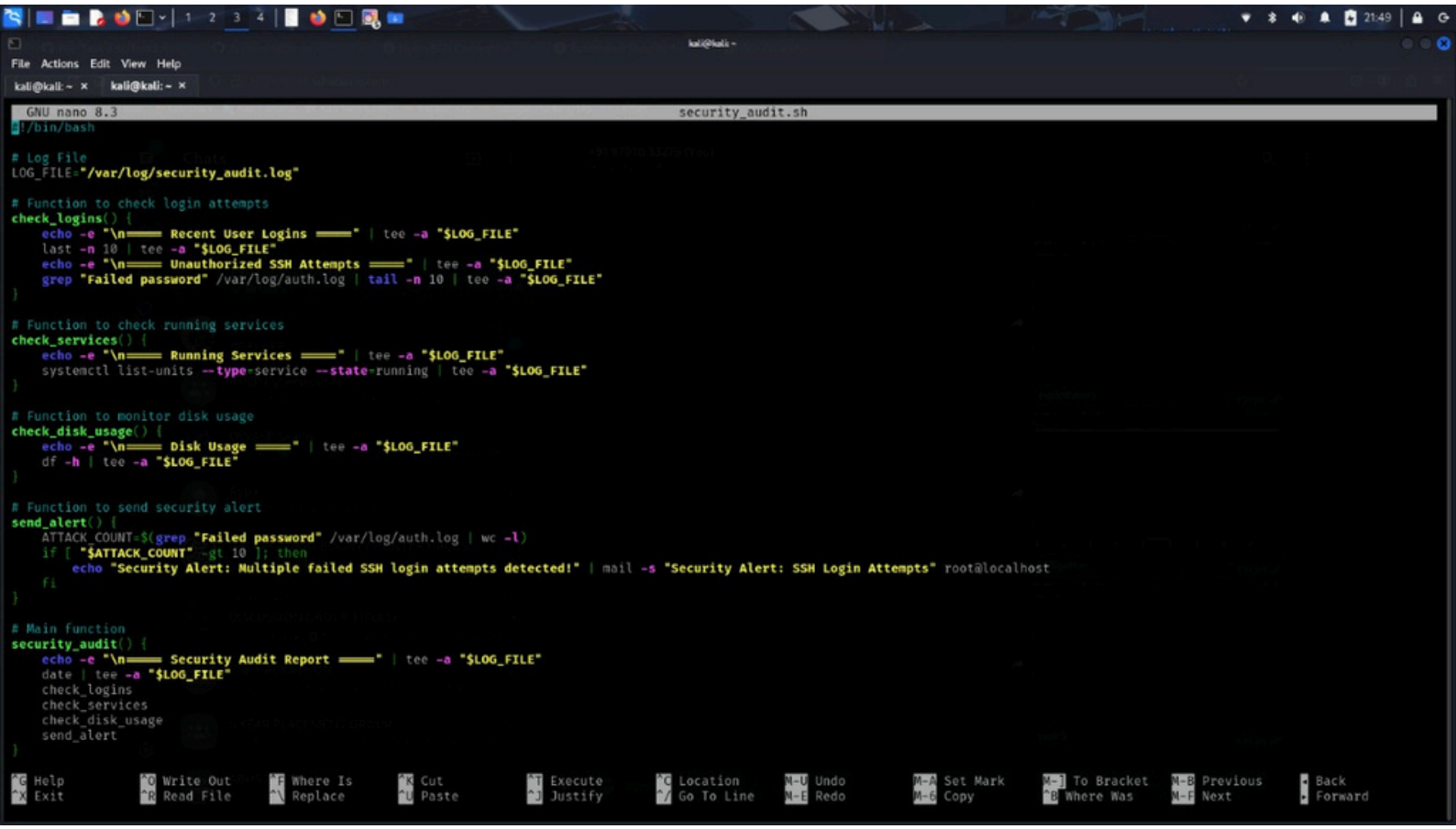
POC TASK 5

Bash Script:

Write a bash script using nano called **security_audit.sh**




```
#!/bin/bash


# Log File

LOG_FILE="/var/log/security_audit.log"


# Function to check login attempts

check_logins() {
```

```
    echo -e "\n===== Recent User Logins =====" | tee -a "$LOG_FILE"
    last -n 10 | tee -a "$LOG_FILE"
    echo -e "\n===== Unauthorized SSH Attempts =====" | tee -a "$LOG_FILE"
    grep "Failed password" /var/log/auth.log | tail -n 10 | tee -a "$LOG_FILE"
}

# Function to check running services
check_services() {
    echo -e "\n===== Running Services =====" | tee -a "$LOG_FILE"
    systemctl list-units --type=service --state=running | tee -a "$LOG_FILE"
}

# Function to monitor disk usage
check_disk_usage() {
    echo -e "\n===== Disk Usage =====" | tee -a "$LOG_FILE"
    df -h | tee -a "$LOG_FILE"
}

# Function to send security alert
send_alert() {
    ATTACK_COUNT=$(grep "Failed password" /var/log/auth.log | wc -l)
    if [ "$ATTACK_COUNT" -gt 10 ]; then
        echo "Security Alert: Multiple failed SSH login attempts detected!" | mail -s "Security Alert: SSH Login Attempts" root@localhost
    fi
}
```

```
# Main function
security_audit() {
    echo -e "\n===== Security Audit Report =====" | tee -a "$LOG_FILE"
    date | tee -a "$LOG_FILE"
    check_logins
    check_services
    check_disk_usage
    send_alert
}

# Execute the script
security_audit
```

Checking User Login Attempts

Command:

```
last -n 10
```

```
┌──(kali㉿kali)-[~]
└─$ nano security_audit.sh

┌──(kali㉿kali)-[~]
└─$ last -n 10
Command 'last' not found, but can be installed with:
sudo apt install wtmpdb
Do you want to install it? (N/y)y
sudo apt install wtmpdb
The following packages were automatically installed and are no longer required:
  cpp-13                  libical3t64                 libmsgraph-0-1          libpython3.12-dev       libswscale7                 pyt
  cpp-13-x86-64-linux-gnu libimobiledevice6           libnsl2                 libpython3.12-minimal   libtag1v5                   pyt
  gcc-13-base             libjim0.82t64               libpaper1               libpython3.12-stdlib    libtag1v5-vanilla           pyt
  imagemagick-6-common    libldap-2.5-0               libperl5.38t64          libpython3.12t64        libtagc0                    pyt
  libassuan0              libllvm17t64                libplacebo338           libqt6dbus6t64          libusbmuxd6                 pyt
  libavfilter9            libmagickcore-6.q16-7-extra libplist3               libqt6gui6t64           libutempter0                pyt
  libavformat60           libmagickcore-6.q16-7t64    libpoppler134           libqt6network6t64       libwebrtc-audio-processing1 pyt
  libconfig++9v5          libmagickwand-6.q16-7t64    libpostproc57           libqt6opengl6t64        linux-image-6.8.11-amd64
  libdirectfb-1.7-7t64    libmbedcrypto7t64           libpython3.11-minimal   libqt6widgets6t64       perl-modules-5.38
  libgspell-1-2           libmfx1                     libpython3.11-stdlib    libssh-gcrypt-4         python3-pexpect
Use 'sudo apt autoremove' to remove them.

Installing:
  wtmpdb

Installing dependencies:
  libpam-wtmpdb  libwtmpdb0

Summary:
  Upgrading: 0, Installing: 3, Removing: 0, Not Upgrading: 360
```

Purpose: Lists the last 10 user login attempts.

Example Output:

- root pts/0 192.168.1.100 Mon Mar 11 12:00 still logged in
- user1 pts/1 192.168.1.101 Mon Mar 11 11:45 - 11:55 (00:10)

Security Risk: Identifies old, inactive accounts or unauthorized logins.

Command: grep "Failed password" /var/log/auth.log | tail -n 10

Purpose: Finds failed SSH login attempts from /var/log/auth.log.

Example Output:

r 11 12:30:01 server sshd[12345]: Failed password for invalid user admin from 192.168.1.200

Security Risk:

If there are multiple failed attempts, an attacker may be brute-forcing SSH.

Detecting Running Services

Command:

systemctl list-units --type=service --state=running

Purpose: Lists currently running system services.

Example Output:

```
UNIT                LOAD   ACTIVE SUB     DESCRIPTION
apache2.service         loaded active running The Apache HTTP Server
ssh.service             loaded active running OpenBSD Secure Shell server
```

Security Risk: Unnecessary services (e.g., old database servers) can expose vulnerabilities.

Monitoring Disk Usage

Command: df -h

Purpose: Displays disk space usage in a **human-readable** format.

Example Output:

```
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda1       50G   45G  5G   90% /
```

Security Risk: If disk space is **over 90%**, attackers might try a **Denial-of-Service (DoS) attack** by filling up logs or storage.

Sending Security Alerts

Command: grep "Failed password" /var/log/auth.log | wc -l

Purpose: Counts the number of failed SSH login attempts.

Example Output:

15

Action: If this count is greater than 10, an alert is sent.

Command: mail -s "Security Alert: SSH Login Attempts" root@localhost

Purpose: Sends an email alert.

Alternative: Install and configure mailutilsfor external emails:

sudo apt install mailutils

Running the Script

Make the script executable:

chmod +x security_audit.sh

```
┌──(kali㉿kali)-[~]
└─$ chmod +x security_audit.sh
./security_audit.sh

tee: /var/log/security_audit.log: Permission denied

═══ Security Audit Report ═══
tee: /var/log/security_audit.log: Permission denied
Wed Mar 12 21:50:49 IST 2025
tee: /var/log/security_audit.log: Permission denied

═══ Recent User Logins ═══
tee: /var/log/security_audit.log: Permission denied
open_database_ro: Cannot open database (/var/lib/wtmpdb/wtmp.db): unable to open database file
tee: /var/log/security_audit.log: Permission denied

═══ Unauthorized SSH Attempts ═══
tee: /var/log/security_audit.log: Permission denied
grep: /var/log/auth.log: No such file or directory
tee: /var/log/security_audit.log: Permission denied

═══ Running Services ═══
tee: /var/log/security_audit.log: Permission denied
  UNIT                      LOAD   ACTIVE SUB     DESCRIPTION
  accounts-daemon.service   loaded active running Accounts Service
  apache2.service           loaded active running The Apache HTTP Server
  bluetooth.service         loaded active running Bluetooth service
  colord.service            loaded active running Manage, Install and Generate Color Profiles
  cron.service              loaded active running Regular background program processing daemon
  dbus.service              loaded active running D-Bus System Message Bus
  fail2ban.service          loaded active running Fail2Ban Service
  getty@tty1.service        loaded active running Getty on tty1
  haveged.service           loaded active running Entropy Daemon based on the HAVEGE algorithm
  lightdm.service           loaded active running Light Display Manager
```

Run the script:

./security_audit.sh

Expected output:

pgsql

===== Security Audit Report =====

Wed Mar 11 12:30:00 UTC 2025

===== Recent User Logins =====

(root) pts/0 192.168.1.100 Mon Mar 11 12:00 still logged in

===== Unauthorized SSH Attempts =====

Mar 11 12:30:01 server sshd[12345]: Failed password for invalid user admin from 192.168.1.200

===== Running Services =====

apache2.service loaded active running The Apache HTTP Server

===== Disk Usage =====

Filesystem Size Used Avail Use% Mounted on

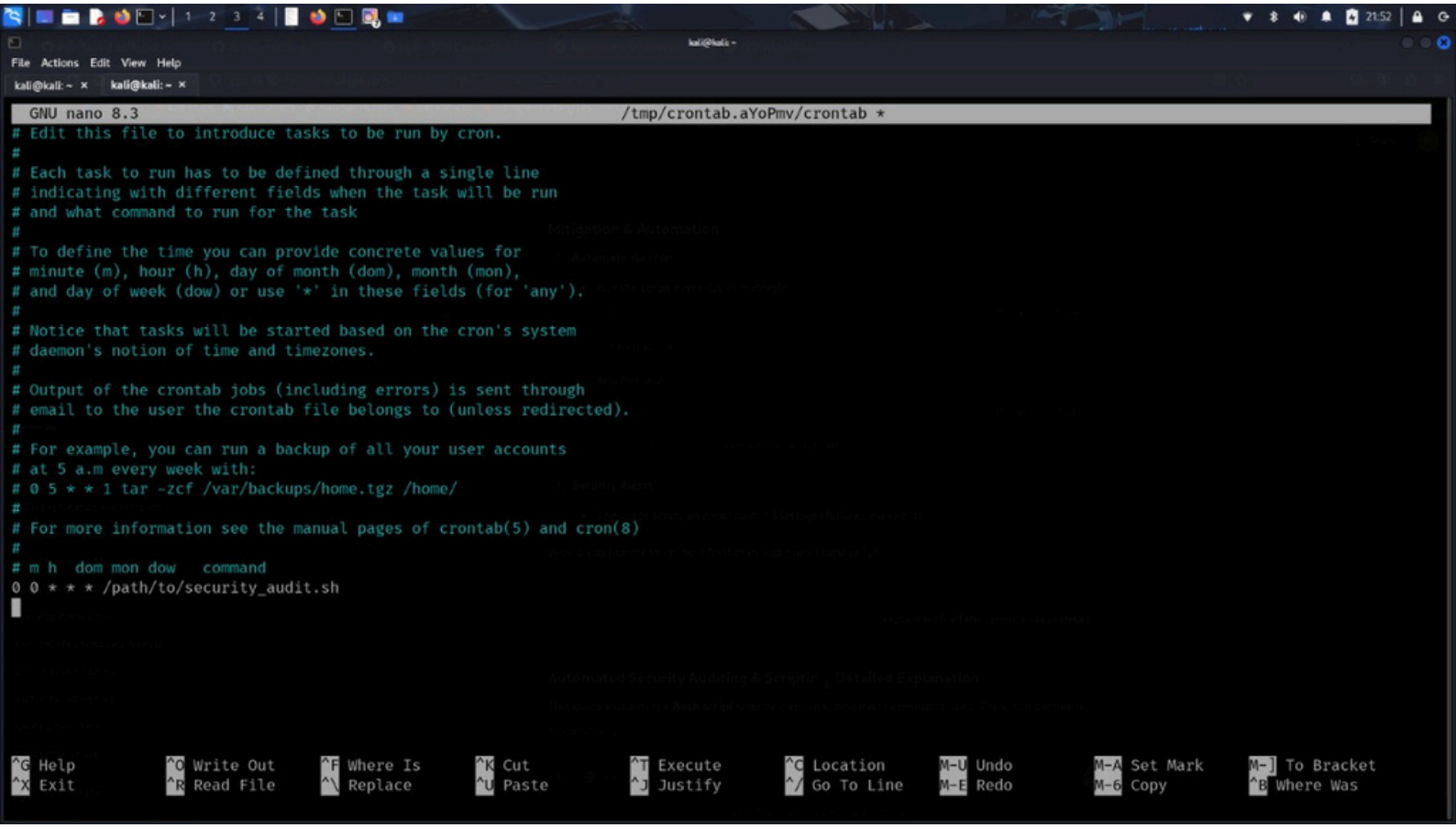
/dev/sda1 50G 45G 5G 90% /

Automating with Cron

To run the script automatically every day at midnight, use:

crontab -e

Add this line:



0 0 * * * /path/to/security_audit.sh

This ensures the script runs **daily at midnight**.