

**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

**New Scheme Based On AICTE Flexible Curricula**

**Artificial Intelligence and Data Science, V-Semester**

**AD-506 - Linux Lab**

**COURSE OUTCOMES: After Completing the course student should be able to:**

CO1. Understand the system calls

CO2. Compare between ANSI C AND C++ AND POSIX standards

CO3. Mapping the relationship between UNIX Kernel support for files

CO4. Understand Kernel support for process creation and termination and memory allocation

Overview of Unix/Linux:-Concepts, Unix/Linux Installation Process, Hardware requirements for Unix/Linux, Advantages of Unix/Linux, Reasons for Popularity and Success of Linux/Unix Operating System, Features of Linux/Unix Operating System, Kernel, Kernel Functions

The Shell Basic Commands, Shell Programming:-Shell Variables, Branching Control Structures, Loop-Control Structure, Continue and break Statements, Sleep Command, Debugging Script. Use of Linux as webserver, file server, directory server, application server, DNS server, SMTP server, Firewall, Proxy server.

File System: -Definition of File System, Defining Geometry, Disk Controller, Solaris File System, DiskBased File Systems, Network-Based File Systems, Virtual File systems, UFS File System, The Boot Block, The Super Block, The Inode, Tuning File System, Repairing File System.

Process Control:-Viewing a Process, Command to display Process, Process Attributes, Process States, ProcessFields, PS Commands options, PGREP, PRSTAT, CDE Process Manager, SchedulingProcess, Scheduling Priorities, Changing the Priority of a time-sharing process, KillingProcess.

System Security:-Physical Security, Controlling System Access, Restricted Shells Controlling File Access, FileAccess Commands, Access Control List(ACLs), Setting ACL Entries, Modifying ACLentries on a file, Deleting ACL entries on a file, Restricting FTP, Securing Super UserAccess, Restricting Root Access, Monitoring super user Access, TCP Wrappers.

Dynamic Host Configuration Protocol: -Introduction, DHCP Leased Time, DHCP Scopes, DHCP IP Address, Allocation Types, Planning DHCP Deployment, DHCP Configuration files, Automatic Startup of DHCP Server, Configuration of DHCP Clients, Manually Configuring the DHCP.

Case Study: -

Installation of Linux, Customization of Linux, Installation of SAMBA, APACHE, TOMCAT, Send MAIL, Postfix, Implementation of DNS, LDAP services, Firewall, Proxyserver

List of Experiments:-

1. To Study basic & User status Unix/Linux Commands.
2. Study & use of commands for performing arithmetic operations with Unix/Linux.
3. Create a file called wlcc.txt with some lines and display how many lines, words and characters are present in that file.
4. Append ten more simple lines to the wlcc.txt file created above and split the appended file into 3 parts. What will be the names of these split files? Display the contents of each of these files. How many lines will be there on the last file?
5. Given two files each of which contains names of students. Create a program to display only those names that are found on both the files.
6. Create a program to find out the inode number of any desired file.
7. Study & use of the Command for changing file permissions.
8. Write a pipeline of commands, which displays on the monitor as well as saves the information about the number of users using the system at present on a file called users.u.
9. Execute shell commands through vi editor.
10. Installation, Configuration & Customizations of Unix/Linux.
11. Write a shell script that accepts any number of arguments and prints them in the reverse order.
12. Write a shell script to find the smallest of three numbers that are read from the keyboard.
13. Write a shell script that reports the logging in of a specified user within one minute after he/she logs in. The script automatically terminates if the specified user does not login during a specified period of time.
14. Installation of SAMBA, APACHE, TOMCAT.
15. Implementation of DNS, LDAP services,
16. Study & installation of Firewall & Proxy server

Suggested Reading:

1. Venkatesh Murthy, "Introduction to Unix & Shell", Pearson Edu
2. Forouzan, "Unix & Shell Programming", Cengage Learning
3. Sumitab Das, "Unix Concept & Application", TMH

4. Gopalan, Shivaselvan,"Beginners Guide to Unix " PHI Learning
5. Venkateshwavle,"Linux Programming Tools Unveil`ed", BS Publication.
6. Richard Peterson,"Linux Complete Reference",TMH
7. Richard Peterson,"Unix Complete Reference",TMH