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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) Explain Layered architecture and kernel role in Linux with neat Diagram? [7M]
b) Describe the issues with creating, copying, moving and deleting the directory file in Linux with examples. [7M]
- 2 a) Compare the comm., comp and diff text processing utilities. [7M]
b) Write about linking of files and describe about kernel role while creating links. [7M]

Unit – II

- 3 a) Explain by writing a script using system time, to show GOOD Morning, GOOD AFTERNOON, and GOODNIGHT. [7M]
b) Demonstrate by writing a shell script to find the factorial of a number. [7M]
- 4 a) Write a shell script to count the specified number of lines in a text file without using wc command? [7M]
b) Describe about Low Level File I/O System Calls. [7M]

Unit – III

- 5 a) Illustrate about child process creation using fork(), vfork() and Exec() [7M]
b) How will you run a process in background? How will you bring that into foreground and how will you kill that process? [7M]
- 6 a) Explain about signal () function? Differentiate the reliable and unreliable signals [7M]
b) Write about the kill and raise signals with its syntax? [7M]

Unit – IV

- 7 a) Create a FIFO to build the communication channel between two processes and give the advantages and disadvantages of Files. [7M]
b) Illustrate pipes? Explain their limitations. Explain how named pipes are replaced to overcome the drawback of pipe in IPC with an example? [7M]
- 8 a) Describe message queue, semaphore, shared memory briefly and list its system calls? [7M]
b) Explain about a shared memory and kernel data structure with a neat diagram? [7M]

Unit – V

- 9 a) What is socket? Explain socket system calls for connectionless protocol. [7M]
b) Explain TCP socket connection establishment with a neat diagram? [7M]
- 10 a) Differentiate TCP and UDP protocols? [7M]
b) Illustrate about bind (), read(), write() functions in Linux? [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):

The Students should enable to:

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 LEARNING OUTCOMES

SEE Question No.		Course Learning Outcomes		Course Outcomes	Blooms Taxonomy Level
1	a	ACS010.01	Learn the importance of Linux architecture along with features.	CO 1	Understand
	b	ACS010.02	Identify and use Linux utilities to create and manage simple file processing operations	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	ACS010.02	Identify and use Linux utilities to create and manage simple file processing operations	CO 1	Remember
3	a	ACS010.07	Develop shell scripts to perform more complex tasks in shell programming environment.	CO 2	Remember
	b	ACS010.07	Develop shell scripts to perform more complex tasks in shell programming environment.	CO 2	Understand
4	a	ACS010.07	Develop shell scripts to perform more complex tasks in shell programming environment.	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	Generalize signal functions to handle interrupts by using system calls.	CO 3	Remember
7	a	ACS010.13	Design and implement inter process communication (IPC) in client server environment by using pipe.	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 shared memory	CO 4	Remember
9	a	ACS010.17	Demonstrate socket connections, socket attributes, socket addresses	CO 5	Remember

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

Signature of Course Coordinator

HOD, CSE