Chapter 3

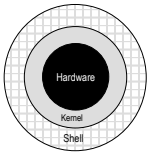
Getting Started

Overview

- What is a Shell?
- Running scripts
- The PATH environment variable
- Sub-shells

Lesson: What Is the Shell?

- Command execution
- Environment settings
- Variable assignment
- Variable substitution
- Command substitution
- Filename generation
- I/O redirection
- Pipelines
- Interpretive programming language

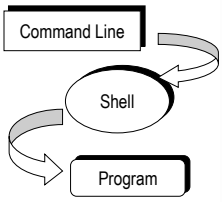


Commonly Used Shells

File	Description
/bin/sh	POSIX / Bourne shell
/bin/ksh	Korn shell
/bin/csh	C Shell
/bin/ash	Almquist Shell
/bin/bash	Bourne-Again shell

What Happens after "Enter?"

- The shell interprets your command line.
- The shell performs any substitutions.
- The shell locates your program.
- The shell sets up I/O redirection.
- The shell invokes your program.
- The shell waits for your program to finish.
- The shell is ready for the next command.



Lesson: Running scripts

- A shell program is a regular file containing UNIX system commands.
- The file's permissions must be at least „read" and „execute".
- To execute, type the name of the file at the shell prompt.
- Data can be passed into a shell program through
  - environment variables
  - command line arguments
  - user input

Additional Techniques

- **Document shell programs by preceding a comment with a number sign (#).**
- `sh shell_program arguments`
  - `shell_program` does **not** have to be executable.
  - `shell_program` does have to be readable.
- `sh < shell_program`
  - Each line of `shell_program` is read and used as input from keyboard.

Which Shell Interprets the Script?

- **First line of the script can decide, which program is used to run script**
- **#! - „magic bang“**
- **Example**

```
$ cat myscript.sh
#!/bin/sh

# Displays list of files
# in the current directory

echo “ Current Directory”
echo “==================“
ls | pr -3t
```

Portability Issues

Korn family Shell	Bourne Shell
`$(command)`	`` `command` ``
`function` *fname*	*fname* `()`
`(( a = a + 1 ))`	`a=`expr $a+1` `

- **There are compatibility and portability issues when deciding on which syntax to use.**
- **When reading scripts, do you understand the syntax used?**

Lesson: The PATH environment variable

- A list of directories where the shell will search for the commands you type

```
$ env
  . . .
PATH=/bin:/usr/bin:~/bin
```

- Working directory is not by default in path

```
$ ls
p1d
$ p1d
sh: p1d: not found
$ ./p1d
```

Lesson: Sub-shells

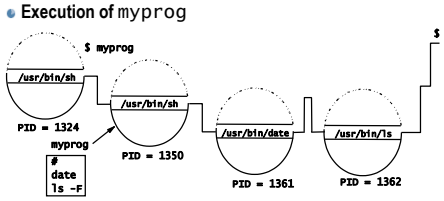
- A shell script may call another shell script.

```
$ cat ./first
# File: first
car1=ford
car2=chevy
echo "Parent car 1: $car1"
echo "Parent car 2: $car2"
./second  # Run the second script.
sleep 1   # Keep echos sequential.
echo "Parent car 1: $car1"
echo "Parent car 2: $car2"
```

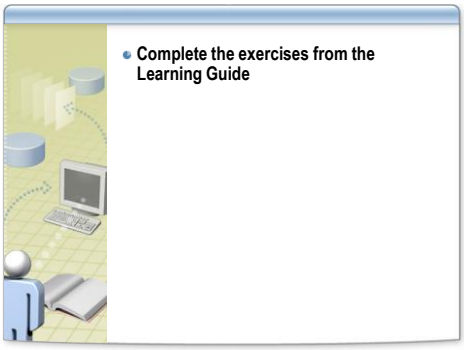
Example Shell Program

```
$ cat myprog
# this is program called myprog
date
ls -F
```

- Execution of `myprog`



Review Exercises



Topics for Review