

UNIX AND SHELL PROGRAMMING

(Common to CSE & IT)

Course Code : 15CT1115

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Pre-requisites:

Operating Systems

Course Outcomes:

At the end of the Course, the Student will be able to:

CO 1 Describe UNIX operating system commands.

CO 2 Understand Shell features.

CO 3 Develop Regular Expressions using Shell script

CO 4 Develop programs using C Shell.

CO 5 Develop system calls for file management.

UNIT-I

(12 Lectures)

INTRODUCTION TO UNIX:

The UNIX Operating System, A brief history of UNIX, The UNIX Architecture and Command structure usage, Basic Characteristics of UNIX.

THE FILE SYSTEM -Types of Files, Directories and Files, Absolute and relative pathnames, UNIX File System, File attributes.

HANDS ON EXPOSURE TO THE FOLLOWING COMMANDS:

GENERAL PURPOSE UTILITIES - cal, date, man, echo, bc, clear, script, tty, passwd, who. FILE HANDLING UTILITIES - pwd, cd, mkdir, rmdir, cat, cp, ls, wc, rm, mv, nl, pg, more, chmod, chown, chgrp

DISK UTILITIES – du, df, mount, umount

PROCESS UTILITIES –ps, fg, bg, kill, stop, wait

NETWORKING UTILITIES – ping, telnet, rlogin, ftp, arp, finger

UNIT-II

(8 Lectures)

INTRODUCTION TO SHELLS:

UNIX Session, Standard Streams, Redirection, Pipes, Tee Command, Command Execution, Command-Line Editing, Quotes, Command Substitution, Job Control, Aliases, Variables, Predefined Variables, Options.

FILTERS:

Filters, concatenating files, Display Beginning and End of files, Cut and Paste, Sorting, Translating Characters, uniq, comm, diff and cmp.

UNIT-III

(10 Lectures)

REGULAR EXPRESSIONS:

Atoms, operators

GREP:

Operation, GREP Family, Searching for File Content.

AWK:

Execution, Fields and Records, Scripts, Operations, Patterns, Actions, Associative Arrays, String Functions, Mathematical Functions, User – Defined Functions, Using System commands in AWK, Applications, AWK and GREP.(Hands-on exposure to GREP and AWK

UNIT-IV

(10 Lectures)

INTERACTIVE C SHELL:

C Shell Features, Two Special Files, Variables, Output, Input, Exit Status of a Command, eval Command, Command History, Command Execution Process.

C SHELL PROGRAMMING:

Basic Script concepts, Expressions, Decisions: Making Selections, Repetition, special Parameters and Variables, changing Positional Parameters, Argument Validation, Debugging Scripts, Script Examples.(Hands-on exposure to C Shell Programming).

UNIT-V**(10 Lectures)****FILE MANAGEMENT:**

File Structures, System Calls for File Management – create, open, close, read, write, lseek, link, symlink, unlink, stat, fstat, lstat. (Hands-on exposure to the above system calls)

DIRECTORY API:

opendir, readdir, closedir, mkdir, rmdir, umask.

TEXT BOOKS:

1. Sumitabha Das, “Unix Concepts and Applications”, 4thEdition. TMH, 2006. (1, 2 units)
2. Behrouz A. Forouzan, Richard F. Gilbery, “Unix and Shell Programming”, 1stEdition, Cengage Learning India, 2003.

REFERENCES:

1. Graham Glass, King Ables, “Unix for Programmers and Users”, 3rdEdition, Pearson Education, 2009.
2. N.B Venkateswarlu, “Advanced Unix programming”, 2ndEdition, BS Publications, 2010.
3. Yashwanth Kanitkar, “Unix Shell programming”, 1stEdition, BPB Publisher, 2010.