**CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY**

FACULTY OF TECHNOLOGY AND ENGINEERING

**Devang Patel Institute of Advance Technology & Research**

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

**CE248 Operating System**

**Semester:** IV

**Academic year :** 2019-20

**PRACTICAL LIST**

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| **Sr. No.** | **AIM OF THE PRACTICAL** | **Date** | **Page No.** | **Remark** |
| **1.** | **Working of Different Kernels:**   1. UNIX Architecture 2. Types of OS- Linux, Unix, MAC, Window etc. 3. Flavors of LINUX |  |  |  |
| **2.** | Study of Unix Architecture and the following Unix commands with option:   |  |  | | --- | --- | | **User Access:** | login, logout, passwd, exit | | **Help:** | man, help | | **Directory:** | mkdir, rmdir, cd, pwd, ls, mv | | **Editor:** | vi, gedit, ed, sed | | **File Handling / Text Processing:** | cp, mv, rm, sort, cat, pg, lp, pr, file, find, more, cmp, diff, comm, head, tail, cut, grep, touch, tr, uniq | | **Security and Protection:** | chmod, chown, chgrp, newgrp | | **Information:** | learn, man, who, date, cal, tty, calendar, time, bc, whoami, which, hostname, history, wc | | **System Administrator:** | su or root, date, fsck, init 2, wall, shutdown, mkfs, mount, unmount, dump, restor, tar, adduser, rmuser | | **Terminal:** | echo, printf, clear | | **Process:** | ps, kill, exec | | **I/O Redirection** (<, >, >>), **Pipe** ( | ), \*, gcc | | |  |  |  |
| **3.** | 1. Write a shell script which calculatesnth Fibonacci number where n will be provided as input when prompted. 2. Write a shell script which takes one number from user and finds factorial of a given number. 3. Write a shell script to sort the number in ascending order. (Using array). |  |  |  |
| **4.** | **Write programs using the following system calls of UNIX operating system: fork, exec, getpid, exit, wait, stat, readdir, opendir.**   1. Write a program to execute fork() and find out the process id by getpid() system call. 2. Write a program to execute following system call fork(), execl(), getpid(), exit(), wait() for a process. 3. Write a program to find out status of named file (program of working stat() system call).   Write a program for “ls” command implementation using opendir() & readdir() system call. |  |  |  |
| **5.** | Process control system calls:   1. The demonstration of fork() 2. execve() and wait() system calls along with zombie and orphan states. |  |  |  |
| **6.** | Write a C program in UNIX to implement Process scheduling algorithms and compare.   1. First Come First Serve (FCFS) Scheduling 2. Shortest-Job-First (SJF) Scheduling 3. Priority Scheduling (Non-preemption) after completion extend on Preemption. 4. Round Robin(RR) Scheduling |  |  |  |

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| **7.** | Thread management using pthread library. Write a simple program to understand it. |  |  |  |
| **8.** | Write a C program in UNIXto implement Bankers algorithm for Deadlock Avoidance. |  |  |  |
| **9.** | Write a C program in UNIXto perform Memory allocation algorithms and calculate Internal and External Fragmentation. (First Fit, Best Fit, Worst Fit). |  |  |  |
| **10.** | Thread synchronization using counting semaphores and mutual exclusion using mutex. |  |  |  |
| **11.** | Write a C program in UNIX to implement inter process communication (IPC) using Semaphore. |  |  |  |
| **12.** | Kernel space programming: Implement and add a loadable kernel module to Linux kernel, demonstrate using insmod, lsmod and rmmod commands. A sample kernel space program should print the "Hello World" while loading the kernel module and "Goodbye World" while unloading the kernel module. |  |  |  |