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CU002 UNIX Bourne Shell Programming

Length: 4 Days

Description

This course teaches attendees how to use the Bourne shell to design and develop command language programs. Topics include an overview of the shell and its functions, command line processing, control constructs (for, while, case, etc.), conditional branching, quoting, positional parameters, command substitution, pipelines, use of built-in shell commands, functions, sub-shells, signals, traps, shell programming efficiencies, and debugging. This course is applicable to all releases of UNIX which have the Bourne shell.

Course Objectives

Upon completion of this course the attendee will be able to:

1. state how the shell functions as a user interface and command line interpreter;
2. modify built-in shell variables and create and use user-defined shell variables;
3. use I/O redirection, pipes, quoting, and filename expansion mechanisms;
4. create structured shell programs which accept and use positional parameters and exported variables;
5. use the shell flow control and conditional branching constructs (while, for, case, if, etc.);
6. create shell programs which process interrupts, pass signals, invoke subshells and functions, and trap signals;
7. use shell debugging mechanisms to improve shell program efficiency and detect and correct errors.

Course Materials

1. UNIX Bourne Shell Programming Student Guide and course notes.

Prerequisites

1. CU001 - Fundamentals of Unix or equivalent experience using UNIX.

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Course Content

I OVERVIEW OF THE SHELL

- A Command interpretation.
- B Processes
 - 1. Process Creation
 - 2. fork and exec.
 - 3. Process invocation
- C User Environment
 - 1. Login Shell Variables
 - 2. Setting Variables from the Login Prompt
 - 3. The /etc/profile and .profile files.
- D Setting and Printing Variables
- E I/O Redirection
- F Pipelines
- G File Name Generation
- H Quoting
- I Command Substitution
- J Background Processing

II CREATING AND EXECUTING SHELL PROGRAMS

- A Creating a Shell Program
- B Executing a Shell Program
- C Debugging Shell Programs

III SHELL VARIABLES & PARAMETERS

- A Assigning Variables
- B Printing Variables
- C The read command.
- D Variable Types
- E Exporting Variables
- F Shell Parameters
- G Conditional Parameter Substitution
- H Positional Parameters
- I shift Command
- J The set and unset commands
- K The . (dot) Command

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IV CONDITIONAL TESTING

- A The test Command
- B The if, else, and elif statements.
- C The case statement.
- D The exit command

V LOOPING MECHANISMS

- A The for, while, and until loops.
- B The true and false statements
- C The break and continue statements

VI SIGNALS AND TRAPS

- A Signals
- B Traps

VII SUBSHELLS AND FUNCTIONS

- A Subshells
- B Functions

VIII PROGRAMMING CONSIDERATIONS

- A Resource Consumption
- B Processes and Files
- C Programming Hints

IX CASE STUDY

X COURSE CONCLUSION