P.R.GOVT.COLLEGE (A)::KAKINADA
DEPARTMENT OF COMPUTER SCIENCE
III B.Sc (CS) Semester -VI
Paper-VII: Elective-A
Operating Systems

Course Objectives

1. To understand the services provided by and the design of an operating system.
2. To understand the structure and organization of the file system.
3. To understand what a process is and how processes are synchronized and scheduled.
4. To understand different approaches to memory management.
5. Students should be able to use system calls for managing processes, memory and the file system.

Course Outcomes

1. Analyze the concepts of processes in operating system and illustration of the scheduling of processor for a given problem instance.
2. Identify the dead lock situation and provide appropriate solution so that protection and security of the operating system is also maintained.
3. Analyze memory management techniques, concepts of virtual memory and disk scheduling.

MODULE - I

Operating System Introduction: Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.

MODULE - II

Process and CPU Scheduling - Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms, Case studies: Linux, Windows.

Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors, Case Studies: Linux, Windows.

MODULE - III

Memory Management and Virtual Memory - Logical & physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table. Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

MODULE - IV

File System Interface - The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure,

Mass Storage Structure - Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.

MODULE - V

Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

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REFERENCES BOOKS:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.
2. Principles of Operating Systems by Naresh Chauhan, OXFORD University Press
3. Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson.
4. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
5. Operating Systems A concept - based Approach, 2nd Edition, D. M. Dhamdhere, TMH.
6. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
7. Operating Systems, A. S. Godbole, 2nd Edition, TMH

Student Activity:

1. Load any new operating system into your computer.
2. Partition the memory in your system
3. Create a semaphore for process synchronization

Operating Systems Lab

Objectives:

• To use linux operating system for study of operating system concepts.

• To write the code to implement and modify various concepts in operating systems

Outcomes:

• The course objectives ensure the development of students applied skills in operating systems related areas.

• Students will gain knowledge in writing software routines modules or implementing various concepts of operating system.

List of Experiments:

1.Usage of following commands
Ls,pwd,tty,cat,who,who am I,rm, mkdir, rmdir,touch,cd.
2. Usage of following commands
Cal,cat(append),cat(concatenate),mv,cp,man,date.
3. Usage of following commands
Chmod,grep,tput(clear,highlight),bc.
4. Write a shell script to check if the number entered at the command line is Prime or not
5. Write a shell script to modify "cal" command to display calendars of the specified months.
6. Write a shell script to modify "cal" command to display calendars of the specified range of months.
7. Write a shell script to accept a login name. If not a valid login name display message "entered login name is invalid"
8. Write a shell script to display date in the mm/dd/yy format.
9. To implement the FCFS Algorithm.
10. To implement the shortest job First Algorithm.
11. To implement the priority algorithm.
12. To implement the round robin Algorithm.
13. To implement the FIFO page replacement algorithm

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MODEL BLUE PRINT FOR THE YEAR 2020-2021
III B.SC (CS) 2020-2023 BATCH
Course Code: CP6207

SEMESTER-VI

SUBJECT: OPERATING SYSTEMS

Time: 2 1/2 Hrs
PAPER- VII **Max. Marks: 60**

Model blue print for the model paper and choice

S.NO	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Section-A Very Short Questions	**5**	**1**	**5**	**5**	**1**	**5**
2	Section-B Short Questions	**6**	**5**	**30**	**3**	**5**	**15**
3	Section-C Essay Questions	**8**	**10**	**80**	**4**	**10**	**40**
TOTAL		**19**		**115**	**TOTAL MARKS**		**60**

Percentage of choice given = $\frac{115 - 60}{115} \times 100 = \frac{55}{115} \times 100 = 47.82\%$

PR GOVT COLLEGE (A)::KAKINADA
DEPARTMENT OF COMPUTER SCIENCE
III B.Sc(CS)-SEMESTER-VI
Paper-VII: Operating Systems (Elective-A)

Time:2 ½ Hrs **Max. Marks: 60**

SECTION - I

Answer ALL questions **5 x 1M= 5 M**

1. Define operating system
2. Define a processing?
3. Define deadlock?
4. Define DMA?
5. Define Process Scheduling

SECTION - II

Answer Any THREE questions **5 x 5M= 25M**

6. Define Operating System and Explain Operating System Functions.
7. What are the differences between Real Time and typical Operating System?
8. Explain about semaphores.
9. What are the differences between paging and segmentation?
10. Write about allocation of frames in virtual memory management.
11. Discuss various file access methods.

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SECTION - III

Answer ALL questions **4 x 10M = 40M**

12. a) Explain Computer System Architecture.
    (Or)
    b) Explain the various operating system services.
13. a) Explain preemptive scheduling algorithms.
    (Or)
    b) Write about classic problems of synchronization.
14. a) Write about Directory Structure.
    (Or)
    b) Explain Disk Scheduling.
15. a) Define Deadlock. Explain Deadlock characterization and methods for handling Deadlocks.
    (Or)
    b) Explain about Deadlock Avoidance.

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MODEL BLUE PRINT FOR MODULE_WISE FOR THE YEAR 2020-2021
III B.SC (CS) 2020-2023 BATCH

Computer Science Course: Operating Systems
CODE:CP1204

Time : 2.30 Hrs. **SEMESTER-V** **Max. Marks: 60**

Model Blue print for the question paper setter

Chapter Name	Essay Questions 10 Marks	Short Questions 5 Marks	Very Short Questions 1 Marks	Marks allotted to the chapter
MODULE -I	2	2	2	32
MODULE -II	2	2	1	31
MODULE -III	2	1	1	26
MODULE – IV,V	2	1	1	26
Total No. of questions	8	8	5	
Total Marks Including choice				115