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## CU011 - UNIX Tools

**Length: 3 Days**

### Description

In this course the attendee will learn how to use more than 50 UNIX commands and their various options and will then be able to interface them together using shell programming constructs. This is an extensive hands-on course and is supported by the excellent UNIX Desktop Guide to Tools textbook by Peter Holsberg. Attendees are encouraged to bring example problems to class so they can be assisted with developing correct solutions. The overall objective of this course is to provide the attendee with the knowledge about UNIX commands so that they can select the appropriate commands for many types of data processing applications.

### Course Objectives

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

1. state the UNIX "tool" philosophy;
2. construct and use regular expressions;
3. select, format, and process data selected from specified files;
4. display and print information from files;
5. use the sed command to apply editing commands to files from an input stream;
6. use the awk programming language to scan files and process patterns;
7. use the commands learned in the course to interact with the shell to create user tools for information processing.

### Course Materials

1. UNIX Tools Student Guide and handouts.

### Prerequisites

1. CU001 - Fundamentals of UNIX
2. CU002 - Bourne Shell Programming or CU003 - Korn Shell Programming

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### Course Content

#### I COURSE OVERVIEW

- A The tool philosophy
- B The UNIX file system
- C The system and user environments
- D UNIX shell constructs

#### II UNIX REGULAR EXPRESSIONS

- A What are regular expressions?
- B Where are regular expressions used?
- C Regular expression characters and construction
- D Regular expression examples

#### III ADVANCED EDITING USING VI

- A ex sub-editor
- B Replacement strings
- C Substitution examples
- D Shell interface and filtering
- E Editor options
- F Abbreviations
- G Macros

#### IV INFORMATION RETRIEVAL COMMANDS

- A The wc, file, find commands.

#### V FILE EXAMINATION/PRINTING

- A Displaying and Printing Files
  - 1. The cat, pg, more, tail, head, tee, and lp commands
- B The grep family

#### VI FILE MANIPULATION COMMANDS

- A File Formatting
  - 1. The nl, fold, fmt, newform, pr, and tr commands
- B Field-Oriented Commands
  - 1. The cut, paste, sort, join, uniq, split, and csplit commands
- C File Comparison
  - 1. The diff, comm, sum commands.
- D File Compression
  - 1. The pack and compress commands.
- E File Archiving
  - 1. The cpio and tar commands.

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### VII THE STREAM EDITOR (sed)

- A What is sed?
- B sed commands, actions and syntax
- C sed pattern space and addresses

### VIII THE AWK LANGUAGE

- A Overview of awk
- B Format of an awk program
- C Records and fields
- D Variables, patterns, operators, conditional statements, and loops
- E String manipulation
- F Mathematical Functions
- G Arrays
- H Shell Interaction

### IX PUTTING IT ALL TOGETHER

- A Shell script constructs
- B Useful shell script commands
- C Example programs and case studies

### X COURSE CONCLUSION