



## Course Curriculum: Your 14 Module Learning Plan

### [Linux Administration](#)

#### **About Edureka**

Edureka is a leading e-learning platform providing live instructor-led interactive online training. We cater to professionals and students across the globe in categories like *Big Data & Hadoop, Business Analytics, NoSQL Databases, Java & Mobile Technologies, System Engineering, Project Management and Programming*.

We have an easy and affordable learning solution that is accessible to millions of learners. With our students spread across countries like the US, India, UK, Canada, Singapore, Australia, Middle East, Brazil and many others, we have built a community of over 1 million learners across the globe.

#### **About The Course**

Edureka's Linux Administration course covers all the concepts on administration methods in Linux. Starting from Linux installation to security administration, networking concepts, file system management, system services, Kernel services, Linux configuration.



## Module 1

### Installation and Initialization

Learning Objectives - In this module, you will understand Linux architecture in general, booting process, how to install Centos7 OS, system initialization and some basic commands to get started.

#### Topics

- ✓ Introduction
- ✓ Installation
- ✓ Linux Architecture
- ✓ Boot Process
- ✓ Kernel
- ✓ System Initialization
- ✓ GRUB(Modify the system boot loader)
- ✓ GUI
- ✓ CLI(Access a shell prompt and issue commands with correct syntax)
- ✓ Use input-output redirection (>, >>, |, 2>, etc.)
- ✓ Create and edit text files, delete, copy, and move files and directories
- ✓ Introduction to Bash Shell
- ✓ Basic Commands
- ✓ Editors
- ✓ Man Pages
- ✓ Boot systems into different targets manually & automatically
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap.

## Module 2

### Package Management & Process Monitoring

Learning Objectives - In this module, you will learn about Package management which includes installing, updating and removing software, Topics on basic networking, tools needed etc, CMD's to monitor system processes and resources.

#### Topics

- ✓ Securing single-user mode (su login)
- ✓ Shutting down and rebooting the system
- ✓ RPM Package Manager
- ✓ Installing and Removing Software
- ✓ RPM Queries
- ✓ RPM Verification
- ✓ About yum

- ✓ Using yum
- ✓ Searching packages/files
- ✓ Configuring local Repositories
- ✓ What processes are?
- ✓ The properties of a process
- ✓ Parent processes and child processes
- ✓ Killing processes and sending signals to a process (kill, killall, xkill)
- ✓ How to start processes, monitor them
- ✓ Identify CPU/memory intensive processes
- ✓ Adjust process priority
- ✓ start/stop/check the status of network services
- ✓ Configure networking and hostname resolution statically or dynamically
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap

## Module 3

### Important Files, Directories and Utilities

Learning Objectives - In this module, you will learn about how to manage services, important directories, files and configurations. Also included are topics on different data processing utilities.

#### Topics

- ✓ Control services and Daemons
- ✓ Start and stop services and configure services to start automatically at boot
- ✓ /dev & /proc directories
- ✓ System documentation under /usr/share/doc
- ✓ Awk
- ✓ Sed
- ✓ Use grep and regular expressions to analyze text
- ✓ Archive, compress, unpack, and uncompress files using tar, star, gzip, and bzip2, dump, restore
- ✓ Locate and interpret log files
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap.



## Module 4

### System Services

Learning Objectives - In this module, you will learn how to configure NTP service, Schedule jobs, Secure communication and copying of files, X Window system etc.

#### Topics

- ✓ Network Time Protocol
- ✓ X Windows
- ✓ SSH: Secure Shell (Access remote systems using ssh, SCP)
- ✓ Passwordless SSH
- ✓ Configure key-based authentication for SSH)
- ✓ Cron
- ✓ Controlling Access to cron
- ✓ System crontab Files
- ✓ Daily Cron Jobs
- ✓ Anacron Scheduler
- ✓ Schedule tasks
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap

## Module 5

### User Administration

Learning Objectives - In this module, you will learn the concepts of user administration in Linux, how to add new user account, modify and delete existing user accounts etc. We will also discuss network users and file permission techniques.

#### Topics

- ✓ Adding a New User Account
- ✓ User Private Groups
- ✓ Modifying/Deleting User Accounts
- ✓ Group Administration
- ✓ Password Aging Policies
- ✓ Switching Accounts
- ✓ Pseudo access
- ✓ Network Users
- ✓ Authentication Configuration
- ✓ SUID and SGID Executable
- ✓ SGID Directories
- ✓ The Sticky Bit
- ✓ Default File Permissions
- ✓ Changing file ownership (chown)
- ✓ Changing file group ownership (chgrp)
- ✓ Permissions on files

- ✓ Permissions on directories
- ✓ How permissions are applied
- ✓ Changing permissions (chmod)
- ✓ Access Control Lists (ACLs)
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap.

## Module 6

### File System Security and Management

Learning Objectives - In this module, we will understand the file system management, which includes mounting, unmounting and automounter techniques. We will discuss details of file system security. We will also understand how permissions are applied.

#### Topics

- ✓ Device Recognition
- ✓ Disk Partitioning
- ✓ Managing Partitions
- ✓ Making Filesystems
- ✓ Difference between ext3 and ext4
- ✓ Filesystem Labels
- ✓ tune2fs
- ✓ Mount Points and /etc/fstab
- ✓ Mounting Filesystems with mount
- ✓ Unmounting Filesystems
- ✓ Handling Swap Files and Partitions
- ✓ Mounting NFS Filesystems
- ✓ Automounter
- ✓ Checking available free space and space used by files (df, du)
- ✓ Checking and correcting the integrity of filesystems (fsck)
- ✓ Users and groups
- ✓ The 'root' user or superuser
- ✓ Changing file ownership (chown)
- ✓ Changing file group ownership (chgrp)
- ✓ Permissions on files
- ✓ Permissions on directories
- ✓ How permissions are applied
- ✓ Changing permissions (chmod)
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap.



## Module 7

### Advanced File System Management

Learning Objectives - In this module, we will learn how to create the Quota System, Reporting Quota Status etc, LVM Creation, Network Tools, File types, diff b/w soft and hard links etc.

#### Topics

- ✓ Special file types
- ✓ Symbolic links (ln -s)
- ✓ Inodes and directory entries
- ✓ Hard links
- ✓ Preserving links while copying and archiving
- ✓ Configuring the Quota System
- ✓ Setting Quotas for Users
- ✓ Reporting Quota Status
- ✓ What is Logical Volume Manager (LVM)?
- ✓ Creating Logical Volumes
- ✓ Resizing Logical Volumes
- ✓ Network Interfaces
- ✓ IPv4 Addresses
- ✓ Dynamic IPv4 Configuration
- ✓ Static IPv4 Configuration
- ✓ Device Aliases
- ✓ Routing Table
- ✓ Default Gateway
- ✓ Verify IP Connectivity
- ✓ Defining the Local Host Name
- ✓ Local Resolver
- ✓ Remote Resolvers
- ✓ Verify DNS Connectivity
- ✓ Network Tools
- ✓ NFS server and NFS Client
- ✓ NFS share for group collaboration
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap

## Module 8

### Server Configurations

Learning Objectives - In this module, you will learn about DNS and Apache Configuration, Analyze and store logs.

#### Topics

- ✓ Configure BIND to function as a caching-only DNS server
- ✓ Configure a caching-only name server to forward DNS queries

- ✓ Troubleshoot DNS client issues
- ✓ Configuring BIND options
- ✓ Configuring directory location for zone files
- ✓ Apache Overview
- ✓ Apache Server Configuration
- ✓ Virtual Hosts
- ✓ Apache Access Configuration
- ✓ Deploy a basic CGI application
- ✓ Configure TLS security
- ✓ Configure private directories
- ✓ Analyze and store logs
- ✓ Annie's Quizzes LAB, Q & A and Quick Recap

## Module 9

### Shell scripting & Kerberos Authentication

Learning Objectives - In this module, you will learn how to write efficient shell scripts, how to configure Kerberos system.

#### Topics

- ✓ Shell Scripting basics
- ✓ Loops
- ✓ shell variables
- ✓ arrays
- ✓ writing scripts
- ✓ Kerberos authentication
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap

## Module 10

### Samba & Mail Services, Virtualization

Learning Objectives - In this module, you will learn about Samba (SMB) Service, Mail Service (SMTP) and Linux Virtualization.

#### Topics

- ✓ Configure SMB to provide network share to clients
- ✓ Configure mail server to forward all emails to Central mail server
- ✓ Introduction to KVM Virtualization
- ✓ Virtual Machine installation
- ✓ Configuring Virtual Machines
- ✓ Install centos systems as virtual guests
- ✓ Configure systems to launch virtual machines at boot
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap



## Module 11

### Advanced Security & Networking Concepts

Learning Objectives - In this module, you will learn about some advanced topics like SELinux, IPTables (Firewall Configuration), Aggregation & Bridging, Linux Containers.

#### Topics

- ✓ SELinux Overview
- ✓ SELinux Tools
- ✓ SELinux Contexts
- ✓ SELinux Booleans
- ✓ Use SELinux port labeling to allow services to use non-standard ports
- ✓ Diagnose and address selinux policy violations
- ✓ Configure firewall settings
- ✓ N/W port security
- ✓ Route IP traffic and create static routes
- ✓ Boot level security (GRUB)
- ✓ Security need for TCP wrappers
- ✓ Configure aggregated links between two systems
- ✓ Use firewall and associated mechanisms such as rich rules, zones and custom rules
- ✓ To implement packet filtering and configure network address translation (NAT)
- ✓ Use /proc/sys and sysctl to modify and set kernel runtime parameters
- ✓ Linux Containers
- ✓ Annie's Quizzes, LAB, Q & A, Quick Recap

## Module 12

### Database Configuration

Learning Objectives - In this module, you will learn about MariaDB installation, creating basic schema, running queries and on how to perform backup, restore operations, iSCSI devices.

#### Topics

- ✓ Install MariaDB
- ✓ Schema Creation and Writing Queries
- ✓ Backup & restore operations
- ✓ Configure a system as either an iSCSI target or initiator that persistently mounts an iSCSI target
- ✓ Annie's Quizzes, LAB, Q & A and Quick Recap

## Module 13

### IPv6 Configuration & Kickstart Configuration

Learning Objectives - In this module, you will learn about IPv6 configuration and how to perform kickstart installation using different services.

#### Topics

- ✓ Ipv6 configuration
- ✓ Kickstart installation using NFS
- ✓ HTTP services
- ✓ Setting Grub Password
- ✓ Setting root password for single user mode from Grub page
- ✓ Configure systems to mount file systems at boot by Universally Unique ID (UUID) or label, List, create, and delete partitions on MBR and GPT disks

## Module 14

### Project – Prepare for the RHCE Exam

Learning Objectives - In this module, we will learn to perform some of the day-to-day activities you would need to do as a Linux administrator such as creating a user, group, setting permissions for them, backing up data, restricting access to specific users, copying/moving files, managing processes and services, and securing system

#### Topics

- ✓ Include questions from all the topics covered so far
- ✓ New troubleshooting scenarios
- ✓ Writing Scripts for given use cases
- ✓ Project for Certification
- ✓ Q & A and Quick Recap



## Project Work

### Project Title: Linux Administration

**Description:** The purpose of this project is to learn and explore Linux administration. This project involves performing some of the day-to-day activities you would need to do as a Linux administrator such as creating a user, group, setting permissions for them, backing up data, restricting access to specific users, copying/moving files, managing processes and services, and securing system. It also includes:

- (i) Partitioning & other features
- (ii) Taking security measures to protect the environment
- (iii) Configure different types of servers
- (iv) Writing Shell Scripts the output of this project provides an idea of tasks you would need to perform while attending RHCE7.

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