22OE303: UNIX PROGRAMMING

Course Name	UNIX Programming			L	T	P	C	CIA	SEE	TM
Course Code	22OE303			3	0	0	3	30	70	100
Year of Introduction:	Year of Offering: 2023	Year of Revision: No Revision		Percentage of Revision: Nil						
L-Lecture, T-Tutorial, P-Practical, C-Credits, CIA-Internal Marks, SEE-External Marks, TM-Total Marks										

Course Descriptive and Purpose: UNIX is to provide simple, powerful tools that can be combined to perform complex tasks. It features a command-line interface that allows users to interact with the system through a series of commands, rather than through a graphical user interface (GUI).

Course Objectives: This course will help the students to learn about fundamental concepts of UNIX, UNIX File System, Shell Programming and Process Concepts.

Specific objectives include:
- To provide an understanding of the Basics of UNIX, Commands and Basic File System.
- To learn various Loops in Shell Programming
- To apply Filters.
- To learn Shell Programming.
- To provide understanding on Probability Distributions and Statistics using R.

Course Outcomes:
Upon successful completion of the course, the student will be able to:
CO1: Have a comprehensive understanding of Unix, including its history, components, basic commands, command substitution, and the ability to effectively use Unix for various tasks.
CO2: Possess a comprehensive knowledge of Unix file systems, including understanding file basics, directories, permissions, INodes, file attributes, and how to manipulate file permissions, ownership, and group associations effectively.
CO3: Proficient in using various Unix filters, including the Grep family, Sed, and AWK, to search, process, and manipulate text data, making you capable of working efficiently with Unix text files.
CO4: have a comprehensive understanding of shell programming in Unix, including variables, control structures, commands, and debugging techniques, enabling you to create and manage shell scripts effectively.
CO5: Possess a deep knowledge of Unix processes, including their types, creation, management, and job control, empowering you to efficiently work with and manipulate processes in a Unix environment.

SYLLABUS

UNIT-I (12 Hours)

Introduction to Unix: Brief History, What is Unix, Unix Components, Using Unix, Commands in Unix, Some Basic Commands, Command Substitution, Giving Multiple Commands.

The File System: The Basics of Files, What's in a File, Directories and File Names, Permissions, INodes, The Directory Hierarchy, File Attributes and Permissions, The File Command, Knowing the FileType, The Chmod Command, Changing File Permissions, The Chown Command, Changing the Owner of a File, The Chgrp Command, Changing the Group of a File.

UNIT-II (12 Hours)

Using the Shell: Command Line Structure, Met Characters, Relating New Commands, Command Arguments and Parameters, Program Output as Arguments, Shell Variables, More on I/O Redirection, Looping in Shell Programs.

UNIT-III (12 Hours)

Filters: The Grep Family, Other Filters, The Stream Editor Sed, The AWK Pattern Scanning and Processing Language, Good Files and Good Filters

UNIT-IV (12 Hours)

Shell Programming: Shell Variables, The Export Command, The Profile File a Script Run During Starting, The First Shell Script, The Read Command, Positional Parameters, The $? Variable, Knowing the Exit Status, More about the Set Command, The Exit Command, Branching Control Structures, Loop Control Structures, The Continue and Break Statement, The Expr Command: Performing Integer Arithmetic, Real Arithmetic in Shell Programs, The here Document(<<), The Sleep Command, Debugging Scripts, The Script Command, The Eval Command, The Exec Command.

UNIT-V (12 Hours)

The Process: The Meaning, Parent and Child Processes, Types of Processes, More about Foreground and Background Processes, Internal and External Commands, Process Creation, The Trap Command, The Stty Command, The Kill Command, Job Control.

Reference Text Books:

1. W.Kernighan & RobPike, The Unix Programming Environment by Brain, Pearson, 1st Edition, 1984
2. M.G.Venkatesh Murthy, Introduction to Unix Shell Programming, Pearson, 1st Edition, 2005
3. B.M.Harwani, Unix and Shell Programming, OXFORD University Press, 2013

PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE

(An Autonomous College in the jurisdiction of Krishna University)

Course Name: UNIX PROGRAMMING

Course Code: 22OE303, Third Semester

(w.e.f admitted batch 2023-24)

Time: 3 Hours **Max Marks: 70**

SECTION-A

Answer ALL questions **(5×4 = 20 Marks)**

1.(a) What is Shell? Explain the Types of Shells. (CO1,L1)

(or)

(b) State I/O re-direction with examples. (CO1,L1)

2.(a) Write File Permission commands with examples. (CO2,L1)

(or)

(b) Write short notes on Command Substitution with example. (CO2,L1)

3.(a) Write short note on Filters in UNIX with examples. (CO3,L1)

(or)

(b) State merits of AWK Scripting. (CO3,L1)

4. (a) Write short note on significance of Regular Expression with grep command. (CO4,L1)

(or)

(b) Write short note on significance of exit status in Shell Programming. (CO4,L1)

5. (a) Distinguish between Internal and External commands. (CO5,L4)

(or)

(b) Examine process of debugging a Shell Script. (CO5,L4)

SECTION-B

Answer ALL questions . All Questions Carry Equal Marks. (5×10=50Marks)

6.(a) Explain the concepts of Unix File System with neat diagram.(CO1,L2)

(or)

(b) Explain the chmod and chown and chgrp commands with examples. (CO1,L2)

7. (a) Make use of Loop Control in Shell Programming with example (CO2,L3)

(or)

(b) Make use of Shell Script that Backup Files in Directory to another Directory. (CO2,L3)

8. (a) Distinguish between sed and AWK. (CO3,L4)

(b) Examine grep command with examples. (CO3,L4)

(or)

(c) Test for awk script to process a text file with different delimiters. (CO3,L4)

9. (a) Explain Branch Control and Loop Control Statements in Unix Shell Programming. (CO4,L2)

(or)

(b) Explain the usage of following command with examples. (CO2,L2)

(i).eval (ii) exec (iii) set (iv) exit (v) expr

10. (a) Explain the types of process in unix environment with examples. (CO5,L5)

(or)

(b) Explain the creation process in unix environment and its significance. (CO5,L5)

(c) Explain the usage of following command with examples. (CO5,L5)

(i) trap (ii) kill (iii) stty