

# TECHNOLOGY



## Ubuntu Fundamentals

## Editing Text Files and Search Patterns





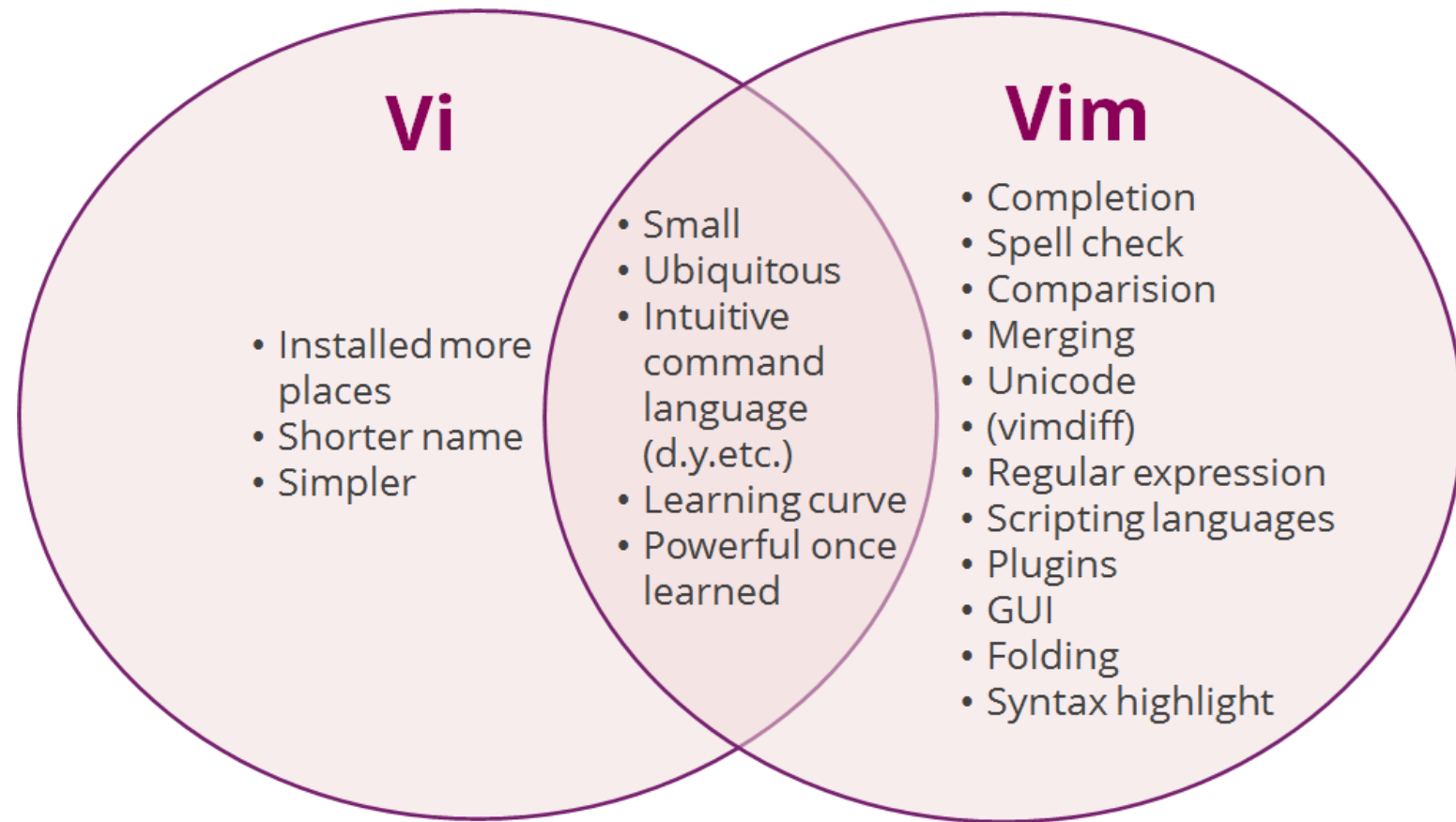
# Learning Objectives

By the end of this lesson, you will be able to:

- 🕒 Create files using the vi editor
- 🕒 Copy or cut and paste data in the vi editor
- 🕒 Apply different file operations using the vi editor
- 🕒 Use grep or egrep for pattern matching

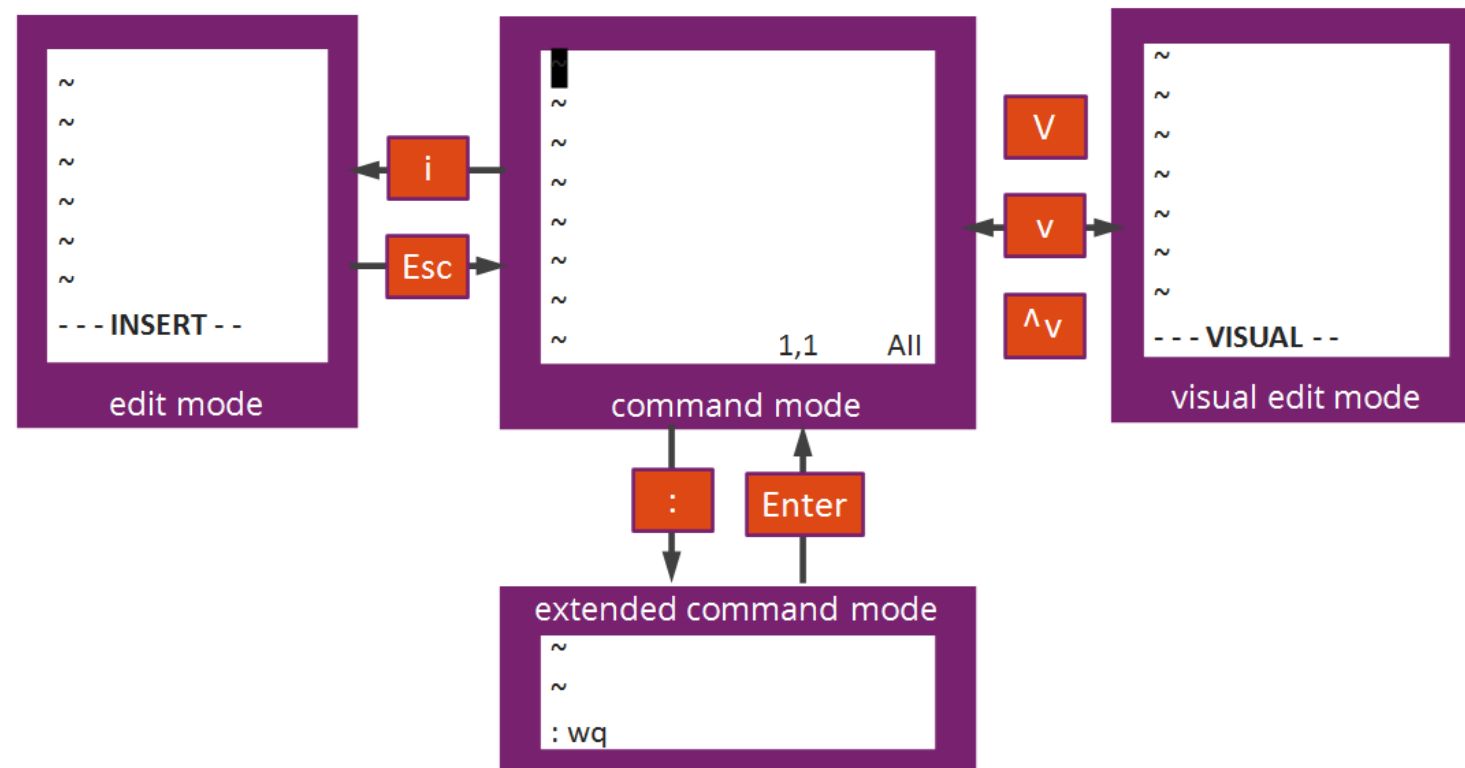


# Introduction to vi/vim Editor



- Vi editor is the most used text editor in Linux.
- It has been modified by the open-source community and the new version is known as vim.
- Vi editor is also the default editor in Linux distributions.

# Different Modes of vi Editor

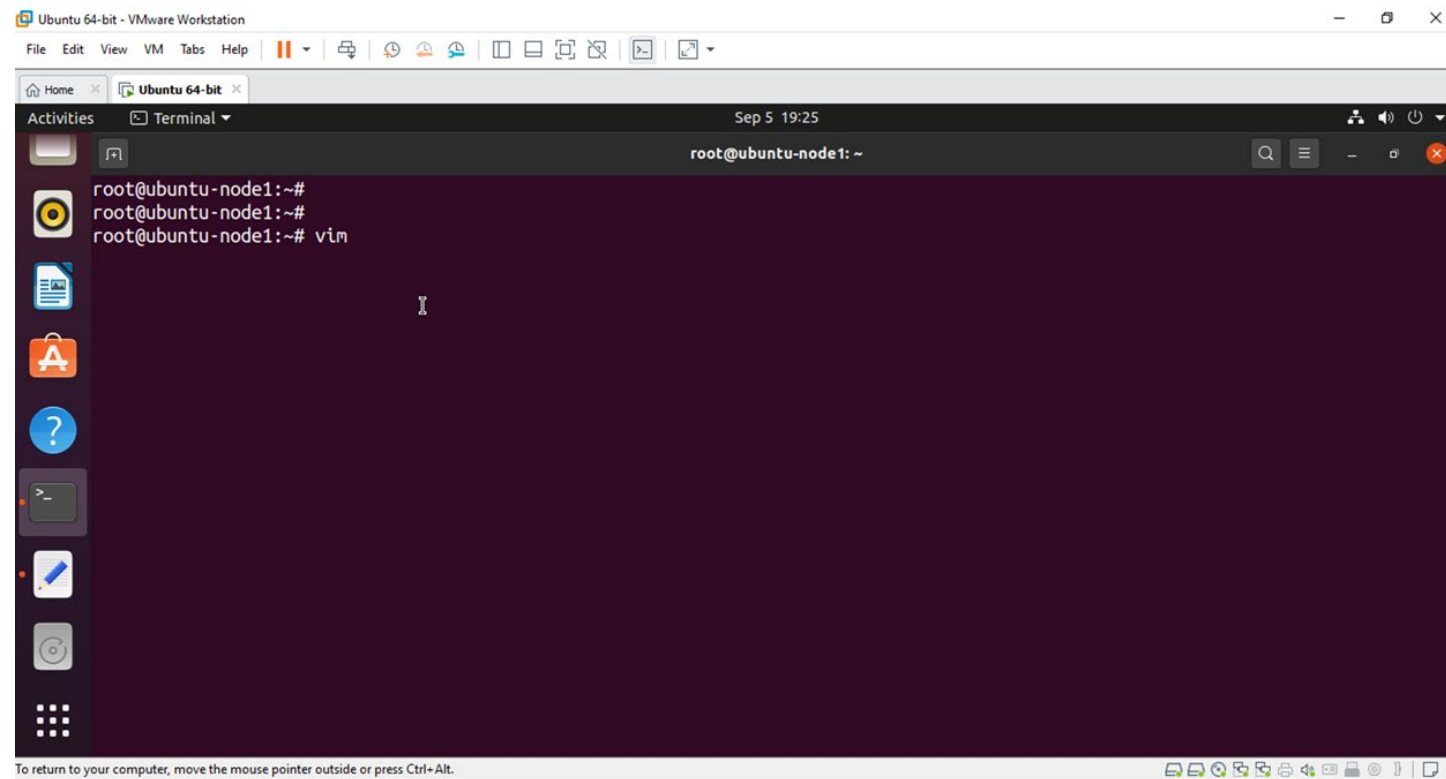


Vi editor works in three different modes:

- Command mode is used for navigation.
- Input mode is used to enter and replace text.
- Insert mode is used for pattern matching, saving, and quitting.

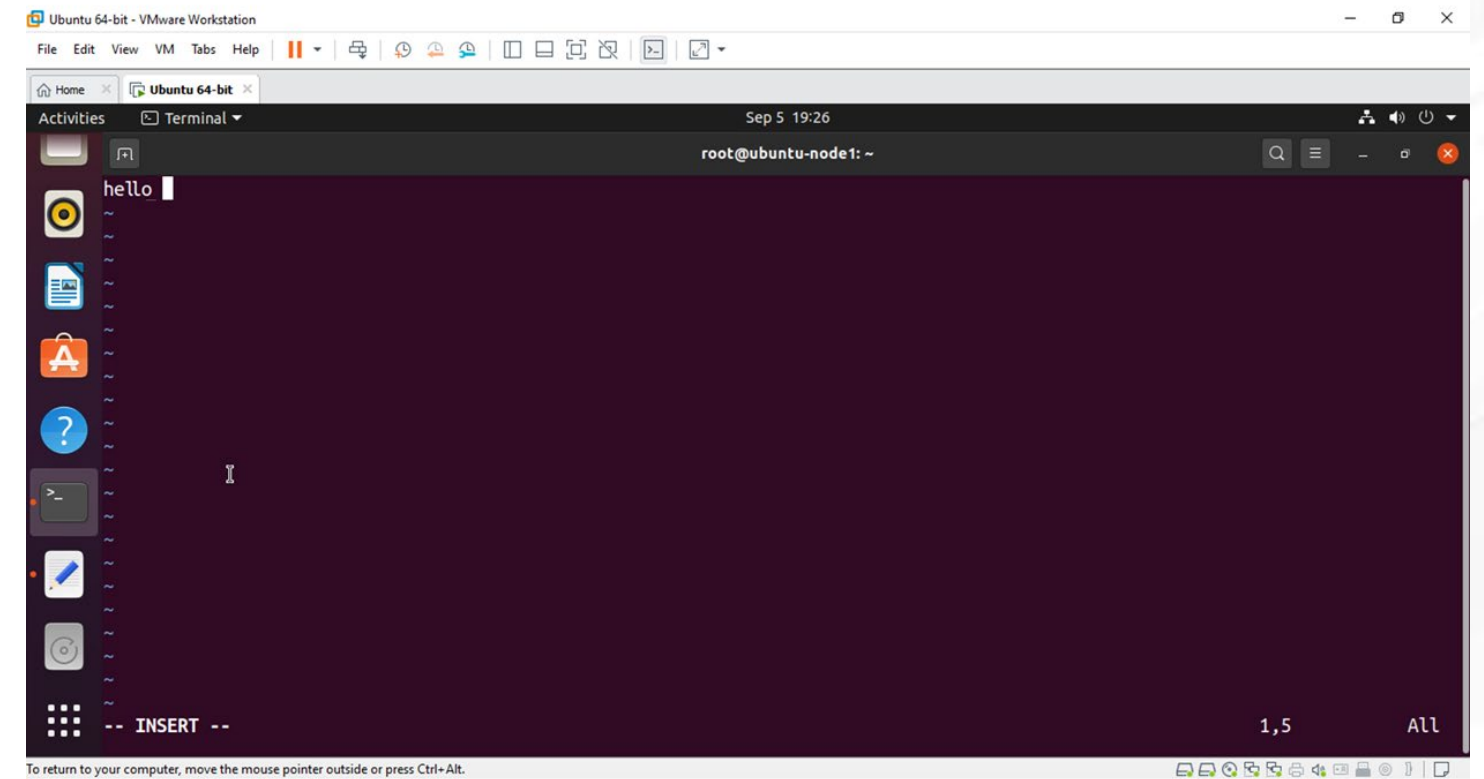
# Create and Assign File Name

- Use the vim command on terminal to open the vi editor.
- The default mode is command mode.



The screenshot shows a terminal window titled 'Ubuntu 64-bit - VMware Workstation'. The terminal prompt is 'root@ubuntu-node1: ~'. The user has entered the command 'vim' and the cursor is positioned at the end of the line. The terminal window has a dark purple background and a light gray border. The top bar shows the date and time as 'Sep 5 19:25'.

```
root@ubuntu-node1:~#  
root@ubuntu-node1:~#  
root@ubuntu-node1:~# vim
```

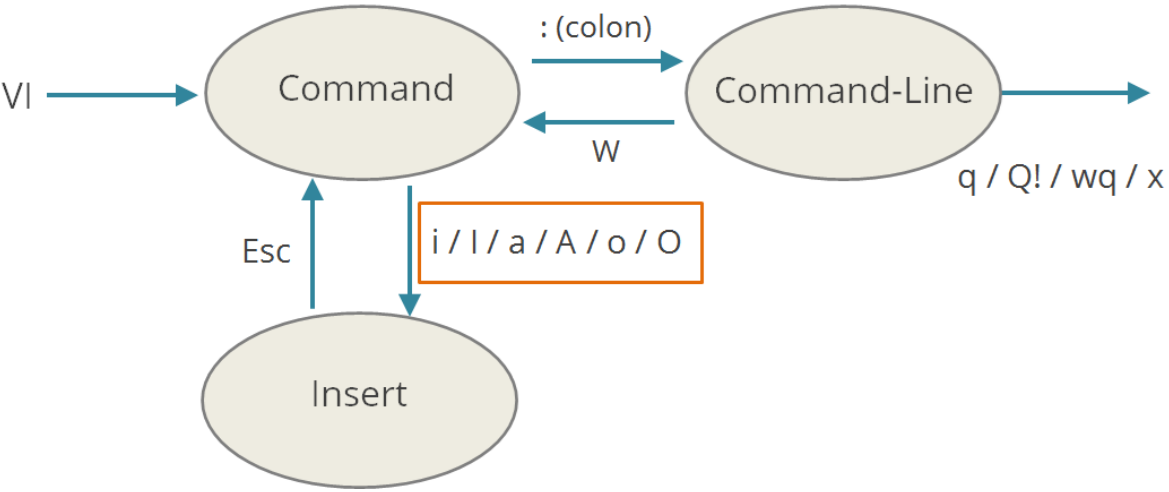


The screenshot shows the same terminal window as the previous one, but now the word 'hello' has been typed. The cursor is positioned at the end of the word. The terminal window has a dark purple background and a light gray border. The top bar shows the date and time as 'Sep 5 19:26'. The bottom status bar shows '1,5' and 'All'.

```
hello
```

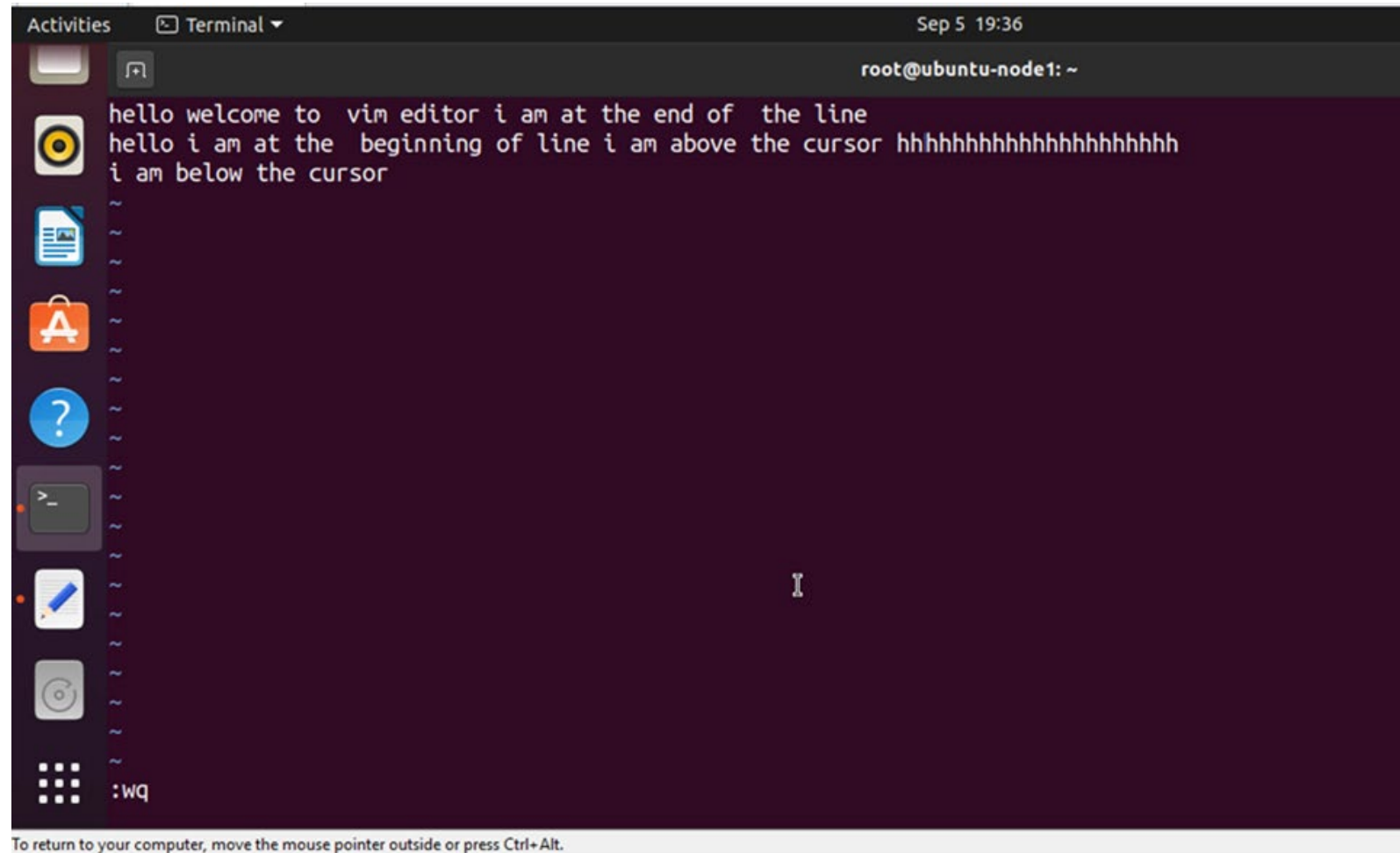
# Switch from Command Mode to Insert Mode

The different keyboard characters used to switch from command mode to insert mode are given below:



Option	Description
i	Inserts data before the current character
I	Inserts data from the start of the current line
a	Inserts data after current character
A	Inserts data at the end of the line
o	Adds data one line below the cursor
O	Adds data one line above the cursor

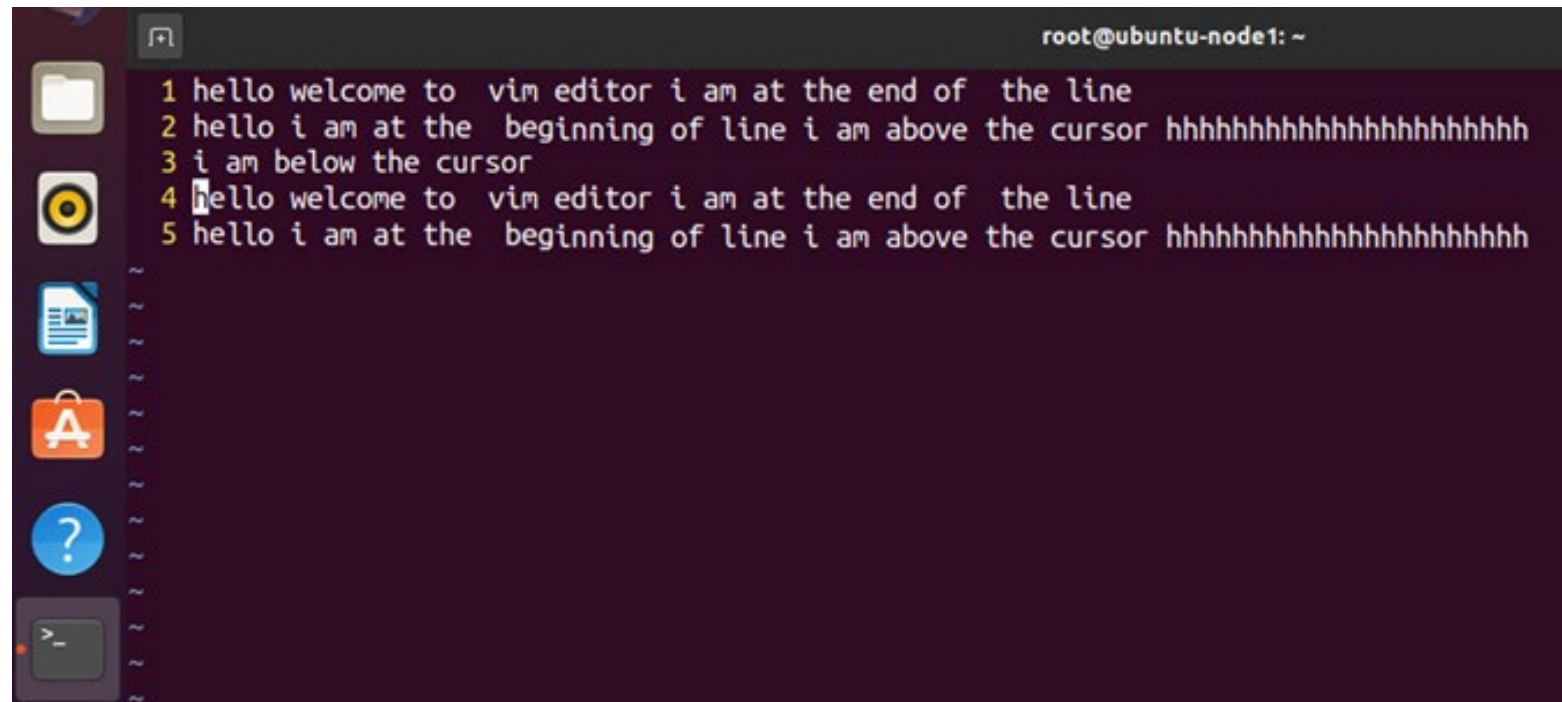
## Save and Quit File



- **Shift colon** key is used to enter into the command prompt.
- **wq** command is used to save and quit the file.



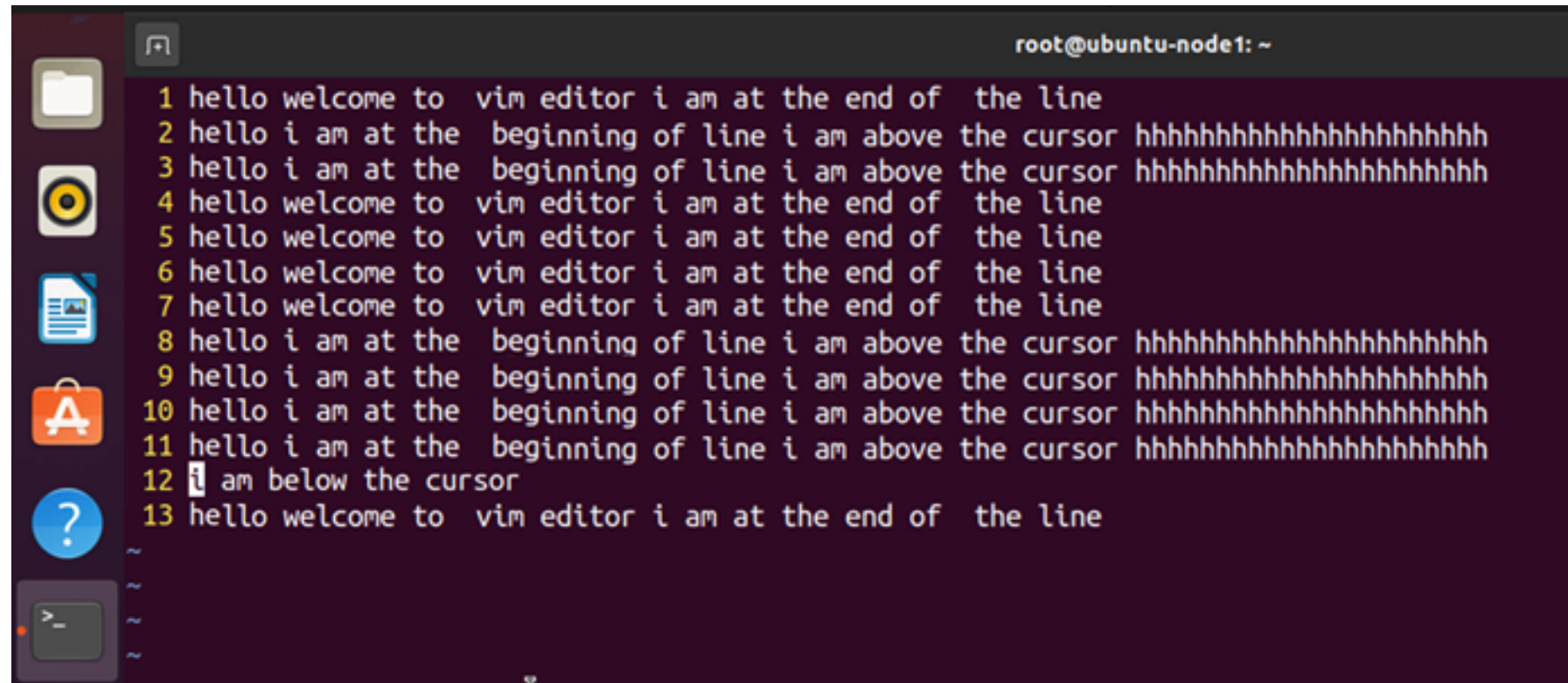
# Copy and Paste Data



```
root@ubuntu-node1: ~  
1 hello welcome to vim editor i am at the end of the line  
2 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhh  
3 i am below the cursor  
4 hello welcome to vim editor i am at the end of the line  
5 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhh
```

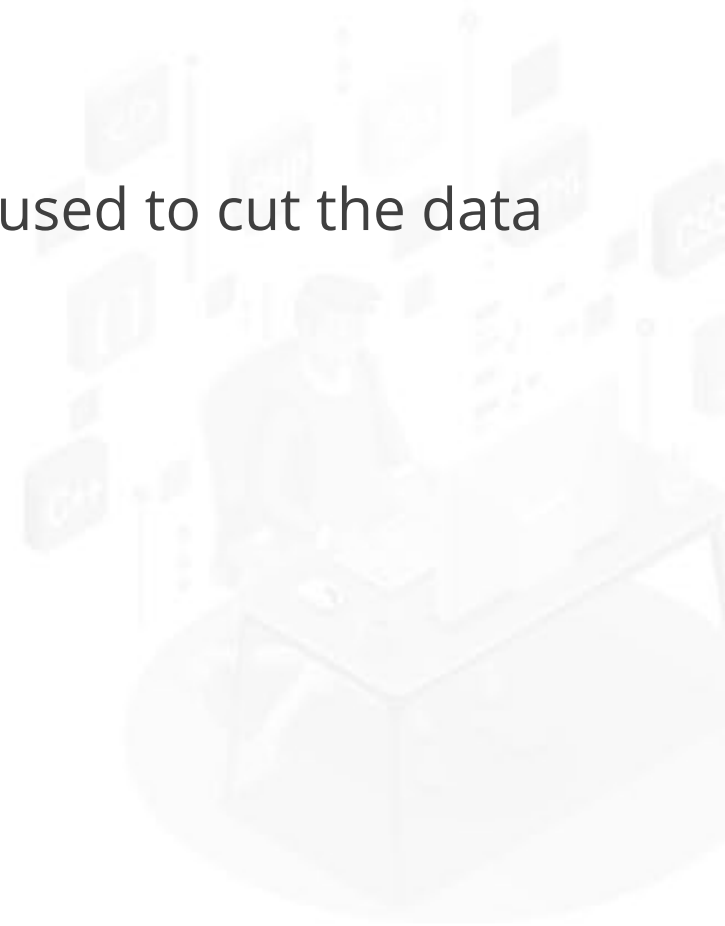
- The **yy** command is used at the beginning of the data or line to copy.
- The numerical value before the command **yy** is used to indicate the number of lines of data to be copied.
- The **p** command is used to paste the copied data in the required destination.

# Cut and Paste Data

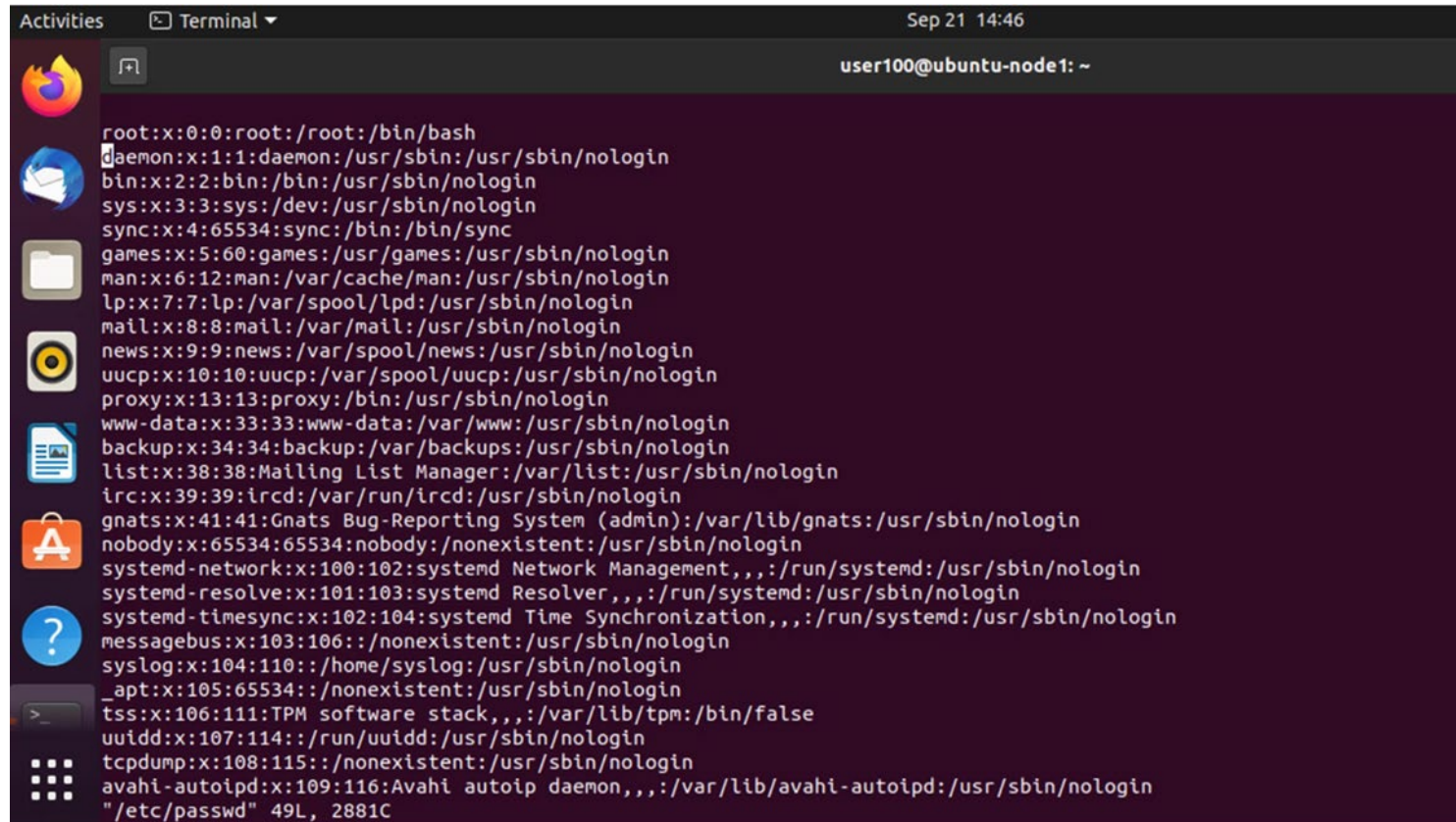


```
root@ubuntu-node1: ~  
1 hello welcome to vim editor i am at the end of the line  
2 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
3 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
4 hello welcome to vim editor i am at the end of the line  
5 hello welcome to vim editor i am at the end of the line  
6 hello welcome to vim editor i am at the end of the line  
7 hello welcome to vim editor i am at the end of the line  
8 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
9 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
10 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
11 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
12 i am below the cursor  
13 hello welcome to vim editor i am at the end of the line
```

- The dd command is used to cut the data or line.



# Delete Character, Word, and Line

A terminal window titled 'Terminal' with a date and time of 'Sep 21 14:46'. The prompt is 'user100@ubuntu-node1: ~'. The terminal displays a list of system users and their details, including root, daemon, bin, sys, sync, games, man, lp, mail, news, uucp, proxy, www-data, backup, list, irc, gnats, nobody, systemd-network, systemd-resolve, systemd-timesync, messagebus, syslog, \_apt, tss, uidd, tcpdump, and avahi-autoipd. The text is as follows:

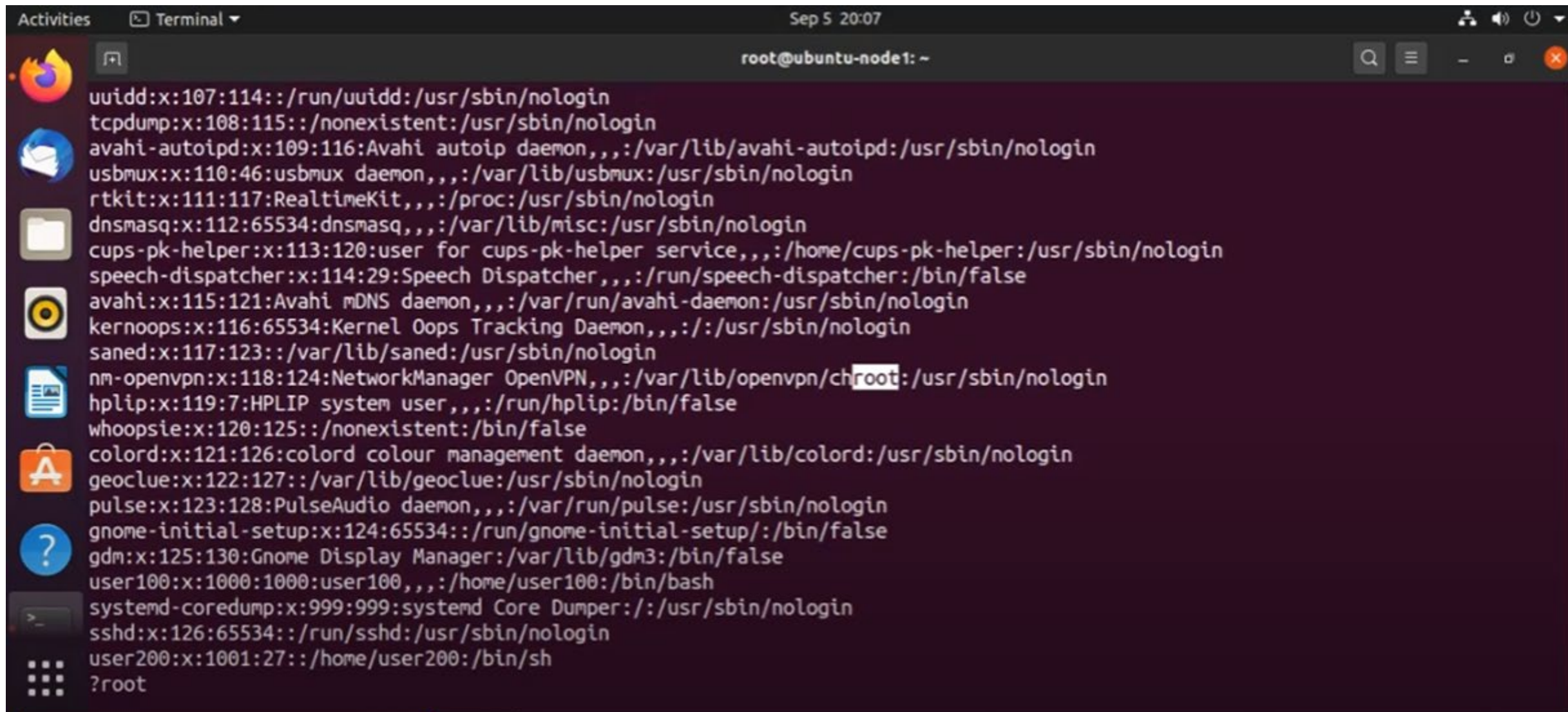
```
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
systemd-timesync:x:102:104:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:106:/:/nonexistent:/usr/sbin/nologin
syslog:x:104:110:/:/home/syslog:/usr/sbin/nologin
_aprt:x:105:65534:/:/nonexistent:/usr/sbin/nologin
tss:x:106:111:TPM software stack,,,:/var/lib/tpm:/bin/false
uidd:x:107:114:/:/run/uidd:/usr/sbin/nologin
tcpdump:x:108:115:/:/nonexistent:/usr/sbin/nologin
avahi-autoipd:x:109:116:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
"/etc/passwd" 49L, 2881C
```

- The x key is used to delete the selected character.
- The dw command is used to delete the selected word.
- The dd command is used to delete a line of data.



# Search Word and Character

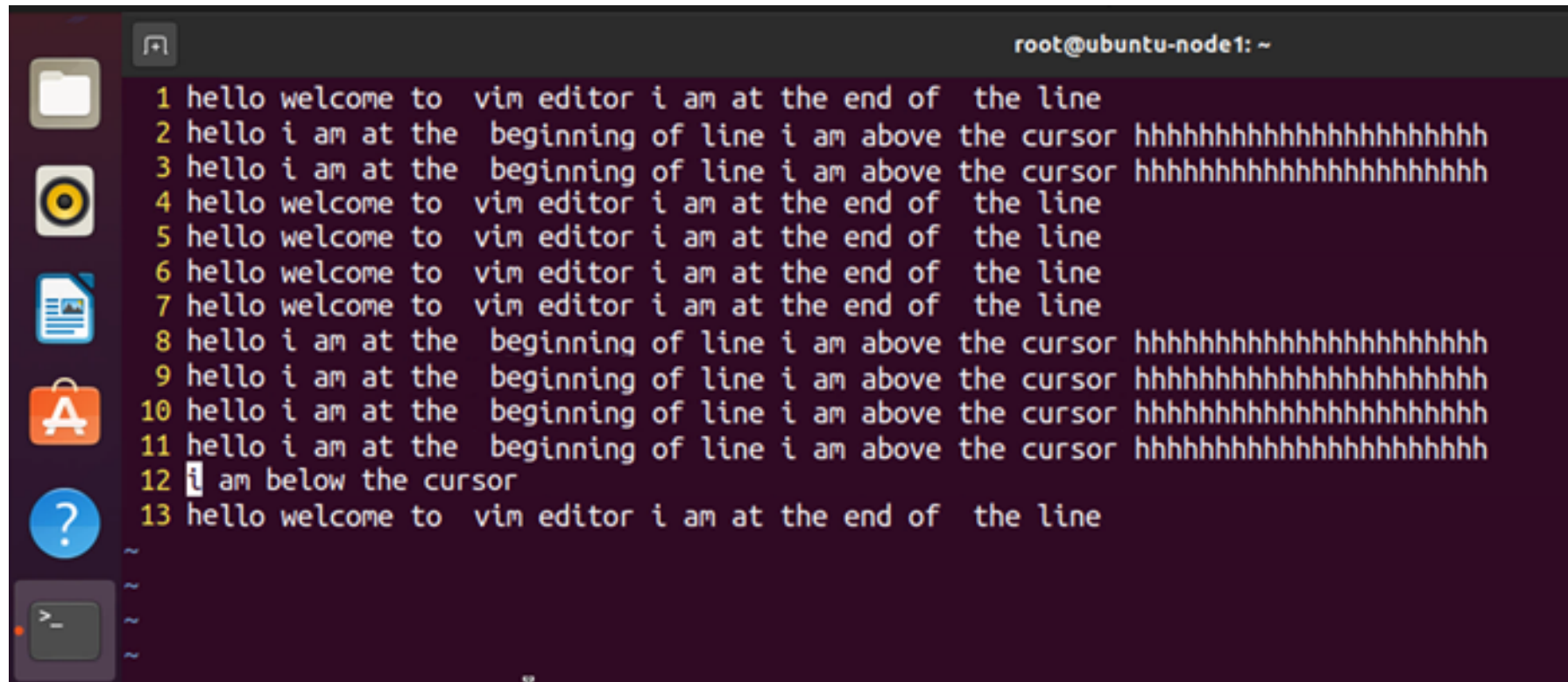
The ? or / key is used to search for any specific string in the vi editor.



```
Activities Terminal Sep 5 20:07 root@ubuntu-node1: ~
uidd:x:107:114::/run/uidd:/usr/sbin/nologin
tcpdump:x:108:115::/nonexistent:/usr/sbin/nologin
avahi-autoipd:x:109:116:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:110:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
rtkit:x:111:117:RealtimeKit,,,:/proc:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
cups-pk-helper:x:113:120:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
speech-dispatcher:x:114:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
avahi:x:115:121:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin
kernoops:x:116:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin
saned:x:117:123::/var/lib/saned:/usr/sbin/nologin
nm-openvpn:x:118:124:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
hplip:x:119:7:HPLIP system user,,,:/run/hplip:/bin/false
whoopsie:x:120:125::/nonexistent:/bin/false
colord:x:121:126:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:122:127::/var/lib/geoclue:/usr/sbin/nologin
pulse:x:123:128:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:124:65534::/run/gnome-initial-setup:/bin/false
gdm:x:125:130:Gnome Display Manager:/var/lib/gdm3:/bin/false
user100:x:1000:1000:user100,,,:/home/user100:/bin/bash
systemd-core dump:x:999:999:systemd Core Dumper:/usr/sbin/nologin
sshd:x:126:65534::/run/sshd:/usr/sbin/nologin
user200:x:1001:27::/home/user200:/bin/sh
?root
```



# Jump a Line



```
root@ubuntu-node1: ~  
1 hello welcome to vim editor i am at the end of the line  
2 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
3 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
4 hello welcome to vim editor i am at the end of the line  
5 hello welcome to vim editor i am at the end of the line  
6 hello welcome to vim editor i am at the end of the line  
7 hello welcome to vim editor i am at the end of the line  
8 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
9 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
10 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
11 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh  
12 i am below the cursor  
13 hello welcome to vim editor i am at the end of the line
```

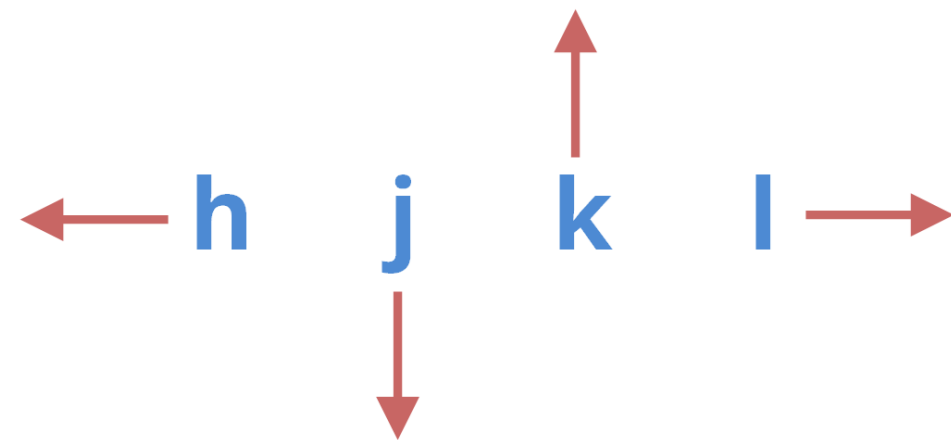
- The G command is used to jump to the last line.
- The gg command is used to move to the first line.

## Join a Line

The J command is used in the current line of data to join it with the next line of data.

```
Activities Terminal Sep 5 20:01
root@ubuntu-node1: ~
1 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh
2 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh
3 hello welcome to vim editor i am at the end of the line
4 hello welcome to vim editor i am at the end of the line
5 hello welcome to vim editor i am at the end of the line
6 hello welcome to vim editor i am at the end of the line
7 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh
8 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh
9 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh
10 hello i am at the beginning of line i am above the cursor hhhhhhhhhhhhhhhhhhhhhhh
11 i am below the cursor
12 hello welcome to vim editor i am at the end of the line
13 hello my brother |hello my sister
~
~
~
```

# Navigate Through Files



The following keyboard characters are used to move around the file:

- h is used to move left
- j is used to move down
- k is used to move up
- l is used to move right



# grep and egrep Command



A terminal window titled 'root@ubuntu-node1: ~' with a dark purple background. On the left side, there is a vertical dock containing several application icons: a Firefox logo, a mail icon, a file manager icon, a CD icon, a document icon, an App Store icon, and a question mark icon. The terminal text shows a series of commands and their outputs:

```

root@ubuntu-node1:~#
root@ubuntu-node1:~#
root@ubuntu-node1:~# man grep
root@ubuntu-node1:~#
root@ubuntu-node1:~#
root@ubuntu-node1:~#
root@ubuntu-node1:~# vi demo_grep
root@ubuntu-node1:~# grep u. demo_grep
hello how are u.
root@ubuntu-node1:~# grep . demo_grep
hello how are u.
root@ubuntu-node1:~# grep + demo_grep
root@ubuntu-node1:~# grep u+ demo_grep
root@ubuntu-node1:~# egrep u+ demo_grep
hello how are u.
root@ubuntu-node1:~# █

```

- **grep** stands for global regular expression print and is used to find the pattern in a given file.
- **egrep** stands for extended global regular expressions print.
- **egrep** is faster than **grep**.



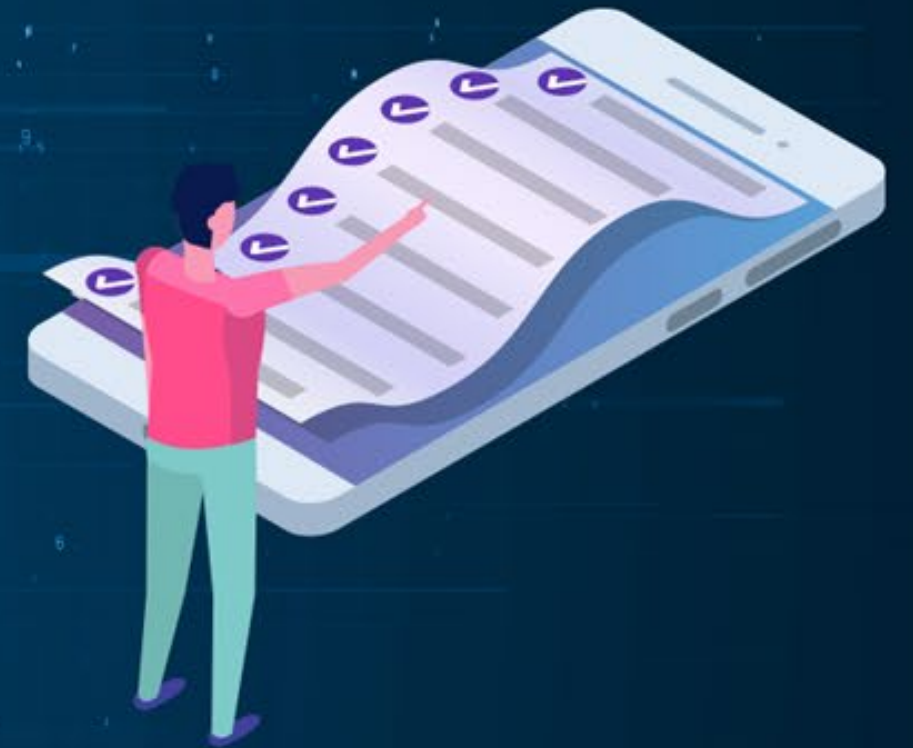
# grep and egrep Command

The following options can be used along with grep command to perform the mentioned tasks:

Option	Description
-o	Output the matched parts of a matching line
-v	Invert the match
-c	Display the count of matching lines
-l	Display the list of filenames
-n	Display the matched lines and their line numbers

## Key Takeaways

- Vi editor is also the default editor in Linux distributions.
- The number at the beginning of the yy command describes the number of lines that need to be copied.
- The dw command is used to delete a word.
- grep stands for global regular expression print.





## Knowledge Check

## Knowledge Check

1

Which command is used to save and quit the file in vi editor?

- A. q
- B. wq
- C. mv
- D. None of them





## Knowledge Check

1

Which command is used to save and quit the file in vi editor?

- A. q
- B. wq
- C. mv
- D. None of them



The correct answer is **B**

w is used to save a file, and q is used to quit. Therefore, wq is used to save and quit a file.

Knowledge  
Check

2

Which command is used to copy the current line of the file?

- A. yy
- B. yw
- C. yc
- D. yz



Knowledge  
Check

2

Which command is used to copy the current line of the file?

- A. yy
- B. yw
- C. yc
- D. yz



The correct answer is **A**

The yy command is used to copy current line of the file.

Knowledge  
Check

3

Which command is used to search for a string in the file using vi editor?

A. / or ?

B. s

C. F

D. t





Knowledge  
Check

3

Which command is used to search for a string in the file using vi editor?

- A. / or ?
- B. s
- C. F
- D. t



The correct answer is **A**

/ or ? operator is used to search for a string inside the file.

Knowledge  
Check

4

Which command is used to jump to the first line?

- A. J
- B. F
- C. GG
- D. gg



Knowledge  
Check

4

Which command is used to jump to the first line?

- A. J
- B. F
- C. GG
- D. gg



The correct answer is **D**

The gg command is used to jump to the first line of the data.