

# CS-344 - Unix Operating System Fundamentals

## Lecture 2

Touring the Features of UNIX/Linux & Editing with the Visual Editor

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Based on slides created by Dr. Bangalore for the Spring 2005 offering of the course

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## Recap ... (1)

- Simple commands:
  - pwd → identify current directory
  - man → help on commands
  - ls → list files
  - ps → list processes
  - cd → change directory
  - cat, more, head, tail → display files
  - cp → copy files
  - mv → move (also rename) files
  - rm → remove files

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## Recap ... (2)

- Other commands:
  - history
  - clear
  - date
  - alias
- Input/Output redirection
  - > to file (rewrites the file)
  - < from file
  - >> append
- Execute more than one command
  - ;

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## Environment Variables

- Store information relevant to the shell or a particular program.
  - \$USER
  - \$LOGNAME
  - \$HOME
  - \$SHELL
  - \$PATH
  - \$CLASSPATH
- env & printenv (output varies depending on shell)
- Environment variables are usually give in uppercase

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## Setting Environment Variables (BASH Shell)

- Temporary changes
  - Remains until logout or exit from the shell  
VARNAME=value\_of\_variable  
export VARNAME
  - Example: EDITOR=vi; export EDITOR
- Lasting changes
  - Enter change in .bash or .bash\_profile
  - Save the file
  - Enter the command:  
*source ~/.bash* or *source ~/.bash\_profile*

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## Creating Files

- We have already seen creating files using
  - output redirection with the ">" directive
  - appending a file using the ">>" direction
- Using cat and ">" directive
- By default the keyboard is connected to the input stream of "cat" utility

```
$ cat > myfile
This is some text being entered into file -- myfile
CTRL-D
$ cat myfile
This is some text being entered into file -- myfile
$
```

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## Editors

- Editors can be used to create new files and edit existing files
- Popular UNIX Editors
  - vi or vim
  - emacs
  - pico
- Editors are programs like other utilities
- The shell launches the editor program and passes control to it, when the program terminates the shell gets back the control

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## Creating a new file with "vi"

- Usage: vi <options> <filename>
- Example:
  - vi myfile - open myfile
  - vi +n myfile - open myfile and move cursor to line n
  - vi +/<string> - open myfile and move cursor to the line with the first occurrence of "string"
- By default you are in "command" mode
- Type "i" to enter "insert" mode
- Type in the text
- Press ESC to exit "insert" mode
- Type ":w" to save file
- Type ":q" to quit
- You can also type ":wq" to save and quit

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## Inserting text

- To insert text into an existing file, enter one of the following commands (from the command mode) and enter the required text:
  - Insert at the current cursor position → press "i"
  - Insert after the current cursor position → press "a"
  - Insert at the start of the current line → press "I"
  - Insert at the end of the current line → press "A"
  - Insert a line above the current line → press "O"
  - Insert a line below the current line → press "o"
- All of the above commands will result in a mode change (from command to insert) – see page 156
- Press ESC to exit the "insert" mode

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## Moving around (I)

- Right → l (→)
- Left → h (←)
- Up → k (↑)
- Down → j (↓)
- A number before the above commands will move the cursor by the number of characters specified (4h – move cursor 4 characters to the left from current position)
- To move to a specific line use: nG where n is the specified line number
- CTRL-G will indicate the current line number and the total number of lines in the file
- To move to a specific target use: /<targetstring> and press ENTER and press n to move to next occurrence of the "targetstring"

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## Moving around (II)

- Scroll
  - up by a page → CTRL-F
  - down by a page → CTRL-B
  - up by half a page → CTRL-U
  - down by half a page → CTRL-D
- Move to the
  - start of the current line → ^ or 0 (number zero)
  - end of the current line → \$
  - start of the previous line → - (minus sign)
  - start of the next line → +
- Move to the
  - start of next word → w (n words forward – nw)
  - start of previous word → b (n words backward – nb)
  - end of current word → e (end of n words – ne)

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## Other Commands

- Undo last text-change action → *u*
- Undo all changes made to the current line → *U* (assumes that you have not move the cursor from that line)
- Repeat last text-change action → *.* (period)
- Delete
  - Character(s) → *x* or *nx*
  - Word(s) → *dw* or *ndw*
  - Line(s) → *dd* or *ndd*
- Replace
  - Character → *r*
  - Word → *cw* (mode change)
  - Line (mode change)
    - *S* or *cc* (from the start of current line)
    - *R* or *C* (from current cursor position)
- Command summary – pages 218-226

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## Using Pico (I)

- Usage: `pico <options> <filename>`
- Example: `pico myfile`
- Editing commands:
  - Move to end of line → *CTRL-E*
  - Move to beginning of line → *CTRL-A*
  - Cut/delete current line (also puts the line in a buffer so it can be undeleted/pasted) → *CTRL-K*
  - Undelete/paste the most recently cut line → *CTRL-U*
  - Mark a block of text → *CTRL-^* (hold down *CTRL*, *SHIFT* and the 6 key, then use the arrows to create the highlighted block)
  - Delete current character → *CTRL-D*
  - Justify/rejustify margin → *CTRL-J*
  - Insert existing file into file you're editing → *CTRL-R*

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## Using Pico (II)

- Save and exit:
  - Type *CTRL-X* – Pico will ask if you want to save changes
  - Press *y* – Pico will show the current file name
  - Press *ENTER* to keep current name, or, type in new name and press *ENTER*
- Exit without saving:
  - Type *CTRL-X* – Pico will ask if you want to save changes
  - Press *n*

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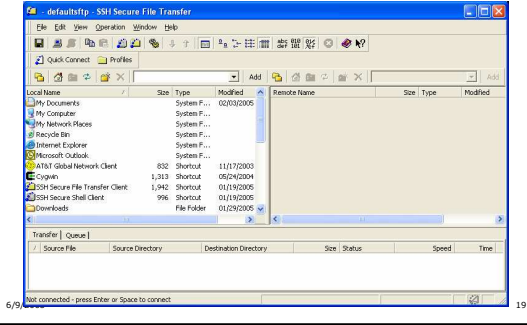
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## Copying files to a UNIX system

Double-click on the SSH Secure File Transfer Client icon



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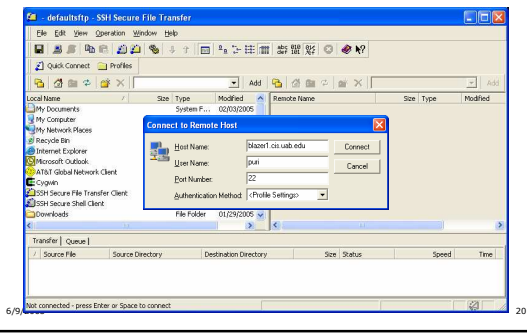
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Press ENTER or SPACEBAR  
A popup window will appear  
Enter the hostname and user in the popup window and click on Connect



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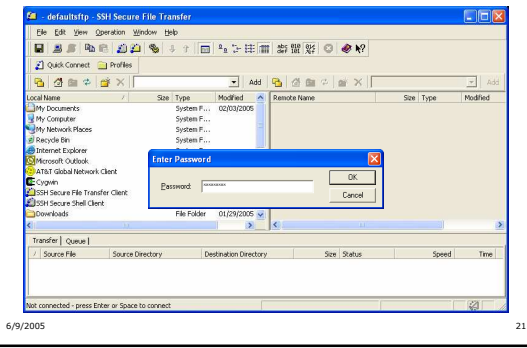
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A popup window will appear and prompt for the password  
Enter your password and click on OK



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