

System Software and Administration

Code: CS 604

Credits: 4

Module I

System Software

Assemblers: General design procedures, Design of two pass assemblers, Cross Assemblers, Macro Processors – Features of a macro facility,(macro instruction arguments, conditional macro expansion, macro calls within macros), Implementation of a restricted facility : A two pass algorithm; Macro Assemblers.

Loader schemes: Compile and go loaders, absolute loaders, relocating loader, Linking, Reallocation- static & dynamic linking, Direct linking loaders, Binders, Overlays, dynamic binders; Working principle of Editors, Debuggers.

Module II

System Administration

Introduction

Duties of the Administrator, Administration tools, Overview of permissions.

Processes: Process status, Killing processes, process priority. Starting up and Shut down: Peripherals, Kernel loading, Console, The scheduler, init and the inittab file, Run-levels, Run level scripts.

Managing User Accounts

Principles, password file, Password security, Shadow file, Groups and the group file, Shells, restricted shells, user management commands, homes and permissions, default files, profiles, locking accounts, setting passwords, Switching user, Switching group, Removing users.

Managing Unix File Systems

Partitions, Swap space, Device files, Raw and Block files, Formatting disks, Making filesystems, Superblock, I-nodes, Filesystem checker, Mounting filesystems, Logical Volumes, Network Filesystems, Boot disks

Configuring the TCP/IP Networking

Kernel Configuration; Mounting the /proc Filesystem, Installing the Binaries, Setting the Hostname, Assigning IP Addresses, Creating Subnets, Writing hosts and networks Files, Interface Configuration for IP, ifconfig, netstat command, Checking the ARP Tables; Name service and resolver configuration.

Module III

TCP/IP Firewall

Methods of Attack, What Is a Firewall? What Is IP Filtering? Setting Up Linux for Firewalling Testing a Firewall Configuration; A Sample Firewall Configuration: IP Accounting, Configuring the Kernel for IP Accounting, Configuring IP Accounting, Using IP Accounting Results

IP Masquerade and Network Address Translation

Side Effects and Fringe Benefits, Configuring the Kernel for IP Masquerade, Configuring IP Masquerade.

Module IV

The Network Information System

Getting Acquainted with NIS, NIS Versus NIS+ , The Client Side of NIS, Running an NIS Server, NIS Server Security.

Network file system

Preparing NFS, Mounting an NFS Volume, The NFS Daemons, The exports File.

System Backup & Recovery

Log files for system and applications; Backup schedules and methods (manual and automated).