Daily System Logger Script

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AIM

To create and schedule a shell script that:

- Logs system information daily
- Stores logs in a dedicated folder
- Rotates logs older than 7 days
- Runs automatically using **cron**

Requirements

- Any Linux distribution (e.g., Linux Mint / Ubuntu / Pop!_OS)
- Text editor (Nano, Vim, VS Code, etc.)
- Cron service enabled

Theory

System administrators often automate logs to track performance and system health. This experiment focuses on:

1. Collecting system data: processes, memory, disk usage, user info
2. Saving daily logs with date-based filenames
3. Deleting old logs automatically
4. Scheduling tasks using `cron`

Exercise 1: Creating the Daily Log Script

Task:

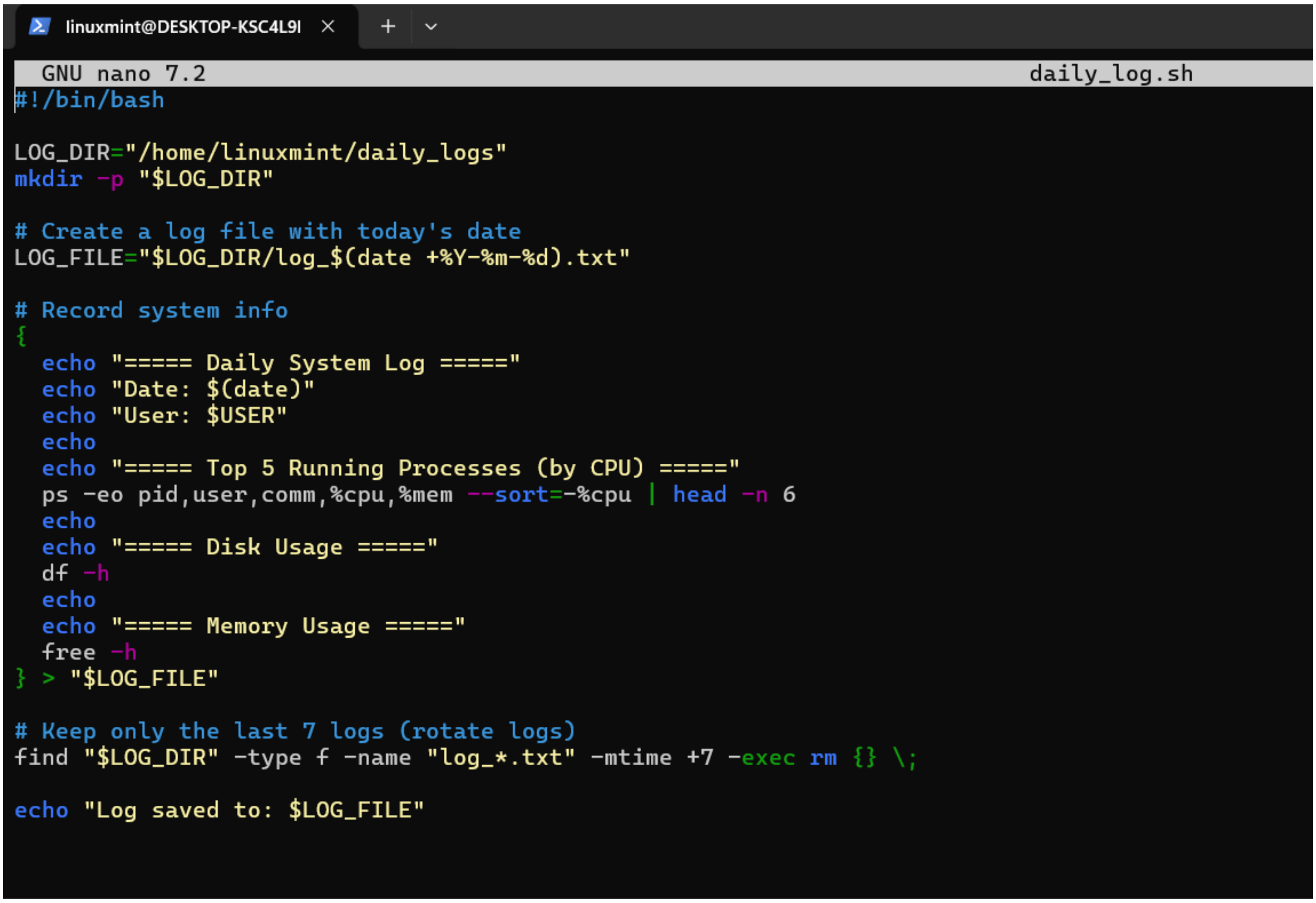
Create a Bash script that saves system info and rotates logs older than 7 days.

Script (daily_log.sh):

```
#!/bin/bash

LOG_DIR="$HOME/daily_logs"
```

```
mkdir -p "$LOG_DIR"

# Create a log file with today's date
LOG_FILE="$LOG_DIR/log_$(date +"%Y-%m-%d").txt"

# Record system information
{
    echo "====== Daily System Log ======"
    echo "Date: $(date)"
    echo "User: $USER"
    echo

    echo "====== Top 5 Running Processes (by CPU) ======"
    ps -eo pid,user,comm,%cpu,%mem --sort=-%cpu | head -n 6
    echo

    echo "====== Disk Usage ======"
    df -h
    echo

    echo "====== Memory Usage ======"
    free -h
} > "$LOG_FILE"

# Delete logs older than 7 days
find "$LOG_DIR" -type f -name "log_*.txt" -mtime +7 -exec rm {} \;

echo "Log saved to: $LOG_FILE"
```

Output Screenshot:



```
  GNU nano 7.2                                                  daily_log.sh
#!/bin/bash

LOG_DIR="/home/linuxmint/daily_logs"
mkdir -p "$LOG_DIR"

# Create a log file with today's date
LOG_FILE="$LOG_DIR/log_$(date +%Y-%m-%d).txt"

# Record system info
{
  echo "===== Daily System Log ====="
  echo "Date: $(date)"
  echo "User: $USER"
  echo
  echo "===== Top 5 Running Processes (by CPU) ====="
  ps -eo pid,user,comm,%cpu,%mem --sort=-%cpu | head -n 6
  echo
  echo "===== Disk Usage ====="
  df -h
  echo
  echo "===== Memory Usage ====="
  free -h
} > "$LOG_FILE"

# Keep only the last 7 logs (rotate logs)
find "$LOG_DIR" -type f -name "log_*.txt" -mtime +7 -exec rm {} \;

echo "Log saved to: $LOG_FILE"
```

Exercise 2: Scheduling the Script Using Cron

Task:

Schedule the script to run daily.

Steps:

1. Open crontab:

```
crontab -e
```

2. Add this line:

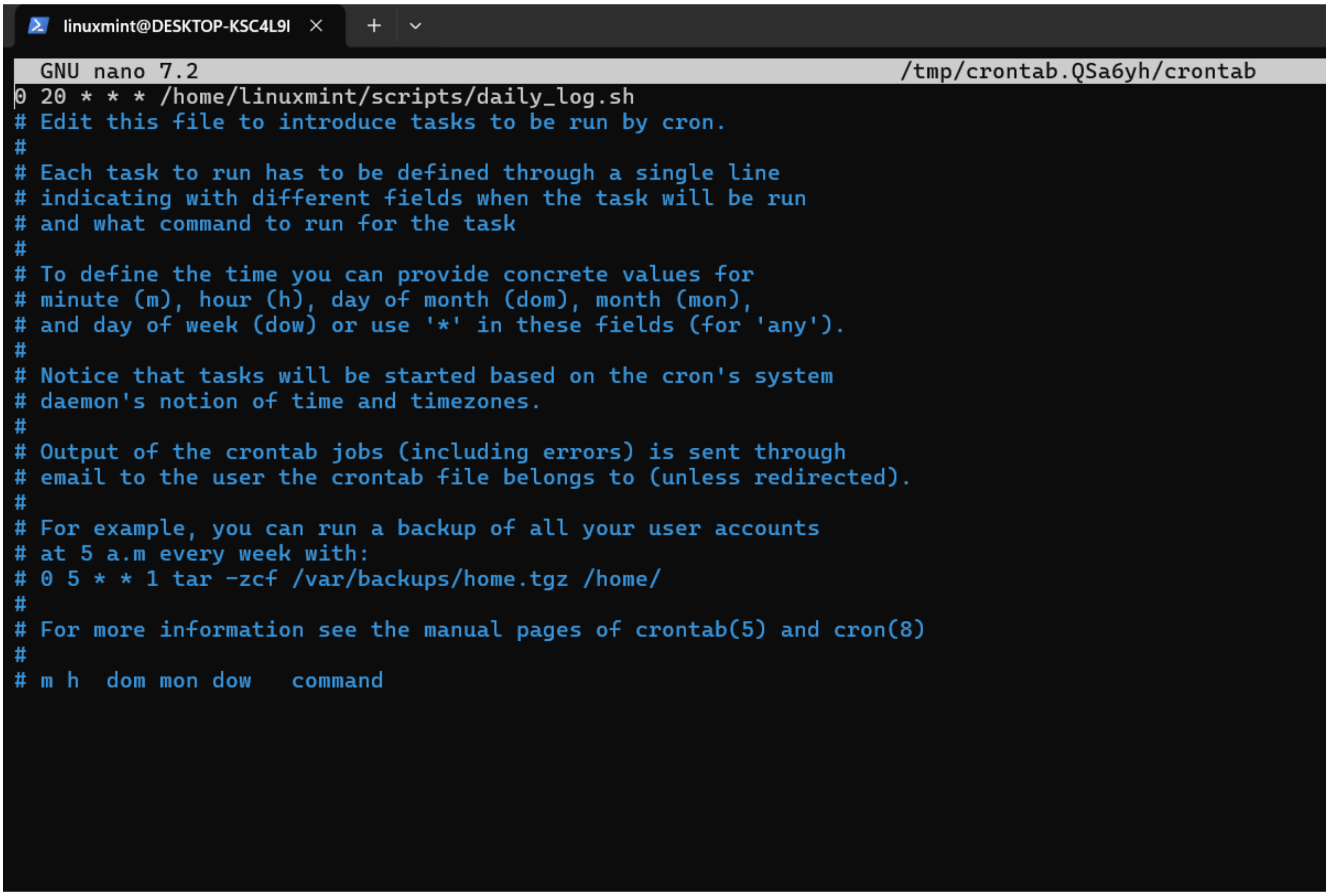
```
0 20 * * * /home/linux/daily_log.sh
```

This runs the script.

Cron Format Reminder:

```
m h dom mon dow command
```

Cron Screenshot:

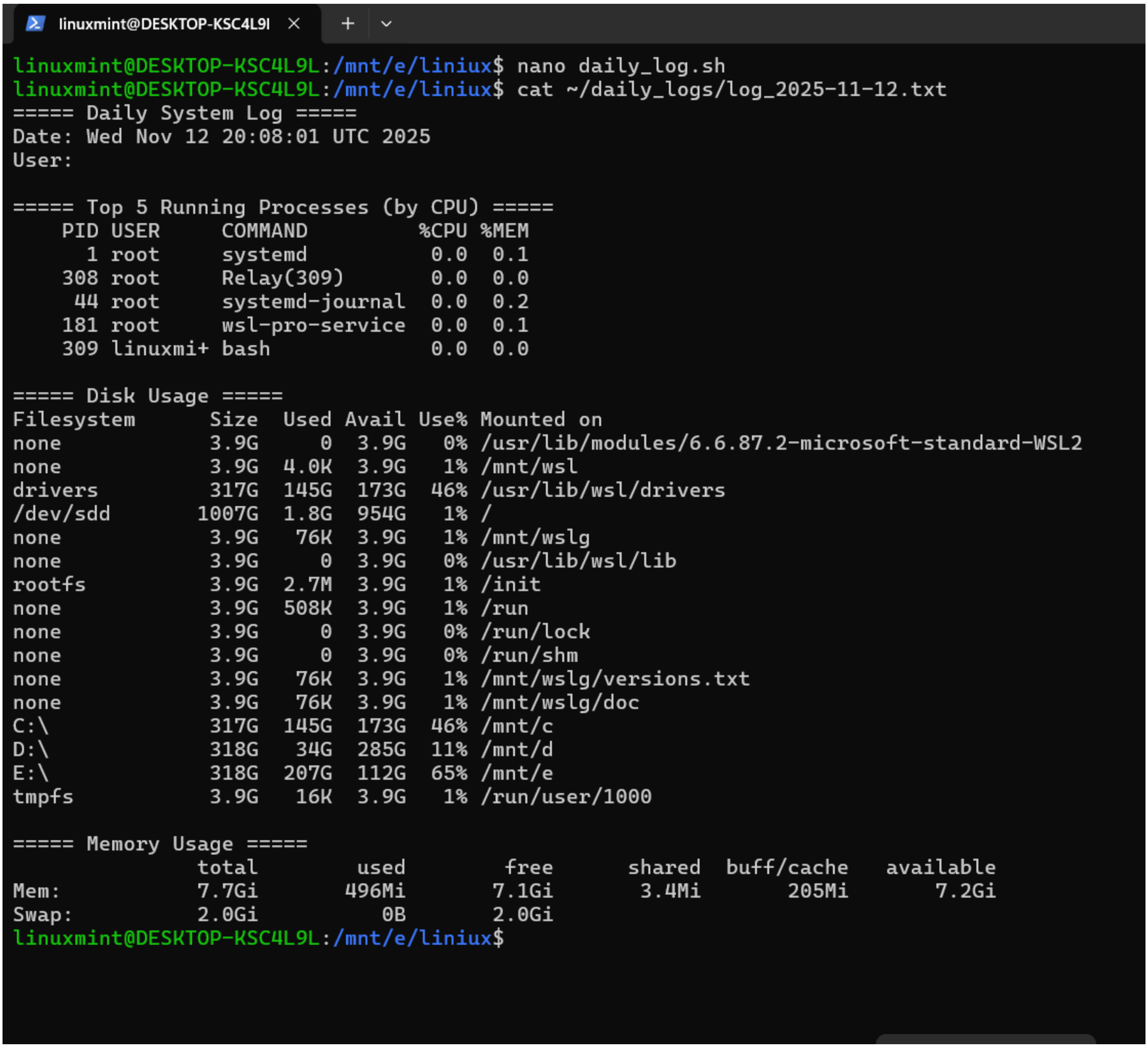


```
  GNU nano 7.2                                                  /tmp/crontab.QSa6yh/crontab
0 20 * * * /home/linuxmint/scripts/daily_log.sh
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h  dom mon dow   command
```

Final Output

The script successfully:

- Creates a new log file daily
- Shows running processes, memory usage, disk usage
- Deletes old logs (older than 7 days)
- Runs automatically via cron



```
linuxmint@DESKTOP-KSC4L9L:/mnt/e/liniux$ nano daily_log.sh
linuxmint@DESKTOP-KSC4L9L:/mnt/e/liniux$ cat ~/daily_logs/log_2025-11-12.txt
===== Daily System Log =====
Date: Wed Nov 12 20:08:01 UTC 2025
User:

===== Top 5 Running Processes (by CPU) =====
    PID USER     COMMAND         %CPU %MEM
      1 root     systemd          0.0  0.1
    308 root     Relay(309)       0.0  0.0
     44 root     systemd-journal  0.0  0.2
    181 root     wsl-pro-service  0.0  0.1
    309 linuxmi+ bash             0.0  0.0

===== Disk Usage =====
Filesystem      Size  Used Avail Use% Mounted on
none            3.9G     0  3.9G   0% /usr/lib/modules/6.6.87.2-microsoft-standard-WSL2
none            3.9G  4.0K  3.9G   1% /mnt/wsl
drivers         317G  145G  173G  46% /usr/lib/wsl/drivers
/dev/sdd       1007G  1.8G  954G   1% /
none            3.9G   76K  3.9G   1% /mnt/wslg
none            3.9G     0  3.9G   0% /usr/lib/wsl/lib
rootfs          3.9G  2.7M  3.9G   1% /init
none            3.9G  508K  3.9G   1% /run
none            3.9G     0  3.9G   0% /run/lock
none            3.9G     0  3.9G   0% /run/shm
none            3.9G   76K  3.9G   1% /mnt/wslg/versions.txt
none            3.9G   76K  3.9G   1% /mnt/wslg/doc
C:\             317G  145G  173G  46% /mnt/c
D:\             318G   34G  285G  11% /mnt/d
E:\             318G  207G  112G  65% /mnt/e
tmpfs           3.9G   16K  3.9G   1% /run/user/1000

===== Memory Usage =====
               total        used        free      shared  buff/cache   available
Mem:           7.7Gi       496Mi       7.1Gi       3.4Mi       205Mi       7.2Gi
Swap:          2.0Gi          0B       2.0Gi
linuxmint@DESKTOP-KSC4L9L:/mnt/e/liniux$
```

Conclusion

This experiment demonstrates automation using shell scripting and cron. The daily log script efficiently captures system information and maintains a clean log directory by removing older log files. Cron ensures the script runs consistently without manual intervention.