Lab Outline

CSE 321: Operating Systems

Semester: Spring 2025

Course Description:

The laboratory exercises will include familiarization with LINUX terminal, C programming, process management, concepts and management of threads, thread synchronization and inter-process communication; Experiments on services of operating systems through simulation/implementation.

Lab Activity Plan:

Lab No	Topic details	Time Allocation	
1	Getting started, Linux Basics and Installing Ubuntu. Familiarizing with the Linux kernel. Working with the Terminal Panel. Learning how one can access and operate on different directories and files through Terminal using Shell Commands.	**Week 3, 4**	**16 Feb – 22 Feb**
2	C Programming (Part 1): Variables, Data types, Input/Output, Arithmetic Operations, Arrays, Pointers, String, Struct.	**Week 4, 5**	**23 Feb– 1 Mar**
3	C Programming (Part 2): Flow Control (If-Else), Loop, Function. **Term Project 1:** Implementing Shell	**Week 5, 6**	**2 Mar– 8 Mar**
4	Systems programming in C: Using UNIX system calls to get and understand process-related all the functionalities.	**Week 6, 7**	**9 Mar – 15 Mar**
5	Mid-Week - No Lab	**Week 8, 9**	**18 Mar – 25 Mar**
6	Threads: Concept of thread, pthread in UNIX. Thread Synchronization: Learning concepts and implementations of mutex and semaphore. Solving race condition problems by using mutex and semaphore.	**Week 10**	**5 Apr – 10 Apr**
7	Inter-Process Communication: Learning and implementing various techniques of Inter-Process Communications such as pipes, shared memory and message passing in order to establish communication among multiple processes. **Term Project 2:** File Systems	**Week 11, 12**	**12 Apr – 21 Apr**
8	Access Control	**Week 12, 13**	**19 Apr– 28 Apr**

9	Lab Final	**Week 13, 14, 15**	**26 Apr – 15 May**

Honor Code

Any form of cheating, plagiarism, and/or academic dishonesty will result in an "F" grade in the lab.

Grading Policies:

The average of n-1 assignment submissions will be counted. If plagiarism is detected, no marks will be assigned to the lab. For each day late submission, 1 mark will be deducted.

Attendance Policy:

In order to attend the final exam, 90% attendance in lab classes is required.

Lab Assessment Methods:

Assessment Criteria	Marks
1. Attendance	2
2. Assignment (n-1)	4
3. Class performance (n-1)	7
4. Lab final	7
5. Term Projects (Avg. of 2)	5
Total	25

Assignment Submission:

Assignment no.	Date of Assignment	Tentative Deadline
1	Week 6, 7	1 week
2	Week 10	1 week
3	Week 11 or 12	1 week
4	Week 12 or 13	1 week

Term Project Submission:

Term Project no.	Date of Assignment	Tentative Deadline
1	Week 5	2 weeks
2	Week 10	2 weeks

Assignment submissions will be taken through Google Form.

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