Software I: Utilities and Internals

Lecture 2 – The **vi** Text Editor

What is **vi**?

- **vi** is the most widely used full-screen text editor for UNIX and Linux system.
- **vi** is short for visual extension (of the line-oriented editor ex) developed by Bill Joy, co-founder of Sun Microsystems.
- The UNIX/Linux editor succession is

  ed → **ex** → **vi**

- The main alternate editor, EMACS, was developed at MIT.

Before Starting **vi**

- Before starting to edit using vi, we need to let vi know what our terminal type is.
- On many systems, it can be changed by typing:

```
set TERM=vt100 or vt300
export TERM
```

- If you don't know the initial terminal type, you can find out by typing

```
echo $TERM
```

On panther

- On panther, this is necessary because users are normally set with a terminal type that is compatible with vi.

```
[SIEGFRIE@panther ~]$ echo $TERM
xterm
```

User Profile

- When a user logs in, there is a profile that is used to initialize the terminal session:

```
[SIEGFRIE@panther ~]$ more .bash_profile
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
        . ~/.bashrc
fi

# User specific environment and startup programs

PATH=$PATH:$HOME/bin

export PATH
unset USERNAME
[SIEGFRIE@panther ~]$
```

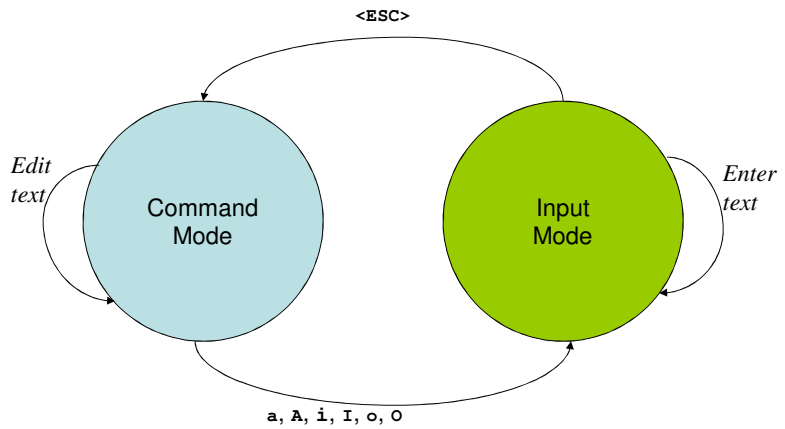
Starting **vi**

- To invoke the vi editor, type
  vi <filename>
- If the file is new, you will get a nearly-blank screen.
- You are initially in command mode. By typing, **i** or **a**, you can start to enter text.

Opening `vi` Screen

```
~
~
~
~
~
~
~
~
~
~
~
~
~
~
newfile    [New File]                    0,0-1          All
```

Command and Input Mode



Nota bene: You always start in command mode

ex Commands in **vi**

- **ex** commands are always available for use in vi command mode if you first type ":"
- Examples
  - **:s/x/y/** will substitute an **y** for **x**.
  - **:., +1j** will join the current line with the following line.
- Finish the command by pressing ↵ just as you would in ex.

Entering Input Mode

a	Append after current **cursor position**.
A	Append after current **line**.
i	**Insert** before current cursor position.
I	**Insert** before current line.
o	Open line **below** current line.
O	Open line **above** current.

Working in Command Mode

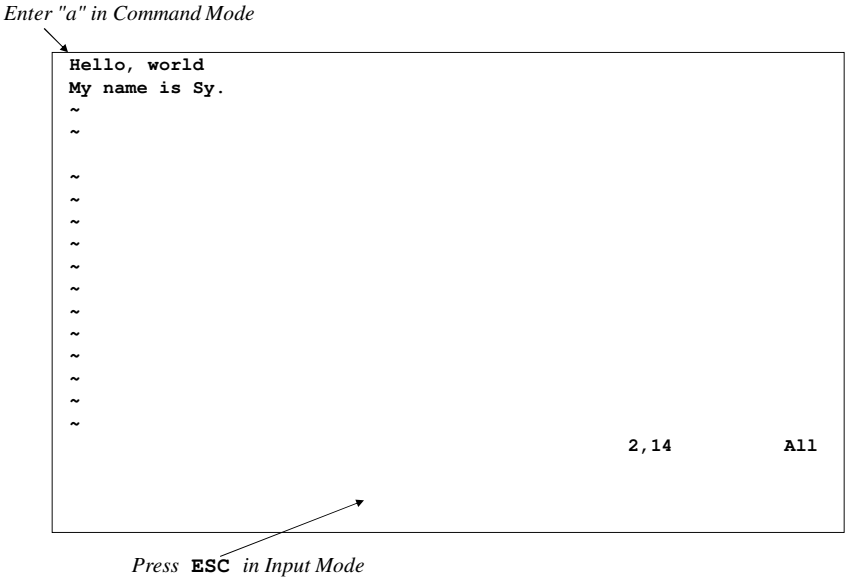
- The command never appears on the screen (except for ex commands).

```
This is new
text enter using "d"
~
~
~
~
~
~
~
~
:s/"a"/"d"/                    2,1           All
```

Leaving Input Mode

- To get back to Command Mode, press the "Escape" key.
- When in doubt about which mode you are in , press "Escape."
- If you press "Escape" in Command Mode, **`vi`** will beep.

Exiting Input Mode



Exiting **vi**

- To write and/or quit your vi session:

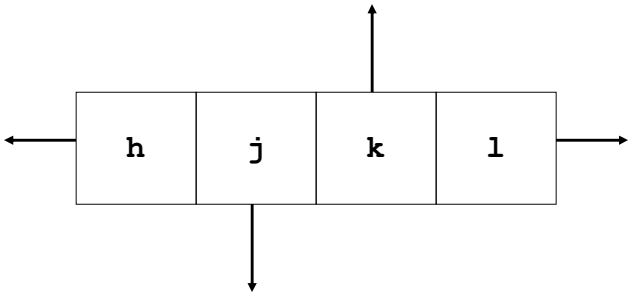
:w	Writes the files
:wq	Writes and quits
:x	Same as **:wq**
ZZ	Same as **:wq**
:q	Quits without writing (if unmodified)
:q!	Quits without writing

vi tells you the Number of Lines

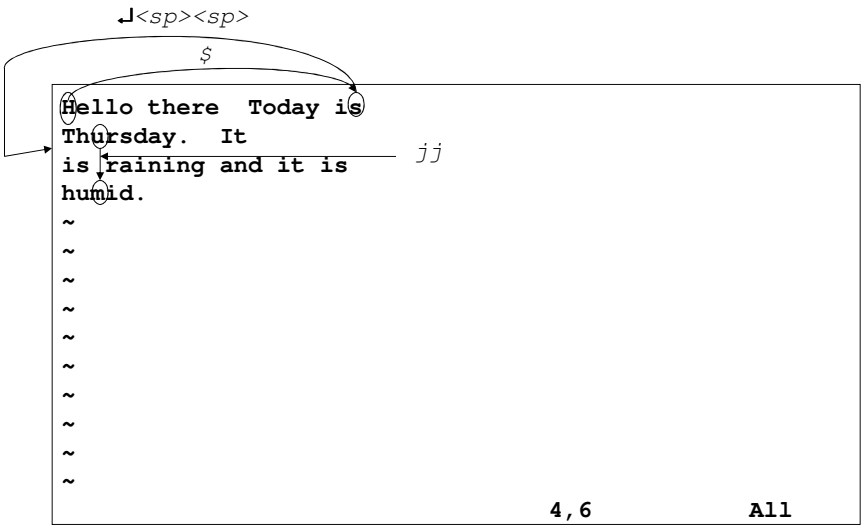
```
#include        <stdio.h>

int     main(void)
{
        printf("Hello, world\n");
        return(0);
}
~
~
~
~
~
~
~
~
~
~
"hello.c" 7L, 78C                                   6,2-9         All
```

Moving Around the Screen



`0`	Beginning of current line
`$`	End of current line
`↵`	Beginning of next line
`+`	Beginning of next line
`-`	Beginning of previous line

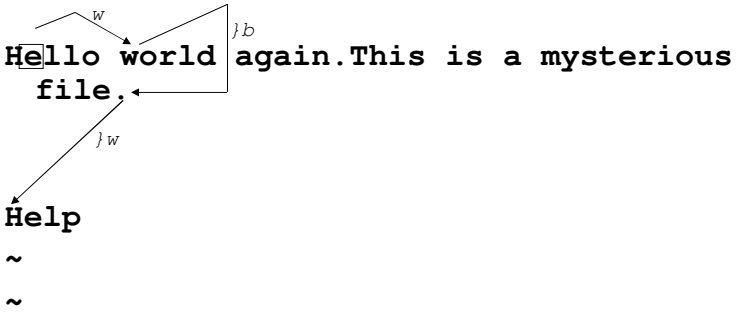


Other Move Commands

w	move to the next word or punctuation
e	move to the end of the next word of punctuation
b	move to the beginning of the previous word
)	move to the beginning of the next sentence
(	move to the beginning of the current sentence
}	move to the beginning of the next paragraph
{	move to the beginning of the current paragraph

vi Words and Paragraphs

- **vi** sentences end with "**.**", "**?**" or "**!**"
- **vi** paragraphs begin after a blank line.



Moving Around Faster

^f	Writes the files
^d	Move forward ½ screen
^b	Move backward one full screen
^u	Move backward ½ screen
G	Moving to the end of the file

A number in front changes the command
3^f – move ahead 3 screens
99G -go to line 99

Modifying Text

- **r** *char* – replace the current character with *char*.
- **R** *string* **<esc>** - Overwrite text with this string.
- **J** – joins current and next line into one line.
- **~** - Switches upper and lower case.

Modifying Text – An Example

Now is the time
for all good men to

- Typing Rt is<Esc> changes it to

Now it ise time
for all good men to

- and J changes it to:

Now it ise time for all good men to

- ~~~ changes it to

Now it ise time FOR all good men to

Deleting Text

x	deletes a single character
num **x**	delete *num* characters
dw	deletes the rest of the current word
num **dw**	deletes *num* words from the current position
d$	deletes the rest of the line
d)	deletes to the beginning of the next sentence
dd	deletes current line
d*num***d**	deletes *num* lines from the current line

Deleting Text – An Example

Date: 12/31/09
Room: 110HHE
Time: 10:00:00AM

- 5x **:**

Date: /09

- d) changes it to

Date:
After d2d
Time: 10:00:00AM

- Typing **u** will undo the most recent change.

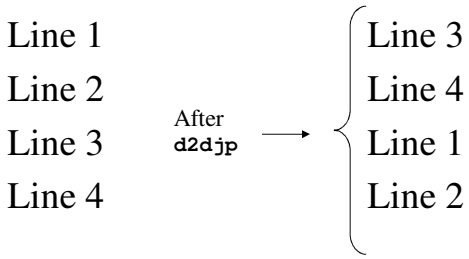
Moving Text

- Lines last deleted (or yanked) are placed in a buffer. You can "put" it anywhere in a file.

  `p` – put it to the right or below the current position.

  `P` – put it to the left or above the current position.

Moving Text – An Example



Searching For Text

- **/***string* – search forward for *string*
- **?***string* – search backward for *string*

Copying and Moving Text

- To copy text, use **yy** (to yank a line) or **yw** (to yank a word) or **y$** (to yank until the end of the line) or **y)** (to yank until the next sentence) followed by **p** or **P**.
- To move text, use **dd**, **dw**, **d$** or **d)** followed by **p** or **P**.

Using **ex** Commands in **vi**

- All **ex** commands in **vi** are preceded by a colon:

  :wq

  :q!

Some Useful **ex** Commands

:*address* **s/***oldpattern***/***newpattern***/** - replace the old pattern in the text with the new pattern on these lines

:*address* **d** – deletes these lines

:g/*opattern***/s//***npattern* – globally searches for *opattern* and replaces it with *npattern*.

:r *file* – reads in *file*

:! *cmd* – perform UNIX shell command *cmd*.

Addresses in **ex** Commands

- Address in these commands can be:

1, 5 – lines 1 through 5

., 30 – current line through line 30

30, $ - line 30 through the end

., +5 – current line through 5 lines downs

:-3, +1 – 3 lines above until 1 line down

Miscellany and Metacharacters

- **^l** – refreshes screen
- Metacharacters

  ^ - beginning of line

  $ - end of line

  . – matches any single character

  ***** - matches preceding character any number of times

  [*string***]** – matches any character in *string*

  [^*string***]** – matches any character ***NOT*** in *string*.

Metacharacters – An Example

- **`/^xyz`** – search for **`xyz`** at beginning
- **`/line.$`** - search for this at the end of the line
- **`/^$`** - search for empty line
- **`s/X.*$/Hello`** – finds **`X`** followed by any character any number of times at end of line and replaces it with **`Hello`**.
- **`:1, $s/[0-9]/-/g`**
- **`:1,$s/[^a-za-Z]/0/g`**
- **`:s/United .*ica/USA/`**