Operating Systems Lab

List of Programs

Problem Statement	Problem Statement	Date of Execution
1	Write a BASH shell script for the following problem statements	
1.1	In an organization, an employee is hired on a Basic Salary of 20,000 Rs, with DA of 40% of Basic Salary, HRA of 10% of Basic Salary, and TA of 2000 Rs per month. There is a deduction of 2% of Basic Salary for retirement and life insurance benefits. The employee is also given a one-time payment of 75,000 Rs. for the purchase of the furniture and 45,000 Rs for the purchase of a laptop. Write a BASH shell script to calculate and display the Net Salary of the employee. Also, display the total amount credited (in the first month) to the account of the employee.	
1.2	Write a BASH shell script to calculate final velocity (v) of an object, where an initial velocity (u), acceleration (a) and time duration (t) is given as an input. The formula that will be used is v = u + a*t.	
1.3	Write a BASH shell script to check that a number that is taken as input is an even number or odd number.	
1.4	Write a BASH shell script to check that a number that is taken as input is divisible by 3 or not	
1.5	Write a BASH shell script to find the factorial of a given number.	
1.6	Write a BASH shell script to check that the given number is prime or not.	

1.7	Write a BASH shell script to display all prime numbers in between 1 to N. The value of N is taken as input from the user.	
1.8	Write a BASH shell script to find and display the sum of the following series (The value of N is taken as input from the user) 1 + 2! + 3! + 4! + 5! + 6! + … + N!	
1.9	Write a BASH shell script to count and display numbers of files and directory present in the current directory.	
1.10	Write a BASH shell script to copy files only from the current directory to another directory. The name of the destination directory is to be taken as an input.	
1.11	Write a BASH shell script to find largest and smallest elements of a given array.	
1.12	Write a BASH shell script to find sum of all elements of a given array.	
2	Prepare and verify an employee database file (EMPLOYEE) that contains at least 30 employee records under the following columns/fields. **EMP Id, EMP First_Name, EMP Last_Name, Location, Designation, Net Salary, Specialization, Project, Joining Month, Joining_Year.** ***Sample Record:*** 101 Raj Kumar Delhi Manager 60000 Data_Analytics ERP	
2.1	Create and execute AWK script to display EMP Id, Name, location, and Designation of employees having designations as ‘Manager’.	
2.2	Create and execute AWK script to display EMP Id, Name, specialization, and location of employees who are specialized in Java Programming and are working at Delhi or Pune locations.	
2.3	Create and execute AWK script to display EMP Id, Name, location,	

	Designation, and Joining Month, Joining_Year of all those employees who joined after Jan 2000 but before December 2005.	
2.4	Create and execute AWK script to display all fields of all those employees who joined the organization on the net salary in between 45000-65000, during the period Jan 2000 to December 2005.	
2.5	Create and execute AWK script to display all fields of the employee getting the highest salary at the Delhi location.	
3	Write a 'C' program using 'gcc' compiler to extract system information. ***Model name, Cache Size, Number of CPU cores, CPU clock speed, Total Memory, Free Memory, OS Name, OS Version.***	
4	Write a 'C' program using 'gcc' compiler to extract PID of parent and child processes. Child process is to be created using fork() system call.	
5	Write and execute a C program to implement FCFS CPU Scheduling Algorithm.	
6	Write and execute a C program to implement SJF CPU Scheduling Algorithm.	
7	Write and execute a C program to implement FCFS Page replacement Algorithm.	
8	Write and execute a C program to implement LRU Page Replacement Algorithm.	
9	Write and execute a C program to implement SSTF Disk Scheduling Algorithm.	
10	Write and execute a C program to implement SCAN Disk Scheduling Algorithm.	