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# LINUX COMMANDS

## 1 - SYSTEM INFORMATION

|                                      |  |
|--------------------------------------|--|
| <code>uname -a</code>                | # Display Linux system information                 |
| <code>uname -r</code>                | # Display kernel release information               |
| <code>cat /etc/redhat-release</code> | # Show which version of Red Hat installed          |
| <code>lsb_release -a</code>          | # Show which version of Ubuntu installed           |
| <code>uptime</code>                  | # Show how long the system has been running + load |
| <code>hostname</code>                | # Show system host name                            |
| <code>hostname -I</code>             | # Display all local IP addresses of the host       |
| <code>last reboot</code>             | # Show system reboot history                       |
| <code>date</code>                    | # Show the current date and time                   |
| <code>cal</code>                     | # Show this month's calendar                       |
| <code>w</code>                       | # Display who is online                            |
| <code>whoami</code>                  | # Who you are logged in as                         |

## 2 - HARDWARE INFORMATION

|                                    |   |
|------------------------------------|---|
| <code>dmesg</code>                 | # Display messages in kernel ring buffer  |
| <code>cat /proc/cpuinfo</code>     | # Display CPU information   |
| <code>cat /proc/meminfo</code>     | # Display memory information  |
| <code>free -h</code>               | # Display free and used memory ( <code>-h</code> for human readable, <code>-m</code> for MB, <code>-g</code> for GB.) |
| <code>lspci -tv</code>             | # Display PCI devices   |
| <code>lsusb -tv</code>             | # Display USB devices   |
| <code>hdparm -i /dev/sda</code>    | # Show info about disk sda  |
| <code>hdparm -tT /dev/sda</code>   | # Perform a read speed test on disk sda   |
| <code>badblocks -s /dev/sda</code> | # Test for unreadable blocks on disk sda  |
| <code>lshw</code>                  | # Display information about CPU, memory, storage, and network interfaces  |

```
lsblk
```

```
# Display information about all storage devices
```

### 3 - PERFORMANCE MONITORING AND STATISTICS

```
top
```

```
# Display and manage the top processes
```

```
htop
```

```
# Interactive process viewer (top alternative)
```

```
mpstat 1
```

```
# Display processor related statistics
```

```
vmstat 1
```

```
# Display virtual memory statistics
```

```
iostat 1
```

```
# Display I/O statistics
```

```
tail -100 /var/log/messages
```

```
# Display the last 100 syslog messages (Use  
/var/log/syslog for Debian based systems.)
```

```
tcpdump -i eth0
```

```
# Capture and display all packets on interface eth0
```

```
tcpdump -i eth0 'port 80'
```

```
# Monitor all traffic on port 80 ( HTTP )
```

```
lsof
```

```
# List all open files on the system
```

```
lsof -u user
```

```
# List files opened by user
```

```
free -h
```

```
# Display free and used memory ( -h for human  
readable, -m for MB, -g for GB.)
```

```
watch df -h
```

```
# Execute "df -h", showing periodic updates
```

```
mpstat
```

```
# Display statistics about CPU usage
```

```
pidstat
```

```
# Display statistics about processes running
```

### 4 - USER INFORMATION AND MANAGEMENT

```
id
```

```
# Display the user and group ids of your  
current user.
```

```
last
```

```
# Display the last users who have logged onto  
the system.
```

```
who
```

```
# Show who is logged into the system.
```

```
w
```

```
# Show who is logged in and what they are  
doing.
```

```
groupadd test
```

```
# Create a group named "test".
```

```
useradd -c "John Smith" -m john
```

```
# Create an account named john, with a
```

|                                     |   |
|-------------------------------------|---|
|                                     | comment of "John Smith" and create the user's home directory. |
| <code>userdel john</code>           | <code># Delete the john account.</code>                       |
| <code>usermod -aG sales john</code> | <code># Add the john account to the sales group</code>        |

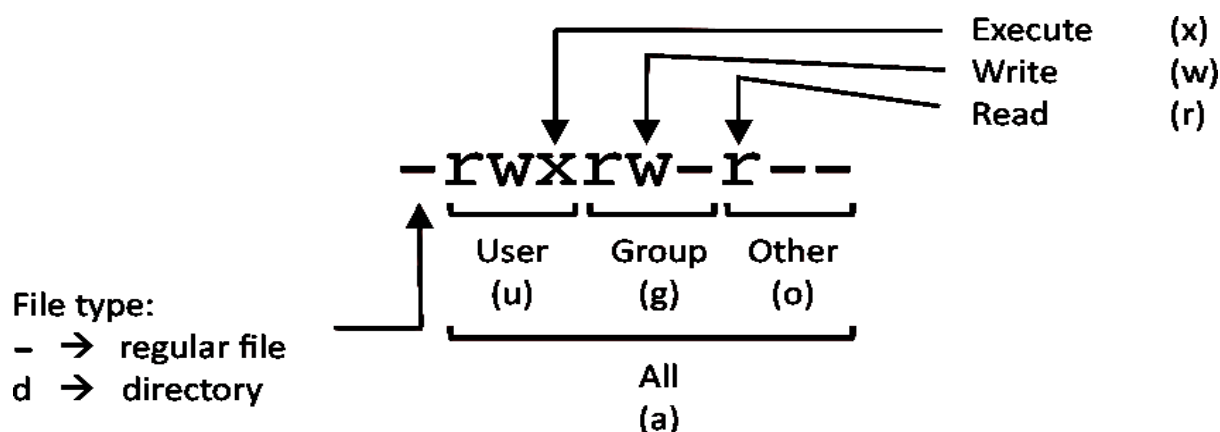
## 5 - FILE AND DIRECTORY COMMANDS

|   |   |
|---|---|
| <code>ls -al</code>                             | <code># List all files in a long listing (detailed) format</code>   |
| <code>pwd</code>                                | <code># Display the present working directory</code>  |
| <code>mkdir directory</code>                    | <code># Create a directory</code>   |
| <code>rm file</code>                            | <code># Remove (delete) file</code>   |
| <code>rm -r directory</code>                    | <code># Remove the directory and its contents recursively</code>  |
| <code>rm -f file</code>                         | <code># Force removal of file without prompting for confirmation</code>   |
| <code>rm -rf directory</code>                   | <code># Forcefully remove directory recursively</code>  |
| <code>cp file1 file2</code>                     | <code># Copy file1 to file2</code>  |
| <code>cp -r source_directory destination</code> | <code># Copy source_directory recursively to destination. If destination exists, copy source_directory into destination, otherwise create destination with the contents of source_directory.</code> |
| <code>mv file1 file2</code>                     | <code># Rename or move file1 to file2. If file2 is an existing directory, move file1 into directory file2</code>  |
| <code>ln -s /path/to/file linkname</code>       | <code># Create symbolic link to linkname</code>   |
| <code>touch file</code>                         | <code># Create an empty file or update the access and modification times of file.</code>  |
| <code>cat file</code>                           | <code># View the contents of file</code>  |
| <code>less file</code>                          | <code># Browse through a text file</code>   |
| <code>head file</code>                          | <code># Display the first 10 lines of file</code>   |
| <code>tail file</code>                          | <code># Display the last 10 lines of file</code>  |
| <code>tail -f file</code>                       | <code># Display the last 10 lines of file and "follow" the file as it grows.</code>   |

## 6 - PROCESS MANAGEMENT

|  |  |
|--|--|
| <code>ps</code>                        | # Display your currently running processes                   |
| <code>ps -ef</code>                    | # Display all the currently running processes on the system. |
| <code>ps -ef   grep processname</code> | # Display process information for <code>processname</code>   |
| <code>top</code>                       | # Display and manage the top processes                       |
| <code>htop</code>                      | # Interactive process viewer (top alternative)               |
| <code>kill pid</code>                  | # Kill process with process ID of <code>pid</code>           |
| <code>killall processname</code>       | # Kill all processes named <code>processname</code>          |
| <code>program &amp;</code>             | # Start <code>program</code> in the background               |
| <code>bg</code>                        | # Display stopped or background jobs                         |
| <code>fg</code>                        | # Brings the most recent background job to foreground        |
| <code>fg n</code>                      | # Brings job <code>n</code> to the foreground                |
| <code>nohup processname</code>         | # Runs a process even after user logs out                    |

## 7 - FILE PERMISSIONS



| PERMISSION |     |     | EXAMPLE                         |                  |  |
|------------|-----|-----|---------------------------------|------------------|--|
| U          | G   | W   |                                 |                  |  |
| rwx        | rwx | rwx | <code>chmod 777 filename</code> | # Use sparingly! |  |
| rwx        | rwx | r-x | <code>chmod 775 filename</code> |                  |  |
| rwx        | r-x | r-x | <code>chmod 755 filename</code> |                  |  |
| rw-        | rw- | r-- | <code>chmod 664 filename</code> |                  |  |

```
rw- r-- r--      chmod 644 filename
```

#### LEGEND

U = User

G = Group

W = World

r = Read

w = write

x = execute

- = no access

```
chown john /path/to/file
```

# Change ownership of /path/to/file to john

```
chgrp sales /path/to/file
```

# Change group ownership of /path/to/file to group sales

## 8 - NETWORKING

```
ip a
```

# Display all network interfaces and IP address

```
ip addr show dev eth0
```

# Display eth0 address and details

```
ethtool eth0
```

# Query or control network driver and hardware settings

```
ping host
```

# Send ICMP echo request to host

```
whois domain
```

# Display whois information for domain

```
dig domain
```

# Display DNS information for domain

```
dig -x IP_ADDRESS
```

# Reverse lookup of IP\_ADDRESS

```
host domain
```

# Display DNS IP address for domain

```
hostname -i
```

# Display the network address of the host name.

```
hostname -I
```

# Display all local IP addresses of the host.

```
wget http://domain.com/file
```

# Download http://domain.com/file

```
netstat -nutlp
```

# Display listening tcp and udp ports and corresponding programs

|                              |  |
|------------------------------|--|
| <code>ifconfig</code>        | # Display information about network interfaces |
| <code>traceroute host</code> | # Display the path that packets take to host   |
| <code>tcpdump</code>         | # Capture and analyze network traffic          |

## 9 - ARCHIVES (TAR FILES)

|  |   |
|--|---|
| <code>tar cf archive.tar directory</code>      | # Create tar named <code>archive.tar</code> containing <code>directory</code> . |
| <code>tar xf archive.tar</code>                | # Extract the contents from <code>archive.tar</code> .                          |
| <code>tar czf archive.tar.gz directory</code>  | # Create a gzip compressed tar file name <code>archive.tar.gz</code> .          |
| <code>tar xzf archive.tar.gz</code>            | # Extract a gzip compressed tar file.   |
| <code>tar cjf archive.tar.bz2 directory</code> | # Create a tar file with bzip2 compression                                      |
| <code>tar xjf archive.tar.bz2</code>           | # Extract a bzip2 compressed tar file.  |

## 10 - INSTALLING PACKAGES

|   |  |
|---|--|
| <code>yum search keyword</code>   | # Search for a package by <code>keyword</code> .   |
| <code>yum install package</code>  | # Install <code>package</code> .   |
| <code>yum info package</code>   | # Display description and summary information about <code>package</code> for RHEL based systems. |
| <code>rpm -i package.rpm</code>   | # Install package from local file named <code>package.rpm</code>                                 |
| <code>yum remove package</code>   | # Remove/uninstall <code>package</code> for RHEL based systems.                                  |
| <code>yum update package</code>   | # Update package with name <code>package</code> for RHEL based systems.                          |
| <code>tar zxvf sourcecode.tar.gz</code><br><code>cd sourcecode</code><br><code>./configure</code><br><code>make</code><br><code>make install</code> | # Install software from source code.   |

|                                      |  |
|--------------------------------------|--|
| <code>apt-get update</code>          | # Update package list for Debian based systems.                                    |
| <code>apt-get upgrade</code>         | # Upgrade all installed packages to their newest version for Debian based systems. |
| <code>apt-get install package</code> | # Install package with name <code>package</code> for Debian based systems.         |
| <code>apt-remove package</code>      | # Remove package with name <code>package</code> for Debian based systems.          |

## 11 - SEARCH

|  |  |
|--|--|
| <code>grep pattern file</code>               | # Search for <code>pattern</code> in <code>file</code>                                       |
| <code>grep -r pattern directory</code>       | # Search recursively for <code>pattern</code> in <code>directory</code>                      |
| <code>locate name</code>                     | # Find files and directories by name   |
| <code>find /home/john -name 'prefix*'</code> | # Find files in <code>/home/john</code> that start with "prefix".                            |
| <code>find /home -size +100M</code>          | # Find files larger than 100MB in <code>/home</code>   |
| <code>whereis program</code>                 | # Display the location of the binary, source and manual page files of <code>program</code> . |
| <code>which program</code>                   | # Display the path of executable that would run if <code>program</code> is executed.         |

## 12 - SSH LOGINS

|                                    |  |
|------------------------------------|--|
| <code>ssh host</code>              | # Connect to <code>host</code> as your local username.   |
| <code>ssh user@host</code>         | # Connect to <code>host</code> as <code>user</code>  |
| <code>ssh -p port user@host</code> | # Connect to <code>host</code> using <code>port</code>   |
| <code>ssh-keygen</code>            | # Create a new SSH key pair.   |
| <code>ssh-copy-id user@host</code> | # Copy SSH key to the <code>remote</code> host to enable passwordless logins for <code>user</code> . |

## 13 - FILE TRANSFERS

|  |   |
|--|---|
| <code>scp file.txt server:/tmp</code>          | # Secure copy <code>file.txt</code> to the <code>/tmp</code> folder on <code>server</code>                              |
| <code>scp server:/var/www/*.html /tmp</code>   | # Copy <code>*.html</code> files from <code>server</code> to the local <code>/tmp</code> folder.                        |
| <code>scp -r server:/var/www /tmp</code>       | # Copy all files and directories recursively from <code>server</code> to the current system's <code>/tmp</code> folder. |
| <code>rsync -a /home /backups/</code>          | # Synchronize <code>/home</code> to <code>/backups/home</code>  |
| <code>rsync -avz /home server:/backups/</code> | # Synchronize files/directories between the local and remote system with compression enabled                            |
| <code>ftp host</code>                          | # Connect to FTP server on the remote <code>host</code> .   |

## 14 - DISK USAGE

|                              |   |
|------------------------------|---|
| <code>df -h</code>           | # Show free and used space on mounted filesystems                           |
| <code>df -i</code>           | # Show free and used inodes on mounted filesystems                          |
| <code>fdisk -l</code>        | # Display disks partitions sizes and types                                  |
| <code>du -ah</code>          | # Display disk usage for all files and directories in human readable format |
| <code>du -sh</code>          | # Display total disk usage off the current directory                        |
| <code>du -a directory</code> | # Display size of all files in <code>directory</code> .                     |
| <code>findmnt</code>         | # List all mounted file systems with details.                               |

## 15 - DIRECTORY NAVIGATION

|                                    |   |
|------------------------------------|---|
| <code>cd ..</code>                 | # To go up one level of the directory tree. (Change into the parent directory.) |
| <code>cd</code>                    | # Go to the <code>\$HOME</code> directory                                       |
| <code>cd /etc</code>               | # Change to the <code>/etc</code> directory                                     |
| <code>alias goto='cd /etc/'</code> | # Create <code>goto</code> alias for command <code>cd /etc/</code> .            |



## 16 - SECURITY

|                                 |  |
|---------------------------------|--|
| <code>passwd</code>             | # Change the current user's password.  |
| <code>sudo -i</code>            | # Switch to the root account with root's environment. (Login shell.)   |
| <code>sudo -s</code>            | # Execute your current shell as root. (Non-login shell.)   |
| <code>sudo -l</code>            | # List sudo privileges for the current user.   |
| <code>visudo</code>             | # Edit the sudoers configuration file.   |
| <code>getenforce</code>         | # Display the current SELinux mode.  |
| <code>sestatus</code>           | # Display SELinux details such as the current SELinux mode, the configured mode, and the loaded policy.          |
| <code>setenforce 0</code>       | # Change the current SELinux mode to Permissive. (Does not survive a reboot.)                                    |
| <code>setenforce 1</code>       | # Change the current SELinux mode to Enforcing. (Does not survive a reboot.)                                     |
| <code>SELINUX=enforcing</code>  | # Set the SELinux mode to enforcing on boot by using this setting in the <code>/etc/selinux/config</code> file.  |
| <code>SELINUX=permissive</code> | # Set the SELinux mode to permissive on boot by using this setting in the <code>/etc/selinux/config</code> file. |
| <code>SELINUX=disabled</code>   | # Set the SELinux mode to disabled on boot by using this setting in the <code>/etc/selinux/config</code> file.   |

## 17 - LOGGING AND AUDITING

|  |   |
|--|---|
| <code>dmesg</code>                     | # Display messages in kernel ring buffer.     |
| <code>journalctl</code>                | # Display logs stored in the systemd journal. |
| <code>journalctl -u servicename</code> | # Display logs for a specific unit (service). |