### SCHEME OF INSTRUCTION AND EVALUATION
I SEMESTER OF II YEAR OF 4-YEAR B.TECH. DEGREE PROGRAMME

**COMPUTER SCIENCE AND ENGINEERING**

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</table>
UNIT – I  

UNIT – II  

UNIT – III  

UNIT – IV  
4. PARTIAL DIFFERENTIAL EQUATIONS: Solution of wave equation, Heat equation and Laplace equation by the method of separation of variables and their application in problems of vibrating string, One dimensional unsteady heat flow and two dimensional steady heat flow (Problems based on Fourier-Trigonometric series only).

TEXT BOOKS:

REFERENCE BOOKS:
Course: II/IV B.Tech I Semester
Branch: Common to all branches
External Examination: 3 Hours
Internal Examination: 2 Hours

Theory: 3 Periods/week
Tutorial: 1 Period/week

External Evaluation: 100
Internal Evaluation: 50

UNIT - I (9+3)
Fundamentals: Sets, Relations, their properties and digraphs, Binary relations, Equivalence Relations, Ordering Relations. Lattices, operations on relations, paths.

UNIT - II (9+3)

UNIT - III (9+3)
Elementary combinatorics: Combinations and Permutations. Enumeration – with repetitions, with Constrained repetitions, principle of inclusion and exclusion.
Recurrence relations: Coefficients of generating functions. Recurrence relations: homogeneous recurrence relations, non homogeneous recurrence relations, non-linear recurrence relations.

UNIT - IV (9+3)
Graphs: Basic concepts, Isomorphism, sub graphs, trees and their properties, spanning trees, binary trees, Planner Graphs, Euler’s formula, multi graphs and Euler circuits, Hamiltonian graphs, Chromatic numbers. Four color problem.

TEXT BOOKS:

REFERENCE BOOKS:
UNIT – I


UNIT – II


3-Phase A.C. Circuits: Production of 3-phase Voltages, Voltage, Current relationships of Line and Phase values for Star and Delta Connections, 3-Phase Power Measurement by two wattmeter method for balanced loads.

UNIT – III

Magnetic circuits: Self and Mutual Inductance, Dot Convention, Coefficient of Coupling.


UNIT – IV

3-Phase Induction Motor: Constructional features, Principle of operation, Production of Rotating Magnetic Field, Torque, Slip Characteristics, Applications.

1-Phase Induction Motors: Production of Rotating Field in various types of 1-Phase Motors, Split Phase, Capacitor start, Capacitor run, shaded Pole motors and Applications.

Synchronous Generators and Motors: Principle of Operation and Applications.

SUGGESTED TEXT / REFERENCE BOOKS:
1. Vincent Del Toro, “Principles of Electrical Engg”. PHI.
5. Sudhakar and Shyam Mohan ‘Network analysis and Synthesis” TMH
CS214 OBJECT ORIENTED PROGRAMMING CONCEPTS

Course:  II/IV B.Tech I Semester
Branch:  Common to CSE, IT
External Examination:  3 Hours
Internal Examination:  2 Hours

Theory:  3 Periods/week
Tutorial:  1 Period/week
External Evaluation:  100
Internal Evaluation:  50

UNIT – I
(9+3)
Introduction to C++:  Basic I/O, Data types, Declarations, Scope, Initialization, Constants, References, Expressions, Statements, Operators, Pointers, Arrays, Structures, Functions, Overloading, Pointers to Functions, Macros, Name Space.

UNIT – II
(9+3)
Classes:  Access Control, Constructors, Destructors, Static and Constant Member Functions, Mutable, In-class function definition, User-defined types.
Operator Overloading:  Overloading of Binary and Unary operators, Conversion operators, Friend functions, String operations, Matrix operations, Complex number operations.

UNIT – III
(9+3)
Inheritance:  Benefits of Inheritance, Cost of Inheritance, Types of Inheritance, Replacement, Refinement, Constructors and Destructors in derived classes, Multiple Inheritance.
Polymorphism:  Types of Polymorphism, Virtual Functions, Pure virtual functions, Abstract class, Virtual Base class.
Templates:  Generic class, Function templates, Class templates, Overloading function templates.

UNIT – IV
(9+3)
Exception Handling:  Error handling, Grouping of exceptions, Catching exceptions, Exceptions in Constructors, Exceptions in Destructors, Exceptions that are not errors, Exception Specifications, Uncaught Exceptions, Exceptions and Efficiency, Error Handling alternatives.

SUGGESTED TEXT / REFERENCE BOOKS:

LIST OF EXPERIMENTS

1. Verification of Kirchhoff’s Laws.
2. Verification of Superposition Theorem.
3. Verification of Thevenin’s Theorem.
4. Voltage and Current relationships of line and Phase values in Star, Delta connections and 3-phase power measurement by Two Wattmeter method.
5. Frequency response of R-L-C series circuit.
6. Determination of parameters of choke coil.
7. S.C. Tests on 1-Phase Transformer to determine the Equivalent circuit parameters and predetermination of efficiency.
8. Efficiency and Voltage Regulation of a 1- Phase Transformer by Direct load test.
9. Speed Control and Swinburne’s test on D.C. shunt motor to predetermine efficiency as Motor and Generator.
11. Load test on D.C. shunt Generator.
12. Demonstration Experiments
   a). D.C. Motor.
   b). D.C. Generator (O.C.C.)
   c). 1 – Phase Induction Motors.
   d). Alternators.
CS216  DATA PROCESSING

Course:  II/IV B. Tech. I Semester  
Branch:  Common to CSE, IT  
External Examination:  3 Hours  
Internal Examination:  2 Hours  
Theory:  3 Periods/week  
Tutorial:  1 Period/week  
External Evaluation:  100  
Internal Evaluation:  50

UNIT-I  
(9+3)


Data Division:  Level structure-Data Description entries – Picture clause, Value clause – File section, working storage section. Edition – numeric, alphabetic, alphanumeric data, special names paragraph. Classes and categories of Data. Usage clause, Synchronized clause, Justified clause, redefines clause, renames clause, sign clause.

UNIT-II  
(9+3)

Procedure Division and Verbs:  Structure Verbs – Data movement, Arithmetic, sequence control, Input – output, Control and conditional. Options – Corresponding option, rounded, on size error, compute, statements, implementation differences. Use of these verbs in simple programs. 


UNIT-III  
(9+3)

File Handling in COBOL:  Basic file concepts – Entities and Attributes, Records, Files, Sequential Files, Relative Files, Ordered Files, direct Access Files, Indexed Sequential Files, Random access files 

Preliminaries of file structures:  Introduction to design and specifications of file structures, File Processing Operations

UNIT-IV  
(9+3)

Secondary storage and system software:  Disks, Magnetic Tape, Disk vs Tape, Physical Organization of CD-ROM, Buffer management, File structure concepts 

Indexing, K-way merging, Sorting of files on tapes, Balanced merge, K-way balance merge, Multi phase merge

SUGGESTED TEXT/REFERENCE BOOKS:
CS217 OBJECT ORIENTED PROGRAMMING LABORATORY

Course: II/IV B.Tech. I Semester  Laboratory: 3 Periods / week
Branch: Common to CSE, IT  External Evaluation: 100
External Examination: 3 Hours  Internal Evaluation: 50
Internal Examination: 2 Hours

Branch: Common to CSE, IT

Group-I
1. Read 10 numbers and display them in sorted order.
2. Read ‘n’ real numbers and display them in sorted order with three decimal accuracy in octal, decimal, and hexadecimal formats.
3. Write functions to swap two numbers using pointers and references.

Group-II
4. Write a program that prints the sizes of the fundamental types, a few pointer types and a few enumeration of your choice. Use the sizeof operator.
5. Write a function that counts the number of occurrences of pair of letters in a string, for example the pair “ab” appears twice in “xabaacbaxabb”.
6. Find LCM of two, three and four numbers using function overloading.

Group-III
7. Create a structure for storing students details (sno, sname, course, Array of five subject’s marks) provide the functions for printing the total marks, calculating percentage and the result.
   (Note: Include the functions within the structure).
8. Write a macro to find square (A+B)-square (C+D).
9. Create a class for complex number and provide methods for addition, subtraction, multiplication and division. Display the output in “a+ib” form.

Group-IV
10. Create a complex number class with default, parameterized, copy constructors and a destructor.
11. Create a class which provides a method to count the number of objects that are created for that class. (Use static method).
12. Create a class INT that behaves exactly like an int. (Note: overload +, -, *, /, %).

Group-V
13. Create a string class and overload + to concatenate two Strings and overload ( ) to print substring.
14. Create Date class and overload ++ to print next date and overload -- to print previous date.

Group-VI
15. Create a string class with pointer to char as data member to represent a string and overload = operator to copy two String objects.
16. Create a user defined array class Array and overload + to add two arrays, overload * to multiply two arrays, overload [] to access given position element and also to use left side of an assignment operator.
17. Create a complex number class and overload +, -, * operators using friend functions.  

**Group-VII**

18. Create a base class person with SSN, Name, Address, Sex. Derive a student class from person class with course_name, marks in all subjects. Provide methods to find results. (Use public, private, protected inheritances).

19. Design classes for the following hierarchy and provide suitable methods.

```
Person
  Name, DOB, Address

Teacher
  Designation, Qualification, DOJ, Salary

Student
  College Name, Course, Academic Year
```

20. Create a shape Class with methods perimeter, area. Derive classes circle, square and triangle from shape class. Provide implementation for perimeter, area in the derived classes. (Declare perimeter, area as pure virtual functions).

**Group-VIII**

21. Design classes for the following hierarchy. Provide appropriate members and methods.

```
Person

Employee

Student

Research Assistant
```

Create an Employee, Student class as Virtual Base Classes.

22. Implement Question No. 21, by declaring pointers to base class and access the derived class methods using base class pointers.

23. Create function template to sort an array, which can sort array of any type.
**Group-IX**
24. Write a function template to overload max method, which can find maximum of any data type.
25. Create a Generic calculator class to perform +, -, *, / operations on any type.
26. Create a Generic class for array of variable size and provide sorting, searching on any type.

**Group-X**
27. Find the roots of a quadratic equation. Handle exception for divide by zero.
28. Handle the Array Index out of Bounds Exception when accessing the elements of Arrays.
29. Create a text file of student information and display the contents of file.

**Group-XI**
30. Write a program to read a text file and remove all white space characters and replace each alphanumeric character with next character in the alphabet (Replace z by a and 9 by 0).
31. Copy the contents of one file into another except the blank lines using command line arguments.
32. Create a file with floating point numbers. Read pair of floating numbers from the file and write into another file.

**Group-XII**
33. Read the contents of three files, concatenate them and display it.
34. Write complex numbers into a file in binary format and in character format.
35. Create a class with integers and overload << to place integer into a file and overload >> to read an integer.
CS218 DATA PROCESSING LABORATORY

Course: II/IV B.Tech I Semester
Branch: Common to CSE, IT
External Examination: 3 Hours
Internal Examination: 2 Hours
Laboratory: 3 Periods/week
External Evaluation: 50
Internal Evaluation: 25

LIST OF EXPERIMENTS

1. Program for using arithmetic verbs.
2. Program to calculate average and total of marks.
3. Program to swap two numbers using temporary variable.
4. Program to find simple interest using compute verb.
5. Program to print memo of a student.
6. Program to find greatest of three no.s.
7. Program to calculate net salary according to given conditions.
8. Program to illustrate Editing characters.
9. Program to find factors of a given number.
10. Program to find factorial of a given number.
11. Program for perfect number.
12. Program to check whether given number is palindrome.
13. Program to print multiplication of given number.
14. Program to check whether given number is Armstrong or not.
15. Program to print Fibonacci series.
16. Program to print prime numbers in a given range.
17. Program to calculate sum of digits of given number.
18. Program illustrating GOTO .Depending on clause.
19. Program to print “welcome “ n times using PERFORM syntax.
20. Program to illustrate “RENAME” clause.
21. Program illustrating operations on one-dimensional array.
22. Program to search for an element in a ARRAY.
23. Program to sort the given numbers.
24. Program to sort elements of array using BUBBLE SORT.
25. Programs on matrices.
26. Program illustrating condition-name-condition.
27. Program using SEARCH verb.
28. Program for BINARY SEARCH.
29. Program to create a sequential file.
30. Program to sort a sequential file.
31. Program to merge two sequential files without using merge verb.
32. Program making use of MERGE verb.
33. Program making use of Input-Output procedure.
34. Program to create relative file.
35. Program to delete a record from a relative file.
36. Program to update a sequential file.
37. Program to append records for a sequential file.
38. Program to create an Indexed file.
39. Program to display the desired record contents in an indexed files.
40. Implementing Reclaiming space in files for fixed size records in C++. Assume fields suitably.
41. Store & Retrieve variable size records. Store fields using delimiter separated format. Store records using delimiter separated format. Compress each record using any data compression technique.
# Scheme of Instruction and Evaluation

**II Semester of II Year of 4-Year B.Tech. Degree Programme**

**Computer Science and Engineering**

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<td>EI226</td>
<td>Basic Electronics</td>
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<td>Data Structures</td>
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<td>CS224</td>
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<td>CS225</td>
<td>Principles of Programming Languages</td>
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<td>CS228</td>
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MH221 MATHEMATICS -III

Course: II/IV B.Tech II Semester
Branch: Common to all branches
External Examination: 3 Hours
Internal Examination: 2 Hours

UNIT – I (9+3)

MATRICES : Rank of a matrix - Solution of system of linear equations - Linear dependence and independence of vector – Characteristics roots and Characteristics vectors of a matrix-Cayley Hamilton Theorem (without proof) - Reduction to diagonal form and normal form. Reduction of a quadratic form to canonical form.

UNIT – II (9+3)


UNIT – III (9+3)


UNIT – IV (9+3)

SOLUTION TO SYSTEM OF LINEAR EQUATIONS : Jacobi, Gauss Siedel iteration method - Solution of algebraic and transcendental equations - Bisection method, Regula-Falsi method & Newton Raphson's Method.

TEXT BOOK :

REFERENCE BOOKS :
1. S.S Sastry, “Introductory Numeriacal Analysis”.
UNIT – I  (9+3)

UNIT – II  (9+3)
Transistor : PNP and NPN transistor, Symbols and diode equivalent of transistor, transistor current components, CE, CB,CC Characteristics, Comparision of three configurations, Construction, Principle of operation and characteristics of FET, MOSFETS and UJT.

UNIT – III  (9+3)
Comparison of BJT and FET.
AMPLIFIERS: Biasing, DC equivalent model, criteria for fixing operating point and methods of Bias stabilization, Thermal run away and thermal stability. Bias compensation techniques Small signal low frequency transistor amplifier circuits: h-parameter representation of a transistor, analysis of single stage transistor amplifier using h-parameters: voltage gain, current gain, input impedance and output impedance. RC coupled amplifier – frequency response.

UNIT – IV  (9+3)


SUGGESTED TEXT / REFERENCE BOOKS:

CS223 DATA STRUCTURES

Course: II/IV B.Tech. II Semester
Branch: Common to CSE, IT
External Examination: 3 Hours
Internal Examination: 2 Hours

UNIT-I (9+3)

Basics of Data Structures: Data structure definition, Applications of data structures, Algorithms, Programs, Design and analysis steps, Time and Storage analysis.

Arrays: Representation of arrays, Memory allocation for arrays, Operations on arrays, Applications of arrays, Pointer arrays, Sparse matrix Operations, Polynomial operations.

Stacks: Stack model and operations, Stack implementation, Multiple stacks.

Stack applications: Infix, Prefix, Postfix notations, Conversion and evaluation of expressions, Recursion.

UNIT-II

Queues: Queue model and operations, Queue implementation, Circular queue, Circular queue implementation, Dequeues, Priority queues, Applications of queues.

Linked Lists: Definition, Representation of a linked list in memory, Operations on single linked list, Double linked list, Operations on double linked list, Circular Linked list, Linked list operations with header node, Implementation of stacks and queues using linked lists.

Applications of linked lists: Sparse matrix representation, Sparse matrix operations using lists, Polynomial representation, Polynomial operations, Dynamic storage Management, Generalized lists, Garbage collection and Memory compaction.

UNIT-III (9+3)

Trees: Basic terminologies, Binary trees representation using arrays, Binary tree representation using linked lists, Binary tree traversal algorithms: inorder traversal, preorder traversal, postorder traversal, Threaded binary tree, binary search tree, Binary search tree operations(addition of a node, deleting a node), AVL trees, B-trees and B+ trees.

Graphs: Terminology, Graph representation methods: adjacency matrix, adjacency lists, adjacency multilists, Graph traversal algorithms: Depth first search, Breadth first search, spanning trees, Minimum spanning tree, Shortest paths.

UNIT-IV

Searching: Linear search algorithm, Binary search algorithm, Fibonacci search algorithm, Comparison of search algorithms.

Sorting: Insertion sort algorithm, Shell sort algorithm, Quick sort algorithm, Merge sort algorithm, Two way merge sort algorithm, Heap sort algorithm.

Tables: Rectangular tables, Tagged tables, inverted tables, Hash tables: Hash techniques, collision Resolution Techniques, closed hashing, open hashing, comparison of collision Resolution techniques.

(All above topics with intuitive notion of complexity of algorithms)

SUGGESTED TEXT / REFERENCE BOOKS:

## CS224 COMPUTER ARCHITECTURE AND ORGANIZATION

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<td>Tutorial: 1 Period/week</td>
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<td>External Examination: 3 Hours</td>
<td>External Evaluation: 100</td>
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<tr>
<td>Internal Examination: 2 Hours</td>
<td>Internal Evaluation: 50</td>
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### UNIT-I (9+3)


**Number Representation:** Integer, Signed, Unsigned, 1’s Complement, 2’s Complement, r’s Complement, Addition and Subtraction of Signed Numbers, Overflow in Integer Arithmetic, Fixed and Floating Point Representation, IEEE 754 Representation, BCD, Gray code.

**Instructions:** Memory Location and Address: Byte addressability, Big endian & Little endian assignments, Word alignment, Accessing Numbers, Characters and Character strings. Addressing modes, Instruction Format: Three, Two, One, Zero Address Instructions, Risk Instructions, Modes of Instructions, Instruction Sequencing, Assembly Language, Stacks and Queues, Subroutines.

### UNIT-II (9+3)

**Central Processing Unit:** Fundamental Concepts, Execution of Complete Instruction, Control Unit, Micro Programming Control Unit, Hardwired Control Unit, Study of 8088, Power Pc Processor.


### UNIT-III (9+3)

**Computer Arithmetic:** Addition & Subtraction of Signed Numbers, Carry look ahead adder, Multiplication of positive numbers, Booth’s Algorithm, Fast Multiplication, Integer Division, Floating Point Arithmetic Operation: Addition, Subtraction, Multiplication & Division.


### UNIT-IV (9+3)

**Computer Peripherals:** Input Devices: Keyboard, mouse, joystick, track ball, touch pad, scanners. Output Devices: Video displays, flat panel display, printers, graphics accelerators.

**Advanced Concepts:** Pipelining: Basic concepts, Data & instruction hazards, Influence on instruction sets, Data path and control considerations, Super scalar operations. Introduction to RISC, CISC.

**Large Computer Systems:** Forms of Parallel Processing, Array Processors, The Structure of General purpose multiprocessor, Interconnection Networks, Memory Organization, Program Parallelism and Shared Variables.
SUGGESTED TEXT / REFERENCE BOOKS:

CS225 PRINCIPLES OF PROGRAMMING LANGUAGES

Course: II/IV B.Tech II Semester
Branch: Common to CSE, IT
External Examination: 3 Hours
Internal Examination: 2 Hours

UNIT- I
Preliminaries of Programming Languages: Software development process, Languages and software development environment, Languages and software design methods, Languages and computer architecture, Programming language qualities, A brief historical perspective, The bird’s-eye view of programming language concepts, A simple program Syntax and semantics, Expressions, Program organization, Program data and algorithms, Data, Computation, External environment.

UNIT- II
Structuring the Data: Built-in types and Primitive types, Data aggregates and type constructors, Insecurities of pointers, User-defined types and abstract data types, Abstract data types in C++, Type systems, Static versus Dynamic program checking, Strong typing and type checking, Type compatibility, Type conversions, Types and subtypes, Generic types, Monomorphic versus Polymorphic type systems, The type structure of representative languages, Pascal, C++, Implementation models, Built-in primitive types and enumerations, Pointers and garbage collection.

UNIT- III
Structuring the Computation: Expressions and statements, Conditional execution, Iteration, Routines, Style issues, Side effects and aliasing, Exceptions, Exceptions handling in C++, A comparative evaluation, Pattern matching, Nondeterminism and Backtracking, Event driven computations, Concurrent computations, Process, Synchronization and communication, Semaphores, Monitors and signals, Rendezvous.
Structuring the Program: Software design methods, Concepts in support of modularity, Language features for programming in large in C, C++, Abstract data types, classes and modules, Generic units, Generic data structures, Generic algorithms, Generic modules, Higher levels of genericity.
Object-Oriented Languages: Concepts of object-oriented programming, Inheritance and the type system, Object-oriented features in programming languages, Object-oriented features in Java.

UNIT- IV
Functional Programming: Characteristics of imperative languages, Mathematical and programming functions, Principles of functional programming, Representative functional languages, LISP, APL, Functional programming in C++.
Logic and rule-based languages: Specification versus Implementation, Principles of logic programming, PROLOG, Functional programming versus Logic programming, Rule-based languages.
SUGGESTED TEXT / REFERENCE BOOKS:

EI227 BASIC ELECTRONICS LABORATORY

Course: II/IV B.Tech. II Semester
Branch: Common to CSE, IT
External Examination: 3 Hours
Internal Examination: 2 Hours

LIST OF EXPERIMENTS

1. Characteristics of a Semiconductor diode / Zener diode
2. Half-wave / Full – wave Rectifier with and without filters
3. Voltage Regulator
4. FET Static Characteristics CS (Common Source)
5. Biasing Circuits (BJT) fixed bias, collector to base bias, self bias.
6. Transistor as Switch / Amplifier.
7. R.C. Phase-Shift Oscillator.
8. Op-amp inverting & Non inverting amplifier
11. 555 Timer as Astable Multivibrator.
12. 555 Timer as Monostable Multivibrator.
CS228 SYSTEM SOFTWARE LABORATORY

Course: II/IV B.Tech. II Semester
Branch: Common to CSE, IT
External Examination: 3 Hours
Internal Examination: 2 Hours
List of Experiments

1. Write programs for the following.
   a) reading a character and displaying it on screen.
   b) to display the name and class of student in separate line.
   c) to display the characters from ‘A’ to ‘Z’.
   d) to check the given two characters are equal or not.
   e) To display alphabets in circular form from given character to the character before
      the given character.
   f) To convert the given alphabet into opposite case.

2. Write programs for the following.
   a) Display the given character in its binary form.
   b) To check given number is even or odd.
   c) To check given number sign(+/-) .
   d) To find 2’s complement of given number.
   e) To change given bit position on in given binary number.
   f) To change given bit position off in given binary number.
   g) Reading a string and displaying it in reverse order.

3. Write programs for the following.
   a) To display 0 to 9 number.
   b) To display decimal number on screen
   c) To convert given hexadecimal into decimal number.
   d) To clear the screen.
   e) To display a message in center of the screen.
   f) To find min and max elements in the given Array.

4. a) General Utility Commands : login, cal, date, who, uname, echo, passwd, pwd, exit.
    b) File & Directory Related Commands : ls, cd, mkdir, rmdir, cat, cp, rm, mv, wc, od, comm, diff, split, ln, touch, chmod, chown, chgrp

5. (a) Do the following problems.
   a) Display the contents of file (filenames starting with ‘a’ and ending with X )
   b) Copy the contents of directory1 to directory2.
   c) Remove the all .C files from current directory.
   d) Find out the no. of lines, words, chars in given file.
   e) Display the identical lines from two given files.
   f) Display the non identical lines from two given files.
   g) Merge the three different files into single one.
   h) Display the list of files in given directory.
   i) Set given file as read only.
   j) Set given file as read, write but not executable.
(b) Filters : (Data Processing Commands) : more, head, tail, cut, paste, sort, uniq, nl, tr

6. (a) Pattern Searching Commands : grep, egrep, fgrep
(b) Do the following
   a) Display the details of all users those who are working on system.
   b) Display the details of all users in a order they logged on to system(based one time) who are working on system.
   c) Create Employee(enum, ename, designation, Date of birth, Salary) Table (file)
      i. Find the details of employee from table whose name is given.
      ii. Display the last two records.
      iii. Display the details of employees in order based Date of Births.
      iv. Remove the duplicate records.
      v. Display the details of employees who are managers.
      vi. Find out the details persons whose name ends with letter ‘a’

7. (a) Process Related Commands : ps, kill, nice, at & batch
(b) Communication Commands : write, mail, talk, finger, news
(c) Shell Script Related Commands : sh, read, command line args ($1), $ @ & $*, set, exit status ($?), logical operator ||,&& ,exit ,if, sleep& wait, case, while & until, for, here documentation (<<start….start), trap, export variables, expr command

8. Write a Shell Scripts for the following.
   a) Display attributes of file in readable format.
   b) Remove duplicate files from the current directory
   c) Write a Script that displays, the last 3 lines of every file specified on the command line, preceded by the filename.
   d) Write a script to convert the given file into uppercase
   e) Accept two directory names as command lines arguments
      (a)Delete identical files from the both directories.
      (b)Identical files must be in any one of the directory.
   f) Write a shell script, which reports the names and sizes of files in a directory where file size exceeds one 1000 bytes. The directory is supplied as command line arguments. The file names should be printed in descending order of their file size. The total no. of such files should also be printed.
   g) The file /etc/passwd contains information about all the users of the system but it is difficult to read. Write a shell script /etc/passwd and displays in readable format.
   h) Display the list of files in current directory.
      a. In-order of modification time.
      b. In-order of access time.

9. a) Display the list of files in the current directory to which you have read, write and execute permissions. Display the list of directories to which you have execute permissions.
   b) Write a shell script, for multiple file copying. Ex. mcp s1 d1 s2 d2 s3 d3 ……
   c) Write a shell script, which executes at login time. The script should display the present working directory, calendar of the present month and report to you whether your friend has logged in. If yes, send a message to his terminal inviting him for a
dinner. If you don’t have write permission to his terminal, mail him with request for his confirmation.

d) Write a shell script which gets executed at login time and displays a blinking message “Good morning/Good Afternoon / Good Evening “ depending upon the time at which the user logs in.

e) Write a shell script that accepts login name as command line argument, and finds out at how many terminals the user has logged in. Do not use grep command

10.
a) Write a shell script, which develops functions for factorial and power
b) Find out recursively the files in current directory which have been last modified on January 7th of current year.
c) Develop a command ‘misc’ which accepts an option and a file name as arguments to perform the following tasks.
   If the option is –u then convert all the characters in the file to upper case.
   If the option –l then convert all the characters in the file to lower case.
   If the option is –d, change the delimiter to a character of your choice.
   If the option supplied is not one of the choices, or file name is missing then appropriate error message with the usage of the command should be displayed.

11.
a) Rename each file in the present directory such that it will have the current shell PID an extension. Do not rename directories. Delete all the files whose size is 0 bytes.
b) Display the information(attributes) of processes running on system in readable format
c) Display the list of files for every 5 minutes.
d) Display the process details in the system every 30 seconds but five times

12. System Calls
   File oriented System calls : open( ), creat( ) , close( ) , read( ) , write( ) , lseek( )
   Process system calls: fork( ) , exit( ) , exec( ) ,wait( ) , kill( )
CS229 DATA STRUCTURES LABORATORY

Course: II/IV B.Tech II Semester
Branch: Common to CSE, IT
Laboratory: 3 Periods/week
External Examination: 3 Hours
Internal Examination: 2 Hours

LIST OF EXPERIMENTS

1. Implementation of sparse matrix representation.
2. Implementation of sparse matrix operations (transpose and addition).
5. Implementation of circular queue using arrays.
6. Conversion of infix to postfix.
7. Conversion of infix to prefix.
8. Implementation of postfix evaluation.
10. Implementation of deques using arrays.
11. Implementation of single linked list and double linked list operations.
   a) Addition
   b) Deletion
   c) Reverse
   d) Sorting
   e) Concatenation
   f) Copying
12. Implementation of stack operations using linked lists.
13. Implementation of queue operations using linked lists.
15. Implementation of single linked list operations using header node.
16. Implementation of double linked list operations using header node.
17. Implementation of polynomial operations.
   a) Addition
   b) Multiplication
   a) Inorder
   b) Preorder
   c) Postorder
20. Implementation of binary search tree operations.
    a) Insertion of a node
    b) Deleting a node
21. Implementation of counting no. of nodes, no. of leaf nodes and height of a binary tree.
22. Implementation of graph representation algorithms.
23. Implementation of graph traversal algorithms.
   a) Depth first search
   b) Breadth first search
   a) Linear search
   b) Binary search
   c) Fibonacci search.
   a) Insertion sort
   b) Shell sort
   c) Quick sort
   d) Merge sort
   e) Heap sort
   a) Open hashing.
   b) Closed hashing.
### SCHEME OF INSTRUCTION AND EVALUATION
I SEMESTER OF III YEAR OF 4-YEAR B.TECH. DEGREE PROGRAMME

**COMPUTER SCIENCE AND ENGINEERING**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Name of the Course</th>
<th>Periods of Instruction Per week</th>
<th>Evaluation Scheme</th>
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<tr>
<td></td>
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<td>Lectures</td>
<td>Tutorials</td>
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<tr>
<td>OE311</td>
<td>Open Elective</td>
<td>3</td>
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<tr>
<td>CS310</td>
<td>Theory of Computation</td>
<td>3</td>
<td>1</td>
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<tr>
<td>CS316</td>
<td>Database System Design</td>
<td>3</td>
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<td>CS314</td>
<td>Operating Systems</td>
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<td>Database System Design Laboratory</td>
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<td>Java Laboratory</td>
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OE311- Open Elective:
- A: Operations Research
- B: Management Information Systems
- C: Entrepreneurship Development
- D: FOREX and Foreign Trade
OE311(A) OPERATIONS RESEARCH

Course: B.Tech. III/IV 1 Semester
Branch: Common to all branches
External Examination: 3 Hours
Internal Examination: 2 Hours

Theory: 3 periods/week
External Evaluation: 100
Internal Evaluation: 50

UNIT-I (9)

UNIT-II (9)

UNIT-III (9)
4. Special type of linear programming: Special type of linear programming problems - Transportation problems - balanced and unbalanced transportation, time transportation problem. Assignment problem - special case of transportation.

UNIT-IV (9)

SUGGESTED TEXT / REFERENCE BOOKS:
2. Kanthiswaroop, etal, Opertions Research, S.Chand & Sons, New Delhi.
OE311(B) MANAGEMENT INFORMATION SYSTEMS

Course: III/IV B.Tech I Semester
Branch: Common to all branches
External Examination: 3 Hours
Internal Examination: 2 Hours
Theory: 3 Periods/week
External Evaluation: 100
Internal Evaluation: 50

UNIT–I
(9)
Management Information Systems (MIS): MIS Concept, Definition, Role and Impact of MIS, MIS and Computer, MIS and Academics, MIS and the User.
Role and Importance of Management: Introduction and Approaches to Management, Functions of Manager, Managers and the Environment, Management as a Control System, Management by Exception, MIS – A Support to the Management.

UNIT–II
(9)

UNIT–III
(9)


UNIT–IV
(9)
**Decision Support Systems**: Concept and Philosophy, DSS: Deterministic Systems, Artificial Intelligence (AI) System, Knowledge Based Expert System (KBES), MIS and the Role of DSS.


Overview of Database Management Systems, Object Oriented Technologies, Client-Server Architecture, Networks.

Case Studies in MIS.

**SUGGESTED TEXT / REFERENCE BOOKS:**

OE311(A) ENTREPRENEURSHIP DEVELOPMENT

Course: III/IV B.Tech I Semester
Branch: Common to all branches
External Examination: 3 Hours
Internal Examination: 2 Hours
Theory: 3 Periods/week
External Evaluation: 100
Internal Evaluation: 50

UNIT-I (9)
Entrepreneurship definition, Significance of Entrepreneurship. Role of Entrepreneurship in development advantages and limitations characteristics of a person to become an entrepreneur, human factor in Entrepreneurship, Motivation, Leadership qualities and the essential skills of communication etc., Role of women entrepreneurship, Agencies dealing with entrepreneurship and small scale Industries. Case studies of successful entrepreneurs. Identification of a variable business opportunity, Various methods.
Activity: Inputs from DIC, SFC, IIC & Nationalized Banks.

UNIT-II (9)
Activity: Visit to a small scale industry.

UNIT-III (9)
Project planning: Product planning and development process, Definition of a project, Sequential steps in executing the project, principles of layouts, Types of layouts, Factors influencing layouts. choosing an optimum layout suitable to the venture. Tenders, Call for quotations, Purchase orders, Procurement and installation of machinery and equipment, Utilities etc. Fundamentals of Production Management, PPC-Concepts, Functions, Long & short run problems. Marketing Management: Definition, Functions and Segments. Financial Management: Objectives & Functions
Activity: Interaction with Entrepreneurs in the field.

UNIT-IV (9)
Personal and Human resource management: Introduction, Definitions, Importance, Factors effecting Major functions of enterprise management. Selection, recruitment, training, placement, development, performance appraisal systems. Legal issues in Entrepreneurship, Intellectual property rights, Issues in setting up the organization.
Activity: Preparation of project report for variable business venture

(P.T.O)
SUGGESTED TEXT / REFERENCE BOOKS:
2. David H. Holt, Entrepreneurship New venture creation prentice hall of India.
OE311(D) FOREX AND FOREIGN TRADE

Course: III/IV B.Tech. I Semester
Branch: Common to all Branches
External Examination: 3 Hours
Internal Examination: 2 Hours

Theory: 3 Periods/week
External Evaluation: 100
Internal Evaluation: 50

UNIT-I


UNIT-II


UNIT-III


UNIT-IV


SUGGESTED TEXT / REFERENCE BOOKS:

CS310 THEORY OF COMPUTATION

Course: III/IV B.Tech, I Semester
Branch: Computer Science & Engineering
Theory: 3 Periods/week
Tutorial: 1 Period/week
External Examination: 3 Hours
Internal Examination: 2 Hours
External Evaluation: 100
Internal Evaluation: 50

UNIT – I (9 + 3)
Regular Expressions and Languages: Regular Expressions, Finite Automata and Regular Expressions, Applications of Regular Expressions.

UNIT – II (9 + 3)
Properties of Regular Languages: Proving Languages not to be Regular, Closure Properties of Regular Languages.

UNIT – III (9 + 3)
Pushdown Automata: Definition of the Pushdown Automaton, The Languages of PDA, Equivalence of PDA’s and CFG’s.

UNIT – IV (9 + 3)
Introduction to Turing Machines: Problems that Computers cannot solve, The Turing Machine, Programming Techniques for Turing Machines, Extension to the Basic Turing Machine.
Undecidability : A Language that is not Recursively Enumerable, An Undecidable problem that is RE, Post’s Correspondence Problem, Undecidable Problems, The Chomsky Hierarchy, Linear Bounded Automata, Context Sensitive Languages, Overview of P & NP Problems.

SUGGESTED TEXT / REFERENCE BOOKS:
CS316 DATABASE SYSTEM DESIGN

Course: III/IV B.Tech I Semester
Branch: Common to CSE, IT
External Examination: 3 Hours
Internal Examination: 2 Hours

UNIT-I

Databases and Database Users: Introduction, Characteristics of the Database approach, Actors on the scene, Workers behind the scene, Advantages of using a DBMS, Implications of the Database Approach, When not to use a DBMS.

UNIT-II

Enhanced Entity-Relationship and Object Modeling: Subclasses, Superclasses and Inheritance, Specialization and Generalization, Constraints and Characteristics of Specialization and Generalization, Modeling UNION Types Using Categories, Formal Definitions for the EER model, Relationship Types of Degree Higher than Two.
SQL: Data Definition, Constraints, Basic Queries in SQL, Complex SQL Queries, Insert, Delete and Update Statements in SQL, Specifying General Constraints as Assertion, Additional Features of SQL.
ER and EER to Relational Mapping and Other Relational Languages: Relational Database Design Using ER-to-Relational Mapping, Mapping EER model Concepts to Relations, The Tuple Relational Calculus, The Domain Relational calculus, Overview of the QBE Language.

UNIT-III


UNIT-IV

Concurrency Control Techniques: Locking Techniques for Concurrency Control, Concurrency Control Based on Timestamp Ordering.


SUGGESTED TEXT / REFERENCE BOOKS:

CS314 OPERATING SYSTEMS

Course: III/IV B.Tech I Semester
Branch: Common to CSE, IT
External Examination: 3 Hours
Internal Examination: 2 Hours

Theory: 3 Periods/week
Tutorial: 1 Period/week
External Evaluation: 100
Internal Evaluation: 50

UNIT-I

Introduction to Operating System:
Definition and Functions of Operating System. Evolution of operating system. Multi-
programming Systems, Multiprocessor Systems, Batch systems, Time sharing systems,
Client server systems, Distributed systems, Real Time systems, Clustered Systems,
Handheld Systems. Feature Migration.


Structure of Operating System: Monolithic Structure, Layered Structure, Virtual
Machine Structure. System components and services.

Process Management:
Process Creation, Process Control Block, Process States, Operation on processes,
Cooperating processes, Inter-process communication, Threads.

UNIT-II

Process Synchronization:
Critical Section Problem. Two Process Solution, Multiple Process Solution. Dekker’s
Algorithm. Semaphores, Monitors. Examples of process synchronization – Readers
Writers Problem, producer consumer problem, Dining Philosophers problem. Process

Deadlocks:
Definition of Deadlock, System model, Deadlock characterization, Prevention,
Avoidance and Detection, Recovery from deadlock, Combined approach.

Case Studies:
UNIX, Windows 2000, MS-DOS

UNIT-III

CPU scheduling:
Basic concepts of scheduling, Scheduling criteria, Scheduling algorithms (First In First
Out, Round Robin, Priority, Shortest Job First, Shortest Remaining Time First, Multilevel
Queue, Multilevel Feedback Queue), Multiple processor scheduling, Algorithm
evaluation, Real time scheduling.

Memory management:
Basic concepts of Memory Management, Caching, Logical versus physical address
space, Swapping, Contiguous Vs Non-Contiguous memory allocation schemes, Paging,
Segmentation, Combined Segmentation and paging.

Virtual memory:
Overview, Multilevel storage organization, Block mapping, Demand paging, Page
replacement concept, Page replacement algorithms, Allocation of frames, Thrashing.

Input / Output:
Device Drivers, Device controllers, Disks and other Devices.
UNIT-IV

(9+3)

File Management:
File concepts, Access methods, Directory structure, File-system structure and services, Allocation methods, Free space management.

Secondary Storage Management:
Disk structure, Disk scheduling, Disk management, Swap space management.

Advanced Concepts of Operating Systems:

Protection and Security:

SUGGESTED TEXT/REFERENCE BOOKS:

EC318 DIGITAL ELECTRONICS

Course: III/IV B.Tech I Semester
Branch: Common to CSE, IT, EEE
External Examination: 3 Hours
Internal Examination: 2 Hours

Theory: 3 Periods/week
Tutorial: 1 Period/week
External Evaluation: 100
Internal Evaluation: 50

UNIT – I

Number Systems and Codes: Introduction to Number systems, Base conversion among different Number Systems, Signed number representation, Binary arithmetic, Use of 1’s and 2’s complement representation in Binary Number system
Introduction to Codes, Weighted and Non weighted codes, self complementing and reflecting codes, code conversion, Error detection and correction, Hamming codes.
Switching functions and minimization:

Basic laws of Boolean algebra, logical gates (block diagram representation), Boolean expressions, SOP and POS forms, realization of Boolean expressions with logic gates, simplification of Boolean expressions, Karnaugh map methods, Tabulation method.

UNIT – II

Half Adder, Full Adder, Serial Adder, Parallel Adder, Carry look ahead Adder, BCD Adder, Subtractor, 1’s and 2’s complement Adder / Subtractor.
Decoders, Seven segment LED displays, Encoders, Multiplexers, De MUX’s realization of Boolean expression using MUX’s and De MUX’s.

UNIT – III

Sequential circuits: RS, JK, D and T Flip Flops, use of direct inputs, shift registers, applications of shift registers, Ring counter, Johnson counter.
Ripple counters – Design of Mod-N ripple counters.
Synchronous sequential machines – state diagrams, state tables, design of synchronous sequential machines, design of Mod-N synchronous counters, Design of sequence detectors

UNIT – IV

Logic Families: Introduction to logic families. Description of the terms – Fan in, Fan out, Noise margin, Propagation delay, current sourcing, current sinking.
Study of RTL, DCTL, DTL, HTL, TTL, ECL, MOS, CMOS families.

SUGGESTED TEXT/REFERENCE BOOKS:

LIST OF EXPERIMENTS

Structured Query Language (SQL):

Group-I

1. Queries on DDL (Create, Alter, Drop), DML (Insert, Update, Delete) statements.
2. Queries on Column Level and Table Level Constraints.

Group-II

1. Queries using functions of NUMBER, CHARACTER, DATE Data types
2. Queries on Data type Conversion Functions.

Group-III

Write the SQL queries for the following Using EMP, DEPT and SALGRADE Relations.

i. Display all the employee details whose name consists two ‘A’s.
ii. Show the details of all employees hired on December 03, 1981.
iii. Display employee number, name, salary prefix with the ‘$’ symbol and in
     descending order.
iv. List the no. of clerks, no. of managers department wise if both no. of clerks and
     no. of managers are >2.
v. Check whether all employee numbers are indeed unique.
vi. Display all the employee details who are completed their 30 years of service.

Group-IV

x. Display the average, monthly salary bill for each job type within a dept.
xi. Show the average salary for all departments employing more than 3 people.

xii. Construct a query, which finds the job with the highest average salary.
xiii. Change the default display like this. For deptno 10 show financial department, for 20 account department, for 30 management information system, 40 electronic data processing.

xiv. Display the employee’s name, dept name, salary and hire date for deptno=20. Specify the alias ‘date-hired’ for Hire Date.

xv. List the employee name, job, salary, grade and deptname for everyone in the company except clerks. Sort on salary, display the highest salary first.

xvi. List the dept details which doesn’t have any employees in it.

xvii. List the lowest paid employees working for each manager. Exclude any group where the minimum salary is less than 1000. Sort the output by salary.

xviii. List the details of those employees whose salaries greater than any salary of their department.

xix. Display the information of employees who earn more than their employees in deptno=30.

xx. Find the employees who earn a salary greater than the average salary in their dept.

xxi. Display the details of employees whose manager has earning highest salary among all managers.

Group-V

xxii. Display the employee details who are the top three earners in the company.

xxiii. List the employee who earns the third highest salary.

xxiv. Delete the duplicate rows in a given table

xxv. Count the number of Constraints on EMP table.

xxvi. Display the check constraint description in a given table.

xxvii. Display the fifth record from a table.

xxviii. Display the middle record in a given table.

xxix. Display all the even rows in a given table.

xxx. Display all the odd rows in a given table.

Group-VI

1. Write SQL statements to create simple, composite indexes.
2. Write SQL statements to create User-Defined Data types.
3. Write SQL statements to create Views.
4. Write SQL statements to create a sequence and use the sequence number in the insert statement.
5. Write SQL statements to Grant and Revoke the privileges to/from the users.

**Group-VII**

**PL/SQL Programs:**

1. Write a PL/SQL program to reverse a given string.
2. Create a table with duplicate records and write a PL/SQL program to insert all the duplicate records from EMP table into another table DUP_EMP (EMPNO, ENAME, DEPTNO).

**Cursors:**

3. Write a PL/SQL program to insert all those missing employees of empno between 7900 to 8000 into Missing table.
4. Write a PL/SQL program that will display the name, deptno and salary of the top 6 highest paid Employees from EMP table.

**Group-VIII**

5. Write a PL/SQL program to debit an A/C for a given account number. If the account doesn’t exist, create a new account. ACCOUNT (ACC_NO, ACC_NAME, BALANCE).

6. A Company offers discount of different goods

<table>
<thead>
<tr>
<th>Discount Table</th>
<th>Customer Table</th>
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</thead>
<tbody>
<tr>
<td>Range</td>
<td>Cust_id</td>
</tr>
<tr>
<td>Total_amt</td>
<td>Discount</td>
</tr>
<tr>
<td>0 – 500</td>
<td>5</td>
</tr>
<tr>
<td>501 – 1000</td>
<td>10</td>
</tr>
<tr>
<td>1001 – 1500</td>
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<tr>
<td>1501 – 2000</td>
<td>20</td>
</tr>
<tr>
<td>2001 – above</td>
<td>25</td>
</tr>
</tbody>
</table>

Write a PL/SQL program to update total_amt of Customer Table.

7. Write a PL/SQL program to update the salary of all managers by 10%, clerks by 8%, and salespersons by 4%.

8. Write a PL/SQL program to raise the salaries of the employees in the deptno 20 by 5%, whose salary is less than 2000. A record for the raise is maintained in the emp_raise table.

EMP_RAISE (EMPNO, DATE_OF_RAISE, ACTUAL_RAISE)

**Group-IX**

9. Write a PL/SQL program to calculate the commission of the sales man and insert the commission in to the commission table.
SALESMAN (SNO, SALES, RATE_OF_COMM).
COMMISSION (SNO, CDATE, COMMISSION).

10. Write a PL/SQL program for calculating average score of the players.
PLAYERS_TAB (PNO, PNAME, MATCHES_PLAYED, RUNS_SCORED, AVERAGE).

11. Write a PL/SQL program using parametric cursors (pass hiredate as parameter) to insert all those Employees who joined the company before the parametric date into another table.

Group-X
Exception handling:
12. Write a PL/SQL program to handle proper exception, if earnings are 0.
PER_TAB (SLNO, PRICE, EARNINGS, P/E).

13. Create a table with Primary key constraint. Handle proper exception if the user tries to violate the constraint.

14. Write a PL/SQL Program to handle User defined Exception.

Stored Procedures / Functions:
15. Write a PL/SQL program using stored procedure or function to debit an a/c and to find the balance of a particular account. Use the table BANK (ACCOUNT, AHNAME, and BALANCE).

16. Write a PL/SQL program to calculate grade using function.
STUDENT (HTNO, NAME, M1, M2, M3, GRADE).

Group-XI
Packages:
17. Create a package like this, Use Stored procedure/function for adding , deleting , updating and calculating total salary (sal+comm) of employees (Use EMP table).

18. Create a package like this, Use Stored procedure/function to debit an A/c, credit an A/c and find the balance for a given A/c no. Use a table BANK (ACC_NO, AH_NAME, BALANCE).

Database Triggers:
19. Create an EXAM table EXAM (EXAMNAME, HTNO_RANGE). Write a trigger to check for these conditions before inserting records. For EXAMNAME=’MCA’, HTNO_RANGE must be 10000 to 50000, For EXAMNAME=’B.Tech’, the range must be 20000 to 30000.
Group-XII

20. Create a table without primary key. Write a trigger to simulate the primary key.

21. Create a student table STUDENT(HTNO, NAME, CLASS, COLLEGE). Write a trigger to insert htno automatically whenever user inserting a new record into student table.

22. Write a database trigger which does not allow deletions of records on Sundays from EMP table.

23. Create a student table STUDENT (SNO,SNAME,COURSE). Write a trigger to allow, only those records whose age lies between 16 and 21.
LIST OF EXPERIMENTS

GROUP-I

1. Print all fibonacci numbers which lies between given two numbers a & b.
2. Accept the string, count number of vowels and remove all vowels.

GROUP-II

3. Accept a line of text, tokenize the line using string tokenizer class and print the tokens in reverse order.
4. Find the average of n numbers where n to be input from the keyboard. If the n is zero or negative then a suitable user defined Exception must be thrown. If it is not possible to convert input to integer then Number Format Exception must be caught.

GROUP-III

5. Create a text file, copy the file into another file.
6. Split the file into smaller files and merge the splitted files into a new file.

GROUP-IV

7. Count the no. of lines, no. of words, no. of characters in a Text file using Stream Tokenizer Class.
8. Create a student file and provide operations insertion, deletion, modification based on key column.

GROUP-V

9. Create two threads. One thread displays “Hello” for every half second and another thread displays “hai” for every second.
10. Give solution for producer and consumer problem using thread synchronization and communication where a producer produces a set of Integers and Consumer consumes those Integers.

GROUP-VI

11. Create a Account Class which implements all account operations. Provide locking such that account details are consistent when the debit or credit operations invoked by the Account holders simultaneously who have shared account.
12. Generate a random number for every second and determine whether number is even, odd, prime or perfect.

**GROUP-VII**

13. Display the contents of Employee table in a neat format.
15. Enhance the salaries of Employee by 10% who are earning salary greater than 5000 using Callable Statement.

**GROUP-VIII**

16. Delete all students whose marks are below 50% and also display the count.
17. Execute given SQL statements on the database and also display the results using Batch Updation.

**GROUP-IX**

18. Develop an applet which draws different geometric shapes and fill them with different colors.
19. Design applet to display “good Morning” if current time is between “6 AM and 12 PM” and “Good Afternoon” if the current time is between 12 PM and 6PM, and “Good Evening” if the current time is between 6PM and 12AM.
20. Design an applet to simulate Paint Brush application.

**GROUP-X**

22. Design an Applet for implementing Bouncing Ball Application
23. Design Calendar applet as following.
GROUP-XI
24. Design servlet which keep tracks that how many clients visited the page(hit count).
24. Design an application as follows using Servlets for validating the user passwords.

User Name
Password

GROUP-XII
25. Design a servlet which accepts table name and displays the contents in tabular format.

Table Name
Emp

Employee Table

Employee Details
Eno
Ename
Salary

26. Design a Servlet as follows and Provide implementations for Insert, Delete, Edit Buttons
LIST OF EXPERIMENTS

1. Logic gates: Aim: Realization of all logic gates using NAND / NOR gates and verification of their truth tables.
3. Half and Full subtractors: Aim: Realization of half and full subtractors using NAND gates and verification of their truth tables.
4. BCD Adder: Aim: Design of BCD Adder using 4 bit Full Adder (IC7483) and Logic gates and verification of its truth table.
5. “n” bit Ripple counter: Aim: Design of “n” bit ripple counter using JK/T FFS and verification of its function table.
7. 4 bit Ring and Johnson Counters: Aim: Design of 4 bit Ring and Johnson counters using DFFS (IC7474) and verification of their function tables.
8. Decade Counter and Decoders: Aim: Verification of the function table of Decade Counter (IC7490) and displaying its output in decimal form using decoders (IC7442-BCD to 7 segment and IC7446 – BCD to Decimal)
9. 4:1 MUX: Aim: Design of a 4 to 1 multiplexer using logic gates and verification of its function table.
10. 8:1 MUX: Aim: Realization of Boolean expressions using 8 to 1 MUX
11. 4 bit shift Register: Aim: Design of a 4 bit shift register and verification of its different modes of operation.
12. Transfer Characteristic of NAND gate: Aim: To experimentally plot the transfer characteristic of NAND gate and to find $\Delta 0$ and $\Delta 1$ Noise margins.

TEXT BOOK:

# SCHEME OF INSTRUCTION AND EVALUATION
## II SEMESTER OF III YEAR OF 4-YEAR B.TECH. DEGREE PROGRAMME
### COMPUTER SCIENCE AND ENGINEERING

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MH321 MANAGEMENT, ECONOMICS AND ACCOUNTANCY

Course: III/IV B.Tech, II Semester
Branch: Common to all branches
External Examination: 3 Hours
Internal Examination: 2 Hours

Theory: 3 Periods/week
External Evaluation: 100
Internal Evaluation: 50

ECONOMICS

UNIT-I
Usefulness:

MANAGEMENT

UNIT-II

UNIT-III

ACCOUNTANCY

UNIT-IV
Preparation of Final Accounts: Trading Account, Profit and Loss Account and Balance Sheet(with simple adjustments).

SUGGESTED TEXT / REFERENCE BOOKS:

2. Principles and Practice of Management By L.M. Prasad.
3. Introduction to Accountancy by T.S.Grewal.
CS320 ALGORITHM ANALYSIS AND DESIGN

Course: III/IV B.Tech, II Semester  Theory: 3 Periods/week
Branch: Computer Science & Engineering Tutorial: 1 Period/week
External Examination: 3 Hours  External Evaluation: 100
Internal Examination: 2 Hours  Internal Evaluation: 50

UNIT-I  (9+3)

Introduction: Algorithm analysis, Time complexity and Space complexity, Big 'O' notation, Omega notation and Theta notation, Different mathematical approach’s for solving time complexity of Algorithms.

Divide and Conquer: General method, Merge sort, Quick sort, Strassens matrix multiplication. Sets and Disjoint Set Union: Introduction, Union and Find Operations.

UNIT-II  (9+3)

Greedy Method: General method, Optimal storage on tapes, Knapsack problem, Minimum spanning tree, Job sequencing with deadlines.

Dynamic Programming: Multistage graphs, All pairs shortest paths, Single source, shortest paths, General weights.

UNIT-III  (9+3)

Dynamic Programming: Optimal binary search trees, String editing, 0/1 knapsack problem, Reliability design problem, Traveling sales person problem, Flow shop scheduling.

Back tracking: General method, 8-Queen problems, Graph coloring problems.

UNIT-IV  (9+3)

Branch and Bound: 0/1 knapsack problem, Traveling sales person problem Efficiency.


SUGGESTED TEXT / REFERENCE BOOKS:

CS323 SOFTWARE ENGINEERING

Course: III/IV B.Tech II Semester
Branch: Computer Science & Engineering
External Examination: 3 Hours
Internal Examination: 2 Hours
Theory: 3 Periods/week
Tutorial: 1 Period/week
External Evaluation: 100
Internal Evaluation: 50

UNIT-I (9+3)

Requirements Engineering: Requirements Engineering Tasks—Initiating the Requirements Engineering Process—Eliciting Requirements—Developing Use-Cases—Building the Analysis Model—Negotiating Requirements—Validating Requirements

UNIT-II (9+3)

Building The Analysis Model: Requirements Analysis—Analysis Modeling Approaches—Data Modeling Concepts—Object-Oriented Analysis—Scenario-Based Modeling—Flow-Oriented Modeling—Class-Based Modeling—Creating a Behavioral Model
Modeling Component-Level Design: Component Designing—Class-Based Components—Conducting Component-Level Design—Object Constraint Language—Designing Conventional Components

UNIT-III (9+3)


UNIT IV (9+3)


Metrics For Process And Projects: Metrics in the Process and Project Domains - Software Measurement - Metrics for Software Quality - Integrating Metrics within the Software Process

Project Scheduling: Project Scheduling - Defining a Task Set for the Software Project - Defining a Task Networks - Scheduling - Earned Value Analysis

SUGGESTED TEXT / REFERENCE BOOKS:

CS322 LANGUAGE PROCESSORS

Course : III/IV B. Tech II Semester  
Theory : 3 periods/week 
Branch : Computer Science & Engineering  
Tutorial : 1 period/week 
External Examination: 3 Hours  
External Evaluation: 100 
Internal Examination: 2 Hours  
Internal Evaluation: 50

UNIT-I  
(9+3)

Introduction to Compiling : Compilers, Analysis of the source program, The phases of a compiler, Cousins of the compiler, Concepts of Loaders, Linkers, The grouping of phases, Compiler writing tools.


Syntax Analysis : The role of a the parser, Context-free grammars, Writing a grammar, Top-down parsing, Bottom-up parsing, Operator Precedence parsing, LR parsers, Using ambiguous grammars, Parser generators.

Syntax Directed Translation : Syntax-directed definitions, Construction of syntax trees, Bottom-up evaluation of S-attributed definitions, L-attributed definitions, Top-Down translation, Bottom-up evaluation of inherited attributes, Space for attribute values at compile time, Analysis of syntax-directed definitions.

UNIT-III  
(9+3)

Type Checking: Type systems, Specification of a simple type checker, Equivalence of type expressions, Type Conversions.

Runtime Environments : Source language issues, Storage organization, Storage-allocation strategies, Symbol tables, Language facilities for dynamic storage allocation, Dynamic storage allocation techniques.


UNIT-IV  
(9+3)


SUGGESTED TEXT / REFERENCE BOOKS:
EC3211 COMMUNICATION SYSTEMS

Course: II/IV B.Tech II Semester
Branch: Computer Science & Engineering
External Examination: 3 Hours
Internal Examination: 2 Hours

UNIT – I

Spectral Analysis: Fourier series and Fourier transform, Fourier transform of power and periodic signals and their properties.
Hibbert Transform – energy and power signals, power spectral density.
Amplitude Modulation: AM, DSB – SC, SSB, VSB, their spectra, generation and detection techniques, power relations.
Frequency Modulation: Frequency and Phase Modulations, Narrow Band, Wide Band, FM generation and detection techniques.

UNIT – II

Sampling theorem, Flat Top Sampling, Natural Sampling, Quantization, Quantization error, pulse code modulation, S/N Ratio, Differential PCM, Delta Modulation, Adaptive Delta Modulation, Inter Symbol Interference, Pulse Amplitude Modulation (PAM), TDM, FDM.

UNIT – III

Data transmission Techniques: ASK, FSK, PSK, QPSK, DPSK generation and detection techniques.
Introduction to Information Theory; Information, Entropy, Channel capacity, Hartly Shannon Law, Band Width and Signal to Noise ratio trade off, Fano-shannon algorithm, discrete memory less system, Huffman coding.

UNIT – IV

Multiplexing and Multiple access: TDMA, FDMA, CSMA, Aloha, Slotted Aloha, CDMA, GIS. Introduction to Mobile and Cellular Communications.

SUGGESTED TEXT / REFERENCE BOOKS:


Theory: 3 Periods/week
Tutorial: 1 period/week
External Evaluation: 100
Internal Evaluation: 50
EI327 MICROPROCESSORS AND INTERFACING

Course: III/IV B.Tech II Semester
Branch: Common to CSE, IT
External Examination: 3 Hours
Internal Examination: 2 Hours

Theory: 3 Periods/week
Tutorial: 1 Period/week
External Evaluation: 100
Internal Evaluation: 50

UNIT-I

8086 ARCHITECTURE Introduction: Evolution of Microprocessors Functional block diagram, Register organization, addressing, Bus structure, Physical and logical addressing, Instruction Set, Address modes.

UNIT-II

Assembly Language programming: Assembler directives, simple programming of 8086, Implementation of structures, time-delays, strings, procedures, Macros, Pin configuration, Min/Max modes, Timing diagrams.

UNIT-III

INTERFACING: Interfacing concepts, detailed study of interfacing devices 8255, 8257, 8254 and 8259. Interfacing of switches, key boards, LEDs, 7 segment display units, CRT interface, floppy disk Interface, stepper motor interface. ADC, DAC interfacing.

UNIT-IV

Serial communication standards, RS232, IEEE 488 BUS, 20mA current loop, 8251, USART, Prototyping and trouble shooting, Software debugging tools, Microprocessors development systems. (MDS)

SUGGESTED TEXT / REFERENCE BOOKS:

1. “MICROPROCESSOR and interfacing” – By D.V.Hall. (TMGH).
2. “MICROPROCESSOR PROGRAMMING AND INTERFACING” with PC By Kenneth Ayala.
3. “Micro computer systems: The 8086 family, architecture, Programming & Design” – Ynhchangliu, glen. A. Gibson, PHI.
4. “Advanced Microprocessors” – Brey – Pearson
CS3212 LANGUAGE PROCESSORS LABORATORY

Course: III/IV B.Tech II Semester  
Laboratory: 3 periods/week
Branch: Computer Science & Engineering  
External Examination: 3 Hours  
External Evaluation: 50
Internal Examination: 2 Hours  
Internal Evaluation: 25

List of Experiments

1. Programs using Lex Tool
   a) Lex specification to skip comments in a file
   b) Lex specification to print two digit numbers in words.
   c) Lex specification to check the validity of given date.
   d) Lex specification to convert given octal number into decimal equivalent.

2. Programs using Yacc Tool
   a) Yacc specification to find sentence validity.
   b) Yacc specification to evaluate expressions using precedence.
   c) Yacc specification to convert binary numbers to decimal numbers
   d) Yacc specification to check the validity of given date.

3. Program to find all meaningful words and generate the tokens for the given input program.

4. Implementing Symbol Table for given HLL.

5. Implementing simple shift reduce parser.

6. Implementing SLR parser.

7. Implementing Canonical LR Parser.

8. Implementing LALR Parser.

9. Write a program in suitable high level language to carryout lexical analysis of an input program in HLL.

10. Write a parser using C for any input HLL program for which lexical analysis has been carried out.

11. Write a program to generate machine code for restricted programming expressions.

12. Experiments on code optimization of programming expressions.
LIST OF EXPERIMENTS

1. Study of 8086 kits.
2. Sum, Average, multiplication
   a) BCD to Binary b) Binary to BCD.
   c) Binary to ASCII d) ASCII to Binary.
5. String Manipulations

INTERFACING EXPERIMENTS

   a) Square wave
   b) Saw tooth
   c) Triangular.
8. LED/LCD interfacing.
10. ADC interfacing.
# SCHEME OF INSTRUCTION AND EVALUATION

I SEMESTER OF IV YEAR OF 4-YEAR B.TECH. DEGREE PROGRAMME

## COMPUTER SCIENCE AND ENGINEERING

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### Professional Elective-I

1. Neural Networks
2. Advanced Database Management Systems
3. Embedded Systems
CS410 COMPUTER NETWORKS

Course: IV/IV B.Tech. I Semester
Branch: Computer Science & Engineering
External Examination: 3 Hours
Internal Examination: 2 Hours

Theory : 3 Periods/week
Tutorial: 1 Period/week
External Evaluation: 100
Internal Evaluation: 50

UNIT-I
Data Link Control: Flow Control, Error Detection, Error Control, High-Level Data Link Control.

UNIT – II
Circuit Switching: Switched Networks, Circuit-Switching Networks, Switching Concepts, Routing, Control Signaling.
Frame relay: Architecture, Call Control, User Data Transfer, Network Function, and Congestion Control.
ISDN and Broadband ISDN: ISDN Channels, User Access, ISDN Protocols, Broadband ISDN.

UNIT – III
LAN Technology: LAN Architecture, Bus/Tree LANs, Ring, Star LANs, Wireless LANs.
LAN Systems: Ethernet and Fast Ethernet (CSMA/CD), Token Ring and FDDI. ATM LANs. Fibre Channel.
Bridges: Operation, Routing, ATM LAN Emulation.

UNIT – IV
Transport Protocols: Transport Services, Protocol Mechanisms, TCP, UDP.
Application Layer Services: Introduction to HTTP, FTP, SMTP, Domain Name Service, Proxy, Firewalls, Virtual Private Networks.

SUGGESTED TEXT / REFERENCE BOOKS:
CS411 ARTIFICIAL INTELLIGENCE

Course: IV/IV B.Tech. I Semester
Branch: Computer Science & Engineering
External Examination: 3 Hours
Internal Examination: 2 Hours

UNIT-I (9+3)
Problems, Problem Spaces and Search: Defining the problem as a state space search, Production systems, Problem characteristics, Production system characteristics, Issues in the design of search programs, Additional problems.

UNIT-II (9+3)
Using Predicate Logic: Representing simple facts in logic, Representing Instance and Isa relationships, Computable functions and Predicates, Resolution, Natural Deduction.

UNIT-III (9+3)
Weak slot and filler structures: Semantic nets, Frames.
Strong slot and filler structures: Conceptual Dependencies, Scripts, CYC.
Vision: Introduction, Defining the Problem, Overview of the Solution, Early Processing, Representing and Recognizing Scenes.

UNIT-IV (9+3)
Reasoning in Uncertain Situations: Introduction to Nonmonotonic Reasoning, Logic-Based Abductive Inference, Abduction - Alternative to Logic.
Understanding Natural Language: Role of Knowledge in Language Understanding, Deconstructing Language - A Symbolic Analysis, Syntax, Syntax and Knowledge with ATN Parsers, Natural Language Applications.

SUGGESTED TEXT / REFERENCE BOOKS:
UNIT-I
Polygons: Polygon representation, Inside test methods, Seed filling and Scanline filling algorithms.
Two Dimensional Transformations: Scaling, Translation and Rotation transformations, Rotation about arbitrary point, Homogenous coordinates, Inverse transformations, Transformation routines, Reflection and Shearing transformations, Instance transformations.

UNIT-II
Segments: Segment creation algorithm, Segment closing algorithm, Segment deletion and Segment renaming algorithms, Image transformation.
Windowing And Clipping: Window and View port, Viewing transformation matrix, Implementation of viewing transformation, Multiple windowing, Cohen-Sutherland Outcode clipping algorithm, Sutherland Hodgman clipping algorithm, Midpoint subdivision clipping algorithm, Generalized clipping.
Three Dimensional Graphics: 3D Primitives, 3D Transformations, Rotation about arbitrary axis, 3D Viewing, Viewing parameters.

UNIT-III
Projections: Parallel projection, Perspective projection, Derivation of parallel projection matrix, Derivation of perspective projection matrix.
Animation: Types of animations, Animation languages, Methods of controlling animation.

UNIT-IV
Multimedia: Media and Data streams, Main properties of a Multimedia systems, Traditional data stream characteristics, Asynchronous transfer mode, Synchronous transfer mode.
Multimedia Applications: Media preparation, Media composition, Media integration, Media communication, Media consumption, Media entertainment.
SUGGESTED TEXT / REFERENCE BOOKS:

CS413 VLSI SYSTEM DESIGN

Course: IV/IV B.Tech. I Semester
Theory: 3 Periods/week
Branch: Common to CSE, IT
Tutorial: 1 Period/week
External Examination: 3 Hours
Internal Evaluation: 50
External Evaluation: 100

UNIT-I
(9+3)

An Overview of VLSI: Complexity and Design, Basic concepts.

Electrical properties of MOS circuits: $I_D-V_D$ characteristics, Device parameters, $V_T$, $G_M$, figure of merit $W_0$, pull-up to pull-down ratio, Bipolar, n-MOS, P-MOS, C-MOS, BiCMOS processes, comparison.

Logic Design with MOSFETS: Ideal switches and Boolean Operations, MOSFETs as switches, Basic Logic Gates in CMOS, Complex Logic Gates in CMOS, Transmission Gate Circuits. Clocking and Dataflow control.

UNIT-II
(9+3)


Elements of physical Design: Basic concepts, Layouts of Basic Structures, Cell Concepts, FET sizing and the unit Transistor, Physical Design of Logic Gates, Design hierarchies, stick diagrams, Design rules and layout- Lambda-Based Design rules, contact cuts, Double Metal MOS process Rules, CMOS Lambda-Based Design rules, Layout Diagrams, Sheet Resistance $R_s$ and its concept applied to MOS Transistors and Inverters, Standard Unit of Capacitance $C_g$, Capacitance calculations, The Delay unit $T$.

UNIT- III
(9+3)


Arithmetic Circuits in CMOS VLSI: Bit Adder Circuits, Ripple-carry Adder, Carry Look-Ahead Adders, Other High-Speed Adders, multipliers.

Memories and Programmable Logic: The Static RAM, SRAM Arrays, Dynamic RAMs, ROM Arrays, Logic Arrays.

UNIT-IV
(9+3)

System-Level Physical Design: Large-scale physical Design, Interconnect Delay Modeling, Crosstalk, Interconnect scaling, Floor planning and Routing, Power Distribution and Consumption, Low-power Design Considerations

Clocking and System Design: Clocked Flip-flops, CMOS Clocking Styles, pipelined Systems, Clock Generation and Considerations.

SUGGESTED TEXT/REFERENCE BOOKS:

UNIT-I


UNIT-II


UNIT-III


**UNIT IV** (9)


**SUGGESTED TEXT / REFERENCE BOOKS:**
UNIT –I

Overview of Storage and Indexing: Data on External Storage, File Organizations and indexing, Index Data Structures, Comparison of File Organizations, Indexes and Performance Tuning.

Storing Data Disks and Files: The Memory Hierarchy, Redundant Arrays of Independent Disks, Disk Space Management, Buffer Manager, Files of records, Page Formats, Record Formats.

Tree-Structured Indexing: Intuition for Tree Indexes, ISAM, B+ Trees, Search, Insert, Delete, Duplicates, B+ Trees in practice.

Hash-Based Indexing: Static Hashing, Extendible Hashing, Linear Hashing, Extendible versus Linear Hashing.

UNIT –II


External Sorting: A simple Two-Way Merge Sort, External Merge Sort, Minimizing I/O Cost versus Number of I/Os, Using B+ trees for Sorting.


UNIT –III

Parallel and Distributed Databases: Introduction, Architectures for Parallel Databases, Parallel Query Evaluation, Parallelizing Individual Operations, Parallel Query Optimization, Introduction to Distributed Databases, Distributed DBMS Architectures, Storing Data in Distributed DBMS, Distributed Catalog Management, Distributed Query Processing, Updating Distributed data, Distributed Transactions, Distributed Concurrency Control, Distributed Recovery.

Object-Database Systems: Motivating Example, Structured Data Types, Operations on Structured Data, Encapsulation and ADTs, Inheritance, Objects, OIDs and Reference types, Database design for an ORDBMS, ORDBMS Implementation Challenges, OODBMS, Comparing RDBMS, OODBMS, and ORDBMS.

Data Warehousing and Data Mining: Terminology and definitions, Characteristics of Data Warehouses, Data Modeling for Data Warehouses, Building a Data Warehouse, Typical functionalities of Data Warehouses, Difficulties of Implementing Data Warehouses, Open Issues in Data Warehousing, An Overview of Data Mining Technology, Association Rules.

UNIT –IV
**Deductive Databases:** Introduction to Recursive Queries, Theoretical Foundations, Recursive Queries with Negation, From Datalog to SQL, Evaluating Recursive Queries.


**Spatial Data Management:** Types of Spatial Data and queries, Applications involving Spatial Data, Introduction to Spatial Indexes, Indexing Based on Space-Filling Curves, Grid Files, R Trees: Point and Region Data, Issues on High Dimensional Indexing.

**SUGGESTED TEXT / REFERENCE BOOKS :**

UNIT – I (9)


Memory Devices: Memory Devices, Memory Organization, Memory Selection for an Embedded System, Allocation of Memory to Program Segments and Blocks and Memory Map of a System, Interfacing Processor, Memories and I/O Devices.

UNIT – II (9)


Device Drivers and Interrupts Servicing Mechanism: Device Drivers, Parallel Port Device Drivers in a System, Serial Port Device Drivers in a System, Interrupt Servicing (Handling) Mechanism, Context and the Periods for Context-Switching, Deadline and Interrupt Latency.

UNIT – III (9)


UNIT – IV (9)


SUGGESTED TEXT / REFERENCE BOOKS:

LIST OF EXPERIMENTS

1. Creation of images using graphics functions.
   (a) Creation of vehicle image with movement.
   (b) Creation of any simple game.
   (c) Creation of weight lifter image.
2. Implementation of DDA line drawing algorithm.
   (a) Creation of images using DDA algorithm.
3. Implementation of Bresenham line drawing algorithm
   (a) Creation of images using Bresenham algorithm.
4. Implementation of polygon creation algorithm.
5. Implementation of Polygon seed filling algorithm.
7. Implementation of polygon scan line filling algorithm
8. Implementation of display file structure using arrays and linked lists
10. Implementation of scaling transformation for line.
12. Implementation of rotation with respect arbitrary point (lines and polygons).
13. Implementation of translation transformation (lines and polygons).
14. Implementation of rotation with respect to arbitrary point (lines and polygons).
15. Implementation of shearing and transformation.
17. Implementation of viewing transformation.
18. Implementation of Suther Land outcode algorithm.
19. Implementation of mid point sub division clipping algorithm.
20. Implementation of Suther Land Hodgman algorithm.
21. Multimedia applications
   (a) Text Animation
   (b) Clip Art
   (c) Animation - Bouncing ball
   (d) Digital Sound
LIST OF EXPERIMENTS IN VISUAL C++

1. Simple program to display message.
2. Program to print mouse coordinates.
3. Program to print message according to mouse events.
4. Simple scribble pad.
5. Display current time.
6. Program to display mouse events.
7. Program to convert the temperature from Centigrade to Fahrenheit using Scrollbars.
8. Program to draw shapes and colours.
15. ODBC Connectivity.

LIST OF EXPERIMENTS IN VISUAL BASIC

1. Changing font in text field.
2. Program to remove duplicate items from List box control.
3. Program to modify the text in the textbox with different sizes and fonts using option buttons and frames.
4. Program to find the roots of Quadratic equation.
5. Program to calculate the simple Interest.
6. Program to change color of form using scrollbars.
7. Program to copy the contents of list box to another one.
9. Program to rotate an arrow 90 degrees every second when you press start button and stops when you press a stop button.
10. Program to implement scribble pad.
11. Program to find the sum of two matrices.
12. Program to print different graphical shapes.
13. Program to illustrate OLE Automation using menus by using menu editor.
14. Program to illustrate Multiple Document Interface with the help of Toolbar Control.
15. Program to illustrate MS flex grid control and data control.
16. Program to add, delete, and modify oracle records using ADO.
17. Program to add, delete, and modify oracle records using RDO.
18. Program to add, delete, and modify oracle records using Sequential files.
19. Program to add, delete, and modify oracle records using Random files.
# SCHEME OF INSTRUCTION AND EVALUATION
## II SEMESTER OF IV YEAR OF 4-YEAR B.TECH. DEGREE PROGRAMME

### COMPUTER SCIENCE AND ENGINEERING

<table>
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<th>Name of the Course</th>
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**Professional Elective-II**
- 1. Cryptography and Network Security
- 2. Simulation and Modeling
- 3. Real Time Systems

**Professional Elective-III**
- 1. Data Mining and Data Warehousing
- 2. Digital Image Processing
- 3. Wireless Communications
UNIT – I (9+3)


Inter Process Communication: Pipes, Streams and Messages, Name Spaces, Message Queues, Semaphores, Shared Memory.

Transport Layer: TCP Connection Establishment and Termination, TIME_WAIT State, Port Numbers, Concurrent Servers, Buffer Sizes and Limitations. Standard Internet Services.

Sockets: Address Structures, Value-Result Arguments, Byte Ordering, Byte Manipulation and inet_aton, inet_addr and inet_ntoa Functions. inet_pton, inet_ntop, sock_ntop and Related Functions. readn, written and readline Functions. isfdtype Function.

UNIT – II (9+3)


I/O Multiplexing: I/O Modes, select Function, Batch Input, pselect and poll Functions.

Socket Options: getsockopt, setsockopt Functions, Socket States, Generic Socket Options, Ipv6 Socket Options, fcntl Function.

Elementary UDP Sockets: recvfrom, sendto Functions and their implementation, Lost Datagrams, connect Function with UDP, Lack of Flow Control with UDP.

UNIT – III (9+3)

Daemon Processes and inetd Superserver: syslogd Daemon, syslog and daemon_init functions, inetd Daemon, daemon_inetd Function.

Advanced I/O Functions: Socket Timeouts, recv, send, readv, writev, recvmsg and sendmsg Functions.

Unix Domain Protocols: Socket Address Structure, socketpair function, socket functions, Unix Domain Stream and Datagram Client, Server, Passing Descriptors, Receiving Sender Credentials.

Nonblocking I/O: Non Blocking Reads and Writes, Daytime Client and Web Client.


UNIT – IV (9+3)

Broadcasting: Broadcast Addresses, Unicast versus Broadcast, Race Conditions.

Multicasting: Multicast Addresses, Multicasting versus Broadcasting on a LAN, Multicast socket options, SNTP (Simple Network Time Protocol).

Threads: Creation and Termination of Threads, Thread Specific Data, Web Client and Simultaneous Connections, Mutual Exclusion (Mutex), Conditional Variables.


SUGGESTED TEXT / REFERENCE BOOKS:

UNIT-I (9)


**Classical Encryption Techniques:** Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Rotor Machines, Steganography.

**Block Ciphers and the Data Encryption Techniques:** Simplified DES, Block Cipher principles, Data Encryption Standard , Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles and modes of operation.

**Advanced Encryption Techniques:** Evaluation Criteria for AES, The AES Cipher.

**Contemporary Symmetric Ciphers:** Triple DES, Blowfish, RC5 Characteristics of Advanced Symmetric Block Ciphers, RC4 Stream Cipher, CAST-128, IDEA Algorithms.

UNIT-II (9)

**Confidentiality Using Conventional Encryption:** Placement of Encryption Function, Traffic Confidentiality, Key Distribution, Random Number Generation.

**Public-Key Cryptography And RSA:** Principles of Public-Key Cryptosystems, The RSA Algorithm.

**Key Management; Other Public-Key Cryptosystems:** Key Management, Diffie-Hellman Key Exchange, Elliptic Curve Arithmetic and Cryptography.

**Message authentication and Hash functions:** Authentication Requirements and Functions, Message Authentication Codes, Hash functions, Security of Hash functions and MACs.

UNIT – III (9)

**Hash Algorithms:** MD5 Message Digest Algorithm, Secure Hash Algorithm, RIPEMED-160, HMAC.

**Digital Signature and Authentication Protocols:** Digital Signatures, Authentication Protocols, Digital Signature Standard.

**Authentication Applications:** Kerberos, X.509 Authentication Service.

**Electronic Mail Security:** Pretty Good Privacy, S/MIME.

**IP Security:** Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management.

UNIT – IV (9)


**Intruders:** Intruders, Intrusion Detection, Password Management.

**Malicious Software:** Viruses and Related Threats, Virus Counter Measures.

**Firewalls:** Firewall Design Principles, Trusted Systems.
SUGGESTED TEXT / REFERENCE BOOKS:

UNIT-I (9)


UNIT-II (9)


UNIT-III (9)


Queuing Problems – Utilization as a Design Factor – Grade of Service.

UNIT-IV

GPSS and SIMSCRIPT: Introduction to GPSS - GPSS Examples- Introduction to SIMSCRIPT – Management of Sets in SIMSCRIPT.


Case Studies: Simulation of Inventory Problem, Manufacturing System, Hospital System.

SUGGESTED TEXT / REFERENCE BOOKS:

CS421(3) REAL TIME SYSTEMS

Course: IV/IV B.Tech II Semester
Branch: Computer Science & Engineering
External Examination: 3 Hours
Internal Examination: 2 Hours

UNIT-I

Typical Real-Time Application: Digital control, high-level controls, signal processing.
Hard Versus Soft Real-Time Systems: Jobs and processors, release times, deadlines, and timing constraints, hard and soft timing constraints, hard real-time systems, soft real-time systems.
A Reference Model Of Real-Time Systems: Processor and resources, temporal parameters of real-time workload, periodic task model, precedence constraints and data dependency, other types of dependencies, functional parameters, resources parameters of jobs and parameters of resources, scheduling hierarchy.

UNIT-II

Commonly Used Approaches To Real-Time Scheduling: Clock driven approach, weighted round-robin approach, priority driven approach, dynamic versus static systems, effective release times and deadlines, optimality of the EDF and LST algorithms, non-optimality of the EDF and the LST algorithms (Theorems and Corollaries are not included), challenges in validating timing constraints in priority-driven systems, Off-line Vs On-line scheduling.
Clock-Driven Scheduling: Notations and assumptions, static timer-driven scheduler, general structure of cyclic schedules, cyclic executives, improving the average response time of periodic jobs, scheduling sporadic jobs, practical considerations and generalizations.
Priority driven scheduling of periodic task: static assumption, fixed-priority versus dynamic priority algorithms, maximum schedulable utilization, optimality of the RM and DM algorithms, a schedulability test for fixed-priority tasks with short response times, schedulability test for priority tasks with arbitrary response times (Theorems and Corollaries are not included).

UNIT-III

Resources and Resource Access Control: Assumptions on resources and their usage, effects of resource contention and resource access control, non-preemptive critical sections, basic priority-ceiling protocol, preemptive-ceiling protocol, controlling access to multiple-unit resources.

UNIT-IV


Note: Proofs of theorems not to be considered.

SUGGESTED TEXT / REFERENCE BOOKS:

UNIT – I (9)

Data warehouse: What is Data Warehouse, Importance, Comparison with Relational Database System, Basics: Partitioning Strategy, Aggregation, Metadata, fact and dimensional tables, star snowflake and fact constellation schemas, data marts.


Data warehouse Design: Developing a data warehouse – design consideration, crucial decisions in designing a data warehouse, technological considerations – Data warehousing for the Government of Tamil Nadu, Data warehousing for the Government of Andhra Pradesh, Data warehousing for the Ministry of Commerce.

UNIT – II (9)

Data Preprocessing: Cleaning, integration, Transformation & reduction.

Data Mining: What is Data Mining, Functionalities, Classification: Major Issues, Priorities, System Architecture, and DMQL.

Descriptive Data Mining: Concept Description – Generalized Characterization, Summarized Characterization, Analytical Characterization, Class Comparison, Descriptive Statistical Measures.

Associative Rule Mining – Basic Concepts, Single and Multi Dimensional Boolean and Multilevel association rules for transaction databases, Correlation Analysis, Constrained based associative rules.

UNIT – III (9)

Predictive Data Mining: What is Predictive Data Mining, Classification – Preparing Data, criteria for comparing algorithms,

Classification: Issues regarding Classification, classification by decision tree, Bayesian Classification, Classification by back propagation, Classification based on concepts from Association Rule Mining, k-nearest neighbor Classifiers, Genetic Algorithms, Fuzzy Set Approaches, Regression – Linear and Multiple Regression, Nonlinear Regression, classifier accuracy.

UNIT – IV (9)

Cluster Analysis: Cluster analysis, Types of data in Cluster Analysis, partitioning methods, hierarchical methods, density based methods, grid based methods, model based clustering methods.

Mining complex types of data: mining spatial databases, mining multimedia databases, mining text databases, mining web based databases.
SUGGESTED TEXT / REFERENCE BOOKS:

CS422(2) DIGITAL IMAGE PROCESSING

Course: IV/IV B.Tech. II Semester
Branch: Computer Science & Engineering

Lectures: 3 Periods/week
External Examination: 3 hours
Internal Examination: 2 hours

UNIT-I (9)


UNIT-II (9)
Image Transforms: 2D Fourier transforms, 2D- DFT, Fast fourierTransform, Walsh, Hadmard, Discrete cosine.


UNIT-III (9)
Image Enhancement in the Frequency Domain: Introduction to the Furier transform and frequency domain, Smoothing Frequency Domain Filters, Sharpening Frequency Domain Filters.


UNIT-IV (9)
Image Representation and Description: Representation: Chain codes, Polygonal approximations, Signatures, Boundary Segments, Skeletons. Boundary Descriptors: Simple Descriptors, Shape numbers, Fourier Descriptors, Statistical moments.

SUGGESTED TEXT/REFERENCE BOOKS:

1. Programs to Implement \textit{fork, exec, pipe} (System Calls) Functions using \textit{write, read, open and close} Functions.

2. Programs to Implementing Inter Process Communication between a Client and Server using
   (a) Pipes. (b) Fifos.

3. Implement Client Server Programs using
   (a) Message Queues (b) Shared Memory.

4. Implement Client and Server Programs using sockets.
   (a) TCP Daytime Client Program using in-built Daytime Server Program.
   (b) TCP Daytime Server Program.

5. Implement TCP Echo Client and Server Programs.

6. Implement User Datagram Protocol for
   (a) Daytime Client Program using in-built Daytime Server Program.
   (b) Daytime Server Program.

7. Implement UDP Echo Client and Server Programs.

8. Implement File Transfer from Server to Client, the Client passes File name.

9. Implement of Unix Domain Protocol
   (a) Daytime Client and Server.
   (b) Echo Server and Client Programs.
   (c) Program to implement \textit{socketpair} system call.

10. Develop a Program to Read and Display different TCP Socket Options.

11. Implement Concurrent Server using \textit{select} Function for Server of TCP to handle TCP and UDP Clients.

12. Program to Implement \textit{gethostbyname, gethostbyaddr} Functions.


15. Implementation of Non-Blocking \textit{connect} and \textit{accept}.


17. Implementation of Server Programs of Different Architectures
   (a) TCP Echo Server Program using Threads.
   (b) TCP Concurrent Server, One Child per Client.
   (c) TCP Preforked server, No Locking around \textit{accept}.
   (d) TCP Concurrent server, One thread per client.
LIST OF EXPERIMENTS

1. Forward Engineer Class diagrams for the following.
   (a) File System
   (b) Spread Sheet
   (c) Window Manager
   (d) School Information System

2. Reverse Engineer
   (a) Class student with attributes name, roll_no and operation study()
   (b) Relationship Aggregation
   (c) Relationship Generalization
   (d) Interface.

3. Construct Use case Diagrams for the following.
   (a) Diagram Editor
   (b) Library Information System
   (c) Banking System
   (d) Cab Dispatching System.

4. Construct Sequence Diagrams for the following.
   (a) Mobile Phone
   (b) Use case student register for a course
   (c) Diagram Editor.

5. Construct Collaboration Diagrams for the following.
   (a) Use case Librarian issues books to student.
   (b) Mobile Phone
   (c) Diagram Editor.

6. Construct Activity Diagrams for the following.
   (a) ATM Transaction
   (b) Ticket Machine
   (c) Sales Order Processing.

7. Construct State Chart Diagrams for the following.
   (a) Account
   (b) CD Player
   (c) ATM machine.

8. Reverse Engineering the following Class Diagrams Using JAVA.
   (a) School Information System
   (b) File System
   (c) Window Manager
   (d) Library Information System

9. Case Study 1: ATM System
10. Case Study 2: Library Information System
11. Case Study 3: Railway reservation System