Hall Ticket No | | | | | | | | | | Question Paper Code: ACS010

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER -1

B.Tech VI Semester End Examinations (Regular), April – 2020

Regulations: IARE-R16

LINUX PROGRAMMING

(CSE)

Time: 3 hours **Max. Marks: 70**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

Unit – I

1	a)	Demonstrate the different file handling and text processing utilities with suitable example for each.	[7M]
	b)	Distinguish between grep and sed commands. Write a grep command to display the lines, count of the lines which matches the given pattern	[7M]
2	a)	Write short notes on file security by elaborating file utility options along with relative and absolute manner for defining appropriate ownership and file access permissions.	[7M]
	b)	Suppose we create a phone directory of friends with family name, first name and phone number on each line. How shall we use AWK to determine which is the most commonly occurring family name in our phone directory?	[7M]

Unit – II

3	a)	Describe linux file system advantages and also state different commands used in system calls for I/O operations.	[7M]
	b)	Write a shell script which checks whether a given file contains a given word. If it does, the script should output the message "The file contains the word"; if not, it should output the message "The file doesn't contain the word".	[7M]
4	a)	Differentiate between the three stat() file description functions with examples.	[7M]
	b)	Write a C program to read a directory name as input and list all files along with details and inode number.	[7M]

Unit – III

5	a)	What is linux process status (ps) and explain the procedures for process creation, replacing a process image, waiting for a process, process termination.	[7M]
	b)	How to prevent an orphan processes in linux? Demonstrate a program to create process and to check orphan process**.**	[7M]
6	a)	How linux kernel provides support for 'signals' and write about kill, raise, alarm, pause, abort and sleep functions used in linux signals	[7M]
	b)	What is an orphan process? Write a program to illustrate orphan process.	[7M]

Unit – IV

7	a)	Compare the IPC functionality provided by message queues and FIFOs. What are the advantages and drawbacks of each? Explain briefly.	[7M]
	b)	What is pipe? What are the differences between named and unnamed pipes? Write a program that uses a pipe to allow the parent process to read a message from its child.	[7M]
8	a)	List and explain the various system calls that are associated with semaphores.	[7M]
	b)	Write a c program to create a message queue with read and write permissions to write 3 messages to it with different priority numbers.	[7M]

Unit – V

9	a)	Explain the usage of stream sockets using client-server message handling example.	[7M]
	b)	Explain about how TCP connections are established and terminated?	[7M]
10	a)	What is socket? Explain socket system calls for connectionless protocol.	[7M]
	b)	Write a C socket program for linux with a TCP server and client example code.	[7M]

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COURSE OBJECTIVES

The course should enable the students to:

I	Interpret the Linux utilities to control the resources.
II	Learn basic concepts of shell scripts and file structures.
III	Understand the concepts of process creation and interruption for multitasking applications.
IV	Explore memory allocation and inter process communication methods.
V	Provide support for distributed and network applications in Linux environment.

COURSE OUTCOMES (COs):

CO 1	Understand the basic commands of Linux operating system and Demonstrate Sed and awk scripting
CO 2	Demonstrate shell scripts and understand creation of file systems and directories and operate them
CO 3	Synthesis creation of background and fore ground processes management through system calls and Generalize signal functions to handle interrupts by using system calls.
CO 4	Demonstrate Inter process communication using shared memory segments, pipes ,message queues
CO 5	Demonstrate various client server applications using TCP or UDP protocols.

COURSE LEARNING OUTCOMES

Students, who complete the course, will have demonstrated the ability to do the following:

ACS010.01	Learn the importance of Linux architecture along with features.
ACS010.02	Identify and use Linux utilities to create and manage simple file processing operations
ACS010.03	Apply the security features on file access permissions by restricting the ownership using advance Linux commands.
ACS010.04	Implement the SED Scripts, operation, addresses, and commands.
ACS010.05	Implement the GREP and AWK commands for pattern matching and mathematical functions.
ACS010.06	Understand the shell responsibilities of different types of shells
ACS010.07	Develop shell scripts to perform more complex tasks in shell programming environment.
ACS010.08	Illustrate file processing operations such as standard I/O and formatted I/O.
ACS010.09	Illustrate directory operations such as standard I/O and formatted I/O.
ACS010.10	Understand process structure, scheduling and management through system calls.
ACS010.11	Generalize signal functions to handle interrupts by using system calls.
ACS010.12	Illustrate memory management of file handling through file/region lock
ACS010.13	Design and implement inter process communication (IPC) in client server environment by using pipe.
ACS010.14	Design and implement inter process communication (IPC) in client server environment by using named Pipes
ACS010.15	Illustrate client server authenticated communication in IPC through messages queues, semaphores
ACS010.16	Illustrate client server authenticated communication in IPC through shared memory.

ACS010.17	Demonstrate socket connections, socket attributes, socket addresses
ACS010.18	Demonstrate various client server applications on network using TCP.
ACS010.19	Demonstrate various client server applications on network using UDP protocols.
ACS010.20	Design custom based network applications using the sockets interface in heterogeneous platforms

MAPPING OF SEMESTER END EXAM TO COURSE LEARNINIG OUTCOMES

SEE Question No.		Course Learning Outcomes		Course Outcomes	Blooms Taxonomy Level
1	a	ACS010.02	Identify and use Linux utilities to create and manage simple file processing operations	CO 1	Understand
	b	ACS010.05	Implement the GREP and AWK commands for pattern matching and mathematical functions.	CO 1	Remember
2	a	ACS010.03	Apply the security features on file access permissions by restricting the ownership using advance Linux commands.	CO 1	Remember
	b	ACS010.03	Implement the GREP and AWK commands for pattern matching and mathematical functions.	CO 1	Remember
3	a	ACS010.08	Illustrate file processing operations such as standard I/O and formatted I/O.	CO 2	Remember
	b	ACS010.07	Develop shell scripts to perform more complex tasks in shell programming environment.	CO 2	Understand
4	a	ACS010.08	Illustrate file processing operations such as standard I/O and formatted I/O.	CO 2	Remember
	b	ACS010.08	Illustrate file processing operations such as standard I/O and formatted I/O.	CO 2	Remember
5	a	ACS010.10	Understand process structure scheduling and management through system calls.	CO 3	Remember
	b	ACS010.10	Understand process structure scheduling and management through system calls.	CO 3	Remember
6	a	ACS010.10	Generalize signal functions to handle interrupts by using system calls.	CO 3	Remember
	b	ACS010.11	Understand process structure scheduling and management through system calls	CO 3	Remember
7	a	ACS010.13	Illustrate client server authenticated communication in IPC through messages queues, semaphores	CO 4	Remember
	b	ACS010.13	Design and implement inter process communication (IPC) in client server environment by using named Pipes	CO 4	Remember
8	a	ACS010.15	Illustrate client server authenticated communication in IPC through messages queues, semaphores	CO 4	Remember
	b	ACS010.16	Illustrate client server authenticated communication in IPC through messages queues, semaphores	CO 4	Remember
9	a	ACS010.17	Demonstrate socket connections, socket attributes, socket addresses	CO 5	Remember
	b	ACS010.18	Demonstrate various client server applications on network using TCP.	CO 5	Understand

SEE Question No.		Course Learning Outcomes		Course Outcomes	Blooms Taxonomy Level
10	a	ACS010.19	Demonstrate socket connections, socket attributes, socket addresses	CO 5	Understand
	b	ACS010.18	Demonstrate various client server applications on network using TCP.	CO 5	Understand

Signature of Course Coordinator **HOD, CSE**