National Institute of Technology Calicut
Department of Computer Science and Engineering

Winter Semester 2022 – 2023
Course Plan for CS3093D: Networks Lab

Credits: 3 Class: B. Tech. (S6 and S8 CSE) Slot: T1 (Batch B) & T2 (Batch A)
Timings:
T1: Friday 2.00 PM to 4.50 PM
T2: Friday 9.00 AM to 11.50 AM
Venue: Big Data Laboratory

Instructors Name : Arun Raj Kumar P & Sumesh T A
Office : CSE-103C & CSE-303C
Telephone : 0495-2286825 & 0495-2286814
Email : park@nitc.ac.in & sumesh@nitc.ac.in

Theory:

Introduction, Overview of Unix Programming Environment, Unix Programing Tools, Introduction to Computer Networking and TCP/IP, Introduction to Socket Programming, TCP Sockets and Concurrent Servers, Threads, I/O Multiplexing and Socket Options, UDP Sockets and Name and Address Conversions, Daemon Processes and Inetd Superserver, Advanced I/O and Timeouts, Non-blocking Sockets, Unix Domain Sockets, Broadcasting, Multicasting, Advanced UDP Sockets, Ioctl Operations. Introduction to open source firewall packages. Introduction to network emulators and simulators.

Tentative Schedule:

1. Theory Session
   Date: 06.01.2023
   Venue: ELHC 403
2. Implementation of basic Client Server program using TCP socket (as a separate file) and UDP Socket (as a separate file).
   Deadline : 20, January. 2023 (9.00 am)
   Evaluation mode : Program will be given based on the experiment
   Mode of submission : Zip file or RAR file (Source codes with snapshots)
3. Implementation of a fully concurrent application with a TCP server acting as a directory server and client programs allowing concurrent connection and message transfer (Eg. Chat system).
   Deadline : 03, February. 2023 (9.00 am)
   Evaluation mode : Program will be given based on the experiment
   Mode of submission : Zip file or RAR file (Source codes with snapshots)
4. Implement the following routing algorithms in C language:
   a. Distance vector routing algorithm using Bellman-Ford
   b. Link state algorithm using Dijkstra's

Deadline : 10, February, 2023 (9.00 am)
Evaluation mode : Program will be given based on the experiment

5. 17,February, 2023: Midsem
6. Experiments with Emulator (Mininet) and Simulator (ns3).
   Deadline : 17, March, 2023 (9.00 am)
   Evaluation mode : Program will be given based on the experiment
7. 24, March,2023: Routing is defined in src/net/ipv4/route.c. Find out the latency of the packet receiving functions in the IP layer by profiling. Which function is consuming more time on querying the routing tables?
8. 31, March, 2023: Build a NAT server in Linux by IPtables.
9. 14, April,2023 : End Semester Examination
10. 21, April, 2023: Buffer Lab

Tentative Evaluation Scheme with Tentative dates

- Assignments : 20% (Given in the tentative schedule)
- Midterm : 30% (17, February 2023)
- End Semester : 50% (14, April 2023)

Attendance

- As per the institute norms

Grading Policy

- *Grading will be relative*
- Makeup examination for midterm will be given only in genuine cases where prior (atleast one day before the midterm exam) intimation is submitted to the course faculty for the consent through faculty advisor
- All issues regarding the valuation of the midterm exams and term projects must be resolved within two days after the marks are announced

Standard of Conduct

Each student is expected to adhere to high standards of ethical conduct, especially those related to cheating. Any academic dishonesty will result in zero marks in the corresponding exam or quiz and will be reported to the department council for record keeping and for permission to assign F grade in the course. CSE Department policy on academic integrity is available at: http://minerva.nitc.ac.in/cse/sites/default/files/attachments/news/Academic-Integrity.pdf

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