EXPERIMENTS

1. Create a HTML static web page which shows the use of different tags in that.
2. Insert an image and create a link such that clicking on image takes user to other page.
3. Prepare a sample code to illustrate three types of lists in HTML.
4. Use tables to provide layout to your HTML page describing your university infrastructure.
5. Use frames such that page is divided into 3 frames 20% on left to show contents of pages, 60% in center to show body of page, remaining on right to show remarks.
6. Create a simple form that will show all the INPUT METHODS available in HTML.
7. Create a sample code to illustrate the Embedded, External and Inline style sheets for your web page.
8. Write an XML example of given tree that demonstrates the creation of user-designed tags and display it in a browser. fname, lname, joindate, bdate,☐college, employee, age, salary (with at least 3 elements) .
9. Write a program in XML for creation of DTD which specifies a particular set of rules.
10. Create an e-book having left side of the page name of the chapters and right side of the page the contents of the chapters clicked on left side.

Textbooks

1. Uttam K. Roy,**Web Technologies, 1/e ,** Oxford University Press, USA
2. Murray, Tom/Lynchburg, Creating a Web Page and Web Site ,College,2002
3. A beginner's guide to HTML NCSA,14th May,2003
4. Kogent Learning Solutions Inc. HTML 5 in simple steps Dreamtech Press

Reference books

1. Steven M. Schafer HTML, XHTML, and CSS Bible, 5ed ,Wiley India
2. Kogent Learning Web Technologies: HTML, JAVA script , Wiley

BCS-26   PRINCIPLES OF OPERATING SYSTEMS

Course Category	:	Department Core (DC)
Pre-requisite Subject	:	NIL
Contact Hours/Week	:	Lecture : 3, Tutorial : 1 , Practical: 2
Number of Credits	:	5
Course Assessment Methods	:	Continuous assessment through tutorials, attendance, home assignments, quizzes, practical work, record, viva voce and Three Minor tests and One Major Theory & Practical Examination
Course Outcomes	:	The students are expected to be able to demonstrate the following knowledge, skills and attitudes after completing this course.

1. Understand the structure and functions of OS.

2. Learn about Processes, Threads and Scheduling algorithms.

3. Understand the principles of concurrency and Deadlocks.

4. Learn various memory management scheme.

5. Study I/O management and File systems.

Topics Covered
UNIT-I
Operating Systems Overview-Components, Goals of Designer, System Structures, User   9
Services, Interrupt Systems and Device Programming-Interrupt Sources and Priorities, Interrupt
Service Routines, Hardware Support - Machine States, Context Switching, Privileged
Instructions and Registers
UNIT-II
Memory Management-Major Issues: Fetch, Placement, Contiguity, Relocation Adjustment,   9
Paging and Virtual Memory, Translate-Look-Aside Buffer (Associative Memory), Single and
Multi-Level Page Tables, Paging with Segmentation, Problems of Large Address Spaces and
How They Are Addressed
Virtual Storage Management- Storage Hierarchy, Cache Usage, Partial Residency, Page
Replacement Strategies, Working Sets
UNIT-III
Concurrency Problems and Solutions- Critical Section Problem, Process Synchronization and   9
Coordination, Semaphores, Special Instructions, Monitors, Inter-process Communication,
Remote Procedure Calls, Special Problems of Transaction-Based Systems
Deadlock and Resource Conflict- Prevention, Avoidance, Detection, Recovery,
Process and Thread Management-Process/Thread Creation and Termination, Process/Thread
States and Their Transitions
CPU Scheduling Algorithms, Non-Preemptive Approaches, Preemptive Approach, Multi-
Processor Considerations
UNIT-IV
Physical Storage Management- Disk Scheduling Algorithms, Disk Performance Features,   9
Disk Reliability Concerns
File System Organization - The Boot Record - Where Things Start, Directory Organization,
File Descriptors, Access Control Backup
System Security-Principle of Least Privilege, Threats and Vulnerabilities, Protection
Mechanisms - Access and Capability Control, User (Subject) Authentication, Levels of Security
in "Trusted" Systems, Confinement Problem
EXPERIMENTS
1. Study of hardware and software requirements of different operating systems
   (UNIX,LINUX,WINDOWS XP, WINDOWS7/8
2. Execute various UNIX system calls for
   a. Process management
   b. File management
   c. Input/output Systems calls
3. Implement CPU Scheduling Policies:
   a. SJF

    b.   Priority

    c.   FCFS

    d.   Multi-level Queue

4. Implement file storage allocation technique:
    a.   Contiguous(using array)
    b.   Linked –list(using linked-list)
    c.   Indirect allocation (indexing)
5. Implementation of contiguous allocation techniques:
    a.   Worst-Fit
    b.   Best- Fit
    c.   First- Fit
6. Calculation of external and internal fragmentation
    a.   Free space list of blocks from system
    b.   List process file from the system
7. Implementation of compaction for the continually changing memory layout and calculate total movement of data
8. Implementation of resource allocation graph RAG)
9. Implementation of Banker's algorithm
10. Conversion of resource allocation graph (RAG) to wait for graph (WFG) for each type of method used for storing graph.
11. Implement the solution for Bounded Buffer (producer-consumer)problem using inter process communication techniques-Semaphores
12. Implement the solutions for Readers-Writers problem using inter process communication technique -Semaphore

Textbooks

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, Operating System Concepts, John Wiley & Sons (ASIA) Pvt. Ltd, Seventh Edition, 2005
2. Pramod Chandra and P. Bhatt, "An Introduction to Operating Systems Concepts and Practice", Prentice Hall India,3rd Edition,2010

Reference books

1. Milenekovie, Operating System Concept, McGraw Hill.
2. Harvey M. Deitel, Paul J. Deitel, and David R. Choffnes, Operating Systems, Prentice Hall, Third edition, 2003
3. Petersons, "Operating Systems", Addison Wesley
4. Andrew S. Tannenbaum & Albert S. Woodhull, "Operating System Design and Implementation", Prentice Hall , 3rd Edition, 2006
5. William Stallings, Operating Systems – internals and design principles, Prentice Hall, 7thEdition, 2011
6. Gary J. Nutt, "Operating Systems", Pearson/Addison Wesley, 3rd Edition 2004.
7. Andrew S. Tannenbaum, "Modern Operating Systems", Prentice Hall,3rd Edition,2007.

BCS-27   COMPUTER GRAPHICS