

**UNIT I      PARALLEL AND DISTRIBUTED DATABASES**

Database System Architectures: Centralized and Client-Server Architectures – Server System Architectures – Parallel Systems- Distributed Systems – Parallel Databases: I/O Parallelism – Inter and Intra Query Parallelism – Inter and Intra operation Parallelism – Distributed Database Concepts - Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency Control – Distributed Query Processing – Three Tier Client Server Architecture- Case Studies.

**UNIT II      OBJECT AND OBJECT RELATIONAL DATABASES**

Concepts for Object Databases: Object Identity – Object structure – Type Constructors – Encapsulation of Operations – Methods – Persistence – Type and Class Hierarchies – Inheritance – Complex Objects – Object Database Standards, Languages and Design: ODMG Model – ODL – OQL – Object Relational and Extended – Relational Systems : Object Relational feature sin SQL/Oracle – Case Studies.

**UNIT III      XML DATABASES**

XML Databases: XML Data Model – DTD - XML Schema - XML Querying – Web Databases – JDBC – Information Retrieval – Data Warehousing – Data Mining

**UNIT IV      MOBILE DATABASES**

Mobile Databases: Location and Handoff Management - Effect of Mobility on Data Management - Location Dependent Data Distribution - Mobile Transaction Models - Concurrency Control - Transaction Commit Protocols- Mobile Database Recovery Schemes

**UNIT V      MULTIMEDIA DATABASES**

Multidimensional Data Structures – Image Databases – Text/Document Databases- Video Databases – Audio Databases – Multimedia Database Design.

**TOTAL = 45****REFERENCES**

1. R. Elmasri, S.B. Navathe, “Fundamentals of Database Systems”, Fifth Edition, Pearson Education/Addison Wesley, 2007.
2. Thomas Cannolly and Carolyn Begg, “ Database Systems, A Practical Approach to Design, Implementation and Management”, Third Edition, Pearson Education, 2007.
3. Henry F Korth, Abraham Silberschatz, S. Sudharshan, “Database System Concepts”, Fifth Edition, McGraw Hill, 2006.
4. C.J.Date, A.Kannan and S.Swamynathan,“An Introduction to Database Systems”, Eighth Edition, Pearson Education, 2006.

5. V.S.Subramanian, "Principles of Multimedia Database Systems", Harcourt India Pvt Ltd., 2001.
6. Vijay Kumar, " Mobile Database Systems", John Wiley & Sons, 2006.

<b>UNIT I</b>	<b>9</b>
Preliminaries – System Software – Review of Computer Architecture – Machine Instructions and Programs – Assemblers – Basic Assembler Functions – Assembler Features – Assembler Design Options	
<b>UNIT II</b>	<b>9</b>
Macro processors – Absolute Loader – Bootstrap Loader – Relocation – Program Linking – Automatic Library Search – Linkage Editors – Dynamic Linking	
<b>UNIT III</b>	<b>10</b>
Basic Compiler Functions – Grammars – Lexical Analysis – Syntactic Analysis – Code Generation – Heap Management – Parameter Passing Methods – Semantics of Calls and Returns – Implementing Subprograms – Stack Dynamic Local Variables – Dynamic binding of method calls to methods – Review of Operating System Concepts – Overview of Memory Management, Virtual Memory, Process Creation – Overview of I/O Systems, Device Drivers, System Boot	
<b>UNIT IV</b>	<b>8</b>
Introduction to Virtual Machines (VM) – Pascal P-Code VM – Object-Oriented VMs – Java VM Architecture – Common Language Infrastructure – Dynamic Class Loading – Security – Garbage Collection – Optimization	
<b>UNIT V</b>	<b>9</b>
Emulation – Interpretation and Binary Translation – Instruction Set Issues – Process Virtual Machines – Profiling – Migration – Grids – Examples of real world implementations of system software	
<b>TOTAL : 45</b>	

**TEXT BOOKS**

1. Leland L. Beck, "System Software", 3<sup>rd</sup> ed., Pearson Education, 1997.
2. James E Smith and Ravi Nair, "Virtual Machines", Elsevier, 2005. (Units 4, 5) (Sections 1.0-1.6, 2.0-2.5, 2.8, 3.0-3.6, 4.2, 5.0-5.3, 5.5-5.6, 6.0-6.3, 6.5-6.6, 10.2, 10.3)
3. Robert W. Sebesta, "Concepts of Programming Languages", 7<sup>th</sup> ed., Pearson Education, 2006. (Unit 3) (Sections 6.9, 9.3, 9.5, 10.1-10.3, 12.10.2)

**REFERENCES**

1. Alfred V Aho, Ravi Sethi, Jeffrey D Ullman, "Compilers", Pearson Education, 1986.
2. Terrance W Pratt, Marvin V Zelkowitz, T V Gopal, "Programming Languages", 4<sup>th</sup> ed., Pearson Education, 2006.
3. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, "Computer Organization", 5<sup>th</sup> ed., McGraw Hill, 2002.
4. Silberschatz, Galvin, Gagne, "Operating System Concepts", 6<sup>th</sup> ed., Wiley, 2003.

**CA9133 OBJECT ORIENTED SYSTEM DESIGN**

**L T P C  
3 0 0 3**

**UNIT I 10**

Introduction to System Concepts - Managing Complex Software — Properties – Object Oriented Systems Development – Object Basics – Systems Development Life Cycle - Rumbaugh Methodology - Booch Methodology - Jacobson Methodology – Unified Process

**UNIT II 8**

Unified Approach – Unified Modeling Language – Static behavior diagrams – Dynamic behavior diagrams – Object Constraint Language

**UNIT III 9**

Inception – Evolutionary Requirements – Domain Models – Operation Contracts - Requirements to Design – Design Axioms – Logical Architecture - Designing Objects with Responsibilities – Object Design – Designing for Visibility

**UNIT IV 9**

Patterns – Analysis and Design patterns – GoF Patterns - Mapping designs to code – Test Driven development and refactoring – UML Tools and UML as blueprint

**UNIT V 9**

More Patterns – Applying design patterns – Architectural Analysis – Logical Architecture Refinement – Package Design – Persistence framework with patterns

**REFERENCES**

1. Craig Larman. “Applying UML and Patterns – An introduction to Object-Oriented Analysis and Design and Iterative Development”, 3rd ed, Pearson Education, 2005.
2. Fowler, Martin. UML Distilled. 3<sup>rd</sup> ed. Pearson Education. 2004.
3. Michael Blaha and James Rumbaugh, “Object-oriented modeling and design with UML”, Prentice-Hall of India, 2005.
4. Booch, Grady. Object Oriented Analysis and Design. 2<sup>nd</sup> ed. Pearson Education. 2000.
5. Ali Bahrami, “ Object Oriented Systems Development”, Tata McGrawHill, 19

**CA9134 INTERNET PROGRAMMING**

**L T P C**

**3 0 0 3**

**UNIT I 9**

Java fundamentals – Class, Object – Inheritance – Polymorphism – Packages – Interfaces – Exception handling

**UNIT II 9**

I/O – AWT – Event handling – Introduction to Threads - Basics of Networking –TCP and UDP sockets – Connecting to the Web

**UNIT III 9**

Applets – JDBC – Swings – Remote Method Invocation

**UNIT IV 9**

World Wide Web – HTML – List –Tables – Frames – Forms – HTTP commands – XML – DTD, Schema – XSLT – XML Parser – Client side scripting

**UNIT V 9**

Server side scripting – JSP – Servlets – Session management – Cookies

**TOTAL: 45**

**REFERENCES**

1. Deitel and Deitel, “Java – How to program”, 3<sup>rd</sup> ed., Pearson Education, 2001.
2. Robert W. Sebesta, “Programming the World Wide Web”, 3<sup>rd</sup> ed., Pearson Education, 2006. (Units 4,5)
3. Herbert Schildt, “Java – The Complete Reference”, 7<sup>th</sup> ed., Tata McGraw Hill, 2007.
4. Chris Bates, “Web Programming”, 3<sup>rd</sup> ed., Wiley, 2006.
5. Black Book, “Java 6 Programming”, Dreamtech Press, 2007.
6. Deitel, “Java How to Program”, Pearson Education, 2003.
7. W Clay Richardson, et al, “Professional Java JDK 6 Edition”, Wrox, 2007.

## **CA 9137 INTERNET PROGRAMMING LABORATORY**

**L T P C**  
**0 0 3 2**

1. Installing java and setting up path and class path
2. Simple java programs for reading keyboard inputs, Call by value, Call by reference, inheritance types, run-time Polymorphism
3. Implementing interfaces in a class
4. Creation of user defined packages
5. Writing user specific exceptions
6. Creation of window based GUI with frames and applets and handling various Event listeners
7. Example programs with threads
8. Implementing UDP, TCP and other protocols
9. Writing java program to retrieve web pages
10. Writing a java program to invoke a remote method
11. Creation of web pages with frames, lists, tables, forms and other controls
12. Creation of XML document, Creation of DTD and schema
13. Writing XSL to display XML content
14. Client side scripts for form validation and simple programs
15. Writing web based applications using Servlets and JSP with Sessions and Cookies

## **CA9138 CASE TOOLS LAB**

**L T P C**  
**0 0 3 2**

1. Practicing the different types of case tools such as (Rational Rose & other Open Source) used for all the phases of Software development life cycle.
2. Data modeling
3. Semantic data modeling
4. Source code generators
5. Re-engineering
6. Experimenting CASE Environments
  - a. Toolkits
  - b. Language-centered
  - c. Integrated
  - d. Fourth generation
  - e. Process-centered

7. Implementation of the following using CASE Workbenches:

- a. Business planning and modeling
- b. Analysis and design
- c. User-interface development
- d. Programming
- e. Verification and validation
- f. Maintenance and reverse engineering
- g. Configuration management
- h. Project management

**CA9141 SOFTWARE PROJECT MANAGEMENT TECHNIQUES**

**L T P C  
3 0 0 3**

<b>UNIT I</b>	<b>INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT</b>	<b>9</b>
Project Definition – Contract Management – Activities Covered By Software Project Management – Overview Of Project Planning – Stepwise Project Planning.		
<b>UNIT II</b>	<b>PROJECT EVALUATION</b>	<b>9</b>
Strategic Assessment – Technical Assessment – Cost Benefit Analysis – Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.		
<b>UNIT III</b>	<b>ACTIVITY PLANNING</b>	<b>9</b>
Objectives – Project Schedule – Sequencing And Scheduling Activities – Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity On Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning And Control.		
<b>UNIT IV</b>	<b>MONITORING AND CONTROL</b>	<b>9</b>
Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Prioritizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.		

## **UNIT V            MANAGING PEOPLE AND ORGANIZING TEAMS**

**9**

Introduction – Understanding Behavior – Organizational Behaviour: A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Oldman–Hackman Job Characteristics Model – Working In Groups – Becoming A Team – Decision Making – Leadership – Organizational Structures – Stress – Health And Safety – Case Studies.

**TOTAL = 45**

### **REFERENCES:**

1. Bob Hughes and MikeCotterell “Software Project Management”, Third Edition, TATA McGraw Hill Edition 2004.
2. Ramesh, Gopalaswamy: "Managing Global Projects ", Tata McGraw Hill, 2001.
3. Royce.” Software Project Theory”, Pearson Education, 1999.  
P.Jalote “Software Project Management In Practice”, Pearson Education, 2000.

## **CA9142            VISUAL PROGRAMMING TECHNIQUES**

**L T P C  
3 0 0 3**

### **UNIT I**

Windows, Visual C++ .NET - The Windows Programming Model - Visual C++ .NET Components - The MFC Application Wizard - .NET Support - The Microsoft Foundation Class Library Application Framework - MFC Essentials - Visual C++ .NET Wizards - Windows Message Mapping - Classic GDI Functions, Fonts, and Bitmaps

### **UNIT II**

Modal and Modeless Dialog Boxes - Common Controls - ActiveX Controls - Menus, Keyboard Accelerators, the Rich Edit Control, and Property Sheets - Toolbars and Status Bars - ToolTips

### **UNIT III**

Reading and Writing Documents - Printing and Print Preview - Splitter Windows and Multiple Views- Context-Sensitive Help - Win32 Core Memory Management - Windows Message Processing and Multi-Threaded Programming - SDI and MDI Applications

### **UNIT IV**



Dynamic-Link Libraries - The Component Object Model – OLE – COM using Active Template Library ATL and ActiveX Controls - OLE DB

## **UNIT V**

Internet Essentials - Introducing Dynamic HTML - ATL Server - Microsoft .NET

## **REFERENCES**

1. George Shepherd; David Kruglinski, "Programming with Microsoft Visual C++ .NET"

**UNIT I INTRODUCTION**

9

Overview of UNIX OS - Environment of a UNIX process - Process control - Process relationships Signals – Interprocess Communication- overview of tcp/ip protocols

**UNIT II ELEMENTARY TCP SOCKETS**

9

Introduction to Socket Programming –Introduction to Sockets – Socket address Structures – Byte ordering functions – address conversion functions – Elementary TCP Sockets – socket, connect, bind, listen, accept, read, write , close functions – Iterative Server – Concurrent Server.

**UNIT III APPLICATION DEVELOPMENT**

9

TCP Echo Server – TCP Echo Client – Posix Signal handling – Server with multiple clients – boundary conditions: Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown – I/O multiplexing – I/O Models – select function – shutdown function – TCP echo Server (with multiplexing) – poll function – TCP echo Client (with Multiplexing)

**UNIT IV SOCKET OPTIONS, ELEMENTARY UDP SOCKETS**

9

Socket options – getsockopt and setsockopt functions – generic socket options – IP socket options – ICMP socket options – TCP socket options – Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing TCP and UDP sockets – Domain name system – gethostbyname function – Ipv6 support in DNS – gethostbyadr function – getservbyname and getservbyport functions.

**UNIT V ADVANCED SOCKETS**

9

Ipv4 and Ipv6 interoperability – threaded servers – thread creation and termination – TCP echo server using threads – Mutexes – condition variables – raw sockets – raw socket creation – raw socket output – raw socket input – ping program – trace route program.

**TOTAL = 45**

**REFERENCES:**

- 1.W. Richard Stevens, “Advanced Programming in The UNIX Environment”, Addison Wesley,
2. **W. RICHARD STEVENS, “UNIX NETWORK PROGRAMMING - VOLUME 1”, PRENTICE HALL INTERNATIONAL, 1998.**

<b>CA9144</b>	<b>MIDDLEWARE TECHNOLOGIES</b>	<b>L T P C</b>
		<b>3 0 0 3</b>
<b>UNIT I</b>	<b>INTRODUCTION</b>	<b>7</b>
	Emergence of Middleware – Objects, Web Services – Middleware Elements – Vendor Architecture – Interoperability – Middleware in Distributed Applications – Types of Middleware – Transaction-Oriented Middleware – MOM – RPC.	
<b>UNIT II</b>	<b>OBJECT ORIENTED MIDDLEWARE</b>	<b>12</b>
	OOM – Developing with OOM – Heterogeneity – Dynamic Object Request – Java RMI – COM+.	
<b>UNIT III</b>	<b>COMPONENT OBJECT RESOURCE BROKER ARCHITECTURE (CORBA)</b>	<b>12</b>
	Naming – Trading – Life Cycle – Persistence – Security – CORBA.	
<b>UNIT IV</b>	<b>WEB SERVICES</b>	<b>7</b>
	Introduction – XML Web Services standards – Creating Web Services – Extending Web Services – Messaging Protocol – Describing – Discovering – Securing.	
<b>UNIT V</b>	<b>OTHER TYPES OF MIDDLEWARE</b>	<b>7</b>
	Real-time Middleware – RT CORBA – Multimedia Middleware – Reflective Middleware – Agent-Based Middleware – RFID Middleware.	
		<b>TOTAL = 45</b>

#### **TEXT BOOKS**

1. Chris Britton and Peter Eye, "IT Architecture and Middleware", Pearson Education, 2<sup>nd</sup> Edition, 2004.
2. Wolfgang Emmerich, "Engineering Distributed Objects", John Wiley, 2000.
3. Keith Ballinger, ".NET Web Services – Architecture and Implementation", Pearson Education, 2003. (Unit IV)

#### **REFERENCES**

1. Qusay H. Mahmoud, "Middleware for Communications", John Wiley and Sons, 2004.
2. Gerald Brose, Andreas Vogel, Keith Duddy, "Java™ Programming with CORBATM: Advanced Techniques for Building Distributed Applications", Wiley, 3rd edition, January, 2004.
3. Michah Lerner, "Middleware Networks: Concept, Design and Deployment of Internet Infrastructure", Kluwer Academic Publishers, 2000.

**VB**

1. Form Design – Keyboard & Mouse events
2. Programs on usage of data types - variant, Control arrays
3. Simple applications using file system controls
4. Database applications using data control.

**VC++**

1. SDK type and MFC based programs for creating simple windows with different window styles
2. SDK type and MFC based programs code for keyboard and mouse events, GDI objects.
3. Simple Dialog Based application – eg. Calculator, interest computation, money conversions, etc.
4. Creating SDI & MDI applications, Modal and Modeless dialog.
5. Programming for reading and writing into documents.
6. Coding Dynamic controls – slider control, progress control, inheriting CtreeView and CricheditView.
7. Creating static and dynamic splitter windows
8. Creating DLLs and using them.
9. Winsock and Winlnet & Internet Explorer common controls.
10. Data access through ODBC – Cdatabase, Crecordset.
11. Creating ActiveX control and using it.

**TOTAL = 45**