**SAVEETHA SCHOOL OF ENGINEERING**



**SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES**

**COMPUTER SCIENCE AND ENGINEERING PROGRAMME**

**CSA04 – OPERATING SYSTEMS**

**LIST OF PROGRAMS**

1. Create a new process by invoking the appropriate system call. Get the process identifier of the currently running process and its respective parent using system calls and display the same using a C program.

2. Identify the system calls to copy the content of one file to another and illustrate the same using a C program.

3. Design a CPU scheduling program with C using First Come First Served technique with the following considerations.

a. All processes are activated at time 0.

b. Assume that no process waits on I/O devices.

4. Construct a scheduling program with C that selects the waiting process with the smallest execution time to execute next.

5. Construct a scheduling program with C that selects the waiting process with the highest priority to execute next.

6. Construct a C program to implement pre-emptive priority scheduling algorithm.

7. Construct a C program to implement non-preemptive SJF algorithm.

8. Construct a C program to simulate Round Robin scheduling algorithm with C.

9. Illustrate the concept of inter-process communication using shared memory with a C program.

10. Illustrate the concept of inter-process communication using message queue with a C program.

11. Illustrate the concept of multithreading using a C program.

12. Design a C program to simulate the concept of Dining-Philosophers problem

13. Construct a C program for implementation the various memory allocation strategies.

14. Construct a C program to organize the file using single level directory.

15. Design a C program to organize the file using two level directory structure.

16. Develop a C program for implementing random access file for processing the employee details.

17. Illustrate the deadlock avoidance concept by simulating Banker’s algorithm with C.

18 Construct a C program to simulate producer-consumer problem using semaphores.

19. Design a C program to implement process synchronization using mutex locks.

20. Construct a C program to simulate Reader-Writer problem using Semaphores.

21. Develop a C program to implement worst fit algorithm of memory management.

22. Construct a C program to implement best fit algorithm of memory management.

23. Construct a C program to implement first fit algorithm of memory management.

24. Design a C program to demonstrate UNIX system calls for file management.

25. Construct a C program to implement the I/O system calls of UNIX (fcntl, seek, stat, opendir, readdir)

26. Construct a C program to implement the file management operations.

27. Develop a C program for simulating the function of ls UNIX Command.

28. Write a C program for simulation of GREP UNIX command

29. Write a C program to simulate the solution of Classical Process Synchronization Problem

30. Write C programs to demonstrate the following thread related concepts.

(i) create (ii) join (iii) equal (iv) exit

31. Construct a C program to simulate the First in First Out paging technique of memory management.

32. Construct a C program to simulate the Least Recently Used paging technique of memory management.

33. Construct a C program to simulate the optimal paging technique of memory management

34. Consider a file system where the records of the file are stored one after another both physically and logically. A record of the file can only be accessed by reading all the previous records.  Design a C program to simulate the file allocation strategy.

35. Consider a file system that brings all the file pointers together into an index block. The ith entry in the index block points to the ith block of the file. Design a C program to simulate the file allocation strategy.

36. With linked allocation, each file is a linked list of disk blocks; the disk blocks may be scattered anywhere on the disk. The directory contains a pointer to the first and last blocks of the file.  Each block contains a pointer to the next block. Design a C program to simulate the file allocation strategy.

37.Construct a C program to simulate the First Come First Served disk scheduling algorithm.

38. Design a C program to simulate SCAN disk scheduling algorithm.

39. Develop a C program to simulate C-SCAN disk scheduling algorithm.

40. Illustrate the various File Access Permission and different types users in Linux.