



# THE BIG PICTURE: UNIX

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# UNIX GIVES YOU ACCESS

- UNIX IS AN OPERATING SYSTEM
  - AN OPERATING SYSTEM IS A SET OF PROGRAMS THAT CONTROL AND ORGANIZE RESOURCES OF A COMPUTER
  - TYPICAL OPERATING SYSTEM (OS):
    - USER CAN CREATE AND MANAGE FILES
    - RUN APPLICATIONS



- UNIX WORKS WELL TO SUPPORT NETWORKS OF COMPUTERS.
  - A TYPICAL WAY TO USE UNIX IS BY OPENING A UNIX WINDOW ON YOUR DESKTOP
  - ANOTHER WAY: SIT DOWN AT A COMPUTER TERMINAL THAT IS DEDICATED TO A UNIX SYSTEM
- ONE NEEDS A UNIX ACCOUNT
- YOURS IS YOUR CLASS ACCOUNT



## A BIT OF UNIX HISTORY

- DEVELOPERS AT AT&T BELL LABS
  - KEN THOMPSON
  - DENNIS RITCHIE
  - 1969-1970
  - THE NAME UNIX WAS COINED TO GIVE THE SYSTEM A NAME, NOT AS AN ACRONYM OR AN ABBREVIATION
  - IT WAS USED TO SERVE THE EARLY NEEDS OF ITS STAFF AT BELL LABS
- 1973 UNIX WAS REWRITTEN IN C



# COMMAND INTERPRETERS

- UNIX IS COMMAND DRIVEN
  - YOU USE A COMMAND, SOMETHING HAPPENS
  - YOU KEEP ISSUING COMMANDS UNTIL YOU GET YOUR WORK DONE
- YOU ISSUE COMMANDS TO A COMMAND INTERPRETER
- THE UNIX COMMAND INTERPRETER IN UNIX IS CALLED THE SHELL
- THERE ARE DIFFERENT KINDS OF SHELLS



## A BIT OF UNIX TECHNICAL STRUCTURE

- UNIX IS-
- MULTITASKING:
  - IT ALLOWS YOU TO DO TWO THINGS AT ONCE
- MULTIUSER:
  - IT WILL SERVE MANY PEOPLE AT ONCE
- PROGRAMMING ENVIRONMENT:
  - TRUE GEEKS EVERYWHERE USE UNIX TO WRITE SOFTWARE



## MAIN COMPONENTS

1. SHELL
2. UTILITIES
3. FILE SYSTEM
4. KERNEL



# THE SHELL

- THE COMPONENT OF UNIX THAT YOU INTERACT WITH IS THE SHELL.
- SHELL: NAME FOR THE COMMAND INTERPRETER
- YOU KNOW WHEN YOU ARE "IN THE SHELL" WHEN YOU SEE A UNIX PROMPT (OR SHELL PROMPT.)

```
$
```

```
-bash-2.05b$
```



# UTILITIES

- THE UTILITIES ARE SOFTWARE TOOLS INCLUDED WITH THE UNIX OPERATING SYSTEM THAT LET YOU DO WORK
  - TEXT EDITING,
  - PROGRAMMING, AND
  - COMMUNICATIONS.



# THE FILE SYSTEM

- THE FILE SYSTEM IS THE STRUCTURE THAT ORGANIZES AND STORES DATA ON THE COMPUTER SYSTEM.
- UNIX ORGANIZES FILES IN A WAY THAT CAN BE UNDERSTOOD AS A TREE ANALOGY.
- SIMPLE UNIX COMMANDS HELP YOU NAVIGATE AND USE THE FILE SYSTEM



## KERNEL

- THE KERNEL IS THE HEART OF UNIX.
- THE KERNEL IS RESPONSIBLE FOR:
  - RESOURCE ALLOCATION,
  - SECURITY, AND
  - LOW-LEVEL INTERFACES WITH HARDWARE.



## LOG IN, ISSUING COMMANDS, LOG OFF

- GETTING A UNIX WINDOW
  - \_ YOU NEED A COMPUTER THAT CAN GIVE YOU ACCESS TO A UNIX SHELL
  - \_ YOU DON'T NEED TO BE AT A UNIX COMPUTER
- REMEMBER TELNET?
  - \_ TO TELNET YOU NEED:
    - UNIX HOST COMPUTER NAME
  - \_ TELNET IS NOT SECURE:
    - USE SSH (SECURE SHELL)



# PUTTY

## WINDOWS WORLD:

- IN THE ACS LABS, THERE IS USUALLY A COMMUNICATIONS FOLDER IN THE START MENU
- YOU SHOULD FIND A WINDOWS VERSION OF SSH (SECURE SHELL CLIENT)
- TO DOWNLOAD A FREE SSH, THERE IS **PuTty**

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

## MAC OSX WORLD:

- OPEN A TERMINAL WINDOW (ICON IN THE DOCK)
- TYPE: **ssh icogscil -l cg3szz**

This is the lowercase letter "l".  
You need to use your icogscil  
account.



# UNIX COMMANDS

- COMMAND-LINE INTERFACE: THE SHELL
- UNIX SYSTEMS VARY IN HOW THEIR COMMAND LINES WORK.
- COGSCI1 USES `-bash-2.05b$` AS THE SHELL PROMPT
- THE PROMPT IS SIMPLY A SYMBOL THAT APPEARS AT THE START OF A COMMAND LINE TO LET YOU KNOW THAT YOU ARE IN THE SHELL
- UNIX IS READY AND WAITING FOR YOUR COMMAND



## DATE AND TIME

- REMEMBER TO USE THE RETURN OR ENTER KEY...

```
$date  
Fri Aug 29 09:32:32 CDT 2004  
$
```

- OUTPUT GOES TO SCREEN → STOUT
- UNIX IS CASE SENSITIVE!



## THE "CLEAR" COMMAND

- THE CLEAR COMMAND CLEARS THE SCREEN OF PREVIOUSLY-ENTERED COMMANDS AND OUTPUT

```
$clear  
$
```

UNIX

