

Comprehensive Linux Operations

Part 1: Creating and Editing Text Files

1. Using Nano

Create a file `server_config.txt` using Nano `#!/bin/bash`

```
einfochips@AHMLPT2608: ~  
einfochips@AHMLPT2608: ~/file7$ cd ..  
einfochips@AHMLPT2608: $ ls  
desktop Documents Downloads file file7 Music Pictures Public snap Templates test testumask Videos  
einfochips@AHMLPT2608: $ nano server_config.txt  
einfochips@AHMLPT2608: $ sudo adduser Jasnin  
[sudo] password for einfochips:  
adduser: Please enter a username matching the regular expression configured  
via the NAME_REGEX[_SYSTEM] configuration variable. Use the '--force-badname'  
option to relax this check or reconfigure NAME_REGEX.  
einfochips@AHMLPT2608: $ 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 []: developer  
Room Number []: 123  
Work Phone []:  
Home Phone []:  
Other []:  
Is the information correct? [Y/n] y  
einfochips@AHMLPT2608: $ cat/etc/passwd  
bash: cat/etc/passwd: No such file or directory  
einfochips@AHMLPT2608: $ cat /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync
```

Part 2: User & Group Management

Add a new user **developer**:

`sudo adduser developer`

```
einfochips@AHMLPT2608: ~  
einfochips@AHMLPT2608: ~/file7$ cd ..  
einfochips@AHMLPT2608: $ ls  
desktop Documents Downloads file file7 Music Pictures Public snap Templates test testumask Videos  
einfochips@AHMLPT2608: $ nano server_config.txt  
einfochips@AHMLPT2608: $ sudo adduser Jasnin  
[sudo] password for einfochips:  
adduser: Please enter a username matching the regular expression configured  
via the NAME_REGEX[_SYSTEM] configuration variable. Use the '--force-badname'  
option to relax this check or reconfigure NAME_REGEX.  
einfochips@AHMLPT2608: $ 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 []: developer  
Room Number []: 123  
Work Phone []:  
Home Phone []:  
Other []:  
Is the information correct? [Y/n] y  
einfochips@AHMLPT2608: $ cat/etc/passwd  
bash: cat/etc/passwd: No such file or directory  
einfochips@AHMLPT2608: $ cat /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync
```

1. Managing Groups

Create a group **devteam**:

```
sudo groupadd devteam
```

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

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

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

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

```
einfochips@AHMLPT2608: ~  
rtkit:x:116:123:RealtimeKit,,,:/proc:/usr/sbin/nologin  
whoopsie:x:117:124::/nonexistent:/bin/false  
sssd:x:118:125:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin  
speech-dispatcher:x:119:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false  
fwupd-refresh:x:120:126:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin  
nm-openvpn:x:121:127:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin  
saned:x:122:129::/var/lib/saned:/usr/sbin/nologin  
colord:x:123:130:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
geoclue:x:124:131::/var/lib/geoclue:/usr/sbin/nologin  
pulse:x:125:132:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin  
gnome-initial-setup:x:126:65534::/run/gnome-initial-setup:/bin/false  
hplip:x:127:7:HPLIP system user,,,:/run/hplip:/bin/false  
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false  
einfochips:x:1000:1000:einfochips,,,:/home/einfochips:/bin/bash  
mdatp:x:999:999::/home/mdatp:/usr/sbin/nologin  
sshd:x:129:65534::/run/sshd:/usr/sbin/nologin  
developer:x:1001:1001:developer,123,,,:/home/developer:/bin/bash  
einfochips@AHMLPT2608:~$ who  
einfochips tty2          2024-07-08 14:52 (tty2)  
einfochips@AHMLPT2608:~$ who  
einfochips tty2          2024-07-08 14:52 (tty2)  
einfochips@AHMLPT2608:~$ sudo adduser developer  
adduser: The user 'developer' already exists.  
einfochips@AHMLPT2608:~$ sudo deluser developer  
Removing user 'developer' ...  
Warning: group 'developer' has no more members.  
userdel: user developer is currently used by process 192655  
/usr/sbin/deluser: '/sbin/userdel developer' returned error code 8. Exiting.  
einfochips@AHMLPT2608:~$ sudo grpadd devteam  
sudo: grpadd: command not found  
einfochips@AHMLPT2608:~$ sudo groupadd devteam  
einfochips@AHMLPT2608:~$ sudo usermod -aG devteam developer  
einfochips@AHMLPT2608:~$ sudo gpasswd -developer devteam  
Removing user eveloper from group devteam  
gpasswd: user 'eveloper' is not a member of 'devteam'  
einfochips@AHMLPT2608:~$ sudo gpasswd -d developer devteam  
Removing user developer from group devteam  
einfochips@AHMLPT2608:~$
```

```
einfochips@AHMLPT2608: ~  
nm-openvpn:x:121:127:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin  
saned:x:122:129::/var/lib/saned:/usr/sbin/nologin  
colord:x:123:130:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
geoclue:x:124:131::/var/lib/geoclue:/usr/sbin/nologin  
pulse:x:125:132:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin  
gnome-initial-setup:x:126:65534::/run/gnome-initial-setup:/bin/false  
hplip:x:127:7:HPLIP system user,,,:/run/hplip:/bin/false  
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false  
einfochips:x:1000:1000:einfochips,,,:/home/einfochips:/bin/bash  
mdatp:x:999:999::/home/mdatp:/usr/sbin/nologin  
sshd:x:129:65534::/run/sshd:/usr/sbin/nologin  
developer:x:1001:1001:developer,123,,:/home/developer:/bin/bash  
einfochips@AHMLPT2608:~$ who  
einfochips tty2      2024-07-08 14:52 (tty2)  
einfochips@AHMLPT2608:~$ who  
einfochips tty2      2024-07-08 14:52 (tty2)  
einfochips@AHMLPT2608:~$ sudo adduser developer  
adduser: The user 'developer' already exists.  
einfochips@AHMLPT2608:~$ sudo deluser developer  
Removing user 'developer' ...  
Warning: group 'developer' has no more members.  
userdel: user developer is currently used by process 192655  
/usr/sbin/userdel: '/sbin/userdel developer' returned error code 8. Exiting.  
einfochips@AHMLPT2608:~$ sudo grpadd devteam  
sudo: grpadd: command not found  
einfochips@AHMLPT2608:~$ sudo groupadd devteam  
einfochips@AHMLPT2608:~$ sudo usermod -aG devteam developer  
einfochips@AHMLPT2608:~$ sudo gpasswd -d developer devteam  
Removing user developer from group devteam  
gpasswd: user 'developer' is not a member of 'devteam'  
einfochips@AHMLPT2608:~$ sudo gpasswd -d developer devteam  
Removing user developer from group devteam  
einfochips@AHMLPT2608:~$ ls -l server_config.txt  
-rw-rw-r-- 1 einfochips einfochips 10 Jul  9 10:19 server_config.txt  
einfochips@AHMLPT2608:~$ chmod 644 server_config.txt  
einfochips@AHMLPT2608:~$ ls -l server_config.txt  
-rw-r--r-- 1 einfochips einfochips 10 Jul  9 10:19 server_config.txt  
einfochips@AHMLPT2608:~$
```

Part 3: File Permissions Management

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
```

-

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`

```
einfochips@AHMLPT2608: ~  
nm-openvpn:x:121:127:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin  
saned:x:122:129::/var/lib/saned:/usr/sbin/nologin  
colord:x:123:130:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
geoclue:x:124:131::/var/lib/geoclue:/usr/sbin/nologin  
pulse:x:125:132:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin  
gnome-initial-setup:x:126:65534::/run/gnome-initial-setup:/bin/false  
hplip:x:127:7:HPLIP system user,,,:/run/hplip:/bin/false  
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false  
einfochips:x:1000:1000:einfochips,,,:/home/einfochips:/bin/bash  
mdatp:x:999:999::/home/mdatp:/usr/sbin/nologin  
sshd:x:129:65534::/run/sshd:/usr/sbin/nologin  
developer:x:1001:1001:developer,123,,:/home/developer:/bin/bash  
einfochips@AHMLPT2608:~$ who  
einfochips tty2      2024-07-08 14:52 (tty2)  
einfochips@AHMLPT2608:~$ who  
einfochips tty2      2024-07-08 14:52 (tty2)  
einfochips@AHMLPT2608:~$ sudo adduser developer  
adduser: The user 'developer' already exists.  
einfochips@AHMLPT2608:~$ sudo deluser developer  
Removing user 'developer' ...  
Warning: group 'developer' has no more members.  
userdel: user developer is currently used by process 192655  
/usr/sbin/deluser: '/sbin/userdel developer' returned error code 8. Exiting.  
einfochips@AHMLPT2608:~$ sudo grpadd devteam  
sudo: grpadd: command not found  
einfochips@AHMLPT2608:~$ sudo groupadd devteam  
einfochips@AHMLPT2608:~$ sudo usermod -aG devteam developer  
einfochips@AHMLPT2608:~$ sudo gpasswd -developer devteam  
Removing user developer from group devteam  
gpasswd: user 'developer' is not a member of 'devteam'  
einfochips@AHMLPT2608:~$ sudo gpasswd -d developer devteam  
Removing user developer from group devteam  
einfochips@AHMLPT2608:~$ ls -l server_config.txt  
-rw-rw-r-- 1 einfochips einfochips 10 Jul  9 10:19 server_config.txt  
einfochips@AHMLPT2608:~$ chmod 644 server_config.txt  
einfochips@AHMLPT2608:~$ ls -l server_config.txt  
-rw-r--r-- 1 einfochips einfochips 10 Jul  9 10:19 server_config.txt  
einfochips@AHMLPT2608:~$
```

Part 4: Controlling Services and Daemons

1 Managing Services with systemctl

Start the Apache service:

`sudo systemctl start apache2`

•

Stop the Apache service:

`sudo systemctl stop apache2`

•

Enable the Apache service to start on boot:

`sudo systemctl enable apache2`

•

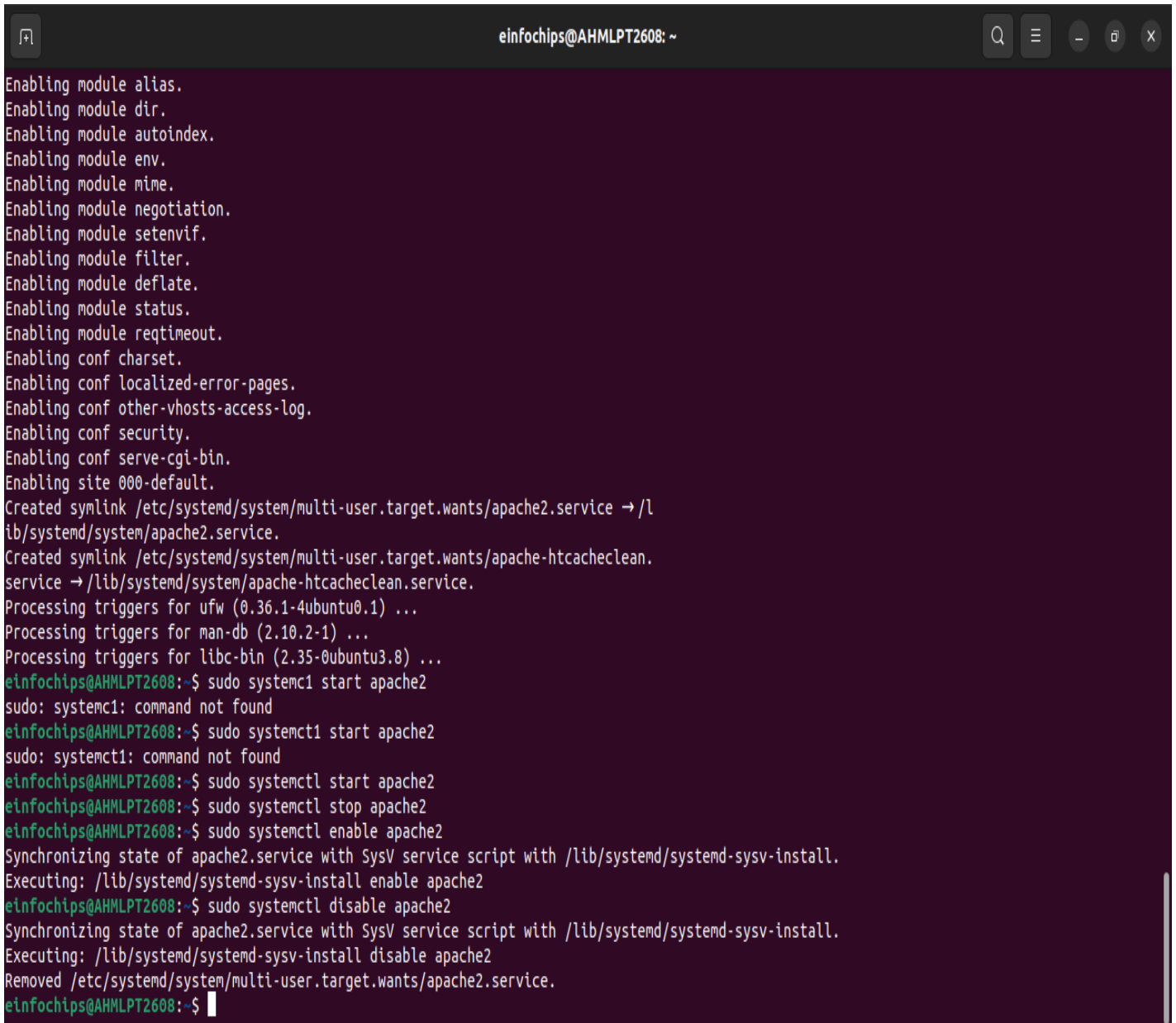
Disable the Apache service:

```
sudo systemctl disable apache2
```

•

Check the status of the Apache service:

```
sudo systemctl status apache2
```

A terminal window with a dark purple background and white text. The window title is 'einfochips@AHMLPT2608: ~'. The terminal output shows the process of enabling module aliases, creating symlinks for systemd services, and attempting to start and stop the Apache service using 'systemctl' and 'systemd' commands. The final command shown is 'sudo systemctl disable apache2', which is partially visible at the bottom of the terminal.

```
einfochips@AHMLPT2608: ~  
Enabling module alias.  
Enabling module dir.  
Enabling module autoindex.  
Enabling module env.  
Enabling module mime.  
Enabling module negotiation.  
Enabling module setenvif.  
Enabling module filter.  
Enabling module deflate.  
Enabling module status.  
Enabling module reqtimeout.  
Enabling conf charset.  
Enabling conf localized-error-pages.  
Enabling conf other-vhosts-access-log.  
Enabling conf security.  
Enabling conf serve-cgi-bin.  
Enabling site 000-default.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.  
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...  
Processing triggers for man-db (2.10.2-1) ...  
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...  
einfochips@AHMLPT2608:~$ sudo systemctl start apache2  
sudo: systemctl: command not found  
einfochips@AHMLPT2608:~$ sudo systemctl start apache2  
sudo: systemctl: command not found  
einfochips@AHMLPT2608:~$ sudo systemctl start apache2  
einfochips@AHMLPT2608:~$ sudo systemctl stop apache2  
einfochips@AHMLPT2608:~$ 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@AHMLPT2608:~$ 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@AHMLPT2608:~$
```

```
einfochips@AHMLPT2608: ~  
Enabling module alias.  
Enabling module dir.  
Enabling module autoindex.  
Enabling module env.  
Enabling module mime.  
Enabling module negotiation.  
Enabling module setenvif.  
Enabling module filter.  
Enabling module deflate.  
Enabling module status.  
Enabling module reqtimeout.  
Enabling conf charset.  
Enabling conf localized-error-pages.  
Enabling conf other-vhosts-access-log.  
Enabling conf security.  
Enabling conf serve-cgi-bin.  
Enabling site 000-default.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.  
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...  
Processing triggers for man-db (2.10.2-1) ...  
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...  
einfochips@AHMLPT2608:~$ sudo systemctl start apache2  
sudo: systemctl: command not found  
einfochips@AHMLPT2608:~$ sudo systemct1 start apache2  
sudo: systemct1: command not found  
einfochips@AHMLPT2608:~$ sudo systemctl start apache2  
einfochips@AHMLPT2608:~$ sudo systemctl stop apache2  
einfochips@AHMLPT2608:~$ 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@AHMLPT2608:~$ 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@AHMLPT2608:~$
```

Part 5: Process Handling

Viewing Processes

List all running processes:

```
ps aux
```

•

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

top

```
einfochips@AHMLPT2608: ~  
~  
~  
einfochips@AHMLPT2608:~$ ps aux  
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND  
root         1  0.0  0.0 168412 12912 ?        Ss   Jul08   0:31 /sbin/init sp  
root         2  0.0  0.0      0     0 ?        S    Jul08   0:00 [kthreadd]  
root         3  0.0  0.0      0     0 ?        I<   Jul08   0:00 [rcu_gp]  
root         4  0.0  0.0      0     0 ?        I<   Jul08   0:00 [rcu_par_gp]  
root         5  0.0  0.0      0     0 ?        I<   Jul08   0:00 [slub_flushwq]  
root         6  0.0  0.0      0     0 ?        I<   Jul08   0:00 [netns]  
root         8  0.0  0.0      0     0 ?        I<   Jul08   0:00 [kworker/0:0H  
root        11  0.0  0.0      0     0 ?        I<   Jul08   0:00 [mm_percpu_wq  
root        12  0.0  0.0      0     0 ?        I    Jul08   0:00 [rcu_tasks_kt  
root        13  0.0  0.0      0     0 ?        I    Jul08   0:00 [rcu_tasks_ru  
root        14  0.0  0.0      0     0 ?        I    Jul08   0:00 [rcu_tasks_tr  
root        15  0.0  0.0      0     0 ?        S    Jul08   0:00 [ksoftirqd/0]  
root        16  0.0  0.0      0     0 ?        I    Jul08   0:15 [rcu_preempt]  
root        17  0.0  0.0      0     0 ?        S    Jul08   0:00 [migration/0]  
root        18  0.0  0.0      0     0 ?        S    Jul08   0:00 [idle_inject/  
root        19  0.0  0.0      0     0 ?        S    Jul08   0:00 [cpuhp/0]  
root        20  0.0  0.0      0     0 ?        S    Jul08   0:00 [cpuhp/1]  
root        21  0.0  0.0      0     0 ?        S    Jul08   0:00 [idle_inject/  
root        22  0.0  0.0      0     0 ?        S    Jul08   0:00 [migration/1]  
root        23  0.0  0.0      0     0 ?        S    Jul08   0:00 [ksoftirqd/1]  
root        25  0.0  0.0      0     0 ?        I<   Jul08   0:00 [kworker/1:0H  
root        26  0.0  0.0      0     0 ?        S    Jul08   0:00 [cpuhp/2]  
root        27  0.0  0.0      0     0 ?        S    Jul08   0:00 [idle_inject/  
root        28  0.0  0.0      0     0 ?        S    Jul08   0:00 [migration/2]  
root        29  0.0  0.0      0     0 ?        S    Jul08   0:00 [ksoftirqd/2]  
root        31  0.0  0.0      0     0 ?        I<   Jul08   0:00 [kworker/2:0H  
root        32  0.0  0.0      0     0 ?        S    Jul08   0:00 [cpuhp/3]  
root        33  0.0  0.0      0     0 ?        S    Jul08   0:00 [idle_inject/  
root        34  0.0  0.0      0     0 ?        S    Jul08   0:00 [migration/3]  
root        35  0.0  0.0      0     0 ?        S    Jul08   0:01 [ksoftirqd/3]  
root        37  0.0  0.0      0     0 ?        I<   Jul08   0:00 [kworker/3:0H  
root        38  0.0  0.0      0     0 ?        S    Jul08   0:00 [cpuhp/4]  
root        39  0.0  0.0      0     0 ?        S    Jul08   0:00 [idle_inject/
```

```
einfochips@AHMLPT2608: ~  
Tasks: 414 total,  2 running, 411 sleeping,  0 stopped,  1 zombie  
%Cpu(s): 13.6 us,  0.7 sy,  0.0 ni, 85.6 id,  0.1 wa,  0.0 hi,  0.0 si,  0.0 st  
MiB Mem : 15744.6 total,  4663.9 free,  4927.4 used,  6153.3 buff/cache  
MiB Swap: 15259.0 total, 15259.0 free,  0.0 used,  9420.0 avail Mem  
  
  PID USER      PR  NI   VIRT    RES    SHR  S  %CPU  %MEM    TIME+  COMMAND  
 2542 einfoch+  20   0 4404464 514144 142820 R 103.0   3.2 272:43.55 /opt/paloaltonetworks/globalprotect/PanGPMUI  
 2097 einfoch+   9 -11 2579632 29232  22064 S   2.3   0.2  2:42.24 /usr/bin/pulseaudio --daemonize=no --log-target=journal  
10486 einfoch+  20   0 562236 59204  41868 S   1.7   0.4  0:30.69 /usr/libexec/gnome-terminal-server  
 2269 einfoch+  20   0 5824548 363084 141492 S   1.0   2.3  5:22.12 /usr/bin/gnome-shell  
14857 einfoch+  20   0 1135.5g 425808 136176 S   0.7   2.6  2:44.81 /snap/teams-for-linux/638/teams-for-linux --type=renderer --enable-cr+  
174436 einfoch+  20   0 2431204 91352  75648 S   0.7   0.6  0:00.99 /snap/firefox/4483/usr/lib/firefox/firefox -contentproc -childID 5 -i+  
214639 einfoch+  20   0 13528    4352   3328 R   0.7   0.0  0:00.48 top  
  527 systemd+  20   0 14836   6784   6016 S   0.3   0.0  0:11.08 /lib/systemd/systemd-oomd  
 1076 root      20   0 242488   9088   7680 S   0.3   0.1  0:01.78 /usr/libexec/upowerd  
12313 mdatp     20   0 883200 174420  69248 S   0.3   1.1  0:28.44 /opt/microsoft/mdatp/sbin/wdavaemon unprivileged 327 329 331 333 326+  
14416 einfoch+  20   0 1124.2g 165260 120952 S   0.3   1.0  0:28.75 /snap/outlook-for-linux/18/outlook-for-linux --no-sandbox  
173922 einfoch+  20   0 11.4g 492832 237384 S   0.3   3.1  2:42.46 /snap/firefox/4483/usr/lib/firefox/firefox  
203480 einfoch+  20   0 2403796 74240  62208 S   0.3   0.5  0:00.51 /snap/firefox/4483/usr/lib/firefox/firefox -contentproc -childID 16 --+  
204107 root      20   0 3639048 31576  17408 S   0.3   0.2  0:03.52 /opt/Tanium/TaniumClient/TaniumCX run-framework  
204210 root      20   0 778536 28800  24832 S   0.3   0.2  0:00.76 /opt/Tanium/TaniumClient/TaniumCX run --purpose libTaniumSoftwareMana+  
   1 root      20   0 168412 12912  8048 S   0.0   0.1  0:31.21 /sbin/init splash  
   2 root      20   0      0      0      0 S   0.0   0.0  0:00.03 [kthreadd]  
   3 root      0 -20      0      0      0 I   0.0   0.0  0:00.00 [rcu_gp]  
   4 root      0 -20      0      0      0 I   0.0   0.0  0:00.00 [rcu_par_gp]  
   5 root      0 -20      0      0      0 I   0.0   0.0  0:00.00 [slub_flushwq]  
   6 root      0 -20      0      0      0 I   0.0   0.0  0:00.00 [netns]  
   8 root      0 -20      0      0      0 I   0.0   0.0  0:00.00 [kworker/0:0H-events_highpri]  
  11 root      0 -20      0      0      0 I   0.0   0.0  0:00.00 [mm_percpu_wq]  
  12 root      20   0      0      0      0 I   0.0   0.0  0:00.00 [rcu_tasks_kthread]  
  13 root      20   0      0      0      0 I   0.0   0.0  0:00.00 [rcu_tasks_rude_kthread]  
  14 root      20   0      0      0      0 I   0.0   0.0  0:00.02 [rcu_tasks_trace_kthread]  
  15 root      20   0      0      0      0 S   0.0   0.0  0:00.81 [ksoftirqd/0]  
  16 root      20   0      0      0      0 I   0.0   0.0  0:15.43 [rcu_preempt]  
  17 root      rt   0      0      0      0 S   0.0   0.0  0:00.04 [migration/0]  
  18 root     -51   0      0      0      0 S   0.0   0.0  0:00.00 [idle_inject/0]  
  19 root      20   0      0      0      0 S   0.0   0.0  0:00.00 [cpuhp/0]  
einfochips@AHMLPT2608:~$
```


Creating and Deploying a Static Website with Apache2

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
```



```
einfochips@AHMLPT2608: /var/www/html

 6 root      0 -20      0      0      0 I    0.0    0.0    0:00.00 [netns]
 8 root      0 -20      0      0      0 I    0.0    0.0    0:00.00 [kworker/0:0H-events_highpri]
11 root      0 -20      0      0      0 I    0.0    0.0    0:00.00 [mm_percpu_wq]
12 root     20  0      0      0      0 I    0.0    0.0    0:00.00 [rcu_tasks_kthread]
13 root     20  0      0      0      0 I    0.0    0.0    0:00.00 [rcu_tasks_rude_kthread]
14 root     20  0      0      0      0 I    0.0    0.0    0:00.02 [rcu_tasks_trace_kthread]
15 root     20  0      0      0      0 S    0.0    0.0    0:00.81 [ksoftirqd/0]
16 root     20  0      0      0      0 I    0.0    0.0    0:15.43 [rcu_preempt]
17 root      rt  0      0      0      0 S    0.0    0.0    0:00.04 [migration/0]
18 root    -51  0      0      0      0 S    0.0    0.0    0:00.00 [idle_inject/0]
19 root     20  0      0      0      0 S    0.0    0.0    0:00.00 [cpuhp/0]

einfochips@AHMLPT2608:~$ kill <PID>
bash: syntax error near unexpected token `newline'
einfochips@AHMLPT2608:~$ sudo systemctl status apache2
○ apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor preset: enabled)
   Active: inactive (dead) since Tue 2024-07-09 10:59:06 IST; 9min ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 212073 (code=exited, status=0/SUCCESS)
    CPU: 89ms

Jul 09 10:57:04 AHMLPT2608 systemd[1]: Starting The Apache HTTP Server...
Jul 09 10:57:04 AHMLPT2608 apachectl[212072]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.0.1. Set the 'ServerName' directive globally to suppress this message
Jul 09 10:57:04 AHMLPT2608 systemd[1]: Started The Apache HTTP Server.
Jul 09 10:59:06 AHMLPT2608 systemd[1]: Stopping The Apache HTTP Server...
Jul 09 10:59:06 AHMLPT2608 apachectl[212656]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.0.1. Set the 'ServerName' directive globally to suppress this message
Jul 09 10:59:06 AHMLPT2608 systemd[1]: apache2.service: Deactivated successfully.
Jul 09 10:59:06 AHMLPT2608 systemd[1]: Stopped The Apache HTTP Server.

einfochips@AHMLPT2608:~$ 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
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.
einfochips@AHMLPT2608:~$ cd /var/www/html
einfochips@AHMLPT2608:/var/www/html$ sudo mkdir mystaticwebsite
einfochips@AHMLPT2608:/var/www/html$ sudo chown -R $developer:$devteam /var/www/html/mystaticwebs
chown: cannot access '/var/www/html/mystaticwebs': No such file or directory
einfochips@AHMLPT2608:/var/www/html$ sudo mkdir
```

Part 2: Creating the Website

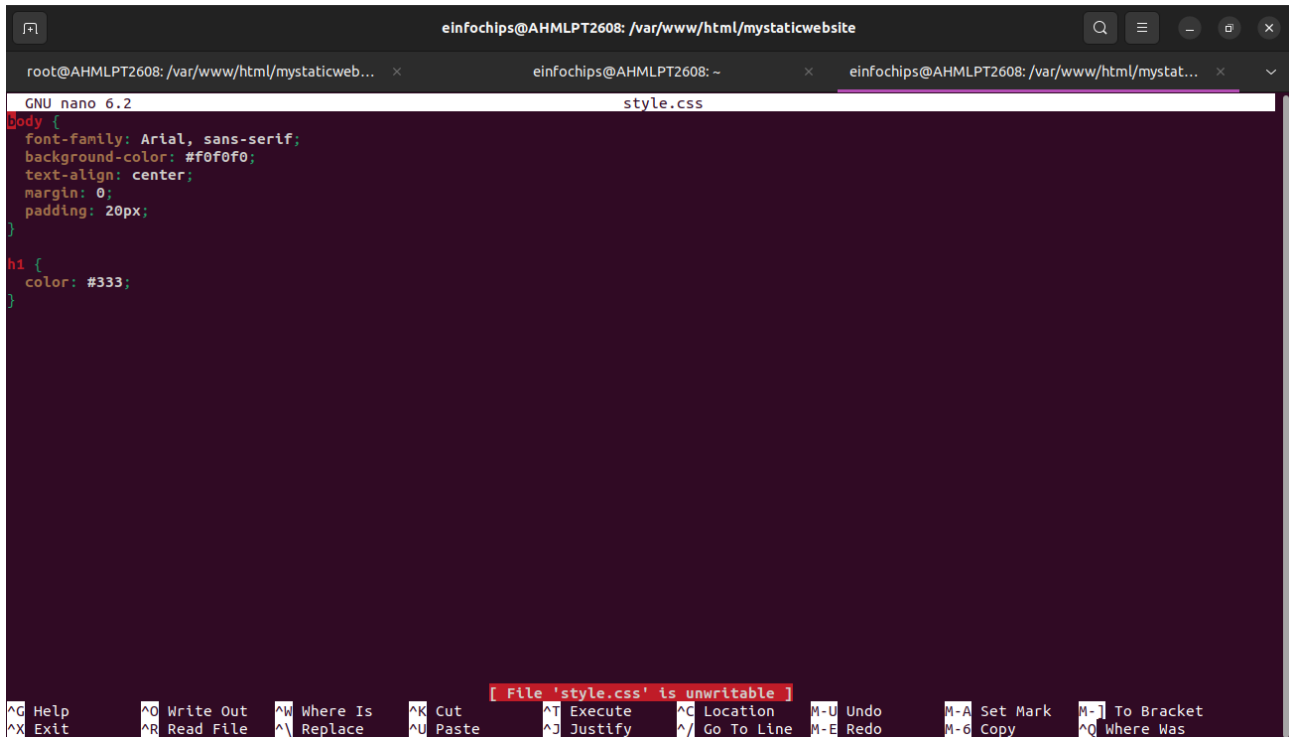
Create HTML File

```
einfochips@AHMLPT2608: /var/www/html/mystaticwebsite

root@AHMLPT2608: /var/www/html/mystaticweb... x einfochips@AHMLPT2608: ~ x einfochips@AHMLPT2608: /var/www/html/mystat... x
GNU nano 6.2 index.html
<!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>

[ File 'index.html' is unwritable ]
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location ^U Undo ^M-A Set Mark ^M-] To Bracket
^X Exit ^R Read File ^V Replace ^N Paste ^D Justify ^_ Go To Line ^M-B Redo ^M-G Copy ^M-^ Where Was
```

Create CSS File



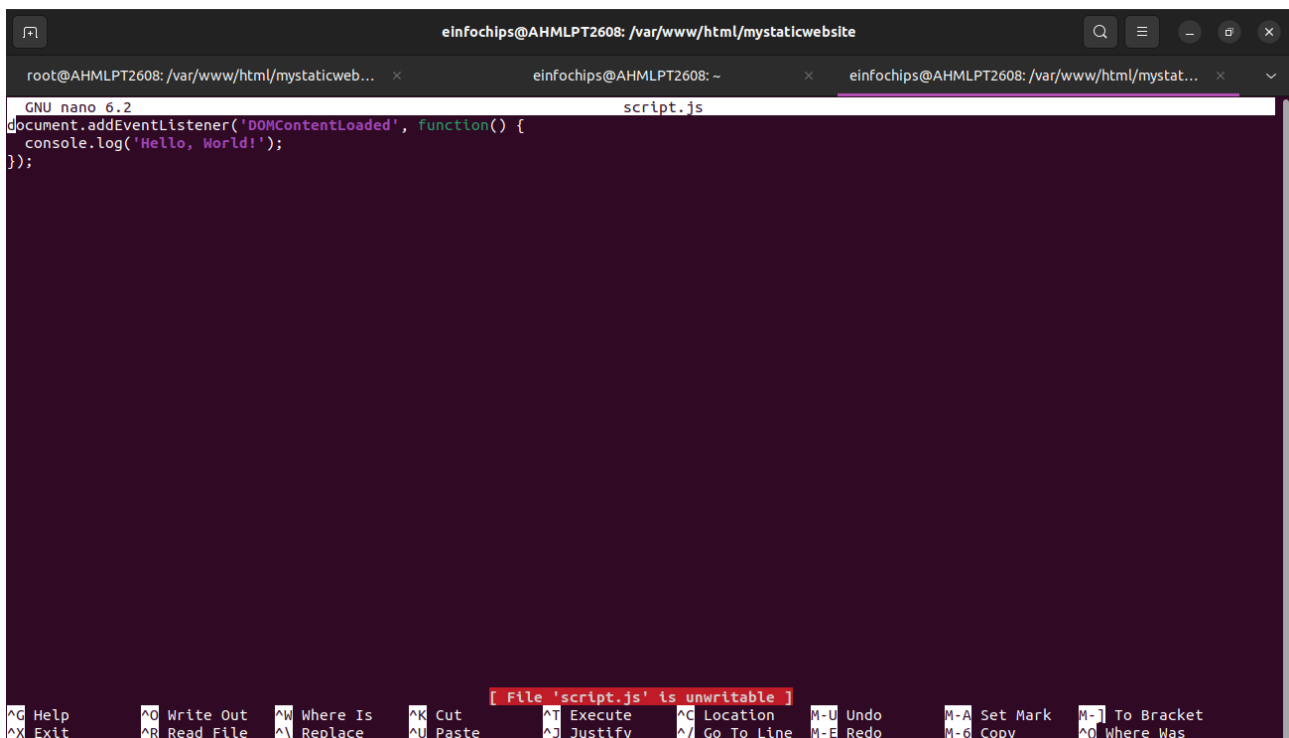
```
GNU nano 6.2 style.css
body {
font-family: Arial, sans-serif;
background-color: #f0f0f0;
text-align: center;
margin: 0;
padding: 20px;
}

h1 {
color: #333;
}
```

[File 'style.css' is unwritable]

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location ^U Undo ^A Set Mark ^M To Bracket
^X Exit ^R Read File ^N Replace ^U Paste ^D Justify ^_ Go To Line ^E Redo ^G Copy ^Q Where Was

Create JavaScript File



```
GNU nano 6.2 script.js
document.addEventListener('DOMContentLoaded', function() {
console.log('Hello, World!');
});
```

[File 'script.js' is unwritable]

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location ^U Undo ^A Set Mark ^M To Bracket
^X Exit ^R Read File ^N Replace ^U Paste ^D Justify ^_ Go To Line ^E Redo ^G Copy ^Q Where Was

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
```

Reload Apache2

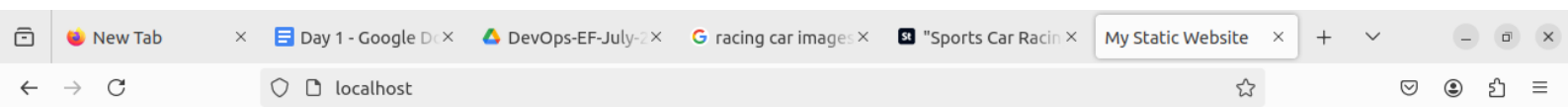
Reload the Apache2 service to apply the changes:

```
sudo systemctl reload apache2
```

-

2. 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.



Welcome to My Static Website

This is a simple static website using Apache2.

