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| SL.NO. | **Program List** | **COs & POs** | **Date** | **Remarks** |
| 1 | Fundamentals of Unix & Linux OS  Installation of UNIX learning/ Disk Partition Learning  ------------------------  Condition: Prepare your installation guide and make YouTube video for that. |  |  |  |
| **OS Architecture & File system** | | | | |
| 2 | Unix & Linux Basic commands  **man, who, cat, cd, cp, ps, ls, mv, rm, mkdir, rmdir, echo, more, date, time, kill, history, chmod, pwd, cal, shutdown** |  |  |  |
| 3 | Unix/Linux Editor  Study in **vi editor, Operation modes, Editing commands** |  |  |  |
| **Shell Programming** | | | | |
| 4 | i) Shell program for swapping two numbers  ii) Write a shell Program to Find Whether the given Number is Even or Odd.  iii) Write a shell Program to Find Whether the given Number is Positive, Negative or Zero.  iv) Write a shell Program to find Simple Interest.  v) Write a shell Program to Find the Largest of Two Numbers. |  |  |  |
| 5 | i) Write a shell Program to Find the Largest of Three Numbers.  ii) Write a shell Program to Find the Factorial for a given range from 0 to 20.  **---Condition**: Print 1 for 0 and 1 but Print Error for negative entry.  iii) Write a Shell Program to Check whether a given Year is a Leap Year or Not. |  |  |  |
| 6 | i) Write a shell Program to print the sum of the first ‘N’ numbers.  ii) Write a shell Program to find the reverse of a number.  iii) Write a shell Program to generate the Fibonacci Series for a given range. |  |  |  |
| 7 | i) Write a Shell Program to Check whether a given Number is a Prime Number or Not. Then Print the Prime number from 2 to 100.  ii) Write a Shell Program to Find whether the given Number is Armstrong Number or Not for 1, 2 , 3, and 4 digit numbers.  iv) Write a Shell Program to Find whether the given Number is a Palindrome Number or Not. |  |  |  |
| 8 | i) Write a Shell Program to Find the Grade based on five subjects.  ii) Write a Shell Program to Find the value of the Series given below:  1/1!+2/2!+3/3!+4/4!+……..up to ‘n’ terms. iii) Write a Shell Program to Convert a given Temperature using Switch Case from:  (a)Celsius to Fahrenheit.  (b)Fahrenheit to Celsius. |  |  |  |
| 9 | i) Write a Shell Program to Print the Floyd’s Triangle.  ii) Write a Shell Program to Find the GCD and LCM of Two Numbers.  iii) Write a Shell Progrm to find any multiplication table for any number. |  |  |  |
| 10 | i) Write a Shell Program to Find the Reverse of a String.  ii) Write a Shell Program to Check whether a given String is a Palindrome String or Not.  iii) Write a Shell Program to Count the Number of Vowels, Consonants and Digits present in a given String. |  |  |  |
| **Program Using the following system calls of UNIX OS fork, getpid, exit, wait, close, stat, opendir, readdir.** | | | | |
| 11 | i) Write a Program fork() in C and Creating a child process using fork() in Python |  |  |  |
| 12 | ii) Write a C program for system calls of UNIX operating system (fork, getpid, exit) |  |  |  |
| 13 | iii) Write a C program to simulate UNIX commands like cp, ls. grep. |  |  |  |
| 14 | iv) Implement in C the following Unix commands using system calls  A) cat B) mv |  |  |  |
| 15 | v) Write a C program to list for every file in a directory, its inode number and file name.? |  |  |  |
| 16 | vi) Calculation in parent and child process using fork() |  |  |  |
| 17 | vii) Write a program that illustrates how to execute two commands concurrently with a command pipe.? |  |  |  |
| **CPU Scheduling Algorithm** | | | | |
| 18 | 1. Write a C Program for FCFS algorithm, where the process number will be four and Burst time will be on user choice. |  |  |  |
| 19 | 1. Write a C Program for SJF algorithm, where the process number will be four and Burst time will be on user choice. (non-preemptive) |  |  |  |
| 20 | 1. Write a C Program for Round Robin Scheduling Algorithm, where process number is 5 and time quantum is based on user choice. |  |  |  |
| **Process Synchronization** | | | | |
| 21 | Write a C program that illustrates two processes communicating using shared memory. |  |  |  |
| 22 | Write a C program to create a message queue with read and write permissions to write 3 messages to it with different priority numbers. |  |  |  |
| 23 | Write a C program that illustrates suspending and resuming processes using signals? |  |  |  |
| 24 | Write client and server programs (using c) for interaction between server and client processes using Unix Domain sockets.? |  |  |  |
| 25 | Write readers and writers problem in C. |  |  |  |
| **Deadlocks** | | | | |
| 27 | Write a C program to avoid deadlock using safety algorithm for single instance. Assume there are 4 processes and 16 resource types. Resouce allocation tables are given below.  P.NO. Maximum Needs Current Needs  P0 9 5  P1 4 3  P2 7 1  P3 6 2  Give the safe process sequence. |  |  |  |
| 28 | Write a C program to display resource allocation graph with single instance for deadlock detection. Show cycle using arrow. |  |  |  |
| 29 | Write a C program for resource Allocation graph (Wait-for Graph) to detect deadlock in a system. If we enter any edge as request age, then system should check that the conversion of claim edge for dead lock detection. |  |  |  |
| 30 | Let us consider a system having 12 magnetic tapes and three processes P1, P2, P3.  Process Maximum Needs Current Needs  P1 10 5  P2 4 2  P3 9 3  Q. Show that the sequence P2--> P1-->P3 are in deadlock.  3. Write the algorithm for above the programs.  4. Write the test cases for each loop. |  |  |  |