

CSCI 211

UNIX Lab

Advanced Unix Commands (1)

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Today's Focus

- File archiving and compression
- Create command shortcut
- Show calendar, date/time
- Show process information
- Terminate processes

What is Archive?

- An **archive** is a single file which *contains the contents of multiple files*, while still identifying the names of the files, their owner(s), and so forth. In addition, archives record access permissions, user and group, size in bytes, and last modification time.
- Usage
 - Used for *storage, backup and transportation*.

Archive command - tar

- Create an archive

```
tar --create --verbose --file=collection.tar blues  
folk jazz
```

```
tar -cvf collection.tar blues folk jazz
```

- List an archive

```
tar --list --verbose --file=collection.tar
```

```
tar -tvf collection.tar
```

- Extract an archive

```
tar --extract --verbose --file=collection.tar
```

```
tar -xvf collection.tar
```

- Update an archive

```
tar --update --verbose --file=collection.tar blues  
classical
```

```
tar -uvf collection.tar blues classical
```

File Compression

- **gzip/gunzip**

`gzip filename`

`gunzip filename`

- **bzip2/bunzip2**

`bzip2 filename`

`bunzip2 filename`

Combine Archiving and Zipping

- Create an archive and gzip it

```
tar czf all.tar.gz file1 file2 dir1 dir2
```

- Gunzip and extract an archive

```
tar xzf all.tar.gz
```

- Create an archive and bzip2 it

```
tar cjf all.tar.bz2 file1 file2 dir1 dir2
```

- Bunzip2 and extract an archive

```
tar xjf all.tar.bz2
```

alias

- Reduce the typing for commands
- Example:

```
alias la='ls -a'
```

- After that, typing 'la' is the same as type 'ls -a'
- Only works for the current session
 - Have to do it every time you log in.
 - To make it persistent, put it in ~/.bashrc

The date Command

- Displays the current time and the date

```
date [+FORMAT]
```

- Examples

```
date
```

```
Sat Sep 26 11:53:57 EDT 2009
```

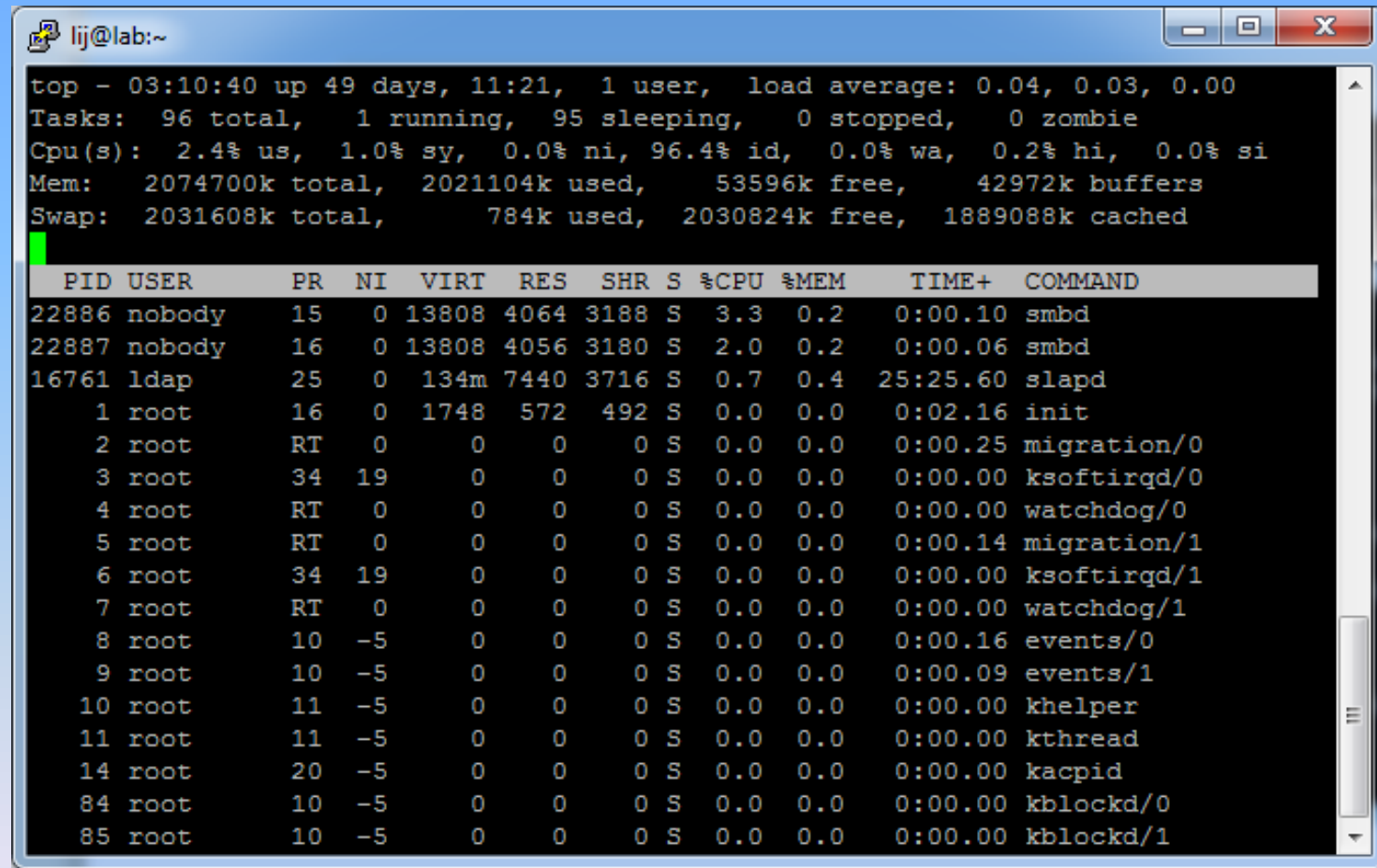
```
date +%B-%d,%Y
```

```
September-26,2009
```


The `cal` Command

- Displays the calendar
 - Display the calendar of the current month
`cal`
 - Display the calendar of the specified month
`cal MONTH YEAR`
 - Display the calendar of the specified year
`cal YEAR`

Check Top Running Programs - top



```
top - 03:10:40 up 49 days, 11:21, 1 user, load average: 0.04, 0.03, 0.00
Tasks: 96 total, 1 running, 95 sleeping, 0 stopped, 0 zombie
Cpu(s): 2.4% us, 1.0% sy, 0.0% ni, 96.4% id, 0.0% wa, 0.2% hi, 0.0% si
Mem: 2074700k total, 2021104k used, 53596k free, 42972k buffers
Swap: 2031608k total, 784k used, 2030824k free, 1889088k cached
```

| PID | USER | PR | NI | VIRT | RES | SHR | S | %CPU | %MEM | TIME+ | COMMAND |
|-------|--------|----|----|-------|------|------|---|------|------|----------|-------------|
| 22886 | nobody | 15 | 0 | 13808 | 4064 | 3188 | S | 3.3 | 0.2 | 0:00.10 | smbd |
| 22887 | nobody | 16 | 0 | 13808 | 4056 | 3180 | S | 2.0 | 0.2 | 0:00.06 | smbd |
| 16761 | ldap | 25 | 0 | 134m | 7440 | 3716 | S | 0.7 | 0.4 | 25:25.60 | slapd |
| 1 | root | 16 | 0 | 1748 | 572 | 492 | S | 0.0 | 0.0 | 0:02.16 | init |
| 2 | root | RT | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.25 | migration/0 |
| 3 | root | 34 | 19 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | ksoftirqd/0 |
| 4 | root | RT | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | watchdog/0 |
| 5 | root | RT | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.14 | migration/1 |
| 6 | root | 34 | 19 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | ksoftirqd/1 |
| 7 | root | RT | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | watchdog/1 |
| 8 | root | 10 | -5 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.16 | events/0 |
| 9 | root | 10 | -5 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.09 | events/1 |
| 10 | root | 11 | -5 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | khelper |
| 11 | root | 11 | -5 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | kthread |
| 14 | root | 20 | -5 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | kacpid |
| 84 | root | 10 | -5 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | kblockd/0 |
| 85 | root | 10 | -5 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | kblockd/1 |

Check Processes - ps

- SYNOPSIS

```
ps [options]
```

- Common usage

```
ps
```

```
ps aux # BSD style
```

```
ps -A # UNIX style
```

```
ps --User username # GNU style
```

ps Example

```
[lij@lab ~]$ ps au
```

| USER | PID | %CPU | %MEM | VSZ | RSS | TTY | STAT | START | TIME | COMMAND |
|------|-------|------|------|------|------|-------|------|-------|------|---------------------|
| root | 2190 | 0.0 | 0.0 | 1556 | 432 | tty1 | Ss+ | Aug13 | 0:00 | /sbin/mingetty tty1 |
| root | 2191 | 0.0 | 0.0 | 1552 | 428 | tty2 | Ss+ | Aug13 | 0:00 | /sbin/mingetty tty2 |
| root | 2192 | 0.0 | 0.0 | 1556 | 432 | tty3 | Ss+ | Aug13 | 0:00 | /sbin/mingetty tty3 |
| root | 2193 | 0.0 | 0.0 | 1552 | 428 | tty4 | Ss+ | Aug13 | 0:00 | /sbin/mingetty tty4 |
| root | 2194 | 0.0 | 0.0 | 1552 | 428 | tty5 | Ss+ | Aug13 | 0:00 | /sbin/mingetty tty5 |
| root | 2195 | 0.0 | 0.0 | 1552 | 428 | tty6 | Ss+ | Aug13 | 0:00 | /sbin/mingetty tty6 |
| lij | 18518 | 0.0 | 0.0 | 7096 | 1984 | pts/1 | Ss | 13:31 | 0:00 | -bash |
| lij | 18754 | 0.0 | 0.0 | 7220 | 1468 | pts/1 | R+ | 13:36 | 0:00 | ps au |

[lij@lab ~]\$

Process ID

Start date/time

Command used to start the process

Combine `ps` with Other Commands

- `ps | grep "str"`
- `ps > file`

Kill Processes

- Send a signal to a process
 - Usually causes the process to exit
- Common usage

```
kill pid
```

```
kill -9 pid
```