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Linux System Administration

SEMESTER-IV

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

BLOCK-1

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

Subject Experts

Prof. Anjana Kakati Mahanta, Gauhati University

Prof. (Retd.) Pranhari Talukdar, Gauhati University

Prof. Shikhar Kumar Sarma, Gauhati University

Dr. Jyotiprokash Goswami, Assam Engineering College

Programme Coordinator

Dr. Ridip Dev Choudhury, KKHSOU

Course Coordinators

Dr. Ridip Dev Choudhury, KKHSOU

Dr. Tapashi Kashyap Das, KKHSOU

Dr. Sruti Sruba Bharali, KKHSOU

SLM Preparation Team

UNITS	CONTRIBUTORS
1,2,3,4,5	Dr. Gautam Chakraborty, NERIM
6	Mr. Saurabh Sutradhar, Royal Global University
7,8	Dr. Ridip Dev Choudhury, KKHSOU

Editorial Team

Structue, Format & Graphics	**:**	Dr. Ridip Dev Choudhury, KKHSOU
Content	**:**	Dr. Khurshid Alam Borbora, KKHSOU

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Headquarters : Patgaon, Rani Gate, Guwahati - 781017
City Office : Resham Nagar, Khanapara, Guwahati- 781022 **Web: www.kkhsou.in**

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DETAILED SYLLABUS

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UNIT 1: Introduction to System Administration **7-18**

Introduction to System Administration, Role of System Administrator, Qualities of good System Administrator, System Administration Common administrative tasks, identifying administrative files - configuration and log files

UNIT 2: Introduction to LINUX Operating System **19-35**

Basic idea on Proprietary, Open Source, Free Software etc, Basic Features of the Linux operating system, Introduction of Various Linux Distribution (Red Hat Enterprise Linux, Cent OS, Fedora Projects, Debian Linux, Ubuntu, SUSE etc.)

UNIT 3: Installation of LINUX Operating System **36-65**

Installation Requirements, Partitioning the Hard drive in Linux, Installing the Linux system: Using Live CD, Virtual Machine, Direct Installation, Installing and Configuring software in Linux

UNIT 4: LINUX Kernel **66-82**

Linux kernel and device drivers, System Startup and Shutdown, Standard I/O, Standard error, Redirection and Piping

UNIT 5: Basics of LINUX File System **83-106**

Basics of Linux file system - File system types (ext3, ext4, xfs, jfs, ReiserFS, iso9660 etc.), Boot block, Super block, Inode table, Data blocks, How Linux access files, storage files, Linux standard directories, LILO, GRUB Boot Loader, three basic types of files (ordinary or regular, special or device and directory), I-nodes and file attributes, init and run levels

UNIT 6: File organization **107-123**

Files and File System (File Types and Permissions, Links, Size and Space, Date and Time); Working with Files: Reading Files, Searching for files, Copying, Moving, Renaming, Deleting, Linking, and Editing Files; Absolute and Relative

path names, File system Mounting and Unmounting, Organization of the file tree, Standard directories and their contents, Disk related commands, checking disk free spaces.

UNIT 7: LINUX File Handling Commands **124-136**

Files and Directory handling Commands - ls, cd, cp, mv, rm, mkdir, rmdir, pwd, Commands for Creating and Viewing ordinary files - cat, more, less

UNIT 8: LINUX Filter Commands **137-154**

Filter Commands - wc, head, tail, cut, tr, top, grep (with regular expressions),. Other commands -tar, unzip, nice, kill, netstat. Setting user and group ownership of files and Access permissions - chmod, chown, chgrp commands

COURSE INTRODUCTION

This is a course on **Linux System Administration.** Linux is an open-source operating system. The Linux OS was developed by Linus Torvalds in 1991. Nowadays, Linux is the fastest-growing operating system. Linux system administration is a process of setting up, configuring, and managing a computer system in a Linux environment. This course is designed to describe most of the skills needed for Linux system administration work.

The course consists of two blocks.

Block 1 deals with the basic concepts of Linux Operating System. The installation processes of the Linux operating system are explained. The file and directory structure of Linux OS are explained. At the end of this block, various file handling and filter commands are discussed.

Block 2 discusses about the Linux shells. It also discusses the processes, printing jobs and establishment of networking in Linux OS. In the last part of this block, the concept of network protocols and basic network security issues are explained.

BLOCK INTRODUCTION

This is the first block of the course **Linux System Administration.** This block contains eight units.

Unit 1 describes the role of system administrator and the common administrative task of a system administrator.

Unit 2 discusses about open Source and Free Software. It also describes various Linux Distributions like Red Hat Enterprise Linux, Cent OS, Fedora Projects, Debian Linux, Ubuntu, and SUSE Linux

Unit 3 describes step by step installation process of Linux operating system.

Unit 4 describes the Linux kernel and the system startup and shutdown procedures.

Unit 5 describes various file system types like ext3, ext4, xfs etc.

Unit 6 discusses how to work with Files. File system mounting and unmounting, Organization of the file tree, Standard directories and their contents are also discussed in this unit.

Unit 7 discusses various file handling commands with examples.

Unit 8 deals with the various Linux filter commands.

Each unit of these blocks includes "CHECK YOUR PROGRESS" questions. These have been designed to self-check your progress of study. It will be helpful for you if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with "ANSWERS TO CHECK YOUR PROGRESS" given at the end of each unit.