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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

Programme: B.E. **Semester: V**

Branch: Computer Science and Engineering **Duration: 3 hrs.**

Course Code: 20CS5PCUSP **Max Marks: 100**

Course: Unix Shell and System Programming

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

			UNIT - I	*CO*	*PO*	Marks
1	a)		Explain the UNIX architecture with neat diagram. Distinguish between external and internal commands.	*1*	*1*	**10**
	b)		Identify and write the commands initiated in shell to do the following. a) To display file differences of two files b) Extract the files from the zip files and to view the archive files. **c)** Check whether the two files in the directory /home/Kumar/ are having common content or not **d)** Rename all the files interactively starting from chap01, chap02 and chap03. e) Remove the entire directory student located in /usr/temp directory	*1*	*1*	**05**
	c)		Assume that in the current session user will change the terminal ssettings, turn off the keyboard input and changes interrupt keys and other settings. Which command is useful to perform all these actions. Also record the session with suitable commands.	*1*	*1*	**05**
			OR			
2	a)		With the help of a neat diagram, explain the parent child relationship with respect to UNIX file system. Also compare and contrast between absolute pathnames and relative pathnames.	*1*	*1*	**10**
	b)		Identify and write the commands initiated in shell to do the following. a) Copy the entire directory by name Bms located in /usr/temp to current directory. b) Rename all the files interactively starting from chap01, chap02 and chap03. c)Remove the files in the directory /home/kumar/prgm from the home directory. d)Display the common content between two files. e) Display an Octal Dump for the content of file file1	*1*	*1*	**05**

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		c)	Discuss any five ordinary file handling commands with an example.	*1*	*1*	**05**
			UNIT - II			
	3	a)	Explain positional parameters and role of set and shift command with an example	*1*	*1*	**06**
		b)	Write a shell script to copy multiple files to a directory.	*2*	*2*	**06**
		c)	Write a shell script that receives even number of filenames as its arguments and copies the contents of the files at the odd-numbered positions on to the files at the following even-numbered positions. If odd number of filenames is supplied then copying does not take place, instead an error message will be displayed.	*2*	*2*	**08**
			OR			
	4	a)	Write a shell program to perform a simulated cp command. Proceed this program using positional parameter and the usage will be on the form of copy <source-file> <target-file> and ensure that parameters are properly used.	*2*	*2*	**06**
		b)	Write a shell script that receives any number of file names as arguments. Checks if every argument supplied is a file or directory and reports accordingly. Whenever the argument is a file, it reports no of lines present in it	*2*	*2*	**06**
		c)	Write a shell script which takes current directory files and perform the following tasks. • Convert all .txt extension files to .doc extension • Move all the zero size files to another directory	*2*	*2*	**08**
			UNIT - III			
	5	a)	Translate the following permissions to octal code and discuss the command used for changing the owner of a file as well as the group of a file i. rwxr-x- -x ii. r-xr-xr-x iii. - -xrwx—x	*1*	*1*	**06**
		b)	Write a shell script which will greet you “Good Morning”,” Good Afternoon”, “Good Evening’ and “Good Night” according to the current time.	*2*	*2*	**06**
		c)	Write a shell script that takes certain filenames as its arguments and searches for a specific word on these files one by one. It stops as soon as the search word is found on a file and reports the name of the file. In case search word is not found on any of the input files, a suitable message will be displayed.	*2*	*2*	**08**
			OR			

	6	a)	Write a shell script to concatenate n1-n5 lines of File1 and n8-n15 lines of File2 to File3.	*2*	*2*	**06**
		b)	Explain the syntax of tr command, Using tr cmd replace the | with a ~ and the / with a – in the File emp.lst for the first 4 records.	*1*	*1*	**06**
		c)	Write a shell script that accepts two filenames as arguments, sorts both to temporary files, merges the sorted files to the Std output, and finally deletes the temporary files.	*2*	*2*	**08**
			UNIT - IV			
	7	a)	Explain the Unix kernel support for files with a neat diagram.	*1*	*1*	**05**
		b)	Write a program in C to implement link command or emulate ln command.	*3*	*3*	**05**
		c)	Give the complete description and usefulness of fcntl and lseek file API with an example for each.	*1*	*1*	**10**
			OR			
	8	a)	Implement a C program to emulate the mv UNIX command using system call.	*3*	*3*	**05**
		b)	Discuss Lock promotion and Lock splitting.	*1*	*1*	**05**
		c)	Write a program that displays the contents of a directory, specifying the type for each of its files. The name for the directory should be an input parameter.	*2*	*2*	**10**
			UNIT - V			
	9	a)	Describe how a 'C' program is started and how it is terminated with a neat block diagram and also demonstrate the use of atexit() function by writing the program of exit handlers?	*2*	*2*	**10**
		b)	Write a C program that illustrates the creation of child process using fork system call. Consider a situation where one process finds sum of even series and other process finds sum of odd series and make parent process to sleep for 3 seconds	*3*	*3*	**10**
			OR			
	10	a)	Write a C program that illustrates the creation of Interprocess communication using Pipe API. Write the three string messages HelloWorld1, HelloWorld2, Helloworld3 in a child process read the same messages in the parent process using fork function.	*3*	*3*	**10**
		b)	Explain the six family functions of Exec API ? Write a C program to display listing of files and directories in a child process using exec API while making the parent process to wait.	*2*	*2*	**10**

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