midsem1

Experiment: [Daily System Logger Script]

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AIM:

- To create a shell script that logs current system information, rotates old logs, schedules itself to run daily, and sends the daily log via local email.

Requirements:

- Any Linux Distro (Pop!_OS)
- Any text editor (VS Code, Vim, Nano, etc.)
- Cron service for scheduling
- Postfix/mailutils for local email

Theory:

In system administration, automated logging is crucial for monitoring system performance, diagnosing issues, and maintaining records.
This experiment involves:

1. Logging details like username, date, processes, and disk usage.
2. Archiving old logs automatically.
3. Scheduling the script to run daily using `cron`.
4. Sending the daily log via local email to the system mailbox.

Procedure & Observations

Exercise 1: Creating the Daily Log Script

Task Statement:

Write a shell script that logs system info, archives old logs, and emails the daily log.

Explanation:

This script:

- Identifies the current user.
- Creates a directory for storing logs.
- Saves daily logs with timestamps.
- Archives logs older than 7 days.
- Compresses weekly logs on Sundays.

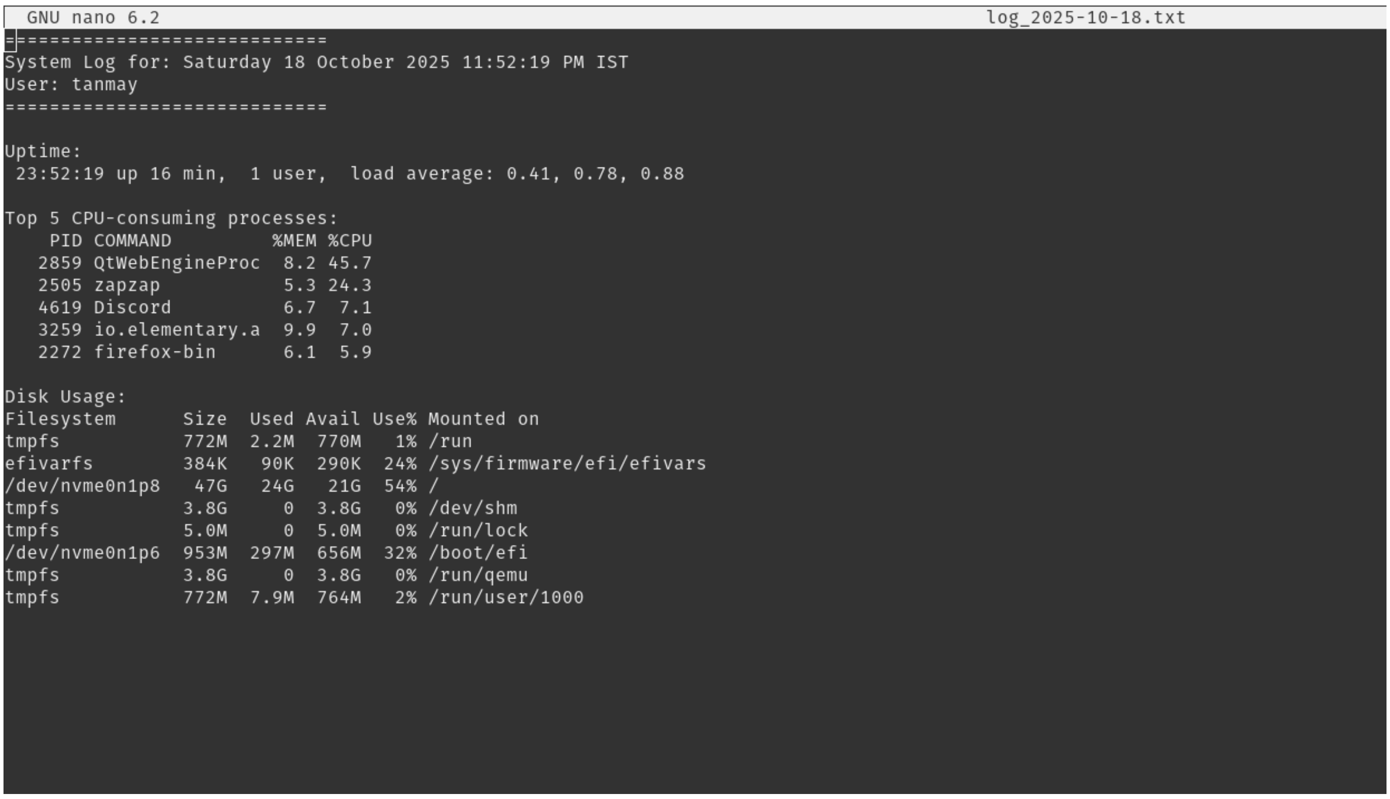
- Sends the daily log via local email.
- Can be scheduled using a cron job.

Command(s):

```
#!/bin/bash

LOG_DIR="$HOME/daily_logs"
ARCHIVE_DIR="$LOG_DIR/archive"
mkdir -p "$LOG_DIR" "$ARCHIVE_DIR"

LOG_FILE="$LOG_DIR/log_$(date +%Y-%m-%d).txt"

{
  echo "=============================="
  echo "System Log for: $(date)"
  echo "User: $(whoami)"
  echo "=============================="
  echo
  echo "Uptime:"
  uptime
  echo
  echo "Top 5 CPU-consuming processes:"
  ps -eo pid,comm,%mem,%cpu --sort=-%cpu | head -n 6
  echo
  echo "Disk Usage:"
  df -h
} > "$LOG_FILE"

echo "Log created successfully at $LOG_FILE"

find "$LOG_DIR" -name "log_*.txt" -mtime +7 -exec mv {} "$ARCHIVE_DIR" \;


if [ "$(date +%u)" -eq 7 ]; then
  tar -czf "$ARCHIVE_DIR/weeklylogs_$(date +%Y-%m-%d).tar.gz" -C
"$ARCHIVE_DIR" .
  echo "Weekly archive created."
fi


if [ -f "$LOG_FILE" ]; then
    mail -s "Daily System Log - $(date +%Y-%m-%d)" tanmay@localhost <
"$LOG_FILE"
```

```
    echo "Log emailed to local mailbox: tanmay@localhost"
else
    echo "No log file found for today!"
fi
```

Output:



```
  GNU nano 6.2                                                                 log_2025-10-18.txt
============================
System Log for: Saturday 18 October 2025 11:52:19 PM IST
User: tanmay
============================

Uptime:
 23:52:19 up 16 min,  1 user,  load average: 0.41, 0.78, 0.88

Top 5 CPU-consuming processes:
    PID COMMAND         %MEM %CPU
   2859 QtWebEngineProc  8.2 45.7
   2505 zapzap           5.3 24.3
   4619 Discord          6.7  7.1
   3259 io.elementary.a  9.9  7.0
   2272 firefox-bin      6.1  5.9

Disk Usage:
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           772M  2.2M  770M   1% /run
efivarfs        384K   90K  290K  24% /sys/firmware/efi/efivars
/dev/nvme0n1p8   47G   24G   21G  54% /
tmpfs           3.8G     0  3.8G   0% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
/dev/nvme0n1p6  953M  297M  656M  32% /boot/efi
tmpfs           3.8G     0  3.8G   0% /run/qemu
tmpfs           772M  7.9M  764M   2% /run/user/1000
```

Exercise 2: Scheduling the Script

Task Statement:

Schedule the above script to run daily using cron.

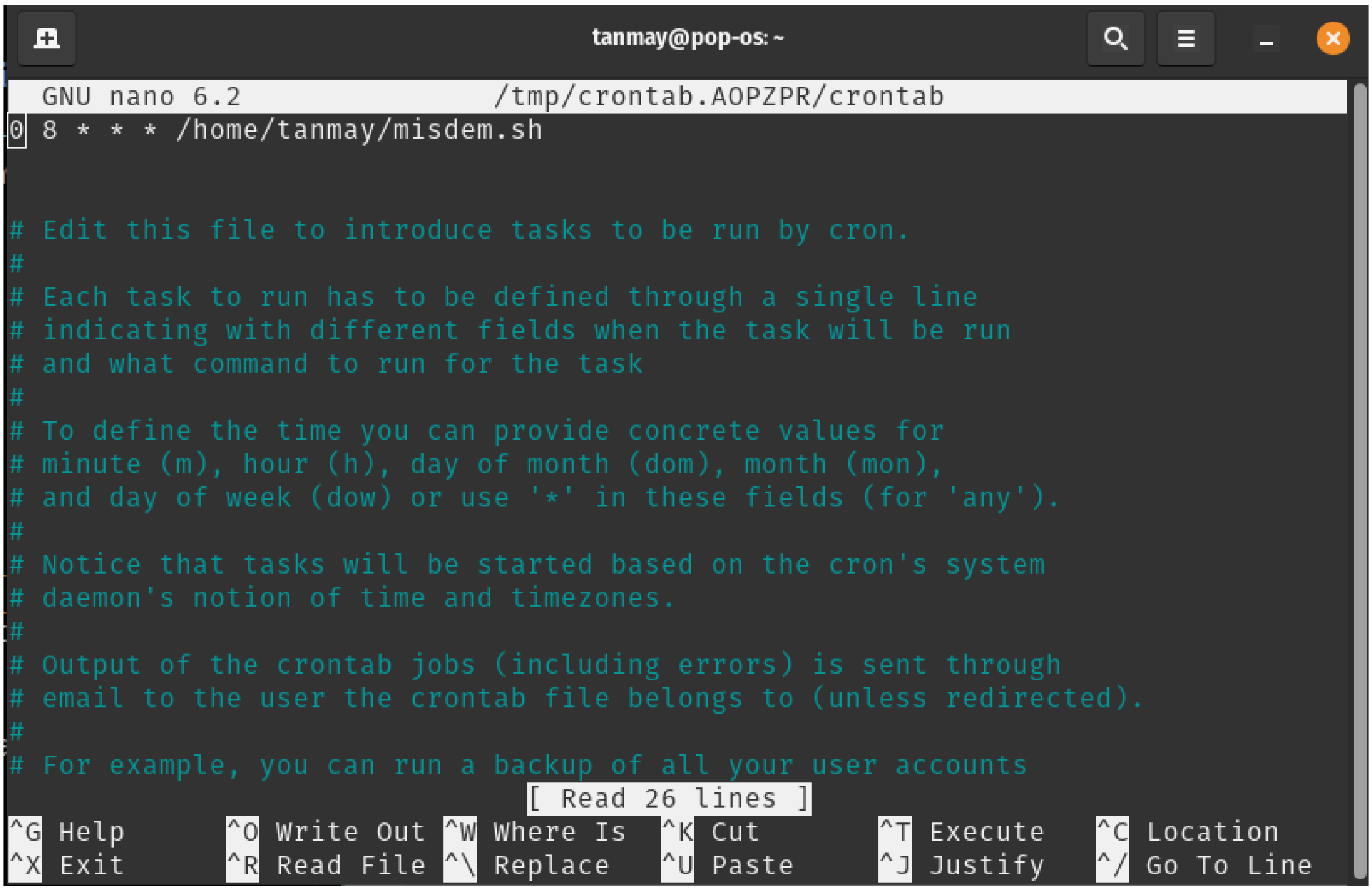
Explanation:

Use crontab to automate the script execution at a fixed time every day.

Command(s):

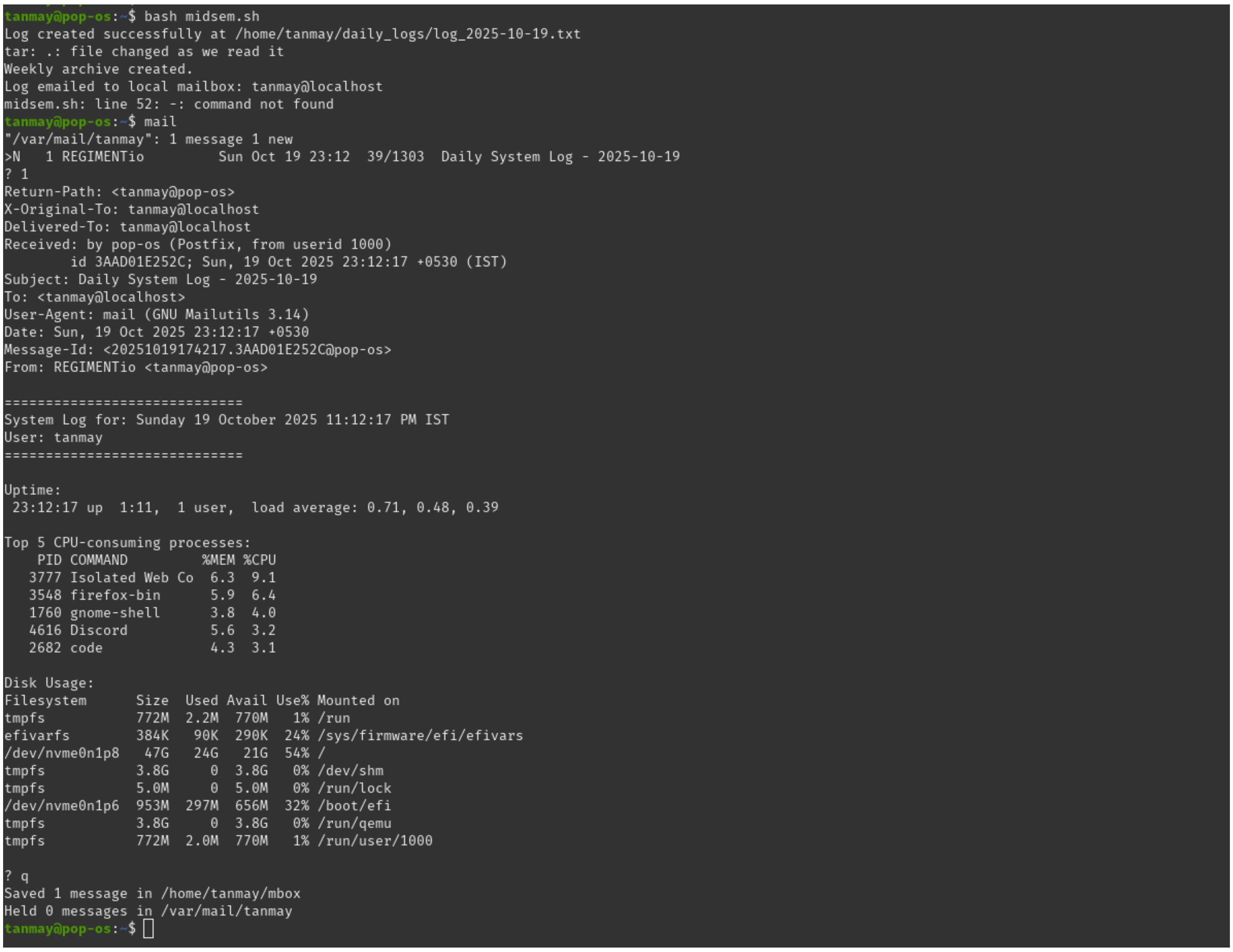
```
crontab -e
0 8 * * * /home/tanmay/desktop/linux/exp3/midsem.sh
```

Output:



```
  GNU nano 6.2                  /tmp/crontab.AOPZPR/crontab
0 8 * * * /home/tanmay/misdem.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
                                [ Read 26 lines ]
^G Help         ^O Write Out    ^W Where Is     ^K Cut          ^T Execute      ^C Location
^X Exit         ^R Read File    ^\ Replace      ^U Paste        ^J Justify      ^/ Go To Line
```

Final Output:



```
tanmay@pop-os:~$ bash midsem.sh
Log created successfully at /home/tanmay/daily_logs/log_2025-10-19.txt
tar: .: file changed as we read it
Weekly archive created.
Log emailed to local mailbox: tanmay@localhost
midsem.sh: line 52: -: command not found
tanmay@pop-os:~$ mail
"/var/mail/tanmay": 1 message 1 new
>N   1 REGIMENTio         Sun Oct 19 23:12  39/1303  Daily System Log - 2025-10-19
? 1
Return-Path: <tanmay@pop-os>
X-Original-To: tanmay@localhost
Delivered-To: tanmay@localhost
Received: by pop-os (Postfix, from userid 1000)
        id 3AAD01E252C; Sun, 19 Oct 2025 23:12:17 +0530 (IST)
Subject: Daily System Log - 2025-10-19
To: <tanmay@localhost>
User-Agent: mail (GNU Mailutils 3.14)
Date: Sun, 19 Oct 2025 23:12:17 +0530
Message-Id: <20251019174217.3AAD01E252C@pop-os>
From: REGIMENTio <tanmay@pop-os>

=============================
System Log for: Sunday 19 October 2025 11:12:17 PM IST
User: tanmay
=============================

Uptime:
 23:12:17 up  1:11,  1 user,  load average: 0.71, 0.48, 0.39

Top 5 CPU-consuming processes:
    PID COMMAND         %MEM %CPU
   3777 Isolated Web Co  6.3  9.1
   3548 firefox-bin      5.9  6.4
   1760 gnome-shell      3.8  4.0
   4616 Discord          5.6  3.2
   2682 code             4.3  3.1

Disk Usage:
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           772M  2.2M  770M   1% /run
efivarfs        384K   90K  290K  24% /sys/firmware/efi/efivars
/dev/nvme0n1p8   47G   24G   21G  54% /
tmpfs           3.8G     0  3.8G   0% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
/dev/nvme0n1p6  953M  297M  656M  32% /boot/efi
tmpfs           3.8G     0  3.8G   0% /run/qemu
tmpfs           772M  2.0M  770M   1% /run/user/1000

? q
Saved 1 message in /home/tanmay/mbox
Held 0 messages in /var/mail/tanmay
tanmay@pop-os:~$
```

Result:
The script successfully logs daily system information, archives logs older than 7 days, compresses weekly logs, and emails the log locally. It runs daily via cron.

Conclusion:

The Daily System Logger script automates log creation, archiving, weekly compression, and local email delivery. It successfully runs daily using cron, demonstrating practical use of shell scripting for system monitoring.

We can simply check the mail by typing mail and typing 1 if its the latest mail on our system., also all of these mails only exist on my system and not on the internet, So even though its sent via email it doesn’t go to gmail or the internet it stays on my system