

OPEN-SOURCE EBOOK

# ++101 LINUX COMMANDS

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# 101 Linux commands Open-source eBook

This is an open-source eBook with 101 Linux commands that everyone should know. No matter if you are a DevOps/SysOps engineer, developer, or just a Linux enthusiast, you will most likely have to use the terminal at some point in your career.

## Permission and Ownership

### Setting Ownership After Creation

```
# Create directory and set ownership
mkdir myapp
sudo chown user:group myapp

# Create with specific permissions and ownership
sudo mkdir -m 755 /opt/myapp
sudo chown user:group /opt/myapp
```

### Creating Directories for Different Users

```
# Create user-specific directories
sudo mkdir -p /home/newuser/{Documents,Downloads,Pictures}
sudo chown -R newuser:newuser /home/newuser
sudo chmod 755 /home/newuser
```

## SELinux Context

### Setting SELinux Context

```
# Create directory with specific SELinux context
mkdir -Z user_home_t user_data

# Create directory and set context afterward
mkdir secure_data
sudo semanage fcontext -a -t httpd_exec_t
"/path/to/secure_data(/.*)?"
sudo restorecon -R /path/to/secure_data
```

# Troubleshooting

## Common Issues and Solutions

```
# Permission denied
sudo mkdir /restricted/path # Use sudo for system directories

# Parent directory doesn't exist
mkdir -p path/to/deep/directory # Use -p flag

# Directory already exists
mkdir -p existing_dir # -p prevents error if directory exists

# Invalid characters in name
mkdir "valid_name" # Use quotes or escape special characters
```

## Debugging Directory Creation

```
# Check available space before creating
df -h .

# Verify parent directory permissions
ls -ld parent_directory

# Check if directory was created successfully
if [ -d "newdir" ]; then
    echo "Directory created successfully"
    ls -ld newdir
fi
```

## Options Reference

Option	Long Form	Description
<code>-m MODE</code>	<code>--mode=MODE</code>	Set file mode (permissions) for created directories
<code>-p</code>	<code>--parents</code>	Create parent directories as needed, no error if existing
<code>-v</code>	<code>--verbose</code>	Print a message for each created directory
<code>-Z CTX</code>	<code>--context=CTX</code>	Set SELinux security context
<code>--help</code>	<code>-</code>	Display help message and exit
<code>--version</code>	<code>-</code>	Output version information and exit

## Best Practices

### Directory Naming Conventions

```
# Use descriptive names
mkdir user_documents    # Good
mkdir stuff             # Poor

# Use consistent naming patterns
mkdir project_2024_01
mkdir project_2024_02

# Avoid spaces and special characters
mkdir my-project        # Good
mkdir "my project"      # Works but can cause issues
```

### Organization Strategies

```
# Date-based organization
mkdir -p archives/$(date +%Y)/{01..12}

# Project-based organization
mkdir -p projects/{active,completed,archived}

# User-based organization
mkdir -p users/{admins,developers,testers}
```

### Automation and Scripting



```
#!/bin/bash
# Script to create standard project structure

PROJECT_NAME="$1"
if [ -z "$PROJECT_NAME" ]; then
    echo "Usage: $0 <project_name>"
    exit 1
fi

echo "Creating project structure for: $PROJECT_NAME"
mkdir -p "$PROJECT_NAME"/{
    src/{main,test},
    docs/{api,user},
    config/{dev,prod,test},
    scripts/{build,deploy},
    data/{input,output,temp}
}

echo "Project structure created successfully!"
tree "$PROJECT_NAME"
```

Short Flag	Description
-h	print the heading of the columns displayed
-b	print the time of last system boot

# The `free` command

The `free` command in Linux/Unix is used to show memory (RAM/SWAP) information.

# Usage

## Show memory usage

**Action:** --- Output the memory usage - available and used, as well as swap

**Details:** --- The values are shown in kibibytes by default.

**Command:**

```
free
```

This is a sample from "101 Linux Commands" by Bobby Iliev and the Hacktoberfest  
community.

For more information, [Click here](#).