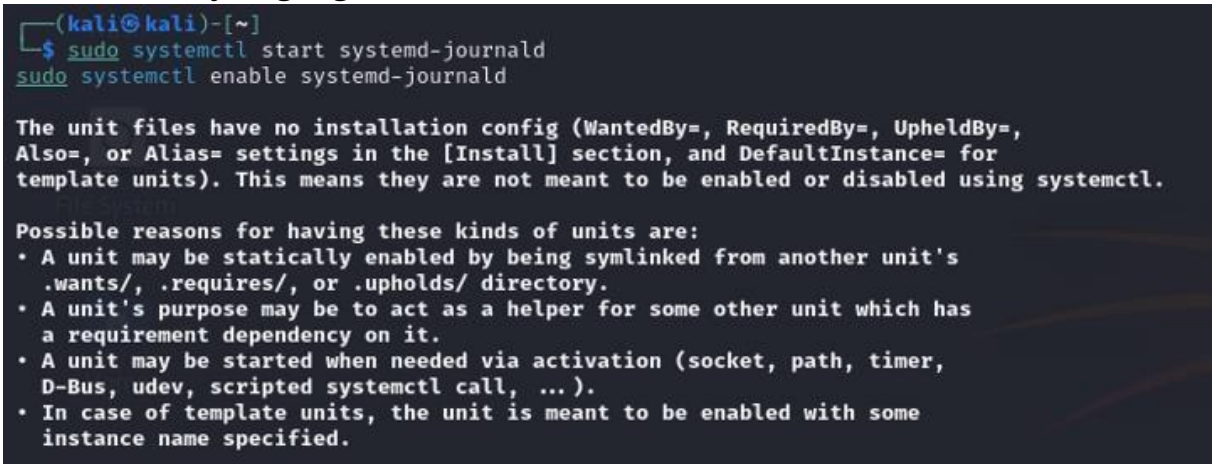
Task 6

Log Analysis & Intrusion Detection

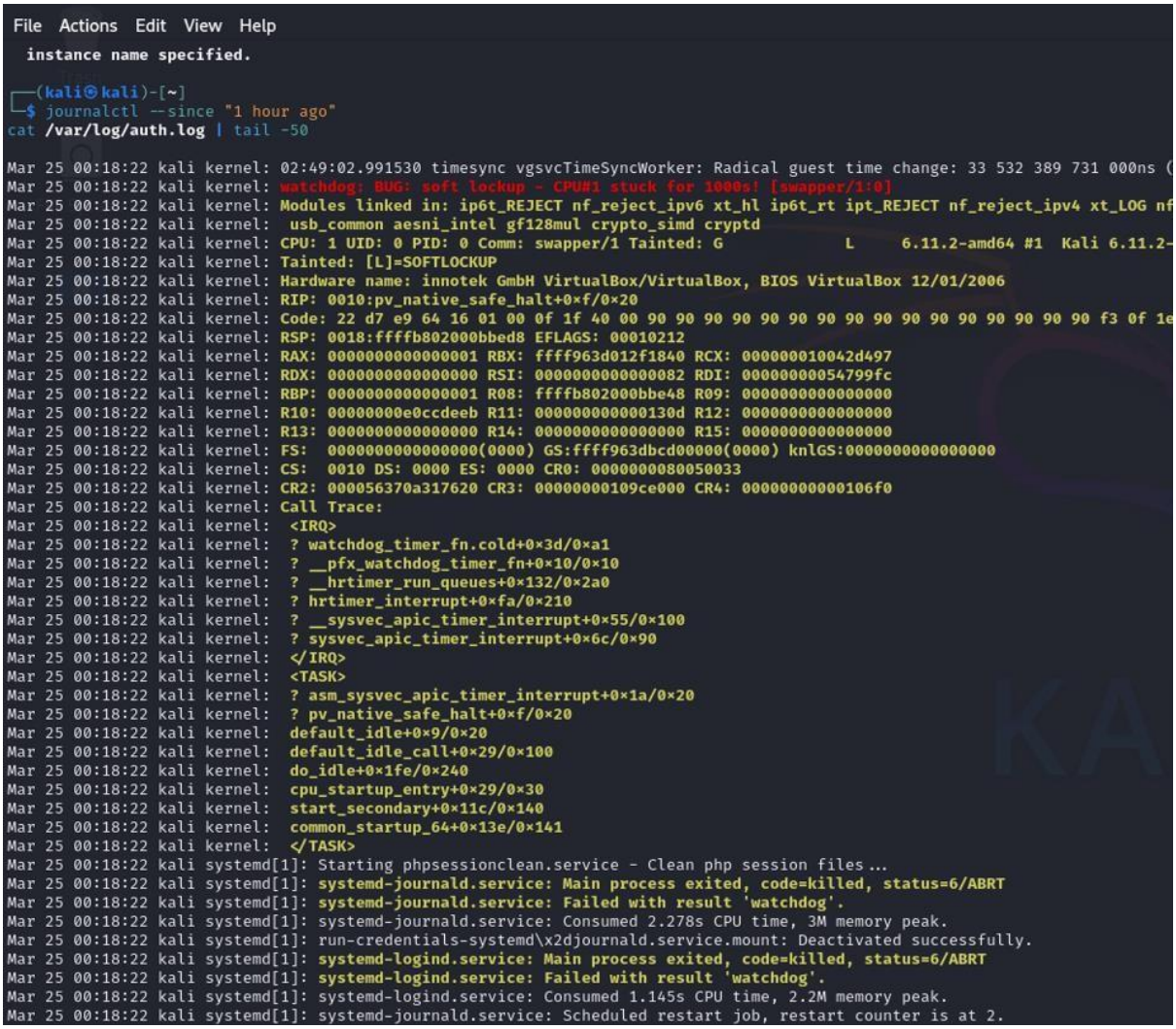
Setup

1. Before analyzing logs, we need to ensure that system logging is active.



2. Check logs:

Check logs using sudo cat /var/log/auth.log.



Exploit

1. **Analyze Logs for Failed SSH Logins:** Find failed attempts:

2. Count occurrences per IP:

Identify Brute-Force Attempts & Unauthorized Access:

- Check repeated failed login attempts from the same IP.
- Review timestamps to identify patterns.
- Compare with legitimate access logs for verification.

```
┌──(kali㉿kali)-[~]
└─$ grep "Failed password" /var/log/auth.log

2025-03-25T01:04:13.359237-04:00 kali sudo:     kali : TTY=pts/0 ; PWD=/home/kali ; USER=root ; COMMAND=/usr/bin/grep 'Failed password' /var/log/auth.log

┌──(kali㉿kali)-[~]
└─$ grep "Failed password" /var/log/auth.log | awk '{print $(NF-3)}' | sort | uniq -c | sort -nr

      1 COMMAND=/usr/bin/grep

┌──(kali㉿kali)-[~]
└─$ grep "Accepted password" /var/log/auth.log
```

Mitigation

1. Implement Fail2Ban to Block Repeated Failed Attempts:

Install Fail2Ban

```
┌──(kali㉿kali)-[~]
└─$ sudo apt install fail2ban -y
```

Configure SSH protection:

```
┌──(kali㉿kali)-[~]
└─$ sudo nano /etc/fail2ban/jail.local
```

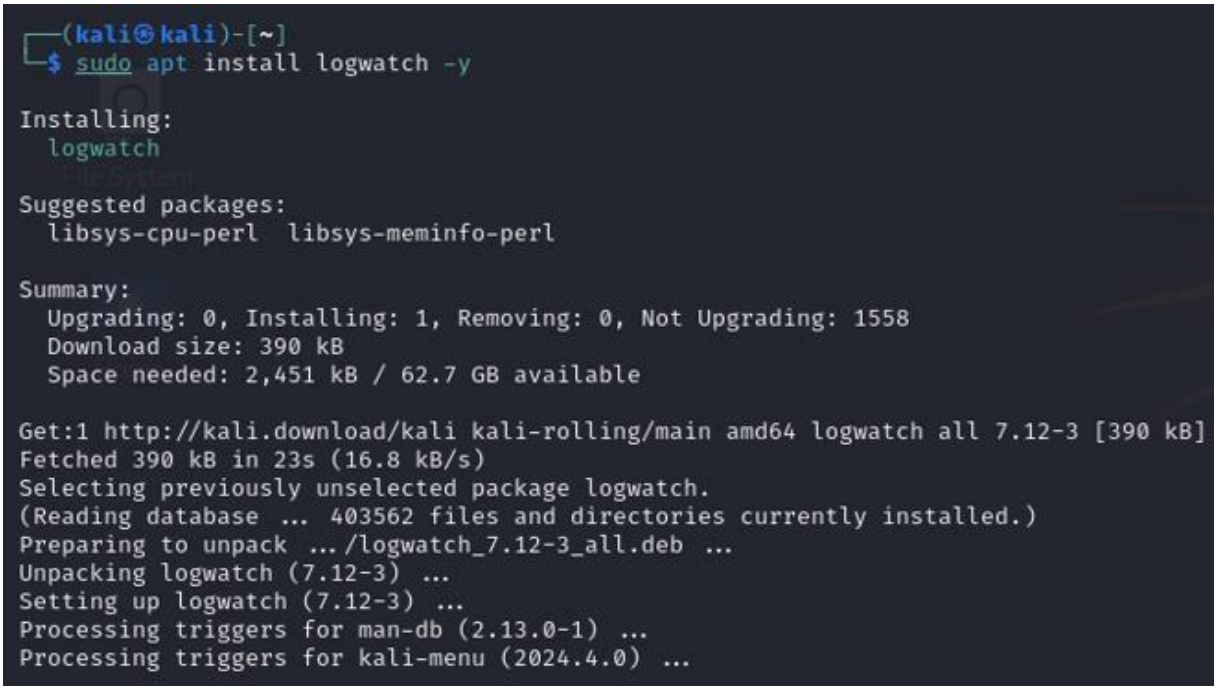
```
  GNU nano 8.2
[sshd]
enabled = true
port = ssh
filter = sshd
logpath = /var/log/auth.log
maxretry = 3
bantime = 600
```

Restart Fail2Ban

```
┌──(kali㉿kali)-[~]
└─$ sudo systemctl restart fail2ban
sudo fail2ban-client status sshd

2025-03-25 01:08:43,696 fail2ban             [165701]: ERROR   Failed to access socket path: /var/run/fail2ban/fail2ban.sock. Is fail2ban running?
```

2. Set Up Log Monitoring Automation:



Generate a security report
Generate a security report using sudo cat /var/log/auth.log > security_report.txt.

```
┌──(kali㉿kali)-[~]
└─$ sudo logwatch --detail high --service sshd --range today

 ################### Logwatch 7.12 (01/22/25) ####################
        Processing Initiated: Tue Mar 25 01:09:56 2025
        Date Range Processed: today
                              ( 2025-Mar-25 )
                              Period is day.
        Detail Level of Output: 10
        Type of Output/Format: stdout / text
        Logfiles for Host: kali
 ##################################################################

 ---------------------- SSHD Begin -----------------------

 SSHD Killed: 1 Time

 SSHD Started: 2 Times

 Illegal users from:
    ::1 (localhost): 1 Time
       invalid_user: 1 Time

 ---------------------- SSHD End -----------------------


 ###################### Logwatch End #########################
```

Configure rsyslog for centralized logging

Ensure remote logging is enabled if needed.

```
┌──(kali㉿kali)-[~]
└─$ sudo nano /etc/rsyslog.conf
```

Conclusion

We analyzed SSH login attempts, identified unauthorized access, and improved security. Using journalctl or /var/log/auth.log, we detected failed logins and brute-force attacks. Fail2Ban was set up to block repeated failures, and logwatch was configured for continuous monitoring.