Capgemini

UNIX

Introduction to Bourne Shell

Lesson Objectives

To understand following topics:

- Different shell types
- Working of shell
- Bourne shell metacharacters
- Shell redirection
- Command substitution

Overview

Shell is:

- The agency that sits between user and UNIX System

- Much more than command processor

Different shell types in the UNIX system are:
- Bourne Shell   - sh
- K Shell   - ksh
- C Shell   - csh
- Restricted Shell   - rsh

Introduction to Shell

Bourne Shell is:

- Named after its founder Steve Bourne

- widely used - sh

C Shell is:

- A product from the Univ. of California, Berkeley

- An advanced user interface with enhanced features - csh

Korn Shell is:

- By David Korn of Bell Lab - ksh

Working of Shell

Executables in /bin directory

- sh indicates   - Bourne Shell

- csh if present indicates   - C Shell

- ksh if present indicated   - Korn Shell

Working of Shell (contd..)

Continuous sleep-waking-waiting cycle

Performs following activities:

- Issues a $ prompt & waits for user to enter a command.
- After user enters command, shell scans & processes the command.
- The command is passed on to the Kernel for execution & the shell waits for its conclusion.
- The $ prompt appears so that the user can enter next command.

Description

Following are the Bourne Shell metacharacters:

- * : To match any number of characters
- ? : To match with a single character
- [] : Character class; Matching with any single character specified within []
- ! : To reverse matching criteria of character class
- \ : To remove special meaning attached to metacharacters
- ; : To give more than one command at the same prompt
- All redirection operators >, <, >> are also shell metacharacters

Shell Redirections

Every Unix command has access to:

- Standard input
- Standard output
- Standard error

Shell can redirect I/p, o/p or error to any physical file using meta characters "<", ">" & "2>"

Shell Redirections (contd..)

Examples:

$ ls > temp

$ wc < file1.txt > result

$ cat nonexistantfile 2> err

Building Block Primitives

Pipe - allows stream of data to be passed between reader & writer process.

O/p of first command is written into pipe and is input to the second command.

- $ who | wc -l
- $ ls | wc –l
- $ ls | wc -l > fcount
- $cat file1.txt | wc –l   (To display number of lines in file file1.txt)

Building Block Primitives (contd..)

| - pipe symbol

Any number of commands can be combined together to make a single command.

What is Command Substitution?

Shell allows the argument of a command to be obtained from the output of another command:

- $ cal `date "+%m 20%y"`

- January 2008

- Su Mo Tu We Th Fr Sa

- 1 2 3 4 5

- 6 7 8 9 10 11 12

- 13 14 15 16 17 18 19

- 20 21 22 23 24 25 26

- 27 28 29 30 31

What is Shell Script?

Group of commands that need to be executed frequently can be stored in a file, called as a shell script or a shell program.

```
$ cat script2.sh              O/P:$ script2.sh
echo 'Enter your name:             Enter your name:
read uname                   xyz
echo "Hi $uname"                        Hi xyz
```

To assign values to variables, use the set command.

```
$ set uname="EveryOne"
$ echo Hi $uname
     Hi EveryOne
```

Command

The eval command is used to assign values to variable

Example: The following command will set $day, $month and $year as separate variables that can then be used later in the script.

```
eval `date '+day=%d month=%m year=%Y'`
```

Summary

In UNIX different types of shells are available: CSH, KSH and Bourne Sh.

Redirection operator can be used to redirect i/p or o/p to files or printer.

Pipeline character can be used to send o/p of one command as i/p of another command.

Group of commands that need to be executed frequently are stored in a file, called as a shell script.

Summary

Review Questions

Question 1: In shell, what are the different metacharacters available?

Question 2: _____ symbol is used as output redirection.

Question 3: _____ symbol is used as command substitution operator.

Knowledge Check