B.TECH DEGREE PROGRAMME

SEMESTER IV
(2021 ADMISSIONS)

SYLLABUS

Rajagiri Valley, Kakkanad,
Kochi 682 039, Kerala, INDIA
www.rajagiritech.ac.in

COURSE CODE	COURSE NAME	L	T	P	CREDIT	YEAR OF INTRODUCTION
101009/IT422S	Operating Systems Lab(Unix)	0	0	2	1	2021

1. Preamble

Operating System and Network Programming Lab aims at giving an in-depth idea of operating system and networking concepts. Students will understand the basic commands and the implementation of process scheduling, inter process communication, semaphores etc. and also aim to implement network programming in Java.

2. Prerequisite

Concepts of Operating Systems and Networking, and Programming knowledge in C and JAVA

3. Syllabus

OPERATING SYSTEM LAB

(Experiments are to be implemented using C programming language)

1. Unix commands (files directory, data manipulation, network communication etc), shell programming and vi editor
2. Familiarization of system calls (fork, exec, getpid, exit, wait, close, stat etc) in operating system.
2. Implement process scheduling algorithms (FCFS, SJF, Round-Robin, Priority) and compute average waiting time and average turn-around time.
3. Inter-process communication using mail boxes, pipes, message queues and shared memory.
4. Implementation of dining philosophers problem using threads, semaphores and shared memory.
5. Implementation of banker's algorithm.
6. Implement memory management schemes (first fit, best fit and worst fit).

(Experiments are to be implemented using javaprogramming language)

7. Familiarization of Network Programming API in Java.
8. Implementation of Medium Access Control protocols – 1) Go Back N.
9. Implementation of an echo server.

10. Implement Client-Server communication using sockets.
11. Implementation of chat application

4. Text Books

1. Andrew S. Tanenbaum and Herbert Bos, *Modern Operating Systems*, 4th edition, Pearson,2015
2. A. Silberschatz, G.Gagne and P.Galvin, *Operating System Concepts*, 7th edition, Addison Wesley, 2004.

5. Reference Books

1. Abraham Silberschatz, Peter B Galvin, Greg Gagne, *Operating System Concepts*, 9/e, Wiley India, 2015.
2. Behrouz A Forouzan, *Data Communications & Networking* –Mc Graw Hill,2008.
3. Herbert Schildt, *The Java 2 : Complete Reference*, Tenth Edition - Mc Graw Hill.
4. https://www.nsnam.org/docs/tutorial/html
5. D M Dhamdhere, *Operating Systems A Concept-based Approach*, Tata McGraw Hill, New Delhi, 2nd Edition, 2010

6. Course Outcomes

After the completion of the course the student will be able to

CO 1: Analyse CPU Scheduling Algorithms like FCFS, Round Robin, SJF and Priority.
CO 2: Implement inter process communication and process synchronization problems.
CO 3: Implement memory management schemes - first fit, best fit and worst fit.
CO 4: Implement client server communication using sockets.
CO 5: Implement MAC protocols.
CO 6: Familiarization of network simulation tool.

7. Mapping of Course Outcomes with Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2					1		3
CO2	3	3	3	2	1					1		3
CO3	3	3	3	2	1					1		3

CO4	3	3	3	2	2					1		3
CO5	3	3	3	2	2					1		3
CO6	2	2	2	2	3					1		3

8. Mark Distribution

Total Marks	Continuous Internal Evaluation (CIE)	End Semester Examination (ESE)	ESE Duration
150	75	75	3hrs

9. Continuous Internal Evaluation Pattern

Attendance : 15 marks
Continuous Assessment : 30 marks
Internal Test (Immediately before the second series test) : 30 marks

10. End Semester Examination Pattern

The following guidelines should be followed regarding award of marks
(a) Preliminary work : 15 Marks
(b) Implementing the work/Conducting the experiment : 10 Marks
(c) Performance, result and inference
(usage of equipments and troubleshooting) : 25 Marks
(d) Viva voce : 20 marks
(e) Record : 5 Marks

General instructions: Practical examination to be conducted immediately after the second series test covering the entire syllabus given below. Evaluation is a serious process that is to be conducted under the equal responsibility of both the internal and external examiners. The number of candidates evaluated per day should not exceed 20. Students shall be allowed for the University examination only on submitting the duly certified record. The external examiner shall endorse the record.

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