

Unix Shells

What is a Shell

- interface between user and OS kernel
 - begins running after login
 - awaits text commands at prompt (% or \$)
- Command Interpreter
 - interprets and executes your commands
- Shell syntax:
 - %command [-options] [arguments]

Types of Shells

- Many shells available
 - Bourne (`sh`)
 - C (`csh`)
 - Korn (`ksh`)
 - Tenex CSH (`tcsh`)
 - Bourne Again SHell (`bash`)
 - most of the examples will be presented in `bash`

Internal & External Commands

- Internal (built-in) vs. External commands
 - Internal
 - no separate process to execute command
 - ex. `cd`
 - External:
 - create new process to execute command
 - ex. `ls`
- External commands are found by tracing your *search path*

Search Path

- Ordered list of file system directories to search for executables
- Defined by `PATH` environment variable
- ex.

```
% echo $PATH
/software/.admin/bins/bin:/usr/ccs/bin:/usr/bin:/usr/ucb:/usr/openwin/bin:/usr/dt/bin:/opt/csw/bin:/u4/j2selby/bin
```

Environment Variables

- Many environment variables are defined in system start-up files (hidden files beginning with `.'`)
 - `.login` or `.profile`
- Each time a shell is created a shell start-up file is read to assign other environment variables
 - `.bashrc` or `.cshrc`

Viewing Environment Variables

- To view your *current* environment settings:

```
% env
TERM=vt100
SHELL=/xhbin/bash
SSH_CLIENT=69.156.52.179 60390 22
SSH_TTY=/dev/pts/11
USER=j2selby
MAIL=/var/mail/j2selby
PATH=/software/.admin/bins/bin:/usr/ccs/bin:/usr/bin:/usr/ucb:/usr/openwin/bin:usr/dt/bin:/opt/csw/bin:/u4/j2selby/bin
PWD=/u4/j2selby
SHLVL=1
HOME=/u4/j2selby
LOGNAME=j2selby
SSH_CONNECTION=69.156.52.179 60390 129.97.152.134 22
```

Setting Environment Variables

- BASH ex. to add /usr/local/bin to PATH:

```
% export PATH=/usr/local/bin:$PATH
```

- Add the present working dir to PATH:

```
% export PATH=`pwd`: $PATH
```

Changing Shells

- To start-up a new shell:

```
$ echo $SHELL
/xhbin/bash
$ csh
% echo $shell
/bin/csh
```

- Changing shells permanently:

```
$ chsh
Changing login shell for j2selby on
cpu04.uwaterloo.ca.
Old shell: /xhbin/bash
New shell: /usr/bin/csh
```