Project: Setting Up an Internal Web Server for XYZ Company

Introduction:

XYZ Company needs an **internal Web Server** to display company information and share some files among employees. As a **System Administrator**, your task is to set up the environment, run the website, and manage permissions securely.

Tasks to be Completed:

1. Configure Network and Connectivity:

- Set the **hostname** to `intranet.xyz.local`
- Ensure the **IP Address** is **static** within the internal network.
- Modify the **/etc/hosts** file to set up local **name resolution**.

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2. Create Users and Assign Roles:

User	Role	Permissions
`admin1`	System Admin	Has `sudo` privileges to manage the server.
`developer1`	Web Developer	Can modify website files only.
`viewer1`	Regular Employee	Can only read shared files.

Implementation:

- Create users using `useradd`.
- Set passwords for each user.
- Add `admin1` to the **sudo** group.
- Ensure `developer1` can modify website files but has no administrative privileges.
- `viewer1` should have **read-only access** to the shared files directory.

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3. Set Up and Manage Files & Permissions:

Required File Structure:

```
/var/www/html/      # Main website files
/var/www/shared/    # Shared company files
```

Required Permissions:

- **/var/www/html/**:
  - **Owner:** developer1
  - **Permissions:** developer1 can modify files, while others can only read them.
- **/var/www/shared/**:
  - **Owner:** admin1
  - **Permissions:** All users can read, but cannot modify files.

Implementation:

- Change file ownership using **chown**.
- Set proper permissions using **chmod**.

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4. Install and Configure Web Server:

- Install **Apache (httpd)** using `dnf install httpd`.
- Start the service and ensure it runs after reboot using `systemctl enable --now httpd`.
- Place a **test HTML page** in `/var/www/html/index.html`. (I'm "your name")
- Verify website accessibility using `curl` http://localhost.

  (search → selinux, firewall (disable))

Expected Outcome:

After completing the project, students should be able to access the company's internal website via a browser using the **IP Address** or **hostname** (`http://intranet.xyz.local`).

- The **developer** can update the website.
- Employees can access shared files in read-only mode.
- Security is enforced to prevent unauthorized modifications.

Python script

Screen 1:

```
(8/11): httpd-tools-2.4.62-1.el9_5.2.x86_64.rpm                           371 kB/s |  79 kB   00:00
(9/11): httpd-filesystem-2.4.62-1.el9_5.2.noarch.rpm                       66 kB/s |  12 kB   00:00
(10/11): httpd-2.4.62-1.el9_5.2.x86_64.rpm                                 88 kB/s |  45 kB   00:00
(11/11): httpd-core-2.4.62-1.el9_5.2.x86_64.rpm                           2.2 MB/s | 1.4 MB   00:00
--------------------------------------------------------------------------------------------------
Total                                                                     499 kB/s | 2.0 MB   00:04
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                                                            1/1
  Installing       : apr-1.7.0-12.el9_3.x86_64                                                 1/11
  Installing       : apr-util-bdb-1.6.1-23.el9.x86_64                                          2/11
  Installing       : apr-util-1.6.1-23.el9.x86_64                                              3/11
  Installing       : apr-util-openssl-1.6.1-23.el9.x86_64                                      4/11
  Installing       : httpd-tools-2.4.62-1.el9_5.2.x86_64                                       5/11
  Running scriptlet: httpd-filesystem-2.4.62-1.el9_5.2.noarch                                  6/11
  Installing       : httpd-filesystem-2.4.62-1.el9_5.2.noarch                                  6/11
  Installing       : httpd-core-2.4.62-1.el9_5.2.x86_64                                        7/11
  Installing       : mod_lua-2.4.62-1.el9_5.2.x86_64                                           8/11
  Installing       : rocky-logos-httpd-90.15-2.el9.noarch                                      9/11
  Installing       : mod_http2-2.0.26-2.el9_4.1.x86_64                                        10/11
  Installing       : httpd-2.4.62-1.el9_5.2.x86_64                                            11/11
  Running scriptlet: httpd-2.4.62-1.el9_5.2.x86_64                                            11/11
  Verifying        : rocky-logos-httpd-90.15-2.el9.noarch                                      1/11
  Verifying        : apr-util-openssl-1.6.1-23.el9.x86_64                                      2/11
  Verifying        : apr-util-bdb-1.6.1-23.el9.x86_64                                          3/11
  Verifying        : apr-util-1.6.1-23.el9.x86_64                                              4/11
  Verifying        : mod_http2-2.0.26-2.el9_4.1.x86_64                                         5/11
  Verifying        : apr-1.7.0-12.el9_3.x86_64                                                 6/11
  Verifying        : mod_lua-2.4.62-1.el9_5.2.x86_64                                           7/11
  Verifying        : httpd-tools-2.4.62-1.el9_5.2.x86_64                                       8/11
  Verifying        : httpd-filesystem-2.4.62-1.el9_5.2.noarch                                  9/11
  Verifying        : httpd-core-2.4.62-1.el9_5.2.x86_64                                       10/11
  Verifying        : httpd-2.4.62-1.el9_5.2.x86_64                                            11/11

Installed:
  apr-1.7.0-12.el9_3.x86_64              apr-util-1.6.1-23.el9.x86_64          apr-util-bdb-1.6.1-23.el9.x86_64       apr-util-openssl-1.6.1-23.el9.x86_64
  httpd-2.4.62-1.el9_5.2.x86_64          httpd-core-2.4.62-1.el9_5.2.x86_64    httpd-filesystem-2.4.62-1.el9_5.2.noarch   httpd-tools-2.4.62-1.el9_5.2.x86_64
  mod_http2-2.0.26-2.el9_4.1.x86_64      mod_lua-2.4.62-1.el9_5.2.x86_64       rocky-logos-httpd-90.15-2.el9.noarch
```
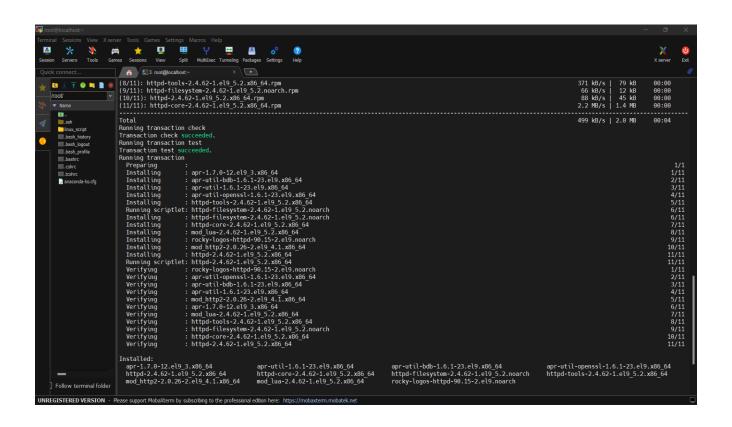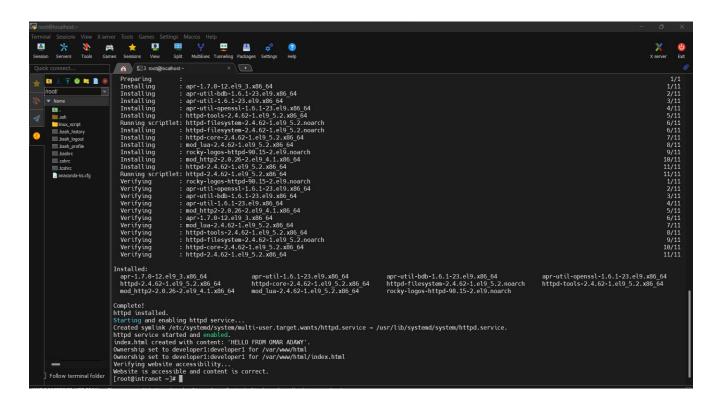
Screen 2:

```
  Preparing        :                                                                            1/1
  Installing       : apr-1.7.0-12.el9_3.x86_64                                                 1/11
  Installing       : apr-util-bdb-1.6.1-23.el9.x86_64                                          2/11
  Installing       : apr-util-1.6.1-23.el9.x86_64                                              3/11
  Installing       : apr-util-openssl-1.6.1-23.el9.x86_64                                      4/11
  Installing       : httpd-tools-2.4.62-1.el9_5.2.x86_64                                       5/11
  Running scriptlet: httpd-filesystem-2.4.62-1.el9_5.2.noarch                                  6/11
  Installing       : httpd-filesystem-2.4.62-1.el9_5.2.noarch                                  6/11
  Installing       : httpd-core-2.4.62-1.el9_5.2.x86_64                                        7/11
  Installing       : mod_lua-2.4.62-1.el9_5.2.x86_64                                           8/11
  Installing       : rocky-logos-httpd-90.15-2.el9.noarch                                      9/11
  Installing       : mod_http2-2.0.26-2.el9_4.1.x86_64                                        10/11
  Installing       : httpd-2.4.62-1.el9_5.2.x86_64                                            11/11
  Running scriptlet: httpd-2.4.62-1.el9_5.2.x86_64                                            11/11
  Verifying        : rocky-logos-httpd-90.15-2.el9.noarch                                      1/11
  Verifying        : apr-util-openssl-1.6.1-23.el9.x86_64                                      2/11
  Verifying        : apr-util-bdb-1.6.1-23.el9.x86_64                                          3/11
  Verifying        : apr-util-1.6.1-23.el9.x86_64                                              4/11
  Verifying        : mod_http2-2.0.26-2.el9_4.1.x86_64                                         5/11
  Verifying        : apr-1.7.0-12.el9_3.x86_64                                                 6/11
  Verifying        : mod_lua-2.4.62-1.el9_5.2.x86_64                                           7/11
  Verifying        : httpd-tools-2.4.62-1.el9_5.2.x86_64                                       8/11
  Verifying        : httpd-filesystem-2.4.62-1.el9_5.2.noarch                                  9/11
  Verifying        : httpd-core-2.4.62-1.el9_5.2.x86_64                                       10/11
  Verifying        : httpd-2.4.62-1.el9_5.2.x86_64                                            11/11

Installed:
  apr-1.7.0-12.el9_3.x86_64              apr-util-1.6.1-23.el9.x86_64          apr-util-bdb-1.6.1-23.el9.x86_64       apr-util-openssl-1.6.1-23.el9.x86_64
  httpd-2.4.62-1.el9_5.2.x86_64          httpd-core-2.4.62-1.el9_5.2.x86_64    httpd-filesystem-2.4.62-1.el9_5.2.noarch   httpd-tools-2.4.62-1.el9_5.2.x86_64
  mod_http2-2.0.26-2.el9_4.1.x86_64      mod_lua-2.4.62-1.el9_5.2.x86_64       rocky-logos-httpd-90.15-2.el9.noarch

Complete!
httpd installed.
Starting and enabling httpd service...
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr/lib/systemd/system/httpd.service.
httpd service started and enabled.
index.html created with content: 'HELLO FROM OMAR ADAWY'.
Ownership set to developer1:developer1 for /var/www/html
Ownership set to developer1:developer1 for /var/www/html/index.html
Verifying website accessibility...
Website is accessible and content is correct.
[root@intranet ~]#
```

ip add or (cat ens160.nmconnection)

```
[root@intranet ~]# cat /etc/NetworkManager/system-connections/ens160.nmconnection
[connection]
id=ens160
uuid=0b989758-a746-3677-910c-a8c6f15cdd7a
type=ethernet
autoconnect-priority=-999
interface-name=ens160
timestamp=1745067966

[ethernet]

[ipv4]
address1=192.168.206.131/24,192.168.206.2
dns=192.168.206.2;
method=manual

[ipv6]
addr-gen-mode=eui64
method=auto

[proxy]
[root@intranet ~]#
```

Hostnamectl

```
[root@intranet ~]# hostnamectl
  Static hostname: intranet.xyz.local
        Icon name: computer-vm
          Chassis: vm
       Machine ID: 8a6078a56f644966a5f77be32447b389
          Boot ID: 7e519e90fec94773bd76a018f39df4f8
   Virtualization: vmware
 Operating System: Rocky Linux 9.5 (Blue Onyx)
      CPE OS Name: cpe:/o:rocky:rocky:9::baseos
           Kernel: Linux 5.14.0-503.14.1.el9_5.x86_64
     Architecture: x86-64
  Hardware Vendor: VMware, Inc.
   Hardware Model: VMware Virtual Platform
 Firmware Version: 6.00
[root@intranet ~]#
```

cat /etc/hosts

```
[root@intranet ~]# cat /etc/hosts
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1          localhost localhost.localdomain localhost6 localhost6.localdomain6
127.0.0.1 intranet.xyz.local
[root@intranet ~]#
```
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cat /etc/passwd | grep 'admin1\|developer1\|viewer1'

```
[root@intranet ~]# cat /etc/hosts
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1          localhost localhost.localdomain localhost6 localhost6.localdomain6
127.0.0.1 intranet.xyz.local
[root@intranet ~]# cat /etc/passwd | grep 'admin1\|developer1\|viewer1'
admin1:x:1000:1000::/home/admin1:/bin/bash
developer1:x:1001:1001::/home/developer1:/bin/bash
viewer1:x:1002:1002::/home/viewer1:/bin/bash
[root@intranet ~]#
```
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sudo -l -U admin1

```
[root@intranet ~]# sudo -l -U admin1
Matching Defaults entries for admin1 on intranet:
    !visiblepw, always_set_home, match_group_by_gid, always_query_group_plugin, env_reset, env_keep="COLORS DISPLAY HOSTNAME HISTSIZE KDEDIR LS_COLORS",
    env_keep+="MAIL PS1 PS2 QTDIR USERNAME LANG LC_ADDRESS LC_CTYPE", env_keep+="LC_COLLATE LC_IDENTIFICATION LC_MEASUREMENT LC_MESSAGES", env_keep+="LC_MONETARY
    LC_NAME LC_NUMERIC LC_PAPER LC_TELEPHONE", env_keep+="LC_TIME LC_ALL LANGUAGE LINGUAS _XKB_CHARSET XAUTHORITY", secure_path=/sbin\:/bin\:/usr/sbin\:/usr/bin

User admin1 may run the following commands on intranet:
    (ALL) ALL
[root@intranet ~]#
```
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ls -ld /var/www/html ls -ld /var/www/shared

```
[root@intranet ~]# ls -ld /var/www/html ls -ld /var/www/shared
ls: cannot access 'ls': No such file or directory
drwxr-xr-x. 2 developer1 developer1 24 Apr 19 15:08 /var/www/html
drwxr-xr-x. 2 admin1     admin1      6 Apr 19 15:07 /var/www/shared
[root@intranet ~]#
```
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systemctl status httpd

```
[root@intranet ~]# ls -ld /var/www/html ls -ld /var/www/shared
ls: cannot access 'ls': No such file or directory
drwxr-xr-x. 2 developer1 developer1 24 Apr 19 15:08 /var/www/html
drwxr-xr-x. 2 admin1     admin1      6 Apr 19 15:07 /var/www/shared
[root@intranet ~]# systemctl status httpd
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
     Active: active (running) since Sat 2025-04-19 15:08:09 EET; 17min ago
       Docs: man:httpd.service(8)
   Main PID: 2277 (httpd)
     Status: "Total requests: 1; Idle/Busy workers 100/0;Requests/sec: 0.000952; Bytes served/sec:   0 B/sec"
      Tasks: 177 (limit: 10868)
     Memory: 36.2M
        CPU: 1.546s
     CGroup: /system.slice/httpd.service
             ├─2277 /usr/sbin/httpd -DFOREGROUND
             ├─2278 /usr/sbin/httpd -DFOREGROUND
             ├─2280 /usr/sbin/httpd -DFOREGROUND
             ├─2281 /usr/sbin/httpd -DFOREGROUND
             └─2282 /usr/sbin/httpd -DFOREGROUND

Apr 19 15:08:09 intranet.xyz.local systemd[1]: Starting The Apache HTTP Server...
Apr 19 15:08:09 intranet.xyz.local httpd[2277]: AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using intranet.xyz.local. Set>
Apr 19 15:08:09 intranet.xyz.local systemd[1]: Started The Apache HTTP Server.
Apr 19 15:08:09 intranet.xyz.local httpd[2277]: Server configured, listening on: port 80
lines 1-20/20 (END)
```
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ls -l /var/www/html/

```
-rw-r--r--. 1 developer1 developer1 30 Apr 19 15:08 index.html
[root@intranet ~]#
```
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curl http://intranet.xyz.local

```
[root@intranet ~]# curl http://intranet.xyz.local
<h1>HELLO FROM OMAR ADAWY</h1>[root@intranet ~]#
```
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