□ Linux Lab Report – Kate Sofia Petersen

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Part 1 – System and User Information

Objective: Display system and user information including kernel version, current user, and date/time.

□ Comment:

These commands provide essential system and user identity information useful for system administration.

□ Commands

- `uname -a` → shows system information including kernel version.
- `whoami` → shows the current user.
- `date` → shows the current date and time.

Part 2 – Commands with Flags and Arguments

Objective: Use commands with flags and arguments to customize output.

□ Comment:

Flags and arguments modify command behavior and output. These examples demonstrate listing files with details and searching text ignoring case.

□ Commands

- `ls -l /home` → lists files with details in /home.
- `grep -i "test" file.txt` → searches for “test” in file.txt, ignoring case.

Part 3 – Navigating Between Directories

Objective: Move confidently between directories using relative and absolute paths.

□ Comment:

Navigating directories is essential for file management. These commands show how to display the current directory and move to others.

Commands

- `pwd` → shows the current directory.
- `cd /etc` → changes to the /etc directory.
- `cd ~` → returns to the home directory.

Part 4 – Creating and Removing Directories

Objective: Manage directories by creating and removing them safely.

Comment:

Creating and removing directories helps organize files. Use mkdir to create and rmdir to remove empty directories.

Commands

- `mkdir dir1 dir2` → creates two directories.
- `rmdir dir1` → removes an empty directory.

Part 5 – Listing Files with Detailed Information

Objective: View detailed file information including permissions and timestamps.

Comment:

Detailed listings provide insights into file permissions, ownership, size, and modification times.

Commands

- `ls -l` → shows file permissions, owner, size, and timestamps.

Part 6 – Viewing and Changing File Permissions

Objective: Understand and modify file permissions and ownership.

Comment:

File permissions control access. Use ls -l to view and chmod to change permissions.

Commands

- `ls -l file.txt` → shows permissions and ownership.
- `chmod 644 file.txt` → changes permissions (owner: read/write, others: read).

Part 7 – File Management

Objective: Create, copy, move, and delete files safely.

Comment:

Managing files involves creating, copying, moving, and deleting. These commands demonstrate each operation.

Commands

- `touch file1.txt` → creates a file.
- `cp file1.txt copy.txt` → copies a file.
- `mv copy.txt newfile.txt` → moves/renames a file.
- `rm newfile.txt` → deletes a file.
- `ls` → verifies with directory listing.

Part 9 – System Administration

Objective: Perform administrative tasks with elevated privileges.

Comment:

System administration requires elevated privileges. Use sudo for admin commands and su to switch users.

Commands

- `sudo apt update` → runs command as administrator.
- `sudo shutdown -h now` → shuts down the system.
- `su - other_user` → switches user.

Part 11 – Export Flow and Logging

Objective: Manage logging environment variables and write to log files.

Comment:

Logging is essential for tracking system events. Set environment variables and append messages to log files.

Commands

- `export LOGFILE=log.txt` → creates environment variable for log file.

- `echo "Start logging" {{CONTENT}}gt;{{CONTENT}}gt; $LOGFILE` → writes to log file.

Part 12 – Disk Space and Memory Usage

Objective: Monitor disk space and memory usage effectively.

Comment:

Disk and memory monitoring help maintain system health. Use df and free commands for readable output.

Commands

- `df -h` → shows disk space in human-readable format.
- `free -h` → shows memory usage.

Part 13 – User Groups and Permissions (Optional)

Objective: View user groups and permissions.

Comment:

Understanding user groups helps manage permissions.

Commands

- `groups` → shows groups for current user.
- `id` → shows UID, GID, and groups.

Part 14 – Scheduled Jobs with cron (Optional)

Objective: Manage scheduled jobs using cron.

Comment:

Cron schedules repetitive tasks. Verify cron service status and list jobs.

Commands

- `crontab -l` → lists scheduled jobs.
- `systemctl status cron` → verifies cron is running.

Part 15 – Environment Variables and System Settings

Objective: View and manage environment variables.

Comment:

Environment variables store system settings. Use printenv to view them.

Commands

- `printenv` → shows all environment variables.
- `printenv PATH` → shows specific variable.

Part 16 – Network Ports and Services (Optional)

Objective: Monitor network ports and services.

Comment:

Network monitoring helps secure services. Use netstat or ss to view open ports.

Commands

- `netstat -tuln` → shows open ports and services.
- `ss -tuln` → alternative to netstat.

Part 17 – System Logs with tail and Filtering

Objective: View and filter system logs effectively.

Comment:

System logs provide insights into system events. Use tail and grep to filter logs.

Commands

- `tail /var/log/syslog` → shows latest lines in system log.
- `grep "error" /var/log/syslog` → filters for “error” in logs.

Part 18 – Directory Structure with find

Objective: Search files and directories efficiently.

Comment:

Find helps locate files and directories recursively.

Commands

- `find . -type f` → shows all files in current and subdirectories.
- `find . -type d` → shows all directories.

Part 19 – User History and Command Logs (Optional)

Objective: Review user command history.

Comment:

Command history helps track past commands.

Commands

- `history` → shows previous commands.
- `cat ~/.bash_history` → shows history file.

Part 20 – Scheduled Jobs with crontab

Objective: Edit and manage scheduled jobs.

Comment:

Crontab allows editing scheduled jobs. Example shows daily backup at 5 AM.

Commands

- `crontab -e` → edit scheduled jobs.
- Example:

  ```
  0 5 * * * /home/sofia/backup.sh
  ```

  Runs backup.sh daily at 05:00.

Mentor Feedback

Mentor, please provide your comments or feedback below: