SARDAR RAJA COLLEGE OF ENGINEERING

RAJA NAGAR, ALANGULAM

Department of Electrical and Electronics Engineering

MICRO LESSON PLAN

Subject Name : **OPERATING SYSTEMS**

Subject Code : **CS2411**

Year : **IV – B.E**

Semester : **VII**

Prepared by,

Mr.B.SIVA SANKAR,

AP/CSE.

CS 2411 OPERATING SYSTEMS LTPC
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UNIT I PROCESSES AND THREADS 9

Introduction to operating systems – review of computer organization – operating system structures – system calls – system programs – system structure – virtual machines. Processes: Process concept – Process scheduling – Operations on processes –Cooperating processes – Interprocess communication – Communication in client-server systems. Case study: IPC in Linux. Threads: Multi-threading models – Threading issues. Case Study: Pthreads library

UNIT II PROCESS SCHEDULING AND SYNCHRONIZATION 10

CPU Scheduling: Scheduling criteria – Scheduling algorithms – Multiple-processor scheduling – Real time scheduling – Algorithm Evaluation. Case study: Process scheduling in Linux. Process Synchronization: The critical-section problem Synchronization hardware – Semaphores – Classic problems of synchronization –critical regions – Monitors. Deadlock: System model – Deadlock characterization –Methods for handling deadlocks – Deadlock prevention – Deadlock avoidance – Deadlock detection – Recovery from deadlock.

UNIT III STORAGE MANAGEMENT 9

Memory Management: Background – Swapping – Contiguous memory allocation – Paging – Segmentation – Segmentation with paging. Virtual Memory: Background –Demand paging – Process creation – Page replacement – Allocation of frames –Thrashing. Case Study: Memory management in Linux

UNIT IV FILE SYSTEMS 9

File-System Interface: File concept – Access methods – Directory structure – File system Mounting – Protection. File-System Implementation: Directory implementation –Allocation methods – Free-space management – efficiency and performance – recovery– log-structured file systems. Case studies: File system in Linux – file system in Windows XP

UNIT V I/O SYSTEMS 8

I/O Systems – I/O Hardware – Application I/O interface – kernel I/O subsystem –streams – performance. Mass-Storage Structure: Disk scheduling – Disk management –Swap-space management – RAID – disk attachment – stable storage – tertiary storage. Case study: I/O in Linux

Total: 45

TEXT BOOKS:

1. Silberschatz, Galvin, and Gagne, “Operating System Concepts”, Sixth Edition, Wiley India Pvt Ltd, 2003.
2. D.M. Dhamdhere, “Operating Systems: A concepts based approach”, Second Edition, Tata McGraw-Hill Publishing Company Ltd., 2006.

REFERENCES:

1. Andrew S. Tanenbaum, “Modern Operating Systems”, Second Edition, Pearson Education/PHI, 2001.
2. Harvey M. Deital, “Operating Systems”, Third Edition, Pearson Education, 2004.

SUBJECT DESCRIPTION AND OBJECTIVES

DESCRIPTION:

The operating system is the most important program that runs on a computer. Every general-purpose computer must have an operating system to run other programs. Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.

For large systems, the operating system has even greater responsibilities and powers. It is like a traffic cop -- it makes sure that different program and users running at the same time do not interfere with each other. The operating system is also responsible for *security*, ensuring that unauthorized users do not access the system.

OBJECTIVES:

1. To learn the concept of process and threads.
2. To understand CPU scheduling.
3. To study about various resource management.

MICRO LESSON PLAN

WEEK	HOURS	LECTURE TOPICS	READING
UNIT-I PROCESSES AND THREADS			
1	1	Introduction-operating system(AV Class)	T1
	2	Review of Computer organization	T1
	3	Operating system structures	T1
	4	System calls,System programs	T1
2	5	System structure,Virtual machines	T1
	6	Process:Process concept,Process scheduling	T1
	7	Operations on processes,Cooperating processes	T1
	8	Inter process communication, Communication in client-server system (AV Class)	T1
	9	.Threads: Multi-threading models,Threading issues.	T1
3	10	Case study:IPC in Linux,pthreads library	T1
	UNIT-II PROCESS SCHEDULING AND SYNCHRONIZATION		
	11	CPU Scheduling,Scheduling criteria	T1
	12	Scheduling algorithms(AV Class)	T1
	13	Multiple-processor scheduling,Real time scheduling	T1
	14	Algorithm Evaluation. Process Synchronization: Critical-Section problem	T1
4	15	Case study:Process scheduling in Linux	T1
	16	Synchronization hardware,Semaphores Classic problems of synchronization	T1
	17	Critical regions,Monitors	T1
	18	Deadlock :System model,Deadlock characterization	T1
	19	Methods for handling deadlock, Deadlock prevention (AV Class)	T1
5	20	Deadlock avoidance	T1
	21	Deadlock detection,Recovery from deadlock	T1

5	**UNIT-III STORAGE MANAGEMENT**		
	22	Memory management Background	T1
	23	Swapping,Contiguous memory allocation	T1
	24,25	Paging(AV Class)	T1
6	26	Segmentation,Segmentation with paging	T1
	27	Virtual Memory: Background , Demand paging (AV Class)	T1
	28	Process creation,Page replacement	T1
	29	Allocation of frames, Thrashing	T1
	30	.Case study:Memory management in Linux	T1
	UNIT-IV FILE SYSTEMS		
7	31	File-System Interface: File concept	T1
	32	Access methods(AV Class)	T1
	33	Directory structure	T1
	34	File system mounting,Protection	T1
8	35	File system implementation	T1
	36	Directory implementation	T1
	37	Allocation methods (AV Class)	T1
	38	Free space management,Efficiency and performance, Recovery,Log-structured file systems	T1
	39	Case study:File system in Linux and Windows XP	T1
	UNIT-V I/O SYSTEMS		
9	40	I/O Systems,I/O Hardware	T1
	41	Application I/O interface,Kernel I/O subsystem	T1
	42	Streams,Performance(AV Class)	T1
	43	Mass-Storage Structure Disk scheduling	T1
10	44	Disk management,Swap-space management	T1
	45	RAID(AV Class)	T1
	46	Disk attachment,Stable storage, Tertiary storage	T1
	47	.Case study:I/O in Linux	T1

Prepared by
B.Sivasankar AP/CSE