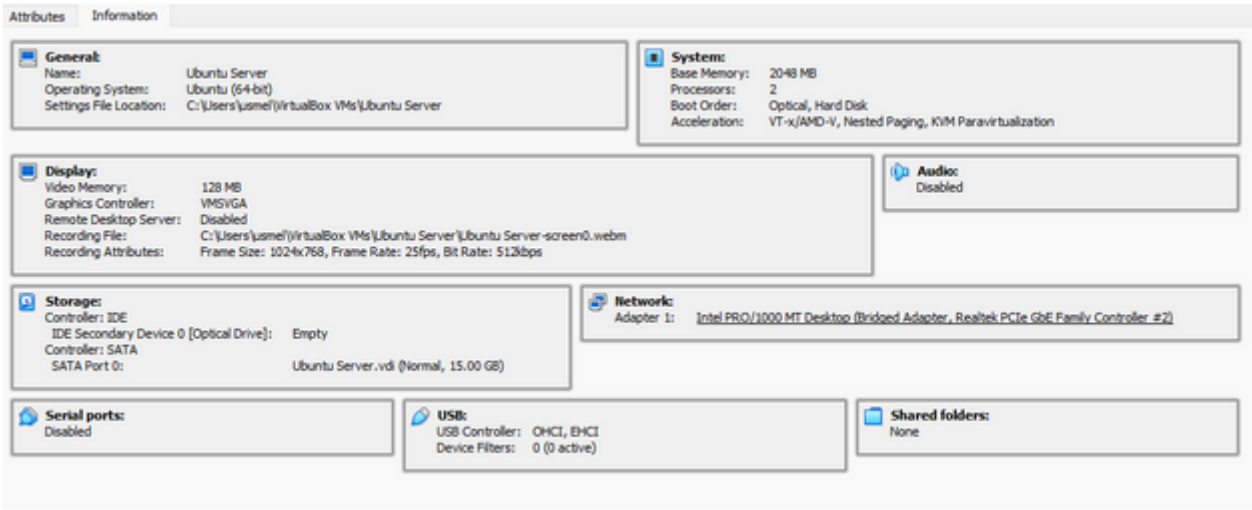


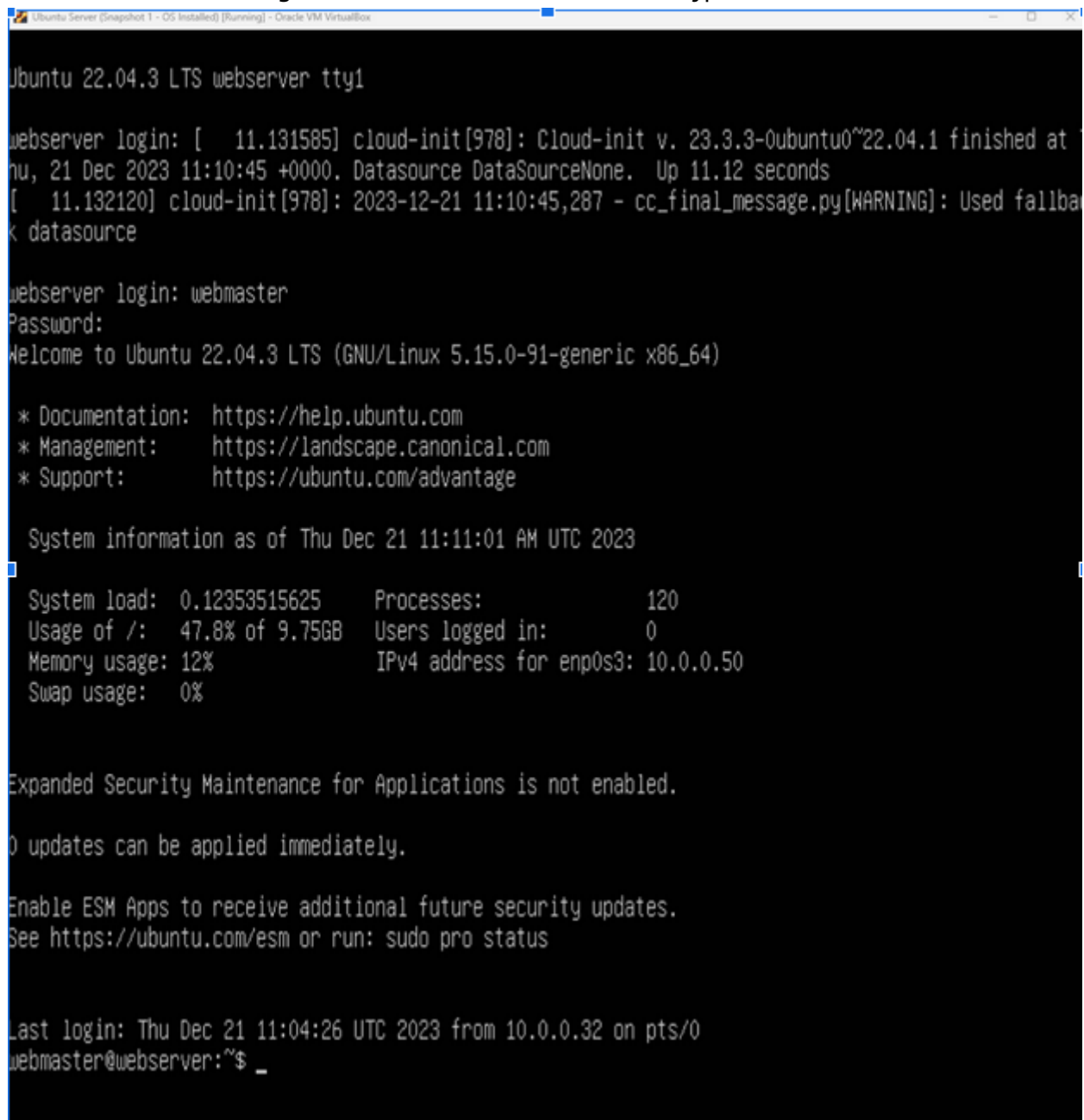
# Question 1

What are the server hardware specifications (virtual machine settings)? Take a screenshot - don't type it!



# Question 2

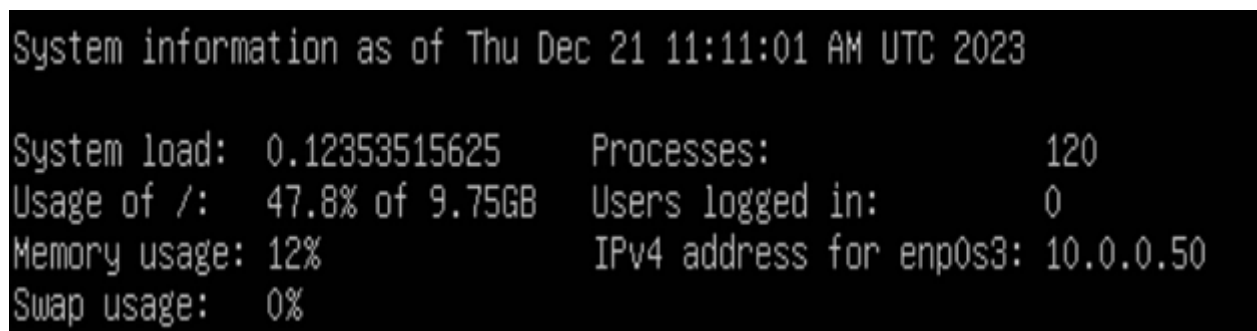
What is Ubuntu server log in screen? Take screenshot - do not type it!

A screenshot of a terminal window titled 'Ubuntu Server (Snapshot 1 - OS Installed) [Running] - Oracle VM VirtualBox'. The terminal shows the login process for 'webserver' on 'tty1'. It displays cloud-init messages, a warning about the fallback datasource, and a successful login for 'webmaster'. The system information is shown as of Thu Dec 21 11:11:01 AM UTC 2023. The system load is 0.12353515625, with 120 processes. Usage of / is 47.8% of 9.75GB. Memory usage is 12%, and swap usage is 0%. The IPv4 address for enp0s3 is 10.0.0.50. The terminal also shows a message about expanded security maintenance for applications not being enabled and that 0 updates can be applied immediately. It prompts the user to enable ESM Apps to receive additional future security updates, with a link to https://ubuntu.com/esm or the command 'sudo pro status'. The last login is recorded as Thu Dec 21 11:04:26 UTC 2023 from 10.0.0.32 on pts/0. The prompt is 'webmaster@webserver:~\$ \_'.

### Question 3

What is the IP address of your Ubuntu Server Virtual Machine?

**10.0.0.50**

A screenshot of a terminal window showing system information as of Thu Dec 21 11:11:01 AM UTC 2023. The system load is 0.12353515625, with 120 processes. Usage of / is 47.8% of 9.75GB. Memory usage is 12%, and swap usage is 0%. The IPv4 address for enp0s3 is 10.0.0.50.

### Question 4

How do you enable the Ubuntu Firewall?

**Use command: *Sudo ufw enable***

```
webmaster@webserver:~$ sudo ufw enable
[sudo] password for webmaster:
Firewall is active and enabled on system startup
webmaster@webserver:~$ _
```

## Question 5

How do you check if the Ubuntu Firewall is running? **Use command: *sudo ufw status***

```
webmaster@webserver:~$ sudo ufw status
Status: active

To Action From
--
Apache ALLOW Anywhere
OpenSSH ALLOW Anywhere
Apache (v6) ALLOW Anywhere (v6)
OpenSSH (v6) ALLOW Anywhere (v6)
```

## Question 6

How do you disable the Ubuntu Firewall? ***Sudo ufw disable***

```
webmaster@webserver:~$ sudo ufw disable
Firewall stopped and disabled on system startup
webmaster@webserver:~$ _
```

## Question 7

How do you add Apache to the Firewall? ***Sudo ufw allow 'Apache'***

```
webmaster@webserver:~$ sudo ufw allow 'Apache'
Skipping adding existing rule
Skipping adding existing rule (v6)
webmaster@webserver:~$
```

## Question 8

What is the command you used to install Apache? ***sudo apt install apache2 -y***

```
webmaster@webserver:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.52-1ubuntu4.7).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
webmaster@webserver:~$ _
```

## Question 9

What is the command you use to check if Apache is running? ***Sudo systemctl status apache2 --no-pager***

```
webmaster@webserver:~$ sudo systemctl status apache2 --no-pager
• apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2023-12-21 11:10:40 UTC; 15min ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 702 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
  Main PID: 773 (apache2)
    Tasks: 55 (limit: 2220)
   Memory: 7.5M
      CPU: 44ms
   CGroup: /system.slice/apache2.service
           └─773 /usr/sbin/apache2 -k start
             └─776 /usr/sbin/apache2 -k start
               └─777 /usr/sbin/apache2 -k start

Dec 21 11:10:40 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 11:10:40 webserver systemd[1]: Started The Apache HTTP Server.
```

## Question 10

What is the command you use to stop Apache? ***sudo systemctl stop apache2***

```
webmaster@webserver:~$ sudo systemctl stop apache2
webmaster@webserver:~$ sudo systemctl status apache2 --no-pager
* apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: inactive (dead) since Thu 2023-12-21 11:27:53 UTC; 1min 6s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 702 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Process: 1479 ExecStop=/usr/sbin/apachectl graceful-stop (code=exited, status=0/SUCCESS)
  Main PID: 773 (code=exited, status=0/SUCCESS)
    CPU: 56ms

Dec 21 11:10:40 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 11:10:40 webserver systemd[1]: Started The Apache HTTP Server.
Dec 21 11:27:53 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 21 11:27:53 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 21 11:27:53 webserver systemd[1]: Stopped The Apache HTTP Server.
```

## Question 11

What is the command you use to restart Apache? ***Sudo systemctl restart apache2***

```
webmaster@webserver:~$ sudo systemctl restart apache2
webmaster@webserver:~$ sudo systemctl status apache2 --no-pager
* apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pres
   Active: active (running) since Thu 2023-12-21 11:35:23 UTC; 6s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 1664 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/S
  Main PID: 1668 (apache2)
     Tasks: 55 (limit: 2220)
    Memory: 4.8M
       CPU: 12ms
    CGroup: /system.slice/apache2.service
           └─1668 /usr/sbin/apache2 -k start
             └─1669 /usr/sbin/apache2 -k start
               └─1670 /usr/sbin/apache2 -k start

Dec 21 11:35:23 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 11:35:23 webserver systemd[1]: Started The Apache HTTP Server.
webmaster@webserver:~$ _
```

## Question 12

What is the command used to test Apache configuration? ***sudo apache2ctl configtest***

```
webmaster@webserver:~$ sudo apache2ctl configtest
Syntax OK
```

## Question 13

What is the command used to check the installed version of Apache? ***Apache2 -v***

```
webmaster@webserver:~$ apache2 -v
Server version: Apache/2.4.52 (Ubuntu)
Server built: 2023-10-26T13:44:44
webmaster@webserver:~$ _
```

## Question 14

What are the most common commands to troubleshoot Apache errors? Provide a brief description of each command. ***Systemctl- Is used to control the service***

***Journalctl- Is used to view the logs generated by systemd***

***Apachectl- Is used to check Apache's configuration***

## Question 15

Which are Apache Log Files, and what are they used for? Provide examples and screenshots.

***They are files that record everything the Apache web server is doing and they are split into two different text files such as Access log and error log . They are used for analysis by the server administrator.***

***Access Log: You use command: sudo tail -f /var/log/apache2/access.log***

```
webmaster@webserver:~$ sudo tail -f /var/log/apache2/access.log
10.0.2.2 - - [21/Dec/2023:10:38:09 +0000] "GET / HTTP/1.1" 200 449 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/120.0.0.0 Safari/537.36 Edg/120.0.0.0"
10.0.2.2 - - [21/Dec/2023:10:38:09 +0000] "GET /favicon.ico HTTP/1.1" 404 489 "http://127.0.0.1:8080/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/120.0.0.0 Safari/537.36 Edg/120.0.0.0"
10.0.2.2 - - [21/Dec/2023:10:39:01 +0000] "-" 408 0 "-" "-"
```

***Error***

**Log: Use command: `sudo tail -f /var/log/apache2/error.log`**

```
webmaster@webserver:~$ sudo tail -f /var/log/apache2/error.log
[Thu Dec 21 11:10:40.351679 2023] [core:notice] [pid 773:tid 140016680531840] AH00094: Command line:
'/usr/sbin/apache2'
[Thu Dec 21 11:27:53.528548 2023] [mpm_event:notice] [pid 773:tid 140016680531840] AH00492: caught S
IGWINCH, shutting down gracefully
[Thu Dec 21 11:31:14.363206 2023] [mpm_event:notice] [pid 1510:tid 140083527432064] AH00489: Apache/
2.4.52 (Ubuntu) configured -- resuming normal operations
[Thu Dec 21 11:31:14.363269 2023] [core:notice] [pid 1510:tid 140083527432064] AH00094: Command line
: '/usr/sbin/apache2'
[Thu Dec 21 11:33:10.502237 2023] [mpm_event:notice] [pid 1510:tid 140083527432064] AH00492: caught
SIGWINCH, shutting down gracefully
[Thu Dec 21 11:33:10.537776 2023] [mpm_event:notice] [pid 1594:tid 140322363410304] AH00489: Apache/
2.4.52 (Ubuntu) configured -- resuming normal operations
[Thu Dec 21 11:33:10.537817 2023] [core:notice] [pid 1594:tid 140322363410304] AH00094: Command line
: '/usr/sbin/apache2'
[Thu Dec 21 11:35:23.756220 2023] [mpm_event:notice] [pid 1594:tid 140322363410304] AH00492: caught
SIGWINCH, shutting down gracefully
[Thu Dec 21 11:35:23.788899 2023] [mpm_event:notice] [pid 1668:tid 140357130188672] AH00489: Apache/
2.4.52 (Ubuntu) configured -- resuming normal operations
[Thu Dec 21 11:35:23.788939 2023] [core:notice] [pid 1668:tid 140357130188672] AH00094: Command line
: '/usr/sbin/apache2'
^Z
[2]+  Stopped                  sudo tail -f /var/log/apache2/error.log
webmaster@webserver:~$ _
```