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

QUESTION BANK

Subject with Code : Linux Programming(16MC814)**Course& Branch**: MCA

Year & Sem: II-MCA& I-Sem **Regulation:**R16

UNIT –I

Linux Utilities and Working with Bash

1. a) How does Linux differ from Unix? Discuss the features of Linux.6M
   b) Explain various text processing utilities, with a suitable example for each.6M
2. a) Explain briefly about text processing and process utilities in Linux.6M
   b) Write a short note on AWK command.6M
3. Explain in detail about awk. 12M
4. Explain in detail about sed. 12M
5. Explain the various usages of cat command. Also explain the file permissions in Linux. 12M
6. a) Describe the responsibilities of a shell. 6M

b) write a shell script to generate first 'n' prime numbers. 6M

7. a) Write a shell script to find whether number is prime or not. 6M

b) Discuss in detail about input and output redirections. 6M

8. a) Write a shell program to find the factorial of a given number. 6M

   b) Write short notes on 'here' documents. 6M

9. Explain the arithmetic operators in shell. Also write a shell program to find the sum of two numbers. 12M
10. Explain the number, string, file comparison operators of shell in linux. 12M

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UNIT –II

Linux Files

1. a) With a neat sketch, explain the Linux file system layout. 6M
   b) Write the following in brief: 6M
   i) Record locking ii) System calls iii) chmod
2. a) Describe the file system structure and different file types in linux. 6M
   b) Compare hard links with soft links. 6M
3. Explain the following system calls: 12M
   a) fcntl b) lseek c) read d) write
4. Write the following in brief: 12M
   a) File descriptors b) Record locking c) Symlink
5. Write the syntax of following system calls: 12M
   a) open b) read c) chmod d) chown
6. a) Define inode and discuss various file types used in linux for accessing files 6M
   b) Write short notes with their syntax for the following: 6M
   i) getcwd ii) readdir iii) fseek
7. a) Draw and explain the structure of typical file system. 6M
   b) Give brief description on low level file access. 6M
8. Explain the scanning directories in linux. 12M
9. Explain the file and the record locking in linux. 12M
10. Explain the following in brief: 12M
    a) mkdir b) rmdir c) chdir d) getcwd

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UNIT –III

Linux Process& Signals

1. a) Explain the process states in linux. 8M
   b) Discuss any three system calls for process management and explain. 4M
2. a) List the differences in using fork() and vfork() system calls. 5M
   b) Write a short note on kill() and raise() functions. 7M
3. Explain the following system calls: 12M

a) fork b) vfork c) wait d) exec

4. a) Explain the steps of how kernel supports a process. 4M

b) What is zombie process? Explain how zombie process can be removed from a system. 8M

5. Explain about the zombie process and orphan process. 12M
6. Explain the following: 12M

   a) kill b) raise c) alarm d) abort

7. a) What is a signal? Discuss the signals SIGKILL and SIGSTOP. 7M
   b) Explain the reliable and unreliable signals in brief. 5M
8. Explain the signal functions in detail. 12M
9. Explain the process of generating and handling the signals. 12M
10. List the different signals in linux. Also explain it briefly. 12M

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UNIT – IV

Interprocess Communication

1.	a) What is a pipe? Explain the process of calling a pipe?	6M
	b) What is message queue? Explain.	6M
2.	a) Explain the advantages of FIFOs over pipes.	5M
	b) Write a C program to illustrate two way communication using FIFOs.	7M
3.	a) Explain the file locking with respect to semaphores.	4M
	b) Write short notes on IPC by using message queues.	8M
4.	Explain the following IPC briefly:	12M
	a) FIFO b) Shared Memory c) Message Queues	
5.	Explain in detail about Linux APIs for shared memory.	12M
6.	a) Explain how pipes are used as a standard input and output.	6M
	b) Explain shared memory and its usage by a number of processes.	6M
7.	a) What is IPC? Explain it by using FIFO's.	7M
	b) Explain IPC between two processes present in different systems.	5M
8.	Explain the semaphores in detail.	12M
9.	Explain the shared memory in detail.	12M
10.	Explain the message queues in detail.	12M

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UNIT –V

Multithreaded Programming and Sockets

1. a) What is meant by synchronization? How synchronization is achieved with semaphores? 6M
   b) Explain the structure of a thread. Discuss its uses. 6M
2. a) Draw and explain life cycle of thread. 6M
   b) Explain the synchronization of threads by using mutexes. 6M
3. a) How mutexes are used to prevent data inconsistency? Explain. 7M
   b) Explain various multithreading models in detail. 5M
4. a) Distinguish between threads and processes. 5M
   b) Discuss in detail about the POSIX thread API. 7M
5. Explain the creation of threads and thread attributes of POSIX thread. 12M
6. a) What is a socket? Explain various data types used by the sockets interface. 8M
   b) Differentiate between connection oriented and connectionless protocol. 4M
7. Draw and explain the typical client/server model. 12M
8. Explain the process of creating client/server communication in Connection oriented model. 12M
9. Explain the process of creating client/server communication in Connectionless model. 12M
10. Explain the Socket APIs in detail. 12M

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