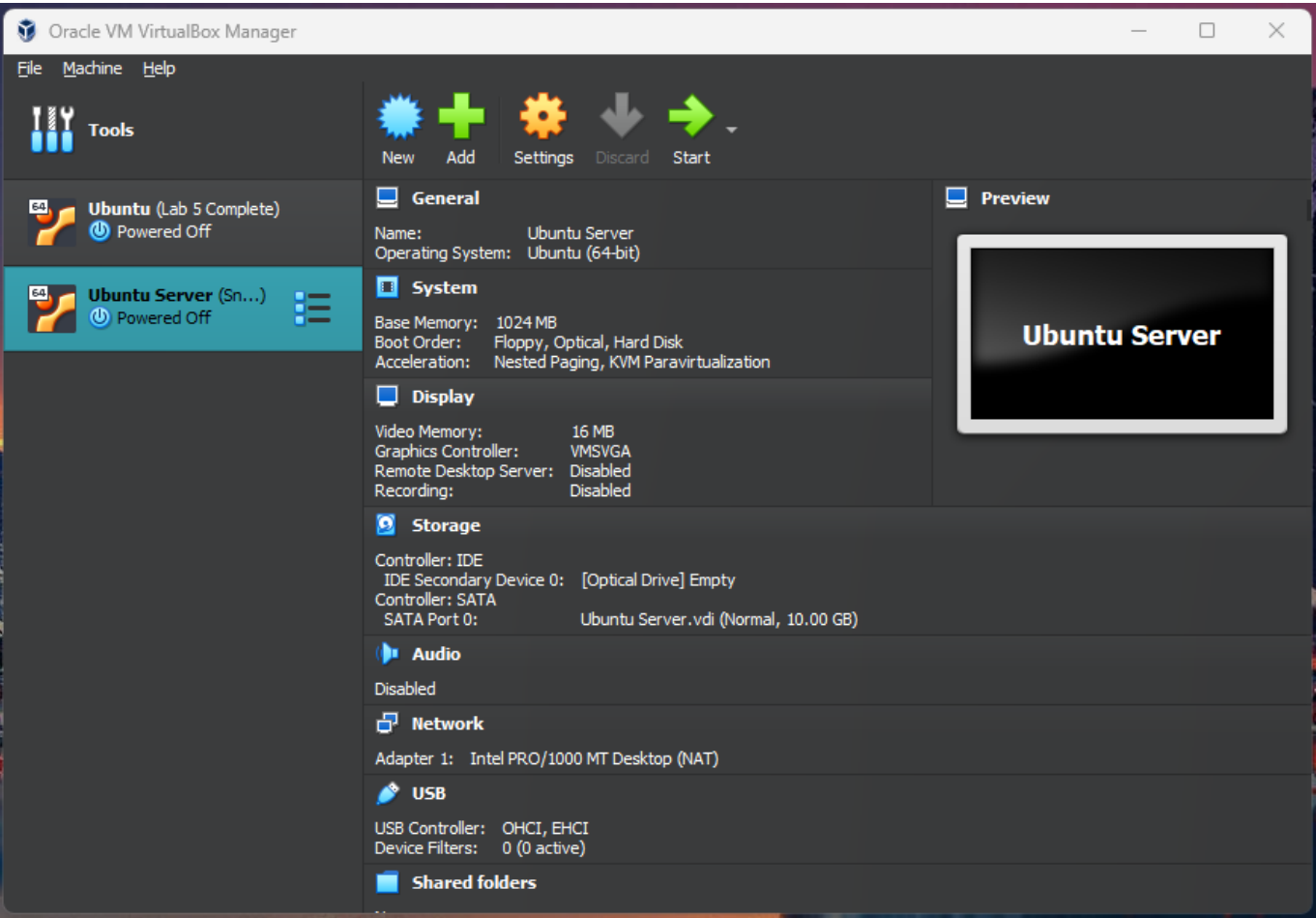


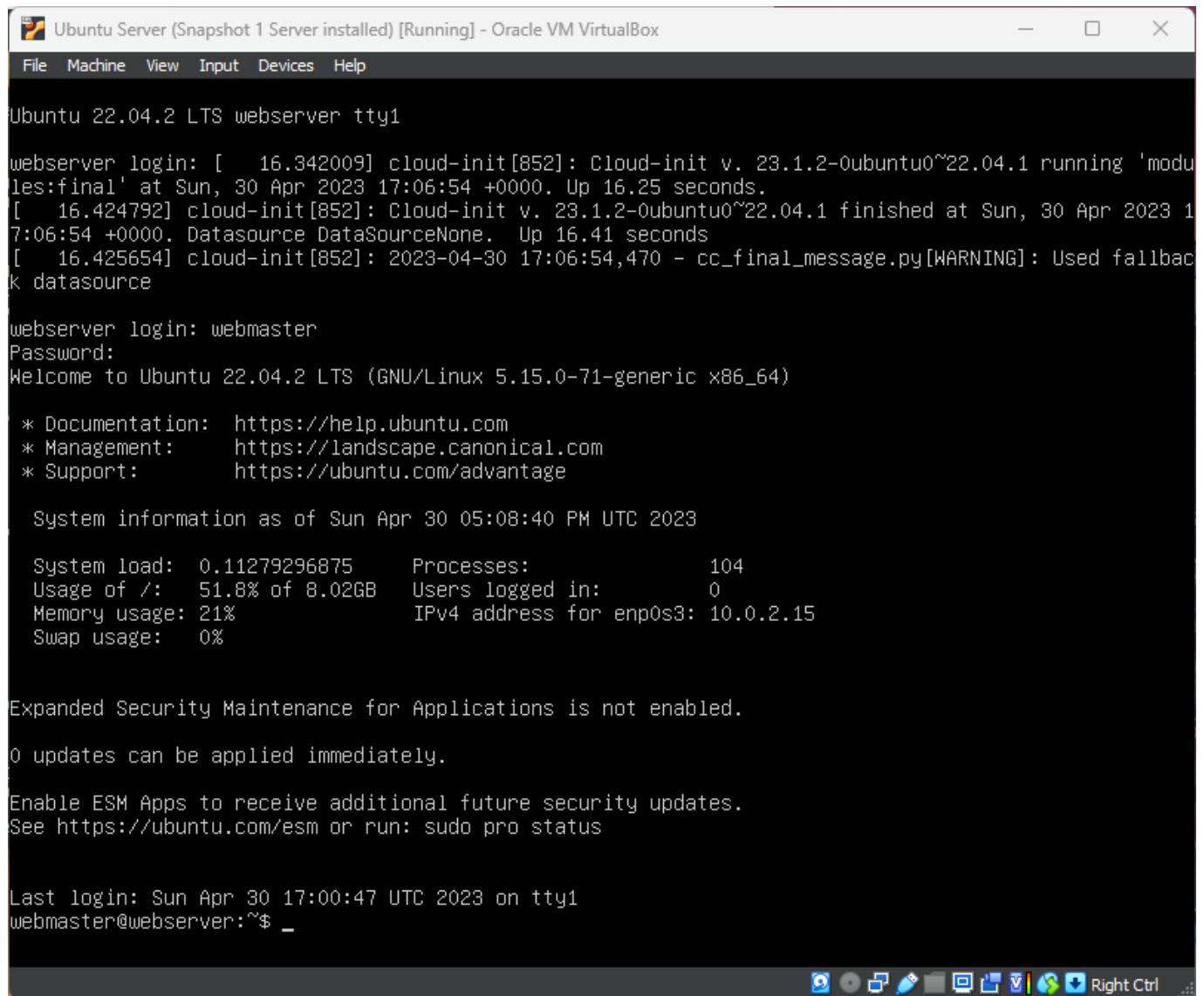
Deliverable 2

Part 1



This is the virtual machine hardware configuration.

Part 2



```
Ubuntu 22.04.2 LTS webserver tty1

webserver login: [ 16.342009] cloud-init[852]: Cloud-init v. 23.1.2-0ubuntu0~22.04.1 running 'modules:final' at Sun, 30 Apr 2023 17:06:54 +0000. Up 16.25 seconds.
[ 16.424792] cloud-init[852]: Cloud-init v. 23.1.2-0ubuntu0~22.04.1 finished at Sun, 30 Apr 2023 17:06:54 +0000. Datasource DataSourceNone. Up 16.41 seconds
[ 16.425654] cloud-init[852]: 2023-04-30 17:06:54,470 - cc_final_message.py[WARNING]: Used fallback datasource

webserver login: webmaster
Password:
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-71-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Sun Apr 30 05:08:40 PM UTC 2023

System load: 0.11279296875   Processes:            104
Usage of /:  51.8% of 8.02GB   Users logged in:      0
Memory usage: 21%           IPv4 address for enp0s3: 10.0.2.15
Swap usage:  0%

Expanded Security Maintenance for Applications is not enabled.

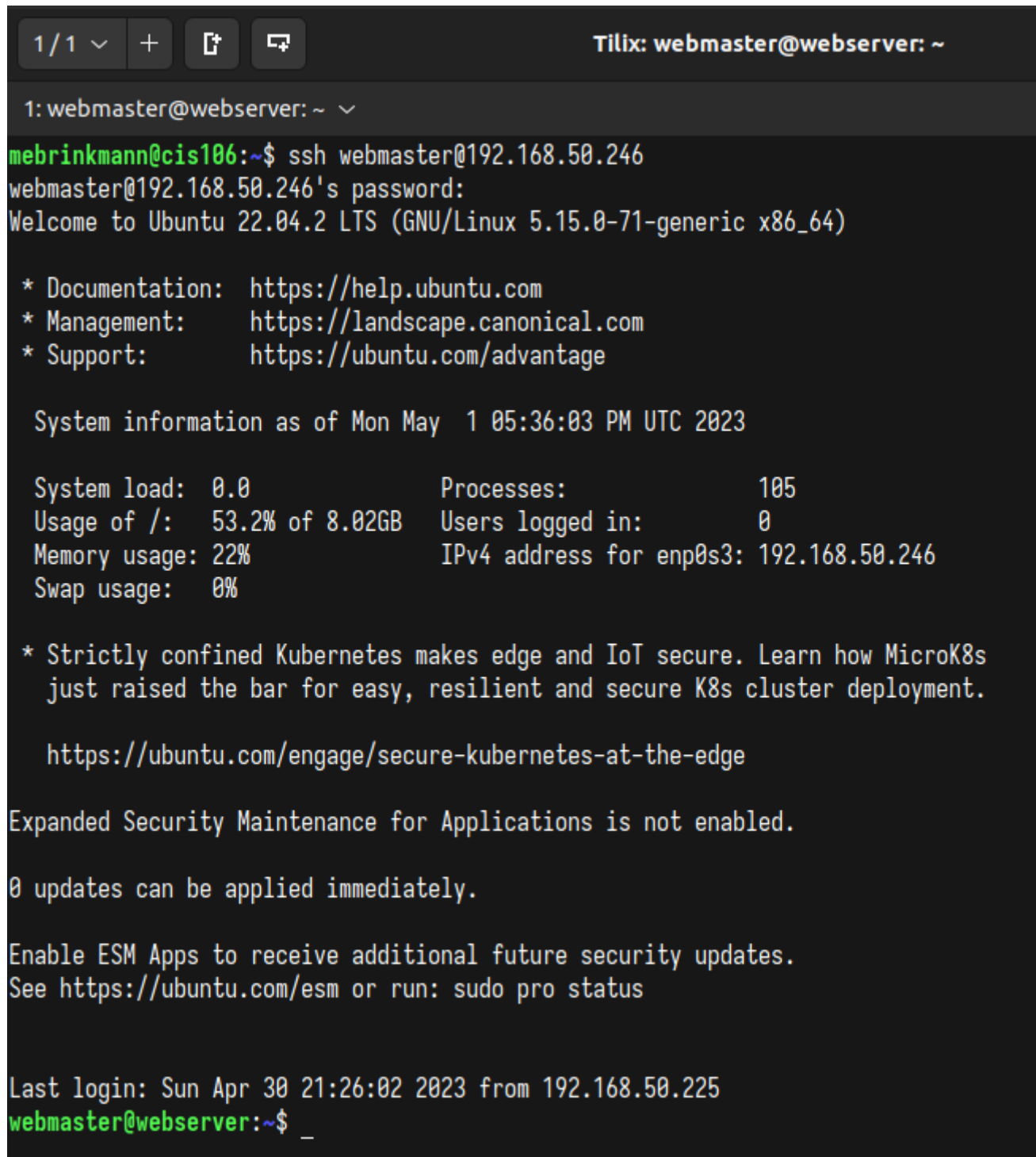
0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Sun Apr 30 17:00:47 UTC 2023 on tty1
webmaster@webserver:~$ _
```

This is the login screen to the server right after signing in.

Part 3



```
1 / 1  +  [Share]  [Copy]  Tilix: webmaster@webserver: ~  
1: webmaster@webserver: ~  
mebrinkmann@cis106:~$ ssh webmaster@192.168.50.246  
webmaster@192.168.50.246's password:  
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-71-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
System information as of Mon May  1 05:36:03 PM UTC 2023  
  
System load:  0.0                Processes:            105  
Usage of /:   53.2% of 8.02GB     Users logged in:     0  
Memory usage: 22%                IPv4 address for enp0s3: 192.168.50.246  
Swap usage:   0%  
  
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s  
  just raised the bar for easy, resilient and secure K8s cluster deployment.  
  
  https://ubuntu.com/engage/secure-kubernetes-at-the-edge  
  
Expanded Security Maintenance for Applications is not enabled.  
  
0 updates can be applied immediately.  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
Last login: Sun Apr 30 21:26:02 2023 from 192.168.50.225  
webmaster@webserver:~$ _
```

This

is a screenshot of the server connecting to my Ubuntu Desktop via ssh.

Part 4

Part 4.1

```
1/1  +  [?]  [?]  Tilix: webmaster@webserver: ~  
1: webmaster@webserver: ~  
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 Mon 2023-05-01 17:17:24 UTC; 20min ago  
     Docs: https://httpd.apache.org/docs/2.4/  
  Process: 696 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)  
 Main PID: 771 (apache2)  
    Tasks: 55 (limit: 1026)  
  Memory: 7.6M  
     CPU: 142ms  
   CGroup: /system.slice/apache2.service  
           └─771 /usr/sbin/apache2 -k start  
             └─775 /usr/sbin/apache2 -k start  
               └─776 /usr/sbin/apache2 -k start  
  
May 01 17:17:23 webserver systemd[1]: Starting The Apache HTTP Server...  
May 01 17:17:24 webserver systemd[1]: Started The Apache HTTP Server.
```

This is the status of 'apache2'.

Part 4.2

```
webmaster@webserver:~$ sudo systemctl status sshd --no-pager  
● ssh.service - OpenBSD Secure Shell server  
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)  
   Active: active (running) since Mon 2023-05-01 17:17:24 UTC; 20min ago  
     Docs: man:sshd(8)  
           man:sshd_config(5)  
  Process: 712 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)  
 Main PID: 766 (sshd)  
    Tasks: 1 (limit: 1026)  
  Memory: 7.6M  
     CPU: 70ms  
   CGroup: /system.slice/ssh.service  
           └─766 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"  
  
May 01 17:17:23 webserver systemd[1]: Starting OpenBSD Secure Shell server...  
May 01 17:17:24 webserver sshd[766]: Server listening on 0.0.0.0 port 22.  
May 01 17:17:24 webserver sshd[766]: Server listening on :: port 22.  
May 01 17:17:24 webserver systemd[1]: Started OpenBSD Secure Shell server.  
May 01 17:36:03 webserver sshd[995]: Accepted password for webmaster from 192.168.50.225 port 40722 ssh2  
May 01 17:36:03 webserver sshd[995]: pam_unix(sshd:session): session opened for user webmaster(uid=1000) by (uid=0)  
webmaster@webserver:~$ _
```

This is the status of 'sshd'.

Part 4.3

```

1 / 1  +  [T]  [R]  Tilix: webmaster@webserver: ~
1: webmaster@webserver: ~  v
webmaster@webserver:~$ sudo systemctl status ufw --no-pager
● ufw.service - Uncomplicated firewall
   Loaded: loaded (/lib/systemd/system/ufw.service; enabled; vendor preset: enabled)
   Active: active (exited) since Mon 2023-05-01 17:17:20 UTC; 22min ago
     Docs: man:ufw(8)
  Process: 542 ExecStart=/lib/ufw/ufw-init start quiet (code=exited, status=0/SUCCESS)
 Main PID: 542 (code=exited, status=0/SUCCESS)
    CPU: 50ms

May 01 17:17:19 webserver systemd[1]: Starting Uncomplicated firewall...
May 01 17:17:20 webserver systemd[1]: Finished Uncomplicated firewall.
webmaster@webserver:~$

```

This is the status of 'ufw'.

Part 5

Part 5.1

```

webmaster@webserver:/var/log$ tail -f -n 10 /var/log/apache2/access.log
192.168.50.225 - - [30/Apr/2023:20:03:51 +0000] "GET / HTTP/1.1" 200 1136 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:18 +0000] "GET / HTTP/1.1" 200 3218 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:18 +0000] "GET /js/scripts.js HTTP/1.1" 200 1025 "http://192.168.50.246/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:18 +0000] "GET /css/styles.css HTTP/1.1" 200 32013 "http://192.168.50.246/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:19 +0000] "GET /assets/img/ipad.png HTTP/1.1" 200 236225 "http://192.168.50.246/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:19 +0000] "GET /assets/img/bg-masthead.jpg HTTP/1.1" 200 218367 "http://192.168.50.246/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:19 +0000] "GET /assets/img/demo-image-02.jpg HTTP/1.1" 200 105405 "http://192.168.50.246/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:19 +0000] "GET /assets/img/demo-image-01.jpg HTTP/1.1" 200 16827 "http://192.168.50.246/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:19 +0000] "GET /assets/img/bg-signup.jpg HTTP/1.1" 200 535508 "http://192.168.50.246/css/styles.css" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"
192.168.50.225 - - [30/Apr/2023:20:13:19 +0000] "GET /assets/favicon.ico HTTP/1.1" 200 23764 "http://192.168.50.246/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/112.0"

```

This is a screenshot of Apache log file: access.log.

Part 5.2

```
webmaster@webserver:/var/log$ tail -f -n 10 /var/log/apache2/error.log
[Sun Apr 30 19:29:13.034536 2023] [core:notice] [pid 1408:tid 140511160612736] AH00094: Command line: '/usr/sbin/apache2'
[Sun Apr 30 19:31:22.501298 2023] [mpm_event:notice] [pid 1408:tid 140511160612736] AH00492: caught SIGWINCH, shutting down gracefully
[Sun Apr 30 19:32:45.483808 2023] [mpm_event:notice] [pid 766:tid 139728438577024] AH00489: Apache/2.4.52 (Ubuntu) configured -- resuming normal operations
[Sun Apr 30 19:32:45.484706 2023] [core:notice] [pid 766:tid 139728438577024] AH00094: Command line: '/usr/sbin/apache2'
[Sun Apr 30 20:32:04.925950 2023] [mpm_event:notice] [pid 766:tid 139728438577024] AH00492: caught SIGWINCH, shutting down gracefully
[Sun Apr 30 20:34:12.474116 2023] [mpm_event:notice] [pid 769:tid 140307137865600] AH00489: Apache/2.4.52 (Ubuntu) configured -- resuming normal operations
[Sun Apr 30 20:34:12.479103 2023] [core:notice] [pid 769:tid 140307137865600] AH00094: Command line: '/usr/sbin/apache2'
[Sun Apr 30 21:26:09.692875 2023] [mpm_event:notice] [pid 769:tid 140307137865600] AH00492: caught SIGWINCH, shutting down gracefully
[Mon May 01 17:17:24.160513 2023] [mpm_event:notice] [pid 771:tid 140562003666816] AH00489: Apache/2.4.52 (Ubuntu) configured -- resuming normal operations
[Mon May 01 17:17:24.176962 2023] [core:notice] [pid 771:tid 140562003666816] AH00094: Command line: '/usr/sbin/apache2'
```

This is a screenshot of Apache log file: error.log.

Part 5.3

```
webmaster@webserver:/var/log$ tail -f -n 10 /var/log/auth.log
May 1 17:59:16 webserver sshd[1244]: pam_unix(sshd:session): session opened for user webmaster(uid=1000) by (uid=0)
May 1 17:59:16 webserver systemd-logind[713]: New session 3 of user webmaster.
May 1 18:00:16 webserver sshd[1299]: Received disconnect from 192.168.50.225 port 52730:11: disconnected by user
May 1 18:00:16 webserver sshd[1299]: Disconnected from user webmaster 192.168.50.225 port 52730
May 1 18:00:16 webserver sshd[1244]: pam_unix(sshd:session): session closed for user webmaster
May 1 18:00:16 webserver systemd-logind[713]: Session 3 logged out. Waiting for processes to exit.
May 1 18:00:16 webserver systemd-logind[713]: Removed session 3.
May 1 18:00:24 webserver sshd[1313]: Accepted password for webmaster from 192.168.50.225 port 49872 ssh2
May 1 18:00:24 webserver sshd[1313]: pam_unix(sshd:session): session opened for user webmaster(uid=1000) by (uid=0)
May 1 18:00:24 webserver systemd-logind[713]: New session 4 of user webmaster.
```

This is a screenshot of SSH log file: auth.log.

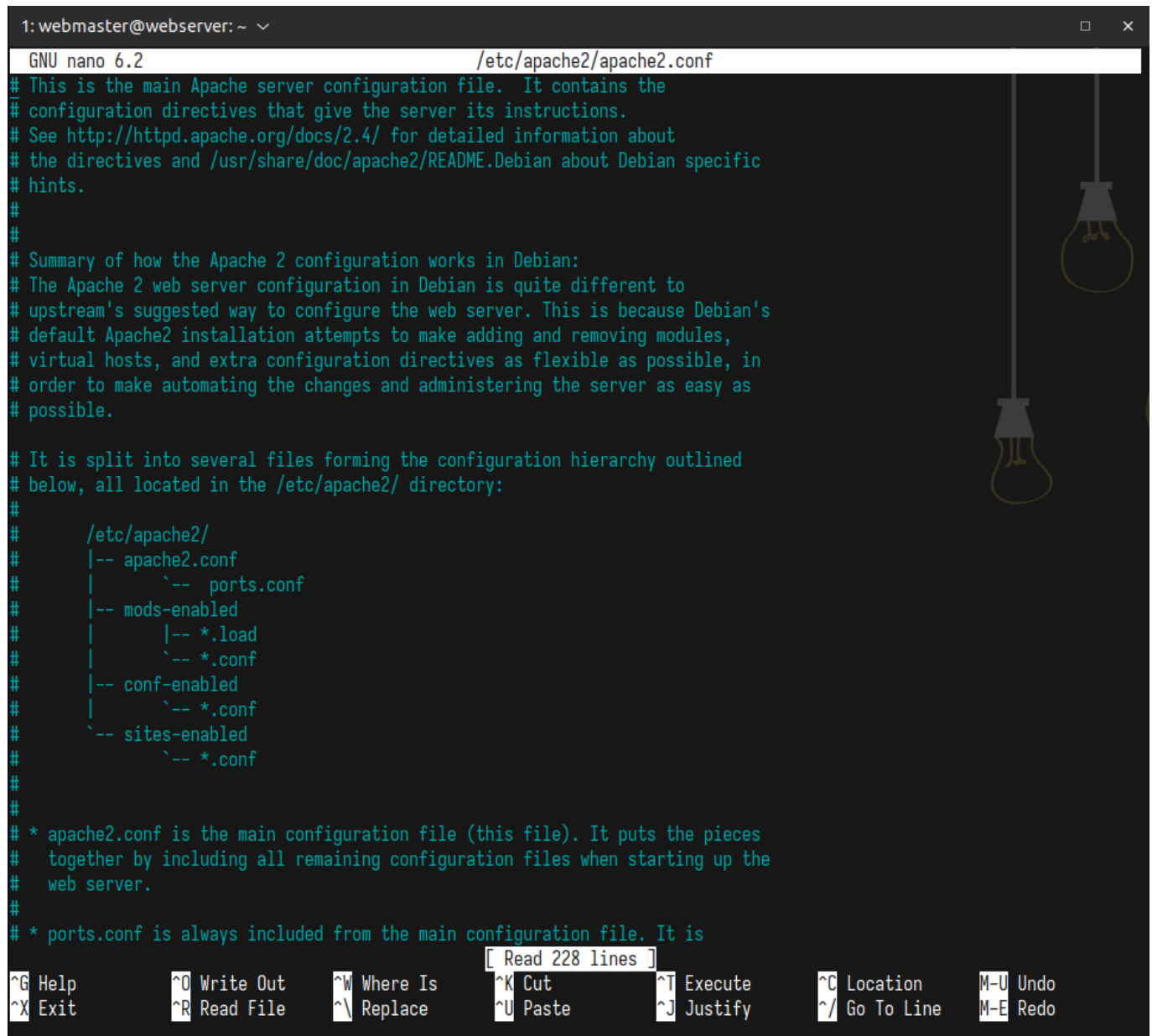
Part 6

Part 6.1

```
1: webmaster@webserver: ~
GNU nano 6.2 /etc/apache2/sites-available/brinkswebsite.conf
<VirtualHost *:80>
    ServerAdmin webmaster@localhost
    ServerName brinkswebsite
    ServerAlias www.brinkswebsite
    DocumentRoot /var/www/brinkswebsite
    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

This is a screenshot of sites-available config file.

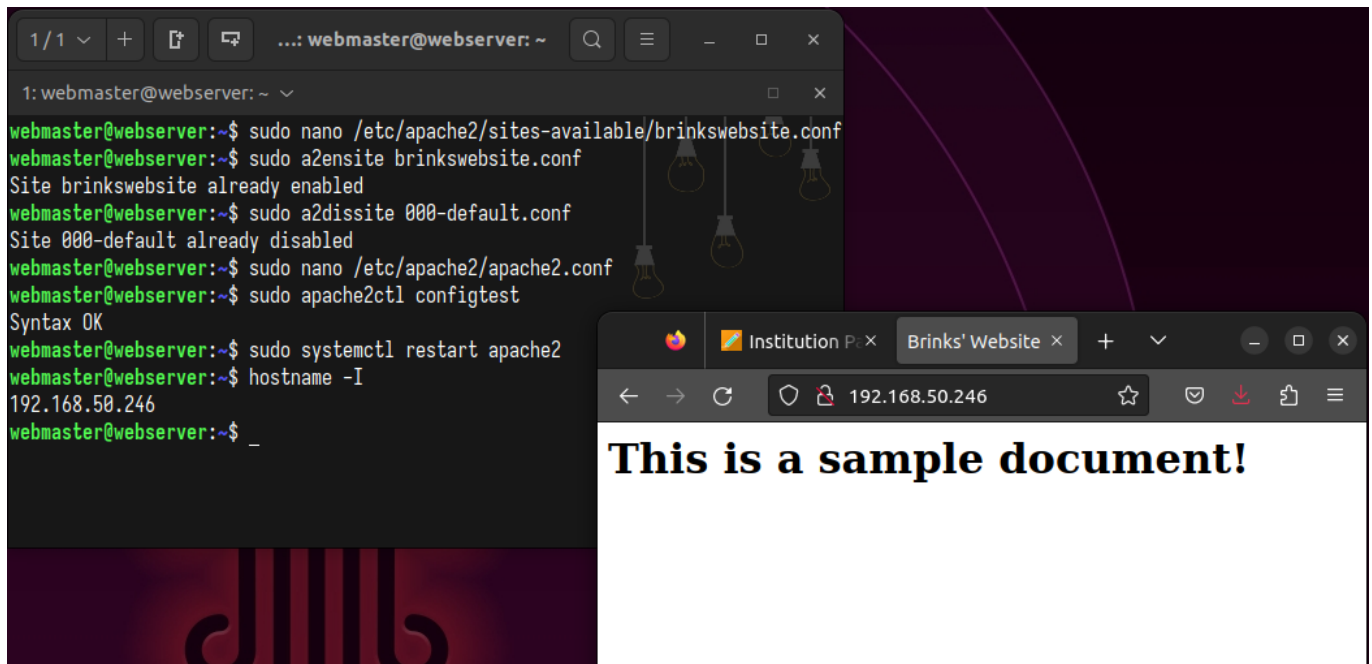
Part 6.2



```
1: webmaster@webserver: ~  
GNU nano 6.2 /etc/apache2/apache2.conf  
# This is the main Apache server configuration file. It contains the  
# configuration directives that give the server its instructions.  
# See http://httpd.apache.org/docs/2.4/ for detailed information about  
# the directives and /usr/share/doc/apache2/README.Debian about Debian specific  
# hints.  
#  
#  
# Summary of how the Apache 2 configuration works in Debian:  
# The Apache 2 web server configuration in Debian is quite different to  
# upstream's suggested way to configure the web server. This is because Debian's  
# default Apache2 installation attempts to make adding and removing modules,  
# virtual hosts, and extra configuration directives as flexible as possible, in  
# order to make automating the changes and administering the server as easy as  
# possible.  
#  
# It is split into several files forming the configuration hierarchy outlined  
# below, all located in the /etc/apache2/ directory:  
#  
# /etc/apache2/  
# |-- apache2.conf  
# |   |-- ports.conf  
# |-- mods-enabled  
# |   |-- *.load  
# |   |-- *.conf  
# |-- conf-enabled  
# |   |-- *.conf  
# |-- sites-enabled  
# |   |-- *.conf  
#  
# * apache2.conf is the main configuration file (this file). It puts the pieces  
# together by including all remaining configuration files when starting up the  
# web server.  
#  
# * ports.conf is always included from the main configuration file. It is  
#  
[ Read 228 lines ]  
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo  
^X Exit      ^R Read File  ^\ Replace    ^U Paste       ^J Justify    ^_ Go To Line  M-E Redo
```

This is a screenshot of apache 2 config file.

Part 7



This is a screenshot of the ip address of my server and the website being accessed all from the Ubuntu Desktop Virtual machine.