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"`

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- 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.**
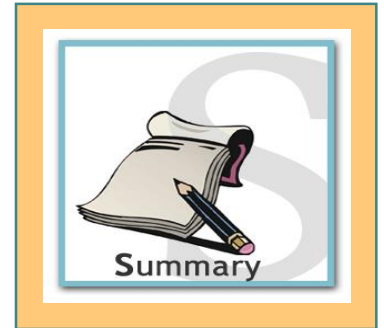
Review Questions

➢ **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