



## JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA

KAKINADA – 533 003, Andhra Pradesh, India

### DEPARTMENT OF INFORMATION TECHNOLOGY

II Year – II Semester		L	T	P	C
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#### UNIX OPERATING SYSTEM LAB

#### Course Objectives:

- To understand the design aspects of operating system
- To study the process management concepts & Techniques
- To study the storage management concepts
- To familiarize students with the Linux environment
- To learn the fundamentals of shell scripting/programming

#### Course Outcomes:

- To use Unix utilities and perform basic shell control of the utilities
  - To use the Unix file system and file access control
  - To use of an operating system to develop software
  - Students will be able to use Linux environment efficiently
  - Solve problems using bash for shell scripting
- 1) a) Study of Unix/Linux general purpose utility command list: man, who, cat, cd, cp, ps, ls, mv, rm, mkdir, rmdir, echo, more, date, time, kill, history, chmod, chown, finger, pwd, cal, logout, shutdown.  
b) Study of vi editor  
c) Study of Bash shell, Bourne shell and C shell in Unix/Linux operating system  
d) Study of Unix/Linux file system (tree structure)  
e) Study of .bashrc, /etc/bashrc and Environment variables.
  - 2) Write a C program that makes a copy of a file using standard I/O, and system calls
  - 3) Write a C program to emulate the UNIX ls -l command.
  - 4) Write a C program that illustrates how to execute two commands concurrently with a command pipe. Ex: - ls -l | sort
  - 5) Simulate the following CPU scheduling algorithms:  
(a) Round Robin (b) SJF (c) FCFS (d) Priority
  - 6) Multiprogramming-Memory management-Implementation of fork (), wait (), exec() and exit (), System calls
  - 7) Simulate the following:  
a) Multiprogramming with a fixed number of tasks (MFT)  
b) Multiprogramming with a variable number of tasks (MVT)
  - 8) Simulate Bankers Algorithm for Dead Lock Avoidance
  - 9) Simulate Bankers Algorithm for Dead Lock Prevention.
  - 10) Simulate the following page replacement algorithms:  
a) FIFO b) LRU c) LFU
  - 11) Simulate the following File allocation strategies  
(a) Sequenced (b) Indexed (c) Linked
  - 12) Write a C program that illustrates two processes communicating using shared memory
  - 13) Write a C program to simulate producer and consumer problem using semaphores



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- 14) Write C program to create a thread using *pthread* library and let it run its function.
- 15) Write a C program to illustrate concurrent execution of threads using *pthread* library.