

**KAKATIYA UNIVERSITY
WARANGAL-506009**

COURSE STRUCTURE FOR MCA I YEAR I SEMESTER
WITH EFFECT FROM 2005-2006

PAPER CODE	TITLE	WORKLOAD PER WEEK		MARKS
		THEORY	PRACTICAL	
MCA111	PROBLEM SOLVING AND COMPUTER PROGRAMMING	4	--	100
MCA112	COMPUTER ORGANIZATION	4	--	100
MCA113	ACCOUNTANCY AND FINANCIAL MANAGEMENT	4	--	100
MCA114	DISCRETE MATHEMATICS	4	--	100
MCA115	MANAGERIAL ECONOMICS	4	--	100
MCA116	C++ LAB	--	4	50
MCA117	BDP LAB	--	4	50
MCA118	IT LAB	--	4	50

Duly approved by the Standing Committee of the Academic Senate

Sd/- Prof. A. Sadanandam, Chairman, BOS

MCA111 PROBLEM SOLVING AND COMPUTER PROGRAMMING

UNIT - I

Computer Science and Programming - Algorithms – Language, Architecture, and Programs – Creating and Developing Programs – Language and Program Design – Using components.

C ++ Programs: Form and Function - Syntax and Semantics – Flow of control – Using Functions – Functions with Parameters – Functions with Several Parameters – Program Style – Identifiers.

Program Design and Implementation - The Input Stream, cin – Variables – Processing Numbers – Classes and Types: An Introduction – Compiling and Linking. (Chapters 1, 2, 3)

UNIT - II

Control, Functions, and Classes - The Assignment Operator – The if/else Statement – Operators – Functions That Return Values – Class Member Functions.

Iteration -Infinite Loops – Kinds of Loops – Alternative Looping Statements – The for Loop – The Operators - The do-while Loop – nested Loops – Defining Constants – Variable Scope.

Classes - Class Documentation: The Interface (.h File) – Comments in .h Files – Member Function Implementation – Scope of Private Variables – Reference Parameters – Pass by Value and Pass by Reference – Const Reference Parameters – Streams Associated with Files – Type Casting. (Chapters 4, 5, 6)

UNIT - III

Class Interfaces, Design, and Implementation - Designing Classes: From Requirements to Implementation – Nouns as Classes – Verbs as Member Functions (Methods) – Implementing and Testing Classes – Structs as Data Aggregates – Structs for Storing Points – Operators for structs.

Arrays - Arrays and Vectors as Counters – Searching a Vector – Binary Search.

Strings, Streams, and Operators - Characters : Building Blocks for Strings – The Type char as an Abstraction – Streams and Files as Lines and Characters – Enumerated Types – Overloaded Operators. (Chapters 7, 8, 9)

UNIT - IV

Recursion - Recursive Functions – Comparing Recursion and Iteration – Scope & lifetime. Sorting, Templates - Sorting an Array – Selection Sort – Insertion Sort – Function Templates - Analyzing Sorts – worst Case and Average Case – Quick sort. Dynamic Data, Class Templates - Pointers as Indirect References – Reference Variables – delete and Destructors. (12.1 only) (Chapters 10, 11,12)

TEXT BOOK:

1. EXPLORING PROGRAMMING AND COMPUTER SCIENCE WITH C ++ BY - OWEN L. ASTRACHAN (MC GRAW HILL)

REFERENCE BOOKS:

1. C++ HOW TO PROGRAM – BY DEITEL & DEITEL - (Addison Wesley)
2. INTRODUCTION TO COMPUTER SCIENCE BY - TREMBLEY AND BUNT - (McGrawHill)
3. TEACH YOURSELF C++ BY - HERBERT SCHILDT - (TMH)
4. THINKING IN C++ BY - BRUCE ECKEL - (Pearson Education, Second Edition)
5. STANDARD C++ WITH OBJECT-ORIENTED PROGRAMMING BY - PAUL S WANG - (VIKAS PUB.)
6. FUNDAMENTAL OF COMPUTING WITH C ++ BY - J.R. HUBBARD, SCHAUM’S SERIES
7. COMPLETE REFERENCE C ++ -BY- SCHILDT (TMH)
8. C++ PROGRAMMING, BY AL STEVENS WILEY, DREAM TECH
9. OBJECT OREINTED PROGRAMMING WITH C ++ BY - R. SUBBURAJ (VIKAS)
10. C ++ PROGRAMMING - BY - DS. MALLIK (THOMSON LEARNING)
11. C ++ PROGRAMMING -BY-HERBERT SCHILDT(DREAM TECH PRESS)
12. STARTING OUT WITH C ++ BY - TONY GADDIS (Dream Tech Press)
13. COMPUTING CONCEPTS WITH C ++ BY – HORSTMANN (WILEY)

MCA112 COMPUTER ORGANIZATION

U N I T - I

LOGIC CIRCUITS : Basic Logic Functions, Synthesis of Logic Functions Using AND, OR, and NOT Gates, Minimization of Logic Expression, Synthesis with NAND and NOR Gates, Practical Implementation of Logic Gates, Flip-Flops, Registers and Shift Registers, Counters, Decoders, Multiplexers, Programmable Logic Devices (PLDs), Field-Programmable Gate Arrays, Sequential Circuits.

BASIC STRUCTURE OF COMPUTER HARDWARE AND SOFTWARE: Functional units, Basic operational concepts, Bus structures, Software, Performance, Distributed Computing.

ADDRESSING METHODS : Basic Concepts, Memory Locations, Main Memory Operations, Addressing Modes, Assembly Language, Basic I/O operations, Stacks and Queues, Subroutines. (Chapter 1, 2.1 to 2.8, A.1 to A.13)

U N I T - II

PROCESSING UNIT: Some Fundamental Concepts, Execution of a Complete Instruction, Hardwired Control, Performance Considerations, Micro Programmed Control, Signed Addition and Subtraction, Arithmetic and Branching Conditions, Multiplication of Positive Numbers, Signed-Operand Multiplication, Fast Multiplication, Integer Division, Floating-Point Numbers and Operations. (Chapter 3, 6.4 to 6.10)

U N I T - III

INPUT-OUTPUT ORGANIZATION: Accessing I/O Devices, Interrupts, Processor Examples, Direct Memory Access, I/O Hardware, Standard I/O Interfaces, The Motorola 680X0 Family, The Intel 80X86 Family, The Power PC Family, The Alpha AXP Family, Architectural and Performance Comparisons, A Stack Processor. (Chapter 4, 8.1 to 8.6)

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UNIT - IV

MEMORY: Semiconductor RAM memories, Read-Only Memories, Cache Memories, Performance Considerations, Virtual Memories, Memory Management Requirements.

INTRODUCTION TO COMPUTER PERIPHERALS : I/O Devices, On-Line Storage. (Chapter 5, 9.1, 9.2)

TEXT BOOK:

- 1 COMPUTER ORGANIZATION, TMH (IV EDITION) BY V.C. HAMACHER

REFERENCE BOOK:

- 1 COMPUTER ORGANIZATION, (PHI) By MORIS MANO
- 2 COMPUTER ARCHITECTURE & ORGANISATION By HAYES, (TMH)
- 3 COMPUTER SYSTEMS ORGANISATION & ARCHITECTURE By CARPINELLI, (ADDISON WESLEY)
- 4 THE ARCHITECTURE OF COMPUTER HARDWARE AND SYTEMS HARDWARE BY I ENGLANDER (WILEY)
- 5 COMPUTER SYTEMS DESIGN AND ARCHITECTURE BY VP HEURING, HF JORDAN (PEARSON)
- 6 COMPUTER ORGANIZATION & ARCHITECTURES BY STALLINGS (PEARSON, PHI)

MCA113 ACCOUNTING AND FINANCIAL MANAGEMENT

UNIT - I

Accounting Information System – Users of Accounting information, Accounting concepts & conventions, Double entry system – Journal, Journalising.

Ledger Posting – Balancing, Subsidiary books – purchase, Sales, P/R, S/R, Cash Book, cash book Triple column. – Problems, Bank Reconciliation statement. – problems. Trial Balance – Preparation of T/B problems.

UNIT - II

Financial Statements – Utility to users, Trading A/C, Profit & Loss A/C – Classification of Expenses.

Classification of Assets and Liabilities, Balance Sheet – Problems – Adjustments: closing stock, outstanding expenses and incomes, prepaid expenses and incomes received in advance, Depreciation, Bad debts, provision for Doubtful debts; interest on capital and Drawings, Problems pertaining to sole Traders, Financial Statements of Non- Profit organization, Receipts & payments A/C, Income and Expenditure A/C and Balance Sheet – simple problems without adjustments.

UNIT - III

Financial Management – Meaning – Need - Profit maximization VS wealth maximization.

Financial Decisions making - Financing Decisions – Sources of Finance: Equity, Debt – Cost of various sources of financing – concept of capital structure. (simple description), Investment Decisions – Characteristics, dividend decisions – concept – Retained earnings.

Financial Analysis – Meaning – indicators of financial status – profitability liquidity, solvency, turnover, Leverage, Types of Financial Analysis – Horizontal Analysis – comparative statements, Vertical Analysis – Common Size statement.

Ratio analysis – meaning – Standards of Comparison.

Profitability Ratios – G.P. Ratio, N.P. Ratio, ROI, EPS, P/E Ratio, Liquidity Ratios – current Ratio, Quick Ratio, Solvency Ratios – Debt equity, Debt – Total funds Turnover Ratios – Stock Turnover, Debtors Turnover, Stock velocity, Debt collection period, Fixed assets turnover, working capital turnover, Simple problems on Ratio analysis.

UNIT - IV

Cost Accounting – Meaning – Significance of cost information Costs – Meaning - Classification : Functional Classification Behavior of costs – Fixed, variable – Features Simple description of costing methods, Preparation Cost sheet under unit costing using functional classification of Costs Cost information for decision making - Decision areas, Marginal Costing – Meaning – Marginal cost Statement, Break even Analysis – Graphic, mathematical Approach, Contribution Margin, P/V Ratio, BEP, Profit Planning, Sales Planning, Sample Problems of Marginal costing, key factor – Simple problems using key factor.

SUGGESTED READINGS:

1. Gupta, R.L. and Radha Swamy, M., Accountancy, Sultan Chand & Sons, New Delhi
2. Mukarjee A and Hanif M, Modern Accountancy, Tata Mc Graw Hill, New Delhi
3. Tulsin P.C, Financial Accounting, TMH, New Delhi
4. Maheswar SN and Maheswari S.K., Financial Accounting, Vikas Publishing House, Mumbai
5. Pandey I.M., Financial Management, Vikas Publishing House, Mumbai.
6. Khan M. Y and Jain P.K., Financial Management, TMH, New Delhi
7. Maheshwari S.N, Cost and Management Accounting, Vikas Publishing House, Mumbai
8. Jain P.K. and Naraang K.L., Cost Accounting, kalyani Publishers, Mumbai
9. Catherine Gowthrope, Business Accounting and Finance: For Non specialists (2nd Ed.) International Thomson Business press, Singapore.
10. JIAMBLO – MANAGERIAL ACCOUNTING (WILEY)

MCA114

DISCRETE MATHEMATICS

UNIT - I

FUNDAMENTALS: Sets, Relations and functions, Fundamentals of logic, Logical inferences, First order logic, Quantified propositions, Mathematical induction

ELEMENTARY COMBINATORICS: Combinations and Permutations, Enumeration - with repetitions, with constrained repetitions, The Principle of Inclusion - Exclusion. (Chapter 1-2)

UNIT -II

RECURRENCE RELATIONS: Generating functions, Coefficients of Generating functions, Recurrence Relations, Inhomogeneous Recurrence Relations (Chapter-3)

UNIT - III

RELATIONS AND DIAGRAMMS: Relations and diagrams, Binary relations, Equivalence relations, Ordering relations, Lattices, Paths and Closures, Directed graphs, Adjacency matrices - Applications, Sorting and Searching (Chapter - 4)

UNIT - IV

GRAPHS: Graphs, Isomorphism, Trees, Spanning trees, Binary trees, Planar graphs, Euler Circuits, Hamiltonian graphs, Chromatic numbers, Four-colour problem, Network flows. (Chapter 5)

TEXT-BOOK:

- 1 Discrete Mathematics For Computer Scientists, (Chapter 1-5) BY J L MOTT, A KANDEL AND T P BAKER

REFERENCE BOOKS :

- 2 DISCRETE MATHEMATICAL STRUCTURE - (TMH) BY TREMBLEY AND MANOHAR
- 3 DISCRETE MATHEMATICS WITH ALGORITHMS - (JOHN WILEY) BY M.O.ALBERTSON AND J.P.HUTCHINSON
- 4 ELEMENTS OF DISCRETE MATHEMATICS-(TMH, SECOND EDITION) BY C.L.LIU
- 5 DISCRETE MATHEMATICS - (PHI, THIRD EDITION) BY BURNORD KOLMAN
- 6 DISCRETE MATHEMATICS BY KH ROSSEN (TMH)
- 7 DISCRETE MATHEMATICS BY S LIPSCHUTZ AND M. LIPSON SCHAUM'S GEN (TMH)
- 8 DISCRETE MATHEMATICS FOR COMPUTER SCIENCE BY GARRRY HAGGARD, J. SCHILPF & S WHITE SIDES (THOMSON PRESS)
- 9 DISCRETE & COMBINATORIAL MATHEMATICS BY RALPH P GRIMALDI (PEARSON EDUCATION)
- 10 DISCRETE MATHEMATICAL STRUCTURES BY DS MALLIK & M K SEN (THOMSON PRESS)

MCA115

MANAGERIAL ECONOMICS

U N I T - I

INTRODUCTION: Nature and Scope of Managerial Economics - Fundamental Concepts used in Managerial Economics - Methods of Economic Analysis for Managerial Decision Making - Objectives of a firm - Profit Maximization VS Wealth Maximization.

U N I T - II

CONSUMER BEHAVIOR AND DEMAND ANALYSIS: The theory of consumer behavior - Concept of utility - Marginal utility Analysis - Consumer surplus - Indifference curve analysis. Concept of demand - Law of demand - Demand determinants - Elasticity of demand - Types - Measurement of elasticity of demand - Types - Measurement of Elasticity of demand - Demand forecasting.

U N I T - III

PRODUCTION ANALYSIS: Laws of Production - The production function - ISO cost and ISO quant curves - Equilibrium of the firm and industry - Choice of optimal combination of factors of production - Choice of optimal expansion path - The law of supply - Derivation of supply curve - Market analysis - Pricing under various competitive situations.

U N I T - IV

National income analysis/ Measurement/ Growth rates Indian economy, Planning and development in India - Development strategies - Five Year Plans - Poverty - Food & Population problems.

TEXT BOOKS

1. MANAGERIAL ECONOMICS (UNIT - I, II, III) BY VARSHNEY & MAHESHWARI
2. INDIAN ECONOMY - (UNIT - IV) BY MISHRA & PURI

REFERENCE BOOKS:

1. JOEL DEAN - MANAGERIAL ECONOMICS
2. P.L. MEHTA - MANAGERIAL ECONOMICS
3. TREVETT - MANAGERIAL ECONOMICS (WILEY)
4. MANAGERIAL ECONOMICS BY PETERSEN (PEARSON)

MCA116 PROBLEM SOLVING & PROGRAMMING C++ LAB

1. Simple Data Types.
2. Control Structures - Alternation and Iteration.
3. Arrays - Strings and Matrix manipulations.
4. Functions.
5. Parameter passing.
6. Recursion - Direct and Indirect recursion.
7. Records.
8. Classes
9. Templates & Other Topics Covered in Paper – I
10. File Processing.

MCA117 BUSINESS DATA PROCESSING-LAB

1. Programs using the arithmetic statements, Designing Display Formats.
2. Sequential file processing Transaction and Master files/ Batch processing.
3. Direct Access files (indexed & relative)/ inter active/On line updation
4. Report writer Programs.
5. Screen Features/ Interactive Programs.

TEXT BOOK:

1. STRUCTURED COBOL PROGRAMMING BY – STERN & STERN (WILEY)

ADDITIONAL BOOK:

PROGRAMMING IN COBOL BY – ROY DASTIDAR (TMH)

MCA118 IT - LAB

The Student is expected to do the exercises on the following topics:

1. Disk Operating System, Commands & Batch Files
2. Windows Accessories, File Manager, Program Manager - Excel
3. UNIX Commands – VI Editor – File Systems - Shell Programming – Writing Simple Shell Scripts – Control Structures – Sequence, Selection, iteration – Pipes & Redirections – Passing Arguments to shell programs – Simple Programs using System calls

TEXT BOOK:

1. UNIX & SHELL PROGRAMMING BY – BEHROUZ A. FOROUZAN (THOMSON PRESS)
2. UNIX PROGRAMMING - BY – SUMITABHA DAS (TMH)

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COURSE STRUCTURE FOR MCA I YEAR II SEMESTER
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PAPER CODE	TITLE	WORKLOAD PER WEEK		MARKS
		THEORY	PRACTICAL	
MCA121	PROBABILITY AND STATISTICAL METHODS	4	--	100
MCA122	DATA STRUCTURES	4	--	100
MCA123	SYSTEM SOFTWARE	4	--	100
MCA124	OPERATING SYSTEMS	4	--	100
MCA125	DATA BASE MANAGEMENT SYSTEMS	4	--	100
MCA126	DATA STRUCTURES LAB	--	4	50
MCA127	OPERATING SYSTEMS LAB	--	4	50
MCA128	DBMS LAB	--	4	50

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MCA121 PROBABILITY AND STATISTICAL METHODS

UNIT - I

INTRODUCTION TO STATISTICS: Data Collection and Tabulation, Graphical Representation of Data Measures of Central Tendency and Dispersion, Moments, Skewness and Kurtosis.

PROBABILITY: Basic Concepts and Terms, Probability Distribution Functions : Uniform, Binomial, Poisson, Mathematical Expectation, Normal and χ^2 Distributions.

UNIT - II

CORRELATION AND REGRESSION: Correlation Coefficient, Bivariate Correlation, Karl Pearsons Formula, Rank Correlation, Regression. Linear Regression Equations, Regression Coefficient Multiple-Correlation. Analysis Vs Regression Analysis.

UNIT - III

TESTING OF STATISTICAL HYPOTHESIS: χ^2 Tests for Variance and for t Distribution, Tests for Mean of a Single Sample, Two Sample Means some tests based on F Distribution.

UNIT - IV

ANALYSIS OF VARIANCE: One way Classification, Two Way Classification, Statistical Analysis of Data.

TEXT BOOK:

1. FUNDAMENTALS OF APPLIED STATISTICS – BY - GUPTA AND KAPOOR

REFERENCE BOOKS:

1. FUNDAMENTAL OF MATHEMATICAL STATISTICS BY - V K KAPOOR AND GUPTA SC
2. STATISTICS (PHI) BY - FREUD
3. PROBABILITY STATISTICS AND RANDOM PROCESS BY - R VEERA RAJAN (TMH)
4. INTRODUCTION TO PROBABILITY & STATISTICS BY - J.S. MILTON & JC ARNOLD (TMH)
5. MILLER & FERUNDS PROBABILITY & STATISTICS FRO ENGINEER BY - JOHNSON (PEARSON)
6. PROBABILITY & STATISTICS FRO ENGINEERS & STATISTICSTS BY - WALPOSE (PEARSON)

MCA122 DATA STRUCTURES

UNIT – I

Introduction: The Abstract Data Type – A Model for an Abstract Data Type – Algorithm Efficiency.

Searching: List Searches – C ++ Search Algorithms – Hashed List Searches – Collision Resolution.

Linked Lists: Linear List Concepts – Linked List Concepts – Linked List Algorithms – Processing a Linked List – Circularly Linked Lists – Doubly Linked Lists – List Abstract Data Type-Linked List Implementation.

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Stacks: Basic Stack Operations – Stack Linked List Implementation – Stack Applications – Stack ADT-Array Implementation.

(Chapters 1,2, 3.1 to 3.4, 3.7, 3.8, 4.1 to 4.3, 4.5, 4.6)

UNIT - II

Queues: Queue Operations – Queue Linked List Design – Queue Applications – Queue ADT-Linked List Implementation – Queue ADT-Array Implementation.

Recursion: Designing Recursive Algorithms – The Towers of Hanoi – C ++ Implementations of Recursion.

Introduction to Trees: Binary Trees – Binary Tree Traversals – Expression Trees – General Trees.

Search Trees: Binary Search Trees.

(Chapters 5 to 7, 8.1)

UNIT - III

Heaps: Heap Definition – Heap Structure – Basic Heap Algorithms – Heap Data Structure – Heap Algorithms – Heap Applications.

Multiway Trees: m-way Search Trees – Simplified B-Trees.

Advanced Sorting Concepts: General Sort Concepts – Insertion Sorts – Selection Sorts – Exchange Sorts – External Sorts.

Graphs: Operations – Graph Storage Structures – Graph Algorithms.

(Chapters 9, 10.1, 10.3, 11, 12.2, 12.3, 12.4 OF 1st Text Book)

UNIT – IV

Algorithm Design Techniques: Greedy Algorithms – A Simple Scheduling Problem – Huffman Codes – Divide and Conquer – Running Time of Divide and Conquer Algorithms – closest-Points Problem – Dynamic Programming – Using a Table Instead of Recursion – Ordering Matrix Multiplications – Backtracking Algorithms – The Turnpike Reconstruction Problem.

(Chapters 10.1, 10.1.1, 10.1.2, 10.2, 10.2.1, 10.2.2, 10.3, 10.3.1, 10.3.2, 10.5, 10.5.1 OF 2nd Text Book)

TEXT BOOKS:

1. DATA STRUCTURES A PSEUDOCODE APPROACH WITH C ++ BY – RICHARD F. GILBER. BEHROUZ A. FOROUZAN (THOMSON PRESS)
2. DATA STRUCTURES & ALGORITHM ANALYSIS IN C ++ BY – MARK ALLEN WEISS.

REFERENCE BOOKS:

1. Sartaj Sahni, Data Structures, Algorithms, and Applications in C ++ , TMH
2. Gregory L. Heileman, Data Structures, Algorithms, And Object - Oriented Programming, TMH.
3. Michael Main Walter Savitch, Data Structures and Other Objects Using C ++, Pearson.

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4. Michael T. Goodrich Roberto Tamassia David Mount, Data Structures and Algorithms, in C ++, John wiley & Sons.
5. Ellis Horowitz Sartaj Shani Dinesh Mehta, Fundamentals of Data Structures in C ++, Galgotia.
6. Adam Drozdek, Data Structures and Algorithms in C ++ , Vikas Publishing House.
7. Bruno R. Preiss, Data Structures And Algorithms with Object - Oriented Design Patterns in C ++ , John wiley & Sons.
8. Data Structures Via C ++ - A.M. Berman (Oxford)
9. Data Structures, Algorithms & OOPS - G.L. Heilmann (TMH)
10. Data Structures and the Standard Template library - W.J. Collins (TMH)
11. Applied Data Structures C ++ - P. Smith (Narosa)

MCA123 SYSTEM SOFTWARE

U N I T – I

BACKGROUND: Introduction, System Software and Machine Architecture, The Simplified Instructional Computer (SIC), SIC Machine Architecture, SIC/XE Machine Architecture, SIC Programming Examples, Traditional (CISC) Machines, VAX Architecture, Pentium Pro Architecture, RISC Machines, Ultra SPARC Architecture, Power PC Architecture, Cray T3E Architecture.

ASSEMBLERS: Basic Assembler Functions, A Simple SIC Assembler, Assembler Algorithm and Data Structures, Machine-Dependent Assembler Features, Instruction Formats and Addressing Modes, Program Relocation, Machine-independent Assembler Feature, Literals, Symbol-Defining Statements, Expressions, Program Blocks, Control Sections and Program Linking, Assemblers Design Options, One-Pass Assemblers, Multi-Pass Assemblers, Implementation Examples, MASM Assembler, SPARC Assembler, AIX Assembler. (Chapters 1, 2)

U N I T – II

LOADERS AND LINKERS: Basic Loader Functions, Design of an Absolute Loader, A Simple Bootstrap Loader, Machine-Dependent Loader Features, Relocation, Program Linking, Algorithm and Data Structures for a Linking Loader, Machine-Independent Loader Features, Automatic Library Search, Loader Options, Loader Design Options, Linkage Editors, Dynamic Linking, Bootstrap Loaders, Implementation Examples, MS-DOS Linker, SunOS Linkers, Cray MPP Linker. (Chapters 3)

U N I T – III

MACRO PROCESSOR: Basic Macro processor Functions, Macro Definition and Expansion, Macro Processor Algorithm and Data Structures, Machine-Independent Macro Processor Features, Concatenation of Macro Parameters, Generation of Unique Labels, Conditional Macro Expansion, Keyword Macro Parameters, Macro Processor Design Options, Recursive Macro Expansion, General-Purpose Macro Processors, Macro Processing within Language Translators. (Chapters 4)

U N I T – IV

COMPILERS: Compiler Functions, Grammars, Lexical Analysis, Syntactic Analysis, Code Generation, Machine-Dependent Compiler Features, Intermediate Form of the Program, Machine-Dependent Code Optimization, Machine-Independent Compiler Features, Structured Variables, Machine-Independent Code Optimization, Storage Allocation, Block-Structured

Languages, Compiler Design Options, Division into Passes, Interpreters, P-Code compilers, Compiler-Compilers. (Chapters 5)

TEXT BOOK:

1. SYSTEM SOFTWARE AN INTRODUCTION TO SYSTEMS PROGRAMMING -By LELAND L. BECK - (ADDISON WESLEY)

REFERENCE BOOK:

1. SYSTEM SOFTWARE AND OPERATING SYSTEMS -By DHAMDHERE - TMH 2nd Edition
2. SYSTEM PROGRAMMING - DONOVON

MCA124 OPERATING SYSTEMS

U N I T - I

INTRODUCTION: What is an Operating Systems?, Mainframe Systems, Desktop Systems, Distributed Systems, Real-Time Systems, Handheld Systems, Feature Migration, Computing Environments.

COMPUTER-SYSTEM STRUCTURES: Computer-System Operation, I/O Structure, Storage Structure, Hardware protection, Network Structure.

OPERATING SYSTEM STRUCTURE: System Components, Operating System Services, System Calls, System Programs, System Structure, Virtual Machines, System Design and Implementation.

PROCESSES: Process Concept, Process Scheduling, Operations on Processes, Cooperating Processes, Interprocess Communication, communication in Client-Server Systems.

THREADS: Multithreading Models Pthreads, Solaris 2 threads, Window 2000 threads, Linux Threads, Java Threads. (Chapters 1, 2, 3, 4 and 5)

U N I T - II

CPU SCHEDULING: Basic concepts, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Process Scheduling Models.

PROCESS SYNCHRONIZATION: Background, The Critical-Section Problem, synchronization Hardware, Semaphores, Critical Regions, Monitors, OS Synchronization.

DEADLOCKS: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection.

MEMORY MANAGEMENT: Background, Swapping, Contiguous Memory Allocation, Paging, Segmentation. (Chapters 6, 7, 8 and 9)

U N I T - III

VIRTUAL MEMORY: Background, Demand Paging, Process Creation, Page Replacement, Allocation of Frames, Thrashing.

FILE SYSTEM INTERFACE: File Concept, Access Methods, Directory Structure, File-System Mounting, File Sharing.

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FILE-SYSTEM IMPLEMENTATION: File-System Structure, File-system Implementation, Directory Implementation, Allocation Methods, Free-Space Management, Efficiency and Performance, Recovery. (Chapters 10, 11 and 12)

UNIT - IV

I/O SYSTEMS: I/O Hardware, Application I/O Interface, Kernel I/O Subsystem, Transforming I/O to Hardware Operations, STREAMS.

MASS-STORAGE STRUCTURE: Disk Structure, Disk Scheduling, Disk Management, Swap-Space Management, RAID Structure, Disk Attachment, Stable-Storage Implementation.

PROTECTION: Goals of Protection, Domain of Protection, Access Matrix, Implementation of access Matrix, Revocation of Access Rights, Capability-Based Systems.

SECURITY: The Security Problem, User Authentication, Program Threats, System Threats, Securing Systems and Facilities, Cryptography. (Chapters 13, 14, 18 and 19)

TEXT BOOK:

1. OPERATING SYSTEM CONCEPTS (6th Edition) By - SILBERSCHATZ, GALVIN, GAGNE Jhon-Wiley (2002)

REFERENC T BOOKS:

1. OPERATING SYSTEMS (IV Edition) By - William Stallings PHI (2002)
2. OPERATING SYSTEMS By - GARY NUTT (Pearson Education)
3. OPERATING SYSTEMS By - CHARLES CROWLEY TMH (2000)
4. MODERN OPERATING SYSTEMS By - A.S. TANENBAUM (PHI) (2002)
5. OPERATING SYSTEMS BY - DM DHAMDHERE (TMH)
6. UNDER STANDING OPERATING SYSTEMS BY - IM FLYNN, AM MCHOCS (THOMSON PRESS)
7. OPERATING SYTEMS - DIETEL (PEARSON)

MCA125 DATABASE MANAGEMENT SYSTEM

UNIT – I

FUNDAMENTALS OF DATABASE CONCEPTS: Database and Database Users: Characteristics of the Database Approach – Advantages of Using the DBMS Approach – A Brief History of Database Applications.

Database System Concepts and Architecture: Data Models, Schemas, and Instances – Three Schema Architecture and Data Independence – Database Languages and Interfaces – The Database System Environment – Centralized and Client/Server Architectures for DBMSs – Classification of Database Management Systems.

Data Modeling Using the Entity Relationship Model: Using High-Level Conceptual Data Models for Database Design – An Example Database Application – Entity Types, Entity Sets, Attributes, and

Keys – Relationship Types, Relationship Sets, Roles, and Structural Constraints – Weak Entity Types – ER Diagrams, naming Conventions, and Design Issues. (Chapters 1 to 3)

UNIT – II

FUNDEAMENTALS OF RELATIONAL MODEL:

The Relational Data Model and Relational Database Constraints: Relational Model Concepts – Relational Model Constraints and Relational Database Schemas.

The Relational Algebra and Relational Calculus: Unary Relational Operations: SELECT and PROJECT – Relational Algebra Operations from Set Theory – Binary Relational Operations: JOIN and DIVISION – Additional Relational Operation – The Tuple Relational Calculus – The Domain Relational Calculus.

Relational Database Design Using ER to Relational Mapping.
(Chapters 5.1, 5.2, 6, 7.1)

UNIT – III

RELATIONAL DATABASE DESIGN:

Functional Dependencies and Normalization for Relational Databases: Informal Design Guidelines for Relation Schemas – Functional Dependencies – Normal Forms Based on Primary Keys – General Definitions of Second and Third Normal Forms – Boyce-Codd Normal Form.

Relational Database Design Algorithms and Further Dependencies: Properties of Relational Decompositions – Algorithms for Relational Database Schema Design – Join Dependencies and Fifth Normal Form. (Chapters 10 and 11)
(Concepts without Proof)

UNIT - IV

FUNCTIONS OF DBMS:

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Processing – Transaction and System Concepts – Desirable Properties of Transactions – characterizing Schedules Based on Recoverability – Characterising schedules Based on Serialisability.

Concurrency Control Techniques: Two-Phase Locking Techniques for Concurrency Control – Concurrency Control Based on Teimestamp Ordering.

Database Recovery Techniques: Recovery Concepts – Recovery Techniques Based on Deferred Update – Recovery Techniques Based on Immediate Update – Shadow paging. (Chapters 17.1 to 17.5, 18.1, 18.2, 19.1 to 19.4)

TEXT BOOK:

1. FUNDAMENTALS OF DATABASE SYSTEMS BY – RAMEZ ELMASRI SHAMKANT B. NAVATHE
V EDITION (PEARSON)

REFERENCE BOOKS:

Duly approved by the Standing Committee of the Academic Senate

Sd/- Prof. A. Sadanandam, Chairman, BOS

- 1 DATABASE SYSTEM CONCEPTS (IV Edition) BY - SILBER SCHATZ, KORTH G. SUDARSHAN (TMH 2002)
- 2 DATABASE MANAGEMENT SYSTEMS BY - ALEXI'S LEON AND MATHEWS LEON (LION VIKAS -2002)
- 3 DATABASE MANAGEMENT SYSTEMS (II Edition) - GERALD. V. POST
- 4 MODERN DATABSE MANAGEMENT (IV Edition) BY - F.R.MC.FADDEN, J.A.HOFFER, M.B.PRESCOTT(Addison Wisley 2000)
- 5 DATABSE MANAGEMENT (III Edition) BY - PRATT and J.J. ADAMSKI (THOMSON EDUCATION-2002)
- 6 DATABASE APPLICATION DEVELOPMENT & DESIGN-MANINO(MCGRAW HIL)
- 7 DATABASE SYSTEMS CONNOLY, BEGG (PEARSON)
- 8 DATABASE SYSTEM IMPLEMENTATION – GARCIA, MOLNA, ULLMAN, WIDON (PHI)
- 9 A FIRST COURSE IN DATABASE SYSTEMS - ULLMAN, WINDON (PEARSON)
- 10 ROB. CORONEL, DATABASE SYSTEMS, THOMSON TECHNOLOGY.
- 11 DATABASE SYSTEMS CONNOLY, BEGG (PEARSON)
- 12 DATABASE SYSTEM IMPLEMENTATION – GARCIA, MOLINA, ULLMAN, WIDON (PHI)
- 13 A FIRST COURSE IN DATABASE SYSTEMS - ULLMAN, WINDON (PEARSON)

MCA126 DATA STRUCTURES – LAB

1. Write C ++ Programs to implement the following using an array.
 - a) Stack ADT
 - b) Queue ADT
2. Write C ++ programs to implement the following using a singly linked list.
 - a) Stack ADT
 - b) Queue ADT
3. Write C ++ program to implement the deque (double ended queue) ADT using a doubly linked list
4. Write a C ++ Program to perform the following operations.
 - a) Insert an element into a binary search tree.
 - b) Delete an element from a binary search tree.
 - c) Search for a key element in a binary search tree.
5. Write a C ++ program to implement circular queue ADT using an array.
6. Write C ++ programs that traverse the given binary tree in.
 - a) Preorder
 - b) Inorder and
 - c) Postorder.
7. Write a C ++ programs for the implementation of bfs and dfs for a given graph.
8. Write C ++ programs for implementing the following sorting methods.
 - a) Quick sort
 - b) Merge sort
 - c) Heap sort
 - d) Selection sort
 - e) Exchange sort
 - f) Insertion sort.
9. Write a C ++ program to perform the following operations.
 - a) Insertion into a 2-3 tree
 - b) Deletion from a 2-3 tree
10. Write C ++ programs to implement
 - a) Sequential
 - b) Binary search
11. Implement converism of infix expressions to post fix notation simple expression evaluator that can handle +, -, /, *.

12. String Operations using Linked lists.
13. Polynominal Operations using Linked lists.

MCA127 OPERATING SYSTEM-LAB

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
 - c) Hierarchical
 - d) DAG
5. Simulate Bankers Algorithm for Dead Lock Avoidance
6. Simulate Bankers Algorithm Dead Lock Prevention.
7. Simulate all Page replacement algorithms.
 - a) FIFO
 - b) LRU
 - c) LFU
 - d) Etc....
8. Simulate Paging Techniques of memory management.

MCA128 DBMS-LAB

Introduction to SQL, DDL, DML, Statements, Built in functions, Aggregate Functions, Joins, Unions, Ordinary Queries, Sub queries, Corelated Sub Query, Nested Subqueries, Parellel & Subqueries.

i) PL/SQL: Data Types, Control structures, Cursor handling Mechanism, Sub programmes Procedure & Functions, Stored Procedures, Database triggers & exception handling.

SUGGESTED BOOK:

STARTING OUT WITH ORACLE – JOHN DAY, CV SLYKE (DREAM TECH)

ADDITIONAL BOOKS:

1. ORACLE DEVELOPER 2000 – IVAN BAYROSS (BPB)
2. SQL, PL/SQL – PS DESHPANDE (DREAM TECH)
3. ORACLE DATABASE 10G SQL – J PRICE (TMH)
4. DATABASE SYSTEMS USING ORACLE – N SHAH (PHI)
5. ORACLE FORMS DEVELOPERS HANDBOOK – LULUSHI (PEARSON)
6. ORACLE SQL AND PL/SQL HANDBOOK – JA PALINSKI (PEARSON)

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COURSE STRUCTURE FOR MCA II YEAR I SEMESTER
WITH EFFECT FROM 2006-2007

PAPER CODE	TITLE	WORKLOAD PER WEEK		MARKS
		THEORY	PRACTICAL	
MCA211	ADVANCED DATA BASE SYSTEMS	4	--	100
MCA212	COMPUTER NETWORKS	4	--	100
MCA213	OBJECT ORIENTED ANALYSYS AND PROGRAMMING	4	--	100
MCA214	SOFTWARE ENGINEERING-I	4	--	100
MCA215	.NET PROGRAMMING	4	--	100
MCA216	OOPS LAB	--	4	50
MCA217	.NET LAB	--	4	50
MCA218	INTERNET PROGRAMMING LAB	--	4	50

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UNIT – I

ENHANCED ENTITY-RELATIONSHIP AND OBJECT MODELING: Subclasses, Super classes, and Inheritance, Specialization and Generalization, Constraints and Characteristics of Specialization and Generalization, Modeling of UNION Types Using Categories, An Example UNIVERSITY ERR Schema and Formal Definitions for the ERR Model, Conceptual Object Modeling Using UML Class Diagrams, Relationship Types of Degree Higher Than Two, Data Abstraction and Knowledge Representation Concepts Relational Database Design Using ER-to-Relational Mapping, Mapping ERR Model Concepts to Relations (Chapters 4 and 7 of text book 1)

UNIT – II

CONCEPTS FOR OBJECT-ORIENTED DATABASES: Overview of Object-Oriented Concepts, Object Identity, Object Structure, and Type Constructors, Encapsulation of Operations, Methods, and Persistence, Type Hierarchies and Inheritance. Overview of the Object Model of ODMG, The Object Definition Language. Object-Relational Features of Oracle, An Overview of SQL3, Implementation and Related Issues for Extended Type Systems, The Nested Relational Data Model.

(Chapter 20.1 to 20.4, 21.1 to 21.3, 22.1, 22.4 of text book 1)

UNIT - III

STORAGE AND INDEXING: OVERVIEW OF STORAGE AND INDEXING - Data on External Storage, File organizations and Indexing, Index Data Structures, Comparison of File Organizations.

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. (Chapters 8, 9 of text book 2)

UNIT – IV

TREE - HASH INDEXING: TREE - STRUCTURED INDEXING - Intuition For Tree Indexes, Indexed Sequential Access Method (ISAM), B+ Trees: A Dynamic Index Structure, Search, Insert, Delete, Duplicates, B+ Trees in Practice.

HASH-BASED INDEXING - Static Hashing, Extendible Hashing, Linear Hashing, Extendible vs. Linear Hashing. (Chapters 10,11 from text book2)

TEXT BOOKS

1. Fundamentals of DataBase Management Systems by Navate & Elmasri (IV Edition)
2. DataBase Management System (III Edition) by Raghu Ramakrishna and J.Gehrke

REFERENCE BOOKS

1. FUNDAMENTALS OF DATABASE SYSTEMS (Third Edition) BY - ELMASRI & NAVATHE (PEARSON EDUCATION 2002)
2. DATABASE SYSTEM CONCEPTS (IV Edition) BY - SILBER SCHATZ, KORTH G. SUDARSHAN (TMH 2002)
3. DATABASE MANAGEMENT SYSTEMS BY - ALEXI'S LEON AND MATHEWS LEON (LION VIKAS -2002)

4. DATABASE MANAGEMENT SYSTEMS (II Edition) - GERALD. V. POST
5. MODERN DATABASE MANAGEMENT (IV Edition) BY - F.R.MC.FADDEN, J.A.HOFFER, M.B.PRESCOTT (Addison Wisley 2000)
6. DATABASE MANAGEMENT (III Edition) BY - PRATT and J.J. ADAMSKI (THOMSON EDUCATION-2002)
7. DATABASE APPLICATION DEVELOPMENT & DESIGN-MANINO (MCGRAW HIL)
8. DATABASE SYSTEMS CONNOLLY, BEGG (PEARSON)
9. DATABASE SYSTEM IMPLEMENTATION – GARCIA, MOLNA, ULLMAN, WIDON (PHI)
10. A FIRST COURSE IN DATABASE SYSTEMS - ULLMAN, WINDON (PEARSON)
11. DATABASE SYSTEMS, ROB. CORONEL, THOMSON TECHNOLOGY.
12. DATABASE SYSTEMS CONNOLLY, BEGG (PEARSON)
13. DATABASE SYSTEM IMPLEMENTATION – GARCIA, MOLINA, ULLMAN, WIDON (PHI)
14. A FIRST COURSE IN DATABASE SYSTEMS - ULLMAN, WINDON (PEARSON)

MCA212 COMPUTER NETWORKS

UNIT – I

BASIC CONCEPTS: Line Configuration – Point-to-Point, Multipoint – Topology – Mesh, Star, Tree, Bus, Ring, Hybrid topologies – Transmission Mode – simplex, Half-Duplex, Full-Duplex – Categories of Networks – LAN, MAN, WAN – InterNetworks.

THE OSI LAYER: The Model – Layered structure – Functions of the Layers – Physical layer, Data Link layer, Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer – TCP/IP Protocol suite

TRANSMISSION OF DIGITAL DATA: INTERFACES AND MODEMS: Digital Data Transmission – Parallel Transmission, Serial Transmission – DTE-DCE Interface – Data Terminal Equipment(DCE), Data Circuit-Terminating Equipment(DCE), Standards, EIA-232 Interface – Other interface standards – EIA-449, EIA-530, X.21 – MODEMS – Transmission Rate – Modem standards – 56K MODEMS – Traditional Modems, 56K Modems – Cable Modems –

MULTIPLEXING: Many to One Downloading, Uploading/ One to Many – Frequency-Division Multiplexing(FDM) – wave Division Multiplexing(WDM) – Time Division Multiplexing(TDM) – Inverse Multiplexing – Multiplexing Application – Common Carrier Services, Analog Services, Digital Services – Digital Subscriber Line(DSL) – ADSL, RADSL, HDSL, SDSL, VDSL – FTTC – FTTC in the Telephone Network, FTTC in the cable TV Network. (Chapter 2, 3, 6 & 8)

UNIT-II

ERROR DETECTION AND CORRECTION: Types of Errors – Single-Bit Error, Burst Error – Detection – Redundancy – Vertical Redundancy check(VRC) – Longitudinal Redundancy Check(LRC) – Cyclic Redundancy Check(CRC) – Checksum – Error Correction – Single-Bit Error Correction, Hamming Code, Burst Error Correction.

DATA LINK CONTROL: Line Discipline – ENQ/ACK, Poll/Select – Flow Control – Stop-and-wait, Sliding Window – Error Control – Automatic Repeat Request (ARQ), Stop-and-wait ARQ, Sliding window ARQ.

LOCAL AREA NETWORK: Project 802 – IEEE 802.1, LLC 371, MAC 371, Protocol Data Unit(PDU) – Ethernet – Access Method:CSMA/CD, Addressing, Electrical Specification, Frame Format,

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Implementation - Other Ethernet Networks - Switched Ethernet, fast Ethernet, Gigabit Ethernet - Token Bus - Token Ring - Access Method:Token Passing, Addressing, Electrical Specification, Frame Format, Implementation - FDDI - Access Method:Token Passing, Addressing, Electrical Specification, Frame Format, Implementation:Physical Medium Dependent(PMD) Layer.

SWITCHING: Circuit Switching - Space-Division Switches, Time-Division Switches, TDM Bus, Space and time-division Switching Combinations, Public Switch Telephone Network(PSTN) - Packet Switching - Datagram Approach, Virtual Circuit Approach, Circuit-Switched Connection versus Virtual Circuit Connection - Message Switching.
(Chapter 9, 10, 12 and 14)

UNIT - III

INTEGRATED SERVICES DIGITAL NETWORK (ISDN): Services - Bearer Services, Tele services, Supplementary Services - History - Voice Communication over Analog Networks, Voice and data Communication over Analog Networks, Analog and Digital Services to Subscribers, Integrated Digital Network(IDN), Integrated Services Digital Network(ISDN) - subscriber Access to the ISDN - B Channels, D Channels, H Channels, User Interfaces, Functional Grouping, Reference Points - The ISDN Layers - Physical Layer, Data Link Layer, Network Layer - Broadband ISDN - services, Physical specifications - Future of ISDN.

X.25: X.25 Layers - Physical Layer, Frame Layer, Packet Layer, PLP Packets - Other Protocols related to X.25 - X.121 Protocol, triple-X Protocols.

NETWORKING AND INTERNETWORKING DEVICES: Repeaters - Not an Amplifier - Bridges - Types of Bridges, Bridges Connecting Different LANs - Routers - Routing concepts - Gateways - Other Devices - Multiprotocol Routers, Brouters, switches, Routing Switches - Routing algorithms - Distance Vector Routing - Sharing Information, Routing Table - Link State Routing - Information Sharing, The Dijkstra Algorithm. (Chapter 16, 17 and 21)

UNIT - IV

TRANSPORT LAYER: Duties of Transport Layer - End-to-End Delivery, Addressing, Reliable Delivery, Flow control, Multiplexing - Connection - Connection Establishment, connection Termination - The OSI Transport Protocol - Transport Classes, Transport Protocol Data Unit(TPDU), Connection-oriented and Connectionless services.

UPPER OSI LAYERS: Session layer - Session transport Interaction, Synchronization points, Session Protocol Data Unit - Presentation Layer - Translation, Encryption/decryption, Authentication, Data Compression - Application Layer - Message Handling System(MHS), File transfer, Access and Management(FTAM), Virtual Terminal(VT), Directory Services(DS), Common Management Information Protocol(CMIP).

TCP/IP PROTOCOL SUITE: Overview of TCP/IP - TCP/IP and the Internet, TCP/Ip and OSI, Encapsulation - Network Layer - Internetwork Protocol(IP) - Addressing - classes, Dotted-decimal Notation, Nodes with More Than One Address, A Sample Internet - Subnetting - Three Levels of Hierarchy, Masking, Finding The Subnetwork Address - Other Protocols In the Network Layer - Address Resolution Protocol(ARP), Reverse Address Resolution Protocol(RARP),Internet Control Message Protocol(ICMP), Internet Group Message Protocol(IGMP) - Transport Layer - User datagram Protocol(UDP), Transmission Control Protocol(TCP). (Chapter 22, 23 and 24)

TEXT BOOK:

1. DATA COMMUNICATIONS AND NETWORKING BY BEHROUZ A. FOROUZAN (TATA Mc.Graw Hill)

REFERENCE BOOK:

2. BUSINESS DATA COMMUNICATION & NETWORKS By - FITZ GERALD (Jhon Wiley)
3. DATA & COMPUTER COMMUNICATIONS – W STALLINGS (PEARSON, PHI)
4. COMPUTER COMMUNICATIONS & NETWORKING TOPOLOGIES – MA GALLO, V.M. HANCOCK (THOMSON)
5. DATA COMMUNICATION & COMPUTER NETWORKS – R. AGARWAL, BB TIWARI (VIKAS)
6. COMPUTER NETWORKS – AS TANENBAUM (PHI)
7. COMPUTER NETWORKS – BLACK (PHI)
8. UNDER STANDING COMMUNICATIONS & NETWORKS – WA SHAY (THOMSON)
9. COMPUTER NETWORKING A TOP-DOWN APPROACH FEATURING THE INTERNET BY – JAMES F. KUROSE AND KEITH W. ROSS (PEARSON)

MCA213 OOPS WITH JAVA**UNIT - I**

Object - Oriented Thinking : Messages and Methods – Classes and Instances – Class Hierarchies – Inheritance – Method Binding, Overriding, and Exceptions.

A Brief History of Object – Oriented Programming: The History of Java – Client – Side Computing – Java Language Description

Object – Oriented Design : RDD – CRC cards – Components and Behavior – Software Components – Formalizing the Interface – Implementing components Integration of Components

Understanding Paradigms: Program Structure – Types – Access Modifiers – Lifetime Modifiers. (Chapters 1 to 4)

UNIT – II

Data Fields – Constructors – Inheritance – The Java Graphics Model – Multiple Objects of the Same Class. Adding User Interaction – Inner Classes – Interfaces – The Java Event Model – Window Layout.

Understanding Inheritance: An Intuitive Description of Inheritance – Subclass, Subtype, and Substitutability – Forms of Inheritance – Modifiers and Inheritance – The Benefits of Inheritance – The Costs of Inheritance.

Mechanisms for Software Reuse: Substitutability –Combining Inheritance and Composition – Dynamic Composition. (Chapters 5, 6, 8, 10)

UNIT - III

Implications of Inheritance: The Polymorphic Variable – Assignment – Equality Test – Garbage Collection.

Polymorphism: Polymorphic Variables – Overloading – Overriding – Abstract methods – Pure Polymorphism.

Input and Output Streams: Input Streams – Output Streams – Object serialization – Piped Input and Output – Readers and Writers.

Exception Handling: Information Transmitted to the Catch Block – The Finally Clause – Throwing Exceptions – Passing on Exceptions. (Chapters 11,12,14,16)

UNIT – IV

The AWT : The AWT Class Hierarchy – User Interface Components – Panels – Dialogs.

Understanding Graphics: Color – Rectangles – Fonts – Images.

Multiple Threads of Execution: Creating Threads – synchronizing Threads. Collection Classes – Multiple Threads of Execution – Exception Handling.

Applets and Web Programming: Applets and HTML – Security Issues – Applets and Applications – Obtaining Resources Using an Applet – Combining Applications and Applets. (Chapters 7, 13, 18, 20, 21)

TEXT BOOK:

1. UNDERSTANDING OBJECT-ORIENTED PROGRAMMING WITH JAVA BY – TIMOTHY BUDD (PEARSON)

REFERENCE BOOKS:

1. THE COMPLETE REFERENCE JAVA 2 (Fourth Edition) BY - PATRICK NAUGHTON & HERBET SCHILDT (TMH)
2. PROGRAMMING JAVA - DECKER&HIRSH FIELD VIKAS PUBLISKING (2001) (THOMSON LEARNING) (SECOND EDITON)
3. INTRODUCTION TO JAVA PROGRAMMING - Y.DANIEL LIANG PHI(2002)
4. OBJECT ORIENTED PROGRAMMING THROUGH JAVA 2 BY - THAMUS WU (Mc.Graw Hill)
5. JAVA 2 - DIETEL & DIETEL (PEARSON EDUCATION)
6. INTRODUCTION TO JAVA – BALA GURU SWAMY
7. INTRODUCTION TO PROGRAMMIND & OOD USING JAVA – JAINO NINE & FA HOSCH (JOHN WILEY)
8. STARTING OUT WITH JAVA – JONY GADDIS (DREAM TECH PRESS)
9. JAVA PROGRAMMING – SCHAUM’S SERIES

10. OBJECT ORIENTED APPLICATION DEVELOPMENT USING JAVA – ER DOXE ETC. (THOMSON PRESS)
11. THINKING IN JAVA –BY – BRUCE ECKEL (PEARSON)
12. PROGRAMMING & PROBLEM SOLVING WITH JAVA – JM SLACK (THOMSON)
13. COMPUTING CONCEPTS WITH JAVA2 ESSENTIALS - CAY HORSTMANN (JOHNWILEY)
14. JAVA PROGRAMMING ADVANCED TOPICS – J WIGGLESWORTH, P LUMBY (THOMSON LEARNING)

MCA214 SOFTWARE ENGINEERING-I

U N I T – I

INTRODUCTION TO SOFTWARE ENGINEERING: The Evolving Role of Software – Software – The 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 – Personal and Team Process Models – process Technology – Product and Process.

PROCESS MODELS: Prescriptive Models – The waterfall Model – Incremental Process Models – Evolutionary Process Models – Specialized Process Models – The Unified Process.
(Chapters 1, 2 and 3)

U N I T – II

AN ANGLE VIEW OF PROCESS: What is Agility? – What is an Agile Porcess? – Agile Process Models.

SOFTWARE ENGINEERING PRACTICE: Software engineering Practice – Communication Practice – Planning Practices – Modeling Practices – Construction Practice – deployment.

SYSTEM ENGINEERING: Compute-Based systems – The System Engineering Hierarchy – Business Process Engineering: An Overview – Product Engineering:An Overview – System Modeling.
(Chaters 4, 5 and 6)

U N I T – III

REQUIRMENT ENGINEERING: A Bridge to Design and Construction – Requirements Engineerin Tasks – Initiating the Requirments Engineeing Process – Eliciting Requirements – Developing Use – Cases – Building the analysis Model – Negotiating Requirements – Validating Requirements.

BUILDING THE ANALYSIS MODEL: Requirements Analysis – Analysis Modeling Approaches – Data Modeling Concepts – Object-orientd Analysis – Scenario-Based Modeling – Flow-Oriented Modelin – Class-Based Modeling – Creating a Behavioral Model.

DESIGN ENGINEERING: Design within the Contxt of Software Engineering – design Process and Design Quality – Design Concepts – The Design Model – Pattern-Based Software Design.
(Chapter 7, 8 and 9)

UNIT – IV

CREATING AN ARCHITECTURAL DESIGN: Software Architecture – Data Design – Architectural Styles and Patterns – Architectural Design – Assessing Alternative Architectural Designs – Mapping Data Flow into a Software Architecture.

MODELING COMPONENT-LEVEL DESIGN: What is a Component? – Designing Class-Based Component-Level Design – Object Constraint Language – designing Conventional Components.

PERFORMING USER INTERFACE DESIGN: The Golden Rules – User Interface Analysis and Design – Interface Analysis – Interface Design Steps – Design Evaluation. (Chapter 10, 11 and 12)

TEXT BOOK:

1. SOFTWARE ENGINEERING BY R.S. PRESSMAN (Mc. Graw Hill Sixth Edition)

REFERENCE BOOKS:

1. SOFTWARE ENGINEERING BY GHEZZI (PHI)
2. SOFTWARE ENGINEERING FUNDAMENTALS BY BEHFOROZ AND HUDSON OXFORD UNIVERSITY PRESS
3. SOFTWARE ENGINEERING BY FAIRLEY (Mc.Graw Hill)
4. SOFTWARE ENGINEERING Theory & practice by Pfleeger (Pearson)
5. SOFTWARE ENGINEERING by KR Agarwal & Yogesh Singh (New Age)
6. SOFTWARE ENGINEERING ?(Schaum's Series TMH)
7. Object Oriented SOFTWARE ENGINEERING by SR Schach (TMH)

MCA215 .NET PROGRAMMING

UNIT - I

Fundamentals of Visual Basic, Exception handling, windows forms, Control Classes, Different Types of Boxes, Labels, Buttons, Panels. (Chapters 1 to 7)

UNIT - II

WINDOWS FORMS: Different types of Bars, Menus, Views.

OBJECT - ORIENTED PROGRAMMING: Classes and objects constructors and destructors, inheritance, modifiers, Interfaces, Polymorphism, Value Binding, Graphics handling and File handling. (Chapters 8 to 13)

UNIT - III

WEB FORMS: Working with webforms, Web forms and HTML, The Web control class, Web Forms and Boxes, Web Forms and Buttons, Validation Controls, Ad Rotators, Web Forms and HTML controls. (Chapters 14 to 19)

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UNIT - IV

DATA ACCESS WITH ADO.NET : Accessing data with the server explorer, Data adapters and Data sets, Binding Controls to databases, Handling databases in code, Database access in Web Applications. Creating user Controls, Web user Controls, and Multithreading creating Windows services, Web Services and Deploying applications. (Chapters 20 to 25)

TEXT BOOK :

1. VB.NET PROGRAMMING (BLACK BOOK) BY STEVEN HOLZNER (Dreamtech- 2003)

REFERENCE BOOKS:

1. VB.NET PROGRAMMING BY T. GADDIS (Dreamtech)
2. Microsoft Visual Basic. Net step by step By Halvorsen (PHI)
3. OOP with Microsoft Visual Basic.Net By Reynold Hacht (PHI)

MCA216 OOPS WITH JAVA LAB

1. Programs to illustrate constructors.
2. Programs to illustrate Overloading & Overriding methods in Java.
3. Programs Illustrate the Implementation of Various forms of Inheritance. (Ex. Single, Hierarchical, Multilevel inheritance....)
4. Program which illustrates the implementation of multiple Inheritance using interfaces in Java.
5. Program to illustrate the implementation of abstract class.
6. Programs to illustrate Exception handling
7. Programs to create packages in Java.
8. Program to Create Multiple Threads in Java.
9. Program to Implement Producer/Consumer problem using synchronization.
10. Program to Write Applets to draw the various polygons.
11. Create and Manipulate Labels, Lists, Text Fields, Text Areas & Panels
12. Handling Mouse Events & Keyboard Events.
13. Using Layout Managers.
14. Create & Manipulate the Following Text Areas, Canvas, Scroll bars, Frames, Menus, Dialog Boxes.
15. Programs, which illustrate the manipulation of strings.
 - a. Ex. 1. Sorting an array of Strings.
 2. Frequency count of words & Characters in a text.
16. Programs, which illustrate the use of Streams.
17. Java Program that reads on file name from the user and displays the contents of file.
18. Write an applet that displays a simple message.
19. 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.
20. 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.
21. Write a Java program for handling mouse events.

22. Write a Java program for creating multiple threads
23. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.
24. Write a Java program that lets users create Pie charts. Design your own user interface (with AWT)
25. Write a Java program that allows the user to draw lines, rectangles and ovals.
26. Write a Java program that illustrates how run time polymorphism is achieved.

TEXT BOOK:

1. THE COMPLETE REFERENCE JAVA J2SE 5TH EDITION BY – HERBERT SCHILDT (TMH)

REFERENCE BOOKS:

1. THE COMPLETE REFERENCE JAVA 2 (Fourth Edition) BY - PATRICK NAUGHTON & HERBERT SCHILDT (TMH)
2. PROGRAMMING JAVA - DECKER&HIRSH FIELD VIKAS PUBLISHING (2001) (THOMSON LEARNING) (SECOND EDITION)
3. INTRODUCTION TO JAVA PROGRAMMING - Y.DANIEL LIANG PHI(2002)
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5. JAVA 2 - DIETEL & DIETEL (PEARSON EDUCATION)
6. INTRODUCTION TO JAVA – BALA GURU SWAMY
7. INTRODUCTION TO PROGRAMMING & OOD USING JAVA – JAINO NINE & FA HOSCH (JOHN WILEY)
8. STARTING OUT WITH JAVA – JONY GADDIS (DREAM TECH PRESS)
9. JAVA PROGRAMMING – SCHAUM’S SERIES
10. OBJECT ORIENTED APPLICATION DEVELOPMENT USING JAVA – ER DOXE ETC. (THOMSON PRESS)
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14. JAVA PROGRAMMING ADVANCED TOPICS – J WIGGLESWORTH, P LUMBY (THOMSON LEARNING)

MCA217 VISUAL PROGRAMMING LAB

The concepts covered in the corresponding theory paper are to be implemented.

TEXT BOOK :

1. VB.NET PROGRAMMING (BLACK BOOK) BY STEVEN HOLZNER (Dreamtech- 2003)

REFERENCE BOOKS:

2. VB.NET PROGRAMMING By T. GADDIS (Dreamtech)
3. Microsoft Visual Basic. Net step by step By Halvorsen (PHI)
4. OOP with Microsoft Visual Basic.Net By Reynold Hactte (PHI)

1. Write an HTML document to display the word "WEBDESIGNING" in horizontal Scrolling format.
2. Write an HTML document to demonstrate Ordered lists.
3. Write an HTML document to demonstrate Unordered lists.
4. Write an HTML document to demonstrate Nested lists.
5. Write an HTML document to divide the window into two halves using frames.
6. Write an HTML document to demonstrate tables.
7. Write an HTML document to prepare student marks list.
8. Write an HTML document to prepare College Website.
9. Write an HTML document to create an on line Application form
10. Write a JavaScript program to read the customer name and perform manipulations
11. Write a JavaScript program to perform the addition of two numbers
12. Write a JavaScript to procedure to input the name and address of a visitor
13. and display a greeting message.
14. Create a HTML page that displays the XML data using XML document.
15. Create a XML document and its DTD.

TEXT BOOK:

1. HTML Black Book, Steven Holzner, Dreamtech Press.

REFERENCE BOOKS:

1. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
2. An Introduction to web Design and Programming –Wang-Thomson
3. Web Applications Technologies Concepts-Knuckles,John Wiley
4. Programming world wide web-Sebesta,Pearson
5. Building Web Applications-NIIT,PHI
6. Web Warrior Guide to Web Programmimg-Bai/Ekedaw-Thomas
7. Beginning Web Programming-Jon Duckett WROX.

**KAKATIYA UNIVERSITY
WARANGAL-506009**

COURSE STRUCTURE FOR MCA II YEAR II SEMESTER
WITH EFFECT FROM 2006-2007

PAPER CODE	TITLE	WORKLOAD PER WEEK		MARKS
		THEORY	PRACTICAL	
MCA221	UNIX NETWORK PROGRAMING	4	--	100
MCA222	ADVANCED JAVA	4	--	100
MCA223	SOFTWARE ENGINEERING-II	4	--	100
MCA224	DATA WAREHOUSING AND MINING	4	--	100
MCA225	PRINCIPLES & PRACTICE OF MANAGEMENT	4	--	100
MCA226	NETWORK PROGRAMING LAB	--	4	50
MCA227	ADVANCED JAVA LAB	--	4	50
MCA228	MINI PROJECT ON DATABASES	--	4	50

Duly approved by the Standing Committee of the Academic Senate

Sd/- Prof. A. Sadanandam, Chairman, BOS

MCA221 UNIX NETWORK PROGRAMMING

U N I T - I

Interprocess Communication: Introduction, File and Record Locking, Simple Client-server Pipes, FIFO's, Streams and Messages, Name Spaces, System V IPC, Message Queues, Semaphores, Shared Memory, Socket and TLI. (Chapters 3, 3.1 to 3.12)

U N I T - II

A Network Primer Communication Protocols: Introduction, TCP/IP, XNS, SNA, NetBIOS, OSI Protocol, UUCP, Protocols Comparisons. (Chapters 4, 5, 5.1 to 5.8)

U N I T - III

Berkeley Sockets: Introduction, Overview, Unix Domain Protocols, Socket Addresses, Elementary Socket System Calls, Simple Examples, Advanced Socket System Calls, Reserved Ports, Stream Pipes, Passing File Descriptors, Socket Options, Asynchronous I/O, Input/Output Multiplexing, Out-of-Band and Data, Sockets and Signals, Internet Super server, Socket Implementation. (Chapters 6, 6.1 to 6.17)

U N I T - IV

Transport, Overview, Transport Endpoint Addresses, Elementary TLI Functions, Simple Example, Advanced TLI Functions, Streams, TLI Implementation, Stream Pipes, Passing File Descriptors, Input/Output Multiplexing, Asynchronous I/O, Out-of-Band Data. (Chapters 7, 7.1 to 7.13)

TEXT BOOK:

1. UNIX NETWORK PROGRAMMING BY W. RICHARD STEVENS

REFERENCE BOOKS:

1. UNIX SYSTEMS PROGRAMMING – K.A. ROBBINS, S. ROBBINS (PEARSON)
2. UNIX THE C ODYSSEY – M. GANDHI, SHETTI, SHAH (BPB PUBLICATIONS)
3. Unix made easy by J Muster (TMH)
4. Advanced Unix Programming by MJ Rochkind (Pearson)

MCA222 ADVANCED JAVA

U N I T - I

FILES AND STREAMS: Introduction, Data Hierarchy, Files and Streams, Creating a Sequential-Access File, Random-Access Files, Reading Data Sequentially from a Random-Access File.

NETWORKING: Introduction, Manipulating URLs, Reading a File on a Web Server, Establishing a Simple Server, Establishing a Simple Client, Client/Server Interaction with Stream Socket Connections, Connectionless Client/Server Interaction with Datagrams, Client/Server Tic-Tac-Toe Using a Multithreaded Server, Security and the Network. (Chapter 17 and 21 of Book 1)

Duly approved by the Standing Committee of the Academic Senate

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UNIT - II

JDBC DATABASE ACCESS: JDBC Basics, New Features in the JDBC 2.0 API (Chapter 26 and 27 of Book 2)

UNIT - III

REMOTE METHOD INVOCATION (RMI): Introduction, Case Study: Creating a Distributed System with RMI, Defining the Remote Interface Implementing the Remote Interface, Define the Client, Compile and Execute the Server and the Client.

JAVA BEANS: Introduction, Bean Box Overview, Preparing a Class to Be a JavaBeans, Creating a JavaBeans: Java Archive Files and the jar Utility, Adding Beans to the Bean Box, Connecting Beans with Events in the Bean Box, Adding Properties to a JavaBeans, Creating a JavaBeans with a Bound Property, Specifying the Bean Info Class for a JavaBeans, JavaBeans World Wide Web Resources. (Chapters 20 and 25 of Book 1)

UNIT - IV

SERVLETS: Overview of Serves, Interacting with Clients, The Life Cycle of a Servlet, Saving Client State, The servletrunner Utility, Running Servlets. (Chapters 34 to 39 of Book 2)

TEXT BOOKS:

1. JAVA HOW TO PROGRAM Third Edition - Deitel & Deitel
2. THE JAVA TUTORIAL CONTINUED Compione, Walrath, Huml, Tutorial Team - Addison Wesley

REFERENCE BOOKS:

1. JAVA TUTORIAL CONTINUED – CAMPIONE (Addison Wesley)
2. THE COMPLETE REFERENCE JAVA 2 (Fourth Edition) BY - PATRICK NAUGHTON & HERBET SCHILDT (TMH)
3. PROGRAMMING JAVA - DECKER&HIRSH FIELD VIKAS PUBLISKING (2001) (THOMSON LEARNING) (SECOND EDITON)
4. INTRODUCTION TO JAVA PROGRAMMING - Y.DANIEL LIANG PHI(2002)
5. OBJECT ORIENTED PROGRAMMING THROUGH JAVA 2 BY - THAMUS WU (Mc.Graw Hill)
6. JAVA 2 - DIETEL & DIETEL (PEARSON EDUCATION)
7. INTRODUCTION TO JAVA – BALA GURU SWAMY
8. INTRODUCTION TO PROGRAMMIND & OOD USING JAVA JAINO NINE & FA HOSCH (JOHN WILEY)
9. STARTING OUT WITH JAVA – JONY GADDIS (DREAM TECH PRESS)
10. JAVA PROGRAMMING – SCHAUM’S SERIES
11. OBJECT ORIENTED APPLICATION DEVELOPMENT USING JAVA – ER DOXE ETC. (THOMSON PRESS)
12. THINKING IN JAVA –BY – BRUCE ECKEL (PEARSON)
13. PROGRAMMING & PROBLEM SOLVING WITH JAVA – JM SLACK (THOMSON)
14. COMPUTING CONCEPTS WITH JAVA2 ESSENTIALS - CAY HORSTMANN (JOHNWILEY)
15. JAVA PROGRAMMING ADVANCED TOPICS – J WIGGLESWORTH, P LUMBY (THOMSON LEARNING)

MCA223 SOFTWARE ENGINEERING-II

U N I T – I

TESTING STRATEGIES: A strategic approach to software testing – Verification and Validation – Organizing for Software Testing – Testing Strategies – Criteria for completion of testing – unit, integration, validation and system testing – debugging. (Chapter 13)

TESTING TACTICS: Testing Fundamental – White Box, Black Box, and Control Structure Testing – Object Oriented testing Methods (Chapter 14)

PRODUCT METRICS: Software Quality – McCall's Quality Factors – ISO 9126 Quality Factors – Measures, Metrics and Indicators – Measures for analysis, design, code and testing – metrics for maintenance. (Chapter 15)

U N I T – II

PROJECT MANAGEMENT: The management Spectrum – The People – The Product – The Process – The Project – The W⁵HH Principle – Critical Practices.

MERTICS FOR PROCESS AND PROJECTS: Metrics in the Process and Project Domains – Software Measurement – Metrics for Software Quality – Integrating Metrics within the Software Process – Metrics for Small Organizations – Establishing a Software Metrics Program.

ESTIMATION: Observations on Estimation – The Project Planning Process – Software Scope and Feasibility – Resources – Software Project Estimation – Decomposition Techniques – Empirical Estimation Models – Estimation for Object-Oriented Projects – Specialized Estimation Techniques – The Make/buy Decision. (Chapters 21, 22 and 23)

U N I T – III

PROJECT SCHEDULING: Basic Concepts – Project Scheduling – Defining a Task Set for the Software Project – Defining a Task Network – Scheduling – Earned Value Analysis.

RISK MANAGEMENT: Reactive vs. Proactive Risk Strategies – Software Risks – Risk Identification – risk Projection – Risk Refinement – Risk Mitigation, Monitoring, and Management – The RMMM Plan.

QUALITY MANAGEMENT: Quality Concepts – Software Quality Assurance – Software Reviews – Formal Technical Reviews – Formal Approaches To SQA – Statistical Software Quality Assurance – Software Reliability – The ISO 9000 Quality Standards – The SQA Plan. (Chapters 24, 25 and 26)

U N I T – IV

CHANGE MANAGEMENT: Software Configuration Management – The SCM Repository – The SCM Process – Configuration Management for Web Engineering.

FORMAL METHODS: Basic Concepts – Mathematical Preliminaries – applying Mathematical Notation for Formal Specification – Formal Specification Languages – Object Constraint Language (OCL) – The Z Specification Language – The Ten Commandments o Formal Methods – Formal Methods – The Road Ahead.

CLEANROOM SOFTWARE ENGINEERING: The Clean room Approach – Functional Specification – Clean room Design – Clean room Testing.

REENGINEERING: Business Process Reengineering – Software Reengineering – Reverse Engineering – Restructuring – forward Engineering – The Economics of Reengineering. (Chapters 27, 28, 29 and 31)

TEXT BOOK:

1. SOFTWARE ENGINEERING BY R.S. PRESSMAN (McGraw Hill Sixth Edition)

REFERENCE BOOKS:

2. SOFTWARE ENGINEERING BY GHAZZI (PHI)
3. SOFTWARE ENGINEERING BY FAIRLEY (McGraw Hill)
4. SOFTWARE ENGINEERING by Behforouz and Hudson (Oxford University Press)
5. SOFTWARE ENGINEERING Theory & practice by Pfleeger (Pearson)
6. SOFTWARE ENGINEERING by KR Agarwal & Yogesh Singh (New Age)
7. SOFTWARE ENGINEERING (Schaum's Series TMH)
8. Object Oriented SOFTWARE ENGINEERING by SR Schach (TMH)
9. Object Oriented System Analysis And Design by Bennett etl (TMH)

MCA224 DATA WAREHOUSING AND DATA MINING

UNIT-I

What is Data Mining, Data Mining Functionalities, and classification, Data Mining Task, Integrating a Data Mining System, Major issues in Data Mining, Descriptive Data Summarization, and Data Cleaning. (Chapters 1,2.1 to 2.3)

UNIT-II

Data Integration and transformation, Data reduction, Data Discrimination and concept Hierarchy Generation. What is Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Complementation, From Data Warehouse to data mining. (Chapters 2.4 to 2.6, 3)

UNIT-III

Basic Concepts of frequent patterns, Frequent Item sets, mining methods, Association rules, what is classification and Prediction, Classification By Decision Tree Induction, Bayesian Classification, Rule-Based Classification. (Chapters 5.1, 5.2.1, 5.2.2, 5.3.1, 6.1, 6.2, 6.3.1, 6.3.3, 6.4.1, 6.4.2, 6.5.1 and 6.5.2)

UNIT – IV

What is Cluster analysis, types, Partitioning methods, Hierarchical methods, Density Based methods, Grid Based methods, and Model-Based Clustering methods, Outlier analysis? (Chapters 7.1 to 7.8 and 7.11)

Duly approved by the Standing Committee of the Academic Senate

Sd/- Prof. A. Sadanandam, Chairman, BOS

TEXT BOOK:

1. DATA MINING CONCEPTS & TECHNIQUES BY JIAEEI HAN, MICHELINE & KAMBER (2nd EDITION) Harcourt India (Elsevier Publishing Company)

REFERENCE BOOKS:

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
6. DATA WAREHOUSING, DATA MINING & OLAP BY ALEX BERSON AND STEPHEN J. SMITH (TMH)
7. Data Warehousing by S Mohanthy (TMH)
8. Data Warehousing using Oracle by Deshpande (Dreamtech)
9. Data Warehousing by Amitesh Sinha (Thomson)
10. Data Mining by P Adriaans & D Zantinge (Pearson)
11. Data Mining by S M Sivanandam & S Sumathi

MCA225 PRINCIPLES AND PRACTICE OF MANAGEMENT**U N I T - I**

Management: Meaning - Nature - Significance of Management Principles of Management - Approaches to Management - An Overview DOF Managerial Functions - Management as Profession - Social Responsibilities of Management.

PLANNING: Concept, Characteristics - Importance and Limitations Steps in Planning Process - Strategic Planning - Decision Making Process.

U N I T - II

ORGANISING: Concept - Importance - Steps in Organising Process Base and Problems of Departmentation - Delegation of Authority - Centralization and Decentralization - Line and Staff Relations - Span of Management.

U N I T - III

DIRECTING: Nature and Importance - Communication - Concept Elements - Process - Patterns of Communication - Barriers to Communication.

MOTIVATION: Nature and Significance - Types of Motivation - Determinants of Motivation - A Brief Discussion on Theories of Motivation (MASLOW's Theory, McCLELLAND FNEED THEORY, THEORY X AND THEORY Y).

LEADERSHIP: Concept - Importance - Leadership Styles - Autocratic, Democratic and Free Rein.

UNIT - IV

STAFFING: Concept - Human Resource Planning - A Brief Description of Recruitment - Selection - Training and Appraisal Methods

Controlling: Meaning - Importance - Steps in Control Process - Problems of Controlling - A Brief Description of Control Techniques

Coordination : Need for Coordination - Approaches to Effective Coordination - Techniques of Coordination.

TEXT BOOK:

1. L.M. PRASAD - PRINCIPLES AND PRACTICES OF MANAGEMENT.

REFERENCES:

1. MANAGEMENT, JAMES A.F. STONER AND CHARLES WANKEL
2. MANAGEMENT, KOONTZ HAROLD AND O'DONNELL CYRIL
3. ORGANISATION AND MANAGEMENT, LOUIS ALLEN
4. MANAGEMENT - TASKS AND RESPONSIBILITIES, PETER F DRUCKER

MCA226 UNIX NETWORK PROGRAMMING LAB

1. Write a program that takes one or more file/directory names as command line
2. input and reports the following information on the file:
 - a. File type.
 - b. Number of links.
 - c. Time of last access.
 - d. Read, Write and Execute permissions.
3. Write a C program that illustrates how to execute two commands concurrently with a command pipe.
4. Write a C program that illustrates the creation of child process using fork system call.
5. Write a C program that displays the real time of a day every 60 seconds.
6. Write a C program that illustrates file locking using semaphores.
7. Write a C program that implements a producer-consumer system with two processes.(using semaphores)
8. Write a C program that illustrates inter process communication using shared memory system calls.
9. Write a C program that illustrates the following.
 - a. Creating a message queue.
 - b. Writing to a message queue.
 - c. Reading from a message queue.

TEXT BOOK:

1. UNIX NETWORK PROGRAMMING BY W. RICHARD STEVENS

REFERENCE BOOKS:

1. UNIX SYSTEMS PROGRAMMING – K.A. ROBBINS, S. ROBBINS (PEARSON)
2. UNIX THE C ODYSSEY – M. GANDHI, SHETTI, SHAH (BPB PUBLICATIONS)

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MCA227 ADVANCED JAVA LAB

PROGRAMS IN JDBC:

1. Write a JDBC Application which creates following menu.
 1. Select statement
 2. Statement other than select statement
 3. ExitEnter your choice (1..3):
Answer:

- 2 Write a JDBC Application which inserting the data at runtime.
- 3 Write a JDBC Application to select values from table using prepared statement
- 4 Write a JDBC Application with designing the form

Query

5. Write a JDBC Application. Finding out column count and column labels along with data
6. Write a JDBC Application finding out all the tables in the database.
7. Write a JDBC Application reading dates and null values from the database.
 1. Write a JDBC Application with form designing

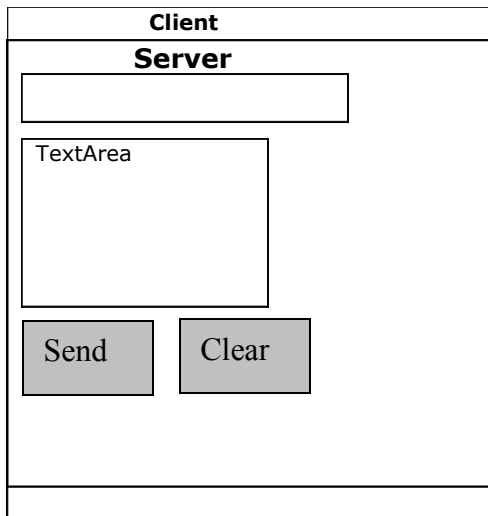
The image shows a graphical user interface (GUI) for a JDBC application. It features a window with several input fields and buttons. The input fields are labeled 'Emp no', 'Emp Name', 'Salary:', and 'Designatio'. To the right of these fields are buttons labeled 'First', 'NEXT', 'PREVIOUS', and 'LAST'. At the bottom of the window are buttons for 'Insert', 'Update', 'Delete', 'Select', 'Clear', and 'Exit'.

9. Write a JDBC Application for SQL procedure Execution with both IN and OUT parameter using callable statement.
10. Write a JDBC Application for SQL function Execution using callable statement.

NETWORKING:

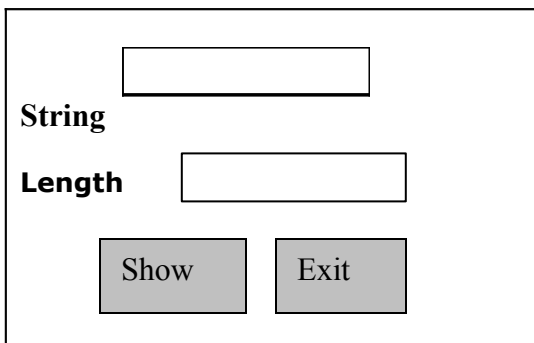
1. Write a client/server application using stream sockets
2. Write a client/server application using datagram sockets
3. Write a program for simple file transfer.
4. Write a program for reading from a URL
5. Write a program for Multithreaded FTP server

6. Write a client/server program with form designing (Text field, labels, Text Area, Buttons)



RMI:

1. Write a program for on RMI Application
2. Write a program for passing on objects to on RMI
3. Write an RMI Application for invoking the database to retrieve the results
4. Write an RMI Application with Form Designing



5. Write an RMI Application with form designing
Enter file name by selecting the file dialog box

The diagram shows a rectangular window with a black border. At the top left, the text "File Name" is followed by a rectangular text input field. Below this, on the left side, is a larger rectangular area labeled "TextArea". At the bottom of the window, there are three rectangular buttons arranged horizontally, labeled "Show", "clear", and "Exit" from left to right.

JAVA – BEANS:

1. Write a Bean Application for an simple property
2. Write a Bean Application for an Booleen Property
3. Write a Bean Application to retrieve the values from the table by invoking database
4. Write a Bean Application for an Indexed property
5. Write a Bean Application for starting and stopping the Juggler Bean and Execute it in Applet
6. Write a Bean Application for an Bound property
7. Write a Bean Application for an constrained property
8. Write a Bean Application for Rotating a Molecular Bean

SERVLETS:

1. Write a servlet program for displaying a message in a browser using generic servlet
2. Write a servlet program to communicate html-servlet

The diagram shows a rectangular form with a black border. It contains two rows of labels and input fields. The first row has the label "Name:" followed by a text input field. The second row has the label "Age:" followed by a text input field. Below these two rows, centered horizontally, is a rectangular button labeled "Send".

3. Write a servlet program to reterive the initial arguments
4. Write a servlet program to communicate the Html – Servlet – Database. Retrive the results for an particular Empno.

The diagram shows a rectangular form with a black border. It contains one row with the label "Emp no" followed by a text input field. Below this row, centered horizontally, is a rectangular button labeled "Send".

5. Write a servlet program to retrieve the results from a table in the format

Empno	Emp Name	Sal
101	xyz	1500
102	abc	3000
103	def	7000

6. W Communicating first servlet to second servlet
 7. W ng the get and post methods.

Studno

Empno

- 8. Write a servlet program for session tracking using hidden form fields.
- 9. Write a servlet program for session tracking using http session.
- 10. Write a servlet program for session tracking using cookies
- 11. write a servlet program for communicating first servlet to another by URL class
- 12. Write a servlet program in the format using http servlet.

ENO	
ENAME	
SAL	
<input style="width: 100px; height: 25px;" type="button" value="INSERT"/>	

TEXT BOOK:

1. JAVA How to Programming BY DEITEL & DEITEL (PEARSON Education - Third Edition-2001)

REFERENCE BOOKS:

2. JAVA TUTORIAL CONTINUED – CAMPIONE (Addison Wesley)
3. THE COMPLETE REFERENCE JAVA 2 (Fourth Edition) BY - PATRICK NAUGHTON & HERBET SCHILDT (TMH)
4. PROGRAMMING JAVA - DECKER&HIRSH FIELD VIKAS PUBLISKING (2001) (THOMSON LEARNING) (SECOND EDITON)
5. INTRODUCTION TO JAVA PROGRAMMING - Y.DANIEL LIANG PHI(2002)
6. OBJECT ORIENTED PROGRAMMING THROUGH JAVA 2 BY - THAMUS WU (Mc.Graw Hill)
7. JAVA 2 - DIETEL & DIETEL (PEARSON EDUCATION)
8. INTRODUCTION TO JAVA – BALA GURU SWAMY
9. INTRODUCTION TO PROGRAMMIND & OOD USING JAVA – JAINO NINE & FA HOSCH (JOHN WILEY)
10. STARTING OUT WITH JAVA – JONY GADDIS (DREAM TECH PRESS)
11. JAVA PROGRAMMING – SCHAUM’S SERIES
12. OBJECT ORIENTED APPLICATION DEVELOPMENT USING JAVA – ER DOXE ETC. (THOMSON PRESS)
13. THINKING IN JAVA –BY – BRUCE ECKEL (PEARSON)
14. PROGRAMMING & PROBLEM SOLVING WITH JAVA – JM SLACK (THOMSON)
15. COMPUTING CONCEPTS WITH JAVA2 ESSENTIALS - CAY HORSTMANN (JOHNWILEY)
16. JAVA PROGRAMMING ADVANCED TOPICS – J WIGGLESWORTH, P LUMBY (THOMSON LEARNING)

KUMCA-228**MINI PROJECT**

Using Database Server and front end Tools

KAKATIYA UNIVERSITY WARANGAL-506009

COURSE STRUCTURE FOR MCA III YEAR I SEMESTER WITH EFFECT FROM 2007-2008

PAPER CODE	TITLE	WORKLOAD PER WEEK		MARKS
		THEORY	PRACTICAL	
MCA311	CRYPTOGRAPHY AND NETWORK SECURITY	4	--	100
MCA312	ARTIFICIAL INTELLIGENCE	4	--	100
MCA313	WEB & VISUAL PROGRAMMING	4	--	100
MCA314 * ELECTIVE-I	A) OPERATIONS RESEARCH OR B) E COMMERCE	4	--	100
MCA315 * ELECTIVE_II	C) DISTRIBUTED OPERATING SYSTEMS OR D) COMPILER DESIGN	4	--	100
MCA316	GUI PROGRAMMING LAB	--	4	50
MCA317	SOFTWARE TESTING LAB	--	4	50
MCA318	ADVANCED WEB PROGRAMMING LAB	--	4	50

11. Papers MCA314 and MCA315 are electives.

12. The student has to choose A or B for Paper MCA314 and C or D for Paper MCA315

Kumca311 CRYPTOGRAPHY AND NETWORK SECURITY

UNIT - I

INTRODUCTION:- Attacks, Services, and Mechanisms, Security Services.

CONVENTIONAL ENCRYPTION: CLASSICAL TECHNIQUES: Steganography, Classical Encryption Techniques.

CONVENTIONAL ENCRYPTION: MODERN TECHNIQUES:- Simplified DES. The Data Encryption Standard, Differential and Linear Cryptanalysis, Block Cipher Modes of Operation.

UNIT - II

CONFIDENTIALITY USING CONVENTIONAL ENCRYPTION:- Traffic Confidentiality, Random Number Generation.

PUBLIC-KEY CRYPTOGRAPHY:- Principles of Public-Key Cryptosystems, The RSA Algorithm, Diffie-Hellman Key Exchange, Elliptic Curve Cryptography.

INTRODUCTION TO NUMBER THEORY:- Prime and Relatively Prime Numbers, Fermat's and Euler's Theorem, Euclid's Algorithm, The Chinese Remainder Theorem, Discrete Logarithms.

UNIT - III

MESSAGE AUTHENTICATION AND HASH FUNCTIONS:- Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and MACs.

DIGITAL SIGNATURES AND AUTHENTICATION PROTOCOLS:- Digital Signatures, Authentication Protocols, Digital Signature Standard.

UNIT - IV

ELECTRONIC MAIL SECURITY: S/MIME.

IP SECURITY: IP Security Overview, IP Security Architecture, Encapsulating Security Payload, Key Management. FIREWALLS: Firewall Design Principles, Trusted Systems. (Chapters 1,2,4,5,6,7,8,10,12,13 and 16)

TEXT BOOK:

2. CRYPTOGRAPHY AND NETWORK SECURITY principles and Practice FOURTH Edition By Willam Stallings (Pearson Asia)

REFERENCE BOOKS:

9. CRYPTOGRAPHY AND NETWORK SECURITY By Atul Kahate , TMH
3. DAVIES & PRICE : SECURITY FOR COMPUTER NETWORKS - Wiley (1984)
4. MAYER & MATYAS : CRYPTOGRAPHY - Wiley B. SCHNEIER : APPLIED CRYPTOGRAPHY - (John Wiley)
5. CRYPTOGRAPHY IN C AND C++ :WEISCHANBACH - A PRESS
6. CRYPTOGRAPHY MYSTIFIED :HERSHEY
7. Introduction to cryptography BY J A Buchanan (Springer)

Kumca312 ARTIFICIAL INTELLIGENCE

UNIT - I

ARTIFICIAL INTELLIGENCE: ITS ROOTS AND SCOPE, AI: HISTORY AND APPLICATIONS : From Eden to ENIAC: Attitudes toward Intelligence, Knowledge, and Human Artifice, Overview of AI Application Area

ARTIFICIAL INTELLIGENCE AS REPRESENTATION AND SEARCH: Introduction, The Propositional Calculus, The Predicate Calculus, Using co Rules to Produce Predicate Calculus Expressions, Application: A Logic-Based Financial Advisor. (Chapters 1&2)

UNIT - II

STRUCTURES AND STRATEGIES FOR STATE SPACE SEARCH: Introduction, Graph Theory, Strategies for State Space Search, Using the State Space to Represent Reasoning with the Predicate Calculus.

HEURISTIC SEARCH: Introduction, An Algorithm for Heuristic Search, Admissibility, Monotonicity, and Informed ness, Using Heuristics in Games, Complexity Issues.

CONTROL AND IMPLEMENTATION OF STATE SPACE SEARCH: Introduction, Recursion-Based Search, Pattern-Directed Search, production Systems, The Blackboard Architecture for Problem Solving. (Chapters 3, 4 and 5)

UNIT - III

REPRESENTATION AND INTELLIGENCE: THE AI CHALLENGE:
KNOWLEDGE REPRESENTATION: Issues in Knowledge Representation, A Brief History of AI Representational Systems, Conceptual Graphs: A Network Language, Alternatives to Explicit Representation, Agent Based and Distributed Problem Solving.

STRONG METHOD PROBLEM SOLVING: Introduction, Overview of Expert System Technology, Rule-Based Expert Systems, Model-Based, Case Based, and Hybrid Systems, Planning. (Chapters 6 and 7)

UNIT - IV

REASONING IN UNCERTAIN SITUATIONS: Introduction, Logic-Based Abductive Inference, Abduction: Alternatives to Logic, The Stochastic Approach to Uncertainty. (Chapter 8)

TEXT BOOK

2. ARTIFICIAL INTELLIGENCE By George F Luger, Pearson Education.

REFERENCE BOOKS :

2. ARTIFICIAL INTELLIGENCES By Ritch & Neight.
3. INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS By D.W. Patterson (PHI-2001)
4. ARTIFICIAL INTELLIGENCE By Patrick Henry Winston(Pearson)
5. PRINCIPLES OF ARTIFICIAL INTELLIGENCE (Narosa)
6. Artificial Intelligence By Shiart Russel Peter Norvig (Pearson)

Duly approved by the Standing Committee of the Academic Senate

Sd/- Prof. A. Sadanandam, Chairman, BOS

7. EXPERT SYSTEMS SYSTEMS AND PRACTICE By Giarratano & Riely (Thomson)
8. ARTIFICIAL INTELLIGENCE APPLICATIONS PROGRAMMING By M Tim Jones (Dreamtech)
9. DECISION SUPPORT SYSTEMS AND INTELLIGENT SYSTEMS By E Turban & J E Aronson (Pearson)
10. ARTIFICIAL intelligence By E Charnaik and D Mcdermott (Addission Wesley)
11. KNOWLEDGE REPRESENTATION LOGICAL , PHILOSOPHICAL & COMPUTATIONAL FOUNDATIONS By J E Sowa

KUMCA 313 WEB AND VISUAL PROGRAMMING

UNIT – I

WEB PROGRAMMING: Introduction to Website design – Website design, Web page design, HTML tags, creating HTML files using Microsoft Front page.

Java Script – Introduction to scripting, functions, arrays, Math, String, Date, Boolean and Number Objects.

Cascading style sheets – In line styles, creating style sheets with the style element, linking external style sheets, user style sheets.

Object Model – ONCLICK, ONLOAD, ONERROR, ONMOUSEMOVE, ONMOUSEOVER, ONMOUSEOUT, ONFOCUS, ONBLUR, ONSUBMIT, ONRESET events.

CGI and Perl – Introduction to Perl, Viewing client/server environment variables, form processing and business logic, using ODBC to connect to a database, cookies.

Servlets – Overview of servlet technology, Handling HTTP GET and POST requests, Session tracking, using JDBC from a servlet.

UNIT - II

VISUAL PROGRAMMING: Introduction to VC ++ environment – Introduction to VC ++, Debugging, introduction to MFC using callback functions and message loop.

Creating and using dialog boxes – handling dialogs in MFC< Dialog data exchange and validation, Modeless dialog boxes, using and expanding the common dialogs and comman controls, customizing the common dialogs.

Creating and Using property sheets – Creating C Property Page derived classes, Responding to property sheet messages, customizing the standard property sheet.

UNIT - III

Working with device contexts and GDI objects – Device contexts in MFC, Brushes and Pens, MFC classes of GDI operations, fonts, bitmaps, device independent bitmap class.

Manipulating threads and managing processes – The difference between processes and threads, creating threads, MFC creation benefits, controlling function, thread synchronization, creating a process.

UNIT - IV

Managing the system registry – Registry’s structure, The predefined registry branches, editing the registry manually, commonly used registry keys, writing application, programs that manipulate the registry.

Exception handling – Exceptions and MFC, the MFC C Exception class, throwing an MFC exception using the ASSERT macros for exception handling.

TEXT BOOKS:

3. Lars Klander, Core Visual C ++ 6, Pearson Education, PHI
4. Deitel, Deitel & Nieto, Internet and Worldwide Web how to Program, Pearson Education, PHI.

REFERENCE BOOKS:

12. Ivan Bayross, Web enabled commercial application development using HTML, DHTML, Java Script, PERL&CGI, BPB publications.
13. Danny Ayers, Hans Bergstem, Mike Bogovich, Professional Java Server Programming, Wrox Press Limited.
14. Davis Chapman, Visual C ++ 6, SAMS Techmedia.
15. Visual C ++ 6, J.P. Muller, TMH
16. Herbert Schildt, MFC Programming for the Ground Up, TMH
17. Alex Berson Stephen J. Smith, Data Warehousing, Data Mining & OLAP, TMH
18. John paul Mueller, Visual C ++ 6, TMH
19. A First Book of Visual C++ By Bronsom (Thomson)\9.
20. Microsoft Visual C++ By Kruglinski et al (wp Press)
21. Complete Reference Visual C++ 6 By Pappas and Murray (TMH)
22. Professional Visual C++ 6 Programming By Steve Holzner (Wiley Dream Tech)
23. MFC Visual C++ 6 By Mike Blaszcak (Wrox)
24. Programming and Working with MFC By Jef Prosize (WP Press)
25. Beginning Visual C++ By Ivor Horton (Wrox)

KUMCA 314 Elective (a) OPERATIONS RESEARCH

UNIT – I

Overview of operations Research, Linear Programming Development, Methods, Duality, Sensitivity Analysis,

TRANSPORTATION PROBLEM : Types of Transportation Problem, Methods to Solve Transportation Problem, Transshipment Model.

ASSIGNMENT PROBLEM : Zero-One Programmin Model for Assignment Problem, Types of Assignment Problem, Hugerian Method, Branch-and-bound Technique for Assignment problem. (Chapters 1,2,3,4)

UNIT – II

NETWORK TECHNIQUES : Shortest-path Model, Minimum Spanning Tree problem, Maximal Flow Problem.

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INTEGER PROGRAMMING: Integer Programming Formulations, The Cutting - Plane Algorithm, Branch-and-bound Technique, Zero-One Implicit Enumeration Algorithm.
INVENTORY CONTROL : Models of Inventory, Operation of Inventory System, Quantity Discount, Implementation of Purchase Inventory Model, Multiple-item Model with Shortage Limitation, Determination of Stock Level of Perishable Items under Probabilistic Condition. (Chapters 5,6,7)

UNIT - III

DYNAMIC PROGRAMMING : Introduction, Application of Dynamic Programming.
QUEUEING THEORY : Terminologies of Queueing System, Empirical Queueing Models, Simulation.
PROJECT MANAGEMENT : Phases of Project Management, Guidelines for Network Construction, Critical Path Method (CPM), Gantt Char (Time Chart), Project Evaluation and Review Technique (PERT), Crashing of Project Network, Project Scheduling with Constrained Resources. (Chapters 8,9,10)

UNIT - IV

GAME THEORY : Game with Pure Strategies, Game with Mixed Strategies, Dominance Property, Graphical Mehtod for $2 \times n$ or $m \times 2$ Games, Linear Prgoramming Approach for Game Theory.
PRODUCTION SCHEDULING : Single-Machine Scheduling, Flow Shop Schedulling, Job Shop Scheduling. (Chapters 12,14)

TEXT BOOK: 1. OPERATION RESEARCH, R. PANNEERSELVAM (phi,2002)

REFERENCE BOOK: OPERATIONS RESEARCH, THAHA (PHI)

KUMCA 314 ELECTIVE(b) : e-COMMERCE

UNIT - I

Traditional Commerce Electronic Commerce-Economic forces& Electronic Commerce-Value Chains in Electronic Commerce-SWOT Analysis- Internet and World Wide Web-Packet Switched Networks-Internet Protocols – Markup Languages and the Web- Intranets and Extranets – INTERNET connection Options – Revenue Models for selling on the Web – Revenue Models in Transition – Revenue strategy Issues – Creating an Effective Web Presence – Web Marketing Strategies – Advertising on the Web – Creating and Maintaining Brands on the Web – Search Engine positioning and Domain Names

UNIT - II

Purchasing, Logistics and Support purchasing – Electronic Data Interchange – EDI on the Internet – Supply Chain Management – Electronic Marketplaces and portals – Web auctions and Related Businesses – virtual Community and portal Strategies – International Nature of Electronic Commerce – Legal environment of Electronic Commerce – Ethical Issues – Taxation and Electronic Commerce

UNIT - III

Web Server Hardware and Software – Software for Web Servers – WebSite and Internet Utility programs – Web Server Hardware – Web Hosting Choices –Electronic Commerce Software – Advanced functions of Electronic Commerce software – Electronic commerce software for small and mid sized companies- electronic commerce software for medium sized to large businesses – Electronic commerce Software for large Businesses – Internet security Issues overview – Intellectual Property threats – Threats to the Security of client Computers – Threats to the Security of Communication Channels – Threats to the Security of Server Computers

UNIT – IV

Electronic Commerce Security Objectives – Protecting Client Computers – Protecting electronic Commerce Communication Channels – Protecting the Web Server – Payment Systems for Electronic commerce – Payment Cards – Electronic Cash – Electronic Wallets – Stored Value Cards – Planning for Electronic Commerce – Strategies for Developing Electronic Commerce Web Sites – Managing electronic Commerce Implementations

TEXT BOOK

ELECTRONIC COMMERCE, Gary P Schneider –Thomson Publishers

REFERENCE BOOKS

- 1.ELECTRONIC COMMERCE BY ELIAS M AWAD (PEARSON)
- 2.FRONTIERS OF ELECTRONIC COMMERCE BY KALAKOTA & WHINSTON (PEARSON)
- 3.e- COMMERCWE BY J F RAYPORT, B J JAWORSKI (TMH)

Kumca315 ELECTIVE(c) DISTRIBUTED OPERATING SYSTEMS

UNIT - I

Introduction to Distributed Systems: Definition of Distributed systems – Hardware Concepts – Software concepts.

Communication in Distributed systems: The Client – Server model – Remote Procedure Call – Group Communication.

UNIT – II

Synchronization in Distributed Systems: Clock Synchronization – Mutual Exclusion – Election Algorithms – Atomic Transactions – Deadlock in Distributed Sytems.

Processes and Processors in Distributed Systems: Threads – System Models – Processor Allocation – Scheduling in Distributed Systems – Real time Distributed Systems.

UNIT - III

Distribute File Systems: Distributed File System Design – Distributed File System implementation – Trends in Distributed file systems.

Distributed Shared Memory: Concept of Shared Memory – Consistency Models – Page –based Distributed Shared Memory – Shared-variable Distributed Shared Memory.

UNIT - IV

Introduction to MACH: Introduction – Process Management in MACH – Memory Management in MACH – communication in MACH – Unix Emulation in MACH.

TEXT BOOK:

1. Distributed Operating Systems, Prof. A. S. Tanenbaum, Pearson

REFERENCE BOOKS:

- 14 Applied Operating System Concepts, Silberschatz, Peter Galvin, Breg Gagne, John Wiley & sons
- 15 Operating Systems, Willaim Stallings (Pearson)
- 16 Advanced concepts in Operating Systems , M. Shigha & NG shirvtratri (TMH)
- 17 Distrbuted Systems Concepts & Design By G Coulouris et al (Pearson)
- 18 Distributed Systems and Networks By Buchanan (TMH)

KUMCA - ELECTIVE 314(b) : COMPILER DESIGN

UNIT – I

Overview of Compilation: Phases of Compilation – Lexical Analysis, Regular Grammar and regular expression for common programming language features, pass and Phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer generator.

Top down Parsing: Context free grammars, Top down parsing – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.

UNIT – II

Bottom up parsing: - Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing , handling ambiguous grammar, YACC – automatic parser generator.

Semantic analysis:_Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Conversion of popular Programming languages language Constructs into Intermediate code forms, Type checker.

UNIT – III

Symbol Tables: Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information. Block structures and non block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records.

Code optimization: Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.

UNIT – IV

Data flow analysis: Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

Object code generation: Object code forms, machine dependent code optimization, register allocation and assignment generic code generation algorithms, DAG for register allocation.

Text Books:

16. Principles of compiler design -A.V. Aho . J.D.Ullman; Pearson Education
17. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

Reference Books:

14. lex &yacc – John R. Levine, Tony Mason, Doug Brown, O’reilly
15. Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wiley dreamtech.
16. Engineering a Compiler-Cooper & Linda, Elsevier.
17. Compiler Construction, Louden, Thomson..
18. AN INTRODUCTION TO FORMAL LANGUAGES AND AUTOMATA (Third Edition), PETER LINZ (Narosa)
19. INTRODUCTION TO COMPILING TECHNIQUES (Second Edition), P. BENNETT (Mc Grow Hill)
20. COMPILER WRITING By - T REMBLAY & SORENSON (McGRAW HILL)
21. COMPILER CONSTRUCTION - Dhamdhare (Macmullaw)
22. INTRODUCTION TO COMPUTER THEORY BY DCA COHEN (WILEY)
23. HE DAY OF COMPUTER SCIENCE - MISHRA & CHANDRA SEKHAR (PHI)
24. THEORY OF COMPUTATION - MARTEN (TMH)
25. INTRODUCTION TO AUTOMATA THEORY LANGUAGE & COMPUTATION - J E HOPEROFT et al (Narosa)

KUMCA 316 GUI PROGRAMMING LAB

ASSIGNMENTS:

5. Creating home pages for institutions and organizations
6. On line shopping
7. Online examinations
8. Chat system
9. Mailing system
10. Building of E-Commerce portals

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11. Building a Visual C ++ application.
12. Controls usage, Mouse and keyboard integrating applications.
13. Working with timers and adding dialog boxes.
14. Creating menus
15. Incorporating graphics, drawings and Bitmaps and Active X controls to an application.
16. Creating single and multiple documents Interface applications.
17. Adding tool bars and status bars.
18. File access and retrieving data from an ODBC database.
19. Updating and Adding database records through ADO.
20. Creating your own classes and modules.
21. Creating DLLs.
22. Multi-tasking
23. Creating Active X controls
24. Internet Application and Network communications.
25. Adding WEB browsing functionality to Applications.

REFERENCE BOOKS:

13. VC ++ 6 COMPLETE REFERENCE, C.H. PAPPAS AND W.H. MURRAY (TMH)
14. Visual C ++ 6 Programming, STEve Holzner (Dream Tech)
15. Visual C ++, Holzner (PHI)
16. Visual C ++, Sphar (Phi/Microsoft)
17. Visual C ++ By SanghVi (Vikas)
18. Deitel, Deitel & Nieto, Internet and Worldwide Web how to Program, Pearson Education, PHI.

KUMCA 317 Software Testing Lab USING WinRunner-

By Using the Calculator

3. Perform GUI Regression test using Rapid Test Script Wizard(RTSW).
4. Perform Bit map Regression test using RTSW.
5. Perform User Interface test using RTSW.
6. Perform Test template test using RTSW.
7. Perform GUI checkpoint for single property.
8. Perform checkpoint for single property.
9. Perform GUI checkpoint for multiple objects.
10. Perform Bitmap checkpoint for object/window.
11. Perform Bitmap checkpoint for screen area.

By Using the Sample Visual Basic Application

12. Perform GUI Regression test using Rapid Test Script Wizard for Visual Basic Application
13. Perform Bit map Regression test using RTSW for Visual Basic Application.
14. Perform User Interface test using RTSW for Visual Basic Application.
15. Perform Test template test using RTSW for Visual Basic Application.
16. Perform GUI checkpoint for single property for Visual Basic Application.
17. Perform checkpoint for single property (use VB Application)
18. Perform GUI checkpoint for multiple objects for Visual Basic Application.

19. Perform Bitmap checkpoint for object/window for Visual Basic Application.
20. Perform Bitmap checkpoint for screen area for VB Application.

Test Cases Preparation

21. Prepare a Test case to evaluate the process of changing the password of a user (Use Visual Basic Application)
22. Prepare a Test Case to evaluate the Calculator Operations. (Develop an Visual Basic Application).

REFERECE:

2. SOFTWARE TESTING TOOLS BY KVKK PRSAD (Dream tech)
3. Software testig tools by nageshwar rao pusuluri(Dream Tech)

KUMCA 318 Advanced Web Programming lab

Programs and Exercises will be done by the students covering the following topics within the scope of Chapters 1 to 20 of the book J2EE 1.4 Bible, Dreamtech-2003.

J2EE Platform, XML Fundamentals, Application Servers, RMI, Servlet Programming, JSP Basics, JSP: tag extensions, Javamail, Java Messaging Service, Java Transactions, Java Cryptography Extensions, EJB architecture and design, session Beans and Business logic, Entity Beans, Message Driver Beans, J2EE Connect or architecture, Web Services.

Reference Books

8. Mastering EJB by Roman (John Wiley)
9. J2EE by Wrox (SPD)
10. J2EE 1.4 By A.E.Walsh (Dreamtech)
11. PROFESSIONAL JAVA SERVER PROGRAMMING, ALLAMRAJU Et al. (Academic PRESS)

**KAKATIYA UNIVERSITY
WARANGAL-506009**

COURSE STRUCTURE FOR MCA III YEAR II SEMESTER

Paper Code	Title	Duration	Marks
MCA321	Industry Project	3 to 4 Months	150

Instructions and Guidelines and evaluation Procedure:

Original bona fide industry Project work, either individually or by a team of not more than FOUR should be carried out with intimation to and guidance from the internal staff member.

The project will be defended by the student by way of a presentation (PPT) and question answer session in the presence of other students and examiners.

The Project report should normally limited to 200 pages and should be divided into 4 to 7 chapters. The report should contain objectives, preposition, review of related research work, methodology, system study, design, coding and screen shots of the sample input and outputs. The last chapter should contain a note on the strengths and weaknesses of the system, scope for further enhancement and other conclusions. Tables, charts, diagrams, pseudo code must be extensively used. Reproduction of theoretical material and explanation of software technologies used must be avoided and or minimized.