

## **IT- 501 –DATA COMMUNICATION**

### **UNIT - I**

**Introduction:-** Data Communication, Components, data representation, data flow and basic model, Serial & Parallel transmission, Data transmission modes, Analog & digital transmission methods, Encoding, Unipolar, Polar, Bipolar, Line & Block codes, Data compression and data compression techniques.

### **UNIT-II**

**Multiplexing:** - Frequency Division Multiplexing (FDM), Time Division Multiplexing (TDM), Statistical Time Division Multiplexing (STDM), **Spread spectrum:** - Frequency Hopping & Direct Sequence, Terminal handling & Polling, **Network Switching Techniques:** - Circuit, Message, Packet & Hybrid, X.25, ISDN.

### **UNIT-III**

**Physical Layer:** - Physical layer characterization, Physical layer Interface and Standards, digital Interface, Connection, specifications & configuration, Modem, Types of Modem, features, signal constellation, block schematic, Network Devices, Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway, Network Topologies.

### **UNIT-IV**

**Transmission Media:** - Transmission line characteristics, distortions, Crosstalk, Guided Media and Unguided media, Electromagnetic polarization , Rays and waves front , Electromagnetic spectrum, Radiation & Propagation of Waves, Inverse square law, Wave attenuation and absorption, Terrestrial Propagation, Skip distance, Radio waves, Microwave, Infrared & Satellite Communication system.

### **UNIT-V**

**Data Link Layer:** - Transmission Errors, Content Error, Flow integrity Error, Error detection & Correction methods, Parity checking, Checksum Error Detection, Cyclic Redundancy Check , Hamming Distance , Interleaved codes , Block Parity, Convolution code, Hardware Implementation, Checksum.

### **References:**

1. Forouzan, “Data communication and Networking”, 5<sup>th</sup> edition, TATA Mc Graw
2. Stallings William , “Data & Computer Communication”, Pearson Education
3. Godbole A., “Data Communication & Network” , TMH
4. Miller, “ Data Network and Comunication”, Cengage Delmar Learning

## **IT- 502 –INFORMATION STORAGE & MANAGEMENT**

### **UNIT-I**

**Introduction:** - Data proliferation, evolution of various storage technologies, Overview of storage infrastructure components, Data creation and The value of data to a business, Information Lifecycle Management, Challenges in data storage and data management, Solutions available for data storage, Core elements of a Data Center infrastructure, Data categorization.

### **UNIT-II**

**Storage Systems Architecture:-** Intelligent disk subsystems overview, Contrast of integrated vs modular arrays, Component architecture of intelligent disk subsystems, Disk physical structure components, properties, performance, and specifications, RAID levels & parity algorithms, hot sparing, Front end to host storage provisioning, mapping and operation.

### **UNIT-III**

**Introduction To Networked Storage:** - Evolution of networked storage, Architecture, components, and topologies of FC-SAN, NAS, IP-SAN, Applications, Elements, connectivity, standards, management, security and limitations of DAS, NAS, CAS & SAN.

**Introduction to Information Availability:** - Business Continuity and Disaster Recovery Basics, Local business continuity techniques, Remote business continuity techniques, Disaster Recovery principles & techniques.

### **UNIT-IV**

**Managing & Monitoring:** - Management philosophies (holistic vs. system & component), Industry management standards (SNMP, SMI-S, CIM), Standard framework applications, Key management, Metric analysis methodologies & trend analysis, Reactive and pro-active management best practices, Provisioning & configuration change planning, Problem reporting, prioritization, and handling techniques, Management tools overview.

### **UNIT-V**

**Securing Storage and Storage Virtualization:** - Information security, Critical security attributes for information systems, Storage security domains, List and analyzes the common threats in each domain, Virtualization technologies, block-level and file-level virtualization technologies and processes.

### **REFERENCE BOOKS:**

1. EMC Corporation, Information Storage and Management, Wiley, India.
2. Robert Spalding, “Storage Networks: The Complete Reference“, Tata McGraw Hill , Osborne, 2003.
3. Marc Farley, “Building Storage Networks”, Tata McGraw Hill ,Osborne, 2001.
4. Additional resource material on [www.emc.com/resource-library/resource-library.esp](http://www.emc.com/resource-library/resource-library.esp)

**IT- 503 – COMPUTER GRAPHICS & MULTIMEDIA**

**UNIT-I**

**Introduction and Overview of Graphics Systems:-** Introduction to Computer Graphics, Application area of Computer Graphics, Introduction to Raster scan & Random scan displays, refreshing, flickering, interlacing, colour monitors, display processors resolution, working principle of dot matrix, inkjet laser printers, working principles of keyboard, mouse scanner, digitizing camera, track ball, tablets and joysticks, graphical input techniques etc.

**UNIT-II**

Scan conversion techniques, image representation, line drawing, simple DDA, Bresenham's Algorithm, Circle drawing, general method, symmetric DDA, Bresenham's Algorithm, curves, parametric function, Beizier Method, B-spline Method.

**UNIT-III**

**2-D Transformation:** - Translation, Rotation, Scaling, Shearing, Reflection, Inverse Transformation, Homogenous coordinate system, Matrices Transformation, Composite Transformation.

**Windowing & Clipping:** - World Coordinate System, Screen Coordinate System, Viewing Transformation, Line Clipping & Polygon Clipping Algorithms

**UNIT-IV**

**3-D Transformations:** - Translation, Rotation and Scaling, **Parallel & Perspective Projection:-** Types of Parallel & Perspective Projection, **Hidden Surface elimination:-** Depth comparison, Back face detection algorithm, Painter's Algorithm, Z-Buffer Algorithm, Curve generation, Bezier and B-spline methods. **Basic Illumination Model:-** Diffuse reflection, Specular reflection, Phong Shading, Gouraud shading, Ray Tracing, Color models like RGB, YIQ, CMY, HSV.

**UNIT-V**

**Multimedia :-** Characteristics of a multimedia presentation, Uses of Multimedia, **Text:-** Types, Unicode Standard, text Compression, Text file formats, Audio Components of an audio system, Digital Audio, Digital Audio processing, Sound cards, Audio file formats, Audio Processing software, **Video:** -Video color spaces, Digital Video, Digital Video processing, Video file formats. **Animation:-** Uses of Animation, Principles of Animation, Computer based animation, 3D Animation, Animation file formats, Animation software's.

**REFERENCES:-**

1. Rogers, "Procedural Elements of Computer Graphics", Tata McGraw Hill
2. Donald Hearn and M.Pauline Baker, "Computer Graphics C Version", Pearson Education, 2003.

3. Prabat K Andleigh and Kiran Thakrar, “Multimedia Systems and Design”, PHI Learning, 3<sup>rd</sup> Indian reprint edition, 2008.
4. Tay Vaughan, “Multimedia making it work”, Tata McGraw Hill edition.
5. Amarendra N Sinha & Arun D Udai , “Computer Graphics”, McGraw Hill publication Fundamental of Computer Graphics and Multimedia, Mukherjee, , PHI Learning

### **LIST OF EXPERIMENTS**

1. To implement Bresenham’s algorithms for line, circle and ellipse drawing.
2. To perform 2D Transformations such as translation, rotation, scaling, reflection and shearing.
3. To implement Cohen–Sutherland 2D clipping and window–viewport mapping.
4. To perform 3D Transformations such as translation, rotation and scaling.
5. To visualize projections of 3D images and Hidden Surface Elimination.
6. To convert between color models.
7. To implement text compression algorithm
8. To implement image compression algorithm
9. To perform animation using any Animation software
10. To perform basic operations on image using any image editing software

**IT- 504 – DATABASE MANAGEMENT SYSTEM**

**UNIT-I**

**Basic Concepts:** - DBMS Concepts and architecture, Introduction, Review of file organization techniques, Database approach v/s Traditional File accessing approach, Advantages of database systems, Data models, Schemas and instances, Data independence, Functions of DBA and designer, Entities and attributes, Entity types, Value, Sets, Key attributes, Relationships, Defining the E-R diagram of database,

**UNIT-II**

**Data models and Relational Databases:** - Various data models, Basic concepts of Hierarchical data model, Network data model, and Relational data model, Comparison between the three types of models, **Relational Data models:** - Domains, Tuples, Attributes, Relations, Characteristics of relations, Keys, Key attributes of relation, Relational database, Schemas, Integrity constraints, Intension and Extension,

**UNIT-III**

**Relational Query languages & SQL:** - Relational algebra and relational calculus, Relational algebra operations like select, Project, Join, Division, outer union. **SQL:** - Data definition in SQL, update statements and views in SQL, QUEL & QBE, Data storage and definitions, Data retrieval queries and update statements.

**UNIT-IV**

**Database Design:-** Introduction to normalization, Normal forms, Functional dependency, Decomposition, Dependency preservation and lossless join, problems with null valued and dangling tuples, multi-valued dependencies.

**UNIT-V**

**Advance Concepts:** - Introduction of Distributed databases, protection, security and integrity constraints, concurrent operation on databases, recovery and transaction processing, basic concepts of object oriented data base system and design.

**References:**

1. Elmasri, Navathe, “Fundamentals Of Database Systems”, Addison Wesley
2. Korth, Silbertz, Sudarshan, “Database Concepts”, McGraw Hill
3. Toledo; Data base management systems;TMH
4. Panneeselvam “Database Management System” PHI
5. Date C J, “An Introduction To Database System”, Addison Wesley
6. Ashutosh Kumar Dubey “Data Base Management Concepts” Katson Publication

**LIST OF EXPERIMENTS:-**

1. Study of DBMS, RDBMS and ORDBMS.
2. To study Data Definition language Statements.
3. To study Data Manipulation Statements.
4. Study of SELECT command with different clauses.
5. Study of SINGLE ROW functions (character, numeric, Data functions).
6. Study of GROUP functions (avg, count, max, min, Sum).
7. Study of various type of SET OPERATORS (Union, Intersect, Minus).
8. Study of various type of Integrity Constraints.
9. Study of Various type of JOINS.
10. To study Views and Indices.

**IT- 505 – OBJECT ORIENTED PROGRAMMING WITH JAVA**

**UNIT-I**

**Introduction to Java :-** Basics of Java programming, Data types, Variables, Operators, Control Structure including selection, Looping, Java methods, Overloading, Math class, Arrays in java.

**UNIT-II**

**Objects and Classes :-** Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, String Buffer, File, this reference.

**UNIT-III**

**Inheritance and Polymorphism :-** Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in java, Package in java, UTIL package.

**UNIT-IV**

**Event and GUI programming:-** Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames. **Layout Managers:-** Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, Introduction to swing.

**UNIT-V**

Multithreading in java, Thread life cycle and methods, Runnable interface, Thread synchronization, Exception handling with try-catch-finally, Collections in java, Introduction to Java Beans and Network Programming.

**Reference Books:**

1. Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press.
2. The Complete Reference, Java
3. (Fourth Edition), Herbert Schild, TMH.
4. Java Programming, D. S. Malik, Cengage Learning.
5. Naughton & Schildt “The Complete Reference Java 2”, Tata McGraw Hill

**LIST OF EXPERIMENTS: -**

1. Write a Java program that displays area of different (Rectangle, Square, Triangle) using the method overloading.
2. To write a java program to print the individual digits of a 3 digit number
3. To write a java program to read an integer and find whether the number is odd or even.
4. To write a java program find the biggest of three integers
5. To write a java program to find the first 15 terms of Fibonacci sequence
6. To write a java program to work with the creation of objects for the class with overloaded constructor and user defined methods returning a value.
7. To write a java program to get and sort names by command line argument.
8. To write a java program to understand the concept of functionalities of different Bitwise operators.
9. Write a Java program that prints the following pattern

```
*****
*****
****
***
**
*
```

10. To write a java program to understand the concept of Method Overriding
11. To write a java program to understand the steps in the creation of packages.
12. To write java program to implement the concept of interface.
13. To write a java program to handle the situation of exception multi inheritance.
14. To write a java program to implement the concept of exception handling.
15. To create a java program in a multithread environment and implement join() and is Alive() functions.
16. To write a java program to implement applet concept.



**IT- 506 – FUNDAMENTAL OF DOT NET PROGRAMMING LAB**

**UNIT-I**

An overview of the Dot NET framework, Common Language Runtime (CLR), the .NET Framework class library (FCL), ASP.NET to support Internet development, Languages supported by DOT NET, An introduction to VB . NET.

**UNIT-II**

An introduction to C#, Program structure, Basic IO, including output to the console and messages boxes, Data types, Arithmetic operations and expressions, Relational and logical operations, Control structures. These include "if", "while", "do-while", "for", and "switch", Namespaces and methods supplied by the FCL, Writing methods, Recursion and overloading Scoping rules, Arrays and data representation, Class definitions, Properties, indexers, access control, Inheritance and polymorphism, Delegates.

**UNIT-III**

**Classes and Objects:-** Types, Structure and Enumeration, Classes, Interfaces, Exception handling and Classes, Collections, Arrays and other Data Structure.

**UNIT-IV**

**Visual Basic fundamentals:-** The Visual Basic .NET Development Environment, The element of VB.NET, VB.NET operators, Software design, Conditional structure and control flow, Methods.

**UNIT-V**

Writing Software with Visual Basic .NET, Interfacing with the End User, Introduction to ASP.NET and C#.NET and their features.

**REFERENCES:**

1. Introduction to Visual basic.NET - NIIT Prentice Hall of India,2005
2. Introducing Microsoft .NET- David S. Platt Microsoft Press”, Saarc Edition, 2001
3. Introduction to Microsoft® ASP.NET Work Book - Microsoft- Microsoft Press
4. Developing XML Web Services Using Microsoft® ASP.NET -Microsoft- Microsoft Press
5. Designing Microsoft ASP.NET Applications-Douglas J. Reilly-Microsoft Press
6. ASP.NET-Danny Ryan and Tommy Ryan-Hungry Minds Maran Graphics

**List of Experiments:-**

- Create an application to accept a character from console and check the case of the character
- Write a VB.NET program to accept any character from keyboard and display whether it is vowel or not.
- Write a Program in C# to check whether a no. is a Palindrome or not.
- Write a Program in C# to find the roots of Quadratic Equation.
- Write a Program in C# to demonstrate boxing and unboxing.
- Write a Program in C# to implement Stack operations.
- Write a Program in C# to find the second largest element in a single dimensional array.
- Write a Program in C# to multiply to matrices using Rectangular arrays.
- Write a VB.Net program to accept a string and convert the Case of the character.
- Develop a menu based VB.NET application to implement a text editor With cut, copy, paste, saved and close operations.
- Write a program in VB.Net to implement a calculator with memory and recall operation