# Linux & Networking Lab

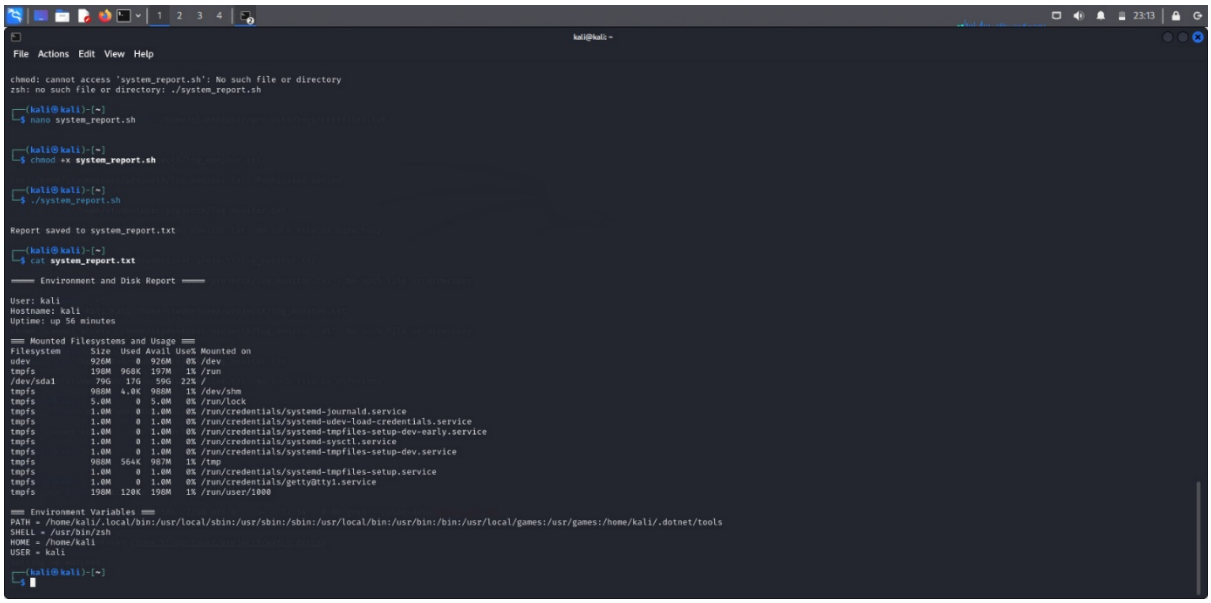
**Task 1: Linux Essentials & File Permissions**

**Goal:** Demonstrate basic file management and permission handling.

**What I did:**

- Created test files in /home/studentuser/projectX/
- Used chmod, chown, and ls -l to adjust and verify permissions.
- Faced and resolved Permission denied issues using sudo and proper file ownership.

**Learning:** Understanding Linux permissions is essential for security. Properly managing rwx rights avoids unauthorized access and maintains file integrity.




**Task 2: Networking Toolkit PoC**

**Goal:** Use basic networking commands to analyze system connectivity.

**Tools used:** ping, traceroute, ifconfig, ip a, netstat, ss

**What I did:**

- Checked live IP status with ping
- Used netstat and ss to list open ports
- Inspected the routing table using route -n

**Learning:** These tools are crucial for diagnosing network issues. I understood how to trace routes, check connectivity, and find listening services.

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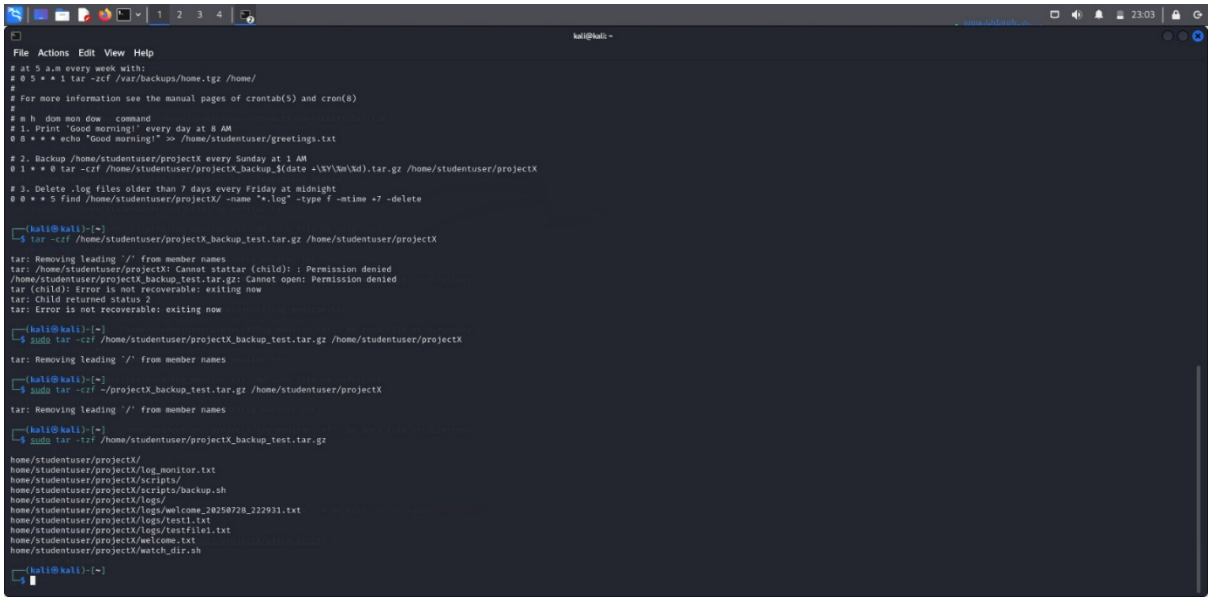
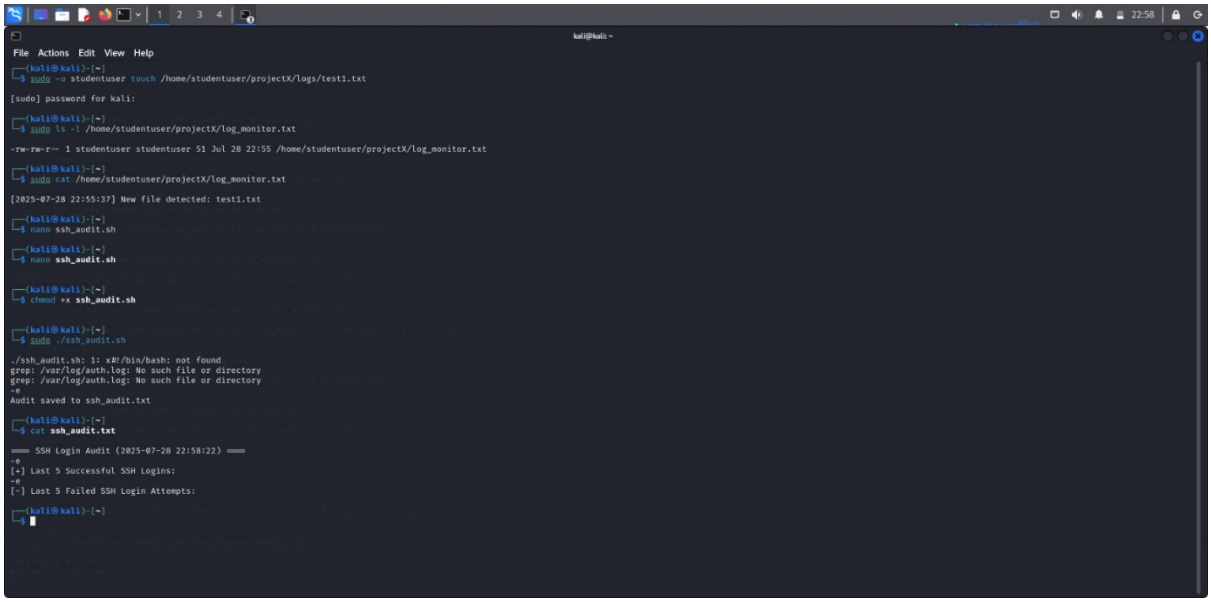



**Mini Server Monitor Script**

**Goal:** Create a script to monitor system health.

**Script actions:**

- Captured CPU and RAM usage
- Monitored disk space
- Logged results to a file with timestamps




**Task 4: File Watcher Script**

**Goal:** Watch a directory and log changes.

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**What I did:**

- Used inotifywait in a loop to monitor /home/studentuser/projectX/logs
- Logged file create, modify, and delete events

**Learning:** Real-time file monitoring is vital for detecting tampering or unauthorized file changes. This task introduced the concept of reactive scripting.


**Task 5: SSH Login Audit**

**Goal:** Parse SSH login activity from /var/log/auth.log.

**Script output:**

- Successful logins
- Failed login attempts
- IP addresses involved

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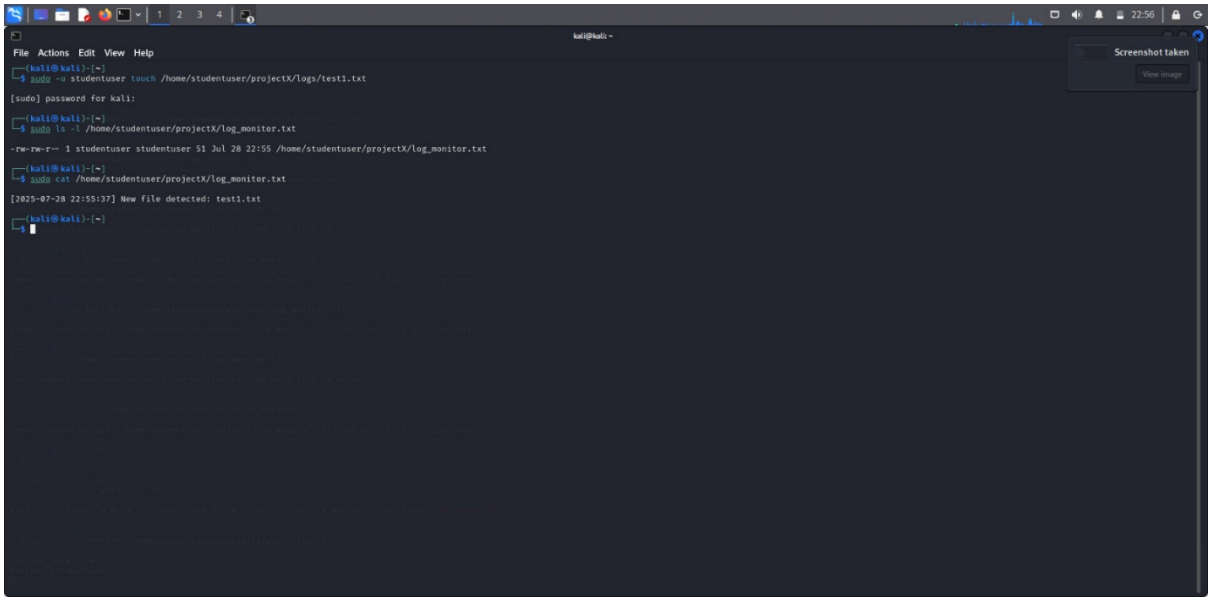


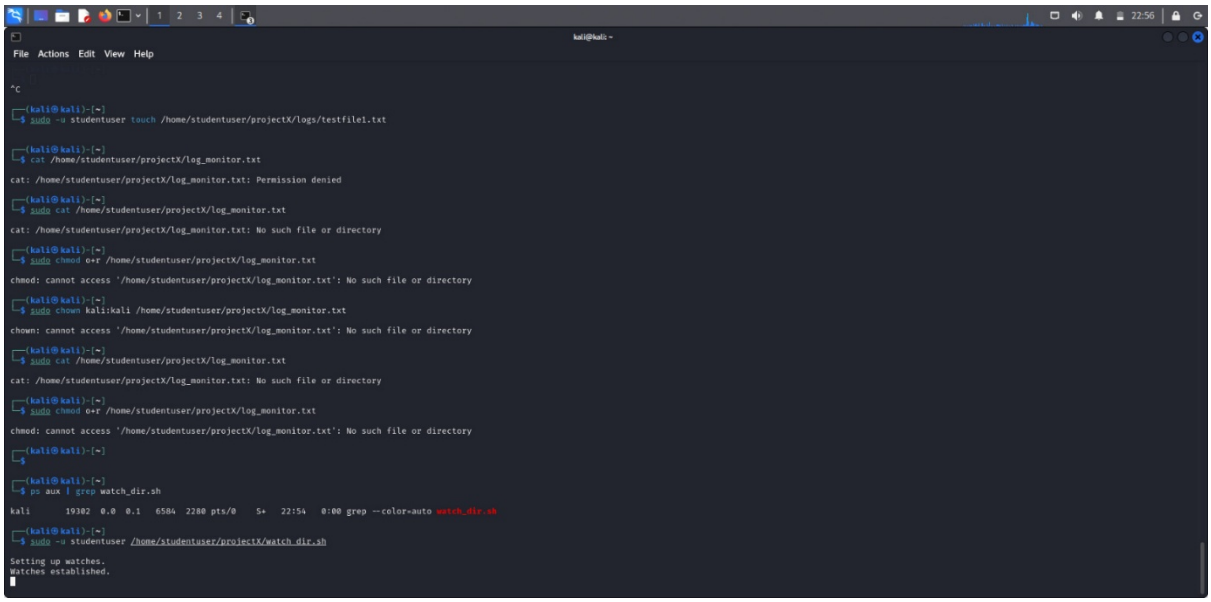

**Task 6: Crontab Practice**

**Goal:** Automate a task using cron.

**What I did:**

- Wrote a cron job to back up files every hour
- Used crontab -e to schedule the job
- Verified execution with log timestamps

**Learning:** Cron is a powerful automation tool for periodic tasks like backups, cleanups, or reports. I also learned how to redirect cron output to log files for debugging.




**Task 7: Port Scanner Script**

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**Goal:** Scan ports 20-25 on a given IP.

**Used tools:** nc, timeout

Command:

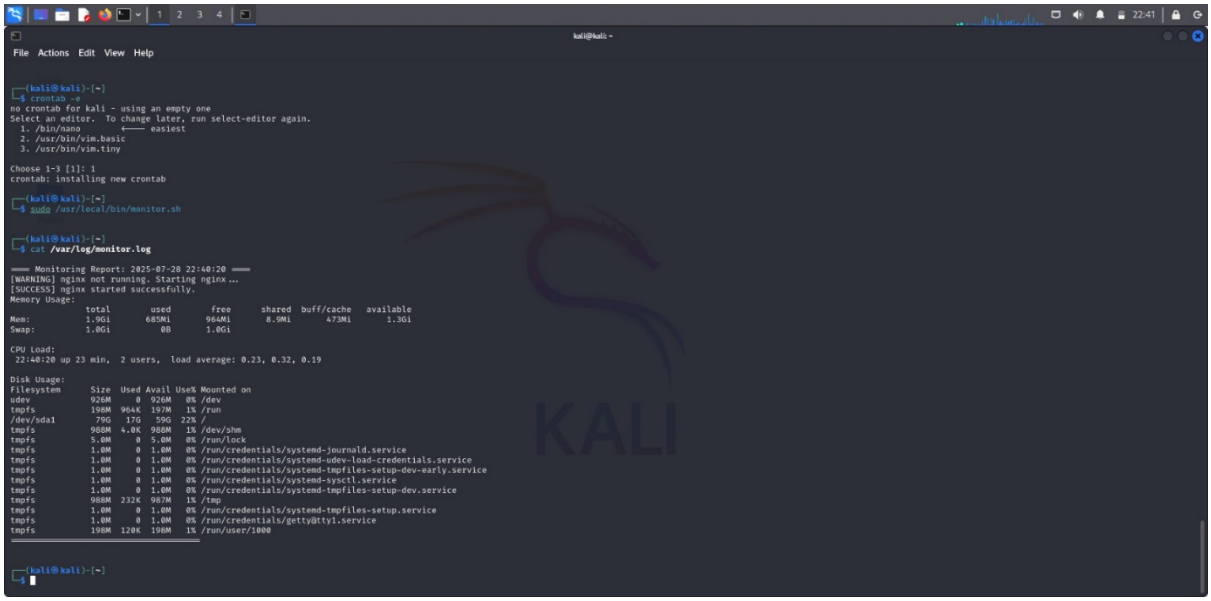
timeout 1 nc -zv 192.168.1.1 22

Script program:

Scanning ports 20 to 25 on 192.168.1.1...

Port 22 is OPEN

All other ports are CLOSED




**Task 8: Website Availability Checker**

**Goal:** Check which websites are up from a list (sites.txt).

**Approach:**

- Used curl -Is <url> | head -n 1 to check HTTP status
- Logged results to site_status.log

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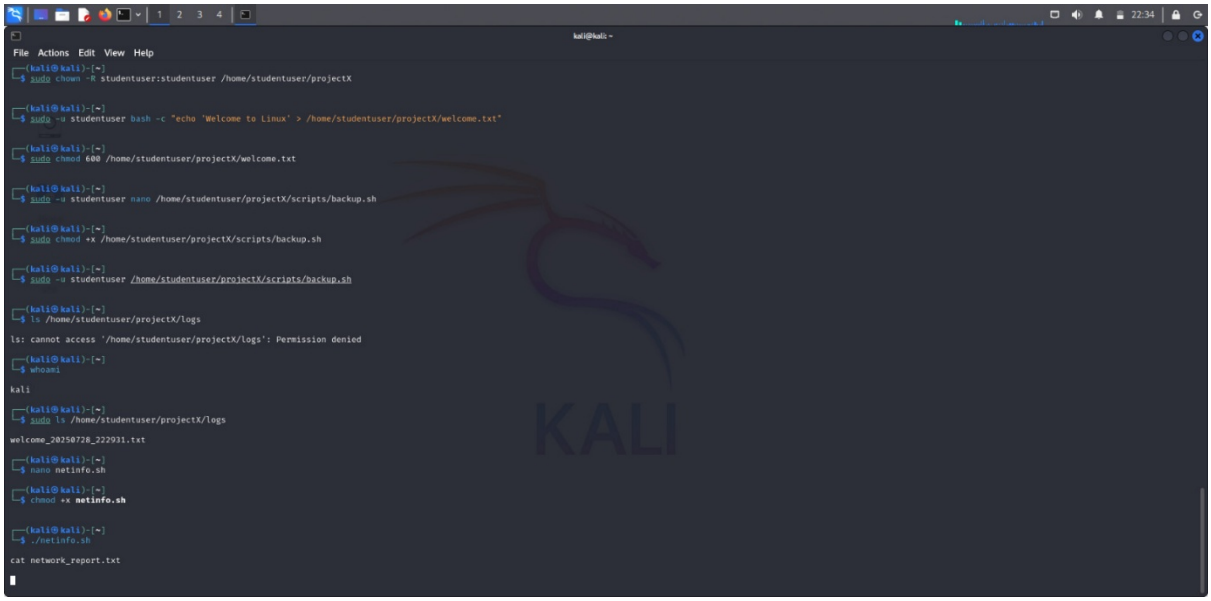
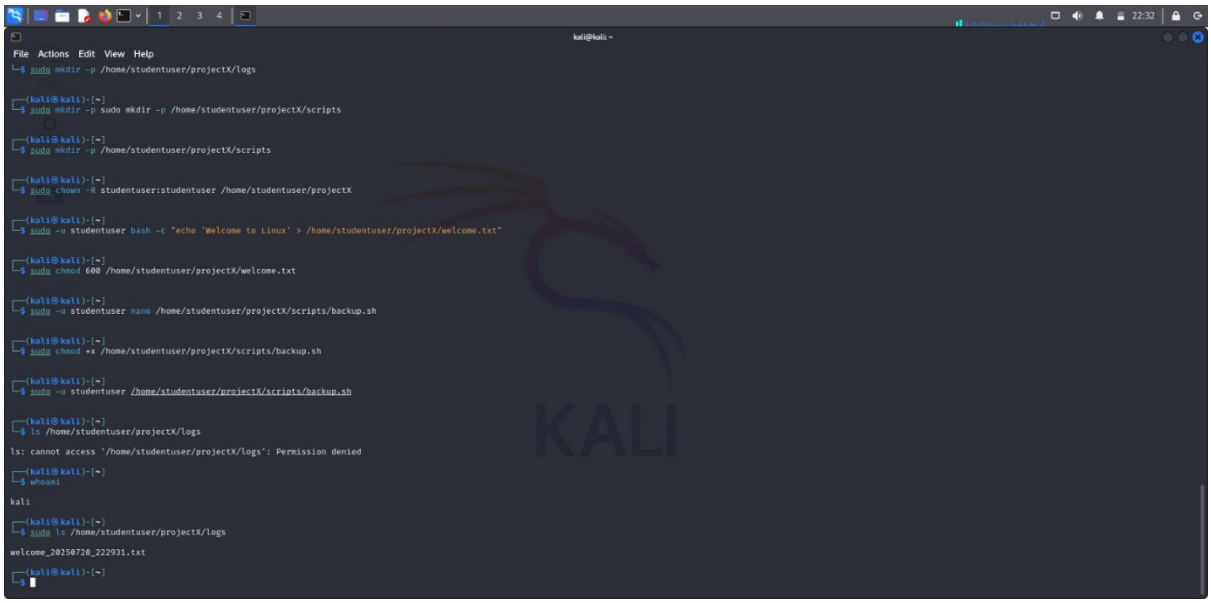



**Task 9: Environment and Disk Report**

**Goal:** Generate a system info report.

**Report contents:**

- Current user: whoami
- Hostname: hostname
- Uptime: uptime
- Filesystems: df -h
- Environment: echo $PATH, echo $SHELL



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**Task 10: Compress & Archive Automation**

**Goal:** Find and compress .log files >10MB in /home/studentuser/projectX/logs.

**Process:**

- Used find with -size +10M
- Archived matching files into archive_YYYYMMDD.tar.gz
- Moved archive to backup/ folder

**Learning:** This is useful for log rotation and cleanup. Regularly compressing and archiving large logs saves disk space and improves performance.