B.Sc. (H) Computer Science Sem III (CBCS)

C – VI Practical List for Operating Systems

Note: The students should be made familiar with the basic UNIX commands like ls, cp, mv, chmod, mkdir, rmdir, rm, cd, pwd, grep, cat, passwd, who, etc.

1. WAP to display the following:
   a. Kernel version
   b. CPU type and model
   c. Information on configured memory, amount of free and used memory
2. WAP to print file details including owner access permissions, file access time, where file name is given as a command line argument.
3. WAP to copy a source file into the target file and display the target file using system calls.
4. WAP (using fork() and/or exec() commands) where parent and child execute:
   a. same program, same code
   b. same program, different code
   c. different programs
   d. before terminating, the parent waits for the child to finish its task

   (Students should experiment with fork() system call to create hierarchy of child processes)
5. WAP to demonstrate producer-consumer problem using shared memory.
6. WAP to demonstrate Inter-Process Communication (IPC) between parent and child using pipe system call.
7. Write programs to understand working of Pthread library.
8. Write programs to implement the following scheduling algorithms
   a. FCFS
   b. Shortest Job First
   c. Shortest Remaining Time First
   d. Non-preemptive priority based
   e. Preemptive priority based
   f. Round Robin
9. WAP to implement first-fit, best-fit and worst-fit allocation strategies.
10. WAP to map logical addresses to physical addresses in a paging scheme. Define the necessary data structures required for the program. Page size and physical memory size should be taken as input from the user. Also accept process id and its size from the user and allocate memory to the process. Make an interactive program to perform the following:
    a. Accept a process id and page no and display frame number for a valid input
    b. Accept a process id to de-allocate and display the frame table