

Linux Administration Guide

Super User (Admin)

- In Linux, Admin is called as "super-user"
- Admin's login name is "root"
- Most modern Linux distributions disable "root" login for security
- To execute commands with admin privileges use "sudo" (if approved by system admin)

Common Admin Commands

```
sudo apt update
sudo apt install vim gcc python3
sudo snap install --classic code
```

Directory Commands

Command	Description	Syntax
<code>pwd</code>	Print present working directory	<code>pwd</code>
<code>cd</code>	Change directory	<code>cd dirpath</code>
<code>ls</code>	List directory contents	<code>ls dirpath</code>
<code>mkdir</code>	Make directory	<code>mkdir dirpath</code>
<code>rmdir</code>	Remove empty directory	<code>rmdir dirpath</code>

Special CD Commands

- `cd ~` - Change to home directory
- `cd ..` - Change to previous directory
- `cd /` - Change to root directory
- `cd .` - Stay in current directory
- `cd ...` - Change to parent directory

File Commands

Command	Description
<code>cat filepath</code>	Display file contents
<code>cat > filepath</code>	Create new file
<code>cat >> filepath</code>	Append to file
<code>touch filepath</code>	Create empty file Or Change file timestamp

Command	Description
<code>rm filepath</code>	Delete file
<code>rm -r dirpath</code>	Delete directory recursively
<code>mv filepath destpath</code>	Move/rename file
<code>cp filename newname</code>	Copy file
<code>cp -r dirpath destpath</code>	Copy directory recursively

File Types and Permissions

File Types

- Regular file (-)
- Directory (d)
- Link file (l)
- Pipe file (p)
- Socket file (s)
- Character special file (c)
- Block special file (b)

File Permissions

- r - read
- w - write
- x - execute
- Format: (rwx)user (rwx)group (rwx)others

Additional File Commands

Listing Commands

- `ls` - List files
- `ls` - list the contents of present working directory
- `ls path` - list the contents of given path
- `ls -l` - list the contents in detail format
 - e.g `$ls -l`
 - Output columns:
 - -rwxr-xr-x 1 user group 4096 Jan 01 12:00 filename
 - Columns represent:
 - File type
 - File permissions (rwx for user, group, others)
 - Number of links
 - Owner name
 - Group name
 - File size in bytes
 - Last modified date and time

- File name

- options with `ls` command
 - `ls -h` - Human readable sizes
 - `ls -l` - Detailed listing
 - `ls -a` - Show hidden files
 - `ls -A` - Show hidden files (except . and ..)
 - `ls -i` - list contents with inode number(inode number is unique number given to every file)
 - `ls -s` - list content with size (number of blocks)
 - `ls -S` - list content in descending order of their sizes
 - `ls -alh` - combine multiple options
 - `ls -R` - list contents recursively (including sub-directories)
 - For more options use `man ls` command

File Information

- `stat file` - Display file information
- `head file` - Display first 10 lines
- `tail file` - Display last 10 lines
- `sort file` - Sort contents alphabetically
- `uniq file` - Display unique lines
- `rev filepath` - Reverse each line
- `tac filepath` - Reverse file contents
- `wc file` - Word count (lines, words, characters)
- `file filepath` - Determine file type
- Use `man command` to get more information about any command.

Utility Commands

- `alias list="ls -l"` - Create command alias
- `unalias list` - Remove alias
- `which command` - Show command location
- `whereis command` - Show command and manual locations
- `date` - Display current date and time
- `cal` - Display calendar
- `clear` - Clear terminal screen
- `history` - Show command history
- `sleep seconds` - Pause for specified seconds
- `uptime` - Show system uptime
- `df` - Show disk space usage

Manual Pages

-man pages provide detailed information about commands, options, and usage.

- `man command` - Show manual page for a command
- Example: `man ls`
 - Use `q` to exit manual page viewer
 - Use `/searchterm` to search within the manual page
 - Use `n` to go to next search result
 - Use `Shift+n` to go to previous search result
- man pages are organized into sections:
 1. User commands
 2. System calls
 3. Library functions
 4. Special files
 5. File formats
 6. Games
 7. Miscellaneous
 8. System administration commands