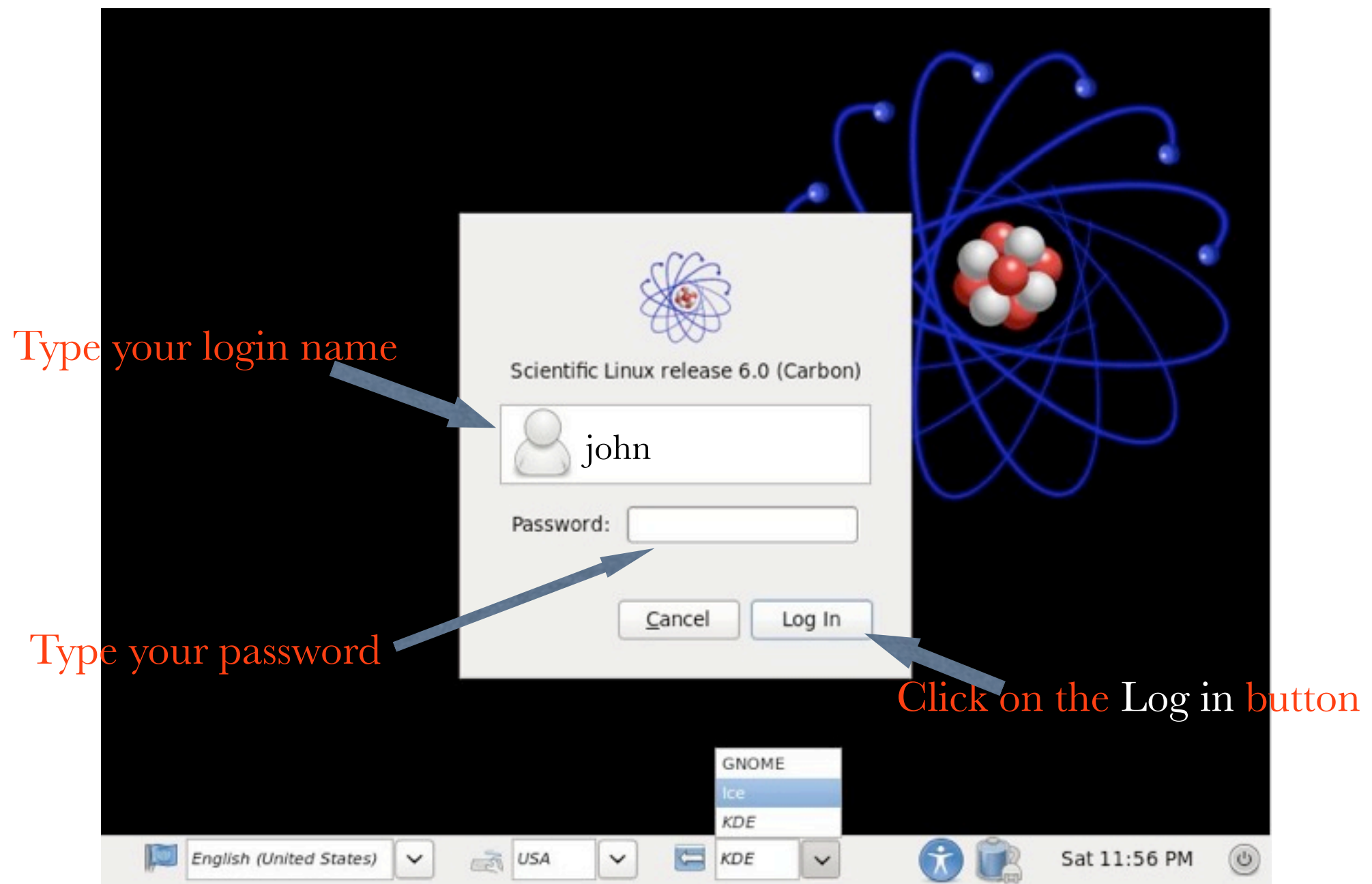# Linux Environment @ hep.wisc.edu

Your Account : Login Name and usage

- You are given a unique login name (e.g. john)
- A temporary password is given to you
- Use this to login name and password to enter the desktop
- The login screen may look something similar to the picture below

Type your login name

Type your password
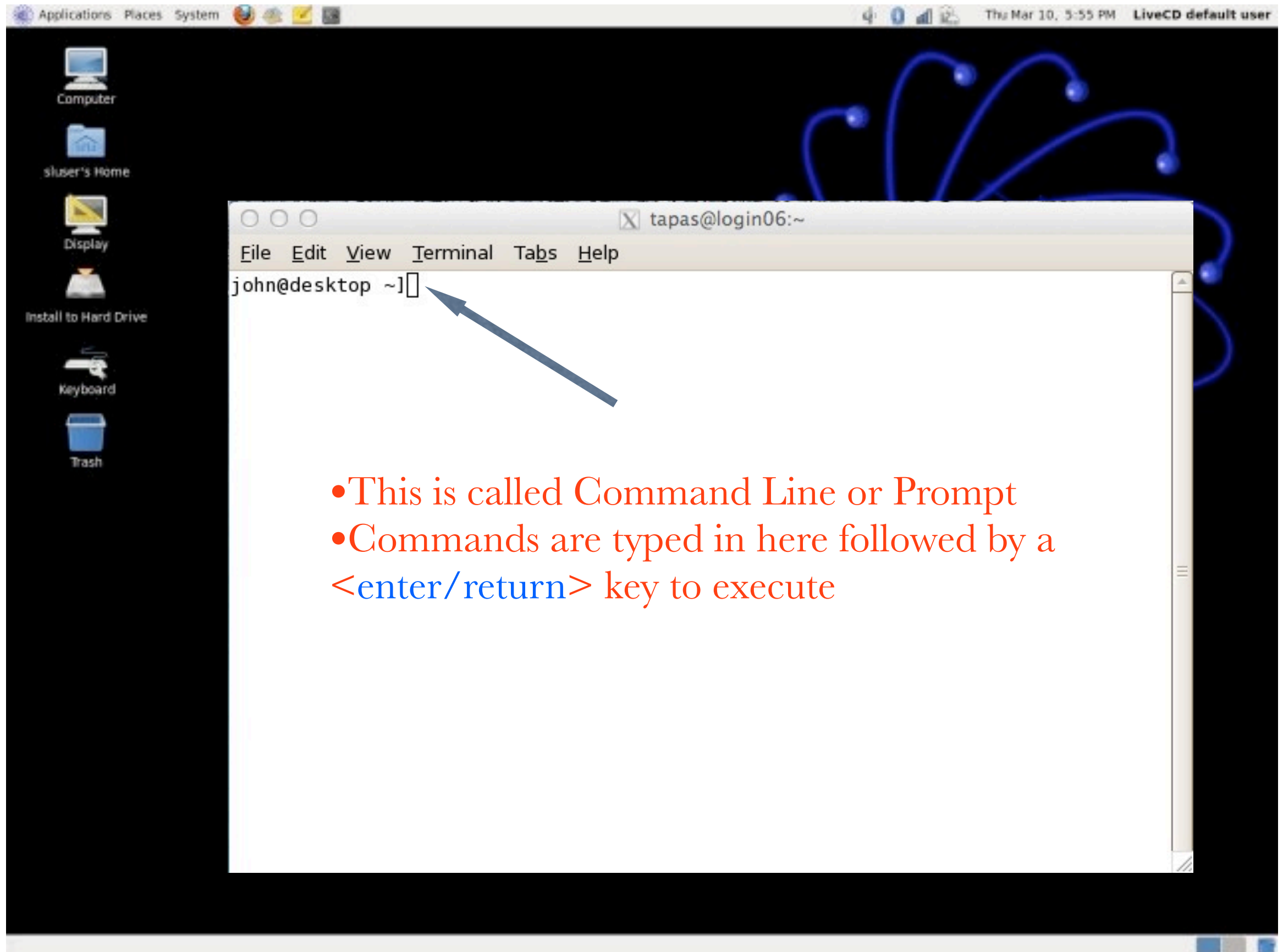
Click on the Log in button

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Desktop

- Clicking on the login button will take you to a desktop manager
- That might look something similar to this picture below
- There are icons for application such as 'Terminal', 'Firefox' (web browser) etc...
- Most of the commands are typed on the 'Terminal' (Click to open one)
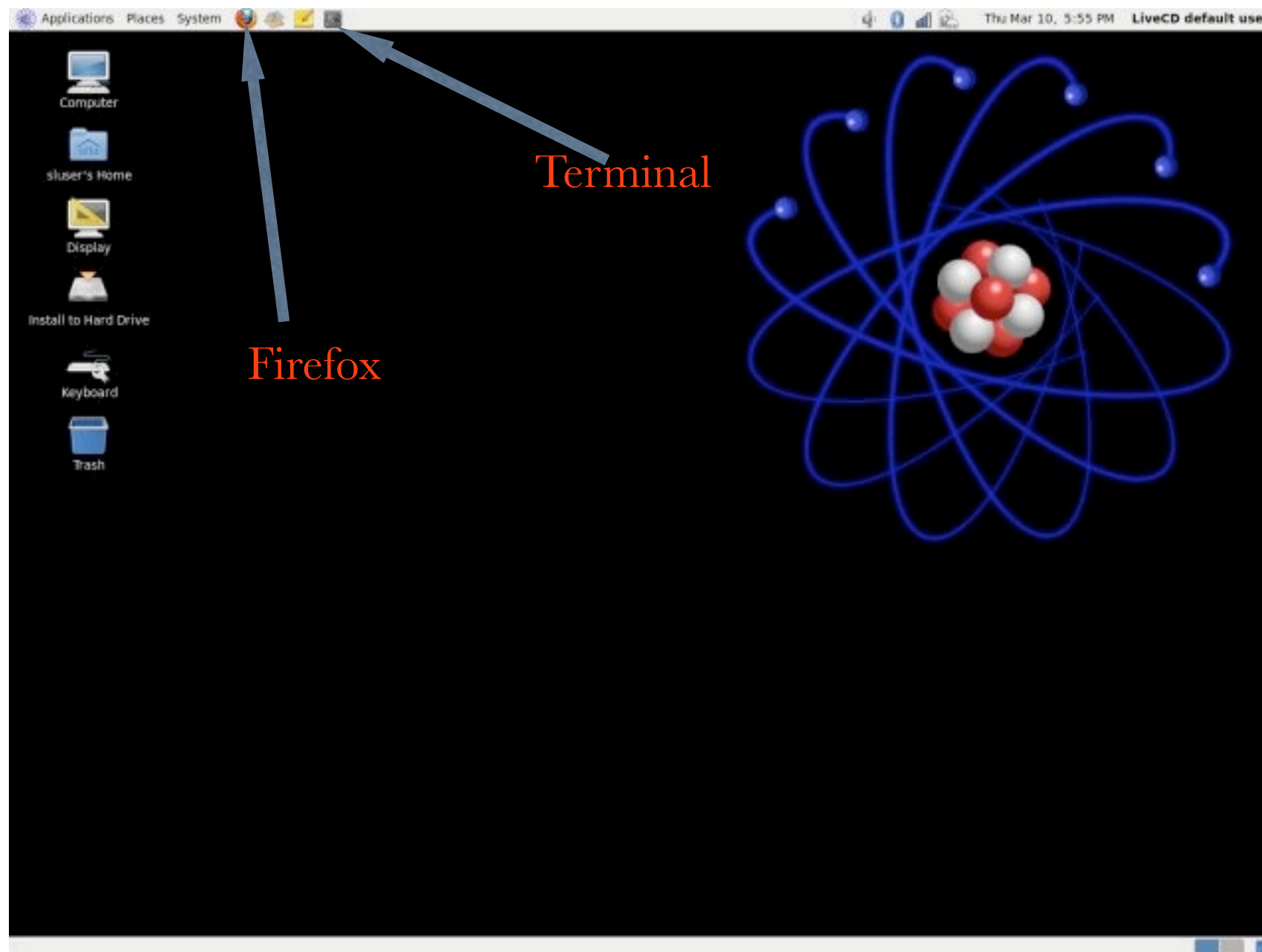
A 'Terminal' might look like this :

- This is called Command Line or Prompt
- Commands are typed in here followed by a <enter/return> key to execute

Basic Linux File System / Command

- A command is an application name that you type to perform a certain action
- A file is an instance in the Linux file system that stores information in a certain format
- File extension defines what kind of format may have been used
    - **test.txt** : defines a plain ascii text file
    - **test.jpg** : defines a jpeg image file
    - **test.db** : defines a database file
    - **test.html** : defines a html file
- A directory is a folder that may contain multiple files or directories
- Your 'home' directory contains your files
    - **~** : abbreviation of your home directory which correspond to the directory (**/afs/hep.wisc.edu/home/john**)
- **cd** : change (go) to a directory
    - **cd ~** : Take you to your home directory (same as : **cd /afs/hep.wisc.edu/home/john**)
- **ls** : List all your files and directory
    - **ls ~** : List your files and directory inside the home directory
- **rm** : remove files or directory (Type after careful consideration)
    - **rm test.txt** : Remove a file named 'test.txt' in the current directory
- **pwd** : prints out the 'present working directory'
- For each of these commands you can add options. To know about these options, you can type '**man**' <**command name**> (e.g., **man rm**)
- **cp** : copy a file (cp file1.txt file2.txt : copies file1.txt to file2.txt. There are now 2 files with same content)
- **mv** : move a file (mv file1.txt file2.txt : moves file1.txt to file2.txt. Only file2.txt exists)
- **less** : Show contents of a file
- **mkdir** : create a new directory (mkdir testdir : create a directory name testdir)

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Creating a new File or directory

- Do not use special characters such as (!,@,#,$...) to create a file or directory
- letters, numbers, underscrores are best practice
- Do not start the file or directory name with a dot or dash
- Meaningful names are best practice
- Names are CaSe sensitive

- To create a new file, you need to set an editor
- An editor is an application that helps edit and organize the content of a file
- Here, application name 'emacs' is used as an editor

- First, you can create an empty file by the following command :
    - **touch test.txt** (This will create an empty file name test.txt)
- You can type '**emacs test.txt**' to open the editor and modify the file content
- Learn more about the emacs editor in here : http://refcards.com/docs/gildeas/gnu-emacs/emacs-refcard-a4.pdf
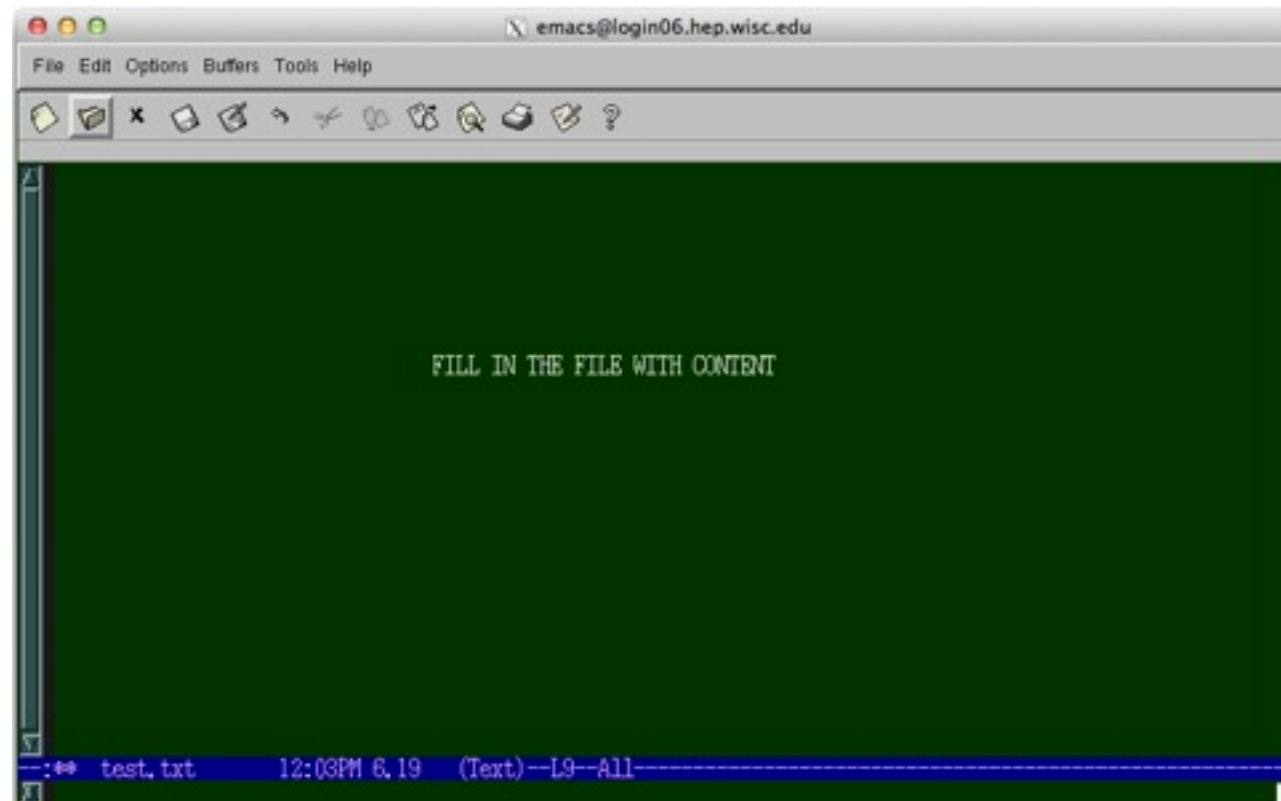
Creating and Storing your file

- Every CMS user is given extra chunk of storage space
- For your login name, the space is available in this directory,
  - **cd /afs/hep.wisc.edu/cms/john** (e.g. for login name john)
- Then create new directories or files inside the above directory

- In addition, some machines provide temporary storage space called 'scratch' located in : **/scratch/john**
- The machines that contains these files are
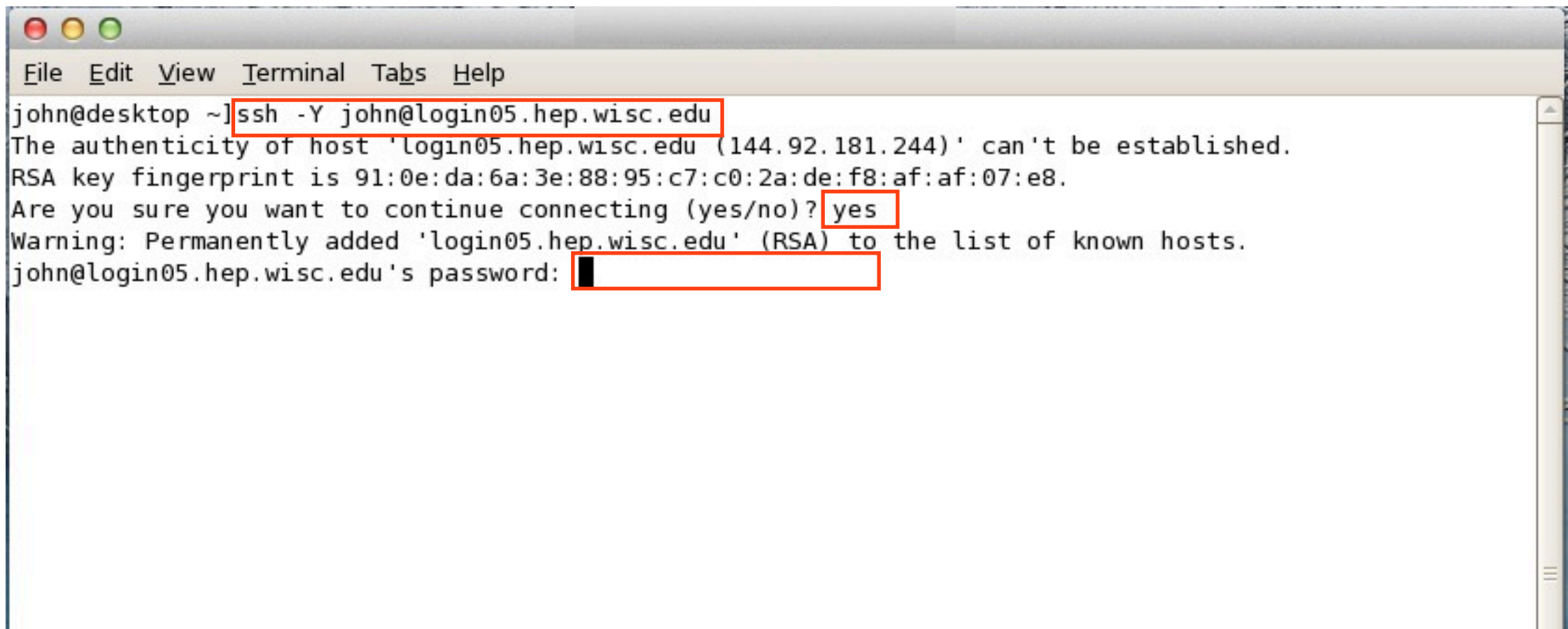- (login01.hep.wisc.edu, login02.hep.wisc.edu ... through ... login06.hep.wisc.edu)

- Even if you are using your desktop, it is recommended to use these login machines and use your **/afs/hep.wisc.edu/cms/john** directory to do your CMS work

- To login to e.g., '**login05.hep.wisc.edu**' from your desktop, you can use the command '**ssh**' (e.g.) on your command line
  - **ssh -Y john@login05.hep.wisc.edu**
  - -Y option in ssh forwards the X11 settings
- After login into one of these machines you can follow the earlier slides to change directories, create, list or modify files

Login to the login.hep.wisc.edu (Linux terminal)

If you are using a linux desktop to login to one of the login machines, then
follow these steps :
    -) Open a 'Terminal' on your desktop
    -) Type 'ssh -Y john@login05.hep.wisc.edu' followed by your password
   -) Red lines highlights the things you need to type

```
File  Edit  View  Terminal  Tabs  Help
john@desktop ~] ssh -Y john@login05.hep.wisc.edu
The authenticity of host 'login05.hep.wisc.edu (144.92.181.244)' can't be established.
RSA key fingerprint is 91:0e:da:6a:3e:88:95:c7:c0:2a:de:f8:af:af:07:e8.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'login05.hep.wisc.edu' (RSA) to the list of known hosts.
john@login05.hep.wisc.edu's password: █
```

Login to the login.hep.wisc.edu (Windows putty)

If you are using a Windows OS, then you can use the application name 'Putty' to login into login05.hep.wisc.edu

-) Putty is a freeware and can be downloaded and installed from here,
http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

-) Once installed, you can double click the application to open and then follow the pictures below to login to login05.hep.wisc.edu with your username and password
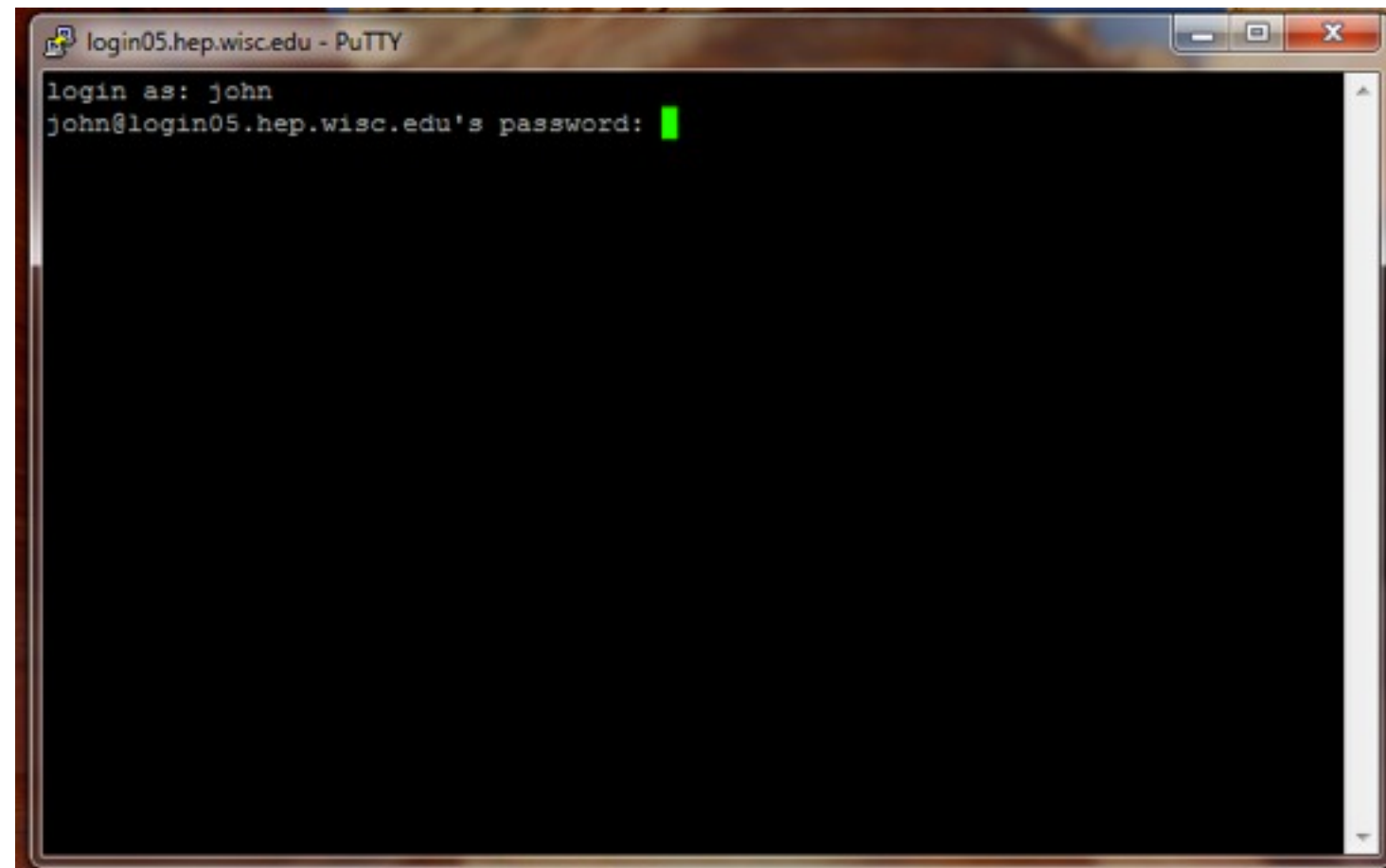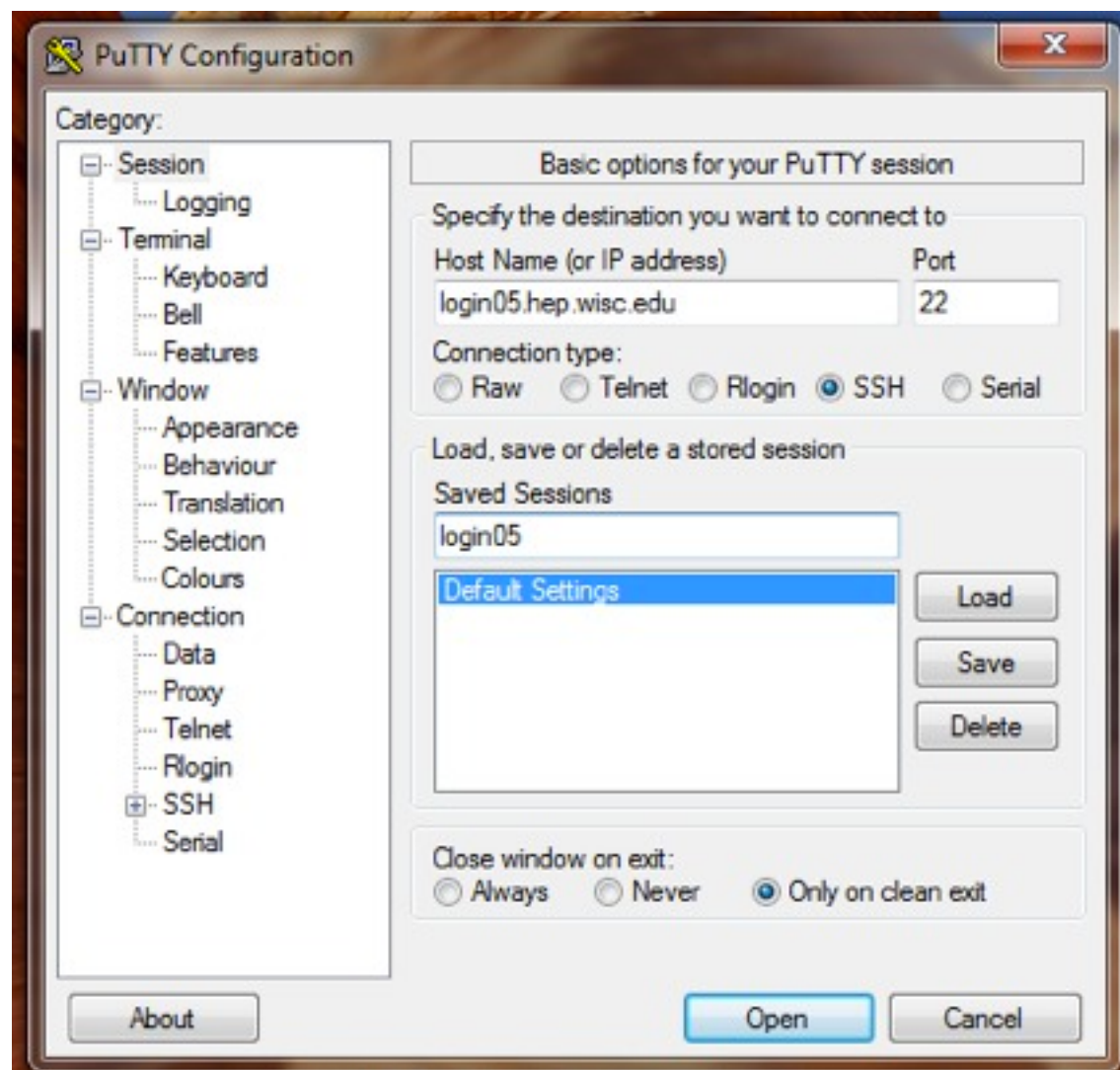
Login to the login.hep.wisc.edu (Mac Terminal.app)

If you are using a Mac-OS-X, then you can use the application name 'Terminal.app' to login into login05.hep.wisc.edu
   -) Terminal.app comes with the mac operating system
    -) You can find it in the folder tree : 'Applications - Utilities - Terminal'
    -) Click to open it and use it in the same way as a linux terminal

SSH and X11 forwarding

•In order to be able to open x-window on the login machines, you need to install XQuartz on your Mac
•XQuartz is a freeware and can be downloaded and installed from here
http://xquartz.macosforge.org/landing/

•Use the '-Y' option in ssh to be able to foward X and open x-terminals on the remote machine
    •'ssh -Y john@login05.hep.wisc.edu'
    •On the remote machine (login05.hep.wisc.edu), you can type command like 'xterm' or 'gnome-terminal' to open multiple terminals

Putty SSH and X11 forwarding

• In the putty configuration - SSH - X11, Enable X11 forwarding
• Type in localhost:0.0 in the X display location
• Once logged into the remote machine, you can type 'xterm' or 'gnome-terminal' to open multiple terminals
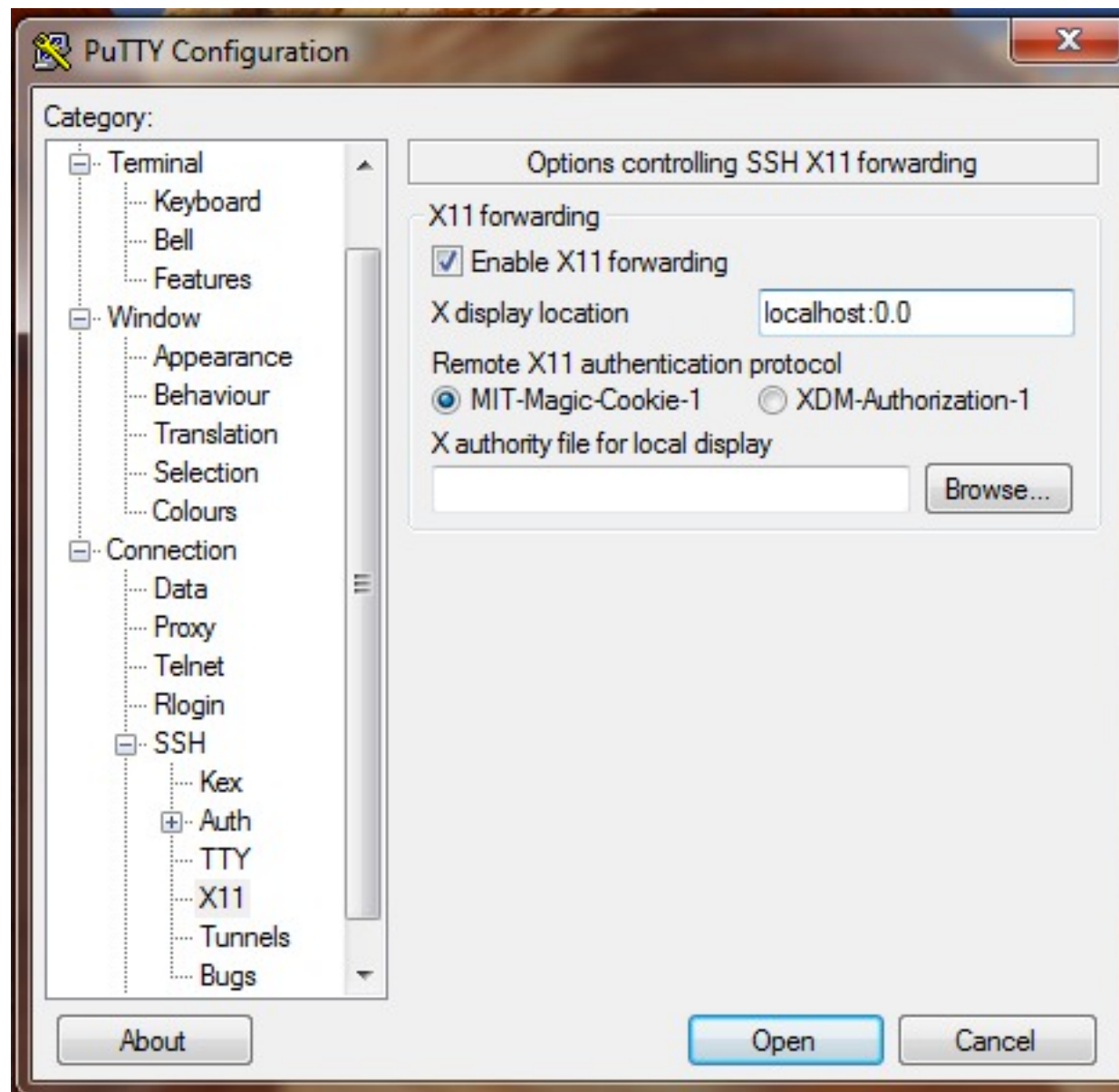
Getting Help

- Do a web search before asking (someone might have seen the same problem and there might be a solution already)
- Try the solution, if that doesn't work, send an email to : help@hep.wisc.edu

- Handy links :

  http://legacy.cs.wisc.edu/csl/linux-orientation/unix-hands-on.pdf

  http://www1.cs.ucr.edu/faq/linux.pdf

  http://computing.fnal.gov/unixatfermilab/html/afs.html

  http://web.mit.edu/merolish/Public/vi-ref.pdf