SOLPAUR UNIVERSITY, SOLAUR
M.C.A. SYLLABUS
(w.e.f. June 2010)

Solapur University, Solapur.								
Syllabus Of Second Year MCA (Under Faculty Of Engg.)								
Semester	Paper Name	L	T	P	TH	TW	POE	Total
3	Computer graphics with multimedia	4		2	100	25		125
	System Programming	4		2	100	25		125
	Computer organization and architecture	4			100			100
	Relational database management system	3		2	100	25	50	175
	Computer algorithm	3			100			100
	Programming Laboratory –III (VB-Programming)		2	2		25	50	75
	Mini project			2		50		50
	Total	18	2	10	500	150	100	750

		L	T	P	TH	TW	POE	Total
4	Operating system	4			100			100
	Data mining	3		2	100	50		150
	Computer networks	4		2	100	25	50	175
	Artificial intelligence	3			100			100
	Elective-1	4			100			100
	Programming Laboratory-IV (Java Programming)	2		4		25	50	75
	Mini project			2		50		50
	Total	20	0	10	500	150	100	750

Elective -1: 1.Advance computer architecture
2.Software testing and Quality Assurance
3.ERP

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		L	T	P	TH	TW	POE	Total
Solapur University, Solapur.								
Syllabus Of Third Year MCA (Under Faculty Of Engg.)								
Semester	Paper Name	L	T	P	TH	TW	POE	Total
5	Mobile communication	4			100			100
	Web design techniques	3		2	100	25		125
	Internet technology	3			100			100
	Elective-2	4			100			100
	Network administration	2		2	100	50		150
	Programming Laboratory –V (.NET Programming)		2	4		25	50	75
	Software project development in .NET			4		50	50	100
	Total	16	2	12	500	150	100	750
6	Software Development Project					150	100	250
	Grand Total							3900

Elective -2: 1.Distributed Database
2.Bio-Informatics
3.Neuro and Fuzzy System

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	L	T	P	TH	TW	POE	Total
	L	T	P	TH	TW	POE	Total

Solpaur University, Solapur.								
Syallabus Of First Year MCA (Under Faculty Of Engg.)								
Semester	Paper Name	L	T	P	TH	TW	POE	Total
1	Discrete Mathematical Structure (Includes Finite State Automata)	4			100			100
	Fundamentals of computer and Programming in C	4	1		100			100
	Digital Electronics	4		2	100	25		125
	Computer oriented numerical methods and statistics	3	1		100			100
	Behavioral and organizational science(BOS)	4			100			100
	Programming Laboratory –I (C-Program)			4		25	50	75
	Seminar-I		2			50		50
	Total	19	4	6	500	100	50	650
2	Computer Oriented Operations Research	4			100			100
	Unified Modelling Language	4			100			100
	Data Structure-I	4		2	100	50	50	200
	MicroProcessor	4		2	100	50		150
	Software Engineering	3			100			100
	Programming Laboratory-II (C++ Prog)	1		4		25	50	75
	Seminar-II		2			25		25
	Total	20	2	8	500	150	100	750

COMPUTER GRAPHICS WITH MULTIMEDIA

Theory: 4 Hours/Week	Total Lectures:40	Theory: 100 Marks
Practical:2 Hours/Week	Term-Work:25 Marks	

SECTION-I

1) Introduction of computer Graphics and its applications, Overview of Graphics systems, Video display devices, Raster scan display, Raster scan systems, video controller, color CRT monitor, Flat panel display, Interactive devices: Tablets, touch panels, mouse, joysticks, track balls, light pen etc., Data generating devices: Scanners and digitizers. (4)

2) DDA and Bresenham's line and circle drawing algorithms, Mid-point circle algorithm, Ellipse generation, antialiasing, character generation, Polygon filling: Seed fill, Edge fill, scan conversion algorithm, (5)

3) 2D Transformation : Basic transformation's, Translation, Rotation, Scaling, Matrix representation's & homogeneous co-ordinates, Composite transformation's, Reflection, shearing, Two dimensional viewing, Two dimensional clipping, Line, Curve, Text. 3D transformation : 3D-transformation, Projection, Viewing, Clipping. (6)

4) Windowing and clipping: Introduction, viewing transforms, 2D clipping, Cohen-Sutherland algorithm, Midpoint subdivision algorithm, Interior and Exterior clipping, Polygon Clipping, Sutherland-Hodgman algorithm (5)

SECTION-II

5) What is multimedia, goals and objectives, characteristics of multimedia presentation, multimedia application, multimedia building blocks, multimedia and internet.Basic, Image fundamentals Image compression: Types of compression: Lossy and lossless, Lossless: RLE, Lossy: Vector quantization (5)

6) Multimedia Audio : characteristics of sound waves, Elements of audio systems: Microphone, speakers, synthesizer, MIDI, digital audio, Audio File Format: WAV, AVI, MPEG,WMA , Animation : types of animation, techniques of animation: Onion skinning, motion cycling, masking, flip book animation, morphing, animation on the web, 3D animation (6)

7) Video : Types of Video, Video broadcasting standards, Video Quality, Digital Video video transmission standards: EDTV, CCER, CIF, SIF, HDTV. (4)

8) Virtual Reality and Multimedia : Concept, VR application, VR devices: Hand gloves, head mounted tracking systems, VR chair, CCD, 3D Sound system, head mounted display. Virtual objects- Basics of VRML. (5)

References :-

1 Computer Graphics by M. Pauline Baker, Donald Hearn
2 Computer Graphics By A.P. Godse, 2nd Editio TPPublication
3 S. Harrington, “Computer Graphics”, 2nd Edition, McGraw-Hill Publications
4 Ranjan Parekh, “ Principles of Multimedia”, TMH,
5 Ralf Steinmetz and Klara Nahrstedt “ Multimedia Computing, Communication and Applications” Pearson Education.
6 Ze-Nian Li, Marks S. Drew, “Fundamentals of Multimedia” Pearson Education

SYSTEM PROGRAMMING

Theory: 4 Hours/Week Total Lectures:40 Theory: 100 Marks
Practical:2 Hours/Week Term-Work:25 Marks

SECTION-I

1.Language Processor: (5)
Introduction , language processing activities, fundamentals of language processing, binding and binding times, language processor development tools.
2.Assemblers: (8)
Elements of assembly language programming ,A simple assembly scheme, pass structure of assemblers, design of a two pass assembler, a single pass assembler for IBM PC.
3.Macro processors : (7)
Macro definition and call, macro expansion, nested macro calls, advanced macro facilities, design of a macro preprocessor.

Section-II

4.Linkers and Loaders: (8)
Relocation and linking concepts, design of a linker, self relocating programs, linking for overlays, loaders and loader types.
5.Compilers and Interpreters: (7)
Aspects of compilation, memory allocation, Phases of compiler, compilation of expression and control structure, code optimization used by compiler, Interpreters.
6.Software tools: (5)
Software tools for program development, editors, debug monitors, programming environments, user interfaces.

Text-Books:
System programming and operating system by D.M.Dhamdhere.
Compilers-principles, techniques and tools by Alfred aho.ravi sethi and seffraj ullman

Reference-Books:
1.System Programming by john Donovan
2.system software-an introduction to system programming by Leland beck.

COMPUTER ORGANIZATION AND ARCHITECTURE

Theory: 4 Hours/Week Total Lectures:40 Theory: 100 Marks

SECTION-I

1. Introduction to Computer Architecture **(6)**
   Generation of computers, Functional Units, Basic Operational Concepts, Bus Structure,RISC & CISC Processors
2. Processor Level Design **(10)**
   Instruction Sets, Instruction Formats, Instructiopn Types, Addressing Modes of RISC & CISC Processors, Fixed Point Arithmetic: Addition, Subtraction, Multiplication, Division (Restoring), Introduction to Floating point Arithmetic.
3. Control Unit Design **(4)**
   Hardwired Control Unit: Design Methods (Introduction), Microprogrammed Control Unit: Introduction

SECTION-II

4. Memory Organization & Design **(7)**
   Virtual Memory, Cache memory, Memory Hierrarchy, Segements & Pages
5. Input-Output Organization **(5)**

   Accessing I/O devices, Direct Memory Access
6. Parallel Processing & Pipelining **(8)**
   Parallel Processing Basic Concepts, Types of Parallelism, Pipelining

Text Books

1. Computer Architecture & Organization- J.P.Hayes
2. Computer Organization – Hamacher Zaky(MGH)
3. Computer Architecture – Hennessy & Patterson

Reference Books

1. Advanced Computer Architecture – Kai Hwang

RELATIONAL DATA BASE MANAGEMENT SYSTEM

Theory:3 Hours Per Week	Total Lectures:35	Theory:100 Marks
Practical: 2Hours / Week	Term Work : 25 Marks	Practical / Oral : 50 Marks

SECTION-I

1. Entity relationship model- Basic concepts, Constraints, Keys, Design issues, ER diagram, Weak entity sets, Extended ER features, Design of ER database schema, Reduction of ER schema to tables. (4)
2. Relational models- Structure of relational database, relational algebra, Extended relational algebra operations, Modification of the database, views, Tuple relational calculus (4)
3. SQL- Basic structure, set operations, aggregate functions, Null values, nested sub queries, views, complex queries, Modification of the database, joined relations, DDL- data definition language, embedded SQL, query by example. (6)
4. Integrity and security – Domain constraints, referential integrity, assertions, triggers, security and authorization, authorization in SQL, encryption and authentication. (6)

SECTION-II

5. Relational data base design- First normal form, Pitfalls in relational database design, functional dependencies, decomposition, desirable properties of decomposition, BCNF, Third normal form, Fourth normal form, (6)
6. Storage and File structure- Overview of physical storage media, Magnetic disk, RAID, Tertiary storage, Storage access, File organization, Organization of record in file, Data dictionary storage, ordered indices, B and B^+ tree index files, Static and dynamic hashing. (6)
7. Query processing- Measures of query cost, selection operations, sorting, join and other operations, evaluation of expression, transformation of relational expressions. (4)
8. Database system architecture- Centralized system, Client server system, server system architecture, parallel systems, Distributed system, network types. (4)

Practicals: Practical will consist of minimum 08 programs based on above syllabus in ORACLE, MS SQL SERVER

Text Book:

1. Database system concepts by A. Silberschatz and Henry F. Korth, TMH (4^{th} edition)

Reference Books:

1. Relational database theory and practicals by Val Occardi, BPB, NEW Delhi
2. Principals of database system by J. D. Ullman, Galgotia
3. Database design by Wiederhold, McGraw Hill
4. Relational data base system by C.J.DATE

COMPUTER ALGORITHM

Theory: 3 Hours/Week Total Lectures:35 Theory: 100 Marks

SECTION-I

1.Introduction- What is algorithm? Algorithm specification, performance analysis, randomize algorithm (4)

2. Divide and conquer- general method, binary search, finding maximum and minimum, merge sort, quick sort, STRASSEN's matrix multiplication, convex hull. (5)

3. The greedy method- KNAPSACK problem, tree vertex splitting, job sequencing with deadlines, optimal merge pattern
single source shortest paths. (5)

4. Dynamic programming- Multistage graphs, All pairs shortest path, optimal binary search trees, string edition, 0/1 KNAPSACK, reliability design, traveling salesman problem, flow shop scheduling. (6)

SECTION – II

5. Basic traversal and search techniques- Techniques for binary trees, Breadth first, depth first search, connected components and spanning trees, bi connected components and DFS. (6)

6. Back Tracking- The 8 Queen's problem, sum of subsets, Graph coloring, KNAPSACK problem (4)

7. Branch and bound- The method, 0/1 KNAPSACK problem, Traveling salesman problem, Efficiency considerations (5)

8. Algebraic problems- The general methods, evaluation and interpolation, the FFT modular arithmetic even faster evaluation and interpolation. (5)

Text Books:

1. Fundamentals of computer algorithm by Horowitz and Sahni, Galgotia

Reference Books:

1. Design and analysis of algorithm by Aho and Ullman, Addison Wesely and company
2. Design of data structure and algorithm by Van Amstal and Printevs, PHI

Programming Laboratory-III(Visual Basic Programming)

Tutorial : 2 Hours/week — Practical/Oral:50 Marks
Practical : 2Hours/Week — Term Work: 25 Marks

1. **Visual Programming : Fundamentals of Visual Basic**
   The Integrated Development Environment
   Visual Development & Event Driven Programming (Properties, Methods, Events)
   Variables, Constants, Arrays, Collections
   Procedures, Arguments, Function Return Values
   Control Flow Statements, Loop Statements
   Nested Control Structure
2. **Working With Forms**
   Designing Menus
   Building Dynamic forms at runtime
   Controls and objects
   Graphics Controls
   Common Dialog Controls
   MDI
3. **OLE**
   OLE Container Control
   OLE Drag & Drop Operations
   OLE Automation
4. **Active X Components**
   Modules and Class Modules
   Using Class Module
   Implementing Collection Properties
   The String Class
5. **Active X Controls**
   Designing Active X Controls
6. **File System Controls & Accessing Files**
   Interacting with Files
   File modes, locking files
   Working with Sequential and Random Access files
   Using File Control
7. **Database Programming with VB**
   Data Access Object (DAO), Remote Data Object (RDO), Active X Data Object (ADO),Designing with the Data Environment Active X Designer
   Using the DataEnvirnment with Data Grid Control & MSHFlexGrid Control
   Using the DataReport ActiveX Desinger
8. **Visual Basic and the Web**
   Introduction to the Web
   Designing the Dynamic HTML (DHTML)

Ref. Books:

Mastering VB6 by Evangelos Petroutsos (BPB Publication)
Complete Reference VB6 by Noel Jerke (Tata McGraw Hill)
VB6 Programming Black Book by Steven Holzner (Dreamtech Press)

MINI PROJECT

Practical: 2Hours / Week Term Work:50 Marks

The project should be based on any of the subject of 4th semester and must complete it during 4th semester only.

The project batches should be form with 3-5 students

OPERATING SYSTEM

Theory: 4 Hours Per Week Total Lectures:40 Theory:100 Marks

SECTION-I

1. Overview and kernel: System structure, user prospective, operating system services, architecture of UNIX OS, system concepts, kernel data structure, system administration.
2. Files: Buffer cache, headers, structure of buffer pool, reading and writing disk blocks, inodes, structure of regular files, directories, conversion of path name to inode, super block, allocation of disk blocks
3. System calls: Open, read, write, file and record locking, lseek, close, file creation, creation of special files, change directory, root, owner, mode, stat and fstat, pipes and dup, mounting and un-mounting file system, link and unlink, abstraction and maintenance of files.
4. Process- Process states and transition, layout of system memory, context of a process, manipulation of process address space, sleep

SECTION-II

5. Process control and scheduling- process creation, signals, termination, awaitbg process termination, invoking other programs, user ID of the process, change in the size of the process, shell, system boot and the INIT process, process scheduling, system call for time and clock
6. Memory management- policies, swapping, demand paging, hybrid system with swapping and demand paging
7. I/O sub-system - The I/O sub-system, driver interfaces, disk drivers, terminal drivers, streams.
8. Inter process communication- Process tracing, system V IPC, network communications, sockets

Text Book

1. The design of the UNIX operating system – M.J.Bach, PHI

Reference Books:

1. Operating system design and implementation – A.S.Tanenbaum, PHI
2. Operating system design – D. Comen, PHI

COMPUTER NETWORKS

Theory:4 Hours Per Week Total Lectures:40 Theory:100 Marks
Practical: 2Hours / Week Term Work : 25 Marks Practical / Oral : 50 Marks

SECTION-I

1. Introduction to Computer Network- applications of network,
structure of communication network, point to point and multi drop circuits, network topologies and design goals, theory of communication, data codes, bits per character, escape character, seven bit codes. (5)

2. Physical Layer- transmission media, analog and digital transmission, synchronous and a synchronous, synchronizing codes, transmission and switching (6)

3. OSI reference model- Design issues for the layers, OSI reference model, Goals of layered protocols, connection oriented and connectionless services, (5)
service primitives

4. The Medium Access sub-layer: The ALOHA protocols, pure and slotted ALOHA, persistent and non- persistent CSMA, CSMA with collusion detection, Introduction to IEEE standards. (5)

SECTION-II

5. Data Link Layer- Design issues, services provided to network layer, framing, and error detection and correction codes, flow control, elementary data link protocol, sliding (6)
Window protocol

6. Network layer- Design issues, services provided to transport layer, routing algorithm, Congestion, congestion control algorithms, Internet working. (4)

7. Transport layer: Services, protocol, Simple Transport Protocol, TCP & UDP. (4)

8.Application Layer: Network security, Domain Name System, SNMP (4)

Practicals: Practical will consist of minimum 08 programs based on above syllabus.

Text Book

1. Computer networks by Tanenbaum, PHI

Reference Books:
2. Data and Computer Communications by William Stallings, PHI
3. Computer networks, protocol standards and interface by Uyless Black

ARTIFICIAL INTELIGENCE

Theory:3 Hours Per Week Total Lectures:35 Theory:100 Marks

SECTION – I

What is artificial intelligence? The AI problem, The underlying assumption, What is an AI technique?, Level of the model, One final word (4)

Problems, problem spaces and search, Defining the problem as state space search, Production system, Production characteristics, Production system characteristics, Issue in the design of the search program, Additional Problems (5)

Heuristic Search Techniques, Generate and Test, Hill Climbing, Best First Search, Problem Reduction, Constrain Satisfaction, Mean-Ends Analysis (6)

Knowledge Representation Issues, Representation and mapping, Approaches to knowledge representation, Issues in knowledge representation, The Frame Problem (5)

SECTION – II

Using Predicate Logic, Representing simple facts in logic, Representing instance and ISA relationships, Computable functions and predicates, Resolution Natural Deduction (4)

Knowledge Representation using Non-monotonic Logic: TMS (Truth Maintenance System), Statistical and probabilistic reasoning, Fuzzy Logic, Knowledge representation Semantic Net, Frames, Script, Conceptual dependency. (5)

Planning, Overview, The Blocks world, Components of planning system, Goal Stack Planning, Nonlinear Planning using Constraint Posting, Hierarchical Planning, Reactive Systems, Natural Language Processing, Syntactic Processing, Semantic Analysis, Discourse and Pragmatic Processing, Statistical Natural Language Processing, Spell checking (6)

Expert System: Utilization and functionality, architectures of Expert system, Knowledge representation, Two case studies on expert systems, Game Playing: Minimize search procedure, Alpha-beta cutoffs, Waiting for Quiescence, Secondary Search (5)

Text Books:

1. Elaine Rich, Kerin Knight, "Artificial Intelligence". TMH

Reference Book :

2. Dan W. Patterson, " Artificial Intelligence And Expert Systems", PHI

ELECTIVE-I

1.ADVANCED COMPUTER ARCHITECTURE

Theory:4 Hours Per Week Total Lectures:40 Theory:100 Marks

SECTION-I

1. Parallel Processing -- **(06)**

Uniprocessor and Multiprocessor parallelism; Types of uniprocessor parallelism; Basics of pipelining & vector processing; Difference between pipelining and vector processors;

2.Pipelined Architectures – **(07)**

Linear, nonlinear pipeline, pipeline hazards, bubbles in pipeline

3.Vector Processing: **(07)**

Why Vector processor? Basic vector architecture, two real world issues: Vector length and stride, effectiveness of compiler vectorization.

SECTION-II

4. Multiprocessors-I: **(07)**

Introduction, centralized shared memory architecture, distributed shared memory architecture

5. Multiprocessors-II**:** **(07)**

Synchronization, models of memory consistency

6. Interconnection Networks : **(07)**

Tightly and loosely coupled architectures, cluster computing as an application of loosely coupled architecture, various topologies, Static and dynamic types of networks with examples.

Text Books:

1. Computer Architecture A Quantitative Approach – John L. Hennessy and David A. Patterson.
2. Advanced Computer Architecture – Kai Hwang - TMGH.
3. Advanced Computer Architecture and Parallel Processing - Kai Hwang and Briggs-TMGH.

Reference Books:

1. Computer organization – Hamacher Zaky – MGH
2. Advanced Computer Architectures A design space approach – Sima, Fountain, Kacsuk- Pearson Education.

2.SOFTWARE TESTING AND QUALITY ASSURANCE

Theory: 4 Hours Per Week | Total Lectures: 40 | Theory: 100 Marks

SECTION-I

1. Quality Concept (6)
   - 1.1 Definition of Quality
   - 1.2 Quality factors
   - 1.3 Software Quality Metrics
   - 1.4 Process Improvement
   - 1.5 Process and Product Quality
   - 1.6 The SEI Process Capability Matrity Model, ISO, Six-sigma
   - 1.7 Process classification
2. Software Quality Assurance (4)
   - 2.1 Need for SQA
   - 2.2 SQA Activities.
   - 2.3 Building blocks of SQA.
   - 2.4 SQA Planning and Standards
3. Software Reliability (4)
   - 3.1 Reliability Measures.
   - 3.2 Reliability Models.
4. Verification and Validation (4)
   - 4.1 Verification and validation planning
   - 4.2 Software Inspections
   - 4.3 Automated Static Analysis
   - 4.4 Cleanroom Software Development

SECTION-II

5. Software Testing Fundamentals (4)
   - 5.1 Testing Objectives.
   - 5.2 How test information Flows?
   - 5.3 Testing Lifecycle
   - 5.4 Test Cases.
6. Levels and Types of Testing (6)
   - 6.1 Unit Testing
   - 6.2 Integration Testing
   - 6.3 System Testing
   - 6.4 Acceptance Testing
   - 6.5 Manual Vs Automatic Testing
   - 6.6 Testers Workbench.

6.7 Installation Testing
6.8 Usability Testing
6.9 Regression Testing
6.10 Performance Testing
6.11 Security Testing

7. Static and Dynamic Testing(6)
   7.1 Static Testing Techniques.
   7.2 Review Types
   7.3 Review Meeting, Review Reporting and Records keeping, Review guidelines and Review checklist.
   7.4 Data Flow Analysis
   7.5 Control Flow Analysis
   7.6 Cyclometric Analysis
   7.7 Dynamic Testing –need and Advantages.
8. Black Box and White Box Testing (6)
   8.1 Functional Testing(Black Box)
   Equivalence Partitioning, BVA, Cause Effect Graphing, Syntax Testing
   8.2 Structural Testing(White Box)
   Coverage Testing, Statements Coverage, Branch and decision coverage, Path Coverage.
   8.3 Validation Testing Activities – Low Level Testing , High Level Testing
   8.4 Introduction to CAST (Computer Aided Software Testing Tools).

Text Books.

1. Quality Software Management By Wevinberg
2. S/W Quality Engineering By Kann
3. Software Engineering By Pressman
4. An Integrated approach to S/W Engineering By Pankaj Jalote.

3.ENTERPRISE RESOURCE MANAGEMENT

Theory:4 Hours Per Week Total Lectures:40 Theory:100 Marks

SECTION-I

1. **ERP – Curtain Raiser:** An overview, Accommodating variety, Integrated Management Information, Seamless Integration, Supply Chain Management, Resource Management, Integrated data model, Scope, Technology, Benefits of FRP, Evolution, ERP revised, ERP & Modern Enterprise, problems.
2. **Business Engineering & ERP:** An overview, what is Business Engineering (BE)? Significance of BE, Principles of BE, BPR, ERP & IT, BE with IT, ERP and Management concerns, problems.
3. **Business Modeling for ERP:** An overview, Building the Business Model, problems.
4. **ERP Implementation:** An overview, Role of consultants, vendors & users, customization, precautions, ERP: Post-implementation options, ERP implementation methodology, Guidelines for ERP implementation, problems.

SECTION-II

5. **ERP and the Competitive Advantage:** An overview, ERP & competitive strategy, problems.
6. **The ERP domain:** An overview, MFG/PRO, OFS/Avalon – Industrial & Financial Systems, Baan IV, SAP, SAP R/3 Applications, Examples of as Indian ERP package, The arrival of ERP III, problems.
7. **Making of ERP:** An overview, Market Dynamics & Competitive Strategy, problems.
8. **Case Studies:** An overview, Mercedes-Benz, Kee Hin Industries, Bull Electronics Angers Plant Manufactures, Ameritech, Essar Steel, Jindal Iron & Steel Company Ltd, Godrej Soaps ans associates companies, Indian Renewable Energy Development Agency (IREDA), ERP Handles Pressure, Sara ERP case study – Hawkins Cookers Ltd, A wholesome enterprise application, Sara IEMS (ERP III) case study – Pan Century, Oleochemicals, Malaysia.

Text Books:

1. Enterprise Resource Planning – Concepts & Practice (Second Edition) By V. K. Garg & N.K. Venkitakishnan

Reference Books:

1. ERPWARE – ERP Implementation Framework By V. K. Garg & N.K. Venkitakishnan

PROGRAMMING LABORATORY –IV(JAVA PROGRAMMING)

Theory:2 Hours Per Week | Term Work : 25 Marks
Practical: 4 Hours / Week | Practical / Oral : 50 Marks

SECTION-I

1.1 Introduction to Core Java
1.2 Introduction to Java Programming Language
1.3 Object oriented concepts with respect to java
1.4 Objects and Classes
1.5 Introducing access control
1.6 Interface
1.7 Packages
1.8 Exception handling

2. Applet as Java applications
   2.1 Introduction
   2.2 Creating an Applet
   2.3 Displaying Applets Using Web Browser and Appletviewer
   2.4 Comparison of Applet and Application
3. Multithreaded Programming
   3.1 Multithreading Concepts.
   3.2 Thread Lifecycle.
   3.3 Creating Multithreaded Application
   3.4 Thread Priorities.
   3.5 Thread Synchronization
4. AWT and Java InputOutput
   4.1 Components (Control)
   4.2 Layout Manager
   4.3 Graphics
   4.4 Listeners
   4.5 Introduction to Swing
   4.6 Java I/O package
   4.7 File Reader/Writer
   4.8 File Sequential / Random

SECTION-II

5. Networking with Java
   5.1 Networking basics
   5.2 Java.net- Networking classes and Interfaces
   5.3 Implementing TCP/IP based Server and Client
   5.4 Datagram Server and Client.
   5.5 URL Connections

6. JDBC
   - 6.1 Introduction
   - 6.2 Writing first JDBC Application
   - 6.3 Types of Statement Objects
   - 6.4 Types of ResultSet
   - 6.5 Metadata
   - 6.6 JDBC and AWT
7. RMI
   - 7.1 Architecture
   - 7.2 Writing Simple RMI application
   - 7.3 RMI with Applets
   - 7.4 Introduction to CORBA
8. Servlets
   - 8.1 Introduction
   - 8.2 Servlet Vs CG1
   - 8.3 Writing and running simple Servlet.
   - 8.4 Servlet Life cycle
   - 8.5 Javax.Servlet.* , javax.servlet.http.*;
   - 8.6 GET and POST
   - 8.7 Servlet and JDBC
   - 8.8 Session Tracking in Servlets.

Text Books:

1. The Complete Reference By Herbert Schildt
2. Core Java(Volume-II) By Cay.S.Horstmann and Gary Comell

MINI PROJECT

Practical: 2Hours / Week Term Work:50 Marks

The project should be based on any of the subject of 4th semester and must complete it during 4th semester only.

The project batches should be form with 3-5 students