SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK

Subject with Code : LP(9F00303) **Course & Branch**: MCA

Year & Sem: II-MCA & I-Sem **Regulation:** R09

UNIT –I

Linux Utilities

1. a) How does Linux differ from Unix? Discuss the features of Linux. 5M
   b) Explain various text processing utilities, with a suitable example for each. 5M
2. a) Explain briefly about text processing and process utilities in Linux. 5M
   b) Write a short note on AWK command. 5M
3. a) List and explain various networking commands. 5M
   b) What is a filter? Explain its role in linux programming. 5M
4. a) Explain various process and disk utilities. 5M
   b) Discuss the commands used to achieve files and compress the contents of file in detail. 5M
5. a) Explain various file permissions in Linux. 5M
   b) Explain various characteristics of Linux. 5M
6. a) List and explain the various disk utility commands. 5M
   b) Explain with syntax of various backup utilities with examples. 5M
7. Explain in detail about awk. 10M
8. Explain in detail about sed. 10M
9. Explain the various usages of cat command. Also explain the file permissions in Linux. 10M
10. Explain the substitution command of sed in Linux. 10M

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UNIT –II

Working with Bash

1. a) Describe the responsibilities of a shell. 5M
   b) write a shell script to generate first 'n' prime numbers. 5M
2. Write shell scripts which work similar to the following commands 10M
   a) head b) tail c) more
3. a) Define shell. Explain how a shell variable can be defined and initialized. 5M
   b) Write a shell script to delete duplicate files in the directory. 5M
4. a) Write a shell script to find whether number is prime or not. 5M
   b) Discuss in detail about input and output redirections. 5M
5. a) Write a short note on the responsibilities of a shell. 5M
   b) Write a shell script to compute first 'n' positive numbers sum and average values. 5M
6. a) Write a shell program to find the factorial of a given number. 5M
   b) Write short notes on 'here' documents. 5M
7. Explain about the variable, file name, command substitutions in detail. 10M
8. Explain the control structures of shell in linux. 10M
9. Explain the arithmetic operators in shell. Also write a shell program to find the sum of two numbers. 10M
10. Explain the number, string, file comparison operators of shell in linux. 10M

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UNIT –III

Linux Files

1. a) With a neat sketch, explain the Linux file system layout. 5M
   b) write the following in brief: 5M
   i) Record locking ii) System calls iii) chmod
2. a) Describe the file system structure and different file types in linux. 5M
   b) Compare hard links with soft links. 5M
3. Explain the following system calls: 10M
   a) fcntl b) lseek c) read d) write
4. Write the following in brief: 10M
   a) File descriptors b) Record locking c) Symlink
5. Write the syntax of following system calls: 10M
   a) open b) read c) chmod d) opendir e) chown
6. a) Define inode and discuss various file types used in linux for accessing files 5M
   b) Write short notes with their syntax for the following: 5M
   i) getcwd ii) readdir iii) fseek
7. a) Draw and explain the structure of typical file system. 5M
   b) Give brief description on low level file access. 5M
8. Explain the scanning directories in linux. 10M
9. Explain the file and the record locking in linux. 10M
10. Explain the following in brief: 10M
    a) mkdir b) rmdir c) chdir d) getcwd

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UNIT –IV

Linux Process

1. a) Explain the process states in linux. 5M
   b) Discuss any three system calls for process management and explain. 5M
2. a) List the differences in using fork() and vfork() system calls. 5M
   b) Write a short note on kill() and raise() functions. 5M
3. a) Draw and explain the structure of a typical process. 3M
   b) Distinguish between fork and vfork. 3M
   c) Write short notes on orphan process. 4M
4. a) How processing of states can be performed in linux? 5M
   b) Explain how zombie process is created in linux. 5M
5. Explain the following system calls: 10M
   a) fork b) vfork c) wait d) exec
6. a) Explain the steps of how kernel supports a process. 5M
   b) What is zombie process? Explain how zombie process can be removed from a system. 5M
7. Explain the following system call interfaces: 10M
   a) wait b) exit c) exec d) fork
8. Explain about the zombie process and orphan process. 10M
9. Explain the process control in brief. 10M
10. Write a program to create the zombie process. 10M

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UNIT –V

Linux Signals

1. a) What is the difference between reliable and unreliable signals? Explain with example. 5M
   b) Write and explain the mechanism of handling a signal. 5M
2. Explain the following: 10M
   a) kill b) raise c) alarm d) abort e) sleep
3. a) What is a signal? Discuss the signals SIGKILL and SIGSTOP. 5M
   b) Explain the reliable and unreliable signals in brief. 5M
4. a) In linux how to generate and handle signals. 5M
   b) Write a c program to illustrate kill() and raise() system calls. 5M
5. a) What are the functions of signal? 5M
   b) What are unreliable signals? 5M
6. a) What is a signal? Discuss the signals SIGKILL and SIGSTOP and explain. 5M
   b) How linux signals are processed inside the kernel? Explain. 5M
7. a) Discuss in detail about the reliable signals. 5M
   b) Write short notes on the kernel support for signals. 5M
8. Explain the signal functions in detail. 10M
9. Explain the process of generating and handling the signals. 10M
10. List the different signals in linux. Also explain it briefly. 10M

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UNIT –VI

Interprocess communication

1.	a) What is a pipe? Explain the process of calling a pipe?	5M
	b) What is message queue? Explain.	5M
2.	a) Explain the advantages of FIFOs over pipes.	5M
	b) Write a C program to illustrate two way communication using FIFOs.	5M
3.	a) Explain the file locking with respect to semaphores.	5M
	b) Write short notes on IPC by using message queues.	5M
4.	Explain the following IPC briefly:	10M
	a) FIFO b) Shared Memory c) Message Queues	
5.	Explain in detail about Linux APIs for shared memory.	10M
6.	a) Explain how pipes are used as a standard input and output.	5M
	b) Explain shared memory and its usage by a number of processes.	5M
7.	a) What is IPC? Explain it by using FIFO's.	5M
	b) Explain IPC between two processes present in different systems.	5M
8.	Explain the semaphores in detail.	10M
9.	Explain the shared memory in detail.	10M
10.	Explain the message queues in detail.	10M

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UNIT –VII

Multithreaded Programming

1. a) What is meant by synchronization? How synchronization is achieved with semaphores? 5M
   b) Explain the structure of a thread. Discuss its uses. 5M
2. a) Draw and explain life cycle of thread. 5M
   b) Explain the synchronization of threads by using mutexes. 5M
3. a) Differentiate between thread and light weight process. 5M
   b) Explain how semaphores are used to control thread operation on shared data. 5M
4. a) What is a thread? Explain about its structure and uses. 5M
   b) Write a short note on mutexes. 5M
5. a) How mutexes are used to prevent data inconsistency? Explain. 5M
   b) Explain various multithreading models in detail. 5M
6. a) Distinguish between threads and processes. 5M
   b) Discuss in detail about the POSIX thread API. 5M
7. a) What is meant by Synchronization? How synchronization is achieved with semaphores? 5M
   b) Explain the multithreading models with examples. 5M
8. Explain the thread synchronization with semaphores. 10M
9. Explain the POSIX thread APIs in detail. 10M
10. Explain the creation of threads and thread attributes of POSIX thread. 10M

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UNIT –VIII

Sockets

1. Write and explain the program for client/server communications using sockets. 10M
2. Explain briefly the following with syntax: 10M
   a) Socket b) connect( ) c) accept( ) d) send( )
3. Write and explain the steps to be followed for creating the server application. 10M
4. Write short notes on connectionless protocols for sockets. 10M
5. a) What is a socket? Explain various data types used by the sockets interface. 5M
   b) Differentiate between connection oriented and connectionless protocol. 5M
6. Explain the socket interfaced and features of TCP connection. 10M
7. Draw and explain the typical client/server model. 10M
8. Explain the process of creating client/server communication in Connection oriented model. 10M
9. Explain the process of creating client/server communication in Connectionless model. 10M
10. Explain the Socket APIs in detail. 10M

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