CU215 - Shell Programming / Scripting

Course Description:

Students learn to read, write, and debug shell scripts, thus increasing productivity by taking full advantage of the UNIX shell.

Audience:

UNIX users, programmers, and system administrators.

Prerequisites:

Fundamentals of UNIX

Course Contents

UNIX Processes

- What is a Process?
- Process Structure
- The ps Utility
- Options to the ps Utility
- Background Commands (&)
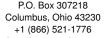- Killing Background Processes
- Redirecting the Standard Error

Getting Started

- What is a Shell?
- Running Scripts
- Specifying the Script's Interpreter
- The PATH Environment Variable
- Sub-shells

Variables

- Shell Variables
- The read Command
- The export Command
- The Shell Environment
- Variable Substitution
- Command Substitution

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The Login Process

- The Login Process
- The System Profile Script
- Your .profile Script
- The . Command

Conditional Statements

- The Exit Status of Commands
- Command Line Examples
- The test Command
- The if-then-else Construct
- The elif Construct
- case Statements

Loops

- The for Loop
- The while Loop
- Reading Lines From Files
- Using Arrays with Loops

Special Variables

- $$ - PID of Shell
- Command-Line Arguments
- $# - Number of Arguments
- $* - All Arguments
- The shift Command
- The set Command
- Getting Options

Quoting Mechanisms

- Single vs. Double Quotes
- What is a Here Document?
- Using a Here Document
- Here Document Quoting
- Ignoring Leading Tabs

Functions

- Shell Functions
- Passing Arguments to Functions
- Returning Values from Functions
- Function Libraries

Advanced Programming

- Shell Arithmetic
- The select Statement
- Terminal Independence in Scripts
- The eval Command

Debugging Techniques

- Using echo
- Using Standard Error
- Options for Debugging
- Script Tracing
- Conditional Debugging

Shell IPC

- Co-processes
- The print and read Commands
- Signals
- The trap Command
- Named Pipes
- The wait Command