



# Computer-aided VLSI System Design

## Linux/Unix Tutorial

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# Outline

- ❖ Connect to workstation
- ❖ Basic commands in Unix/Linux
- ❖ Text editors



# Outline

- ❖ Connect to workstation
  - ❖ LAB 231 workstation list
  - ❖ File transfer(FileZilla)
  - ❖ Putty & Xming
  - ❖ MobaXterm
- ❖ Basic commands in Unix/Linux
- ❖ Text editors



# LAB 231 Workstation List

❖ <http://cad.ee.ntu.edu.tw>

IC設計實驗室可供連線工作站一覽表

Apr. 18, 2013

IP	NAME	TYPE	CPU	CPU CLOCK	MEMORY	OS
140.112.20.59	cad16	IBM X3400	Intel Xeon 64	2.4 GHz * 16	100 G	RHEL 5
140.112.20.60	cad17	IBM X3550	Intel Xeon 64	2.4 GHz * 16	20 G	RHEL 5
140.112.20.61	cad18	SUN Blade 2500	UltraSPARC	1.28 GHz*2	8 G	Solaris 10
140.112.20.62	cad19	SUN Blade 2000	UltraSPARC	1.2 GHz * 2	8 G	Solaris 10
140.112.20.63	cad20	SUN Blade 2000	UltraSPARC	1.2 GHz * 2	8 G	Solaris 10
140.112.20.64	cad21	DELL R620	Intel Xeon 64	2 GHz * 32	48 G	CentOS 5
140.112.20.65	cad22	SUN Blade 2500	UltraSPARC	1.28 GHz * 2	8 G	Solaris 10
140.112.20.66	cad23	DELL R620	Intel Xeon 64	2 GHz * 16	96 G	CentOS 5
140.112.20.67	cad24	SUN Fire 280R	UltraSPARC	1.2 GHz * 2	4 G	Solaris 9
140.112.20.68	cad25	SUN Fire 280R	UltraSPARC	1.2 GHz * 2	4 G	Solaris 9
140.112.20.69	cad26	SUN Fire 280R	UltraSPARC	1.2 GHz * 2	4 G	Solaris 9
140.112.20.70	cad27	IBM x260	Intel Xeon 64	3.2 GHz * 4	8 G	RHEL 4
140.112.20.71	cad28	IBM x260	Intel Xeon 64	3.2 GHz * 4	8 G	RHEL 4
140.112.20.72	cad29	IBM e336	Intel Xeon 64	3.2 GHz	5 G	RHEL 4
140.112.20.73	cad30	IBM X3650	Intel Xeon 64	2 GHz * 16	12 G	SUSE 11
140.112.20.74	cad31	SUN Blade 2000	UltraSPARC	1.015 GHz * 2	8 G	Solaris 10
140.112.20.75	cad32	SUN Blade 2000	UltraSPARC	1.015 GHz * 2	8 G	Solaris 8
140.112.20.76	cad33	IBM X3500	Intel Xeon 64	2 GHz * 16	20 G	RHEL 4
140.112.20.77	cad34	IBM X3650	Intel Xeon 64	2.4 GHz * 8	12 G	RHEL 5
140.112.20.78	cad35	SUN V20z	AMD Opteron	2.4 GHz * 2	4 G	RHEL 4
140.112.20.79	cad36	SUN V20z	AMD Opteron	2.4 GHz * 2	4 G	RHEL 4
140.112.20.80	cad37	SUN V20z	AMD Opteron	2.4 GHz * 2	4 G	RHEL 4
140.112.20.81	cad38	IBM X3650	Intel Xeon 64	2.4 GHz * 16	96 G	RHEL 5
140.112.20.82	cad39	IBM X3650	Intel Xeon 64	2 GHz * 24	40 G	CentOS 5
140.112.20.83	cad40	IBM X3550	Intel Xeon 64	2 GHz * 24	8 G	CentOS 5
140.112.20.84	cad41	Fujitsu RX300 S4	Intel Xeon 64	2 GHz * 8	10 G	RHEL 4
140.112.20.85	cad42	IBM X3500	Intel Xeon 64	2 GHz * 24	32 G	CentOS 5



# FileZilla (1/2) for File Transfer

1. FileZilla 主視窗的「站台管理員(S...)」按鈕。

2. 在「站台管理員」對話框中，點擊「新增站台(N)」按鈕。

3. 在「選擇欄位(S)」清單中，選擇「我的站台」下的「cvsd」。

4. 在「一般設定」標籤頁中，輸入主機(H) IP: 140.112.20.XX 和連接埠(P): 22。

5. 在「一般設定」標籤頁中，輸入使用者(U): r02000 和密碼(W): 。

6. 在「一般設定」標籤頁中，點擊「連線(C)」按鈕。

協議(I): SFTP - SSH File Transfer Protocol

登入型式(L): 一般

帳號(A):

註解(M):

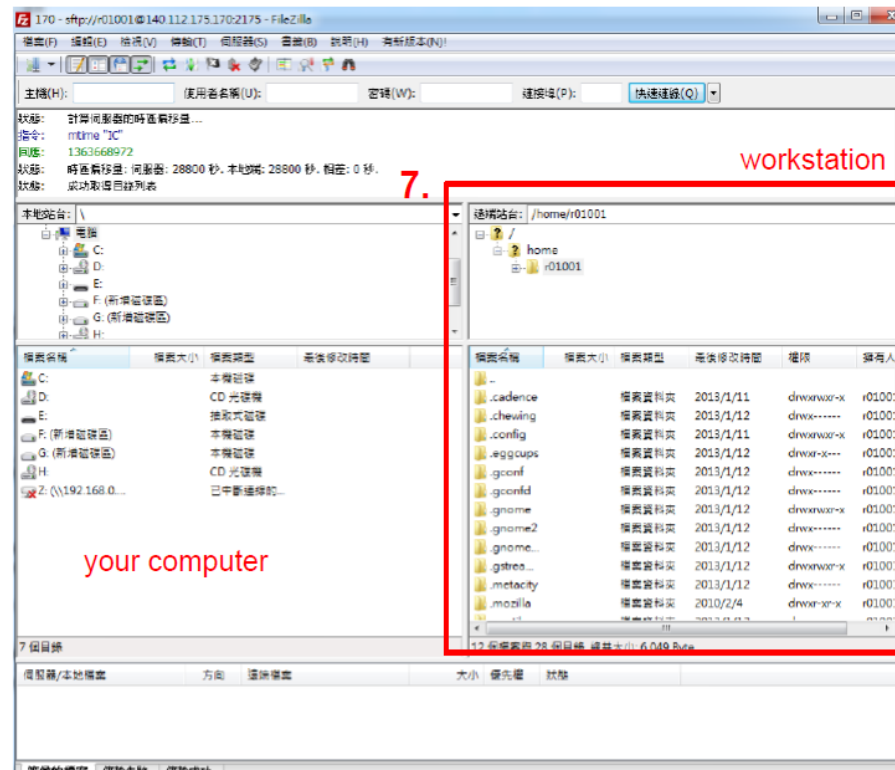
確認(O) 取消



# FileZilla (2/2) for File Transfer

## ❖ Download

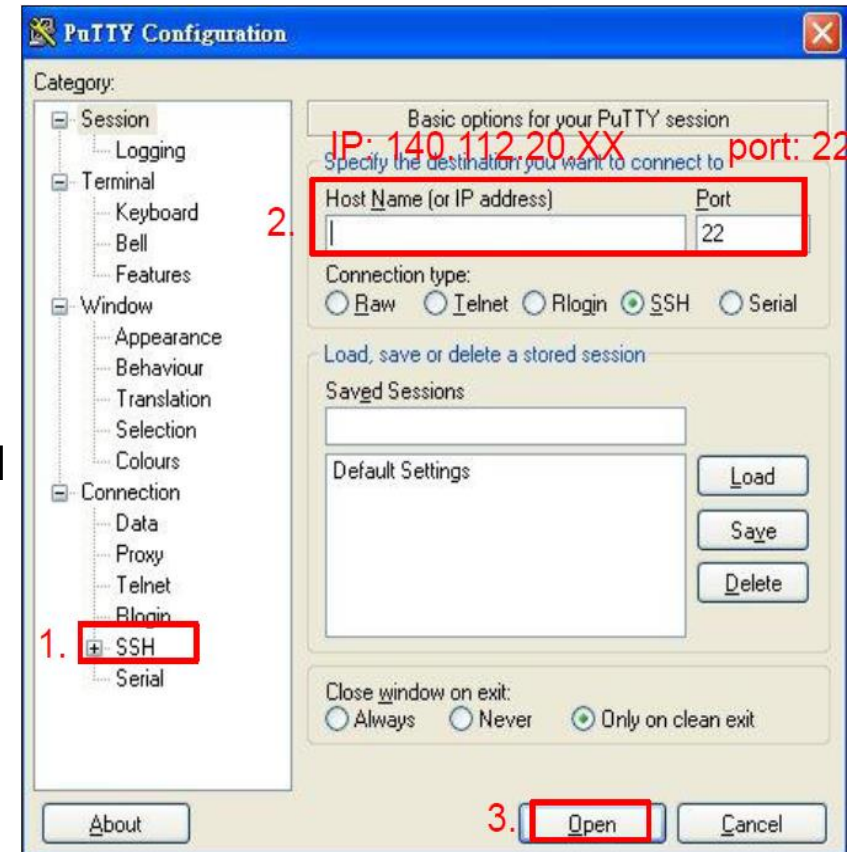
❖ <http://sourceforge.net/projects/filezilla/files/>





# Putty (1/2)

- ❖ Host name :
  - ❖ EX 140.112.20.70
- ❖ Port : 22
- ❖ Login as:
  - ❖ Your account( ex: r04XXX)
- ❖ r04XXX@140.112.20.70's password





## Putty (2/2)

### ❖ Download

❖ <http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe>

### ❖ Official website

❖ <http://www.chiark.greenend.org.uk/~sgtatham/putty/>

### ❖ Tutorial

❖ <http://www.ascc.sinica.edu.tw/putty>



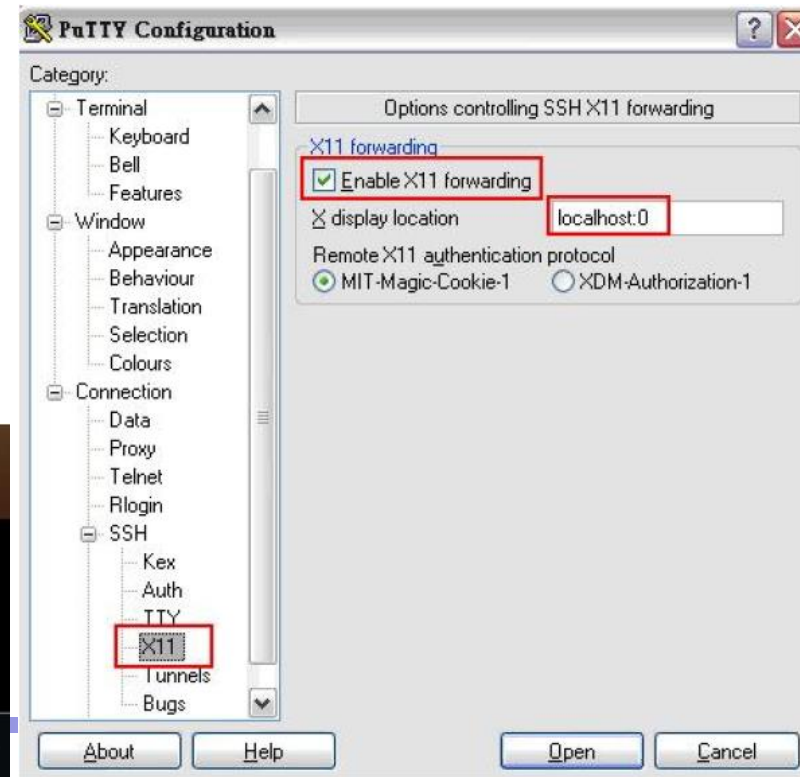


## X Server – Xming (1/3)

- ❖ Xming is a standalone open source X Server for Windows
- ❖ Programs that use a graphical user interface like **nWave** require an X server on your home computer

- ❖ Setup Putty before connecting (SSH→X11)

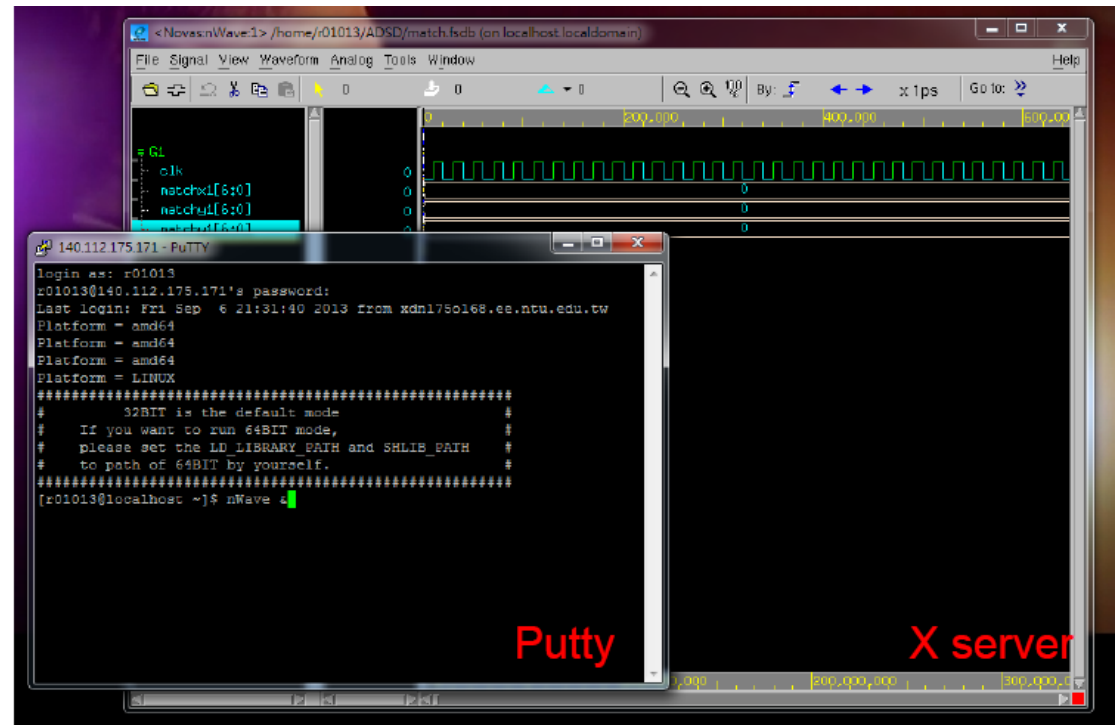
- ❖ Enable X11 forwarding
- ❖ Selecting display location
  - Enter “localhost: 0”





## X Server – Xming (2/3)

- ❖ Open programs with GUI
  - ❖ EX: dsign\_vision & (for *synthesis* or *insert scan chain*)
  - ❖ EX: nWave & (for *debugging*)





## **X Server – Xming (3/3)**

### ❖ Download

- ❖ <http://sourceforge.net/projects/xming/>

### ❖ Tutorial

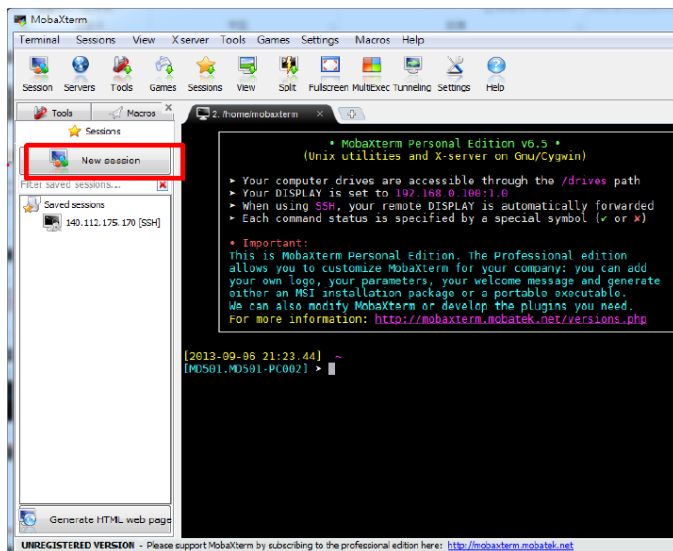
- ❖ <http://blog.jangmt.com/2009/11/xming.html>
- ❖ <http://1337-tux.blogspot.com/2005/03/xming.html>
- ❖ <https://sites.google.com/site/ykcycuee/tutorial/remote-access/xming>
- ❖ [http://qiu.bioweb.hunter.cuny.edu/index.php?option=com\\_content&view=article&id=110](http://qiu.bioweb.hunter.cuny.edu/index.php?option=com_content&view=article&id=110)



# MobaXterm (1/2)

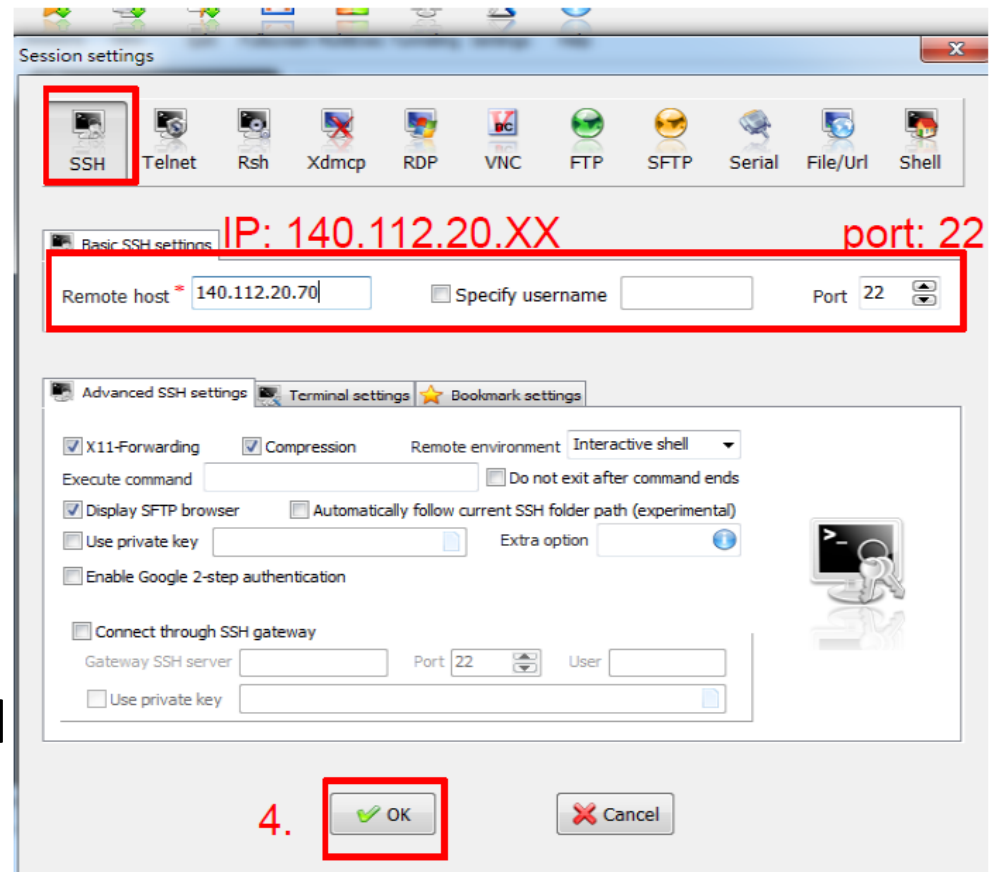
❖ MobaXterm = SFTP + SSH + X-server

❖ New Session



2.

3.



❖ Or directly enter command to connect

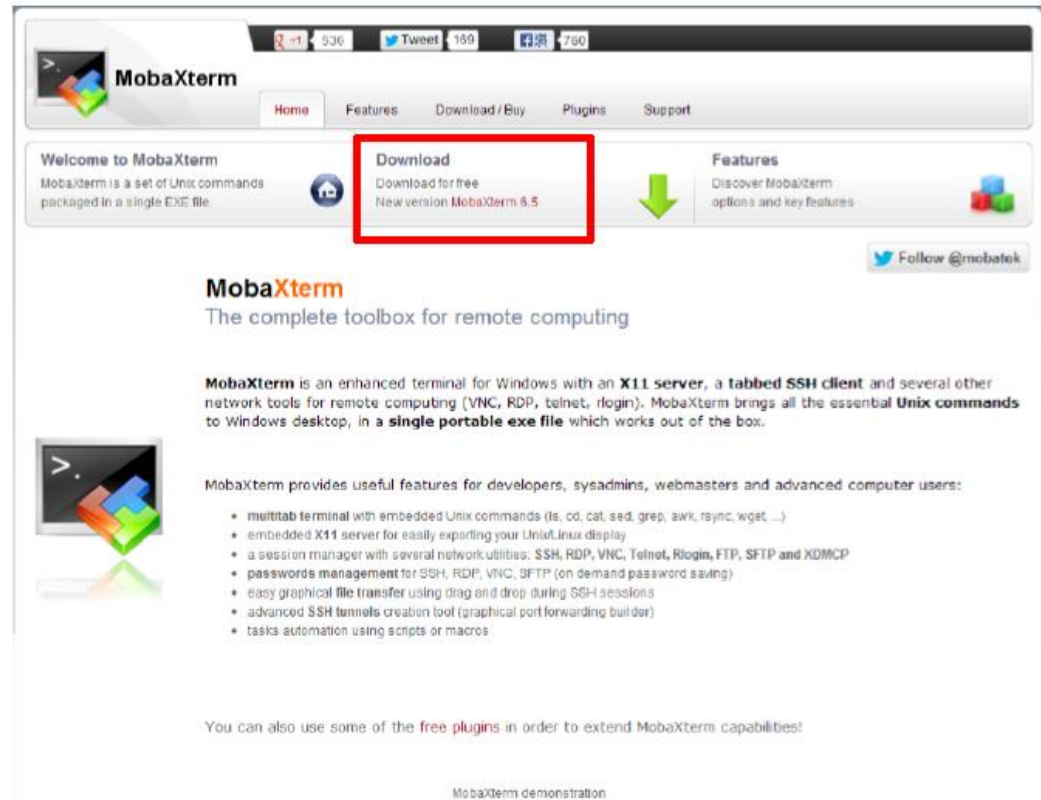
❖ `ssh r04XXX@140.112.20.70`



# MobaXterm (2/2)

❖ Download:

❖ <http://mobaxterm.mobatek.net/>





# Outline

- ❖ Connect to workstation
- ❖ Basic commands in Unix/Linux
- ❖ Text editors



# Environment

The screenshot shows the MobaXterm Personal Edition v6.5 interface. The terminal window displays the following content:

```

• MobaXterm Personal Edition v6.5 •
(Unix utilities and X-server on Gnu/Cygwin)

> Your computer drives are accessible through the /drives path
> Your DISPLAY is set to 192.168.0.100:1.0
> When using SSH, your remote DISPLAY is automatically forwarded
> Each command status is specified by a special symbol (✓ or ✗)

• Important:
This is MobaXterm Personal Edition. The Professional edition
allows you to customize MobaXterm for your company: you can add
your own logo, your parameters, your welcome message and generate
either an MSI installation package or a portable executable.
We can also modify MobaXterm or develop the plugins you need.
For more information: http://mobaxterm.mobatek.net/versions.php

[2013-09-06 21:42:48] ~
[MD501.MD501-PC002] > ssh r01013@140.112.175.171
Last login: Fri Sep 6 21:32:41 2013 from xdn175o160.ee.ntu.edu.tw
Platform = amd64
Platform = amd64
Platform = amd64
Platform = LINUX
#####
# 32BIT is the default mode #
# If you want to run 64BIT mode, #
# please set the LD_LIBRARY_PATH and SHLIB_PATH #
# to path of 64BIT by yourself. #
#####
[r01013@localhost ~]$ ls
ADSD      Parti_ALU  c          default.svf      libManager.log  novas_dump.log      testing_pattern
CDS.log   a          clogsoMxT5  filenames.log     nWaveLog        prog.m
CVSDhw    ad_icd     command.log  filenames_8553_020121217.log  ncverilog.log    senior_lab
INCA_libs b          d.v         icc2012cb        novas.rc         synopsys_cache_D-2010.03-SP5

[r01013@localhost ~]$
  
```

At the bottom of the window, it says: UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <http://mobaxterm.mobatek.net>



# Basic commands (1/5)

## ❖ Files

- ❖ `ls` : lists files
- ❖ `ls -l` : lists files in long format
- ❖ `ls -a`: lists all files, including the ones whose filename beginning in a dot
  
- ❖ `cp src-filename dest-filename` : copy files
- ❖ `mv src-filename dest-filename` : move files
- ❖ `rm filename` : delete the file
- ❖ `more filename` : show the content of the file





## Basic commands (2/5)

### ❖ Directories

- ❖ `mkdir dirname` : make a new directory
- ❖ `cd dirname` : change directory
- ❖ `cd..` : go up on directory level from here
- ❖ `cd~` : go to user's home directory
- ❖ `rm -rf dirname` : remove a directory



## Basic commands (3/5)

### ❖ Compress and decompress files

#### ❖ Compress

- `tar -cvf filename.tar filename`
- `gzip *.tar`

■ \* stand for all files whose filename extension are .tar

#### ❖ Decompress

- `gzip -d filename.tar.gz`
- `tar -xvf filename.tar`



## Basic commands (4/5)

### ❖ Processes

- ❖ `ctrl + c` : kill foreground process
- ❖ `ps` : report processes and their pid numbers
- ❖ `Kill pid#` : kill the process with the pid#

### ❖ Logout

- ❖ `exit`

### ❖ More options about command

- ❖ `man command-name` : display on-line manual pages



# Basic commands (5/5)

## ❖ Reference

### ❖ Chinese

- [http://linux.vbird.org/linux\\_basic/redhat6.1/linux\\_06command.php](http://linux.vbird.org/linux_basic/redhat6.1/linux_06command.php)
- [http://boson4.phys.tku.edu.tw/UNIX/Unix Command/index\\_basic.htm](http://boson4.phys.tku.edu.tw/UNIX/Unix Command/index_basic.htm)
- <http://www.lib.cgu.edu.tw/instruction/basiccmd.html>
- <http://larc.ee.nthu.edu.tw/~lmdenq/Unix.htm#%A4E%A1B%BF%E9%A5X%A4J%C2%E0%A6V>

### ❖ English

- <http://mally.stanford.edu/~sr/computing/basic-unix.html>
- <http://www.math.utah.edu/lab/unix/unix-commands.html>
- <http://www.computerhope.com/unix/overview.htm>



# Outline

- ❖ Connect to workstation
- ❖ Basic commands in Unix/Linux
- ❖ Text editors
  - ❖ Vim
  - ❖ Notepad++
  - ❖ Sublime Text



# Vim (1/4)

## ❖ Vim (Vi Improved)

- ❖ An extended version of the vi editor
- ❖ Additional features designed to be helpful in editing program source code
- ❖ Free and open source software



## Vim (2/4)

### ❖ Three major modes

#### ❖ Common mode (*c-mode*)

- All keystrokes are interpreted as commands

#### ❖ Insert mode (*i-mode*)

- Most keystrokes are inserted as text

#### ❖ Edit mode (*e-mode*)

- Open/new/save file and quit vim

### ❖ Change modes

#### ❖ i-mode ← c-mode → e-mode

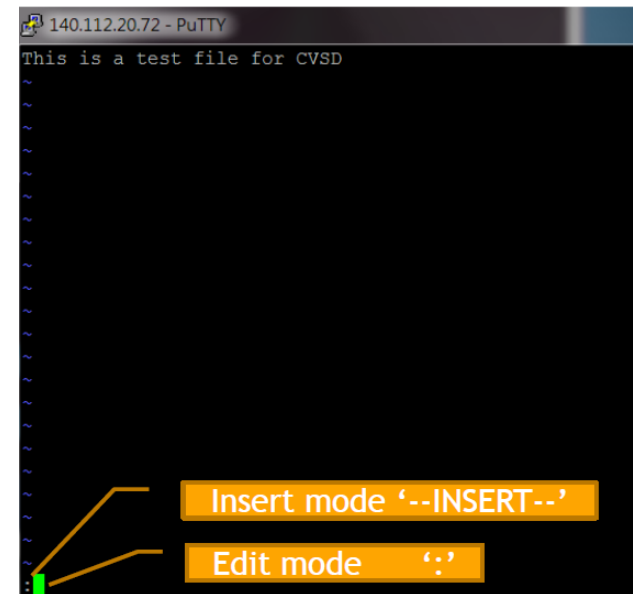
Key: "i"

Key: ":"

#### ❖ i-mode → c-mode ← e-mode

Key: "esc"

Key: "esc"





## Vim (3/4)

### ❖ Basic command in c-mode

- ❖ Key **dd** : delete the whole line
- ❖ Key **u** : undo
- ❖ Key **I** : enter insert-mode
- ❖ Key **:w + enter** : save a document
- ❖ Key **:q + enter** : quit without saving
- ❖ Key **:wq + enter** : save and quit at the same time
- ❖ Key **:q! + enter** : discard changes and quit
- ❖ Key **:w *new\_filename* + enter** : save as new-filename





# Vim (4/4)

## Vim Visual Cheat Sheet

Movement/Range	
Character	
h j k l	
← ↓ ↑ →	
word, WORD (all non-blank ch)	
w b	next/prev word
W B	next/prev WORD
e E	end of word/WORD
Line	
0 \$	begin/end of line
^	begin (non-blank) of line
Paragraph, Block	
{ }	prev/ next paragraph
[[ ]]	begin/end of block
%	matching parenthesis
Window, File	
H	top of win
M	mid of win
L	btm of win
C-B C-F	prev/next page
gg G	begin/end of file
mx 'x	mark/jump to x
Search	
* #	find current word backward/forward
fx	to character x to right
gd	to definition of current word
/xxx	search xxx
n N	next/prev search result

Mode Commands	
ESC C-[]	enter normal mode
v	enter visual mode
V	enter visual line mode
C-v	enter visual block mode
i	enter insert mode
R	enter replace mode
a	append
A	append at end of line
General Commands	
y	yank/copy (range)
d	delete/cut (range)
c	modify (range)
x	delete/cut (character)
D	delete to end of line
C	modify to end of line
p	paste after cursor
J	join lines
r	replace (character)
>	indent
<	indent leftward
.	redo
u	undo
EX Commands	
:w	save(:wq save and quit)
:q	quit(:q! quit anyway)
:e x	edit file x
:n	new window
:h	vim help
:xx	jump to line #xx

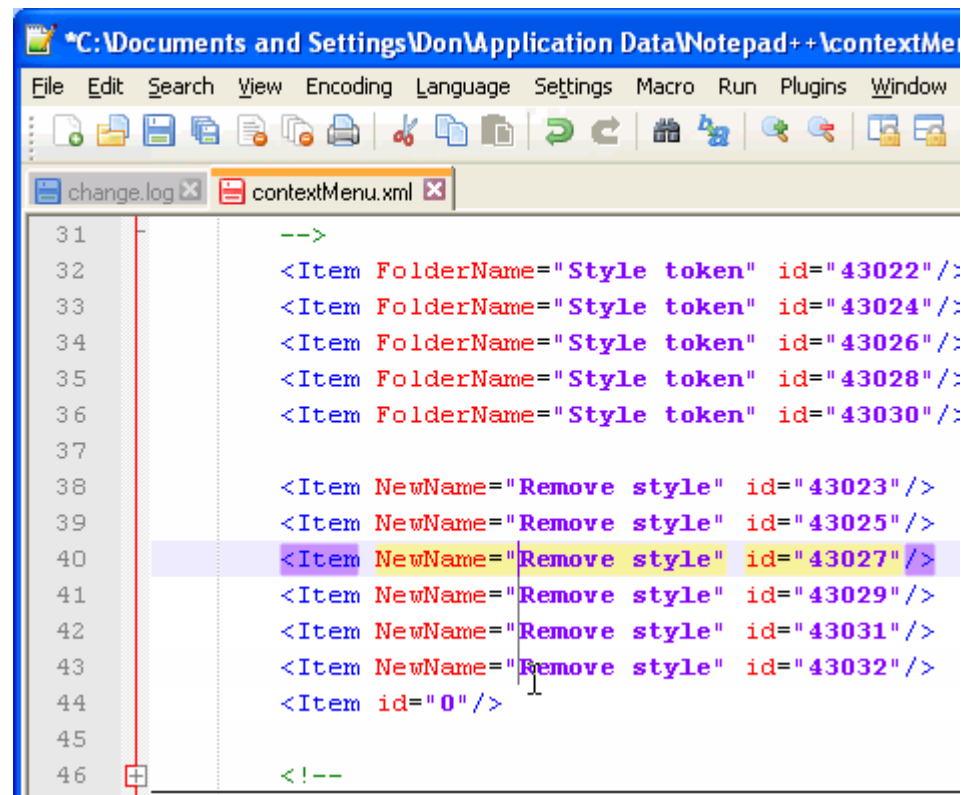
Auto-completion [insert mode]	
C-N C-P	auto-complete
C-X C-F	next/prev keyword
C-X C-F	auto-complete file name
Split window	
:vsp :sp	vertically/horizontally split
:diffs	split and diff
C-W p	to last accessed window
C-W w	to next window



# Notepad++

❖ <http://notepad-plus-plus.org/download/v6.6.9.html>

❖ alt



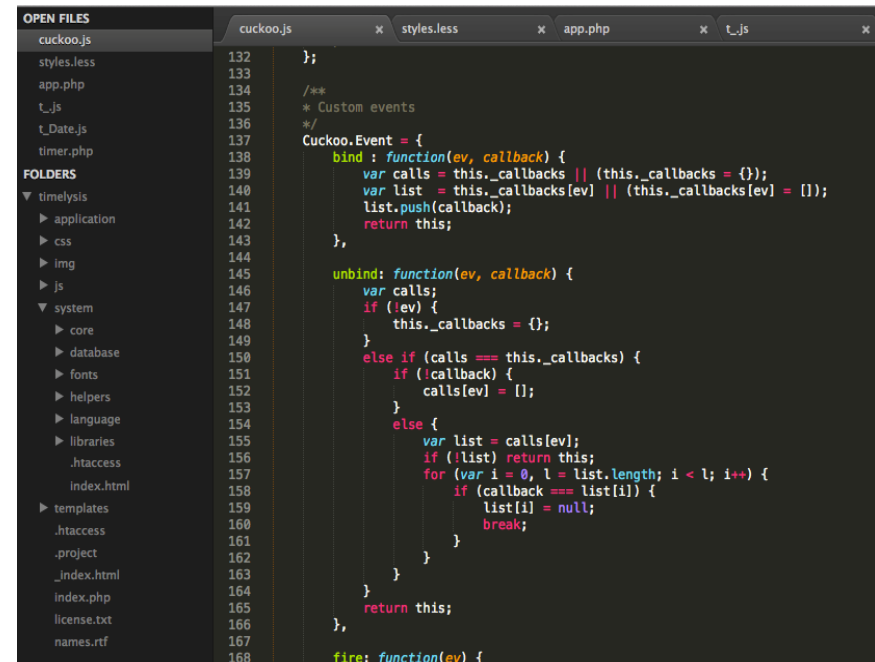
The screenshot shows the Notepad++ application window with the file `*C:\Documents and Settings\Don\Application Data\Notepad++\contextMenu.xml` open. The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, and Window. The toolbar contains icons for file operations and editing. The active tab is `contextMenu.xml`, and another tab `change.log` is visible. The XML content is as follows:

```
31      -->
32      <Item FolderName="Style token" id="43022"/>
33      <Item FolderName="Style token" id="43024"/>
34      <Item FolderName="Style token" id="43026"/>
35      <Item FolderName="Style token" id="43028"/>
36      <Item FolderName="Style token" id="43030"/>
37
38      <Item NewName="Remove style" id="43023"/>
39      <Item NewName="Remove style" id="43025"/>
40      <Item NewName="Remove style" id="43027"/>
41      <Item NewName="Remove style" id="43029"/>
42      <Item NewName="Remove style" id="43031"/>
43      <Item NewName="Remove style" id="43032"/>
44      <Item id="0"/>
45
46      <!--
```



# Sublime Text

- ❖ <http://www.sublimetext.com/2>
- ❖ A cross between a text editor and an IDE
- ❖ Easy to extend via packages (package manger)



```
132  });
133
134  /**
135   * Custom events
136   */
137  Cuckoo.Event = {
138    bind : function(ev, callback) {
139      var calls = this._callbacks || (this._callbacks = {});
140      var list = this._callbacks[ev] || (this._callbacks[ev] = []);
141      list.push(callback);
142      return this;
143    },
144
145    unbind : function(ev, callback) {
146      var calls;
147      if (!ev) {
148        this._callbacks = {};
149      }
150      else if (calls === this._callbacks) {
151        if (!callback) {
152          calls[ev] = [];
153        }
154        else {
155          var list = calls[ev];
156          if (!list) return this;
157          for (var i = 0, l = list.length; i < l; i++) {
158            if (callback === list[i]) {
159              list[i] = null;
160              break;
161            }
162          }
163        }
164      }
165      return this;
166    },
167
168    fire : function(ev) {
```

- ❖ <http://filipminev.com/post/14262857223/9-reasons-you-must-install-sublime-text-2-code>