



# TRAINING TRAINS

96985 48633  
90250 10144

IT Services and IT Consultancy \ Internship-Implant Training \ Software Training Institute

உங்கள் கடை மற்றும் வியாபாரத்திற்கு ஏற்ற Website & Andriod App மற்றும் Software மிகச்சிறந்த முறையில் செய்து கொடுக்கப்படும்.

Expertise : AI, Machine Learning & Data Science \ Cybersecurity & Ethical Hacking  
IoT, Blockchain & Cloud Computing \ Full Stack Web & Mobile Development  
Digital Marketing & SEO

W3 App Developers

332, MULLAMPARAPPU, N.G.PALAYAM POST  
ERODE - 638 115

DomainHostly.COM

## Linux – 100+ Lab Exercises Roadmap (Basic, Intermediate, Advanced)

### □ Basic Level (30+ Exercises)

**Objective:** Build foundational command-line skills, understand the Linux file system, and navigate through essential operations.

#### □ File System Navigation & Management

- Navigate directories using `cd`, `ls`, `pwd`.
- Create, delete, and move files/directories with `touch`, `rm`, `mv`, `cp`, `mkdir`.
- Explore file permissions using `chmod`, `chown`, `umask`.
- Use `find` and `locate` to search files.
- Use `df`, `du`, and `lsblk` for disk space analysis.

#### □ Basic Command-Line Utilities

- Redirect input/output using `>`, `>>`, `2>`, `|`, `tee`.
- Use `cat`, `more`, `less`, `head`, `tail`.
- Archive files using `tar`, `gzip`, `bzip2`, `zip`.
- Learn and use `grep`, `awk`, `cut`, `sed`.
- Manage processes using `ps`, `top`, `htop`, `kill`.

#### □>User & Group Management

- Create and delete users (`useradd`, `userdel`).
- Create and manage groups (`groupadd`, `gpasswd`).
- Set user passwords and switch users (`passwd`, `su`, `sudo`).
- Assign users to groups and configure `/etc/sudoers`.
- Understand `/etc/passwd`, `/etc/group`, and `/etc/shadow`.

#### □ File Permissions & Ownership

- Change file ownership (`chown`, `chgrp`).
- Use symbolic and octal modes to set permissions.



# TRAINING TRAINS

96985 48633  
90250 10144

IT Services and IT Consultancy \ Internship-Implant Training \ Software Training Institute

உங்கள் கடை மற்றும் வியாபாரத்திற்கு ஏற்ற Website & Andriod App மற்றும் Software மிகச்சிறந்த முறையில் செய்து கொடுக்கப்படும்.

Expertise : AI, Machine Learning & Data Science \ Cybersecurity & Ethical Hacking  
IoT, Blockchain & Cloud Computing \ Full Stack Web & Mobile Development  
Digital Marketing & SEO

**W3 App Developers**

332, MULLAMPARAPPU, N.G.PALAYAM POST  
ERODE - 638 115

**DomainHostly.COM**

- Configure default file permissions via umask.
- Set SUID, SGID, and Sticky Bit.
- Test permission changes in shared directories.

## □ Intermediate Level (40+ Exercises)

**Objective:** Gain practical experience with shell scripting, package management, system services, and network configuration.

### □ Shell Scripting & Automation

- Write basic shell scripts using bash.
- Accept user input and arguments in scripts.
- Use conditionals (if, elif, case) in scripts.
- Implement loops (for, while, until).
- Automate tasks using cron (crontab) and at.

### □ Package & Software Management

- Install and remove packages with apt, yum, dnf.
- Manage repositories and GPG keys.
- Compile software from source using make and gcc.
- Create and install .deb or .rpm packages.
- Maintain system updates and upgrades.

### □ Networking & Connectivity

- Check network interfaces using ip, ifconfig, nmcli.
- Configure static IPs and DNS.
- Use ping, traceroute, netstat, ss.
- Scan ports with nmap, test services with telnet, nc.
- Transfer files using scp, rsync, sftp.

### □ System Services & Logs

- Use systemctl to manage services.
- Analyze logs via journalctl and /var/log/.
- Enable/disable startup services.



# TRAINING TRAINS

96985 48633  
90250 10144

IT Services and IT Consultancy \ Internship-Implant Training \ Software Training Institute

உங்கள் கடை மற்றும் வியாபாரத்திற்கு ஏற்ற வேப் & அந்தோட் ஐப் மற்றும் ஸ்டாஃப் மிகச்சிறந்த முறையில் செய்து கொடுக்கப்படும்.

Expertise : **AI, Machine Learning & Data Science \ Cybersecurity & Ethical Hacking  
IoT, Blockchain & Cloud Computing \ Full Stack Web & Mobile Development  
Digital Marketing & SEO**

**W3 App Developers**

332, MULLAMPARAPPU, N.G.PALAYAM POST  
ERODE - 638 115

**DomainHostly.COM**

- Monitor resource usage with `iostat`, `vmstat`, `sar`.
- Check system boot and uptime information.

## □ Advanced Level (40+ Exercises)

**Objective:** Master Linux administration, performance tuning, security, and advanced scripting techniques.

### □ Security & Access Control

- Set up and configure `iptables`, `firewalld`, or `ufw`.
- Implement SELinux or AppArmor.
- Configure and monitor `fail2ban`.
- Manage SSH keys and restrict SSH access.
- Conduct file integrity checks with `aide` or `tripwire`.

### □ Advanced Shell & Tools

- Debug scripts with `set -x` and `trap`.
- Use functions and error handling in Bash scripts.
- Schedule job dependencies with `anacron`.
- Automate system reports (disk, memory, logs).
- Use `expect` for automating interactive sessions.

### □ Server & Service Management

- Set up and secure an Apache/Nginx server.
- Install and configure an FTP/SFTP server.
- Deploy and manage MySQL/PostgreSQL servers.
- Configure DNS using `bind9`.
- Implement load balancing using `HAProxy`.

### □ Virtualization & Containers

- Install and manage VMs with KVM/QEMU.
- Use `virt-manager` and `virsh` CLI.
- Run containers using Docker on Linux.
- Manage cgroups and namespaces.



# TRAINING TRAINS

96985 48633  
90250 10144

IT Services and IT Consultancy \ Internship-Implant Training \ Software Training Institute

உங்கள் கடை மற்றும் வியாபாரத்திற்கு ஏற்ற Website & Andriod App மற்றும் Software மிகச்சிறந்த முறையில் செய்து கொடுக்கப்படும்.

Expertise : AI, Machine Learning & Data Science \ Cybersecurity & Ethical Hacking  
IoT, Blockchain & Cloud Computing \ Full Stack Web & Mobile Development  
Digital Marketing & SEO

W3 App Developers

332, MULLAMPARAPPU, N.G.PALAYAM POST  
ERODE - 638 115

DomainHostly.COM

- Set up LXD/LXC containers.

## □ Performance Tuning & Monitoring

- Monitor system with top, iotop, glances, dstat.
- Optimize memory usage and swappiness.
- Tweak kernel parameters with sysctl.
- Profile performance with perf, strace.
- Analyze boot time with systemd-analyze.

---

## □ Capstone Projects

- Set up a complete LAMP/LEMP stack from scratch.
- Automate server hardening via Bash scripts.
- Create a log monitoring and alerting solution.
- Configure a secure file transfer system with auditing.
- Deploy and benchmark containerized apps on Linux.

---

## □ Tools & Utilities

- vim, nano, tmux, screen, ssh, scp, rsync
- bash, cron, systemd, tcpdump, nmap
- firewalld, iptables, ufw, selinux, appArmor
- docker, lxd, kvm, virsh, qemu