

Charotar University of Science and Technology [CHARUSAT]**Chandubhai S. Patel Institute of Technology [CSPIT]****U & P U. Patel Department of Computer Engineering****Practical List**

Subject code	:	CE347	Semester	:	6	Academic Year	:	2020-21
Subject name	:	Internals of Operating System						

	Aim	H r s.	C O
1	Collect the following basic information about your machine using proc. a. How many CPU cores does the machine have? b. How much memory, and what fraction of it is free? c. How many context switches has the system performed since bootup? d. How many processes has it forked since bootup? e. How many processors does your machine have? f. What is the frequency of each processor? g. Find out various states of process at time of observation.	2	2
2	Implement copy command using open, create, read, write, access and close system call. Be sure to include all necessary error checking including, ensuring the source file exists. Test your program with following specifications. a. File extension with .txt, .c, .zip, .exe, .tar b. Copy the whole directory.	2	1
3	Write a program for 'ls' command using 'opendir()' and 'readdir()' system call.	2	3
4	[A] Write a C program that will print parent process id and child process id. Mention error checking if the child process is not created.	2	2
5	[B] In continuation of part (a), write a C program where the parent process waits for the child process to terminate.	2	2
6	[C] Write a C program using execvp() system call which will count the characters from file 'wc', using program 'p.c'.	2	3
7	Write the following programs using inter process communication – shared memory: [A] The program 'writer.c' will write 1 to 100 in the shared memory region. [B] Another program 'reader.c' that will read all the numbers from shared memory to make addition of it and display it.	2	3
8	Implement a message queue for message sharing.	2	4
9	Create a 1GB swap area in your linux partition and free it. Check the allocation of swap space. Execute following commands to monitor swap space in linux. a. Swapon b. use of /proc/swaps c. free	4	5

	d. top		
10	<p>A. Create a file and check the following information for it's inode.</p> <ol style="list-style-type: none"> 1. check inode number of that file 2. search the file using its inode number. 3. Find the total number of inodes in the system. (stat , -i , tune2fs) 4. List all the statistics about inode usage (amount available, amount used and amount free and use percentage) 5. Check total number of free inodes. 6. Check total number of used inodes. 7. Find inode utilization in the current directory. 8. Count Inode Usage with Grand Total 9. Does inode change when you copy and move the file? 10. Can we reduce inode usage? 11. Does the total number of inode depend on system configuration or flavours of Linux/Unix operating system? 12. Specify size of inode. Does every inode have the same size? <p>B. Understand Superblock.</p> <ol style="list-style-type: none"> 1. List the contents of the filesystem superblock (https://linoxide.com/linux-command/linux-inode/) 13. Manipulate the filesystem meta data <p>C. Create hard link and soft link for a file.</p> <p>D. Find hard link in Linux (https://linoxide.com/linux-command/linux-inode/)</p>	4	4
11	<ol style="list-style-type: none"> a. catch the terminal interrupts by using appropriate signals. b. Schedule a signal for a process. c. Kill the process using signals. 	2	4
12	Change the Priority of a Running Process	2	3

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