

**Linux Fundamentals**

**Course Number:** LNX-114
**Duration:** 4 days

**Overview**

This Linux training class teaches attendees the fundamental tools and concepts of Linux and Unix and how to use the command line. Beginners develop a solid foundation in Linux, while advanced users discover patterns and fill in gaps in their knowledge.

**Prerequisites**

All students should be comfortable with computers. No familiarity with Linux or other Unix operating systems is required.

**Materials**

All Linux training attendees receive comprehensive courseware.

**Software Needed on Each Student PC**

Attendees will not need to install any software on their computer for this class. The class will be conducted in a remote environment that Accelebrate will provide; students will only need a local computer with a web browser and a stable Internet connection. Any recent version of Microsoft Edge, Mozilla Firefox, or Google Chrome will be fine.

**Objectives**

* Manipulate files
* Master basic and advanced filesystem features
* Use I/O redirection and pipes to control the follow of data
* Search and manipulate text using regular expressions
* Manage jobs and processes
* Master use the standard Linux text editors
* Automate tasks with shell scripts
* Manage software packages

**Outline**

* Introduction: What is Linux?
	+ Unix and its Design Principles
	+ FSF and GNU
	+ The Linux Kernel
	+ Linux Kernel and Versioning
	+ Linux Distribution types and families
* Login and Exploration
	+ Logging In
	+ Running Programs
	+ Interacting with Command Line
	+ Desktop Graphical Environments
	+ Gathering Login Session Info
	+ Gathering System Info
	+ Uptime & w
	+ Using the root account
	+ Switching User Contexts (sudo)
	+ Help from Commands and Documentation (man,info,pinfo)
	+ Getting Help Within the Graphical Desktop (yelp)
* The Linux Filesystem
	+ Filesystem Support
	+ Linux Filesystem Features
	+ Filesystem Hierarchy Standard
	+ Navigating the Filesystem (ls,find,which,whereis)
	+ Displaying Directory Contents
	+ Filesystem Structures
	+ Determining Disk Usage With df
	+ Determining Disk Usage (GUI)
	+ File Ownership
	+ Default Group Ownership
	+ File and Directory Permissions
	+ File Creation Permissions with umask
	+ SUID and SGID on files
	+ SGID and Sticky Bit on Directories
	+ Changing File Permissions
	+ User Private Group Scheme
* Manipulating Files
	+ Directory Manipulation
	+ File Manipulation
	+ Deleting and Creating Files
	+ Nautilus Graphical File Manager
	+ Hard and Symbolic Links
	+ Displaying Files contents
	+ Producing File Statistics
	+ Searching the Filesystem (find, locate)
* Shell Basics
	+ Role of Command Shell
	+ Communication Channels
	+ File Redirection
	+ Piping Commands Together
	+ Filename Matching
	+ File Globbing and Wildcard Patterns
	+ Brace Expansion
	+ Shell and Environment Variables
	+ Key Environment Variables
	+ General Quoting Rules
	+ Nesting Commands
* Archiving and Compression
	+ Archives with tar
	+ The gzip Compression Utility
* Text Processing
	+ Searching Inside Files
	+ The Streaming Editor
	+ Text Processing with  awk/nawk/gawk
	+ Replacing Text Characters
	+ Text Sorting
	+ Extracting Columns of Text
	+ Combining Files and Merging Text
	+ Comparing File content
* Regular Expressions
	+ Regular Expression Overview
	+ (Standard) Regular Expressions
* Text Editing
	+ Text Editing
	+ Nano
	+ gedit
	+ vi and Vim
* Messaging
	+ Electronic Mail (mail, mailx)
	+ Sending Email with sendmail
	+ broadcasting with wall and mesg
* Command Shells
	+ Shells
	+ Identifying the Shell
	+ Changing the Shell
	+ Configuration Files
	+ Script Execution
	+ Shell Prompts
	+ Bash: Bourne-Again Shell
	+ Bash: Configuration Files
	+ Bash: Command Line History
	+ Bash: Command Editing
	+ Bash: Command Completion
	+ Bash: "shortcuts"
	+ Bash: prompt
	+ Setting Resource Limits via ulimit
* Introduction to Shell Scripting
	+ Shell Scripts Features and Layout
	+ Shell Script Template
	+ Positional Parameters
	+ Input & Output
	+ Doing Math
	+ Exit Status
	+ Conditional Statements
	+ Flow Control: case
	+ for, while and until Loops
* Process Management and Job Control
	+ What is a Process?
	+ Process Lifecycle
	+ Process States
	+ Viewing Processes
	+ Signals
	+ Tools to Send Signals
	+ create a daemon process with nohup
	+ Managing Processes
	+ Job Control Overview and Commands
* At and Cron
	+ Automating Tasks
	+ at/batch
	+ cron
	+ The crontab Command
	+ crontab Format
	+ /etc/cron.\*/ Directories
* Managing Software
	+ Downloading files with wget and curl
	+ Managing Software Dependencies
	+ Using the yum/dnf command
	+ Using yum history
	+ Configuring Yum
	+ Yum Repositories
* The Secure Shell (SSH)
	+ Secure Shell
	+ OpenSSH Client & Server Configuration
	+ Accessing Remote Shells
	+ Transferring Files
	+ SSH Key Management
* Mounting Filesystems
	+ Filesystems Concept Review
	+ Mounting Filesystems
	+ NFS
	+ SMB
	+ Filesystem Table (/etc/fstab)
	+ AutoFS
* Printing
	+ Common UNIX Printing System (CUPS)
	+ Defining a Printer
	+ Standard Print Commands
* Conclusion