This is a reference document to understand how class flows.

Linux Basics

Getting started with Linux

- What is Linux and Open Source
- Linux distributions

Accessing the command line interface (CLI)

- Understanding the linux file system hierarchy and CLI
- Understanding shell

Basic shell commands

- Understanding absolute and relative path
- Creating files and directory using CLI

Hands on Lab: Changing working directories, listing directory content, using vim editor and mkdir command

- Understanding linux command and using options for linux commands
- Getting help for using commands
- Matching file with shell expansion (Globbing)

Hands on Lab: Using options and globbing for linux commands

- Writing and executing simple bash script
- Using variables in scripts

Hands on Lab: Writing simple scripts for basic activity

- Managing files and directory from CLI

- Understanding CLI shortcuts
- Archive and compression

Hands on Lab: copy, move, rename, remove, link, archive,compress files and directory

- Managing file content from CLI
- Understanding about redirection, tee, pipe, grep

Hands on Lab: Viewing file content and using redirectors, tee, pipe and grep command in CLI

Linux administration

Managing local linux users and groups

- User information
- UID
- Creating users
- Modifying users property
- Deleting users
- Managing password for users
- Creating group
- Adding and removing members
- Deleting group

Hands on Lab: Creating, modifying, deleting users and groups

Privileges and Permissions

- Understanding substitute login and privilege
    - Sudo configurations
- Basic permissions
    - Understanding permissions
    - Understanding default permissions
    - What is umask?
    - Changing umask
    - Changing permission
    - Managing permissions for users, groups

Hands on Lab: Managing permissions and promoting as privileged user

- Access control List(ACL)
    - Setting acl,recursive acl, default acl
    - Removing acl
    - Backup and restore acl

Hands on Lab: Managing permissions with acl with setfacl and getfacl

- Special Permissions
    - Understanding sticky bit
    - Understanding set GID
    - Understanding set UID

Hands on Lab: Managing special permissions with chmod

Networking basics

- Types of Network
- IP addressing and MAC address
- Simple LAN network with linux computers
    - Using IP command
    - Using NMTUI
    - USing NMCLI

Hands on Lab: Creating a simple LAN network and managing IP property with NMTUI and NMCLI

Software Management

- Managing softwares using rpm and yum

Hands on Lab: Connecting to internet repository for installing softwares using yum

Monitoring and managing linux process

- Explain about process and its importance
- Listing process
- Controlling jobs
- Killing process

Hands on Lab: Listing, controlling and killing process with linux commands

Managing services and daemons

- Identifying automatically started services
- Managing services

Hands on Lab: Managing services using systemctl command

Securing the Linux system

- What is firewall
- Understanding firewall in linux
- Managing firewalld in CLI

Hands on Lab: Implementing firewall and applying direct and rich rules

Maintaining accurate time

- Understanding NTP
- Implementing NTP time server
- Syncing time from NTP time server

Hands on Lab: Configuration of NTP time server and client

Configuring and securing SSH

- Understanding remote login and ssh
- Login with password and without password(with keys)
- Managing SSH server
- Secure copy

Hands on Lab: Authenticating with and without password for SSH and secure copy of files between linux systems

Scheduling jobs

- Implementing at and cron scheduler in linux and scheduling

Hands on Lab: Scheduling with at and cron

Managing basic storage

- Creating partition, filesystem and mount points

Hands on Lab: Creating partition and managing partitions

- Creating swap partition

Hands on Lab: Creating and deleting swap partition

Managing logical volume

- Understanding LVM and creating, extending and reducing LV and VG

Hands on Lab: Creating and managing LVM

Implementing advanced storage

- Manage layered storage with stratis local storage

Hands on Lab: Creating and managing stratis local storage

- Virtual data optimizer

Hands on lab: Creating deduplication volume with vdo

Network attached storage

- Network File system

Hands on Lab: Configuration of NFS server and client and managing permissions

- Understanding on demand mounting

Hands on Lab: Configuration of autofs in NFS client

- Understanding Internet small computer system interface

Hands on Lab: Implementation of ISCSI server and client

- Common internet file system

Hands on Lab: Implementation of CIFS and accessing from linux and windows

Apache Web Server

- Implementation of basic apache web server and virtual hosting

Hands on Lab: Configuration of apache web server and virtual hosting