INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad -500 043

COMPUTER SCIENCE AND ENGINEERING
TUTORIAL QUESTION BANK

Course Name	:	**LINUX PROGRAMMING**
Course Code	:	A70511 (R15)
Class	:	IV B. Tech I Semester
Branch	:	Computer Science and Engineering
Year	:	2018- 19
Course Coordinator	:	Ms. Y Harika Devi, Assistant Professor, CSE
Course Faculty	:	Ms. G Geetha Reddy, Assistant Professor, CSE Ms. E Umashankari, Assistant Professor, CSE Ms. B Ramyasree, Assistant Professor, CSE

OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should remember the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

S No	QUESTIONS	Blooms taxonomy level	Course Outcomes
	UNIT – I **Part - A (Short Answer Questions)**		
1.	State kernel role in Linux?	Remember	2
2.	List different types of shells in Linux	Understand	2
3.	Describe compressing of files in Linux.	Remember	2
4.	Find the list of files in a directory along with file attributes.	Understand	1
5.	Give the vi editor text editing commands?	Remember	2
6.	Define hard link and soft link of a file.	Understand	1
7.	Compare CP and MV commands.	Understand	2
8.	Illustrate moving of files in Linux environment with examples?	Remember	2
9.	What is 'rlogin' command purpose?	Remember	1
10.	Give the use of 'telnet' command with example?	Remember	1
11.	What is ftp and its importance in Unix?	Understand	2
12.	Differentiate tar and zip/unzip commands?	Remember	1
13.	How to create a file hierarchy using single command in Linux?	Remember	1

14.	How to create a new directory in a specific disc location in Linux with example?	Understand	2
15.	List the errors while deleting a directory with suitable examples.	Remember	1
16.	Give the attributes meaning in grep command	Remember	1
17.	Describe any four built in variables in Shell and Demonstrate their usage by example?	Understand	2
18.	Write a shell script to display GOOD MRNG, GOOD AFTERNOON,	Remember	1
19.	GOOD NIGHT based on system time whenever user logs on.	Understand	2
20.	What is the use of here documents?	Remember	1
	Part - B (Long Answer Questions)		
1.	Explain Layered architecture and kernel role in Linux with neat Diagram?	Understand	1
2.	Compare the comm., comp and diff text processing utilities.	Understand	2
3.	Illustrate the file filter commands with examples	Remember	2
4.	Remember about links of files and describe about kernel role while creating links.	Understand	1
5.	Describe the issues with creating, copying, moving and deleting the directory file in linux with examples.	Remember	1
6.	Differentiate stream editor and line editor	Understand	2
7.	Discuss on list of commands in sed.	Remember	2
8.	How to create background job and foreground jobs in Linux? Explain Moving processes to the background and foreground with an example?	Remember	1
9.	Explain about ‘ulimit’ and, mount commands? Illustrate ‘pg’ and more command with example?	Remember	2
10.	Distinguish between user Defined variables and environment Variables with example?	Understand	1
11.	Describe about I/O Redirection operations, built in variables in Shell.	Remember	2
12.	Explain by writing a script using system time, to show GOOD Morning, GOOD AFTERNOON, GOODNIGHT.	Remember	1
13.	Explain by writing shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory?	Understand	2
14.	Explain how the shell treat a command line passed to it.	Remember	2
15.	Write an awk script to find the number of characters, words and lines in a file.	Remember	2
16.	Write a shell script to find and delete all file with the word “Unix".	Remember	3
17.	Write a shell script to count the specified number of lines in a text file without using wc command?	Remember	4
18.	Demonstrate by writing a shell script to find the factorial of a number.	Understand	5
19.	Explain by writing shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory?	Understand	4
20.	Explain Moving processes to the background and foreground with an example?	Understand	5

Part - C (Problem Solving and Critical Thinking Questions)			
1.	Differentiate windows and Linux operating system and analyze Important system calls?	Remember	1
2.	Illustrate security concepts in both Linux and windows operating Systems?	Understand	2
3.	Illustrate a shell script called 'say Hi', put this script into your startup file called .bash profile, the script should run as soon as you logon to system, and it print any one of the following message in info box using dialog utility, if installed in your system, If dialog utility is not installed then use echo statement to print message: - Good Morning, Good Afternoon, Good Evening, according to system time.	Remember	2
4.	Illustrate by writing script, that will print, Message "Hello World", in Bold and Blink effect, and in different colors like red, brown etc using echo command.	Understand	3
5.	Describe the Debugging process in shell	Understand	4
UNIT – II Part – A (Short Answer Questions)			
1.	Differentiate between afile locking and record locking.	Remember	6
2.	Differentiate symlink ( ) and link() functions with example?	Understand	7
3.	Define a system call?	Understand	7
4.	List the file types supported by linux.	Understand	6
5.	Differentiate system call with library function?	Remember	6
6.	Compare dot and dot dot notations in the file system?	Remember	7
7.	Distinguish relative path and absolute path.	Understand	7
8.	Differentiate hard link and soft link	Remember	6
9.	List the significance of fcntl arguments	Understand	7
10.	List the file API system calls with purpose	Remember	6
11.	Give the list of directory API functions	Understand	7
12.	Write the syntax for "if" conditionals in Linux?	Understand	6
13.	Discuss 3 standard streams in Linux	Remember	7
14.	Write a command to display PID of current shell.	Understand	7
15.	Write a script to print the first 10 elements of Fibonacci series.	Remember	6
Part - B (Long Answer Questions)			
1.	Write a program to create, read and write the contents of directory File Using directory API.	Remember	6
2.	Explain about symlink ( ) function with example? Explain about link( )function with example?	Understand	7
3.	Write a program to create, read and write the contents of Ordinary file using file API.	Remember	7
4.	Explain about unlink ( ) functions with example? Explain about symlink ( ) functions with example?	Remember	7
5.	Define a system call? Differentiate system call with library Function?	Remember	6
6.	Explain about dot and dot dot directories in the file system?	Understand	7
7.	Define symbolic link? Hard link with examples?	Understand	6
8.	Differentiate symbolic link instead of a hard link.	Understand	6
9.	Define fcntl ( ), read (), write () writen () function with examples?	Understand	6

10.	Describe the characteristics of Unix File System.	Understand	7
11.	Describe about Low Level File I/O System Calls.	Remember	7
12.	Describe usage of dup(), dup2() system calls with example?	Remember	6
13.	Define stat () and create () function with examples?	Understand	7
14.	Describe open ( ) function in Linux with examples?	Understand	6
15.	Differentiate stat ( ), fstat ( ) and lstat() with example?	Understand	7
Part – C (Problem Solving and Critical Thinking)			
1.	Differentiate file API and standard library functions for file Operations.	Understand	6
2.	Emulate the ls command using file API	Understand	7
3.	Illustrate to read input from the standard input (stdin) and display on the standard output (stdout) using file API.	Understand	7
4.	Differentiate and analyze different file creation api functions with example	Understand	6
5.	List and briefly describe the functionalities of standard i/o library.	Remember	6
UNIT-III Part - A (Short Answer Questions)			
1.	What is a process?	Remember	8
2.	State process states	Remember	8
3.	Remember the kernel role on process management	Remember	9
4.	List the process attributes	Remember	8
5.	Give 5 examples of reliable signals.	Remember	9
6.	Describe orphan process with example?	Remember	8
7.	What is fork() with example?	Understand	9
8.	Define zombie processes with example?	Remember	9
9.	Write the differences between threads and processes.	Understand	9
10.	Explain process ID of init process?	Understand	4
11.	Differentiate fork() and vfork() with example?	Remember	8
12.	Describe exec () with example?	Remember	7
13.	Illustrate exit ( ) function?	Understand	8
14.	List all flavors of excec() function.	Understand	7
15.	Define zombie processes with example?	Remember	8
16.	Illustrate calloc( ) and malloc( ) functions?	Understand	7
17.	Discuss the two components of the directory file?	Remember	8
18.	Distinguish between alarm(), sleep(), pause() functions?	Understand	8
19.	Write the difference between reliable and unreliable signals.	Understand	8
20.	Explain how to handle signal?	Understand	8
Part – B (Long Answer Questions)			
1.	Illustrate about child process creation using fork(), vfork() and Exec()	Remember	8
2.	Discuss about orphan process and zombie process with example?	Understand	9
3.	**Explain** how to terminate process normally or abnormally?	Understand	9
4.	Illustrate about redirection of standard output to file abc.txt	Understand	8
5.	Write about the kill and raise functions.	Remember	8
6.	Differentiate wait () and waitpid() with examples?	Remember	8

7.	Explain the mechanism for handling a signal with example?	Remember	8
8.	How many ways a process goes to wait state or termination state forcefully	Remember	9
9.	Describe SIGKILL and SIGINT with examples?	Remember	9
10.	Explain about signal () function? Differentiate the reliable and unreliable signals	Remember	9
11.	Elaborate different versions of exec () with examples?	Understand	9
Part – C (Problem Solving and Critical Thinking)			
1.	Differentiate and analyze non-blocking IO operations in both Windows and Linux operating systems?	Understand	6
2.	Write a program to create a child process and get the processed of child and parent	Remember	7
3.	Write a program to find sum of odd numbers by child process and sum of even numbers by parent processes of given range numbers using fork function.	Remember	7
4.	Illustrate to redirect the standard input (stdin) and the standard output (stdout) of a process, so that scanf () reads from the pipe and printf ()writes into the pipe?	Understand	7
5.	Illustrate by writing c program where process forks to a child, then Waits for someone to terminate?	Understand	7
UNIT-IV **Part – A (Short Answer Questions)**			
1.	What is IPC.	Understand	11
2.	List the different mechanisms for inter process communication.	Remember	10
3.	Describe FIFO concept with example?	Remember	10
4.	What is the use of FIFO comparing with pipe?	Remember	11
5.	Describe mkfifo() system call by example?	Remember	10
6.	Describe Pipes opening concept with example?	Remember	11
7.	Describe pipes? Explain their limitations.	Remember	10
8.	List the message API system calls to create, delete, send and receive	Remember	11
9.	Describe the structure of a message	Remember	10
10.	Illustrate about IPC_EXEC?	Remember	11
11.	Differentiate between kill() and rise()?	Remember	10
12.	What is named pipe?	Understand	11
13.	Explain about msgtyp with example?	Understand	8
14.	Describe IPC _PRIVATE with example?	Remember	8
15.	Describe pipe () system call?	Remember	10
Part – B (Long Answer Questions)			
1.	Describe message queue API with syntax and example?	Remember	11
2.	Differentiate pipe and named pipe concepts in IPC process.	Understand	10
3.	Create a pipe to redirect the input of one command to other Command.	Remember	11
4.	Create a FIFO to build the communication channel between two processes and give the advantages and disadvantages of Files.	Remember	10

5.	Illustrate pipes? Explain their limitations. Explain how named pipes are replaced to overcome the drawback of pipe in IPC with an examples	Remember	11
6.	Explain about shared-memory segment to overcome the Drawback of message queue with example.	Understand	10
7.	Illustrate about V IPC semaphore mechanism with example.	Remember	10
8.	Explain about synchronization and How synchronization is Achieved with Semaphores?	Understand	11
9.	Explain the structure of a shared memory and kernel data structure with a neat diagram?	Remember	11
10.	Explain the system functions associated for creating and Destroying a shared memory?	Remember	11
11.	Explain the following functions with syntax: (a) stat() (b) read() (c) open() (d) fstat()	Understand	10
12.	Explain about memory management functions malloc(), calloc(), realloc(), free() with suitable example.	Remember	10
13.	Write a C program for wc command using system calls or library functions.	Understand	11
14.	Write a c program to read a directory and display all the files in the given directory.	Remember	10
15.	Discuss the characters that are used as wild cards by the shell. Explain their meaning and illustrate their usage. Write a note on character class.	Understand	11
Part – C (Problem Solving and Critical Thinking)			
1.	Demonstrate the priority message queues with example using Message Queue API	Understand	8
2.	Illustrate to displays no of messages in queue, last message send, last	Remember	9
3.	Message read time in a given message queue.	Remember	8
4.	Demonstrate race conditions with shared memory?	Understand	9
5.	Write a c program to send and receive message using pipes. Implement two way communication using pipes.	Remember	8
UNIT-V Part - A (Short Answer Questions)			
1.	List the POSIX APIs of semaphores.	Understand	10
2.	Demonstrate client and server programming using TCP protocol?	Remember	12
3.	Explain about socket( ) function in Linux?	Remember	10
4.	Explain about accept( ) function in Linux?	Understand	12
5.	Explain about bind( ) function in Linux?	Remember	10
6.	Explain about read() function in Linux?	Understand	12
7.	Illustrate with a neat diagram about threads, and light weight processes?	Remember	10
8.	Explain about separate kernel stack and light weight processes?	Remember	12
9.	Differentiate process and threads?	Understand	10
10.	Differentiate stream sockets and raw sockets?	Remember	10
11.	Demonstrate client and server programming using UDP protocol?	Understand	12
12.	Write primitive is used by server for waiting the client connection requests.	Remember	10
13.	Draw the structure of TCP/IP for exchange information between	Remember	10

	client and server.		
14.	List the attributes in socket address functions	Remember	12
15.	Distinguish between IPV4 and IPV6.	Understand	12
Part - B (Long Answer Questions)			
1.	Illustrate pthreadcreate ( ) function with examples?	Remember	10
2.	Explain pthreadkill ( ) function with example?	Remember	12
3.	Illustrate about POSIX APIs of semaphores?	Understand	12
4.	Explain thread synchronization with semaphores with example?	Remember	10
5.	Illustrate about Semaphores with examples?	Remember	10
6.	Explain TCP socket connection establishment with a neat diagram?	Remember	11
7.	Explain UCP data transfer with a neat diagram?	Understand	10
8.	Demonstrate client and server programming using TCP protocol with Neat diagram?	Understand	12
9.	Explain about socket () , listen(), accept( )system calls in Linux?	Remember	10
10.	Illustrate about bind (), read(), write() functions in Linux?	Remember	12
11.	Explain about sendto () and recvfrom () functions in Linux?	Remember	11
12.	Illustrate about TCP NODELAY syntax with a small program?	Understand	12
13.	Explain all byte ordering and manipulation functions with Examples?	Remember	10
14.	Explain about how TCP connections are established and terminated.	Remember	10
15.	Demonstrate echo server and echo client using 6666 port in TCP style?	Remember	11
Part – C (Problem Solving and Critical Thinking)			
1.	Illustrate by writing a c program to implement UDP chat client server?	Understand	10
2.	Demonstrate client and server programming using UDP protocol with Neat diagram?	Understand	10
3.	Illustrate by writing a c program to implement TCP chat client server?	Remember	9
4.	Differentiate stream sockets and raw sockets and related system calls?	Remember	9
5.	Explain how small and big packets handled in transferring client Server Environment?	Understand	10

Prepared By: Ms. Y Harika Devi, Assistant Professor, CSE
Ms. B Ramya sree, Assistant Professor, CSE
Ms. E Uma shankari, Assistant Professor, CSE
Ms. G Geetha, Assistant Professor, CSE

HOD, CSE