

c. Console formatting functions.

8. Implement the following:

- a. Show the implementation of exception handling
- b. Show the implementation for exception handling for strings
- c. Show the implementation of exception handling for using the pointers.

9. Show the implementation

- a. Design a class FileDemo open a file in read mode and display the total number of words and lines in the file.
- b. Design a class to handle multiple files and file operations
- c. Design a editor for appending and editing the files

10. Show the implementation for the following

- a. Show the implementation of template class library for swap function.
- b. Design the template class library for sorting ascending to descending and vice-versa
- c. Design the template class library for concatenating two strings

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|--|------------------------------|-----------------------|--------------|
| CLASS: B. Sc (Information technology) | | Semester – III | |
| COURSE: Modern Operating Systems | | | |
| Periods per week 1 Period is 50 minutes | Lecture | 5 | |
| | TW/Tutorial/Practical | 3 | |
| | | | |
| | | Hours | Marks |
| Evaluation System | Theory Examination | 3 | 100 |
| | TW/Tutorial/Practical | -- | 50 |
| | | | |

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|----------|---|
| Unit-I | Introduction to Operating Systems: OS and Computer System, System performance, Classes of OS, Batch processing, time-sharing, multiprocessing, real time, distributed and modern operating systems, Desktop Systems, Handheld Systems, Clustered Systems, Assemblers, Compilers and Interpreters, Linkers. |
| Unit-II | Operating-System Structures: Operating-System Services, User Operating-System Interface, System Calls, Types of System Calls, System Programs, Operating-System Design and Implementation, Operating-System Structure, Virtual Machines, Operating-System Generation, System Boot. |
| Unit-III | Processes and Process Synchronization: Process Concept, Process Scheduling, Scheduling Criteria, Scheduling Algorithms, Operations on Processes, Interprocess Communication, Multithreading Models, Threading Issues, Thread Scheduling, Communication in Client–Server Systems, The Critical-Section Problem, Peterson’s Solution, Semaphores. |
| Unit-IV | Memory Management: Memory management without swapping or paging; Swapping, Virtual Memory, Page replacement algorithms, Modeling paging algorithms, Design issues for paging systems, segmentation |
| Unit-V | File-System Interface and Implementation: File Concept, File-System Mounting, Free-SpaceManagement, File Sharing, NFS. Mass-Storage Structure: Disk Structure, Disk Management, Swap-Space Management, RAID Structure, Stable-Storage Implementation. Deadlocks , Deadlock detection and recovery, avoidance and prevention |
| Unit-VI | I/O Systems: Application I/O Interface, Transforming I/O Requests to Hardware Operations, STREAMS, Performance. Protection and Security: Principles of Protection, Domain of Protection, Access Matrix, Access Control, Capability-Based Systems, Language-Based Protection, The Security Problem, System and Network Threats, Implementing Security Defenses. |

Books:

Modern Operating Systems, Andrew Tanenbaum,

Operating Systems, 2nd Edition, K. A.Sumitra Devi and N.P Banashree, SPD

Operating System Concepts, 8th Edition, Abraham Silberschatz, Peter B.Galvin, Greg Gagne, Wiley publication

Reference:

Operating Systems- A concept based approach , 2nd Edition, D.M. Dhamdhare, McGrawHill publications

Term Work:

Assignment: *Should contain at least 6 assignments (one per unit) covering the Syllabus.*

Tutorial: At the least three tutorials based on above syllabus must be conducted.

Case Studies (Suggested):

- a) MS-DOS
- b) Windows NT
- c) Windows 2008 Server
- d) Windows 7
- e) Unix
- f) Linux
- g) OS/2
- h) MAC OS
- i) Symbian
- j) Chrome
- k) Android