CSE 391
Lecture 10

Do anything from anywhere – tools to free your choice of OS

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http://www.cs.washington.edu/391/
Important Announcement

• There will **not** be a traditional final

  - Instead, we will have a **take-home Final**
    - Everyone needs to complete it
    - It is a bit more involved / comprehensive than other assignments
    - Have to choose a number of "achievements" and turn in evidence that you completed them
    - Will involve quite a bit of discovery of how to do the tasks
    - If you need to make up an assignment from earlier in the quarter to get up to your 14 points, you can do extra "achievements"

• **To pass the class you must:**
  - Earn 14 points from HW 1-9
  - Earn a passing mark on the take-home final
Lecture summary

• Remote connections – get to your application or resource from anywhere

• Local options – get your application or resource to work on your setup

• Figure out how to do what you want to do in a new environment

• Course Evals – Don’t forget to fill these out!
Remote Connections: to a Linux machine

- You’ve seen remote connections to a Linux machine in action
  - Departmental attu.cs.washington.edu Linux server
  - Can use ssh (or PuTTY) from anywhere – independent of location and OS
Remote Connection: to a Windows machine

What about remote connections to a Windows machine?

- RDP – Remote Desktop Protocol, Enables remote connections to a Windows box from anywhere, independent of OS.
  - From Linux – `xfreerdp` or `rdesktop` commands, for example for user rea:
    - Note: On the CSE VM you will need to install `xfreerdp`. If you try to run `xfreerdp` it should ask you if you want to install it, say yes.
  - From Windows – Remote Desktop Connection
  - From Mac – “Microsoft Remote Desktop” App from Apple store

- Note: You must have an account on the Windows machine in question in order to connect to it remotely.
CSE Virtual Windows nodes

• For students with CSE accounts: The CSE department offers a set of hosted virtual machine nodes, imaged similar to Windows machines in basement labs, remotely accessible via RDP for people with CSE accounts. YOU MUST USE YOUR CSE Windows PASSWORD!
  - Overview: http://www.cs.washington.edu/lab/services/vdi/
  - Pick an available node from the list of currently available nodes: http://vdi.cs.washington.edu/vdi/
  - **Need to use the right domain!!** CSEPCLAB\<username>
  - **Note:** Windows and Mac users must now install the Husky OnNet Package before doing a remote desktop from a non-CSE (personal) machine. See: http://vdi.cs.washington.edu/vdi/ for more details.
Non-remote options: **linux on Windows?**

- **Cygwin**: unix style environment within Windows
  - [https://www.cygwin.com/](https://www.cygwin.com/)
  - “package manager” is part of the install file
  - Provides the unix-like directory structure
    - Home directory is `/home/<WindowsUsername>`

- Your actual windows directory structure is located at `/cygdrive/<driveletter>`

- Enables: quick use of linux style tools in a terminal environment in Windows

- Compare to: Windows cmd interface
Non-remote options: Windows on linux?

• One barrier to switching to Linux: lots of apps are built for Windows
  ▪ <Insert app here> that I use all the time isn’t ported to Linux! 😞

• Wine is an attempt at solving this
  ▪ Provides an environment to run Windows applications in Linux
    • [http://www.winehq.org/](http://www.winehq.org/)
  ▪ Open source
  ▪ Not perfect, but many people have good success with major programs
    • Many successfully run WoW, MS Office, TextPad...

• Lots of online tutorials / message boards / instructions to get your favorite app working in Linux
Another barrier to using Linux as your main Desktop OS: “I don’t know how to do <X> in Linux”

- Imagine you had never seen or used Windows before. Would you somehow intuitively know how to:
  - Change your desktop background/resolution?
  - Install new graphics card drivers?
  - Change system settings? (Control Panel? What’s that?)
  - Etc etc...

- So how do you figure it out?
  - Ever read the Windows manual? (hint: there is no “the” manual)
    - “Windows 7 Product Guide” -- 140 pages, considered very high level
    - “Windows 7 for Dummies” -- 432 pages
    - “Windows 7 Bible” -- 1248 pages
  - What do you do when you don’t know how to do something?
DEAR VARIOUS PARENTS, GRANDPARENTS, CO-WORKERS, AND OTHER "NOT COMPUTER PEOPLE."

WE DON'T MAGICALLY KNOW HOW TO DO EVERYTHING IN EVERY PROGRAM. WHEN WE HELP YOU, WE'RE USUALLY JUST DOING THIS:

START

FIND A MENU ITEM OR BUTTON WHICH LOOKS RELATED TO WHAT YOU WANT TO DO.

I CAN'T FIND ONE

I'VE TRIED THEM ALL.

PICK ONE AT RANDOM.

OK

CLICK IT.

HAVE YOU BEEN TRYING THIS FOR OVER HALF AN HOUR?

NO

YES

ASK SOMEONE FOR HELP OR GIVE UP.

DID IT WORK?

NO

YES

YOU'RE DONE!

GOOGLE THE NAME OF THE PROGRAM PLUS A FEW WORDS RELATED TO WHAT YOU WANT TO DO. FOLLOW ANY INSTRUCTIONS.

PLEASE PRINT THIS FLOWCHART OUT AND TAPE IT NEAR YOUR SCREEN. CONGRATULATIONS; YOU'RE NOW THE LOCAL COMPUTER EXPERT!

Courtesy XKCD
The More You Know™

• Step 1: Try and explore intuitively
  ▪ Hey, you’re CSE majors. Where would *you* put that setting if you were designing the system?

• Step 1.5: Look in short, directly relating references
  ▪ Man pages, quick start guides, the TOC in the manual (if exists...)

• Step 2: If that fails, search online!
  ▪ Likely someone else has wanted to do what you want, and *also* couldn’t figure it out
    • And, likely they’ve posted to a discussion board and had some guru give a detailed response
    • Or, a FAQ has been written somewhere that tells you how
Mix and match

• Don’t think of Linux/Windows as a binary choice
• These tools provide a continuum of options
  ▪ Windows
  ▪ Windows + Cygwin
  ▪ Windows + Cygwin + Linux VM
  ▪ Linux + Windows VM + Wine
  ▪ Linux + Wine
  ▪ Linux

• Can choose the setup that best suits your situation and application requirements
The choice is yours

• To clarify: the purpose here was not to say “you should switch to Linux as your main OS”
  ▪ But, you should know what tools and options exist, and be able to use Linux as your main OS if desired
  ▪ You should be able to survive if someone locked you in a closet with a laptop that had Fedora or Ubuntu

• Wrap up discussion:
  ▪ What tools seem the most useful that you learned this quarter?
    • What tools seem like they address important areas, but need to be better?
  ▪ From your experience, are there other tools you think you’d mention in this course, tools CSE majors should be aware of?
    • Linux commands/tools, programming development tools...