RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG AND TECHNOLOGY, NANDYAL
AUTONOMOUS
MASTER OF COMPUTER APPLICATIONS

I Year, I-Sem (MCA)   T   C
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(F0001121) PROBABILITY AND STATISTICS

UNIT –I
Probability: Sample Space and events-probability-The axioms of probability-Some Elementary theorems-Conditional probability-Baye's theorem.
UNIT- II
Random variables: Discrete and continuous –Distribution –Distribution function.
UNIT – III
Distribution: Binomial, Poisson and Normal distribution – related properties.
UNIT- IV
Sampling Distribution: Populations and samples-Sampling distributions of mean (known and unknown) proportions, sums and differences.
UNIT –V
Estimation: Point estimation-interval estimation-Bayesian estimation
UNIT- VI
Test of hypothesis: Means and proportions-Hypothesis concerning one and two means-Type I and Type II errors. One -tail, two -tail tests.
UNIT – VII
Tests of significance: Student's t-test, F-test, χ2 – test, Estimation of proportion.
UNIT-VIII
Curve fitting: The method of least squares – Interfaces based on the least squares estimations –Curvilinear regression – multiple regressions- correlation for univariate and bivariate distributions.
TEXT BOOKS:
1. Probability and statistics for MCA, T.K.V.Iyengar, B.krishna Gandhi, S.Ranganathan, M.V.S.S.N.Prasad, S.Chand and Company Ltd.
2. Mathematical Statistics, Gupta, Kapoor , S.Chand.
3. Probability and statistics: Shahanaz Batul, Ridge Publications.
REFERENCES:
1. Probability and Its Applications, Murray R Spiegel,Schaum Series,TMH
2. Engineering Mathematics, B.V.Ramana, TMH., 2002,
3. Introduction to probability and statistics, J.S.Milton, Jesse C.Arnold, 4/e, TMH.

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(F0002121) EFFECTIVE COMMUNICATION & PERSONALITY DEVELOPMENT

OBJECTIVE:
The objective of this Course is to understand the communication concepts and to develop the students' personality traits and professional spirit. Assuming that the students are fairly proficient in the basic communication skills of listening, speaking, reading and writing in English the course aims to train them in communicating efficiently in the workplace and professional contexts.

SYLLABUS

UNIT-1: Motivation-Goal Setting- Principles & Strategies of Personality Development

UNIT-II: Communication: Process – Principles-Barriers - Active Listening

UNIT-III: Non-Verbal Communication-Kinesics – Chronemics-   Oculesics- Paralinguistics

UNIT-IV: Corporate Communication – Types of Communication- Formal and Informal conversations – Professional Etiquettes

UNIT-V: Developing Vocabulary – Jargon –Idioms & Phrases

UNIT-VI: Effective Meetings – Video Conferencing

UNIT-VII: Written Communication – Technical Writing- Letter - Wring – Report Writing- Email

UNIT VIII – Reading Skills - Fiction analysis – Robin Sharma 's The Monk Who Sold His Ferari

REFERENCES:
1   Essentials of Business Communication, Rajendra Pal, JS.Korlahhi, S.Chand
2   Technical Communication (Principles and Practice) by   Meenakshi Raman & Sangeeta Sharma, Oxford University 2004.
3   The Dynamics of Successful Personality and projection (Second Edition) by– J.R. Bhatti, PEARSON 2011
4   The ACE of Soft Skills (Attitude, Communication and Etiquette for success)
    by- Gopalaswamy Ramesh & Mahadevan Ramesh , PEARSON 2010.
5   Technical writing 3rd edition by *Sharon J. Gerson & Steven M. Gerson* Pearson Education 2001

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(F0003121) ACCOUNTING AND FINANCIAL MANAGEMENT

UNIT I:
Introduction to Accounting: Principles, concepts and conventions, double entry system of accounting, classification of accounts and debit-credit rules.

UNIT II:
Financial Statements: Introduction to basic books of accounts, journal and ledger – trial balance – preparation of final accounts: trading account, profit and loss account and balance sheet.

UNIT III:
Funds Flow Analysis: Meaning, Importance, statement of changes in working capital, statement of sources and application of funds.

UNIT IV:
Financial Analysis through ratios: Ratio Analysis – classification of ratios – short term solvency and long term solvency – profitability ratios – analysis and interpretation of financial statements through ratios of liquidity, solvency and profitability.

UNIT V:
Break Even Analysis: Concept of Break Even Point, Cost-Volume-Profit Analysis, Determination of Break Even Point, Margin of Safety and P/V ratio, Impact of changes in cost or selling price on BEP, Practical applications of Break Even Analysis.

UNIT VI:
Introduction to Financial Management: Meaning and scope, role of financial manager, objectives of time value of money – goals of financial management, leverages: operation, financial leverage and combined leverage.

UNIT VII:
Capital Structure: Cost of capital: cost of equity, preference shares, bonds – weighted average cost of capital – capital gearing – overcapitalization and undercapitalization, sources of finance.

UNIT VIII:
Capital Budgeting: Capital and its significance, types of capital, estimation of fixed and working capital requirements, methods and sources of raising capital. Capital budgeting: features, proposals, methods of capital budgeting, payback method, accounting rate of return (AAR), Net Present Value Method(NPV) and Internal Rate of Return (IRR) -simple problems.

TEXT BOOKS:
1. Financial Accounting, S.N.Maheshwari, Sultan Chand, 2009.
2. Financial Management and Policy, Van Horne, James,C., Pearson ,2009.

REFERENCES:
1. Financial Accounting, Tulsian, S Chand, 2009.
2. Financial Statement Analysis, Khan and Jain, PHI, 2009
3. Financial Management, I.M.Pandey, Vikas Publications
4. Financial Management, Bhat Sundhindra, Excel: 2009
5. Financial Management, Prasanna Chandra, T.M.H, 2009.

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(F0004121) COMPUTER ORGANIZATION

UNIT I
NUMBER SYSTEMS AND COMPUTER ARITHMETIC- Signed and unsigned numbers, Addition and subtraction, multiplication, division, Floating point representation, logical operation, Gray code, BCD codes, Error detecting codes, Boolean algebra, Simplification of Boolean expressions, K-Maps.

UNIT II
MEMORY ORGANIZATION-Memory hierarchy, Main memory-RAM, ROM chips, Memory address map, memory contention to CPU, Associative Memory-Hardware logic, match, read and write logic, Cache Memory-Associative mapping, Direct mapping, Set-associative mapping, hit and miss ratio.

UNIT III
MICRO PROGRAMMED CONTROL **:** Control memory, Address sequencing, microprogram example, design of control unit, Hard wired control, Microprogrammed control

UNIT IV
BASIC CPU ORGANIZATION-Introduction to CPU, Instruction formats-INTEL-8086 CPU architecture-Addressing modes - generation of physical address- code segment registers, Zero, one, two, and three address instructions.

UNIT V
INTEL 8086 ASSEMBLY LANGUAGE INSTRUCTIONS-Data transfer instructions-input- output instructions, address transfer, Flag transfer, arithmetic, logical, shift, and rotate instructions.

UNIT VI
INTEL 8086 ASSEMBLY LANGUAGE INSTRUCTIONS Conditional and unconditional transfer, iteration control, interrupts and process control instructions, assembler directives, Programming with assembly language instructions.

UNIT VII
INPUT -OUTPUT ORGANIZATION-Peripheral devices, input-output interface-I/O Bus and interface modules, I/O versus Memory bus, isolated versus memory mapped I/O, Modes of transfer-Programmed I/O, Interrupt-initiated I/O, priority interrupts-Daisy chaining, parallel priority, interrupt cycle, DMA- DMA control, DMA transfer, Input output processor-CPU-IOP communication.

UNIT VIII
PIPELINE AND VECTOR PROCESSING **:** Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.

TEXT BOOKS:
1. Computer System Architecture, M. Morris Mano , 3rd Edition, PHI/Pearson Education,2008.
2. Microprocessors and Interfacing, Douglas Hall, Tata McGraw-Hill.

REFERENCES:
1. Computer Organization, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, Vth Edition, McGraw Hill.
2. Fundamentals of Computer Organization and Design, Sivarama P.Dandamudi, Springer Int. Edition.
3. Computer Organization and Architecture, William Stallings, 7th Edition, Pearson/PHI,2007.
4. Digital Design , M. Morris Mano, PHI/Pearson Education .

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(F0005121) C-PROGRAMING

Unit I- Overview of Computer Programming

Fundamentals of computers - Evolution of computer systems, Basic anatomy of computer system, Components of computer. Introduction to Computer Programming languages. Problem solving techniques - Algorithms and Flowcharts. How to trace an algorithm. Simple examples on how to write and trace an effective algorithms and how to draw an effective flow charts. Program control structures – sequence, selection and iteration. Software Development Method.

Unit II- Introduction to C Language

History of C language, Importance of C language, Definition of a C Program, General Form of a C Program, Steps to execute C program. Various Data Types supported by the C language. C tokens – Identifiers, Key words, Variables, Constants, Operators. Operator precedence and Associativity. Expressions and their evaluation process. Type Conversions- Automatic and type casting. Managing Input/Output operations. Control Statements- Non iterative statement- if, if else, Nested if else, lf else ladder and switch statements. Loop Constructs - while, for, do-while. break, continue, return and goto statements. Example Programs on the topics covered in this unit.

Unit III- Arrays

Arrays – Definition, Need of arrays while writing C programs. Types of arrays- One dimensional, Two dimensional, Multi dimensional arrays. Declaration of One dimensional array, initialization of one dimensional array, storing and accessing the elements from a one dimensional array. Two-dimensional Arrays and their declaration, initialization, storing & accessing elements from it. Declaration of multi dimensional array, initialization of multi dimensional arrays, storing and accessing the elements from a multi dimensional array. Example Programs on the topics mentioned above.

Unit IV- Functions:

Introduction, Library Functions and User defined functions. Need for user-defined functions. General form of declaring a function, Elements of an user defined functions- Function definition Function call, Function declaration, Function name, return type, parameters, return statements. Categorization of functions with respect to parameters and return values. Definition of Scope of a variable with suitable examples.

Unit V- Storage Classes and Strings

Storage Classes - Automatic, External, Static, and Register. Arrays and functions - Passing an entire array as an Argument to a function. Recursion – Need of recursive functions, Solving Towers of Hanoi Problem using recursive function and its trace out. Preprocessor Commands. Example Programs on the topics mentioned above.
Strings - Definition, Declaring and initializing strings, Basic Operations on strings, String handling Functions, Table of strings. Example Programs on the topics mentioned above.

Unit VI- Pointers

Introduction, Need of using pointer variables, Pointer variable declaration, initialization of pointer variables, how to access a value from a memory location through it's pointer variable. Arithmetic operations on pointer variables . Pointers and functions - pointers as function arguments (i.e., call-by-reference), Pointers and

Arrays, Pointers and Strings, Array of Pointers, Pointers to Pointers, Generic Pointers, Pointer to Functions. Example Programs on the topics mentioned above.

Unit VII- Structure

Structures – Introduction, Features of Structures. Declaration and Initialization of Structures, Accessing structure members, structure initialization. Nested Structures, Array of Structures, Arrays within structures and Pointers to Structures, Structures and Functions, Bit Fields, Unions, Union of Structures. Dynamic Memory Allocation Functions. Example Programs on the topics mentioned above.

Unit VIII- File Input/Output

Introduction, Types of Files, File I/O Operations- High level I/O functions- Open & Close a file, Read and Write data into a file, Searching data in the file, Error handling during I/O operations on files. Command Line Arguments, Applications of Command Line Arguments. Example Programs on the topics covered in this unit.

TEXT BOOKS:
1. Computer programming and Data Structures, E.Balaguruswamy, Tata Mc Graw Hill. 2009 revised edition.
2. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A. Ananda Rao, Pearson Education

REFERENCES:
1. Let us C – Yeshwanth kanetkar, 5th Edition.BPB Publications
2. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press
3. The C Programming Language, Brian W.Kerninghan, Dennis M.Ritchie
4. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson Education / PHI, Eighth Edition.
5. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.

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(F0006121) C-PROGRAMING LAB

Objectives:
- To make the student learn a programming language.
- To teach the student to write programs in C to solve typical problems.
- To introduce the student to simple linear data structures such as lists, stacks, queues.

Recommended Systems/Software Requirements:
- Intel based desktop PC with ANSI C Compiler and Supporting Editors

Exercise l:

a) Write a C program to find the roots of a quadratic equation.

b) Write a C program to calculate the following Sum:

   Sum=1-x2/2! +x4/4!-x6/6!+x8/8!-x10/10!

Exercise 2:

a) Write a C program, which takes two integer operands and one operator from the user, performs the specified operation and then prints the result.

   (Consider the operators +,- ,*, /, % and use Switch Statement)

b) The total distance travelled by vehicle in't' seconds is given by distance S = ut+1/2at2 where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec2) respectively. Write C program to find the distance travelled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.

Exercise 3:

a) Write a C program to find the sum of individual digits of a positive integer.

b) Write a C program to generate the first 'n' terms of the Fibonacci sequence.

   [**Note**: A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.]

c) Write a C program to generate all the prime numbers between 1 and n, where 'n' value is given by the user.

   [**Note:** Develop each of the above programs by using different loop constructs supported by C language. (i.e., while, do while and for Loops)]

Exercise 4:

a) Write a C program to generate Pascal's triangle.

b) Write a C program to construct a pyramid of numbers.

[Detailed Syllabus]   7

Exercise 5:

a) Write a C program to find all the even numbers in the given one dimensional array.

b) Write a C program to print the elements of an array in reverse order.

c) Write a C program to perform the following operations:

      i) Addition of Two Matrices   ii) Subtraction of Two Matrices

      iii)Multiplication of Two Matrices

[Note: Use functions to implement the above specified operations]

Exercise 6:

a) Write C programs that use both recursive and non-recursive functions

      i) To find the factorial of a given integer.

      ii) To find the GCD (greatest common divisor) of two given integers.

      iii) To reverse a given positive integer.

Exercise 7:

a) Write a C Program to solve the Towers of Hanoi problem by using recursive function.

b) Write a C Program to demonstrate the various storage classes, which are supported by the C language. [i.e., automatic, external, static and register]

Exercise 8:

a) Write a C Program to demonstrate that, how to pass an entire array as an argument to a function with a suitable example.

b) Write a C Program to perform various operations on given two strings using string handling functions.

Exercise 9:

a) Write a C Program to perform various arithmetic operations on pointer variables.

b) Write a C Program to demonstrate the following parameter passing mechanisms:

      i) call-by-value ii) call-by-address

Exercise 10:

a) Write a C program that uses functions to perform the following operations:

      i) To insert a sub-string in to a given main string from the specified position.

      ii) To delete 'n' Characters from a given position in a given string.

b) Write a C program to determine if the given string is a palindrome or not.

Exercise 11:

a) Write a C program that displays the position or index in the string 'S' where the string 'T' begins, or − 1 if 'S' doesn't contain 'T'.

b) Write a C program to count the lines, words and characters in a given text.

Exercise 12:

a) 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.

b) Write a C program to convert the given Roman numeral to its decimal equivalent value.

Exercise 13:

a) Write a C program that uses functions to perform the following operations:

      i) Reading a complex number   ii) Writing a complex number

      iii) Addition of two complex numbers iv) Multiplication of two complex numbers

(Note: Represent the complex number using a structure.)

Exercise 14:

a) Write a C program which copies contents of one file to another file.

b) Write a C program to reverse the first 'n' characters in a file.

   (Note: The file name and n are specified on the command line.)

Exercise 15:

a) Write a C program to display the contents of a file using command line arguments.

b) Write a C program to merge two files into a third file (i.e., the contents of the first file followed by the contents of the second file are put in the third file)

   (Note: The file name and n are specified on the command line.)

REFERENCE BOOKS

1. The Spirit of C, an introduction to modern programming, M.Cooper, Jaico Publishing House.
2. Mastering C, K.R. Venugopal and S.R. Prasad, TMH Publications.
3. Computer Basics and C Programming, V. Raja Raman, PHI Publications.

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(F0007121) COMPUTER ORGANIZATION LAB

List of Sample Problems/Experiments:

Write assembly language programs for the following using TASM.

1. Write an 8086 assembly language program to add two 8-bit numbers?
2. Write an 8086 assembly language program to add two 16- bit numbers?
3. Write an 8086 assembly language program to illustrate AAA instruction?
4. Write an 8086 assembly language program to illustrate AAS instruction?
5. Write an 8086 assembly language program to subtract two 8-bit   numbers?
6. Write an 8086 assembly language program two subtract two 16-bit numbers?
7. Write an 8086 assembly language program to find one 's complement?
8. Write an 8086 assembly language program to two's complement?
9. Write an 8086 assembly language program to find sum of 1 to 100 numbers?
10. Write an 8086 assembly language program to find two's complement using NEG instruction?
11. Write an 8086 assembly language program to illustrates shift instructions?
12. Write an 8086 assembly language program to illustrates rotate instructions?
13. Write an 8086 assembly language program to find the biggest of two numbers?
14. Write an 8086 assembly language program to find the smallest of two numbers?
15. Write an 8086 assembly language program to find average of two numbers?
16. Write an 8086 assembly language program to calculate the following expression?
    A=B+C-D*E
17. Write an 8086 assembly language program to calculate the following expression?
    Z=X*Y+W-V+U/K
18. Write an 8086 assembly language program to illustrates AND,OR,XOR instructions?
19. Write an 8086 assembly language program to illustrates test instructions?
20. Write an 8086 assembly language program to illustrates MUL instruction?
21. Write an 8086 assembly language program to illustrate AAM instruction?
22. Write an 8086 assembly language program to divide two numbers?
23. Write an 8086 assembly language program to sort numbers using bubble sort?
24. Write an 8086 assembly language program to sort numbers in descending order?
25. Write an 8086 assembly language program to find factorial using procedures?
26. Write an 8086 assembly language program to add two 8-bit numbers using procedures?
27. Write an 8086 assembly language program to add two 16-bit numbers using procedures?

28. Write an 8086 assembly language program to multiply two 16-bit numbers using procedures?

29. Write an 8086 assembly language program to find sum of array elements?

30. Write an 8086 assembly language program to find average of array elements?

31. Write an 8086 assembly language program to find largest number in an array?

32. Write an 8086 assembly language program to find smallest number in an array?

33. Write an 8086 assembly language program to convert decimal number to hexadecimal number?

34. Write an 8086 assembly language program to convert ASCII number to packed BCD?

35. Write an 8086 assembly language program to accept a character from key board and print character?

36. Write an 8086 assembly language program to move a string from data segment to extra segment?

37. Write an 8086 assembly language program to reverse a string?

38. Write an 8086 assembly language program to concate two the strings?

39. Write an 8086 assembly language program to compare two strings?

40. Write an 8086 assembly level language program to find the given string is palindrome or not?

REFERENCES:

1) IBM PC Assembly Language and Programming, P. Abel, 5th Edition, PHI/Pearson Education.

2) Introduction To Assembly Language Programming, Sivarama P.Dandamudi, Springer Int. Edition,2003.

3) The 8088 and 8086 Microprocessors: Programming , Interfacing,Software,Hardware and Application,4th edition,W.A.Triebel,A.Singh,N.K.Srinath,Pearson Education

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(F0008121) IT WORKSHOP

Objectives:

The IT Workshop for engineers is a training lab course spread over 40 hours. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel, Power Point.

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows , Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. **The students should work on working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible.**
Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email.

Productivity tools module would enable the students in crafting professional word documents, excel spread sheets and power point presentations. (**Recommended to   use Microsoft office 2007 in place of MS Office 2003)**

PC Hardware

Exercise 1 – Task 1 : Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Exercise 2 – Task 2 : Every student should disassemble and **assemble the PC back to working condition.** Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Exercise 3 – Task 3 : Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Exercise 4 – Task 4 : Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva

Exercise 5 – Task 5 : Hardware Troubleshooting : Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva

Exercise 6 – Task 6 : Software Troubleshooting : Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Internet & World Wide Web

Exercise 7 - Task 1 : **Orientation & Connectivity Boot Camp :** Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally

students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Exercise 8 - Task 3 : **Search Engines & Netiquette :** Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

MS Word

Exercise 9&10: The mentor needs to give an overview of Microsoft (MS) word 2007: Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word. Give a task covering to create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Inserting table, using Drawing toolbar in word.

MS Excel

Exercise 11&12: The mentor needs to tell the importance of MS office 2007 Excel as a Spreadsheet tool covering Accessing, overview of toolbars, saving excel files, Using help and resources., Also give a task that is covering the features like Gridlines, Format Cells, Summation, auto fill, Formatting Text.

MS Power Point

Exercise 13&14: Students will be working on MS power point that helps them create basic power point presentation. Topics covered during this Exercise include :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in Power point. Students shall be given a model power point presentation which needs to be replicated (exactly how it's asked).

REFERENCES :
1. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dream tech
2. The Complete Computer upgrade and repair book,3rd edition Cheryl A Schmidt, WILEY Dreamtech
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson   Education.
4. PC Hardware and A+Handbook – Kate J. Chase PHI (Microsoft)
5. LaTeX Companion – Leslie Lamport, PHI/Pearson.
6. IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinson and Ken Quamme. – CISCO Press, Pearson Education.
7. IT Essentials PC Hardware and Software Labs and Study Guide Third Edition by   Patrick Regan – CISCO Press, Pearson Education.
8. Troubleshooting,Maintaining and Repairing PCs,S.J.Bigelow,5th edition,TMH.

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(F0009122) ORGANISATION STRUCTURE AND PERSONNEL MANAGEMENT

UNIT I- Introduction to Management**:** Concepts of Management and organization – nature, importance and functions and theories of management, systems approach to management, leadership styles, social responsibilities of management.

UNIT II- Introduction to Organization**:** Designing Organizational structures: Basic concepts related to Organization – Departmentation and Decentralization, types and evaluation of mechanistic and structures of organization and suitability.

UNIT III- Decision Process Approach**:** Parts of organization system, development of corporate strategy, dynamics of decision, role of system. Types models: mathematical planning models, deterministic and probabilistic models.

UNIT IV- Personnel Management**:** Evolution, objectives, personnel policies. Personnel management vs HRM, position of the personnel department in the organization, Role of personnel manager as line manager and staff manager.

UNIT V- Man Power Planning: Need-strategies and limitations, manpower inventory, manpower forecasting, job description, recruitment, job specification and selection, interviewing techniques, transfers and promotion policies.

UNIT VI- Training and Development: Objectives and policies planning, organizing the training department, training manager and his job, on and off the job training techniques, career planning, objectives of performance appraisal.

UNIT VII- Understanding Human Behavior**:** Personality – Johari Window – Transactional Analysis. Perception: Perceptual process, Development of Attitudes and Values, Understanding Group Dynamics, Team Effectiveness, Strategies to deal with conflicts and stress.

UNIT VIII- Contemporary Strategies: Total Quality Management (TQM), six sigma, people capability maturity model (PCMM) levels, performance management, business process outsourcing (BPO), business process re-engineering, bench marking and balanced score card.

Text Books:
1. Organisational Behaviour, Robbins:Pearson,2008.
2. Management and Organizational Behavior, P.Subbarao HPH, 2009.

References:
1. Industrial Business Management, Martand T Telsang, S.Chand.
2. Human resources Management, Dr L.M.Prasad, S.Chand.
3. Dynamic personnel Administration, Rudrabasavaraj MN, Himalaya.
4. Personnel Management, Mamoria & Gankar, HPH, 2009.
5. Essentials of Management, Koontz & Weihrich, TMH, 2009.
6. Understanding Organisational Behaviour, Udai Pareek, P.H.I,2009.

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(F0010122) DATA STRUCTURES THROUGH C

UNIT – I
Introduction: Definition, Classification of Data Structures.
Linked list: Definition, Single linked lists, Doubly linked lists, Circular linked lists, Circular Double linked lists, Applications of Linked list: Sparse Matrix Manipulation, Polynomial Representation
UNIT – II
Stacks: Introduction, Definition, Representation of Stacks- Arrays and Linked lists, Operations on stacks, Applications of stacks-Evaluation of Arithmetic Expression, Recursion.
UNIT - III
Queues: Introduction, Definition, Representation of Queues- Arrays and Linked lists, Various Queue structures, Operations on Queues, Applications, Priority queues.
UNIT - IV
Sorting: Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, and Quick Sort
UNIT - V
Searching: Linear Search, Binary Search, and Fibonacci Search.
Tables: Rectangular, Inverted Tables, Hashing Techniques.
UNIT - VI
Tress: Binary Tree, Binary Search Tree (BST), Representation and operations on BST, Tree Traversal Techniques: In order, post order, pre order. Applications of BST.
UNIT – VII
Special Binary Trees: AVL trees, Red-Black tress, Heaps, Heap Sort, Applications of Special binary Trees.
UNIT – VIII
Graphs –Introduction, Graph Terminologies, Representation of Graphs, Graph traversal techniques-BFS, DFS.

TEXT BOOKS:
1. Samanta,‖Classic Data Structures‖, 1/e, 2001, PHI.
2. Programming in C and Data Structures, J.R. Hanly, Ashok N. Kamthane, A. Ananda Rao, Pearson Education
3. An Introduction to Data Structures With Applications, Trembley, Sorenson, 2/e, TMH.
4. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
5. Computer Programming and Data Structures, E. Balagurusamy Education / PHI, Eighth Edition.

REFERENCES :
1. Programming in C – Stephen G. Kochan, III Edition, Pearson Eductaion.
2. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press
3. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson

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(F0011122) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

UNIT-I
Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms.

UNIT-II
Predicates: Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction, Quantifiers.

UNIT-III
Relations: Properties of Binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Hasse diagram, Lattice and its Properties,
Functions: Inverse Function, Composition of functions, Pigeonhole principles and its application.

UNIT-IV
Algebraic structures: Algebraic systems examples and general properties, Semi groups and monads, groups, sub groups, homomorphism, Isomorphism.

UNIT-V
Elementary Combinatorics: Basis of counting, Enumerating Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial & Multinomial theorems, the principles of Inclusion – Exclusion.

UNIT-VI
Recurrence Relation: Generating Functions & Sequences , Calculating Coefficient of generating function, Recurrence relations, Solving Recurrence relation by substitution and Generating functions. Characteristic roots, solution of Inhomogeneous Recurrence Relation.

UNIT-VII
Graph Theory: Representation of Graph, DFS, BFS, Minimal Spanning Trees, Planar Graphs

UNIT-VIII
Graph Theory Applications: Basic Concepts Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers

TEXT BOOKS:
1. Discrete Mathematical Structures with Application to Computer Science, Tremblay, Manohar McGraw Hill Publication (for unit-1 to unit-4).
2. Discrete Mathematics for Computer Scientists & Mathematicians, 2/e, J.L.Mott, A. Kandel, T.P. Baker, PHI (for unit-5 to unit-8).

REFERENCE:
1. Discrete and Combinatorial Mathematics- An Applied Introduction, Ralph. P.Grimaldi,5/e, Pearson Education.
2. Mathematical foundation of computer science by Dr.D.S.Chandra sekharaiah, prism publication.

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(F0012122) OPERATING SYSTEMS

UNIT I
Operating System Introduction, Structures - Simple Batch, Multi programmed, timeshared, Personal Computer, Parallel, Distributed Systems ,Real-Time Systems , System components, Operating-System services, System Calls, Virtual Machines, System Design and Implementation.

UNIT II
Process and CPU Scheduling - Process concepts and scheduling, Operation on processes, Cooperating Processes, Threads, and Interposes Communication Scheduling Criteria, Scheduling Algorithm, Multiple - Processor Scheduling, Real-Time Scheduling.

UNIT III
Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging. Demand Paging , Performance of Demanding Paging , Page Replacement ,Page Replacement Algorithm, Allocation of Frames, Thrashing.

UNIT IV
File System Interface and Implementation -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management, Directory Management, Directory Implementation, Efficiency and Performance.

UNIT V
Process Management and Synchronization - The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization, Critical Regions, Monitors.

UNIT VI
Deadlocks - System Model, Dead locks Characterization, Methods for Handling Dead locks Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock.

UNIT VII
Case Study-1- UNIX - Design Principles, Programmer Interface, User Interface, Process Management, Memory Management, File System, I/O System, Inter process Communication.

UNIT VIII
Introduction to distributed systems:
Distributed systems: goals hardware concepts software -design

TEXT BOOKS:
1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
2. Andrew S.Tanenbaum : Distributed operating system, Prentice Hall International Inc.1995

REFERENCE BOOKS:
1. Operating System A Design Approach-Crowley,TMH.
2. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI
3. Operating Systems, Dhamdhere, TMH

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(F0013122) UNIX AND SHELL PROGRAMMING

UNIT I
Introduction to Unix:- Architecture of Unix, Features of Unix , Unix Commands – PATH, man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip.
UNIT II
Unix Utilities:- Introduction to unix file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin.Text processing utilities and backup utilities, detailed commands to be covered are tail, head , sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, cpio
UNIT III
Introduction to Shells : Unix Session, Standard Streams, Redirection, Pipes, Tee Command, Command Execution, Command-Line Editing, Quotes, Command Substitution, Job Control, Aliases, Variables, Predefined Variables, Options, Shell/Environment Customization. Filters: Filters and Pipes, Concatenating files, Display Beginning and End of files, Cut and Paste, Sorting, Translating Characters, Files with Duplicate Lines, Count Characters, Words or Lines, Comparing Files.
UNIT IV
Grep: Operation, grep Family, Searching for File Content.
Sed: Scripts, Operation, Addresses, commands, Applications, grep and sed.
UNIT V
awk: Execution, Fields and Records, Scripts, Operations, Patterns, Actions, Associative Arrays, String Functions, String Functions, Mathematical Functions, User – Defined Functions, Using System commands in awk, Applications, awk and grep, sed and awk.
UNIT VI
Interactive Korn Shell :
Korn Shell Features, Two Special Files, Variables, Output, Input, Exit Status of a Command, eval Command, Environmental Variables, Options, Startup Scripts, Command History, Command Execution Process.
Korn Shell Programming :
Basic Script concepts, Expressions, Decisions: Making Selections, Repetition, special Parameters and Variables, changing Positional Parameters, Argument Validation, Debugging Scripts, Script Examples.
UNIT VII
Process Control: Introduction, Process Identifiers, fork, vfork, exit, wait, Waitpid, wait3 and wait4 Functions, Race Conditions, exec Functions, Changing User Ids and Group Ids, Interpreter Files, System Function, Process Accounting, User Identification, Process Times.
UNIT VIII
File Management :File Structures, System Calls for File Management – create, open, close, read, write, lseek, link, symlink, unlink, stat, fstat, lstat, chmod, chown, Directory API – opendir, readdir, closedir, mkdir, rmdir, umask.
TEXT BOOKS :
    1. Unix and shell Programming Behrouz A. Forouzan, Richard F. Gilberg.Thomson
    2. Your Unix the ultimate guide, Sumitabha Das, TMH. 2nd Edition.
REFERENCES :
    1. Unix for programmers and users, 3rd edition, Graham Glass, King Ables, Pearson   Education.
    2. Unix programming environment, Kernighan and Pike, PHI. / Pearson Education
    3. The Complete Reference Unix, Rosen, Host, Klee, Farber, Rosinski, Second Edition, TMH.

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(F0014122) DATA STRUCTURES THROUGH C LAB

Objectives:

- To make the student learn a programming language.
- To teach the student to write programs in C to solve typical problems.
- To introduce the student to simple linear data structures such as lists, stacks, queues.

Recommended Systems/Software Requirements:

- Intel based desktop PC with ANSI C Compiler and Supporting Editors

Exercise 1

Write a C program that uses functions to perform the following operations:
i) Creation ii) Insertion iii) Deletion iv) Traversal on Singly linked list

Exercise 2

Write a C program that uses functions to perform the following operations:
i) Creation ii) Insertion iii) Deletion iv) Traversal on Doubly linked list

Exercise 3

Write a C program that uses functions to perform the following operations:
i) Creation ii) Insertion iii) Deletion iv) Traversal on Circular linked list

Exercise 4

a) Write C programs that implement stack (its operations) using
i) Arrays ii) Pointers
b) Write C programs that implement Queue (its operations) using
i) Arrays ii) Pointers

Exercise 5

Write a C program that uses Stack operations to perform the following:
i) Converting infix expression into postfix expression
ii) Evaluating the postfix expression

Exercise 6

Write a C program that implements the following sorting methods to sort a given list of integers in ascending order
i) Bubble sort
ii) Selection sort
iii) Insertion sort

Exercise 7

Write C program that implements the following sorting method to sort a given list of integers in ascending order:
i)Quick sort
ii)Merge sort

Exercise 8

Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers :

i) Linear search ii) Binary search

Exercise 9

Write C programs to create BST and perform operations on it.

Write C programs to implement recursive and non recursive Tree traversal techniques.

Exercise 10

Write C programs to implement Trapezoidal and Simpson methods

Write C programs to implement Heap Sort.

Exercise 11

Write C programs that implement

i) BSF

ii) DSF

REFERENCES:

1. The Spirit of C, an introduction to modern programming, M.Cooper, Jaico Publishing House.
2. Mastering C, K.R. Venugopal and S.R. Prasad, TMH Publications.
3. Computer Basics and C Programming, V. Rajaraman, PHI Publications

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(F0015122) UNIX AND SHELL PROGRAMMING LAB

Objectives:
- To teach students various unix utilities and shell scripting

Recommended Systems/Software Requirements:
- Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space LAN Connected
- Any flavour of Unix / Linux

Week1

Session-1
a) Log into the system
b) Use vi editor to create a file called myfile.txt which contains some text.
c) correct typing errors during creation.
d) Save the file
e) logout of the system

Session-2
a) Log into the system
b) Open the file created in session 1
c) Add some text
d) Change some text
e) Delete some text
f) Save the Changes
g) Logout of the system

Week2
a) Log into the system.
b) Use the cat command to create a file containing the following data. Call it mytable use tabs to separate the fields.

1425	Ravi	15.65
4320	Ramu	26.27
6830	Sita	36.15
1450	Raju	21.86

c) Use the cat command to display the file, mytable.
d) Use the vi command to correct any errors in the file, mytable.
e) Use the sort command to sort the file mytable according to the first field. Call the sorted file my table (same name)
f) Print the file mytable
g) Use the cut and paste commands to swap fields 2 and 3 of mytable. Call it my table (same name)
h) Print the new file, mytable
i) Logout of the system.

Week3

1) a) Login to the system.
   b) Use the appropriate command to determine your login shell.
   c) Use the /etc/passwd file to verify the result of step b.
   d) Use the who command and redirect the result to a file called myfile1. Use the more command to see the contents of myfile1.
   e) Use the date and who commands in sequence (in one line) such that the output of date will display on the screen and the output of who will be redirected to a file called myfile2. Use the more command to check the contents of myfile2.

2. a) Write a sed command that deletes the first character in each line in a file.
   b) Write a sed command that deletes the character before the last character in each line in a file.
   c) Write a sed command that swaps the first and second words in each line in a file.

Week4

a) Pipe your /etc/passwd file to awk, and print out the home directory of each user.
b) Develop an interactive grep script that asks for a word and a file name and then tells how many lines contain that word.
c) Repeat
d) Part using awk

Week5

a) Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.
b) Write a shell script that accepts one or more file name as arguments and converts all of them to uppercase, provided they exist in the current directory.
c) Write a shell script that determines the period for which a specified user is working on the system.

Week6

a) Write a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers.
b) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.

Week7

a) Write a shell script that computes the gross salary of a employee according to the following rules:
   i)If basic salary is < 1500 then HRA =10% of the basic and DA =90% of the basic.
   ii)If basic salary is >=1500 then HRA =Rs500 and DA=98% of the basic
   The basic salary is entered interactively through the key board.
b) Write a shell script that accepts two integers as its arguments and computers the value of first number raised to the power of the second number.

Week8

a) Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, have the program ask the user for the necessary information, such as the file name, new name and so on.
b) Write shell script that takes a login name as command – line argument and reports when that person logs in
c) Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.

Week9

    a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.

    b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.

    c) Write a shell script to perform the following string operations:

        i)To extract a sub-string from a given string.

        ii)To find the length of a given string.

Week10

Write a C program that takes one or more file or directory names as command line input and reports the following information on the file:

        i)File type

        ii)Number of links

        iii)Read, write and execute permissions

        iv)Time of last access

(Note : Use stat/fstat system calls)

Week11

Write C programs that simulate the following unix commands:

    a) mv

    b) cp

(Use system calls)

Week12

Write a C program that simulates ls Command

(Use system calls / directory API)

TEXT BOOKS

1. Introduction to UNIX & SHELL programming, M.G. Venkatesh Murthy, Pearson Education.
2. Unix concepts and applications, Fourth Edition, Sumitabha Das, TMH.
3. Unix for programmers and users, 3rd edition, Gaham Glass & K. Ables, pearson education.
4. Unix and shell Programming –A text book, B.A. Forouzan & R.F. Giberg, Thomson.
5. Beginning shell scripting, E. Foster – Johnson & other, Wile Y- India.

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(F0016122) OPERATING SYSTEMS LAB

List of Sample Problems/Experiments:

1. Simulate the following CPU scheduling algorithms
   a) Round Robin   b) SJF   c) FCFS d) Priority

2. Simulate all file allocation strategies
   a) Sequential   b) Indexed   c) Linked

3. Simulate MVT and MFT

4. Simulate all File Organization Techniques
   a) Single level directory   b) Two level
5. Simulate Bankers Algorithm for Dead Lock Avoidance

6. Write a C program to create a child process and allow the parent to display "Hello" and the child to display "Welcome" on the screen.

7. Simulate all page replacement algorithms such as
   a) FIFO   b) LRU   c) LFU

8. Simulate Paging Technique of memory management.

9. Write C programs that make a copy of a file using i) standard I/O and
   ii) system calls.

10. Write C programs that count the number of blanks in a text file using
    i) standard I/O   and   ii) system calls.

REFERENCES:
   1. Operating Systems, P.P. Choudhury, PHI Learning Private Ltd.
   2. Operating Systems, R.Chopra, S.Chand and Company Ltd

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(F0017123) SOFTWARE ENGINEERING

UNIT I
Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, Software myths.
A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment.
UNIT II
Process models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process.
System models: Context Models, Behavioral models, Object models.
UNIT III
Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.
Software Requirements: Functional and non-functional requirements, User requirements, System requirements, the software requirements document.
UNIT IV
Design Engineering: Design process and Design quality, Design concepts, the design model.
Creating an architectural design: Software architecture, Data design, Architectural styles and patterns, Architectural Design.
UNIT V
Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.
UNIT VI
Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing.
Product metrics: Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.
UNIT VII
Risk management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.
UNIT VIII
Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.
TEXT BOOKS
    1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition.McGrawHill International Edition.
    2. Software Engineering- Sommerville, 7th edition, Pearson education.
REFERENCES
    1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers
    2. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiely.
    3. Systems Analysis and Design- Shely Cashman Rosenblatt,Thomson Publications.
    4. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.

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(F0018123) DATABASE MANAGEMENT SYSTEMS

UNIT I

Data base System Applications, data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor

UNIT II

History of Data base Systems. Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

UNIT III

Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.
Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT IV

Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

UNIT V

Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

UNIT VI

Overview of Transaction Management: ACID Properties – Transactions and Schedules– Concurrent Execution of transaction – Lock Based Concurrency Control – Performance Locking – Transaction Support in SQL – Introduction to Crash recovery.

UNIT VII

Concurrency Control: Serializability, and recoverability – Introduction to Lock Management – Lock Conversions – Dealing with Dead Locks – Specialized Locking Techniques – Concurrency without Locking.
Crash recovery: Introduction to ARIES – the Log – Other Recovery related Structures – the Write-Ahead Log Protocol – Check pointing – recovering from a System Crash –Media recovery – Other approaches and Interaction with Concurrency control.

UNIT VIII

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: Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

Hash Based Indexing: Static Hashing – Extendable hashing – Linear Hashing – Extendable vs. Liner hashing.

TEXT BOOKS :

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition
2. Data base System Concepts, Silberschatz, Korth, McGraw hill, V edition.

REFERENCES :

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
3. Introduction to Database Systems, C.J.Date Pearson Education

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(F0019123) COMPUTER NETWORKS

UNIT – I
Introduction: OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN.

UNIT - II
Physical Layer: Transmission media copper, twisted pair wireless, Co axial cable, Narrow band, broad band ISDN and ATM.

UNIT - III
Data link layer: Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window, Data link layer in HDLC, Internet.

UNIT - IV
Medium Access sub layer: ALOHA, MAC addresses, Carrier sense multiple access. IEEE 802.X Standard Ethernet, wireless LANS.

UNIT - V
Network Layer: Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing.

UNIT – VI
Dynamic routing – Broadcast routing. Congestion, Control Algorithms – General Principles – of Congestion prevention policies. Internet working: The Network layer in the internet.

UNIT –VII
Transport Layer: Transport Services, Connection management, TCP and UDP protocolsl.

UNIT – VIII
Application Layer – DNS, WWW, E-mail, Multimedia.
Network Security- Cryptography, Public key Algorithm.

TEXT BOOKS:
1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI
2. Data Communications and Networking – Behrouz A. Forouzan.Third Edition TMH.

REFERENCES:
1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education
2. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson

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(F0020123) OBJECT ORIENTED PROGRAMING USING C++

UNIT I
Different paradigms for problem solving, need for OOP paradigm, classes and instances, fundamental characteristics of OOP (Alan key), differences between OOP and Procedure Oriented Programming.

UNIT II
C++ Basics: Structure of a C++ program, Data types, Declaration of variables, Expressions, Operators, Operator Precedence, Evaluation of expressions, Type conversions, Pointers, Arrays, Pointers and Arrays, Strings, Structures, References. Flow control statements- if, switch, while, for, do, break, continue, goto statements.

UNIT III
C++ Functions-Scope of variables, Parameter passing methods, Default arguments, inline functions, Recursive functions, Pointers to functions.
C++ Classes And Data Abstraction: Class definition, Class objects, Class scope, this pointer, Friends to a class, Static class members, Constant member functions, Constructors and Destructors, Data abstraction, ADT and information hiding.

UNIT IV
Dynamic memory allocation and de-allocation operators-new and delete, Dynamic creation and destruction of objects, Preprocessor directives, name spaces.
Polymorphism: Function overloading, Operator overloading, Generic programming-necessity of templates, Function templates and class templates.

UNIT V
Inheritance: Defining a class hierarchy, Different forms of inheritance, Defining the Base and Derived classes, Access to the base class members, Base and Derived class construction, Destructors, Virtual base class.

UNIT VI
Virtual Functions and Run Time Polymorphism: Overriding, Static and Dynamic bindings, Base and Derived class virtual functions, Dynamic binding through virtual functions, Virtual function call mechanism, Pure virtual functions, Abstract classes.

UNIT VII
C++ I/O: I/O using C functions, C++ Stream classes hierarchy, Stream I/O, File streams and String streams, File Operations, Overloading << and >> operators, Error handling during file operations, Formatted I/O.

UNIT VIII
Exception Handling: Benefits of exception handling, Throwing an exception, The try block, Catching an exception, Exception objects, Exception specifications, Stack unwinding, Re-throwing an exception, Catching all exceptions.

TEXT BOOKS:
1. Object Oriented Programming in C++, 4th Edition, R.Lafore, SAMS, Pearson Education
2. Object Oriented Programming with c++,Balaguruswamy.

REFERENCES:
1. An Introduction to OOP, 3rd Edition, T. Budd, Pearson Education, 2008.
2. Programming Principles and Practice Using C++, B.Stroutstrup, Addison- Wesley, Pearson Education.
3. Problem solving with C++, 6th Edition, Walter Savitch, Pearson Education, 2007.
4. OOP in C++, 3rd Edition, T.Gaddis, J.Walters and G.Muganda, Wiley DreamTech Press.
5. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.

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(F0021123) OPERATIONS RESEARCH

UNIT I

Introduction to Operations Research: Basics definition, scope, objectives, phases, models and limitations of Operations research, Linear programming problem – Formulation of LPP, Graphical solution of Lpp, Simplex method, Artificial variables, big – M method, two – phase method, degeneracy and unbounded solutions.

UNIT II

Revised simplex method – Formulation of Lpp, Computational procedure, Duality in LP – Introduction, Comparison of solutions of dual and its primal, dual simple method.

UNIT III

Transportation problem – Formulation, solution, unbalanced Transportation problem. Finding basic feasible solutions – Northwest corner rule, least cost method and vogel's approximation method, optimality test – stepping stone method and MODI mehtod.

UNIT IV

Assignment model – Formulation, Hungarian mehtod for optimal solution, solving unbalanced, maximization, restrictions on Assignment prooblems, travelling salesman problem as assignment problem.

UNIT V

Sequnecing models, solution of sequnencing problem – processing n jobs through 2 machines – processing n jobs through 3 machines – processing n jobs through m machines processing 2 jobs through m machines.

UNIT VI

Replacement models, Replacement of items that Deteriorate whose maintenance costs increase with time without change in the money value, replacement of items that fail suddenly: individual replacement policy, group replacement policy.

UNIT VII

Dynamic programming, characteristics of dynamic programming, dynamic programming approach for priority Management employment smoothening, capital budgeting, stage coach/shortest path, cargo loading and reliability problems.

UNIT VIII

Games Theory, competitive games, rectangular game, saddle poiont, minimax (maximin)
Method of optimal strategies, value of the game, solution of games with saddle points, dominance principle, rectangular games without saddle point – mixed strategy for 2X2 games.

TEXT BOOKS:
1. Operations Research, P.K. Gupta and D.S. Hira, S. Chand & co., 2007.
2. Operation Reasearch by S.D.Sarma, Kedharnath Publications.

REFERENCES:
1. Operations Research, A.M. Natarajan, P.Balasubramani, A. Tamilarasi, Pearson Education, 2005.
2. Operations Research, R. Paneerselvam, 2/e, PHI 2008.
3. Operations research, P Sankara Iyer, Tata McGraw Hill, 2008.

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(F0022123) OBJECT ORIENTED PROGRAMING USING C++ LAB

List of Sample Problems/Experiments:

1. Write a **C++** program to find the sum of individual digits of a positive integer.

2. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C++ program to generate the first n terms of the sequence.

3. Write a **C++** program to generate all the prime numbers between 1 and n , where n is a value supplied by the user.

4. Write **C++** programs that use both recursive and non-recursive functions
   a. To find the factorial of a given integer.
   b. To find the GCD of two given integers.
   c. To find the nth Fibonacci number.

5. Write a **C++** program that uses a recursive function for solving Towers of Hanoi problem.

6. Write a **C++** program that uses functions
   a. To swap two integers.
   b. To swap two characters.
   c. To swap two reals. Note: Use overloaded functions.

7. Write a **C++** program to find both the largest and smallest number in a list of integers.

8. Write a **C++** program to sort a list of numbers in ascending order.

9. Write a **C++** program that uses function templates to solve problems-7&8.

10. Write a **C++** program to sort a list of names in ascending order.

11. Write a **C++** program to implement the matrix ADT using a class. The operations supported by this ADT are:
    a) Reading a matrix.   b) Printing a matrix.   c) Addition of matrices.
    d) Subtraction of matrices.   e)Multiplication of matrices.

12. Implement the matrix ADT presented in the problem-11 using overloaded operators (<<, >>, +, -, *) and templates.

13. Implement the complex number ADT in C++ using a class. The complex ADT is used to represent complex numbers of the form c=a+ib, where a and b are real numbers. The operations supported by this ADT are:
    a) Reading a complex number.   d) Subtraction of complex numbers.
    b) Writing a complex number.   e) Multiplication of complex numbers.
    c) Addition of Complex numbers.   f) Division of complex numbers.

14. Write a C++ program that overloads the + operator and relational operators (suitable) to perform the following operations:
    a) Concatenation of two strings.
    b) Comparison of two strings.

15. Implement the complex number ADT in **C++** using a class. The complex ADT is used to represent complex numbers of the form c=a+ib, where a and b are real numbers. The operations supported by this ADT are:
    a) Reading a complex number.   d) Subtraction of complex numbers.
    b) Writing a complex number.   e) Multiplication of complex numbers.

c) Addition of Complex numbers.   f) Division of complex numbers.

Note: 1. overload << and >> operators in part a and part b.

                 2. overload +, - , * , / operators in parts c, d, e and f.

16. Write a template based **C++** program that determines if a particular value occurs in an array of values.

17. Write a **C++** program that uses functions to perform the following operations:
    a. Insert a sub-string into the given main string from a given position.
    b. Delete n characters from a given position in a given string.

18. Write a **C++** program that uses a function to reverse the given character string in place, without any duplication of characters.

19. Write a **C++** program to make the frequency count of letters in a given text.

20. Write a **C++** program to count the lines, words and characters in a given text.

21. Write a **C++** program to determine if the given string is a palindrome or not.

22. Write a **C++** program to make frequency count of words in a given text.

23. Write a **C++** program that displays the position or index in the string S where the string t begins, or −1 if S doesn't contain t.

24. 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C++ program to find the 2's complement of a binary number.

25. Write a **C++** program that counts the number of 1 bit in a given integer.

26. Write a **C++** program to generate Pascal's triangle.

27. Write a **C++** program to construct of pyramid of numbers.

28. Write a **C++** program to compute the Sine series.

29. Write a **C++** program to display the contents of a text file.

30. Write a **C++** program which copies one file to another.

31. Write a **C++** program that counts the characters, lines and words in the text file.

32. Write a **C++** program to change a specific character in a file.
    Note: Filename, number of the byte in the file to be changed and the new character are specified on the command line.

33. Write a **C++** program to reverse the first n characters in a file.

34. Write a **C++** program that uses a function to delete all duplicate characters in the given string.

35. Write a **C++** program that uses a function to convert a number to a character string.

36. Write a **C++** program that uses a recursive function to find the binary equivalent of a given non-negative integer n.

37. Write a **C++** program to generate prime numbers up to n using Sieve of Eratosthenes method.

38. Write a **C++** program
    a) To write an object to a file.
    b) To read an object from the file

39. Write **C++** programs that illustrate how the following forms of inheritance are supported:
    a) Single inheritance   b) Multiple inheritance
    c) Multi level inheritance   d) Hierarchical inheritance

40. Write a **C++** program that illustrates the order of execution of constructors and destructors when

new class is derived from more than one base class.

41. Write a **C++** program that illustrates how run time polymorphism is achieved using virtual functions.

42. Write a **C++** program that illustrates the role of virtual base class in building class hierarchy.

43. Write a **C++** program that illustrates the role of abstract class in building class hierarchy.

REFERENCES:

1. Mastering **C++**, K.R.Venu Gopal, Raj Kumar and T.Ravi Shankar, TMH.
2. **C++** Programming, D.S.Malik, Cengage Learning.
3. Practical **C++** Programming, S.Qualline,SPD.
4. Object Oriented Programming with **C++**, E.Balaguruswamy, 4th Edition, TMH,2008.
5. OOP with **C++**, S.Sahay,Oxford Higher Education.
6. **C++** and OOP Paradigm,D.Jana,2nd Edition, PHI
7. Fundamentals of **C++** Programming,S.Subramanian,Jaico Publishing House.
8. **C++** Programming, Al Stevens,7th edition,Wiley India.

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(F0023123) DATA BASE MANAGEMENT SYSTEMS LAB

Objectives:
*   To teach the student database design and query and PL/SQL.

Recommended Systems/Software Requirements:

*   Intel based desktop PC
*   Mysql /Oracle latest version Recommended

1) Creation, altering and droping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2) Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.

    Example:- Select the roll number and name of the student who secured fourth rank in the class.
3) Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4) Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)
5) i)Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)

    ii)Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
6) Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
7) Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE- APPLICATION ERROR.
8) Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
9) Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
10) Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
11) Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12) Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

TEXT BOOKS :
1. ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition
2. ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc- Graw Hill.
3. SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.

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(F0024123) COMPUTER NETWORKS LAB

Objective:
- To Understand the functionalities of various layers of OSI model
- To understand the operating System functionalities

System/ Software Requirement
- Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.

2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.

3. Implement Dijkstra's algorithm to compute the Shortest path thru a graph.

4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm.

5. Take an example subnet of hosts . Obtain broadcast tree for it.

6. Take a 64 bit playing text and encrypt the same using DES algorithm .

7. Write a program to break the above DES coding.

8. Using RSA algorithm Encrypt a text data and Decrypt the same

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(F0025124) Object Oriented Programming Through Java

UNIT-I
Introduction : Creation of Java, importance of Java to internet, byte code, Java buzzwords, OOP Principles, Encapsulation, Inheritance and Polymorphism, data types, variables, declaring variables, dynamic initialization, scope and life time of variables, arrays, operators, control statements, type conversion and casting, compiling and running of simple Java program.

UNIT-II
Classes and Objects : Concepts of classes and objects, class fundamentals Declaring objects, assigning object reference variables, introducing methods, constructors, usage of static with data and methods, usage of final with data, access control, this key word, garbage collection, overloading methods and constructors, parameter passing – call by value, recursion, nested classes and inner classes, exploring the String class.

UNIT-III
Inheritance: Basic concepts, member access rules, usage of super key word, forms of inheritance, method overriding, abstract classes, dynamic method dispatch, using final with inheritance, the Object class.

UNIT-IV
Packages and Interfaces : Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.

UNIT-V
Exception Handling and Multithreading : Concepts of Exception handling, types of exceptions, usage of try, catch, throw, throws and finally keywords, Built-in exceptions, creating own exception sub classes, Concepts of Multithreading, differences between process and thread, thread life cycle, creating multiple threads using Thread class, Runnable interface, Synchronization, thread priorities, inter thread communication, daemon threads, deadlocks, thread groups.

UNIT-VI
Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

UNIT-VII
Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes.
AWT: Concepts of components, container, panel, window, frame, canvas, Font class, Color class and Graphics.

UNIT-VIII
AWT Controls : Buttons, Labels, Text fields, Text area, Check boxes, Checkbox groups, Lists, Choice, Scrollbars, Menus, Layout Managers – Flow, Border, Grid and Card.
Swing – JApplet, JFrame and JComponent, Icons and Labels, Handling threading issues, text fields, buttons – The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

TEXT BOOKS :
1. The Complete Reference Java J2SE 5th Edition, Herbert Schildt, TMH Publishing Company Ltd, NewDelhi.
2. Programming with java primer 3rd Edition, E.Balaguruswamy, McGraHill.

REFERENCES:
1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI.
2. Core JAVA, R.Nageswara Rao, Dreamtech Press.
3. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education.
4. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education.
5. Beginning in Java 2, Iver Horton, Wrox Publications.
6. Java, Somasundaram, Jaico.
7. Big Java 2nd Edition, Cay Horstmann, John Wiley and Sons.

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(F0026124) OBJECT ORIENTED ANALYSIS AND DESIGN USING UML

UNIT - I
Introduction to UML : Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT - II
Basic Structural Modeling : Classes, Relationships, common Mechanisms, and diagrams.
Advanced Structural Modeling : Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

UNIT - III
Class & Object Diagrams : Terms, concepts, modeling techniques for Class & Object Diagrams.

UNIT- IV
Basic Behavioral Modeling-I : Interactions, Interaction diagrams.

UNIT - V
Basic Behavioral Modeling-II : Use cases, Use case Diagrams, Activity Diagrams.

UNIT - VI
Advanced Behavioral Modeling : Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT-VII
Architectural Modeling : Component, Deployment, Component diagrams and Deployment diagrams.

UNIT - VIII
Case Study : The Unified Library application, ATM Application.

TEXT BOOKS :
1. Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

REFERENCE BOOKS:
1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.
3. Atul Kahate: Object Oriented Analysis & Design, The McGraw-Hill Companies.
4. Mark Priestley: Practical Object-Oriented Design with UML,TATA McGrawHill
5. Appling UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.

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(F0027124) SOFTWARE TESTING METHODOLOGIES

UNIT I:
Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs

UNIT II:
Flow graphs and Path testing: Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT III:
Transaction Flow Testing: Transaction flows, transaction flow testing techniques. Dataflow testing:- Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

UNIT IV:
Domain Testing:-domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

UNIT V:
Paths, Path products and Regular expressions: Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

UNIT VI:
Logic Based Testing: Overview, decision tables, path expressions, kv charts, specifications.

UNIT VII:
State, State Graphs and Transition testing: State graphs, good & bad state graphs, state testing, Testability tips.

UNIT VIII:
Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools.
Usage of JMeter and Winrunner tools for functional / Regression testing, creation of test script for unattended testing, synchronization of test case, Rapid testing, Performance testing of a data base application and HTTP connection for website access.

TEXT BOOKS:
1. Software Testing techniques - Baris Beizer, Dreamtech, second edition.
2. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.

REFERENCES:
1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing Techniques – SPD(Oreille)
3. Software Testing in the Real World – Edward Kit, Pearson.
4. Effective methods of Software Testing, Perry, John Wiley.
5. Art of Software Testing – Meyers, John Wiley.

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(F0028124) HUMAN COMPUTER INTERACTION
(ELECTIVE-I)

UNIT I
Introduction: Importance of user Interface – definition, importance of good design. Benefits of good design. A brief history of Screen design.

UNIT II
The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT III
Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.

UNIT IV
Screen Designing:- Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design.

UNIT V
Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.

UNIT VI
Components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors.

UNIT VII
Software tools – Specification methods, interface – Building Tools.

UNIT VIII
Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOKS:
1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamTech.
2. Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education Asia

REFERENCES:
1. Human – Computer Interaction. Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell Bealg, Pearson Education
2. Interaction Design Prece, Rogers, Sharps. Wiley Dreamtech.
3. User Interface Design, Soren Lauesen , Pearson Education.
4. Human –Computer Interaction,D.R.Olsen,Cengage Learning.
5. Human –Computer Interaction,Smith - Atakan,Cengage Learning.

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(F0029124) COMPUTER GRAPHICS
(Elective-I)

UNIT I
A Survey of Computer Graphics: Overview of graphics systems: Video-Display Devices, Raster-scan Systems, Random-scan Systems, Graphics Monitors and Work stations, Input devices, Hardcopy Devices and Graphics Software.

UNIT II
Output Primitives: Points and lines, Line drawing algorithms, Loading the Frame Buffer, Line Function, Circle Generating algorithms and Ellipse Generating algorithms, Filled area primitives: Scan line polygon fill algorithm, inside-outside boundary-fill and flood-fill algorithms.

UNIT III
2-D Geometrical transforms: Basic Transformations, Matrix representations and Homogeneous coordinates, Composite transforms, Other Transformations, Transformations between coordinate systems, Transformation Functions, Raster method for Transformation.

UNIT IV
2-D Viewing: The Viewing Pipeline, Viewing coordinate reference frame, Window to View-port coordinate transformation, 2D Viewing functions, Clipping Operation, Point Clipping, Line Clipping: Cohen-Sutherland and Liang - Barsky line clipping algorithms, Polygon Clipping: Sutherland – Hodgeman polygon clipping algorithm, Curve Clipping, Text Clipping, Exterior Clipping.

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

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

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

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

TEXT BOOKS:
  1. "Computer Graphics *C version*", Donald Hearn and M.Pauline Baker, Pearson Education.

REFERENCES:

1. "Computer Graphics Principles & practice", second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education.

2. "Computer Graphics", second Edition, Donald Hearn and M.Pauline Baker, PHI/Pearson Education.

3. "Computer Graphics Second edition", Zhigand xiang, Roy Plastock, Schaum's outlines, Tata Mc-Graw hill edition.

4. Procedural elements for Computer Graphics, David F Rogers, Tata Mc Graw hill, 2nd edition.

5. "Principles of Interactive Computer Graphics", Neuman and Sproul, TMH.

6. Principles of Computer Graphics, Shalini Govil, Pai, 2005, Springer.

7. Computer Graphics, Steven Harrington, TMH

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(F0030124) INFORMATION SECURITY
(Elective-I)

UNIT - I
Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT - II
Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.

UNIT - III
Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.

UNIT - IV
Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT - V
IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

UNIT - VI
Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

UNIT - VII
Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3.
Intruders, Viruses and related threats.

UNIT - VIII
Firewall Design principles, Trusted Systems. Intrusion Detection Systems.

TEXT BOOKS :
1. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.
2. Hack Proofing your network by Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W.Manzuik and Ryan Permeh, wiley Dreamtech

REFERENCES :
1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Network Security - Private Communication in a Public World by Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
4. Principles of Information Security, Whitman, Thomson.
5. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
6. Introduction to Cryptography, Buchmann, Springer.

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(F0031124) DISTRIBUTED SYSTEMS
(ELECTIVE II)

UNIT-I
Introducton Of Distributed System: Goals, Hardware Concepts, Software Concepts the Client-Server Model.

UNIT-II
Communication: Remote Procedure Call, Remote Object Invocation

UNIT III
Communication : Message Oriented Communication, Stream-Oriented Communication.

UNIT-IV
Processes: Threads, Clients, Servers, Code Migration, Software Agents.

UNIT-V
Synchronization: Clock Synchronization, Logical Clocks, Global State, Election Algorithms, Mutual Exclusion, Distributed Transactions.

UNIT-VI
Consistency And Replication: Introduction, Data-Centric Consistency Models, Client Centric Consistency Models

UNIT-VII
Fault Tolerance: Introduction to Fault Tolerance, Process Resilience

UNIT-VIII
Fault Tolerance : Reliable Client-Server Communication, Reliable Group Communication, Distributed Commit, Recovery.

Text Books
Andrew S. Tanenbaum, Maarten Van Steen. Distributed Systems – Principles and Paradigms 2/e, PHI, 2004.

Reference Books
1. Pradeep K. Sinha, "Distributed Operating Systems Concepts and Design", PHI 2002.
2. Randy Chow Theodore Johnson, "Distributed Operating Systems and Algorithm Analysis", PEA, 2009.
3. George Couloris, Jean Dollimore, Tim Kind berg, "Distributed Systems Concepts and Design", 3/e, PEA, 2002.

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(F0032124) ARTIFICIAL INTELLIGENCE
(ELECTIVE II)

UNIT - I
Introduction: AI problems, foundation of AI and history of AI.
Intelligent agents: Agents and Environments, The concept of rationality, the nature of environments, structure of agents,

UNIT - II
Solving Problems by Searching: Problem solving agents, Example problems,
Searching for solutions, Uniformed search strategies:– Breadth first search, depth first search, Depth limited search, Iterative deepening depth first search, Bi-direction search – comparing uniform search strategy.

UNIT - III
Informed Search and Exploration: Informed (Heuristic search) Greedy best first search, A* search, Memory bounded heuristic search, Heuristic functions: The effect of heuristic accuracy on performance, Inventing admissible heuristic functions, Learning heuristic from experience.

Unit-IV
Constrain satisfaction problems: Constrained satisfaction problems, Backtracking search for CSPs, Variable and value ordering, local search for constraint satisfaction problems.

UNIT – V
Knowledge and Reasoning: Knowledge – Based Agents, the Wumpus world, logic, propositional logic: A very simple logic, syntax, semantics, a simple Knowledge base, inference, equivalence, validity, and sarisfiability, Resolution patterns in propositional logic, Resolution, Forward & Backward, Chaining.

UNIT - VI
First order logic: Representation revisited, Syntax and semantics of first-order logic: models for first-order logic, symbols and interpretation, terms, atomic sentences, complex sentences, quantifiers, equality, Using first order logic: assertions and queries in first-order logic, the kinship domain, numbers, sets, and lists, the wumpus world, Knowledge Engineering In first-order logic: the Knowledge Engineering process, the electronic circuits domain.

UNIT - VII
Uncertainty– Acting under uncertainty: handling uncertain knowledge, uncertainty and rational decisions, Design for a decision-theoretic agent, Basic probability notation: propositions, atomic events, prior probability, conditional probability, The Axioms of probability: using the axioms of probability, why the axioms of probability are reasonable, Interface using full joint distributions, independence, Bayes' rule and its use: Applying Bayes' rule: the simple case, using Bayes' rule: combining evidence.

UNIT - VIII
Learning – Forms of learning, Induction learning,
Learning Decision Tree: Decision tree as performance elements, expressiveness of decision tree, Including decision trees from examples, Choosing attribute test, Assessing the performance of the learning algorithm, noise and overfitting, broadening the applicability of decision trees, Ensemble learning, why learning works: computational learning theory, how many examples are needed? , learning decision lists.

TEXT BOOKS:
1. Artificial Intelligence – A Modern Approach. Second Edition, Stuart Russel, Peter Norvig, PHI/Pearson Education.
2. Artificial Intelligence, 3rd Edition, Patrick Henry Winston., Pearson Edition.

REFERENCES:
1. Artificial Intelligence, 2nd Edition, E.Rich and K.Knight (TMH).

2. Artificial Intelligence and Expert Systems – Patterson PHI.
3. Expert Systems: Principles and Programming- Fourth Edn, Giarrantana/ Riley,   Thomson.
4. PROLOG Programming for Artificial Intelligence. Ivan Bratka- Third Edition – Pearson Education

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(F0033124) ADVANCED COMPUTER ARCHITECTURE
(ELECTIVE - II)

UNIT - I
Fundamentals of Computer design- Technology trends- cost- measuring and reporting performance quantitative principles of computer design.

UNIT - II
Instruction set principles and examples- classifying instruction set- memory addressing- type and size of operands- addressing modes for signal processing-operations in the instruction set- instructions for control flow- encoding an instruction set.-the role of compiler

UNIT - III
Instruction level parallelism (ILP)- over coming data hazards- reducing branch costs –high performance instruction delivery- hardware based speculation- limitation of ILP

UNIT - IV
ILP software approach- compiler techniques- static branch protection - VLIW approach - H.W support for more ILP at compile time- H.W verses S.W Solutions

UNIT - V
Memory hierarchy design- cache performance- reducing cache misses penalty and miss rate – virtual memory- protection and examples of VM.

UNIT - VI
Multiprocessors and thread level parallelism- symmetric shared memory architectures- distributed shared memory- Synchronization- multi threading.

UNIT - VII
Storage systems- Types – Buses - RAID- errors and failures- bench marking a storage device- designing a I/O system.

UNIT - VIII
Inter connection networks and clusters- interconnection network media – practical issues in interconnecting networks- examples – clusters- designing a cluster.

TEXT BOOK :
1. Computer Architecture A quantitative approach 3rd edition John L. Hennessy & David A. Patterson Morgan Kufmann (An Imprint of Elsevier)

REFERENCES :
2. "Computer Architecture and parallel Processing" Kai Hwang and A.Briggs International Edition McGraw-Hill.
3. Advanced Computer Architectures, Dezso Sima, Terence Fountain, Peter Kacsuk, Pearson.
4. Parallel Computer Architecture, A Hardware / Software Approach, David E. Culler, Jaswinder Pal singh with Anoop Gupta, Elsevier

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(F0034124) OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB

1. Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

2. The Fibonacci sequence is defined by the following rule. The fist two values in the sequence are 1 and 1. Every subsequent value is the run of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

3. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that. Integer.

4. a) Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.

    b) Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome(using StringBuffer class).

5. Write a Java program for sorting a given list of names in ascending order.

6. Write a Java program to multiply two given matrices.

7. Write a Java Program that reads a line of integers, and then displays each integers, and the sum of all the integers (use StringTokenizer class)

8. Write a Java program that illustrates how run time polymorphism is achieved.

9. Write a Java program that illustrates

    a) Constructor Overloading using this keyword

    b) Method Overloading.

10. Write a java program implement

    a) Single Inheritance   b) Multilevel

11. Write a java program implement Multiple Inheritance using Interface.

12. Write a java program to create a Package and perform the Arithmetic operations and user can select the operation.

13. Write a java program that implements Abstract Classes.

14. Write a java program convert the currency into different currency (Rupees, Pounds and Dollars) using Interface.

15. Write a Java program that reads a file and displays a file and displays the file on the screen, with a line number before each line.

16. Write a Java program that displays the number of characters, lines and words in a text file.

17. Write a Java program that:

    a) Implements stack ADT.

18. Write a Java program for creating multiple threads.

19. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

20. Write an applet that displays a simple message.

21. Write an applet that computes the payment of a loan based on the amount of the loan, the interest rate and the number of months. It takes one parameter from the browser: Monthly rate; if true, the interest rate is per month; Other wise the interest rate is annual.

22. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the + - X % operations. Add a text field to display the result.

23. Write a Java program for handling mouse events.

24. Write a Java program for handling keyboard events.

25. Write a Java program to create a button when the user clicks the buttons it display the color (AWT).

26. Write a Java program that allows the user to draw lines, rectangles and Ovals.

TEXT BOOKS:
1. The Complete Reference Java J2SE 5th Edition, Herbert Schildt, TMH Publishing Company Ltd, NewDelhi.
2. Programming with java primer 3rd Edition, E.Balaguruswamy, McGraHill.

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(F0035124) CASE TOOLS LAB

1) The student should take up the case study of Unified Library application which is mentioned in the theory, and Model it in different views i.e Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.

2) Student has to take up another case study of his/her own interest and do the same what ever mentioned in first problem. Some of the ideas regarding case studies are given in reference books which were mentioned in theory syllabus can be referred for some idea.

Note : The analysis, design, coding, documentation, database design of mini project which will be carried out in 4th year should be done in object-oriented approach using UML and by using appropriate software which supports UML, otherwise the mini project will not be evaluated.

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(F0036124) SOFTWARE TESTING TOOLS LAB

1. Write programs in 'C' Language to demonstrate the working of the following constructs:
   i) do...while ii) while....do iii) if...else iv) switch v) for

2. "A program written in 'C' language for Matrix Multiplication fails" Introspect the causes for its failure and write down the possible reasons for its failure.

3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.

4. Write the test cases for any known application (e.g. Banking application)

5. Create a test plan document for any application (e.g. Library Management System)

6. Study of any two of the following testing tools:

   a) Study of any testing tool (e.g. Win runner)

   b) Study of any web testing tool (e.g. Selenium)

   c) Study of any bug tracking tool (e.g. Bugzilla, bugbit)

   d) Study of any test management tool (e.g. Test Director)

   e) Study of any open source-testing tool (e.g. Test Link)

7. Take a mini project (e.g. University admission, Placement Portal) and execute it. During the Life cycle of the mini project create the various testing documents* and final test report document.

*Note: To create the various testing related documents refer to the text "Effective Software Testing Methodologies by William E. Perry"

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(F0037125) WEB TECHNOLOGIES

Objectives:
This course demonstrate an in-depth understanding of the tools and Web technologies necessary for business application design and development. The course covers client side scripting like HTML, JavaScript and server side scripting like servlets, JSPs. And also XML and web servers and database interfacing.

UNIT I
HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets;

UNIT II
Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT III
XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

UNIT IV
Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's

UNIT V
Web Servers and Servlets: Tomcat web server, Introduction to Servelets: Lifecycle of a Serverlet, JSDK, The Servelet API, The javax.servelet Package, Reading Servelet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues,

UNIT VI
Introduction to JSP: The Problem with Servelet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat

UNIT VII
JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations

UNIT VIII
Database Access : Database Programming using JDBC, Studying Javax.sql.* package,Accessing a Database from a JSP Page, Application – Specific Database Actions,Deploying JAVA Beans in a JSP Page, Introduction to struts framework..

TEXT BOOKS:
1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1,2 ,3)
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert   Schildt. TMH (Chapters: 25) (UNIT 4)
3. Java Server Pages –Hans Bergsten, SPD O'Reilly (UNITs 5,6,7,8)

REFERENCE BOOKS:
1. Programming world wide web-Sebesta,Pearson
2. Core SERVLETS ANDJAVASERVER PAGES   VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly for chap 8.
5. Murach's beginning JAVA JDK 5, Murach, SPD
6. An Introduction to web Design and Programming –Wang-Thomson
7. Web Applications Technologies Concepts-Knuckles,John Wiley
8. Programming world wide web-Sebesta,Pearson
9. Web Warrior Guide to Web Programmming-Bai/Ekedaw-Thomas
10. Beginning Web Programming-Jon Duckett WROX.
11. Java Server Pages, Pekowsky, Pearson.

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(F0038125) DATA WAREHOUSING AND DATA MINING

UNIT – I
Introduction : Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining task primitives, Integration of data mining system with Data base or Data Warehouse system, Major issues in Data Mining.

UNIT – II
Data Warehouse and OLAP Technology:
Overview of Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining

UNIT – III
Data Preprocessing: Need of preprocessing the data, Descriptive Data Summarization, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation.

UNIT – IV
Mining Frequent patterns, Associations, and Correlations:
Basic Concepts, Efficient and Scalable Frequent Itemset Mining methods, Mining Various Kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.

UNIT – V
Classification I:
Overview of Classification and Prediction, Issues Regarding Classification and Prediction, Bayesian Classification, Classification by Decision Tree Induction, Rule-Based Classification, Classification by Backpropagation,.

UNIT – VI
Classification II:
Support Vector Machines, **Lazy Learners:** k-Nearest-Neighbor Classifiers, Prediction, Accuracy and Error Measures, Evaluating the Accuracy of a Classifier or Predictor, Ensemble Methods- Increasing the Accuracy, Model Selection

UNIT – VII
Cluster Analysis I:
Overview of Cluster Analysis, Types of data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods

UNIT – VIII
Cluster Analysis II:
Grid-Based Methods, Model-Based Clustering Methods, Clustering High-Dimensional Data, Constraint-Based Cluster Analysis, outlier Analysis.

TEXT BOOKS:
1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India,second Edition.

REFERENCES:
1. Data Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON   EDUCATION
2. Data Mining Techniques – ARUN K PUJARI, University Press.
3. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.
4 Data Warehousing Fundamentals – PAULRAJ PONNAIAH WILEY STUDENT EDITION
5. The Data Warehouse Life cycle Tool kit – RALPH KIMBALL WILEY STUDENT EDITION.

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(F0039125) DISTRIBUTED DATABASES

UNIT I
Introdiuction to Distributed Databases: Features of Distributed versus Centralized Databases, why distributed databases?, Distributed Database Management Systems, Review of databases, Review of computer networks.

UNIT II
Principles Of Distributed Databases , Levels Of Distribution Transparency, Reference Architecture for Distributed Databases , Types o f Data Fragmentation, Integrity Constraints in Distributed Databases.

UNIT III
Distributed Database Design: A Framework for Distributed database Design,The Design of database Fragmentation

UNIT IV
Translation of Global Queries to Fragment Queries: Equivalence Transformations for Queries, Transforming Global Queries into Fragment Queries, Distributed Grouping and Aggregate Function Evaluation, Parametric Queries.

UNIT V
The Management of Distributed Transactions: A Framework for Transaction Management , Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions, Architectural Aspects of Distributed Transactions.

UNIT VI
Concurrency Control: Foundation of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control based on Timestamps, Optimistic Methods for Distributed Concurrency Control.

UNIT VII
Reliability: Basic Concepts, Nonblocking Commitment Protocols, Reliability and concurrency Control, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency, Checkpoints and Cold Restart,

UNIT VIII
Distributed Database Administration: Catalog Management in Distributed Databases, Authorization and Protection

TEXT BOOKS :
1. Distributed Database Principles & Systems, Stefano Ceri, Giuseppe Pelagatti McGraw-Hill

REFERENCES:
1. Principles of Distributed Database Systems, M.Tamer Ozsu, Patrick Valduriez – Pearson Education.

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(F0040125) E – COMMERCE
(Elective-III)

UNIT - I

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications.

UNIT - II

Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT - III

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.

UNIT-IV

Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.

UNIT - V

Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.

UNIT - VI

Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses. Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.

UNIT - VII

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

UNIT - VIII

Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processings, Desktop video conferencing.

TEXT BOOK :
1. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

REFERENCES :
1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.
2. E-Commerce, S.Jaiswal – Galgotia.
3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.
4. Electronic Commerce – Gary P.Schneider – Thomson.
5. E-Commerce – Business, Technology, Society, Kenneth C.Taudon, Carol Guyerico Traver.

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(F0041125) MULTIMEDIA AND APPLICATION DEVELOPMENT
(ELECTIVE - III)

UNIT - I
Fundamental concepts in Text and Image: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color in image and video: color science, color models in images, color models in video.

UNIT - II
Fundamental concepts in video and digital audio: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

UNIT - III
Action Script I: ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Classes, Authoring an ActionScript Class.

UNIT - IV
Action Script II : Inheritance, Authoring an ActionScript 2.0 Subclass, Interfaces, Packages, Exceptions.

UNIT - V
Application Development : An OOP Application Frame work, Using Components with ActionScript MovieClip Subclasses.

UNIT - VI
Multimedia data compression : Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm: Quantization, Transform Coding, Wavelet-Based Coding, Embedded Zerotree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).

UNIT - VII
Basic Video Compression Techniques: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.

UNIT - VIII
Multimedia Networks: Basics of Multimedia Networks, Multimedia Network Communications and Applications : Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand(MOD).

TEXT BOOKS :
1. Fudamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI/Pearson Education.
2. Essentials ActionScript 2.0, Colin Moock, SPD O,REILLY.

REFERENCES :
1. Digital Multimedia, Nigel chapman and jenny chapman, Wiley-Dreamtech
2. Macromedia Flash MX Professional 2004 Unleashed, Pearson.
3. Multimedia and communications Technology, Steve Heath, Elsevier(Focal Press).
4. Multimedia Applications, Steinmetz, Nahrstedt, Springer.
5. Multimedia Basics by Weixel Thomson
6. Multimedia Technology and Applications, David Hilman , Galgotia

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(F0042125) IMAGE PROCESSING

(ELECTIVE III)

UNIT - I

Introduction : Examples of fields that use digital image processing, fundamental steps in digital image processing, components of image processing system.. Digital Image Fundamentals: A simple image formation model, image sampling and quantization, basic relationships between pixels (p.nos. 15-17, 21- 44, 50-69).

UNIT - II

Image enhancement in the spatial domain : Basic gray-level transformation, histogram processing, enhancement using arithmetic and logic operators, basic spatial filtering, smoothing and sharpening spatial filters, combining the spatial enhancement methods (p.nos 76-141).

UNIT - III

Image restoration : A model of the image degradation/restoration process, noise models, restoration in the presence of noise–only spatial filtering, Weiner filtering, constrained least squares filtering, geometric transforms; Introduction to the Fourier transform and the frequency domain, estimating the degradation function (p.nos 147-167, 220-243, 256-276).

UNIT - IV

Color Image Processing : Color fundamentals, color models, pseudo color image processing, basics of full–color image processing, color transforms, smoothing and sharpening, color segmentation (p.nos: 282-339).

UNIT - V

Image Compression : Fundamentals, image compression models, error-free compression, lossypredictive coding, image compression standards (p.nos: 409-467,492-510).

UNIT - VI

Morphological Image Processing : Preliminaries, dilation, erosion, open and closing, hit or miss transformation, basic morphologic algorithms (p.nos:519-550).

UNIT - VII

Image Segmentation : Detection of discontinuous, edge linking and boundary detection, thresholding, region–based segmentation (p.nos: 567-617).

UNIT - VIII

Object Recognition : Patterns and patterns classes, recognition based on decision–theoretic methods, matching, optimum statistical classifiers, neural networks, structural methods – matching shape numbers, string matching (p.nos: 693-735).

TEXT BOOK :

1. Digital Image Processing, Rafeal C.Gonzalez, Richard E.Woods, Second Edition, Pearson Education/PHI.

REFERENCES :

1. Image Processing, Analysis, and Machine Vision, Milan Sonka, Vaclav Hlavac and Roger Boyle, Second Edition, Thomson Learning.
2. Introduction to Digital Image Processing with Matlab, Alasdair McAndrew, Thomson Course Technology
3. Computer Vision and Image Processing, Adrian Low, Second Edition, B.S.Publications
4. Digital Image Processing using Matlab, Rafeal C.Gonzalez, Richard E.Woods, Steven L. Eddins, Pearson Education.
5. Digital Image Processing, William K. Prat, Wily Third Edition
6. Digital Image Processing and Analysis, B. Chanda, D. Datta Majumder, Prentice Hall of India, 2003.

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(F0043125) SOFTWARE PROJECT MANAGEMENT
(Elective-IV)

UNIT - I
Conventional Software Management: The waterfall model, conventional software Management performance.
Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

UNIT - II
Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.
The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT - III
Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.
Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT - IV
Model based software architectures: A Management perspective and technical perspective.
Work Flows of the process: Software process workflows, Iteration workflows.

UNIT - V
Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.
Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT - VI
Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.
Process Automation: Automation Building blocks, The Project Environment.

UNIT - VII
Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.
Tailoring the Process: Process discriminants.

UNIT - VIII
Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.
Case Study: The command Center Processing and Display system- Replacement (CCPDS-R)

TEXT BOOK:
　　1. Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCES:
　　1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
　　2. Software Project Management, Joel Henry, Pearson Education.
　　3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

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(F0044125) MIDDLEWARE TECHNOLOGIES
(Elective-IV)

UNIT-I:
Introduction to client server computing: Evolution of corporate computing models from centralized to distributed computing, client server models. Benefits of client server computing, pitfalls of client server programming.

UNIT-II:
CORBA with Java: Review of Java concept like RMI, RMI API, JDBC. Client/Server CORBA-style, The object web: CORBA with Java.

UNIT III:
Introducing C# and the .NET Platform; Understanding .NET Assemblies; Object – Oriented Programming with C#; Callback Interfaces, Delegates, and Events.

UNIT IV:
Building c# applications: Type Reflection, Late Binding, and Attribute-Based Programming; Object Serialization and the .NET Remoting Layer; Data Access with ADO.NET; XML Web Services.

UNIT-V:
Core CORBA / Java: Two types of Client/ Server invocations-static, dynamic. The static CORBA, first CORBA program, ORBlets with Applets, Dynamic CORBA-The portable count, the dynamic count multi count.

UNIT-VI:
Existential CORBA: CORBA initialization protocol, CORBa activation services, CORBAIDL mapping CORBA java- to- IDL mapping, The introspective CORBA/Java object.

UNIT-VII:
Java Bean Component Model: Events, properties, persistency, Intrespection of beans, CORBA Beans

UNIT-VIII:
EJBs and CORBA: Object transaction monitors CORBA OTM's, EJB and CORBA OTM's, EJB container frame work, Session and Entity Beans, The EJB client/server development Process The EJB container protocol, support for transaction EJB packaging EJB design Guidelines.

Text Books:
1. Client/Server programming with Java and CORBA Robert Orfali and Dan Harkey, John Wiley & Sons, SPD 2nd Edition
2. Java programming with CORBA 3rd Edition, G.Brose, A Vogel and K.Duddy, Wiley-dreamtech, India John wiley and sons
3. C# and the .NET Platform Andrew Troelsen, Apress Wiley-dreamtech, India Pvt Ltd

Reference: Books:
1. Distributed Computing, Principles and applications, M.L.Liu, Pearson Education
2. Client/Server Survival Guide 3rd edition Robert Orfali Dan Harkey and Jeri Edwards, John Wiley & Sons
3. Client/Server Computing D T Dewire, TMH.
4. IBM Webspere Starter Kit Ron Ben Natan Ori Sasson, TMh, New Delhi
5. Programming C#, Jesse Liberty, SPD-O'Reilly.
6. C# Preciesely Peter Sestoft and Henrik I. Hansen, Prentice Hall of India
7. Intoduction to C# Using .NET Pearson Education
8. C# How to program, Pearson Education

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(F0045125) CLOUD COMPUTING
(Elective-IV)

UNIT-I
Introduction: What Is the Cloud? The Emergence of Cloud Computing, The Global Nature of the Cloud, Cloud-Based Service Offerings, Grid Computing or Cloud Computing?,Is the Cloud Model Reliable?, Benefits of Using a Cloud Model, What About Legal Issues When Using Cloud Models?, What Are the Key Characteristics of Cloud Computing?, Challenges for the Cloud.
The Evolution of Cloud Computing :   Hardware Evolution, Internet Software Evolution, Server Virtualization.

UNIT-II
Web Services Delivered from the Cloud: Communication-as-a-Service (CaaS), Infrastructure-as-a-Service (IaaS), Monitoring-as-a-Service (MaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS), **Building Cloud Networks:** The Evolution from the MSP Model to Cloud.
Computing and Software-as-a-Service, The Cloud Data Center, Collaboration, Service-Oriented Architectures as a Step Toward Cloud Computing, Basic Approach to a Data Center-Based SOA.

UNIT III
Virtualization Practicum: Chapter Overview, Downloading Sun xVM VirtualBox, Installing Sun xVM VirtualBox, Adding a Guest Operating System to VirtualBox, Downloading FreeDOS as a Guest OS, Downloading the 7-Zip Archive Tool, Adding a Guest OS to Sun xVM VirtualBox.

UNIT IV
Federation, Presence, Identity, and Privacy in the Cloud: Federation in the cloud, Presence in the Cloud, Privacy and Its Relation to Cloud-Based Information Systems,

UNIT V
Security in the Cloud: Cloud security challenges, Software- as-a-service security, Is Security-as-a-Service the New MSSP?

UNIT VI
Common Standards in Cloud Computing: The open cloud consortium- The distributed management task force - standards for application developers - standards for messaging - standards for security

UNIT VII
End-User Access to Cloud Computing: YouTube, YouTube API Overview, Zimbra, Facebook, Zoho, DimDim Collaboration, **Mobile Internet Devices and the Cloud:** Smartphone, Mobile Operating Systems for Smartphones - Mobile Platform virtualization – Collaboration applications for mobile platforms - Future trends

UNIT VIII
Cloud Computing case studies: Google App Engine, Google Web Toolkit, Microsoft   Azure Services Platform ,Windows Live, Exchange Online, SharePoint Services, Microsoft Dynamics CRM, Amazon EC2, Amazon Simple DB, Amazon S3, Amazon Cloud Front, Amazon SQS(Text book-2)

TEXTBOOKS:
1. Cloud Computing implementation, management and security by Joh n W.Ruttinghouse, James F. Ransome. CRC Press, Taylor & Franc is group, 2010.
2. Cloud Computing a practical approach by Anthony T.velte, Toby J.velte Robert Elsenpeter. Tata Me Graw Hill edition , 2010

REFERENCES:1 Cloud Application Architectures by George Reese. Oreilly publishers
           2.Cloud computing and SOA convergence in your enterprise, by David S. Linthicum, Addison- Wesley

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG AND TECHNOLOGY, NANDYAL
AUTONOMOUS
MASTER OF COMPUTER APPLICATIONS

III YEAR, I-SEM (MCA)   P   C
                                                                             3   2

(F0046125) WEB TECHNOLOGIES LAB

Objective :

     To create a fully functional website with mvc architecture. To Develop an online Book store using we can sell books (Ex amazon .com).

Hardware and Software required :
1. A working computer system with either Windows or Linux
2. A web browser either IE or firefox
3. Tomcat web server and Apache web server
4. XML editor like Altova Xml-spy [www.Altova.com/**XML**Spy – free] , Stylusstudio , etc.,
5. A database either Mysql or Oracle
6. JVM(Java virtual machine) must be installed on your system
7. BDK(Bean development kit) must be also be installed

Week-1:

Design the following static web pages required for an online book store web site.

1) **HOME PAGE:**
The static home page must contain three **frames**.

Top frame   : Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

Left frame   : At least four links for navigation, which will display the catalogue of respective links.
         For e.g.: When you click the link **"CSE"** the catalogue for **CSE** Books should be displayed in the Right frame.

Right frame: The *pages to the links in the left frame must be loaded here*. Initially this page contains description of the web site.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Description of the Web Site			

Fig 1.1

2) LOGIN PAGE:
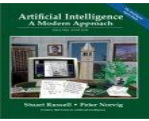
This page looks like below:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Login : [＿＿＿＿＿] Password: [＿＿＿＿＿] Submi		Reset	

3) CATOLOGUE PAGE:

The catalogue page should contain the details of all the books available in the web site in a table.
The details should contain the following:

1. Snap shot of Cover Page.
2. Author Name.
3. Publisher.
4. Price.
5. Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL		Book : XML Bible Author : Winston Publication : Wiely	$ 40.5	Add to cart
		Book : AI Author : S.Russel Publication : Princeton hall	$ 63	Add to cart
		Book : Java 2 Author : Watson Publication : BPB publications	$ 35.5	Add to cart
		Book : HTML in 24 hours Author : Sam Peter Publication : Sam publication	$ 50	Add to cart

Note: Week 2 contains the remaining pages and their description.

Week-2:
4) CART PAGE:
The cart page contains the details about the books which are added to the cart.
The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE	**Book name**	**Price**	**Quantity**	**Amount**
ECE	Java 2	$35.5	2	$70
EEE	XML bible	$40.5	1	$40.5
CIVIL		**Total amount**		$130.5

5) REGISTRATION PAGE:
Create a "*registration form* "with the following fields
        1) Name (Text field)
        2) Password (password field)
        3) E-mail id (text field)
        4) Phone number (text field)
        5) Sex (radio button)
        6) Date of birth (3 select boxes)
        7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
        8) Address (text area)

WEEK 3:
VALIDATION:
Write *JavaScript* to validate the following fields of the above registration page.
1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

Note : You can also validate the login page with these parameters.

Week-4:
Design a web page using **CSS (C**ascading **S**tyle **S**heets**)** which includes the following:
1) Use different font, styles:
In the style definition you define how each selector should work (font, color etc.).
Then, in the body of your pages, you refer to these selectors to activate the styles.
For example:

```
<HTML>
<HEAD>
<style type="text/css">
B.headline {color:red; font-size:22px; font-family:arial; text-
decoration:underline}
</style>
</HEAD>
<BODY>
<b>This is normal bold</b><br>
Selector {cursor:value}
For example:
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
```

```
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
<b class="headline">This is headline style bold</b>
</BODY>
</HTML>
```

2) Set a background image for both the page and single elements on the page.
   You can define the background image for the page like this:

```
BODY {background-image:url(myimage.gif);}
```

3) Control the repetition of the image with the background-repeat property.
   As background-repeat: repeat Tiles the image until the entire page is filled, just like an ordinary
   background image in   plain HTML.

4) Define styles for links as
         A:link
         A:visited
         A:active
         A:hover
   Example:
         <style type="text/css">
         A:link {text-decoration: none}
         A:visited {text-decoration: none}
         A:active {text-decoration: none}
         A:hover {text-decoration: underline; color: red;}
         </style>

5) Work with layers:
   For example:
         LAYER 1 ON TOP:
         <div style="position:relative; font-size:50px; z-index:2;">LAYER 1</div>
         <div style="position:relative; top:-50; left:5; color:red; font-size:80px; z-index:1">LAYER 2</div>

         LAYER 2 ON TOP:
         <div style="position:relative; font-size:50px; z-index:3;">LAYER 1</div>
         <div style="position:relative; top:-50; left:5; color:red; font-size:80px; z-index:4">LAYER 2</div>

6) Add a customized cursor:
   Selector {cursor:value}
   For example:

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
```

```
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
```

Week-5:
Write an XML file which will display the Book information which includes the following:

     1) Title of the book
     2) Author Name
     3) ISBN number
     4) Publisher name
     5) Edition
     6) Price

Write a Document Type Definition (DTD) to validate the above XML file.
Display the XML file as follows.
The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.
Use XML schemas XSL and CSS for the above purpose.
Note: Give at least for 4 books. It should be valid syntactically.
Hint: You can use some xml editors like XML-spy

Week-6:
VISUAL BEANS:
Create a simple visual bean with a area filled with a color.
The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false.
The color of the area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the "property window ".

Week-7:
    1) Install TOMCAT web server and APACHE.
        While installation assign port number 4040 to TOMCAT and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.
    2) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root. Access the pages by using the urls : http://localhost:4040/rama/books.html (for tomcat)
         http://localhost:8080/books.html (for Apache)

Week-8:
User Authentication :
     Assume four users user1,user2,user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a servelet for doing the following.
   1. Create a Cookie and add these four user id's and passwords to this Cookie.
   2. Read the user id and passwords entered in the Login form (week1)   and authenticate with the values (user id and passwords) available in the cookies.
   If he is a valid user(i.e., user-name and password match) you should welcome   him by name(user-name) else you should display " You are not an authenticated user ". Use init-parameters to do this.

Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

Week-9:

Install a database(Mysql or Oracle).
Create a table which should contain at least the following fields: name, password, email-id, phone number(these should hold the data from the registration form).
Practice 'JDBC' connectivity.
        Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.
Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page (week2).

Week-10:

Write a JSP which does the following job:
Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from   the database (similar to week8 instead of cookies).

Week-11:

Create tables in the database which contain the details of items (books in our case like Book name , Price, Quantity, Amount)) of each category. Modify your catalogue page (week 2)in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using JDBC.

Week-12:

HTTP is a stateless protocol. Session is required to maintain the state.
The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time(i.e., from different systems in the LAN using the ip-address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate()).
Modify your catalogue and cart JSP pages to achieve the above mentioned functionality using sessions.

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(F0047125) PROFESSIONAL COMMUNICATION & SOFT SKILLS LAB (PROS)

The Professional Communication & Soft skills Lab (PROS) focuses on the production and practice of sounds of language and equips students with the use of English in everyday situations and contexts.

➢ To train students   to use language effectively in everyday conversations, to participate in group discussions, to help them face interviews, and sharpen public speaking skills

➢ To expose the students to a varied blend   of self-instructional, learner-friendly modes of language learning

➢ To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm

➢ To initiate them into greater use of the computer in resume preparation, report- writing, format-making etc.

➢ To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required ability to face computer-based competitive exams such   GRE, TOEFL, GMAT etc.

Syllabus

• Week # 1   Introduction & Objectives – Significance of Communication
• Week # 2   Starting Social Conversations – Tips & Practice
• Week # 3   Group Discussion
• Week # 4   Soft skills – Team Dynamics & Corporate Communication Aspects
• Week# 5   Accent & Pronunciation Practice
• Week # 6   E-Correspondence & Virtual Communication
• Week # 7   Technical Presentations
• Week # 8   Interview Skills – Mock Interviews
• Week # 9   Soft skills - Cross-Cultural Communication
• Week #10   Reviews

Evaluation:

• The practical examinations for Professional Communication & Soft skills Lab (PROS)   shall be conducted as per the norms prescribed for the core subject practical sessions.

• For the sessions, there shall be a continuous evaluation during the year for 40 sessional marks and 60 marks for year-end examination. Of the 40 marks, 20 marks shall be awarded for day-to-day work and 20 marks to be awarded by conducting internal lab test(s). The year-end examination shall be conducted by the teacher concerned and External Examiner from other Institution.

Suggested Readings:

• Business Communication (Concepts, Cases, and Applications) Second Edition
  By P.D. Chaturvedi & Mukesh Chaturvedi, Pearson ltd. 2011
• Better English Pronunciation (Second Edition)   by D. O' Connor,
  Cambridge University Press 1967, 1980
• Technical interviews (Excel with Ease) by Anil Kumar Maini , Pearson ltd. 2011
• Practical English Usage (New Edition) By Michael Swan , Oxford University Press.