Introduction to UNIX (part 2)

CSE 2031
Fall 2010

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Command Terminators

- Command terminator: new line or **;**

`% `**`date; who`**

- Another command terminator: &

`% `**`nedit lab9.c&`**
  - ○ Tells the shell not to wait for the command to complete.
  - ○ Used for a long-running command "in the background" while you continue to use the xterm for other commands.

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Command Terminators (cont.)

- Use parentheses to group commands

```
% ( sleep 5; date ) & date
14929       # process ID of long-running command
Tue Nov 9 14:06:15 EST 2010   # output of 2nd date
% Tue Nov 9 14:06:20 EST 2010 # output of 1st date
```

- The precedence of | is higher than that of ;

```
% date; who | wc -l
% (date; who) | wc -l
```

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tee command

- **tee** copies its input to a file as well as to standard output (or to a pipe).

```
% date | tee date.out
Tue Nov  9 13:51:22 EST 2010
% cat date.out
Tue Nov  9 13:51:22 EST 2010
% date | tee date.out | wc
      1       6      29
% cat date.out
Tue Nov  9 13:52:49 EST 2010
```

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Comments

- If a shell word begins with #, the rest of the line is ignored.
- Similar to // in Java.

```
% echo Hello #world
Hello
% echo Hello#world
Hello#world
```

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Metacharacters

- Most commonly used: *
- Search the current directory for file names in which any strings occurs in the position of *

```
% echo *  # same effect as
% ls *
```

- To protect metacharacters from being interpreted: enclose them in single quotes.

```
% echo '***'
***
```

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Metacharacters (cont.)

- Or to put a backslash \ in front of each character:

```
% echo \*\*\*
***
```

- Double quotes can also be used to protect metacharacters, but …
- The shell will interpret `$, \` and `` `…` `` inside the double quotes.
- So don't use double quotes unless you intend some processing of the quoted string (to be discussed later).

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Quotes

- Quotes do not have to surround the whole argument.

```
% echo x'*'y    # same as echo 'x*y'
x*y
```

- What's the difference between

```
% ls  x*y
% ls 'x*y'
```

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Program Output as Arguments

- To use the output of a command X as the argument of another command Y, enclose X in back quotes: **`X`**

```
% echo `date`
Tue Nov 9 13:11:03 EST 2010
% date     # same effect as above
Tue Nov 9 13:11:15 EST 2010
% echo date
date
% wc `ls *`
% wc *     # same as above
```

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Program Output as Arguments (2)

- Single quotes vs. double quotes:

```
% echo The time now is `date`
The time now is Tue Nov 9 13:11:03 EST 2010

% echo "The time now is `date`"
The time now is Tue Nov  9 13:11:15 EST 2010

% echo 'The time now is `date`'
The time now is `date`
```
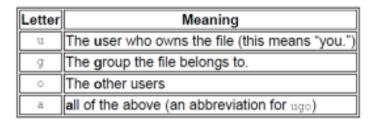
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Program Output as Arguments (3)

```
% pwd
/cs/home

% ls | wc -l
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% echo You have `ls | wc -l` files in the `pwd` directory
You have 26 files in the /cs/home directory
```

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File/Directory Permissions

Letter	Meaning
u	The user who owns the file (this means "you.")
g	The group the file belongs to.
o	The other users
a	all of the above (an abbreviation for ugo)

r	Permission to read the file.
w	Permission to write the file.
x	Permission to execute the file, or, in the case of a directory, search it.

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Example

```
indigo 354 % ls -l
total 284
drwxr-xr-x   2 utn faculty    4096 Oct 29 21:35 Asg1/
drwx------   2 utn faculty    4096 Sep 19 13:37 Misc/
drwxr-xr-x   3 utn faculty    4096 Nov  7 15:37 Notes/
drwxr-x---  10 utn utn        4096 Nov 11 13:27 Posted_Labs/
drwxr-xr-x   5 utn faculty    4096 Nov  7 15:38 Weekly_Labs/
-rw-r--r--   1 utn faculty    2003 Sep  9 14:10 grade.html
-rw-r--r--   1 utn faculty    4815 Oct 25 20:06 index.html
-rw-r--r--   1 utn faculty    2363 Oct 17 13:35 midterm.html
-rw-r--r--   1 utn faculty    4116 Nov  7 15:44 news.html
-rw-r--r--   1 utn faculty  112755 Sep 30 17:13 schedule.pdf
-rw-r--r--   1 utn faculty    4736 Nov  7 15:51 weekly_labs.html
```
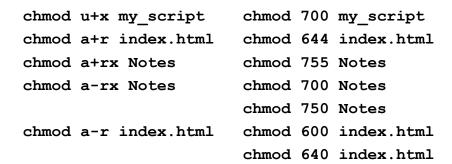
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chmod Command

```
chmod who+permissions filename # or dirname
chmod who-permissions filename # or dirname
```
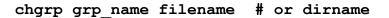
Examples:
```
chmod u+x my_script # make file executable
chmod a+r index.html    # for web pages
chmod a+rx Notes        # for web pages
chmod a-rx Notes
chmod a-r index.html
```

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chmod with Binary Numbers

```
chmod u+x my_script      chmod 700 my_script
chmod a+r index.html     chmod 644 index.html
chmod a+rx Notes         chmod 755 Notes
chmod a-rx Notes         chmod 700 Notes
                         chmod 750 Notes
chmod a-r index.html     chmod 600 index.html
                         chmod 640 index.html
```

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chgrp Command

```
chgrp grp_name filename  # or dirname
```

● Examples:
```
chgrp submit asg1
chgrp labtest lab9
```

● To display the group(s) a user belongs to, use **id** command:
```
% id cse12345
uid=12695(cse12345) gid=10000(ugrad) groups=10000(ugrad)
```

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Next time …

- Writing shell scripts

- Reading for this lecture:
  - 3.1 to 3.5, UNIX book
  - `chmod` tutorial:
    `http://catcode.com/teachmod/`

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