



وَقُلْ رَبِّ زِدْنِي عِلْمًا

FINAL PROJECT

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IP Address Configuration (nmcli&ip add)

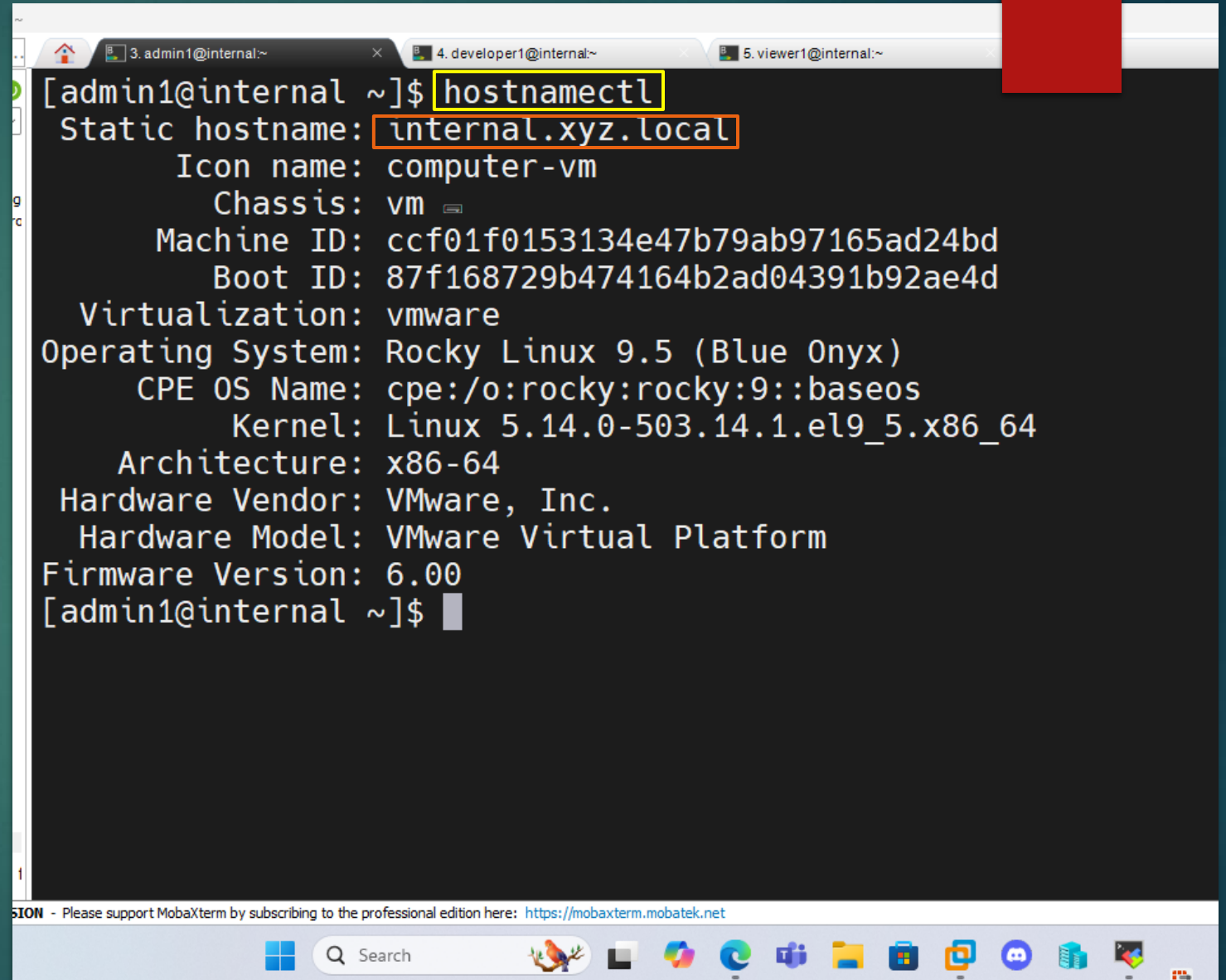
- ▶ Configuring the IP address is crucial for ensuring that the server can communicate with other devices on the internal network. By using the command **nmcli** to modify in the network interface and make it static.
- ▶ Using **ip ad** command to show our ip address that we assign

```
admin1@internal ~]$ ip ad
lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
ens224: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP
    link/ether 00:0c:29:4f:73:18 brd ff:ff:ff:ff:ff:ff
    altname enp19s0
    inet 192.168.153.131/24 brd 192.168.153.255 scope global nopromisc
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:fe4f:7318/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
admin1@internal ~]$
```

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Hostname Configuration (hostnamectl)

- ▶ Setting the correct hostname ensures that the server can be easily identified on the network.
- ▶ The `hostnamectl` command was used to set the hostname of the server to `internal.xyz.local`.



The screenshot shows a MobaXterm terminal window with three tabs: '3. admin1@internal:~', '4. developer1@internal:~', and '5. viewer1@internal:~'. The active tab is '3. admin1@internal:~'. The terminal displays the output of the `hostnamectl` command, which is highlighted with a yellow box. The output shows the static hostname set to `internal.xyz.local`, which is also highlighted with a red box. Other system information displayed includes icon name, chassis, machine ID, boot ID, virtualization type, operating system, CPE OS name, kernel, architecture, hardware vendor, hardware model, and firmware version.

```
[admin1@internal ~]$ hostnamectl
Static hostname: internal.xyz.local
Icon name: computer-vm
Chassis: vm
Machine ID: ccf01f0153134e47b79ab97165ad24bd
Boot ID: 87f168729b474164b2ad04391b92ae4d
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
[admin1@internal ~]$
```

At the bottom of the terminal window, there is a message: "SION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>". The Windows taskbar is visible at the bottom of the screen.

admin1@internal:~

Quick connect..

3. admin1@internal:~

4. developer1@internal:~

5. viewer1@internal:~

6.

```
[admin1@internal ~]$ cat /etc/hosts
127.0.0.1    localhost localhost.localhost localhost4 localhost4.localhost4
::1         localhost localhost.localhost localhost6 localhost6.localhost6
192.168.153.131 internal.xyz.local
[admin1@internal ~]$
```

Edit /etc/hosts File

- ▶ The /etc/hosts file is used to assign the ip to the hostname locally.
- ▶ When the user accesses the website using the assigned name, which is easier to remember, it is resolved to the server's IP address like how DNS works.

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admin1@internal:~

Quick connect..

3. admin1@internal:~

4. developer1@internal:~

5. viewer1@internal:~

6.

```
[admin1@internal ~]$ cat /etc/passwd | grep 'admin1\|developer1\|viewer1'
```

```
admin1:x:1001:1001:~/home/admin1:/bin/bash
```

```
developer1:x:1002:1002:~/home/developer1:/bin/bash
```

```
viewer1:x:1003:1003:~/home/viewer1:/bin/bash
```

[admin1@internal ~]\$

Check Created Users (cat /etc/passwd)

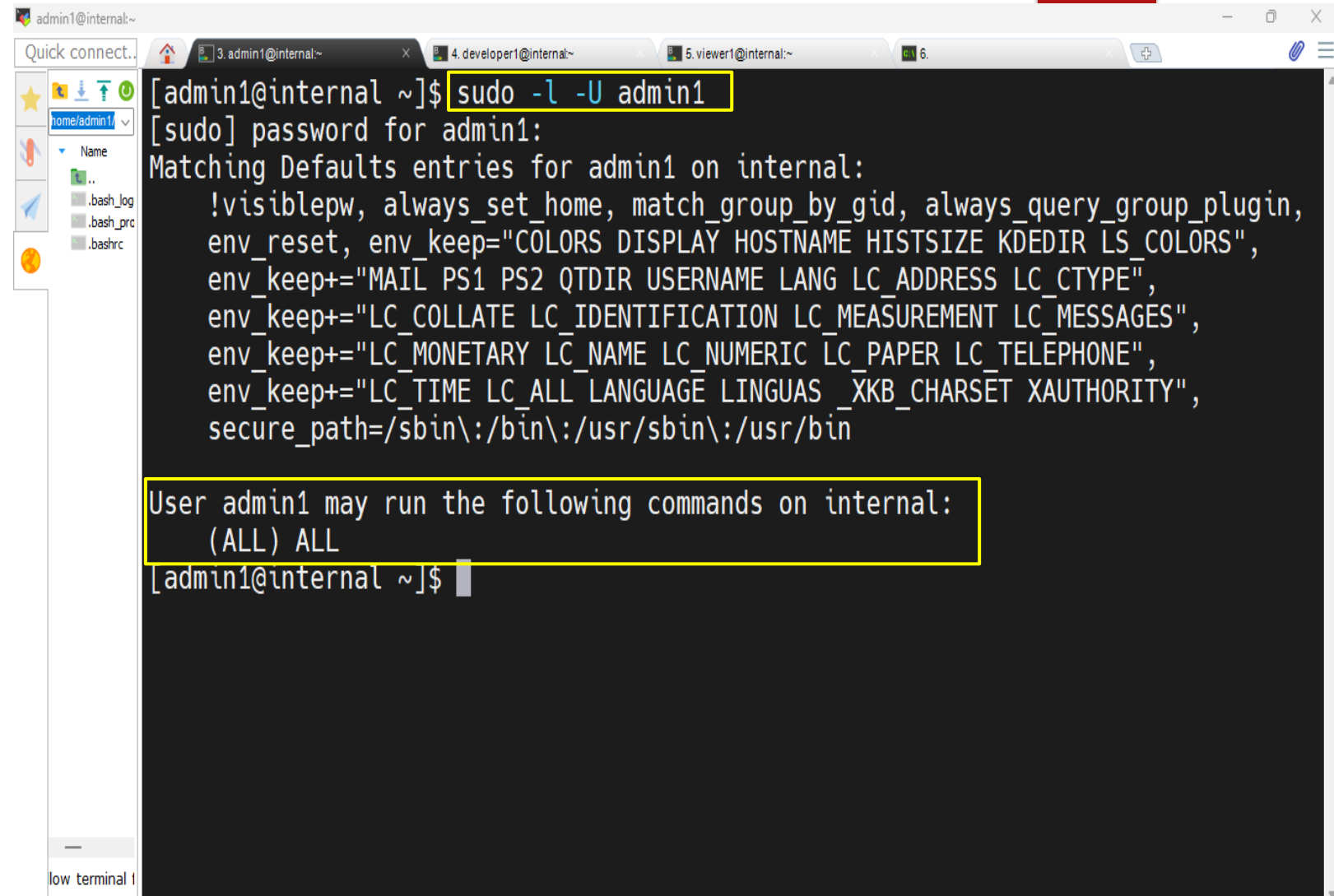
- ▶ Creating users with specific roles and permissions is critical for maintaining security and access control on the server. We created users such as admin1, developer1, and viewer1, each with specific roles.

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Checking Sudo Privileges for Admin (sudo -l -U admin1)

- ▶ To allow the system administrator to perform privileged tasks, we need to confirm that the **admin1** user has the necessary sudo privileges.
- ▶ We add **admin1** to the group of the wheel to become admin.



```
admin1@internal:~  
[admin1@internal ~]$ sudo -l -U admin1  
[sudo] password for admin1:  
Matching Defaults entries for admin1 on internal:  
    !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 internal:  
    (ALL) ALL  
[admin1@internal ~]$
```

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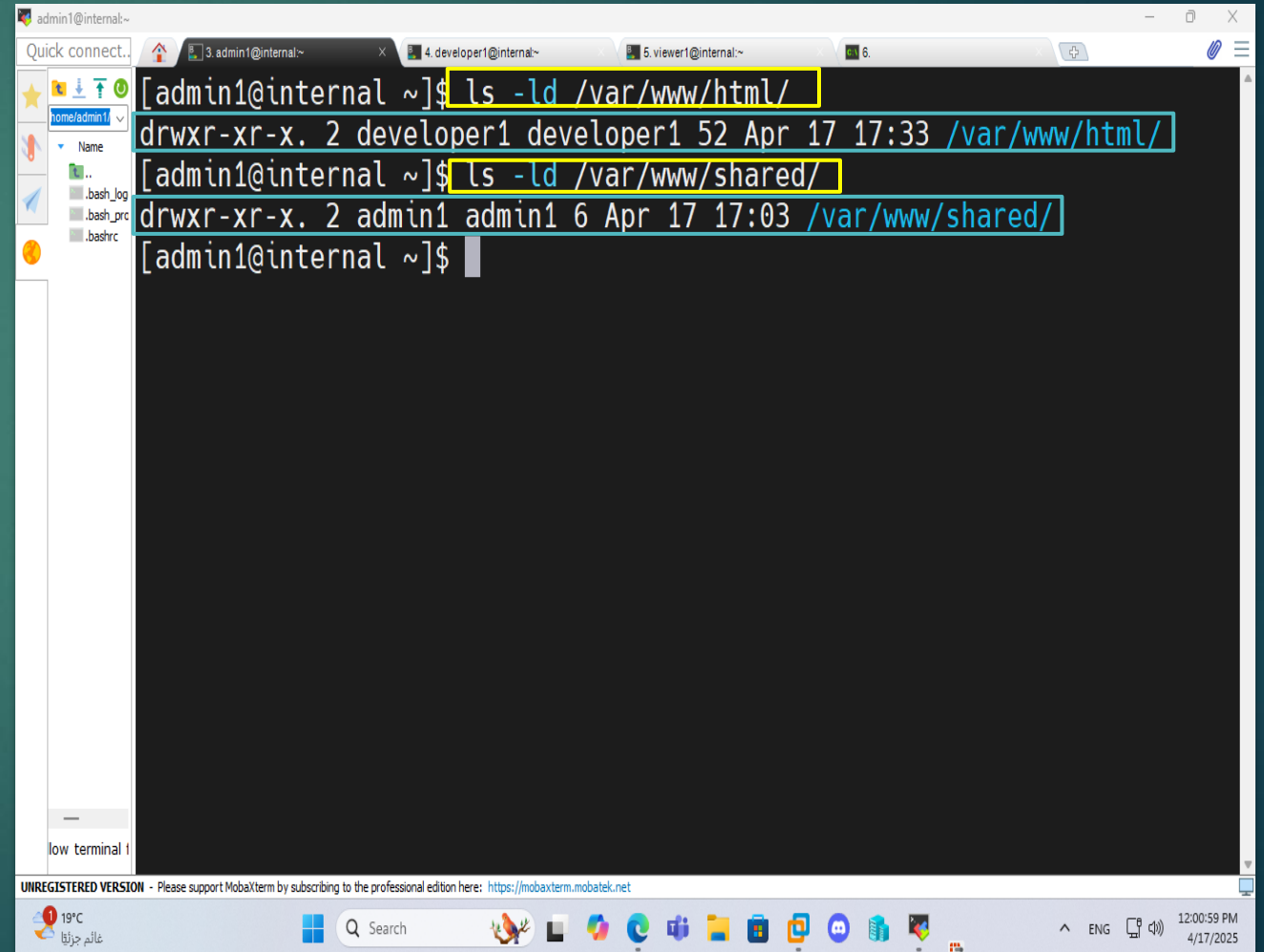
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Search

11:59:53 AM 4/17/2025

Verify Directory Permissions

- ▶ This ensures that only **developer1** can modify files in the **website directory** and **admin1** has access to the **shared files**.
- ▶ we use the command **chown** to change the owner of the files and **chmod** to set permissions



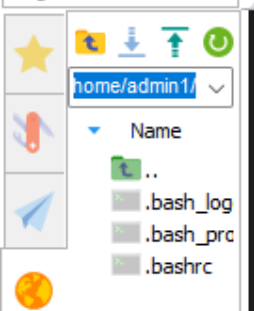
The screenshot shows a MobaXterm terminal window with three tabs: '3. admin1@internal:~', '4. developer1@internal:~', and '5. viewer1@internal:~'. The active tab is '3. admin1@internal:~'. The terminal output shows the following commands and results:

```
[admin1@internal ~]$ ls -ld /var/www/html/
drwxr-xr-x. 2 developer1 developer1 52 Apr 17 17:33 /var/www/html/

[admin1@internal ~]$ ls -ld /var/www/shared/
drwxr-xr-x. 2 admin1 admin1 6 Apr 17 17:03 /var/www/shared/

[admin1@internal ~]$
```

The terminal window also shows a file explorer on the left with a tree view containing 'home/admin1', '.bash_log', '.bash_prc', and '.bashrc'. The bottom status bar indicates 'UNREGISTERED VERSION' and provides a link to the professional edition: <https://mobaxterm.mobatek.net>. The system tray at the bottom shows the date and time as 12:00:59 PM 4/17/2025.



```
[admin1@internal ~]$ systemctl status httpd
```

```
● httpd.service - The Apache HTTP Server
```

```
Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
```

```
Active: active (running) since Thu 2025-04-17 18:22:49 EET; 2min 15s ago
```

```
Docs: man:httpd.service(8)
```

```
Main PID: 12929 (httpd)
```

```
Status: "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes served/sec: 0 B/sec"
```

```
Tasks: 177 (limit: 36526)
```

```
Memory: 29.4M
```

```
CPU: 1.443s
```

```
CGroup: /system.slice/httpd.service
```

```
└─12929 /usr/sbin/httpd -DFOREGROUND
```

```
└─12932 /usr/sbin/httpd -DFOREGROUND
```

```
└─12933 /usr/sbin/httpd -DFOREGROUND
```

```
└─12934 /usr/sbin/httpd -DFOREGROUND
```

```
└─12935 /usr/sbin/httpd -DFOREGROUND
```

```
Apr 17 18:22:49 internal.xyz.local systemd[1]: Starting The Apache HTTP Server: Server configured, listening on: port 80.  
Apr 17 18:22:49 internal.xyz.local httpd[12929]: Started The Apache HTTP Server.  
Apr 17 18:22:49 internal.xyz.local systemd[1]: Started The Apache HTTP Server.  
[admin1@internal ~]$
```

Check Apache Service Status

- I first install the service by using `dnf install httpd`
- Then we enable the service and check it is running or not by using `systemctl status` command

admin i@internal:~

Quick connect..

3. admin1@internal:~

4. developer1@internal:~

5. viewer1@internal:~

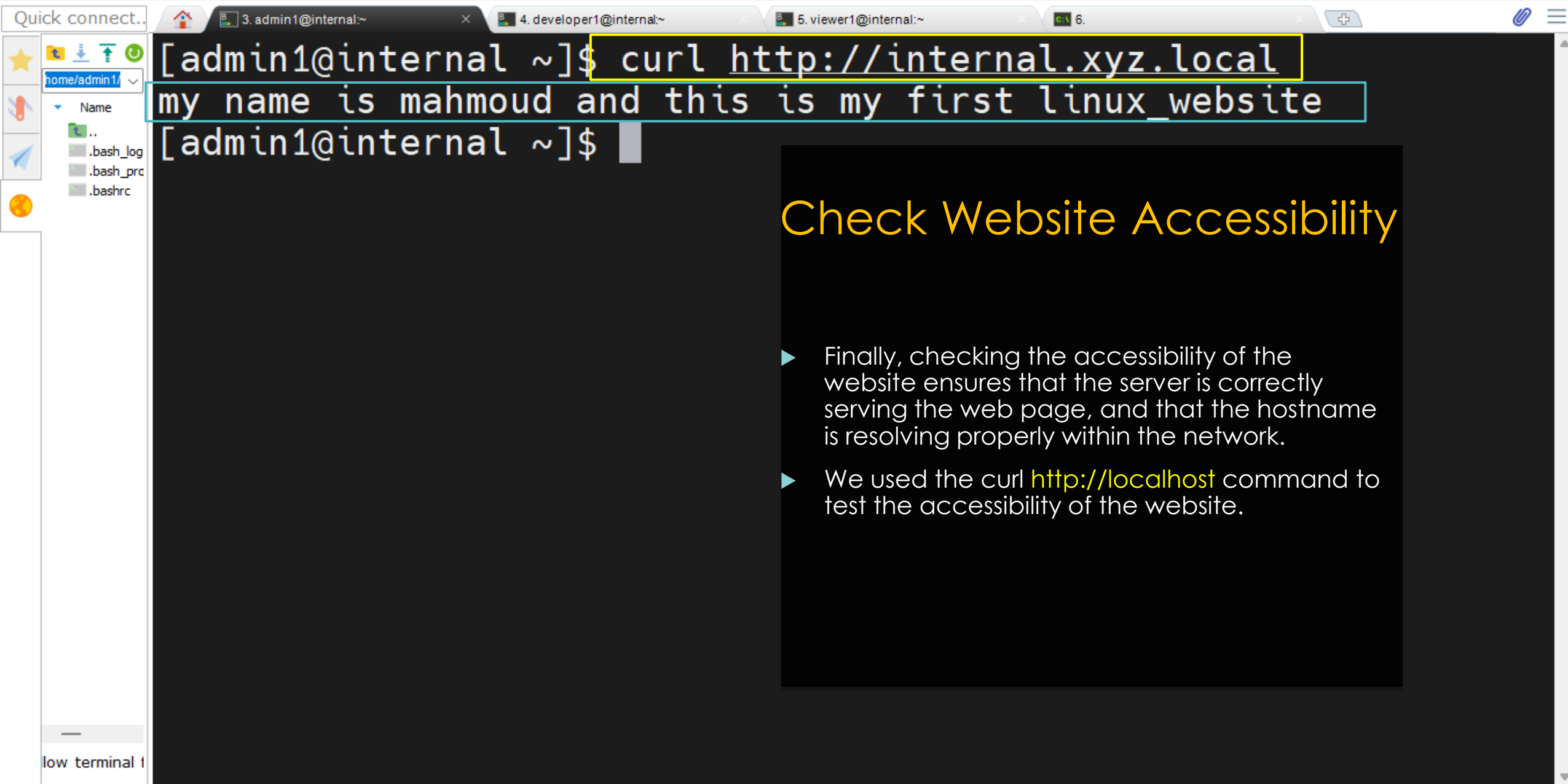
6.

```
[admin1@internal ~]$ ls -l /var/www/html/
total 4
-rw-r--r--. 1 developer1 developer1 54 Apr 17 17:16 index.html
-rw-r--r--. 1 developer1 developer1  0 Apr 17 17:33 test_permission.html
[admin1@internal ~]$
```

List Website Files by ls -l command

- ▶ We make sure here that the **developers** owns the directory of /html/ and the files under it as they can modify files in it.

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The screenshot shows a MobaXterm terminal window with four tabs: '3. admin1@internal:~', '4. developer1@internal:~', '5. viewer1@internal:~', and '6.'. The active tab is '3. admin1@internal:~'. The terminal displays the command `curl http://internal.xyz.local` and its output: `my name is mahmoud and this is my first linux_website`. The command and output are highlighted with yellow and blue boxes respectively. The terminal prompt is `[admin1@internal ~]$`. On the left side of the terminal window, there is a sidebar with a 'Quick connect..' button, a star icon, and a file explorer showing the directory `home/admin1/` with files `..`, `.bash_log`, `.bash_prc`, and `.bashrc`. At the bottom left of the terminal window, it says 'low terminal t'.

```
[admin1@internal ~]$ curl http://internal.xyz.local
my name is mahmoud and this is my first linux_website
[admin1@internal ~]$
```

Check Website Accessibility

- ▶ Finally, checking the accessibility of the website ensures that the server is correctly serving the web page, and that the hostname is resolving properly within the network.
- ▶ We used the curl `http://localhost` command to test the accessibility of the website.