



Training America Corporation

Korn Shell Programming Course Outline (5 days)

Course Description: This course introduces UNIX system users to the theory and practice of automating repetitive tasks with Korn shell scripts. Topics include program structure, data handling, flow control, regular expressions, functions and input/output processing. The course was written for delivery on the Solaris operation system from Sun Microsystems.

Audience: Application developers, database administrators, system administrators, network managers, webmasters, and any other IT professional who is need to read, write and maintain Korn shell scripts.

Prerequisites: This course requires a solid understanding of basic UNIX commands and the ability to use the `vi` editor with confidence. These skills can be gained by from the UNIX Fundamentals course or six months of hands-on UNIX system experience.

Classroom Hardware/Software Requirements:

- One Solaris server per classroom (Intel or SPARC)
- CD-ROM for installation of course files
- One X-terminal capable workstation per student
- Local area network between server and clients
- One set of Solaris operating system media (Intel or SPARC)

Course Objectives:

- Write reliable, maintainable and efficient Korn shell scripts
- Understand shell command line processing
- Use input/output redirection and stream processing
- Use pipes features and filter commands
- Use all significant features of the Korn shell
- Implement advanced variable and array manipulation
- Develop shell scripts that use advanced decision making constructs
- Develop shell scripts that complex looping constructs
- Develop interactive scripts
- Write and use functions to support modular design
- Understand the operation of regular expressions
- Use `grep`, `sed` and `nawk` to process text file and data streams
- Use `nawk` advanced features to develop scripts
- Use traps and signals to control scripts

Course Content:

Module 1: Understanding the UNIX Shell

- Roles of the UNIX Shell
- Command Line Processing
- Common UNIX Shells
- Shell Programming Features

Module 2: Getting Started with Korn

- Shell Script Structure
- Documenting the Script
- Sequential Command Execution
- Command Substitution in Korn
- Shell Built-in Commands

Module 3: Stream Redirection and Pipes

- Using the Standard Streams
- Programmer Defined Streams
- Reading and Writing to Streams
- Using Pipes with Filter Commands

Module 4: Basic Data Handling

- Variable Creation and Recall
- Using Command Substitution
- Local and Exported Variables
- Command Line Variables

Module 5: Regular Expressions and `grep`

- Basic of Regular Expression
- Extracting Data with `grep`

Module 6: Making Simple Decisions

- Simple Decision Processing
- Command Execution Status
- Multiple Choice Decisions
- Nested Decisions Processing

Module 7: Regular Expressions and `sed`

- Basic Form of `sed` Command
- Defining Line Addresses
- Editing Data with `sed`

Module 8: Making Complex Decisions

- Using the `test` Utility
- Korn Conditional Expressions
- Korn Shell Logical Expressions
- Making Decisions with `case`

Module 9: Regular Expression and `nawk`

- Basic Form of `nawk` Command
- Generating Reports with `nawk`

Module 10: Math in the Shell

- Integer Math with the `expr` Utility
- Integer Math with the `let` Command
- Floating Point Math with `bc`
- Floating Point Math with `nawk`

Module 11: Loops in Korn Scripts

- General Structure of a Loop
- Loops with `while` Command
- Loops with `until` Command
- Loops with `for` Command

Module 12: Advanced Data Handling

- Variable Expansion Controls
- Typesetting Variables
- Creating Arrays
- Access Array Members

Module 13: Korn Shell Functions

- Creating and Running Functions
- Arguments and Return Values
- Typesetting Local Variables
- Using Function Libraries

Module 14: Programming with `nawk`

- Making Decisions with `nawk`
- Loop Control with `nawk`
- Arrays with `nawk`
- Using Functions

Module 15: Creating Interactive Scripts

- Using `read` and `print` Commands
- Validating User Input
- Using the `heredoc (<<)` Command
- Using the `select` Command
- Using the `getopts` Command

Module 16: Controlling Processes

- Basic Form of `trap` Command
- Handling Signals
- Handling Errors

Appendix A: Hands-on Lab Exercises

Appendix B: Lab Exercise Solutions

Appendix C: Shell Quick Reference