



## Lab 8: Process Control

In this lab you will use the **ps** command to monitor processes as you create them using UNIX commands.

### Preparation

- Skim Lesson 10 slides: <http://simms-teach.com/cis90calendar.php>
- Check the forum for news on this lab: <http://oslab.cis.cabrillo.edu/forum/>
- For additional assistance come to the CIS Lab: <http://webhawks.org/~cislab/>

### Procedure

Log on to Opus so that you have a command line shell at your service. Be sure you are in your home directory to start this lab.

1. Run the C shell program **cs**. Did your prompt change?
2. Now run the Bourne shell **sh**. Different prompt again?
3. Run the **ps** command to see that you have three shell processes running.
4. Run the **ps** command with the **-l** option (**l** for **long** format). Look at the column headed by the symbol **SZ**. This is the size of the process in 1K blocks. Which of the three shells that you are running is the largest? Redirect that line of output to the file *bigshell*.
5. Now terminate the Bourne and C shells by typing the **exit** command twice.
6. Run the **ps** command with the **-ef** option. What is the parent (*PPID*) of your shell process? The Grandparent? The Great Grandparent? How far can you go?
7. What is the name of the program with the PID of 1? What is its parent?
8. Run the **app** command in the foreground.
9. Notice that you are stuck. Bring up another window on Opus and kill this process. Hint: use the command **ps -u \$LOGNAME** to find the PID number.
10. Run the **app** command in the background by adding an **&** on the command line. (Hit the Enter key to get your prompt back)

11. Now try to log out by entering the **exit** command. What does the shell say?
12. Enter **exit** again, and then log back in. Use **ps** to check on the app process. Is it there? What happened?
13. This time enter the following command:  
**find \$HOME > files.out 2>/dev/null &**

### Submittal

We will now use the **at** command to submit the work you have just done. Since the find process may not be finished running yet, we will set the command to be executed just before midnight. The **at** command gets its input from *stdin*, so you will have to type the following lines:

```
at 11:59pm
at> cat files.out bigshell > lab08
at> cp lab08 /home/rsimms/turnin/cis90/lab08.$LOGNAME
at> <Ctrl-D>
```

Note: You don't type the "at>" portion. For the Ctrl-D hold down the Ctrl key and tap the D key which must be entered as the first character on the last line.

**It highly recommended that you don't do the submittal as shown above on the day the lab is due. If you make a mistake you will miss the deadline. Instead set an earlier time on the **at** command so you can verify it worked as expected or just do the lab earlier in the week.**

If you get a warning message from the **at** command about using the Bourne shell to execute your job, that is ok.

Tomorrow morning you should see the file, *lab08* in your home directory and have an email acknowledging receipt of your lab.

Be sure to verify that your submittal was completed before the deadline. No late work is accepted.

### Grading Rubric (30 points total)

- 10 points for creating *bigshell* correctly
  - 2 if not a single line
  - 2 if not using long format
  - 4 if indicates wrong shell
  - 5 if does not indicate biggest shell
  - 10 if ps output is missing entirely
- 10 points for creating *files.out* correctly
- 10 points for submitting correctly