochips@AHMLPT1474:~/Day2$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor preset: enabled)
   Active: active (running) since Tue 2024-07-09 12:05:34 IST; 2min 33s ago
     Docs: https://httpd.apache.org/docs/2.4/
    Main PID: 77482 (apache2)
      Tasks: 55 (limit: 18866)
     Memory: 5.1M
        CPU: 50ms
    CGroup: /system.slice/apache2.service
            └─77482 /usr/sbin/apache2 -k start
              └─77483 /usr/sbin/apache2 -k start
                └─77484 /usr/sbin/apache2 -k start

Jul 09 12:05:34 AHMLPT1474 systemd[1]: Starting The Apache HTTP Server...
Jul 09 12:05:34 AHMLPT1474 apachectl[77481]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.0.1 instead. See the documentation for more details.
```

Stop the Apache service:

```
sudo systemctl stop apache2
```

Check the status of the Apache service:

```
sudo systemctl status apache2
```

```
einfochips@AHMLPT1474: ~/Day2
~
~
~
~
~
~
einfochips@AHMLPT1474:~/Day2$ sudo systemctl stop apache2
einfochips@AHMLPT1474:~/Day2$ sudo systemctl status apache2
○ apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor preset: ena
   Active: inactive (dead) since Tue 2024-07-09 12:09:06 IST; 3s ago
     Docs: https://httpd.apache.org/docs/2.4/
    Process: 78247 ExecStop=/usr/sbin/apachectl graceful-stop (code=exited, status=0/S
   Main PID: 77482 (code=exited, status=0/SUCCESS)
      CPU: 88ms

Jul 09 12:05:34 AHMLPT1474 systemd[1]: Starting The Apache HTTP Server...
Jul 09 12:05:34 AHMLPT1474 apachectl[77481]: AH00558: apache2: Could not reliably dete
Jul 09 12:05:34 AHMLPT1474 systemd[1]: Started The Apache HTTP Server.
Jul 09 12:09:06 AHMLPT1474 systemd[1]: Stopping The Apache HTTP Server...
Jul 09 12:09:06 AHMLPT1474 apachectl[78249]: AH00558: apache2: Could not reliably dete
Jul 09 12:09:06 AHMLPT1474 systemd[1]: apache2.service: Deactivated successfully.
Jul 09 12:09:06 AHMLPT1474 systemd[1]: Stopped The Apache HTTP Server.
lines 1-15/15 (END)
```

2. Understanding Daemons

- Discuss the role of the `sshd` daemon in providing SSH access to the server.

Part 5: Process Handling (20 minutes)

Scenario: Monitor and manage processes to ensure the server is performing optimally.

1. Viewing Processes

List all running processes:

`ps aux`

```
einfochips@AHMLPT1474: ~/Day2
einfochips@AHMLPT1474:~/Day2$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.1  0.0 168356 12960 ?        Ss   10:11   0:12 /sbin/init splash
root         2  0.0  0.0      0     0 ?        S    10:11   0:00 [kthreadd]
root         3  0.0  0.0      0     0 ?        I<   10:11   0:00 [rcu_gp]
root         4  0.0  0.0      0     0 ?        I<   10:11   0:00 [rcu_par_gp]
root         5  0.0  0.0      0     0 ?        I<   10:11   0:00 [slub_flushwq]
root         6  0.0  0.0      0     0 ?        I<   10:11   0:00 [netns]
root         8  0.0  0.0      0     0 ?        I<   10:11   0:00 [kworker/0:0H-events]
root        11  0.0  0.0      0     0 ?        I<   10:11   0:00 [mm_percpu_wq]
root        12  0.0  0.0      0     0 ?        I    10:11   0:00 [rcu_tasks_kthread]
root        13  0.0  0.0      0     0 ?        I    10:11   0:00 [rcu_tasks_rude_kthr]
root        14  0.0  0.0      0     0 ?        I    10:11   0:00 [rcu_tasks_trace_kth]
root        15  0.1  0.0      0     0 ?        S    10:11   0:09 [ksoftirqd/0]
root        16  0.0  0.0      0     0 ?        I    10:11   0:05 [rcu_preempt]
root        17  0.0  0.0      0     0 ?        S    10:11   0:00 [migration/0]
root        18  0.0  0.0      0     0 ?        S    10:11   0:00 [idle_inject/0]
root        19  0.0  0.0      0     0 ?        S    10:11   0:00 [cpuhp/0]
root        20  0.0  0.0      0     0 ?        S    10:11   0:00 [cpuhp/1]
root        21  0.0  0.0      0     0 ?        S    10:11   0:00 [idle_inject/1]
root        22  0.0  0.0      0     0 ?        S    10:11   0:00 [migration/1]
root        23  0.0  0.0      0     0 ?        S    10:11   0:00 [ksoftirqd/1]
root        25  0.0  0.0      0     0 ?        I<   10:11   0:00 [kworker/1:0H-events]
root        26  0.0  0.0      0     0 ?        S    10:11   0:00 [cpuhp/2]
root        27  0.0  0.0      0     0 ?        S    10:11   0:00 [idle_inject/2]
root        28  0.0  0.0      0     0 ?        S    10:11   0:00 [migration/2]
```

Use `top` to view processes in real-time:

`top`

```
einfochips@AHMLPT1474: ~/Day2
einfochips@AHMLPT1474:~/Day2$ top

top - 12:11:05 up 1:59, 1 user, load average: 0.83, 0.57, 0.42
Tasks: 317 total, 1 running, 316 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.1 us, 1.0 sy, 0.0 ni, 96.9 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 15797.7 total, 6270.7 free, 3000.2 used, 6526.8 buff/cache
MiB Swap: 15259.0 total, 15259.0 free, 0.0 used. 11685.3 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM    TIME+  COMMAND
 15916 einfoch+  20   0   556308   52724   40396  S   6.6   0.3   0:20.87  gnome-terminal-
  1841 einfoch+  20   0   5703812   307444   139100  S   6.3   1.9   10:21.85  gnome-shell
 34813 root      20   0   3639048   32688   18048  S   3.7   0.2   0:20.71  TaniumCX
 34883 root      20   0   1067252   99572   21760  S   3.3   0.6   0:12.43  TaniumCX
 3904 einfoch+  20   0   1136.1g   302888   126132  S   2.0   1.9   3:24.96  outlook-for-lin
  199 root      -51   0         0         0         0  S   1.7   0.0   0:11.77  irq/51-DELL08B+
10138 einfoch+  20   0   2403808   75008   62720  S   0.7   0.5   0:01.81  Web Content
  153 root      0  -20         0         0         0  I   0.3   0.0   0:00.38  kworker/2:1H-e+
  627 root      20   0   276232   10624   9600  S   0.3   0.1   0:18.58  thermald
  932 root      20   0   270064   21264   15360  S   0.3   0.1   0:29.23  telemetryd_v2
 3861 einfoch+  20   0    32.6g   105804   63668  S   0.3   0.7   0:06.02  outlook-for-lin
 8795 einfoch+  20   0    11.6g   455932   265884  S   0.3   2.8   4:10.87  firefox
21051 root      20   0   1393948   47080   18788  S   0.3   0.3   0:28.44  TaniumClient
34844 root      20   0   929132   31576   23808  S   0.3   0.2   0:05.90  TaniumCX
34905 root      20   0   772952   23040   20480  S   0.3   0.1   0:04.47  TaniumCX
76242 root      20   0         0         0         0  I   0.3   0.0   0:00.85  kworker/4:2-mm+
    1 root      20   0   168356   12960   7968  S   0.0   0.1   0:12.55  systemd
```

2. Managing Processes

Identify a process to kill using `ps` or `top`, then kill it:

`kill <PID>`

```
einfochips@AHMLPT1474: ~/Day2
%Cpu(s):  4.8 us,  1.8 sy,  0.0 ni, 93.3 id,  0.1 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem : 15797.7 total,  6312.8 free, 2965.1 used,  6519.9 buff/cache
MiB Swap: 15259.0 total, 15259.0 free,   0.0 used. 11727.5 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 80342 einfoch+  20   0 1136.1g 286532 119636 S   13.1   1.8   0:06.89 outlook-for-lin
 35017 root       20   0 101372  82716 12160 S    6.7   0.5   0:25.61 pybin
  1665 einfoch+   9  -11 2286648 31212 22252 S    4.6   0.2   0:10.31 pulseaudio
 37269 root       20   0  43424  33296 11776 S    3.7   0.2   0:08.48 pybin
   667 root       20   0 1159904 141072 59008 S    3.0   0.9   1:01.83 wdaemon
   838 root       20   0 1040716  78068 47744 S    3.0   0.5   1:19.55 wdaemon
 80226 einfoch+  20   0   32.5g  74316 62380 S    3.0   0.5   0:01.25 outlook-for-lin
 80012 einfoch+  20   0 1124.2g 153964 117588 S    2.7   1.0   0:01.75 outlook-for-lin
  1841 einfoch+  20   0 5701768 307448 139100 S    2.1   1.9  10:27.29 gnome-shell
 80425 einfoch+  20   0   33.0g  57472 48512 S    2.1   0.4   0:00.07 outlook-for-lin
21051 root       20   0 1393948  47012 18788 S    0.9   0.3   0:28.88 TaniumClient
   932 root       20   0 270756  22360 15360 S    0.6   0.1   0:29.86 telemetryd_v2
15916 einfoch+  20   0 556308  52724 40396 S    0.6   0.3   0:21.62 gnome-terminal-
  387 root      -51   0     0     0     0 S    0.3   0.0   0:08.15 irq/138-iwlwif+
  391 root      -51   0     0     0     0 S    0.3   0.0   0:03.07 irq/142-iwlwif+
   627 root       20   0 276232  10624  9600 S    0.3   0.1   0:18.86 thermald
  1662 einfoch+  20   0 407252  26496  4608 S    0.3   0.2   0:02.06 PanGPA
  1685 einfoch+  20   0   10128   5632  4096 S    0.3   0.0   0:01.62 dbus-daemon
  1999 einfoch+  20   0 315316  11672  6784 S    0.3   0.1   0:11.43 ibus-daemon
einfochips@AHMLPT1474:~/Day2$ kill 80342
einfochips@AHMLPT1474:~/Day2$
```

Change the priority of a process (e.g., running `sleep` with a lower priority):

```
nice -n 10 sleep 100 &
```

○

Change the priority of the process using `renice`:

```
renice +10 <PID>
```

Creating and Deploying a Static Website with Apache2

Preparation (5 minutes)

- Ensure you have access to a Linux environment (e.g., virtual machines, EC2 instances, or local installations) with sudo privileges.

Activity Breakdown

Part 1: Installing Apache2 (5 minutes)

1. Update Package Lists

Open the terminal and run:

```
sudo apt update
```

○

2. Install Apache2

Install Apache2 by running:

```
sudo apt install apache2
```

○

3. Start and Enable Apache2

Start the Apache2 service:

```
sudo systemctl start apache2
```

○

Enable Apache2 to start on boot:

```
sudo systemctl enable apache2
```

○

4. Verify Installation

- Open a web browser and navigate to http://your_server_ip. You should see the Apache2 default page.

Part 2: Creating the Website (10 minutes)

1. Navigate to the Web Directory

Change to the web root directory:

```
cd /var/www/html
```

2. Create a New Directory for the Website

Create a directory named `mystaticwebsite`:

```
sudo mkdir mystaticwebsite
```

```
einfochips@AHMLPT1474: /var/www/html
Executing: /lib/systemd/systemd-sysv-install enable apache2
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.
einfochips@AHMLPT1474:~/Day2$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2024-07-09 12:14:02 IST; 6min ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 80778 (apache2)
    Tasks: 55 (limit: 18866)
   Memory: 5.1M
      CPU: 48ms
   CGroup: /system.slice/apache2.service
           └─80778 /usr/sbin/apache2 -k start
             └─80779 /usr/sbin/apache2 -k start
               └─80780 /usr/sbin/apache2 -k start

Jul 09 12:14:02 AHMLPT1474 systemd[1]: Starting The Apache HTTP Server...
Jul 09 12:14:02 AHMLPT1474 apachectl[80777]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, please see the /etc/httpd/conf/httpd.conf file for instructions on how to solve this problem
Jul 09 12:14:02 AHMLPT1474 systemd[1]: Started The Apache HTTP Server.

einfochips@AHMLPT1474:~/Day2$ cd /var/www/html
einfochips@AHMLPT1474:/var/www/html$ sudo mkdir mystaticwebsite
einfochips@AHMLPT1474:/var/www/html$ ls
index.html  mystaticwebsite
einfochips@AHMLPT1474:/var/www/html$
```

Change ownership of the directory:

```
sudo chown -R $USER:$USER /var/www/html/mystaticwebsite
```

○

3. Create HTML File

Create and edit the `index.html` file:

```
nano /var/www/html/mystaticwebsite/index.html
```

○

Add the following content:

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>My Static Website</title>
```

```
<link rel="stylesheet" type="text/css" href="styles.css">
```

```
</head>
```

```
<body>
```



```
<h1>Welcome to My Static Website</h1>

<p>This is a simple static website using Apache2.</p>

<script src="script.js"></script>

</body>

</html>
```

○

○ Save and exit (Ctrl+O, Enter, Ctrl+X).

4. Create CSS File

Create and edit the `styles.css` file:

```
nano /var/www/html/mystaticwebsite/styles.css
```

○

Add the following content:

```
body {

    font-family: Arial, sans-serif;

    background-color: #f0f0f0;

    text-align: center;

    margin: 0;

    padding: 20px;

}
```

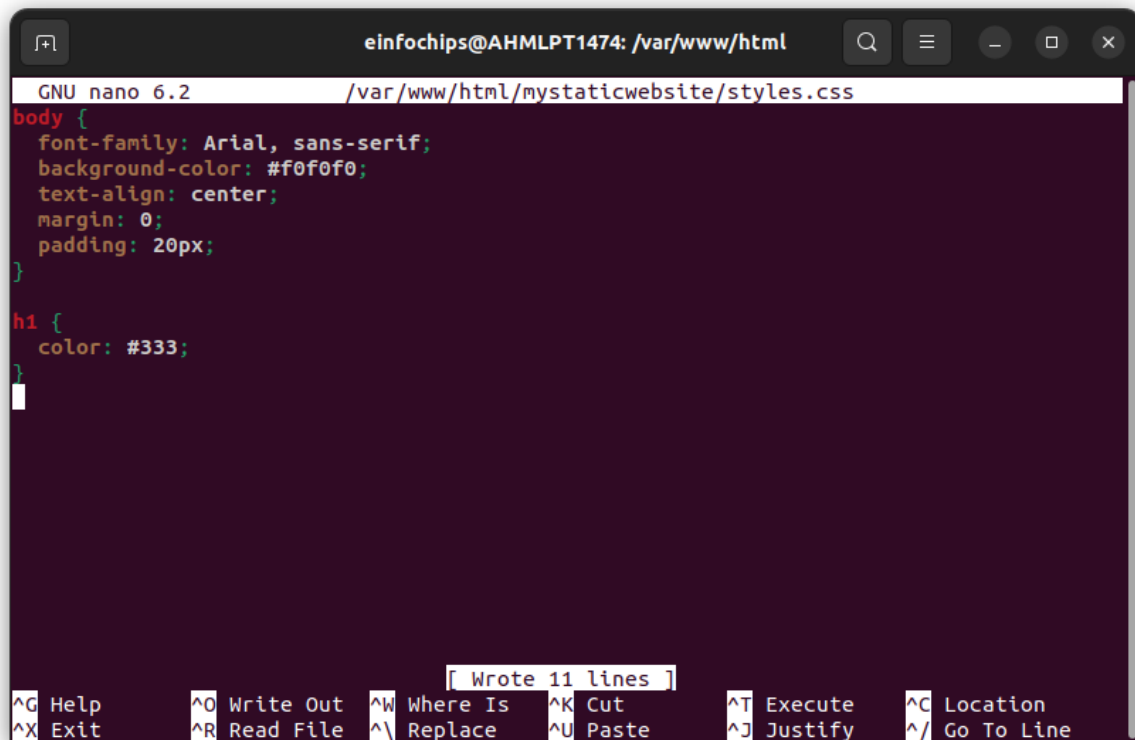
```
h1 {

    color: #333;

}
```

○

○ Save and exit (Ctrl+O, Enter, Ctrl+X).



```
GNU nano 6.2 /var/www/html/mystaticwebsite/styles.css
body {
  font-family: Arial, sans-serif;
  background-color: #f0f0f0;
  text-align: center;
  margin: 0;
  padding: 20px;
}

h1 {
  color: #333;
}
[ Wrote 11 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line
```

5. Create JavaScript File

Create and edit the `script.js` file:

```
nano /var/www/html/mystaticwebsite/script.js
```

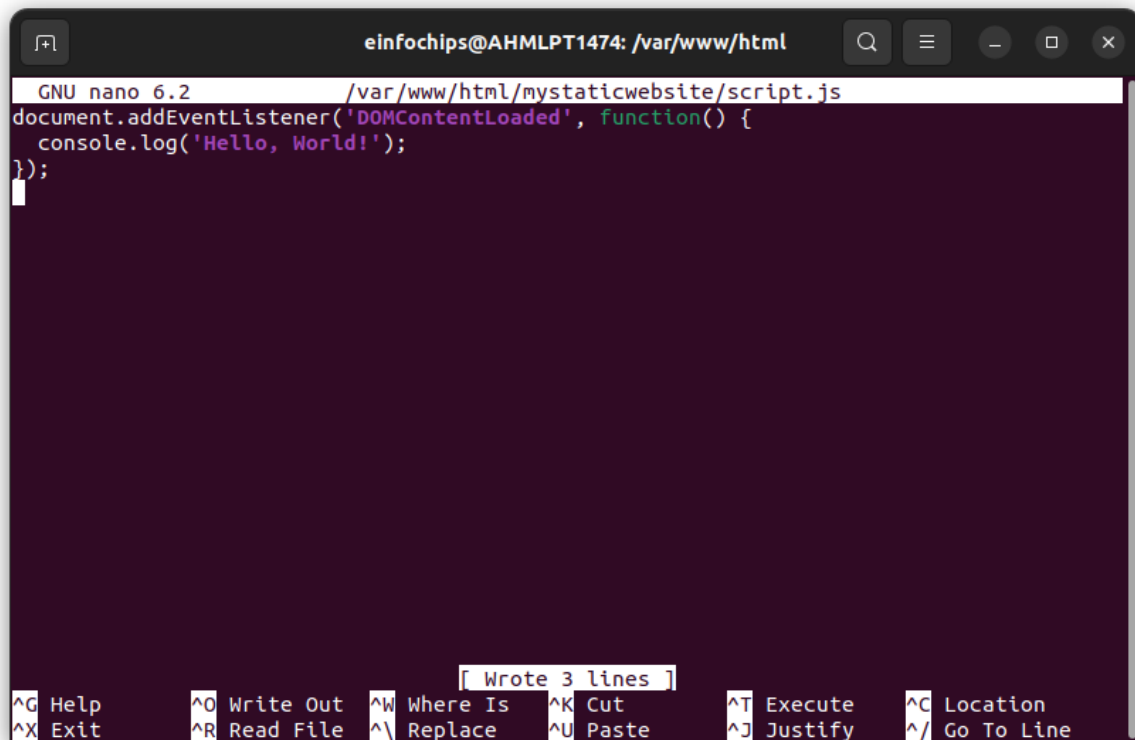
○

Add the following content:

```
document.addEventListener('DOMContentLoaded', function() {
  console.log('Hello, World!');
});
```

○

○ Save and exit (Ctrl+O, Enter, Ctrl+X).



```
einfochips@AHMLPT1474: /var/www/html
GNU nano 6.2 /var/www/html/mystaticwebsite/script.js
document.addEventListener('DOMContentLoaded', function() {
  console.log('Hello, World!');
});
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line
[ Wrote 3 lines ]
```

6. Add an Image

Download or copy an image file (e.g., `logo.png`) to the website directory:

```
cp /path/to/your/logo.png /var/www/html/mystaticwebsite/logo.png
```

○

Update `index.html` to include the image:

```
<body>

<h1>Welcome to My Static Website</h1>



<p>This is a simple static website using Apache2.</p>

<script src="script.js"></script>

</body>
```

```
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite
einfochips@AHMLPT1474:~/Day2$ cd /var/www/html
einfochips@AHMLPT1474:/var/www/html$ sudo mkdir mystaticwebsite
einfochips@AHMLPT1474:/var/www/html$ ls
index.html  mystaticwebsite
einfochips@AHMLPT1474:/var/www/html$ sudo chown -R $USER:$USER /var/www/html/mystaticwe
bsite
einfochips@AHMLPT1474:/var/www/html$ ^[[200~nano /var/www/html/mystaticwebsite/index.ht
ml~^C
einfochips@AHMLPT1474:/var/www/html$ nano /var/www/html/mystaticwebsite/index.html
einfochips@AHMLPT1474:/var/www/html$ ^[[200~nano /var/www/html/mystaticwebsite/styles.c
ss~^C
einfochips@AHMLPT1474:/var/www/html$ nano /var/www/html/mystaticwebsite/styles.css
einfochips@AHMLPT1474:/var/www/html$ nano /var/www/html/mystaticwebsite/script.js
einfochips@AHMLPT1474:/var/www/html$ cp /home/einfochips/Downloads/random.jpg /var/www/
html/mystaticwebsite/logo.png
einfochips@AHMLPT1474:/var/www/html$ ls
index.html  mystaticwebsite
einfochips@AHMLPT1474:/var/www/html$ cd mystaticwebsite
einfochips@AHMLPT1474:/var/www/html/mystaticwebsite$ ls
index.html  logo.png  script.js  styles.css
einfochips@AHMLPT1474:/var/www/html/mystaticwebsite$ cd ..
einfochips@AHMLPT1474:/var/www/html$ vim index.html
einfochips@AHMLPT1474:/var/www/html$ cd mystaticwebsite
einfochips@AHMLPT1474:/var/www/html/mystaticwebsite$ vim index.html
einfochips@AHMLPT1474:/var/www/html/mystaticwebsite$
```

Part 3: Configuring Apache2 to Serve the Website (10 minutes)

1. Create a Virtual Host File

Create and edit the virtual host configuration file:

```
sudo nano /etc/apache2/sites-available/mystaticwebsite.conf
```

○

Add the following content:

```
<VirtualHost *:80>
```

```
ServerAdmin webmaster@localhost
```

```
DocumentRoot /var/www/html/mystaticwebsite
```

```
ErrorLog ${APACHE_LOG_DIR}/error.log
```

```
CustomLog ${APACHE_LOG_DIR}/access.log combined
```

```
</VirtualHost>
```

○

○ Save and exit (Ctrl+O, Enter, Ctrl+X).

2. Enable the New Virtual Host

Enable the virtual host configuration:

```
sudo a2ensite mystaticwebsite.conf
```

○

3. Disable the Default Site

Disable the default site configuration:

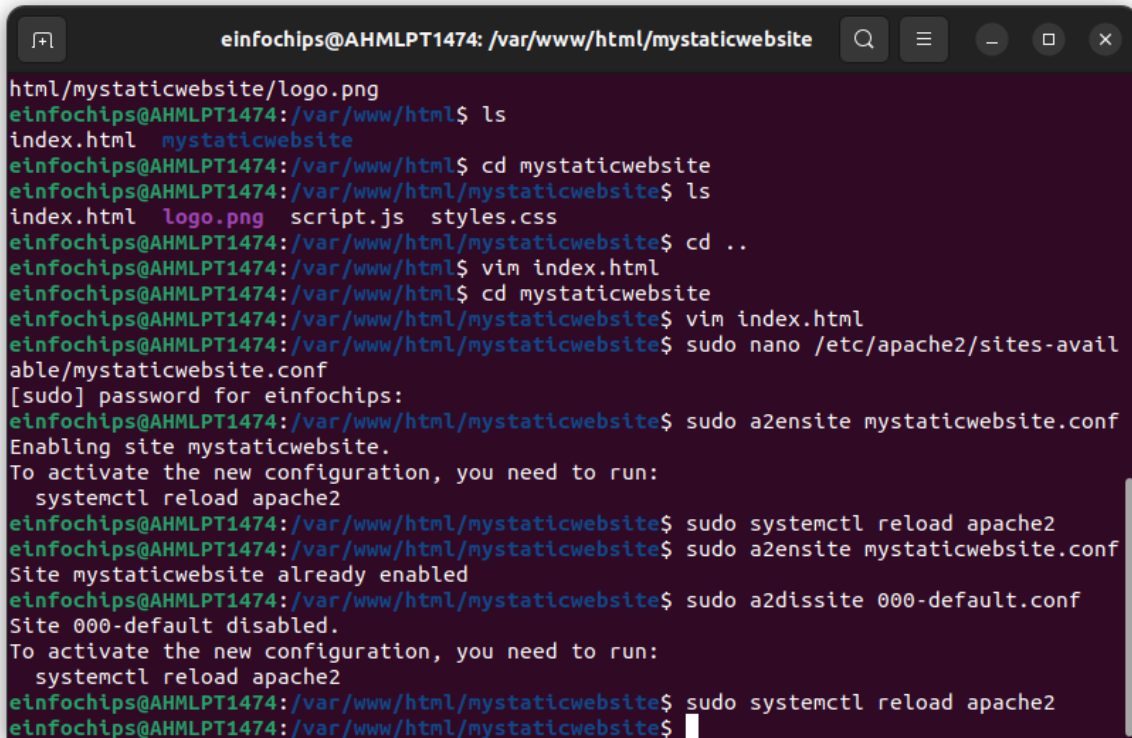
```
sudo a2dissite 000-default.conf
```

○

4. Reload Apache2

Reload the Apache2 service to apply the changes:

```
sudo systemctl reload apache2
```

A terminal window titled 'einfochips@AHMLPT1474: /var/www/html/mystaticwebsite' showing a series of commands and their outputs. The user navigates to the 'mystaticwebsite' directory, lists files (index.html, logo.png, script.js, styles.css), and then runs 'sudo nano /etc/apache2/sites-available/mystaticwebsite.conf'. After editing, they run 'sudo a2ensite mystaticwebsite.conf', which outputs 'Enabling site mystaticwebsite. To activate the new configuration, you need to run: systemctl reload apache2'. They then run 'sudo systemctl reload apache2' and 'sudo a2ensite mystaticwebsite.conf' again, which outputs 'Site mystaticwebsite already enabled'. Finally, they run 'sudo a2dissite 000-default.conf', which outputs 'Site 000-default disabled. To activate the new configuration, you need to run: systemctl reload apache2'. The terminal ends with 'sudo systemctl reload apache2' and a cursor on a new line.

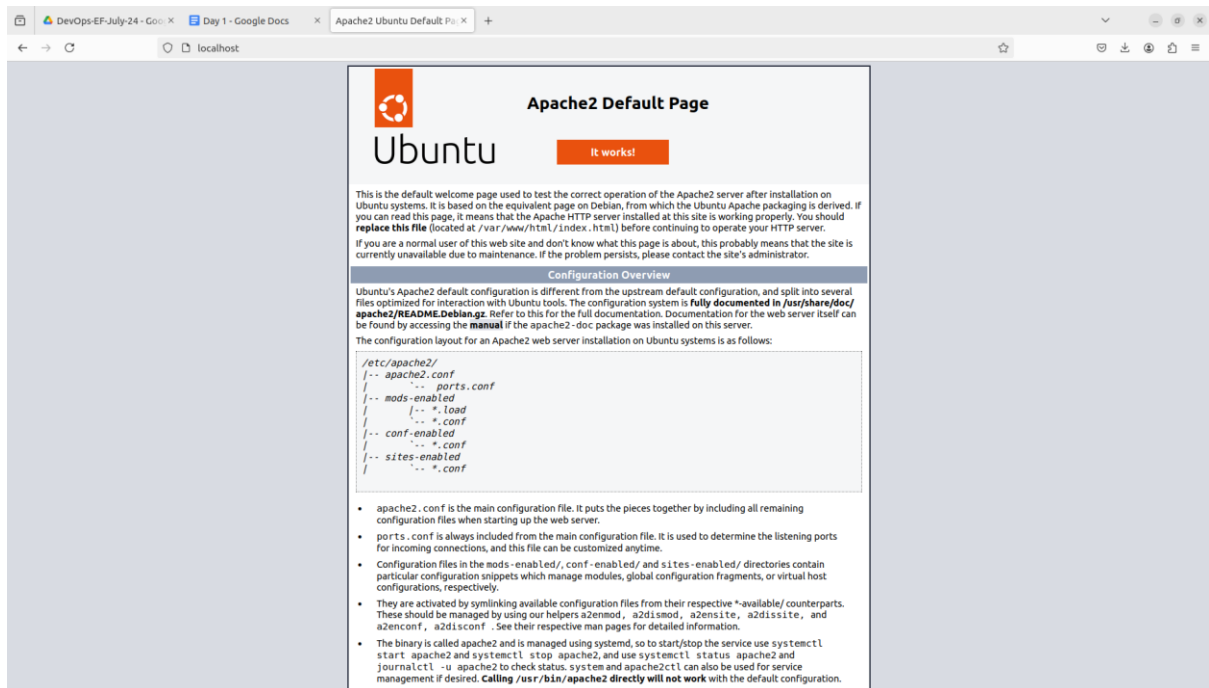
```
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ ls
html/mystaticwebsite/logo.png
einfochips@AHMLPT1474: /var/www/html$ ls
index.html  mystaticwebsite
einfochips@AHMLPT1474: /var/www/html$ cd mystaticwebsite
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ ls
index.html  logo.png  script.js  styles.css
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ cd ..
einfochips@AHMLPT1474: /var/www/html$ vim index.html
einfochips@AHMLPT1474: /var/www/html$ cd mystaticwebsite
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ vim index.html
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ sudo nano /etc/apache2/sites-available/mystaticwebsite.conf
[sudo] password for einfochips:
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ sudo a2ensite mystaticwebsite.conf
Enabling site mystaticwebsite.
To activate the new configuration, you need to run:
    systemctl reload apache2
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ sudo systemctl reload apache2
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ sudo a2ensite mystaticwebsite.conf
Site mystaticwebsite already enabled
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ sudo a2dissite 000-default.conf
Site 000-default disabled.
To activate the new configuration, you need to run:
    systemctl reload apache2
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$ sudo systemctl reload apache2
einfochips@AHMLPT1474: /var/www/html/mystaticwebsite$
```

○

5. Test the Configuration

- Open a web browser and navigate to http://your_server_ip. You should see the static website with the HTML, CSS, JS, and image.

Default:



New:

