

Lesson Plan for UNIX and Shell Programming

UNIX and Shell Programming							
Lecture	Tutorial	Practical	Credit	Major Test	Minor Test	Total	Time
3	0	0	3	75	25	100	3 Hrs.
Purpose	Expertisation in computational programming skills on Unix/Linux Environment.						
Course Outcomes(CO)							
CO1	Learning of simple & advanced commands with features and characteristics of Unix /Linux Systems.						
CO2	Exploring knowledge of programming development skills using Shell, Filters, editors and other utilities.						
CO3	Analyzing the programming behaviour based on programming development/management on Unix /Linux Systems.						
CO4	Developing creativity as system administrative with networking expertisation in Unix /Linux Systems.						

S. No.	Lecture No.	Topic	Subtopics
1	L1	History of Unix	Origins, Evolution, Unix vs Linux
2	L2	Unix System Structure	Kernel, Shell, Utilities, File System
3	L3	Unix Environment & Startup	Bootting, Runlevels, System Startup Process
4	L4	User Account Management	Creating Users, Groups, Permissions
5	L5	Accessing and Navigating Linux	Terminal Access, Switching Users, File System Navigation
6	L6	Logging In and Out	Login Shells, TTYs, Logout Methods
7	L7	Process Management Basics	Starting, Stopping, Killing Processes
8	L8	File Compression Commands	zip, unzip, compress, uncompress, pack, unpack
9	L9	Shells in Unix/Linux	Bourne Shell, C Shell, Korn Shell, Bash
10	L10	Shell as Command Processor	Command Parsing, Execution, Redirection
11	L11	Unix File System	File Types, File Permissions, Directory Structure
12	L12	Mounting and Unmounting	Mount Commands, Devices, Auto Mounting
13	L13	Unix/Linux Files and I-nodes	File Metadata, Inode Structure
14	L14	File System Commands	ls, cp, mv, rm, chmod, chown, find
15	L15	Shell Variables and Environment	User Defined, System Variables, Export
16	L16	Shell Scripting Basics	Syntax, Variables, Control Structures

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17	L17	Unix Architecture	Kernel-User Space, Shell Interaction
18	L18	Handling Ordinary Files	cat, more, head, tail, wc, file
19	L19	General Purpose Utilities	date, cal, who, uname, echo
20	L20	Advanced Unix Commands	tee, xargs, cut, paste, tr
21	L21	Regular Expressions	Metacharacters, Character Classes, Anchors
22	L22	Filters	sort, uniq, grep, sed, awk
23	L23	Grep and Egrep	Pattern Matching, Options and Examples
24	L24	Unix Editors Overview	vi, sed, Emacs, nano
25	L25	Visual and Stream Editors	vi Modes, sed for Editing Streams
26	L26	Programming with AWK	Patterns, Actions, Scripts, Text Processing
27	L27	Introduction to Perl	Syntax, Variables, Scripts, File Handling
28	L28	File Compression Techniques	Delta Compression, Xdelta, Parallel Compression
29	L29	Writing C Programs in Unix	vi Editor, gcc Compiler
30	L30	Makefile Utility	Dependency Checking, Compilation Automation
31	L31	Linking Libraries	Static vs Shared, gcc Options
32	L32	Debugging with GDB	Breakpoints, Stack Trace, Variable Inspection
33	L33	Process Initialization	rc Files, init Process, systemd
34	L34	Networking Tools & Security	ping, telnet, FTP, firewall, mail, tar, cpio, dd
35	L35	Case Study – Linux OS	Linux as Open Source, Distros, Community Development