ATC-UNIX-PROGRAMMING: UNIX Programming

Course Code: ATC-UNIX-PROGRAMMING
Duration: 5 days
Instructor-led Training (ILT) | Virtual Instructor-led Training (VILT)

OVERVIEW

This hands-on course provides training on standard UNIX commands and utilities used for day to day tasks including file manipulation, program execution and control, and effective use of the shell and desktop environments. The course presents the concepts necessary to understand the way UNIX works as well as the system's most commonly used commands. Data manipulation utilities and shell syntax for synthesizing command pipelines are emphasized. Bourne shell, Bash shell and Korn shell programming techniques are introduced so students will be able to read and modify existing shell scripts as well as create their own. Desktop environments are also introduced from a user's perspective, including common window managers, Open Office utilities and an introduction to configuration tools. Comprehensive hands on exercises are integrated throughout to reinforce learning and develop real competency.

SKILLS COVERED

- Navigating the file system
- Controlling file access
- File and directory naming rules and conventions
- Manipulating files and links
- Controlling the Terminal
- Working with vi
- Monitoring and controlling processes
- Using command line editing
- Command substitution, quoting and escaping
- Using backup commands
- Submitting and controlling print jobs
- Communicating over the network
- Remote access with password authentication
- Working with secure shells
- Using GNOME and KDE GUI environments
- How to write and run shell scripts
- Using conditional constructs to control script execution
- Manipulating strings
- Command-line processing
- Using regular expressions
- Counting words, lines and characters
- Working with compression utilities
- Writing functions
- Using the ksh and bash commands
- Working with UNIX I/O streams

WHO SHOULD ATTEND?

Those who need training in UNIX/Linux and Shell Scripting.

PREREQUISITES

Familiarity with the Unix/Linux command line and running simple commands

MODULES

Module 1: Introduction to UNIX

- Design Philosophy
- System Components
- The Shell and Command Entry
- Documentation

Module 2: Basic User Commands

- Logging In and Logging Out
- Command Line Editing
- Navigating the File System
- Viewing and Copying Files

- Controlling the Terminal
- Sending and Receiving Mail

Module 3: Text Editing

- Types of Editors
- From ed to ex to vi
- Basic Editor Tasks with vi
- Editing Multiple Files
- Named Buffers
- vi Startup File

Module 4: UNIX Processes

- The UNIX Process Model
- Process States
- Monitoring and Controlling Processes

Module 5: The File System

- File System Organization
- File Types
- File and Directory Naming Rules and Conventions
- Commands for Navigating the File System
- Introduction to Inodes
- Ownership, Permissions, and Dates
- Manipulating Files and Links
- Manipulating Directories
- Determining Disk Usage
- Other File System Utilities

Module 6: Introduction to Shells: sh, Bash, and KSH

- Shell Functions
- I/O Redirection and Pipes
- Command Separation and Grouping
- Background Execution
- Filename Expansion
- Shell Variables
- Command Substitution
- Quoting and Escaping Metacharacters
- Bash Shell Features
- Korn Shell Features
- Command Execution
- Startup Files
- Customizing the User Environment

Module 7: Printing

- Printing Under AT&T UNIX
- Printing Under BSD UNIX

Module 8: Multitasking and Batch Processing

- Multitasking
- Scheduled Execution Using cron
- The at and batch Commands

Module 9: Shell Programming

- Shell Script Features and Capabilities
- Creating and Running a Script
- Working With Variables
- Environment Variables
- Working With Data Types

o Formatting
o Base Conversion
o Setting Special Attributes

- Input/output Techniques
- Conditional Constructs oif/then oelse/elif
- Looping Constructs ofor, while, until
- Math Operators

Module 10: Advanced Shell Features

- Manipulating Strings
- Writing and Calling Functions
- Controlling Process Priorities
- Interpreting Command Line Arguments
- Making Scripts Interactive
- Special Shell Variables
- Advanced I/O with Streams
- Improving Performance of Scripts

Module 11: Text Manipulation Utilities

- Editing a File from a Script
- Scripting with ed or sed
- UNIX and Linux Utilities to Manipulate Files
- Regular Expressions
- grep and egrep
- The Stream Editor sed
- Sorting in Scripts
- Generating Reports with awk
- Splitting Large Files
- Counting Words, Lines, and Characters
- Transforming File Contents
- Extracting Text Strings

Module 12: File Processing Utilities

- Examining and Comparing Files
- Reporting Differences Between Files
- Comparing Files of Any Format
- Displaying Data in Octal and Hex
- Compressing Data
- Converting File Formats

Module 13: Backing Up Files

- Backup Media
- UNIX Device Names
- tar and cpio
- File Transport and Conversion with dd

Module 14: Networking Commands

- UNIX Network Applications

o Remote Execution Commands
o Remote Activity Reporting
o Communicating with Remote Users

- Internet Applications

o ftp, tftp, telnet

- Remote Access Control Mechanisms
- Using the Secure Shell(ssh)

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