

Assignment

Exercise: E.1.1: - Find the difference between GPL, FreeBSD & OpenBSD licenses?

GPL (General Public License) is like a sharing rule. If you use or change the software, you must share your changes with everyone.

FreeBSD is like a freedom pass. You can use, change, or sell the software without sharing your changes.

OpenBSD is like FreeBSD, but with extra security precautions. It's like a freedom pass with a security badge.

Think of it like a recipe: -

GPL: If you modify the recipe, you have to share the new recipe with everyone.

FreeBSD: You can modify the recipe and keep it secret.

OpenBSD: You can modify the recipe, keep it secret, and make sure it's safe and secure.

Exercises: E.2.1: - Install Oracle Virtual Box & install latest version of Ubuntu OS?

Installing VirtualBox and Ubuntu

Step 1: Download and Install VirtualBox

1. Download the VirtualBox installer from the official website.
2. Run the installer and follow the on-screen instructions.

Step 2: Download the Latest Ubuntu ISO

1. Go to the Ubuntu download page.
2. Select the latest "Desktop" version of Ubuntu.
3. Download the ISO image file.

Step 3: Create a New Virtual Machine in VirtualBox

1. Open VirtualBox and click "New".
2. Name the VM (e.g., "Ubuntu").
3. Select "Linux" as the type and "Ubuntu" as the version.
4. Allocate RAM and create a virtual hard disk.

Step 4: Configure Storage Settings

1. Select the VM and click "Settings".
2. Go to the "Storage" tab.
3. Add the Ubuntu ISO file to the empty CD icon.

Step 5: Start the Virtual Machine and Install Ubuntu

1. Click "Start" to boot up the VM.
2. Select the option to boot from the Ubuntu ISO.
3. Follow the on-screen instructions to install Ubuntu.

Exercises: E.3.1 How to use Linux commands?

1. ls: List files and directories.
2. cd: Change directory.
3. pwd: Display the current directory.
4. mkdir: Create a new directory.
5. rm: Remove files or directories.
6. cp: Copy files or directories.
7. mv: Move or rename files.
8. touch: Create an empty file.

9. tree: Display directory structure.
10. cat: Display file content.
11. less / more: View files page by page.
12. head: Show the first 10 lines.
13. tail: Show the last 10 lines.
14. nano: A simple text editor.
15. vi / vim: An advanced text editor.
16. find: Locate files and directories.
17. grep: Search within files.
18. locate: Quickly find files using a database.
19. which: Locate a command's path.
20. df: Display disk space usage.
21. du: Show directory or file size.
22. mount / umount: Mount or unmount file systems.
23. lsblk: List all block devices.
24. fsck: Check and repair file systems.
25. ps: Display running processes.
26. top: Monitor system processes.
27. htop: Interactive process manager.
28. kill: Terminate a process.
29. uptime: Show system uptime.
30. free: Check memory usage.
31. ping: Check connectivity.
32. curl: Transfer data to/from servers.
33. wget: Download files from the internet.
34. ifconfig / ip: View or configure network interfaces.
35. netstat: Show network statistics.
36. SSH: Remote access to servers.
37. SCP: Securely Copy Files Between Systems.
38. chmod: Modify file permissions.
39. chown: Change file owner/group.
40. umask: Set default permissions.
41. tar: Archive and compress files.
42. gzip/gunzip: Compress and decompress files.
43. zip/unzip: Handle zip files.
44. uname -a: Show system information.
45. hostname: Display system hostname.
46. whoami: Current user.
47. id: Show user and group IDs.
48. dmesg: Kernel log messages.
49. lscpu: CPU architecture information.
50. lsusb: List USB devices.
51. lspci: Show PCI devices.
52. reboot: Restart the system.
53. shutdown: Power off the system.
54. systemctl: Manage system services.

Exercises:4.1: - Without internet how to find locate and use appropriate man pages?

Finding Man Pages

1. *Use the man command*: Type man <command_name> to view the man page for a specific command.
2. *Use the apropos command*: Type apropos <keyword> to search for man pages related to a specific keyword.

Locating Man Pages

1. ***Use the man -k option*:** Type `man -k <keyword>` to search for man pages related to a specific keyword.
2. ***Use the man -f option*:** Type `man -f <command_name>` to view a brief description of a specific command.
3. ***Check the /usr/share/man directory*:** Man pages are usually stored in the `/usr/share/man` directory.

Using Man Pages

1. Viewing man pages: Use the `man` command to view a man page.
2. Navigating man pages: Use the arrow keys, Page Up, and Page Down to navigate through a man page.
3. Searching within man pages: Use the `/` key to search for a specific keyword within a man page.
4. Exiting man pages: Press the `q` key to exit a man page.

Exercises:5.1: - Show the current hostname of the system and modify the hostname?

Showing the Current Hostname

1. Open a terminal.
2. Type the command `hostname` and press Enter.
3. The current hostname of the system will be displayed.

Modifying the Hostname

1. Open a terminal.
2. Type the command `sudo hostnamectl set-hostname <new_hostname>` (replace `<new_hostname>` with the desired hostname) and press Enter.
3. Enter the administrator password when prompted.
4. The hostname will be changed permanently.

Exercises:5.2: - Show the current date and modify the current of the system?

Showing the Current Date

1. Open a terminal.
2. Type the command `date` and press Enter.
3. The current date and time will be displayed.

Modify the current date

Using the `timedatectl` command (Ubuntu 16.04 and later)

1. Open a terminal.
2. Type the command `sudo timedatectl set-time "YYYY-MM-DD HH:MM:SS"` (replace `YYYY-MM-DD HH:MM:SS` with the desired date and time) and press Enter.
3. Enter the administrator password when prompted.

Exercises:5.3: - Show the current month, year and timezone of system time?

Showing Current Month, Year, and Timezone

Method 1: Using the `date` command

1. Open a terminal.
2. Type the command `date +"%B %Y %Z"` and press Enter.

- `%B` displays the full month name.

- `%Y` displays the four-digit year.

- `%Z` displays the timezone.

Exercises:5.4: - Show the current uptime of the system?

Using the `uptime` command

1. Open a terminal.
2. Type the command `uptime` and press Enter.

Exercises:5.5: - Show the current logged in user of the system?

Using the `whoami` command

1. Open a terminal.
2. Type the command `whoami` and press Enter.

Exercises:5.6: - List all the files including hidden files of the user home directory?

Using `ls` command

1. Open a terminal.
2. Type the command `ls -a ~` and press Enter.

The `-a` option stands for "all" and includes hidden files (files starting with a dot `.`) in the listing.

Using `ls` command with detailed listing

1. Open a terminal.
2. Type the command `ls -al ~` and press Enter.

The `-l` option stands for "long" and displays detailed information about each file, including permissions, ownership, and timestamps.

Exercises:5.7: - show the location of command executable?

Using the `which` command

1. Open a terminal.
2. Type the command `which <command_name>` and press Enter.

Replace `<command_name>` with the name of the command you want to locate.

Using the `whereis` command

1. Open a terminal.
2. Type the command `whereis <command_name>` and press Enter.

Replace `<command_name>` with the name of the command you want to locate.

Using the `find` command

1. Open a terminal.
2. Type the command `find / -name <command_name>` and press Enter.

Replace `<command_name>` with the name of the command you want to locate.

Exercises:6.1 Create a file `~/hello.txt` with content "Hello, World"?

Method 1: Using the `echo` command

1. Open a terminal.
2. Type the command `echo "Hello, World" > ~/hello.txt` and press Enter.

Method 2: Using a text editor

1. Open a terminal.
2. Type the command `nano ~/hello.txt` (or any other text editor of your choice) and press Enter.
3. Type "Hello, World" in the editor.
4. Press `Ctrl+X`, then `Y`, then Enter to save and exit the editor.

After using any of these methods, you can verify that the file has been created with the correct content by typing `cat ~/hello.txt` in the terminal.

Exercises:6.2 Create a file `~/hello.txt` with content "Hello, World. I am here"?

Method 1: Using the `echo` command

1. Open a terminal.

2. Type the command `echo "Hello, World. I am here" > ~/hello.txt` and press Enter.

Method 2: Using a text editor

1. Open a terminal.
2. Type the command `nano ~/hello.txt` (or any other text editor of your choice) and press Enter.
3. Type "Hello, World. I am here" in the editor.
4. Press Ctrl+X, then Y, then Enter to save and exit the editor.

After using any of these methods, you can verify that the file has been created with the correct content by typing `cat ~/hello.txt` in the terminal.

Exercises:6.3 Redirect command's stdout and stderr to `/tmp/log.txt`?

Exercises:6.4 Count the number of lines and words in `~/hello.txt`?

Method 1: Using `wc` command

1. Open a terminal.
2. Type the command `wc ~/hello.txt` and press Enter.

The `wc` command will display the number of lines, words, and characters in the file.

Method 2: Using `wc` command with options

1. Open a terminal.
2. Type the command `wc -l ~/hello.txt` to count the number of lines.
3. Type the command `wc -w ~/hello.txt` to count the number of words.

output:

```
wc ~/hello.txt
```

Output:

```
1 1 12 /home/mohni/hello.txt
```

In this output:

- 1 is the number of lines.
- 1 is the number of words.
- 12 is the number of characters.

Exercises:6.5 Count the number of lines in `/var/log/messages`

Method 1: Using `wc` command

```
wc -l /var/log/syslog
```

Output:

```
17802 /var/log/syslog
```

In this output:

- 17802 is the number of words in the file.

Exercises:7.1 Show the current directory.

```
pwd
```

Output:

```
/home/mohni
```

Exercises:7.2 List all the subdirectory of root filesystem.

ls /

Output:

bin boot dev etc home lib lib64 lost+found media mnt opt proc root run sbin srv sys tmp snap

Exercises:7.3 Change the directory user home directory and create mydata directory inside that.

Step 1: Change to the user's home directory

cd ~

or

cd /home/mohni

Step 2: Create a new directory called "mydata"

mkdir mydata

Output:

Before running the commands:

pwd

Output:

/home/mohni

Now, if you list the contents of the home directory:

ls

Output:

mydata

Exercises:7.4 Create a logs directory inside /tmp and copy file ~/.bashrc file to /tmp/logs?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Create the logs Directory

Create a new directory called "logs" inside the "/tmp" directory:

mkdir /tmp/logs

Step 3: Verify the Directory Creation

Verify that the "logs" directory has been created successfully:

ls /tmp

Output:

logs

Step 4: Copy the ~/.bashrc File

Copy the "~/.bashrc" file to the "/tmp/logs" directory:

cp ~/.bashrc /tmp/logs

Step 5: Verify the File Copy

Verify that the "~/.bashrc" file has been copied successfully:

ls -al /tmp/logs

Output:

.bashrc

Exercises:7.5 Move the user's mydata directory to /tmp?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Move the mydata Directory

Move the "mydata" directory from the user's home directory to "/tmp" using the mv command:

```
mv ~/mydata /tmp
```

Verification

Verify that the "mydata" directory has been moved successfully:

```
ls /tmp
```

Output:

```
logs
```

```
mydata
```

Exercises:7.6 list tree structure of /tmp/logs directory?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Use the tree Command

Use the tree command to list the tree structure of the "/tmp/logs" directory:

```
tree -al /tmp/logs
```

Output:

```
/tmp/logs
```

```
|-- .bashrc
```

Exercises:7.7 Show the content of /tmp/logs/.bashrc?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Use the cat Command

Use the cat command to display the contents of the "/tmp/logs/.bashrc" file:

```
cat /tmp/logs/.bashrc
```

Output

The output will display the contents of the ".bashrc" file, which typically includes bash shell configuration settings and aliases:

```
# ~/.bashrc: executed by bash(1) for non-login shells.
```

```
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
```

```
# for examples
```

```
# If not running interactively, don't do anything
```

```
case $- in
```

```
  i*) ;;
```

```
  *) return;;
```

```
Esac
```

Exercises:7.8 Remove the file /tmp/logs/.bashrc?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Use the rm Command

Use the rm command to remove the "/tmp/logs/.bashrc" file:

```
rm /tmp/logs/.bashrc
```

Output

If the file is removed successfully, there will be no output.

Verification

To verify that the file has been removed:

`ls -al /tmp/logs`

Exercises:7.9 Remove the directory /tmp/logs/?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Use the rmdir Command

Use the rmdir command to remove the empty "/tmp/logs/" directory:

`rmdir /tmp/logs`

Output

To verify that the directory has been removed:

`ls /tmp`

Exercises:7.10 list tree structure of /tmp/logs directory?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Use the tree Command

Use the tree command to list the tree structure of the "/tmp/logs" directory:

`tree /tmp/logs`

Output

Since the "/tmp/logs" directory was removed, the output will be:

No such file or directory

This error message indicates that the "/tmp/logs" directory does not exist.

Verification

To verify that the directory does not exist:

`ls /tmp`

Exercises:7.11 show the first 100 lines of /var/log/messages?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Use the head Command

Use the head command to display the first 100 lines of the "/var/log/messages" file:

`head -n 100 /var/log/messages`

Output

The output will display the first 100 lines of the "/var/log/messages" file:

Feb 2 12:00:00 ubuntu systemd[1]: Starting System Logging Service...

Feb 2 12:00:00 ubuntu systemd[1]: Started System Logging Service.

Feb 2 12:00:00 ubuntu rsyslogd[1234]: imuxsock: Acquired UNIX socket
'/run/systemd/journal/syslog' (fd 3) from systemd. [v8.2004.0]

...

Exercises:7.12 show the last 100 lines of /var/log/messages?

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Use the tail Command

Use the tail command to display the last 100 lines of the "/var/log/messages" file:

```
tail -n 100 /var/log/messages
```

Output

The output will display the last 100 lines of the "/var/log/messages" file:

```
Feb  2 12:59:00 ubuntu systemd[1]: Starting System Logging Service...
Feb  2 12:59:00 ubuntu systemd[1]: Started System Logging Service.
Feb  2 12:59:00 ubuntu rsyslogd[1234]: imuxsock: Acquired UNIX socket
'/run/systemd/journal/syslog' (fd 3) from systemd. [v8.2004.0]
...
```

Exercises:7.13 Find files which contain "sys" in the name starting from the specified directory.

Step 1: Open the Terminal

Open the Terminal application on your Ubuntu system.

Step 2: Use the find Command

Use the find command to search for files that contain "sys" in the name:

```
find /var/logs/syslog -type f -name "*sys*"
```

Output

The output will display a list of files that contain "sys" in the name:

```
/var/logs/syslog
```