



Clemson University - Center for Corporate Learning
1 North Main Street, 7th Floor,
Greenville, SC 29601
<http://www.clemson.edu/online/>
Contact: Juanita Durham | 864.656.3984 | jdrhm@clemson.edu

Linux Command Line

Format: Self-Pace Online / eLearning
Program Duration: 6 Months
Course Contact Hours: 300

Linux Command Line

The Linux Command Line Interface (CLI) is a powerful tool for users, developers, and administrators. Quick changes to a system with no Graphical Interface, such as many servers or some recovery tasks, can be accomplished with command line tools. Repetitive tasks, such as file management and local access control changes, can be done more efficiently from the command line than through a point-and-click interface. Learning to use the Linux CLI also prepares for full automation with scripting tools.

The Linux Command Line program introduces common utilities used at the Linux command line. While learning commands for specific tasks, learners will obtain greater confidence navigating the Linux filesystem, understand how to locate and edit files, use Bash shell features for efficiency and automation, and be able to use built-in help for further exploration. Beginning with basic Linux System Administration walking learners through the essential system administration tasks learners need to know to get up and running in Linux quickly.

The Linux Command Line Program

The program starts with the basics, from determining which distribution is right for you to walking through the steps of installing Linux on the two most popular flavors: Ubuntu and Red Hat. Next, learners will connect to Linux and really get into it, using an editor and working with files. Learners will then dive into managing permissions, processes and software before working with logs, exploring Linux security and finally managing services. From there, real world examples are offered throughout the program where the focus is on teaching you how to operate and manage some of the most frequently used Linux services. This program also provides information on how Linux administration is typically dealt with in corporate environments, with a focus on content management systems, automatic deployment systems and operating Linux from the cloud.

Education and National Certifications

- Students should have or be pursuing a high school diploma or GED.
- Students who complete this program can sit for the **Professional Institute Certification (LPIC) Level 1 Certification Exam (Exams 101 and 102)**. Successful completion of both LPIC-1 exams (101 and 102) is required to obtain the LPIC level 1 certification.

Program Objectives

At the conclusion of this program, students will be able to:

- Install and connect to Linux
- Use a Linux Editor
- Work with Linux Files
- Manage Users and Groups and associated Permissions in Linux
- Manage Linux Processes
- Manage Software on Linux
- Work with Logs
- Apply Basic Security
- Manage Services in Linux
- Obtain greater confidence navigating the Linux filesystem
- Locate and edit files from the Linux command line
- Use Bash shell features for efficiency and automation
- Use built in help for further exploration

Linux Command Line Detailed Student Objectives:

BEGINNING LINUX SYSTEMS ADMINISTRATION

GETTING STARTED WITH LINUX

- Choose the right Linux
- Start Easy: Get Linux from Amazon Web Services (AWS)
- Understand Linux System Administration Tasks

INSTALLING LINUX

- Install Ubuntu Linux
- Install CentOS
- Understand Linux Deployment in Corporate Environments

CONNECTING TO LINUX

- Connect as Different Users
- Log in Using a Local Console
- Connect to Linux using SSH
- Connect to Linux from Windows

USING AN EDITOR

- Understand the importance of Using Editors
- Use vi
- Use nano

WORKING WITH FILES

- Understand Linux Directory Structures
- Understand How to Files
- Look at File Contents
- Copy, Move, and Remove Files

- Understand Links

MANAGING USERS AND GROUPS

- Understand User and Group Accounts
- Create Users and Groups
- Manage Passwords

MANAGING PERMISSIONS

- Apply Ownership
- Manage Read, Write, and Execute Permissions

MANAGING PROCESSES

- Understand and Monitor Processes
- Understand and Manage Processes
- Start Processes Automatically
- Schedule Processes

MANAGING SOFTWARE ON LINUX

- Understand the difference between Software Installation versus Deployment
- Manage RPM-based Software Packages
- Manage APT-based Software Packages

WORKING WITH LOGS

- Read Log Files
- Understand Where to Find Logs
- Use journalctl

APPLYING BASIC SECURITY

- Configure a Firewall
- Apply SSH Security
- Understand SELinux

MANAGING SERVICES

- Configure an Apache Web Server
- Configure an FTP Server
- Set up a Samba Server
- Work with KVM Virtualization

LINUX COMMAND LINE

ACCESSING THE LINUX COMMAND LINE INTERFACE

- Understand the uses of the Linux command line interface
- Access the command line locally: Text login
- Access the command line locally: GNOME menus (CentOS)

- Access the command line locally: GNOME Shell (Fedora)
- Access the command line locally: KDE (Kubuntu)
- Access the command line remotely: ssh command (Linux or Mac OSX)
- Access the command line remotely: Graphical program
- Run commands from the bash shell
- Recall previous commands with history shortcuts

GETTING HELP WITHIN THE SYSTEM

- Use the man pages
- Navigate the info pages
- View syntax with --help
- Identify available documentation with whatis and man -k
- Interpret usage syntax

MANIPULATING FILES

- Understand navigation
- Read files
- Organize files
- Employ less typing with TAB completion

MANAGING A LARGE NUMBER OF FILES

- Use filename-expansion wildcards to organize files
- Archive files with tar and gzip
- Transfer files to or from a remote system with scp and rsync
- Download files from a remote system with wget or curl
- Use echo to preview command expansion

EDITING FILES FROM THE COMMAND LINE

- Choose an editor
- Edit files with nano
- Edit files with vim
- Do advanced edits with vim and sed
- Set the default editor

ACCESS CONTROL: BASIC FILE PERMISSIONS

- View basic permissions
- Identify owner and group membership
- Escalate privilege with su and sudo
- Change file permissions
- Change file owner and group
- String commands together

LOCATING FILES ON THE SYSTEM

- Use locate to find files by name
- Use find to locate files by name, date, owner, size, and more
- Identify text files containing a specific string using grep
- Search the content of a file for patterns
- Protect special characters with quotes

PROCESS MANAGEMENT

- List processes running on a system
- Manage a running process

- View available system resources
- Save the output of a command to a file
- Use command substitution

BASIC BASH SHELL CONFIGURATION

- Create shortcuts with alias
- Customize environment variables
- Configure shell options
- Save configuration by editing login and shell startup scripts