

## **Linux Assignment**

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### **1) Configure smtp in localhost.**

- Installed Postfix and mail utilities to set up SMTP functionality on the local system
- Started and enabled the Postfix service to ensure the mail server is active and persistent
- Verified the Postfix service status to confirm it is running correctly
- Sent a test email from a normal user to the root user using the mail command
- Logged in as root and verified successful mail delivery from the local mailbox

The screenshot shows two terminal windows. The left window shows the command `sudo apt install mailutils postfix` being run, followed by the output of the package installation. The right window shows the command `mail -s "Mail to Localhost" root` being run, followed by the output of the test email sent to the root user.

```
root@sigmold:~# sudo apt install mailutils postfix
[sudo] password for sigmold:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libfcgi-fast-perl libfcgi-perl libconfuse-common libfcgi-bin libfcgi-perl libfcgi0t64
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 298 not upgraded.
root@sigmold:~# systemctl start postfix
root@sigmold:~# systemctl enable postfix
Synchronizing state of postfix.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable postfix
root@sigmold:~# systemctl status postfix
● postfix.service - Postfix Mail Transport Agent
  Loaded: loaded (/usr/lib/systemd/system/postfix.service; enabled; preset: enabled)
  Active: active (exited) since Tue 2026-01-06 15:15:27 IST; 1 day 7h ago
    Docs: man:postfix(1)
   Main PID: 2308 (code=exited, status=0/SUCCESS)
     CPU: 2ms

Jan 06 15:15:27 sigmold:Starting postfix.service - Postfix Mail Transport Agent...
Jan 06 15:15:27 sigmold:Finished postfix.service - Postfix Mail Transport Agent.
root@sigmold:~# echo "Hi, I am root! This is a simple mail to check ****" | mail -s "Mail to Localhost" root
root@sigmold:~#
```

The screenshot shows a terminal window displaying the test email sent to the root user. The email contains the message "Hi, I am root! This is a simple mail to check \*\*\*\*".

```
From root@sigmold-ThinkPad-E14 Wed Jan 7 19:17:44 2026
Return-Path: <root@sigmold-ThinkPad-E14>
X-Original-To: root
Delivered-To: root@sigmold-ThinkPad-E14
Received: by sigmold-ThinkPad-E14 (Postfix, from userid 0)
          id 21AF09A16EA; Wed, 7 Jan 2026 19:17:44 +0530 (IST)
Subject: Intro root
To: root@sigmold-ThinkPad-E14
User-Agent: mail (GNU Mailutils 3.17)
Date: Wed, 7 Jan 2026 19:17:44 +0530
Message-Id: <20260107191744.21AF09A16EA@sigmold-ThinkPad-E14>
From: root <root@sigmold-ThinkPad-E14>

Hi I am root.\n This Is a mail \n\n****

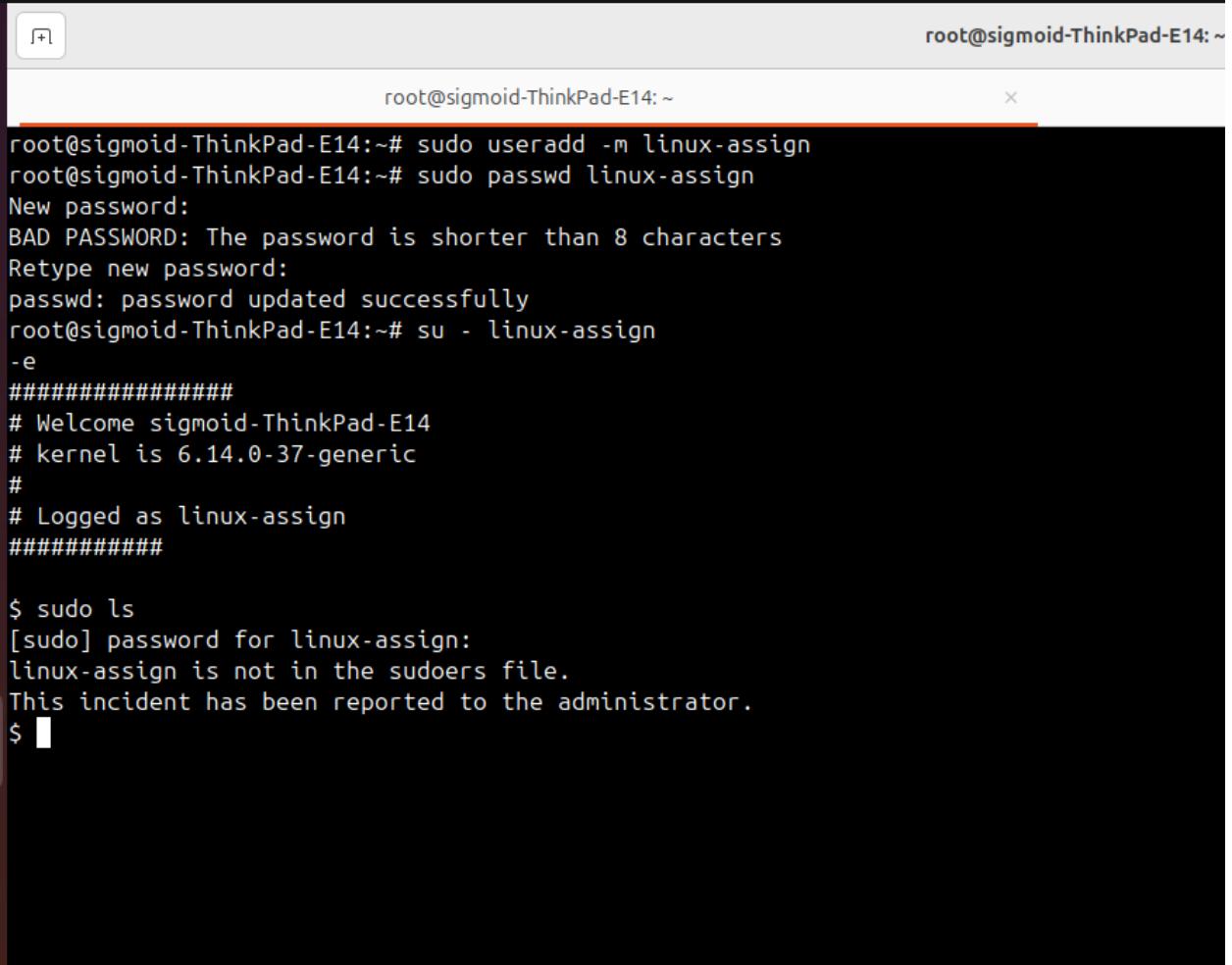
From root@sigmold-ThinkPad-E14 Wed Jan 7 22:51:27 2026
Return-Path: <root@sigmold-ThinkPad-E14>
X-Original-To: root
Delivered-To: root@sigmold-ThinkPad-E14
Received: by sigmold-ThinkPad-E14 (Postfix, from userid 1000)
          id 706599A16B0; Wed, 7 Jan 2026 22:51:27 +0530 (IST)
Subject: Mail to Localhost
To: root@sigmold-ThinkPad-E14
User-Agent: mail (GNU Mailutils 3.17)
Date: Wed, 7 Jan 2026 22:51:27 +0530
Message-Id: <20260107172227.706599A16B0@sigmold-ThinkPad-E14>
From: Sigmoid <sigmold@sigmold-ThinkPad-E14>

Hi, I am sigmold. This is a simple mail to check ****
-
-
-
"/var/mail/root" 31L, 1120B
```

### **2) Create a user in your localhost, which should not be able to execute the sudo command.**

- Created a new local user account using the useradd command

- Set a password for the newly created user
- Switched to the new user account to verify login access
- Attempted to run a command using sudo from the new user account
- Confirmed that the user is not part of the sudoers file and cannot execute sudo commands



The screenshot shows a terminal window with a black background and white text. At the top right, it says "root@sigmoid-ThinkPad-E14: ~". The terminal output is as follows:

```

root@sigmoid-ThinkPad-E14:~# sudo useradd -m linux-assign
root@sigmoid-ThinkPad-E14:~# sudo passwd linux-assign
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
root@sigmoid-ThinkPad-E14:~# su - linux-assign
-e
#####
# Welcome sigmoid-ThinkPad-E14
# kernel is 6.14.0-37-generic
#
# Logged as linux-assign
#####

$ sudo ls
[sudo] password for linux-assign:
linux-assign is not in the sudoers file.
This incident has been reported to the administrator.
$ 

```

- 3) **Configure your system in such a way that when a user type and executes a describe command from anywhere of the system it must list all the files and folders of the user's current directory.**
  - Created a custom alias named describe to map it to the ls command
  - Added the alias definition in the user's shell configuration file (.bashrc)
  - Reloaded the shell configuration to apply the alias immediately
  - Executed the describe command from the home directory
  - Verified that describe lists all files and directories of the current location, same as ls

```

root@sigmoid-ThinkPad-E14: ~          sigmoid@sigmoid-ThinkPad-E14: ~

# To enable the settings / commands in this file for login shells as well,
# this file has to be sourced in /etc/profile.

# If not running interactively, don't do anything
[ -z "$PS1" ] && return

# check the window size after each command and, if necessary,
# update the values of LINES and COLUMNS.
shopt -s checkwinsize

# set variable identifying the chroot you work in (used in the prompt below)
if [ -z "${debian_chroot:-}" ] && [ -r /etc/debian_chroot ]; then
    debian_chroot=$(cat /etc/debian_chroot)
fi

# set a fancy prompt (non-color, overwrite the one in /etc/profile)
# but only if not SUDOing and have SUDO_PS1 set; then assume smart user.
if ! [ -n "${SUDO_USER}" -a -n "${SUDO_PS1}" ]; then
    PS1='${debian_chroot:+($debian_chroot)}\u@\h:\w\$ '
fi

# adding alias script
alias describe='ls'

```

```

root@sigmoid-ThinkPad-E14: ~          sigmoid@sigmoid-ThinkPad-E14: ~

root@sigmoid-ThinkPad-E14:~# pwd
/root
root@sigmoid-ThinkPad-E14:~# vim /etc/bash.bashrc
root@sigmoid-ThinkPad-E14:~# describe
mbox snap
root@sigmoid-ThinkPad-E14:~# ls
mbox snap
root@sigmoid-ThinkPad-E14:~#

```

```

root@sigmoid-ThinkPad-E14: ~          sigmoid@sigmoid-ThinkPad-E14: ~

sigmoid@sigmoid-ThinkPad-E14:~$ pwd
/home/sigmoid
sigmoid@sigmoid-ThinkPad-E14:~$ describe
crontab-enrty2 Desktop Documents Downloads Music Pictures Public snap Templates Videos
sigmoid@sigmoid-ThinkPad-E14:~$ ls
crontab-enrty2 Desktop Documents Downloads Music Pictures Public snap Templates Videos
sigmoid@sigmoid-ThinkPad-E14:~$ 

```

- 4) Users can put a compressed file at any path of the linux file system. The name of the file will be “research” and the extension will be of compression type, for example gzip type extension will be .gz. You have to find the file and check the compression type and uncompress it.
- Located the compressed file named research anywhere in the filesystem using the find command
  - Identified the compression type of the file using the file command
  - Verified that the file was compressed using gzip format
  - Uncompressed the file using the gzip -d command
  - Extracted the archive contents successfully and verified the output files

```
root@sigmoid-ThinkPad-E14:~      sigmoid@sigmoid-ThinkPad-E14:~/Docume...      sigmoid@sigmoid-ThinkPad-E14:~      sigmoid@sigmoid-ThinkPad-E14:~/Docume...
sigmoid@sigmoid-ThinkPad-E14:~$ pwd
/home/sigmoid
sigmoid@sigmoid-ThinkPad-E14:~$ find -name research.*
./Documents/practise/research.tar
sigmoid@sigmoid-ThinkPad-E14:~$ cd Documents/practise/
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ gzip research.tar
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ file research.tar.gz
research.tar.gz: gzip compressed data, was "research.tar", last modified: Wed Jan  7 18:41:12 2026, from Unix, original size modulo 2^32 30720
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ ls
at-entry Crontab3 Crontab-entry example file9 new new.txt research.tar.gz shell_Scripting vieditorfile vimeditorfile
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ gzip -d research.tar.gz
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ ls
at-entry Crontab3 Crontab-entry example file9 new new.txt research.tar shell_Scripting vieditorfile vimeditorfile
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ tar -xf research.tar
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ ls
at-entry Crontab3 Crontab-entry example file9 new new.txt research.tar shell_Scripting vieditorfile vimeditorfile
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$
```

**5) Configure your system in such a way that any user of your system creates a file then there should not be permission to do any activity in that file.**

- Configured the system umask value to control default file permissions for all users
- Set the umask in the global profile so it applies system-wide
- Created a test file to verify default permissions
- Confirmed that the newly created file has no read, write, or execute permissions
- Validated that no user can perform any operation on the file without changing permissions

```
# /etc/profile: system-wide .profile file for the Bourne shell (sh(1))
# and Bourne compatible shells (bash(1), ksh(1), ash(1), ...).

if [ "${PS1-}" ]; then
    if [ "${BASH-}" ] && [ "$BASH" != "/bin/sh" ]; then
        # The file bash.bashrc already sets the default PS1.
        # PS1=\h:\w\$'
        if [ -f /etc/bash.bashrc ]; then
            . /etc/bash.bashrc
        fi
    else
        if [ "$(id -u)" -eq 0 ]; then
            PS1='# '
        else
            PS1='$ '
        fi
    fi
fi

if [ -d /etc/profile.d ]; then
    for i in /etc/profile.d/*.*; do
        if [ -r $i ]; then
            . $i
        fi
    done
    unset i
fi

umask 777
```

```
root@sigmoid-ThinkPad-E14:~ x sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise... x sigmoid@sigmoid-ThinkPad-E14:~ x sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise...

sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ pwd
/home/sigmoid/Documents/practise
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ sudo vim /etc/profile
[sudo] password for sigmoid:
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ source /etc/profile

#####
# Welcome sigmoid-ThinkPad-E14
# kernel is 6.14.0-37-generic
#
# Logged as sigmoid
#####

sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ touch assign
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ ls -ltr assign
----- 1 sigmoid sigmoid 0 Jan  8 00:37 assign
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ cat assign
cat: assign: Permission denied
sigmoid@sigmoid-ThinkPad-E14:~/Documents/practise$ echo "Adding content" >> assign
-bash: assign: Permission denied
----- 1 sigmoid sigmoid 0 Jan  8 00:37 assign
```

- 6) Create a service with the name showtime , after starting the service, every minute it should print the current time in a file in the user home directory.**

**Ex:-**

**sudo service showtime start -> It should start writing in file.**

**sudo service showtime stop -> It should stop writing in file.**

**sudo service showtime status -> It should show status.**

- Created a custom shell script to write the current system time into a file located in the user's home directory every minute
- Made the script executable so it can be run by the system service manager
- Created a custom systemd service file named showtime to manage the script execution
- Started the showtime service to begin writing time entries and verified its running status
- Stopped the service and confirmed that the time logging process terminated successfully

```
root@sigmoid-ThinkPad-E14: ~          sigmoid@sigmoid-ThinkPad-E14: ~
#!/bin/bash

while true
do
    date >> /home/sigmoid/showtime.log
    sleep 60
done
~
```

```
root@sigmoid-ThinkPad-E14: ~          sigmoid@sigmoid-ThinkPad-E14: ~          sigmoid@sigmoid-ThinkPad-E14: ~          sigmoid@sigmoid-ThinkPad-E14: ~
sigmoid@sigmoid-ThinkPad-E14:~$ pwd
/home/sigmoid
sigmoid@sigmoid-ThinkPad-E14:~$ sudo vim /usr/local/bin/showtime.sh
sigmoid@sigmoid-ThinkPad-E14:~$ sudo chmod +x /usr/local/bin/showtime.sh
sigmoid@sigmoid-ThinkPad-E14:~$ sudo vim /etc/systemd/system/showtime.service
sigmoid@sigmoid-ThinkPad-E14:~$ sudo systemctl daemon-reload
sigmoid@sigmoid-ThinkPad-E14:~$ sudo service showtime start
sigmoid@sigmoid-ThinkPad-E14:~$ sudo service showtime status
● showtime.service - Show Time Service
   Loaded: loaded (/etc/systemd/system/showtime.service; disabled; preset: enabled)
     Active: active (running) since Thu 2026-01-08 01:07:17 IST; 24s ago
       Main PID: 24593 (showtime.sh)
         Tasks: 2 (limit: 8943)
        Memory: 604.0K (peak: 1.1M)
          CPU: 3ms
        CGroup: /system.slice/showtime.service
                └─24593 /bin/bash /usr/local/bin/showtime.sh
                    ├─24595 sleep 60

Jan 08 01:07:17 sigmoid-ThinkPad-E14 systemd[1]: Started showtime.service - Show Time Service.
sigmoid@sigmoid-ThinkPad-E14:~$ sudo service showtime stop
sigmoid@sigmoid-ThinkPad-E14:~$ cat showtime.log
Thu Jan  8 01:07:17 AM IST 2026
Thu Jan  8 01:08:17 AM IST 2026
Thu Jan  8 01:09:17 AM IST 2026
Thu Jan  8 01:10:17 AM IST 2026
sigmoid@sigmoid-ThinkPad-E14:~$
```