SRI A S N M GOVERNMENT COLLEGE, PALAKOL, W.G. DT
(Affiliated to Adikavi Nannaya University, Rajahmundry)
(Accredited with NAAC "B" Grade with 2.61 CGPA points)
CBCS/Semester System
(W.e.f. 2020-21 Admitted Batch)
II YEAR IV SEMESTER SYLLABUS

OPERATING SYSTEMS

COURSE CODE: BSCS45T

UNIT I:

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems.

UNIT II:

Processor and User Modes, Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Preemptive and Preemptive Scheduling Algorithms.

UNIT III:

Process Management: Deadlock, Deadlock Characterization, Necessary andSufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery. Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter- process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.

UNIT IV:

Memory Management: Physical and Virtual Address Space; Memory Allocation Strategies– Fixed and -Variable Partitions, Paging, Segmentation, Virtual Memory.

UNIT V:

File and I/O Management, OS Security : Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework.

Additional Topics: Disk scheduling techniques

TEXT BOOKS:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and GregGagne (7thEdition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)

REFERENCES:

1. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH)
2. Online Resources for UNIT V

OPERATING SYSTEM USING C/JAVA LAB

COURSE CODE: BSCS45P

Time: 3 Hours   **Max.Marks:50**

Details of Lab Syllabus: **Operating Systems Lab using C/Java**

1. Write a program to implement Round Robin CPU Scheduling algorithm

2. Simulate SJF CPU Scheduling algorithm

3. Write a program the FCFS CPU Scheduling algorithm

4. Write a program to Priority CPU Scheduling algorithm

5. Simulate Sequential file allocation strategies

6. Simulate Indexed file allocation strategies

7. Simulate Linked file allocation strategies

8. Simulate MVT and MFT memory management techniques

9. Simulate Single level directory File organization techniques

10. Simulate Two level File organization techniques

11. Simulate Hierarchical File organization techniques

12. Write a program for Bankers Algorithm for Dead Lock Avoidance

13. Implement Bankers Algorithm Dead Lock Prevention.

14. Simulate all Page replacement algorithms.

   a) FIFO

   b) LRU

   c) LFU

15. Simulate Paging Techniques of memory management

Lab Evaluation Procedure

4. **Record:**   **10 Marks**

5. **Procedure cum Execution:**   **30 Marks**

6. **Viva:**   **10 Marks**

                    Total   **50 Marks**

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II YEAR IV SEMESTER Model Paper

OPERATING SYSTEM

Time: 3 Hours   **Max. Marks: 75**

Section - A

Answer any 5 question   **5X5 = 25M**

1. Define operating system. Explain batch operating system.

2. What is process? Explain process states.

3. Explain threading issues.

4. Define semaphore. Explain types of semaphore.

5. What are characteristics of deadlock? Explain briefly

6. Explain about Virtual memory.

7. Explain physical and logical address space.

8. Write about file types.

Section - B

Answer following question   **5X10 = 50M**

9. a) Define operating system. Explain various types of operating systems.

(OR)
b) What is operating system? Explain functions of operating system.

10. a) Define thread. Differentiate user level and kernel level threads.

(OR)
b) Define preemption. What are various preemptive algorithms? Discuss briefly?

11. a) Define deadlock. What are necessary conditions for deadlock to occur?

(OR)
b) Discuss classical process synchronization problems.

12. a) Explain the following

    i) Segmentation

    ii) Fixed and variable partitions.

(OR)

b) Explain the concept of paging with example.

13. a) What are various file operations? Explain File allocation methods.

(OR)

b) Explain Android Development Framework.