MCA - III semester

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UNIT I:

UNIT II:

UNIT III:
Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity’s – AND, OR and NOTR – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

UNIT IV:

UNIT V:

UNIT VI:

UNIT VII:

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UNIT VIII:

TEXT BOOKS:
1. Data base Management Systems, 3/e, Raghurama Krishnan, Johannes Gehrke, TMH
2. Data base System Concepts, 6/e, Silberschatz, Korth, TMH

REFERENCE BOOKS:
1. Data base Management System, 5/e, Elmasri Navathe, Pearson
2. Introduction to Database Systems, 8/e, C.J.Date, Pearson
3. Data base Systems design, Implementation, and Management,5/e, Rob, Coronel, Thomson
4. Database Management System, Connolly Begg, Pearson
5. Database Management systems, Farcia-Molina Ullman Widom, Pearson
6. Database Management Systems, Majumdr, Bhattacharyya, TMH,96

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UNIT I:
Network Hardware reference model: Transmission media, Narrowband ISDN, Broad band ISDN, ATM.

UNIT II:
The data Link layer: Design Issues, Error detection and correction, Elementary Data Link Protocols, Sliding window protocols: Data link layer in HDLC, Internet and ATM.

UNIT III:
Channel allocation methods: TDM, FDM, ALOHA, Carrier sense Multiple access protocols, Collision Free protocols – IEEE standard BO2 for LANS – Ethernet, Token Bus, Token ring, Bridges.

UNIT IV:

UNIT V:
Internet Working: Tunneling, internetworking, Fragmentation, network layer in the internet – IP protocols, IP address, Subnets, Internet control protocols, DSPF, BOP, Internet multicasting, Mobile IP. Network layer in the ATM Networks – cell formats, connection setup, routing and switching, service categories, and quality of service, ATM LANs.

UNIT VI:
The Transport Layer: Elements of transport protocols – addressing, establishing a connection, releasing connection, flow control and buffering and crash recovery, end to end protocols: UDP, reliable Byte Stream (TCP) end to end format, segment format, connection establishment and termination, sliding window revisited, adaptive retransmission, TCP extension, Remote Procedure Call – BLAST, CHAN, SELECT, DCE.

UNIT VII:

UNIT VIII:
Application Layer: Name service (DNS) Domains Hierarchy, Name servers. Traditional Applications: SMTP, MIME, World Wide Web: HTTP, Network Management: SNMP

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TEXT BOOKS:
1. Computer Networks and rew, Tanenbaum, 4/e, Pearson
2. Data and computer communications, stallings, 8/e, PHI

REFERENCE BOOKS
1. Data communications and networking Forouzan, 4/e, TMH
2. Computer Networks – A System Approach , Peterson ,Bruce Davie,2/e,Harcourt Asia
3. Computer communications and networking technologies, Gallo, Hancock,Cengage
4. An Engineering approach to compute networking, Kesha,Pearson
5. Communication networks, 2/e , Leon-Garcia, TMH
7. Computer networks, C R Sarma, Jaico,
8. Understanding data communications, Held, 7/e , Pearson
UNIT I:
Review of Unix Utilities and Shell Programming: File handling utilities, security by file permissions, process utilities, disk utilities, networking commands, backup utilities, text processing utilities, Working with the Bourne shell, What is a shell, shell responsibilities, pipes and input redirection, output redirection, here documents

UNIT II:
Shell as a programming language, shell meta characters, shell variables, shell commands, the environment, control structures, shell script examples.

UNIT III:
Unix Files: Unix file structure, directories, files and devices, System calls, library functions, low level file access, usage of open, creat, read, write, close, lseek, stat, fstat, octl, umask, dup, dup2. The standard I/O (fopen, fclose, fflush, fseek, fgets, getc, getchar, fputc, putc, putchar, ftell, ftell64), formatted I/O, stream errors, streams and file descriptors, file and directory maintenance (chmod, chown, unlink, link, symlink, mkdir, rmdir, chdir, getcwd), Directory handling system calls (opendir, readdir, closedir, rewinddir, telldir,fgets, gets).

UNIT IV:
Unix Process:Threads and Signals: What is process, process structure, starting new process, waiting for a process, zombie process, process control, process identifiers, system call interface for process management, fork, vfork, exit, wait, waitpid, exec, system, Threads, Thread creation, waiting for a thread to terminate, thread synchronization, condition variables, cancelling a thread, threads vs. processes, Signals, Signal functions, unreliable signals, interrupted system calls, kill and raise functions, alarm, pause functions, abort, sleep functions.

UNIT V:
Data Management: Management Memory ( simple memory allocation, freeing memory) file and record locking ( creating lock files, locking regions, use of read/ write locking, competing locks, other commands, deadlocks). Interprocess Communication: Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, pipes, FIFOs.

UNIT VI:
Message Queues: IPC, permission issues, Access permission modes, message structure, working message queues, Unix system V messages, Unix kernel support for messages, Unix APIs for messages, client/server example.

UNIT VII:
Semaphores: Unix system V semaphores, Unix kernel support for semaphores, Unix APIs for semaphores, file locking with semaphores. Shared Memory: Unix system V shared memory, working with a shared memory segment, Unix kernel support for shared memory, Unix APIs for shared memory, semaphore and shared memory example.

UNIT VIII:
Sockets: Berkeley sockets, socket system calls for connection oriented protocol and connectionless protocol, example client/server program, advanced socket system calls, socket options.

TEXT BOOKS:
1. Unix Concepts and Applications, 3/e, Sumitabha Das, TMH

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2. Advanced Unix Programming, N B Venkateswarlu, BSP

REFERENCE BOOKS:
1. Unix and shell Programming, Sumitabha Das, TMH
4. Unix and shell Programming, N B Venkateswarlu, Reem, New Delhi
5. Unix Programming, Kumar Saurabh, Wiley,India
7. Unix Concepts and Applications, Das, 4/e, TMH
UNIT I:
Structure and Classification of MIS: Structure of MIS, MIS Classification.

UNIT II:
Information system as an Enabler: Introduction, changing concepts of IS, IS as an Enabler.

UNIT III:
Basics of Computer system: A computer System, Computer Hardware Classification, Computer Software, Programming Languages
Database Management: Introduction, Database Hierarchy, Files- The Traditional Approach, Databases- The Modern Approach, Database Structure, Database Management System, Types of Database Structures or Data Models, Structured Query Language (SQL), Normalisation, Advances in Database Technology.

UNIT IV:
Telecommunications and Networks: Telecommunications, Types of Signals, communication Channel, Characteristics of Communication Channels, Communications Hardware, Communication Networks, computer Networks in India, Applications of Communication

UNIT V:
E-Business and e-Commerce: Introduction, Cross- Functional Enterprise Information system, e-Commerce
System Development Approaches: System Development Stages, System Development Approaches

UNIT VI:

UNIT VII:

UNIT VIII:

TEXT BOOKS:
1. Management Information Systems, Managerial Perspectives,2/e, D P Goyal, Macmillan.
2. Management Information Systems: Managing the Digital Firm, 10/e, Laudon, Kenneth, PHI

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REFERENCE BOOKS:
1. Management Information systems, Conceptual foundations, structure and development, 2/e, Gordon B. Davis, Margrethe H. Olson, TMH
2. Management Information systems, 7/e, James A O’Brien, George M Marakas, TMH
3. Management Information systems, Mahadeo Jaiswal, Monika Mital, Oxford Higher Education
4. Management Information systems, 9/e, James A O’Brien, George M Marakas, Ramesh Behl, TMH
5. Management Information systems, The manager’s view, Robert Schultheis, Mary sumner, TMH
7. Management Information System, David Kroenke, TMH.
11. Management Information Systems, Nirmalya Bagchi, Vikas
12. Management Information Systems, Indrajit Chatterje, PHI
UNIT I:
Introduction: Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.

UNIT II:
Output primitives: Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

UNIT III:
2-D geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems. (p.nos 204-227 of text book-1).

UNIT IV:
2-D viewing: The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland–Hodgeman polygon clipping algorithm

UNIT V:
3-D object representation: Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.

UNIT VI:
3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations.
3-D Viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping

UNIT VII:
Visible surface detection methods: Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods

UNIT VIII:
Computer animation: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

TEXT BOOKS:
2. Computer Graphics Principles & practice, 2/e, Foley, VanDam, Feiner, Hughes, Pearson

REFERENCE BOOKS:
2. Computer Graphics, Zhigand xiang, Roy Plastock, Schaum’s outlines, 2/E, TMH
3. Procedural elements for Computer Graphics, David F Rogers, 2/e, TMH
6. Computer Graphics, Steven Harrington, TMH

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MCA 3.6 DBMS Lab

1. Execute a single line and group functions for a table.
2. Execute DCL and TCL Commands.
3. Create and manipulate various DB objects for a table.
4. Create views, partitions and locks for a particular DB.
5. Write PL/SQL procedure for an application using exception handling.
6. Write PL/SQL procedure for an application using cursors.
7. Write a DBMS program to prepare reports for an application using functions.
8. Write a PL/SQL block for transaction operations of a typical application using triggers.
9. Write a PL/SQL block for transaction operations of a typical application using package.
10. Design and develop an application using any front end and back end tool (make use of ER diagram and DFD).
11. Create table for various relation
12. Implement the query in sql for a) insertion b) retrieval c) updation d) deletion
13. Creating Views
14. Writing Assertion
15. Writing Triggers
16. Implementing operation on relation using PL/SQL
17. Creating Forms
18. Generating Reports

Typical Applications – Banking, Electricity Billing, Library Operation, Pay roll, Insurance, Inventory etc.

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Note: Student needs exposure to all programs, but expected to complete at least 15

1. Programs using basic network commands
2. Program using system calls: create, open, read, write, close, stat, fstat, lseek
3. Program to implement inter process communication using pipes
4. Program to perform inter process communication
5. Program using TCP sockets (Client and Server)
6. Program using UDP sockets (Client and Server)
7. Program using URL class to download webpages
8. Write a shell script for sorting, searching and insertion/deletion of elements in a list
9. Create two processes to run a for loop, which adds numbers 1 to n, say one process adds odd numbers and the other even
10. By creating required number of processors, simulate a communication between them as below:
11. Create a file that is shared among some users, write a program that finds whether a specific user has created read and write operations on the file
12. Create a shared lock and exclusive lock among some number of processes, say 1 to 10 on any data of 100 elements. For example, process 5 wants a shared lock on elements 5 to 50 or process 8 wants exclusive lock on elements 32 to 45. Create access violations on the locks and show what occurs, then.
13. Write a program demonstrating semaphore operation on a shared file for reading but not writing
14. Create a distributed key among some processes which exchange messages of the form (m, Ti, I) for resource sharing, where m=request, reply, release, Ti=time stamp and I=process id
15. Write a program demonstrating mutual exclusion principle
16. Write a program which reads a source file name and destination file name using command line arguments and then converts into specified format (i.e. either from lower case to upper case or upper case to lower case or inverse of each)
17. Write a program which takes a set of filenames along with the command line and print them based on their size in bytes either ascending or descending order
18. Write a program which takes directory name along the command line and displays names of the files which are having more than one link
19. Write a program to display the use of temporary files
20. Write a program to demonstrate the use of exec family functions
21. Write a program to demonstrate the locking mechanism while accessing the shared files
22. Write a program to demonstrate semaphore operation on a shared file for reading but not writing
23. Write a shell script containing a function mycd() using which, it is possible to shuttle between directories
24. Write a shell script which deletes all lines containing the word "UNIX" in the files supplied as arguments to this shell script
25. Write a shell script which displays a list of all files in the current directory to which you have read, write and execute permissions
26. Write a menu-driven program which has the following options:
27. Write a shell script for renaming each file in the directory such that it will have the current shell's PID as an extension. The shell script should ensure that the directories do not get renamed
28. Write a program which demonstrates the shared memory functions

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