**

**SEMESTER – 5th**

**STUDY SCHEME - 2012**

**DEPARTMENT OF COMPUTER SCIENCE ENGGINEERING**

**ASRA COLLEGE OF ENGINEERING & TECHNOLOGY,**

**BHAWANIGARH**

**STUDY SCHEME**

****

**Computer Networks II**

**Syllabus**

**L T P**

 **` 3 1**

**DETAILED CONTENTS**

**BTCS 301 Computer Architecture**

**Objectives:** This course offers a good understanding of the various Networking techniques and prepares the student to be in a position to handle and establish various computer networks.

**1. Network Security:** Fundamentals of network security, Basics of IPv6, IPsec: overview of IPsec, IP and IPv6,uthentication header (AH), Encapsulating Security Payload (ESP). **[6]**

**2. Internet Key Exchange (IKE):** History, Photuris, Simple Key-management for Internet protocols (SKIP), IKE phases, IKE encoding. **[6]**

**3. Adhoc networks:** Features, advantages and applications, Adhoc versus Cellular networks, Network architecture, Protocols: MAC protocols, Routing protocols, Technologies. **[6]**

**4. Wireless Communication Systems:** Evolution, examples of wireless communication systems, 2G Cellular networks, Evolution for 2.5G TDMA Standards, IS-95B for 2.5G CDMA. **[6]**

**5. 3G wireless networks:** wireless local loop (WLL), Local Multipoint Distribution System (LMDS), Wireless local Area Networks (WLANs), Bluetooth and Personal Area Networks. **[6]**

**6. Wireless System Design:** Introduction, Frequency reuse, channel assignment strategies, handoff strategies, interference and system capacity, improving coverage and capacity in cellular systems. **[6]**

**Suggested Readings/Books:**

1. Theodore S. Rappaport, Wireless Communication: Principles and Practices (2ndEdition), Pearson Education.

2. Charlie Kaufman, Radio Perlman, Mike Speciner, Neywork security, 2nd ed., PHI.

3. Sunilkumar S. Manvi, Mahabaleshwar S. Kakkasageri, Wireless and mobile networks: concepts and protocols,Wiley India.

4. Michael A. Gallo & William M. Hancock, “Computer Communications and Networking Technologies”,Cengage Learning / Thomson Brooks / Cole

5. S. Keshav, “An Engineering Approach to Computer Networking“, Pearson Education.

6. Mayank Dave, “Computer Networks”, Cengage Learning

**Computer Networks II**

**List of Assignments**

**Assignment-1**

Q:1Explain network security in detail?

Q:2 Difference between IPV4 and IPV6?

Q:3 Explain security attacks ?

Q:4 What is the purpose of IPV6?

Q;5Write short note on IPV5?

**Assignment-2**

Q:1 Explain IP security in detail ?

Q:2 Explain various modes of operation of IP sec ?

Q:3Explain various two security protocols in detail ?

Q:4 Difference between AH and ESP?

Q:5 Various services provided by IP sec ?

**Assignment-3**

Que: What is the hidden terminal problem.

Que: What is RTS, CTS handshake protocol.

Que: Classification of MAC protocol.

Que: Describe MACA Y protocol.

Que: Explain in detail PAMAS.

Que: MARCH protocol.

Que: Explain various routing protocol in Ad-hoc network?

**Assignment No. 4**

Que: What do you mean by handoff. What are its strategies?

Que: Describe Bluetooth standards in detail.

Que: Explain Local Multipoint Distribution System.

Que: Explain the architecture of 3G network with detail.

Que: Explain evolution of wireless communication system with example.

Que: What is GSM, GPRS and difference between both?

**Computer Networks II**

**List of Tutorials**

**Tutorial No. 1**

Que: What do you mean by Network Security?

Que: What do you mean by term Crytography?

Que: What do you mean by plain text and Cypher text?

Que: What are different types of Cryptography?

Que: Explain the various Security Services.

Que: What do you mean by the terms integrity, authentication, confidentially and non-reputation?

Que: What do you mean by digital signatures?

Que: Explain various security attacks?

Que: What do you mean by Phishing Sites?

Que: What do you mean by SSL?

**Tutorial No. 2**

Que: Explain Ad-hoc network in detail.

Que: What is exposed node problem.

Que: What are sender initiated protocol and receiver initiated protocol.

Que: Describe MACA protocol.

Que: Comparison of MACA and MACA Y.

Que: DBTMA protocol.

Que: Difference between cellular network and Ad-hoc network.

**Tutorial No. 4**

Que: Explain 2G cellular network with its architecture?

Que: Explain the architecture of GSM.

Que: Explain wireless LAN in detail.

Que: Explain wireless local loop.

Que: What do you mean by PAN.

Que: What are the various channel assignment strategies

**BTCS 507 Computer Networks – II LAB**

1. To configure the IP address for a computer connected to LAN and to configure network parameters ofa web browser for the same computer.

2. To plan IPv6 address scheme for a local area network comprising of ‘n’ terminals.

3. To develop programs for implementing / simulating routing algorithms for Adhoc networks.

4. To install any one open source packet capture software like wireshark etc.

5. To configure Wireless Local Loop.

6. To plan Personal Area Network.

7. To configure WLAN.

8. To configure Adhoc networks.

9. To install and configure wireless access points.

**BTCS 502 Relational Database Management System-I**

**Syllabus**

**Introduction to Database Systems:**

File Systems Versus a DBMS, Advantages of a DBMS, Describing and Storing Data in a DBMS, Database System Architecture, DBMS Layers, Data independence. [6]**.**

**Physical Data organization:**

File Organization and Indexing, Index Data Structures, Hashing, B-trees, Clustered Index, Sparse Index, Dense Index, Fixed length and Variable length Records.[61

**Data Models:**

Relational Model, Network Model, Hierarchical Model, ER Model: Entities, Attributes and Entity Sets, Relationships and Relationship Sets, Constraints, Weak Entities, Class Hierarchies, Aggregation, Conceptual Database Design with the ER Model, Comparison of Models.[s]

**The Relational Model:**

Introduction to the Relational Model, ER to Relational Model Conversion, Integrity Constraints over Relations, Enforcing Integrity Constraints, Relational Algebra, Relational Calculus, Querying Relational Data.[5]

**Relational Query Languages:**

SQL Basic, SQL Query, Creating Table and Views, SQL as DML, DDL and DCL, SQL Algebraic Operations, Nested Queries, Aggregate Operations, Cursors, Dynamic SQL, Integrity Constraints in SQL, Triggers and Active Database, Relational Completeness, Basic Query Optimization Strategies. Algebraic Manipulation and Equivalences.[7]

**Database Design:**

Functional Dependencies, Reasoning about Functional Dependencies, Normal Forms, Schema Refinement, First, Second and Third Normal Forms, BCNF, Multi-valued Dependency, Join Dependency, Fourth and Fifth Normal Forms, Domain Key Normal Forms, Decompositions.

**Transaction Management:**

ACID Properties, Serializability, Two-phase Commit protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read problem, Read-Write Locks, Deadlocks Handling, 2pL protocol. [6]

**Database Protection:**

Threats, Access Control Mechanisms, Discretionary Access Control, Grant and Revoke, Mandatory Access Control, Bell LaPadula Model, Role Based Security, Firewalls, Encryption and Digital Signatures.[5]

**Suggested Reading Books**:

1. Ramez Elmasri, Shamkant Navathe, Fundamentals of Database Systems, Fifth Edition, Pearson Education, 2007.

2. C.J. Date, An Introduction to Database Systems, Eighth Edition, Pearson Education

3. Alexis Leon, Mathews Leon, Database Management Systems, Leon Press.

4. S. K. Singh, Database Systems Concepts, Design and Applications, Pearson Education.

**BTCS 502 Relational Database Management System-I**

**List of Assignments**

**Assignment 1**

DBMS, advantages, disadvantages, applications, File System Limitations, Indexes

**Assignment 2**

Relational Model,ER Model, Network model,Hierarchical model, Comparison of all models.

**Assignment 3**

Normal Forms:First, Second and Third Normal Forms, BCNFFourth and Fifth Normal Forms

**Assignment 4**

Deadlocks Handling, 2pL protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read problem

**Assignment 5**

Role Based Security, Firewalls

**BTCS 502 Relational Database Management System-I**

**List of Tutorials**

1. Distinguish between procedural and non-procedural languages?
2. What do you mean by Query Processor?
3. Define DDL and DML?
4. List two reasons why null values might be introduced in database?
5. What are mapping cardinalities? Discuss its types?
6. What is trigger? What is its use?
7. Define Serializability.
8. What is SQL DBL and SQL DML? Give two examples for each.
9. Define the functional dependency
10. Give an example of a query with ‘where’ and ‘group by’ clause.
11. What is a view? How a view is created?
12. Define E-R Diagram with the help of an example?
13. Distinguish between disjoint and overlapping constraints?
14. What is the role of security in normal forms?
15. Consider the following relational database and give an expression in relational

algebra each of the following queries

Employee (person-name, street, city)

Works (person name, company name, salary)

Company (Company name, city)

Managers (person name, manager-name)

(a) Find the names of all employees who work for First Bank Corporation.

(b) Find the names and cities of residences of all employees who work for First Bank Corporation.

(c) Find the names of all the employees who do not work for First Bank Corporation.

(d) Find names of all employees who earn more than $10000 per annum.

(e) Find names of all employees who earn more than every employee of Small Bank Corporation.

 6. Consider the following employee database where the primary keys areunderlined.

Employee (employee-name, street, city)

Works (employee-name, company\_name,salary)

Company( company-name, city)

Managers (employee-name, manager\_name)

. Give an expression in SQL for each of the following queries.

(i)Find the names of all employees who work for First Bank Corporation and live in Las Vegas.

(ii) Find the names, street addresses and cities of residences of all employees who work for First Bank Corporation and earn more than $10000.

1. (iii) Find all employees who do not work for First Bank Corporation.
2. (iv) Find the company that has the smallest payroll.
3. (v) Find all employees in the database who do not live in the same cities and on the same streets as do their managers
4. What are the various types of transaction failure that may occur in system?
5. What do you mean by granularity of data items?
6. What is statistical database security?
7. Define Serializability of schedules
8. Define Granting of Privileges?
9. Define Shadow Paging?
10. Demonstrate the use of four character functions; LOWER, UPPER, INITCAP and LENGTH.
11. What are Indexes, Package, Cursor and Views? Explain briefly with SQL examples.
12. The students passing in the various subjects are as follows:



Write the commands in SQL for the following:

(a) What is average Math Score?

(b) List of students in the order of merit list.

(c) List the students who are passed either in Math or Science.

(d) What is maximum score in language?

(e) How many students have passed?

**BTCS 506 RDBMS LAB**

*Note:* This practical will enable students to retrieve data from relational databases using SQL. Students willalso learn about triggers, cursors, stored procedures etc.

1. Introduction to SQL and installation of SQL Server / Oracle.

2. Data Types, Creating Tables, Retrieval of Rows using Select Statement, Conditional Retrieval ofRows, Alter and Drop Statements.

3. Working with Null Values, Matching a Pattern from a Table, Ordering the Result of a Query,

Aggregate Functions, Grouping the Result of a Query, Update and Delete Statements.

4. Set Operators, Nested Queries, Joins and Sequences.

5. Views, Indexes, Database Security and Privileges: Grant and Revoke Commands, Commit andRollback Commands.

6. PL/SQL Architecture, Assignments and Expressions, Writing PL/SQL Code, Referencing Non-SQLparameters.

7. Stored Procedures and Exception Handling.

8. Triggers and Cursor Management in PL/SQL.

**Suggested Tools –** MySQL, DB2, Oracle, SQL Server 2012, Postgre SQL, SQL lite

**DESIGN ANALYSIS AND ALGORITH**

**Syllabus**

 **L T P**

 **3 1 4**

**DETAILED CONTENTS**

1. **Introduction:** What is an algorithm? Time and space complexity of an algorithm. Comparing the performance of different algorithms for the same problem. Different orders of growth. Asymptotic notation. Polynomial vs. Exponential running time.
2. **Basic Algorithm Design Techniques**. Divide and conquer, greedy, randomization, and dynamic programming. Example problems and algorithms illustrating the use of these techniques.
3. **Graph Algorithms.** Graph traversal: breadth-first search (BFS) and depth-first search (DFS) Applications of BFS and DFS. Topological sort. Shortest paths in graphs: Dijkstra and Bellrnan-Ford Minimum spanning trees,
4. **Sorting and searching**. Binary search in an ordered array. sorting algorithms such as Merge sort, Quick sort, Heap sort, Radix Sort and Bubble sort with analysis of their running times. lower bound on sorting. Median and order statistics.
5. **NP-completeness**. Definition of class NP.NP-hard and NP-complete problems. 3SAT is NP complete. Proving a problem to be NP-complete using polynomial-time reductions. Examples of NP-complete problems.
6. **Coping with NP-completeness**. Approximation algorithms for various NP-complete problems.
7. **Advanced topics.** Pattern matching algorithms : Knuth- Morris-Pratt algorithm. Algorithms in Computational, Geometry : Convex hulls. Fast Fourier Transform (FFT) and its applications. Integer and polynomial arithmetic. Matrix multiplication :Strassen's algorithm.

**Suggested Reading Books:**

1. Algorithm Design by J. Kleinberg and E. Tardos.

2. Introduction to Algorithms by Thomas H. Cormen, Charles E. Iriserson, Ronald L. Rivest, and Clifford Stein

3. Algorithms by S. Dasgupta, C.H. Papadimitriou, and U.V. Vazirani.

4. Algorithm Design: Foundations, Analysis, and Intemet Examples by Michael T. Gooddch and Roberto Tamassia,

5. The Design and Analysis of Computer Algorithms by A. V. Aho, J. E. Hopcroft, and J. D Ullman

6. The Afi of Computer Programming, Volumes l, 2, and 3, by Donald Knuth

**DESIGN ANALYSIS AND ALGORITH**

**List of Assignments**

**Assignment 1**

* Define space and time Complexity?
* List different notations of complexity of an algorithm
* What is Algorithm Analysis
* Compare the performance of any two algos
* Explain Divide and Conquer in detail

**Assignment 2**

* What is Greedy method? State and write algorithm for knapsack problem using greedy method
* What are the advantages of Dynamic Programming over Greedy Method?
* State and illustrate any Dynamic programming problem
* What is principle of optimality?

**Assignment 3**

* What do you mean by graph algorithm ?
* Define space and Time complexity.
* Define shortest path.
* Illustrate dikjastra algorithm.
* Define BSF.

**Assignment 4**

* What do you mean by NP problem.
* Define linear search with e.g.
* Illustrate NP completeness’.
* E.g of NP completeness’**.**

**Assignment 5**

* What is Pattern matching algorithms.
* Define some algorithm for pattern matching.
* Define Fast Fourier Transform (FFT) and its applications.
* Define Integer and polynomial arithmetic**.**

**DESIGN ANALYSIS AND ALGORITH**

**List of Tutorials**

**Tutorial 1**

**Very short Question answer**

1. What is Algorithm?
2. How the complexity of an algorithm can be measured?
3. Define Big Oh notations.
4. What are Asymptotic Notations?
5. Define Omega notation
6. Define theta notation
7. Is 2n+5= ɵ(n)
8. Define space and Time complexity
9. What are different orders of growth?
10. What are asymptotic notations?
11. Plot a graph showing Polynomial vs. Exponential running time

**Short Question answer**

1. What are Asymptotic Notations? Explain each with example?
2. Compare time complexity of linear, binomial, polynomial, exponential and logarithm. Also plot a graph.

**Long Answer Questions**

1. What is an algorithm? What are various notations to define an algorithm? How the complexity of an algorithm be measured?
2. What are asymptotic notations? Explain all notations with two examples of each.

**Tutorial 2**

**Very Short Answer Questions**

1. What is the general principle of Divide and Conquer?
2. What are various advantages and disadvantages of Dynamic programming over Greedy Approach?
3. What is general principle of Greedy approach?
4. What is principle of Optimization?
5. What is Knapsack problem?
6. What is traveling salesperson problem?

**Short Answer Questions**

1. What is divide and conquer technique? Explain Merge sort using this approach.
2. What is Dynamic Programming? Explain in detail.
3. What is Greedy approach? Explain all the three greedy criteria.
4. Show the intermediate steps when the numbers 123, 23, 1, 43, 54, 36, 75, 34
are sorted using merge sort.

**Long Answer Questions**

1. Distinguish between Quick sort and Merge sort, and arrange the following numbers in increasing order using merge sort. (18, 29, 68, 32, 43,37, 87, 24, 47, 50)
2. Find an optimal solution to the knapsack instance n = 7, m= 15 (p1, p2, p3, ….p7) = (10, 5, 15, 7, 6, 18, 3) and (w1, w2, w3, ... w7) (2, 3, 5, 7, 1, 4, 1)
3. What is Greedy Approach? State and Explain Knapsack problem using Greedy Approach.
4. Explain Dynamic Programming with an example.

**Tutorial 3**

**Very Short Answer Questions**

1. What is BFS in graph?
2. What is DFS?
3. Define Topological sort.
4. What is minimum spanning tree?
5. Differentiate BFS and DFS
6. What is spanning tree?

**Short Answer Questions**

1. Explain Dijkstra algorithm.
2. Explain BFS with an example.
3. Explain DFS with an example.
4. Explain Bellman-Ford algorithm.
5. Explain topological sort with an example.
6. What is spanning tree? What is minimum spanning tree? Explain with an example.

**Long Answer Questions**

1. Explain Minimum Spanning tree? Write Kruskal’s Algorithm to find minimum Spanning Tree?
2. Differentiate BFS and DFS with an example.
3. Explain algorithms for shortest paths in graphs.

**BTCS 508 Design & Analysis of Algorithms Lab**

**Objective:** To get a first-hand experience of implementing well-known algorithms in a high-level language.To be able to compare the practical performance of different algorithms for the same problem.

1. Code and analyze to compute the greatest common divisor (GCD) of two numbers.

2. Code and analyze to find the median element in an array of integers.

3. Code and analyze to find the majority element in an array of integers.

4. Code and analyze to sort an array of integers using Heap sort.

5. Code and analyze to sort an array of integers using Merge sort.

6. Code and analyze to sort an array of integers using Quick sort.

7. Code and analyze to find the edit distance between two character strings using dynamicprogramming.

8. Code and analyze to find an optimal solution to weighted interval scheduling using dynamic

Programming.

9. Code and analyze to find an optimal solution to matrix chain multiplication using dynamic

Programming.

10. Code and analyze to do a depth-first search (DFS) on an undirected graph. Implementing an

application of DFS such as (i) to find the topological sort of a directed acyclic graph, OR (ii) to find

a path from source to goal in a maze.

11. Code and analyze to do a breadth-first search (BFS) on an undirected graph. Implementing anapplication of BFS such as

(i) to find connected components of an undirected graph, OR (ii) to checkwhether a given graph is bipartite.

12. Code and analyze to find shortest paths in a graph with positive edge weights using Dijkstra’salgorithm.

13. Code and analyze to find shortest paths in a graph with arbitrary edge weights using Bellman-Fordalgorithm.

14. Code and analyze to find the minimum spanning tree in a weighted, undirected graph.

15. Code and analyze to find all occurrences of a pattern P in a given string S.

16. Code and analyze to multiply two large integers using Karatsuba algorithm.

17. Code and analyze to compute the convex hull of a set of points in the plane.

18. (Mini-project Topic) Program to multiply two polynomials using Fast Fourier Transform (FFT).

**BTCS 504 Computer Graphics**

COURSE CONTENTS:

1. Introduction: Computer Graphics and its applications, Elements of a Graphics, Graphics Systems: Video Display Devices, Raster Scan Systems, Random Scan Systems, Input devices.

2. Basic Raster Graphics: Scan conversion- Point plot technique, Line drawing, Circle generating and Ellipse generating algorithms.

3. Two-dimensional Geometric Transformations: Basic Transformations-Translation, Rotation and Scalling , Matrix Representation and Homogeneous Coordinates, Composite Transformations, Reflection and Shearing transformations.

4. Clipping: Window to viewport transformation, Clipping Operations- Point Clipping, Line Clipping, Polygon Clipping and Text Clipping.

5. Filling Techniques: Scan line algorithms, Boundary-fill algorithm, Flood-fill algorithm, Edge fill and fence fill algorithms.

6. Elementary 3D Graphics: Plane projections and its types, Vanishing points, Specification of a 3D view.

7. Visibility: Image and object precision, Hidden edge/surface removal or visible edge/surface determination techniques; z buffer algorithms, Depth sort algorithm, Scan line algorithm and Floating horizon technique.

8. Advance Topics: Introduction of Rendering, Ray tracing, Antialiasing, Fractals, Gourard and Phong shading.

**Suggested Readings/ Books:**

**1.** Donald Hearn and M.Pauline Baker, **“**Computer Graphics”, Second Edition, PHI/Pearson Education.

**2.** Zhigand xiang, Roy Plastock, Schaum’s outlines, **“**Computer Graphics Second Edition”,Tata Mc- Grawhill edition.

**3.** C, Foley, VanDam, Feiner and Hughes, “Computer Graphics Principles & Practice”, Second Edition, Pearson Education

**BTCS 504 Computer Graphics**

**List of Assignments**

**Assignment - 1**

Q.1) Write a short note on:

(a) keyboard (b) mouse (c) joystick (d) trackball.

Q.2) What is computer graphics? Explain application of computer graphics.

Q.3) Write a short note on:

(a) cathode ray tube.

(b) raster scan display

( c) color CRT monitor

(d) liquid crystal display

(e) direct view storage tubes.

**Assignment – 2**

Q.1) Explain DDA line generation algorithm.

Q.2) Explain Bresenham line generation algorithm.

Q.3) Define transformation.

Q.4) Explain reflection and shearing transformation.

**Assignment – 3**

Q.1) What is clipping? Explain types of clipping

Q.2) Explain boundary – fill algorithm.

Q.3) Explain flood- fill algorithm.

Q.4) what is fence fill algorithm.

**Assignment – 4**

Q.1) Define vanishing points.

Q.2) Explain 3D transformation.

Q.3) Explain Z- buffer algorithm

Q.4) Explain depth sort algorithm.

Q.5) Explain scan line algorithm.

**Assignment – 5**

Q.1) Define :

(a) rendering

(b)raytracing

(c) fractals

(d) gourard and phong shading

**BTCS 504 Computer Graphics**

**List of Tutorials**

**TUTORIALS SHEET - 1**

Q:1) What is raster scan system?

Q:2) What is aspect ratio?

Q:3) What is parallel and prespective projection?

Q:4) Explain the gourard shading model.

Q:5) What is constant intensity shading.

Q:6) What is random scan system?

Q:7) What do you understand by clipping, windowing and viewporting? Discuss Sutherland-cohen algorithm in detail.

**TUTORIAL SHEET -2**

Q:1) What is pixel.

Q:2) Define “view space”.

Q:3) Define “model space”.

Q:4) Write an algorithm to draw a line .

Q:5) Write an algorithm to draw the ellipse.

Q:6) Write a procedure for thick line using bresenham’s algorithm.

**TUTORIAL SHEET-3**

Q:1) What is ray tracing?

Q:2) What are bitmaps?

Q:3) What is line clipping?

Q:4) Explain the procedure of flood fill algorithm.

Q:5)Explain various shearing transformation?

Q:6) Explain the development of Bezier curve.

**TUTIORAL SHEET- 4**

Q:1) What is antializing.

Q:2) What is clipping?

Q:3) Define rendering.

Q:4) Define scan conversion.

Q:5) Explain the working principle of mouse.

Q:6) Write short notes on the following:

1. Floating horizon
2. Vanishing points.

**TUTIORALS SHEET -5**

1. Q:1) What is Bezier curve.
2. Q:2) What is prespective view?
3. Q:3) What is Z- Buffer.
4. Q:4) List all the application of computer graphis.
5. Q:5) What are projections? Explain different types of projection.
6. Q:6) Explain the detail of phong shading.

**BTCS 509 Computer Graphics Lab**

1. To plot a point (pixel) on the screen.

2. To draw a straight line using DDA Algorithm.

3. To draw a straight line using Bresenham’s Algorithm.

4. Implementation of mid-point circle generating Algorithm.

5. Implementation of ellipse generating Algorithm.

6. To translate an object with translation parameters in X and Y directions.

7. To scale an object with scaling factors along X and Y directions.

8. To rotate an object with a certain angle about origin.

9. Perform the rotation of an object with certain angle about an arbitrary point.

10. To perform composite transformations of an object.

11. To perform the reflection of an object about major axis.

12. To clip line segments against windows using Cohen Sutherland Algorithm.

13. Perform the polygon clipping against windows using Sutherland Hodgeman technique.

14. Fill a rectangle with a specified color using scan line algorithm.

15. Implementation of flood-fill and boundary-fill algorithms.

**Computer peripherals and Interfaces**

1. **SYSTEM RESOURCES:** Inrerrupt, DMA Channel, I/O port Addresses and resolving and resolving the conflict of resources. I/O buses. ISA, EISA, Local bus, VESA Local bus, PCI -bus, PCI Express,Accelerated graphics port bus.
2. **IDE &SCSI Interfaces:** IDE origin, IDE Interface ATA standards ATAI to ATA7. ATA feature, ATA RAID and SCSI RAID, SCSI Cable and pin Connector pin ours SCSI V/s IDE Advantages andlimitation.
3. **Video Hardware:** Video display technologies, DVI Digit signals for CRT Monitor LCD panels, Video adapter types, Integrated Video/ Motherboard chipset, Video RAM,Video driver and multiple Monitor, Graphic accelerators. Advanced 3D Technologies, TV Tuner and Video Capture upgradestroubleshooting Video Cards and Drivers.
4. **I/O Interfaces**: I/O Interfaces from USB and IEEEI394, I/OInterface from serial and parallelto IEEEI394 and USB 961, parallel to SCSI converter. Testing of serial andparallel port, USB Mouse//Keyboard Interfaces.
5. **Input/output Driver software aspects**: Role of device driver DOS and UNIX/ LINUX devicedrivers.

 6. Design & Integration of Peripheral devices to a computer system as a Case Study

 7. **Future Trends:** Detailed Analysis of recent progress in the peripheral and Bus systems. Some aspects

Ofcost Performance analysis while designing the system

Suggested /Readings / Books

l. Douglas V. Hall ,.Microprocessors and tnterfacing,', Tata Mccraw Hilt 2006.

2. Barry B. Brcy & C.R.Sarma,' The intel microprocessors," pearson 2003.

3, P. Pal Chandhari ,r.Computer Organization and design" &enrice Hall of India pvr. Ltd, 1994.

**Computer peripherals and Interfaces**

**List of Assignments**

**Assignment 1**

Difference between following buses

1. ISA
2. MCA
3. EISA
4. VESA
5. PCI Bus
6. PCI Express Bus

**Assignment 2**

Q1) What is IDE/ATA. Explain various standards for ATA.

Q2) Difference between ATA & SCSI.

Q3) Difference between ATA & SATA.

**Assignment 3**

Q1) Features of various video adapter cards.

Q2) Working of TV tuner card and its types

**Assignment 4**

Q1) I/O interface from serial &parallel to IEEE 1394 and USB 961?

Q2) Parallel to SCSI converter.

**Assignment 5**

Q1) Explain a Linux/Unix device drivers.

Q2) Design & Integration of peripheral device to a computer system.

**DEPARTMENT TEACHERS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sno.** | **Name of Teacher** | **Contact no.** | **Email-id** |
| **1.** | **Er. Parvinder Singh** | **84377-00327** | **asrahodcse@gmail.com** |
| **2.** | **Er.Navjot Kaur** | **84277-52347** | **asracsef10@gmail.com** |
| **3.** | **Er. Mohit Kumar** | **98881-03368** | **asracsemk@gmail.com** |
| **5.** | **Er. RajnishKansal** | **98760-63764** | **asra.cse.rajnish@gmail.com** |
| **6.** | **Er. Manish Mittal** | **86999-90597** | **asratpo@gmail.com** |
| **7.** | **Er. Inderjeet Singh** | **86991-00160** | **asracseinder@gmail.com** |
| **8.** | **Er. Jasdeep Kaur** | **98729-76515** | **asrajasdeepcse@gmail.com** |
| **9.** | **Er. Sourav Garg** | **99158-48810** | **asracsesrv@gmail.com** |
| **10.** | **Er. Shaveta Sehgal** | **90414-38756** | **asra.cse.shaveta@gmail.com** |