Bash Commands and Vim Guide

Essential bash commands and vim for terminal editing. On Windows: Git Bash.

Navigation

```
pwd                # Current directory
ls -la             # List with details
cd <dir>           # Change directory
cd ..              # Up one level
cd ~               # Home
cd -               # Previous directory
```

File Operations

```
touch <file>      # Create file
mkdir -p a/b/c    # Create nested dirs
cp -r src dest    # Copy recursively
mv src dest       # Move/rename
rm -rf <dir>      # Remove (caution!)
cat, head, tail, less  # View files
```

Permissions and Search

```
chmod +x file     # Make executable
chmod 755 file    # rwxr-xr-x
grep "pattern" file    # Search in file
grep -r "pattern" dir  # Recursive
find . -name "*.py"    # Find files
wc -l file       # Line count
```

Process and Environment

```
ps aux | grep python
kill -9 <PID>
nohup cmd &        # Background, survive logout

env                # List variables
export VAR="value"
```

Redirection and Pipes

```
cmd > file.txt    # Overwrite
cmd >> file.txt   # Append
cmd 2> err.log    # Redirect stderr
cmd > out.log 2>&1
cmd1 | cmd2       # Pipe
```

Useful Shortcuts

```
history             # Command history
!!                  # Repeat last
!42                 # Execute #42 from history
Ctrl+R              # Search history
Ctrl+A/E            # Start/end of line
Ctrl+U/K            # Delete to start/end
Ctrl+L              # Clear screen
```

Vim: Getting Started

```
vim file.txt      # Open file
```

Exit (Normal mode):

- `:q` quit (no changes)
- `:q!` quit without saving
- `:wq` or `ZZ` save and quit

Vim Modes

1. Normal (default) - navigation, commands

2. Insert - typing

3. Visual - selection

4. Command - `:` commands

From Normal: `i` insert, `a` append, `v` visual, `:` command. `Esc` return to Normal.

Vim Navigation

```
h/j/k/l      left/down/up/right
w/b          word forward/back
0/$          start/end of line
gg/G         top/bottom of file
42G          go to line 42
```

Vim Editing

```
x, dd       delete char, line
yy, p       copy line, paste
u, Ctrl+R   undo, redo
cw, cc      change word, line
```

Vim Search and Replace

```
/pattern      search forward
n/N           next/previous match
:s/old/new/g        current line
:%s/old/new/g      entire file
:%s/old/new/gc    with confirmation
```

Vim: Line Numbers and Indent

```
:set number        # Show line numbers
:set rnu           # Relative numbers
>>  <<             # Indent right/left
gg=G               # Auto-indent file
```

Vim Tips for Beginners

1. Start in Normal mode

2. Use Esc frequently

3. Use h/j/k/l instead of arrows

4. Learn incrementally

5. `:help <topic>` for help

Vim as Git Editor

```
git config --global core.editor "vim"
```

For commit messages: type message, Esc, `:wq`

Quick Reference

Action	Command
Quit	`:q`
Save and quit	`:wq` or `ZZ`
Insert	`i`
Normal	`Esc`
Delete line	`dd`
Copy/Paste	`yy` / `p`
Search	`/pattern`