Gujarat Arts & Science College, Ahmedabad
Computer Science Department[Self Finance]
M.Sc. (Computer Science)(2nd Year-Semester-III)

Paper: 505 **Subject**: Distributed Operating System

1. Write a program to display "Hello World" using thread.
2. Write a program to find the length of a string using thread.
3. Write RMI application where client supplies two numbers and server response by summing it.
4. Write a program to implement TIME SERVER using RMI.
5. Write a program to implement calculator using RMI.
6. Write RMI application to find the string is palindrome or not.
7. Write the Remote Invocation Method (RMI) program to find a factorial of a number.
8. Write RMI based application program that converts digits to words; e.g. 123 will be converted to one two three.
9. Write RMI application to check whether the given number is Prime or not. Write all interfaces and required classes.
10. Write down a program which demonstrate the Socket programming for passing the message from server to client.
11. Write a program to implement ECHO SERVER using Socket.
12. Write a program to add two numbers using Socket.
13. Write a program of Client-Server network for chatting between Client and Server.
14. Write a java program to create a deadlock situation.
15. Write a java program to execute any one mutual exclusion algorithm.

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Paper: 505 **Subject**: iOS Programming

1. Write the "Hello" in simulator using coding.
2. Write the program to display "Image" and give the animation between three images.
3. Write the program to create the submission form and pass the all values on next page.
4. Write the program to play the audio and video in the simulator.
5. Write the program to display the .pdf in simulator.
6. Write the program for sending an e-mail.
7. Write the program for integrate the web service using web view controller and load the web page in the simulator.
8. Write the program to display the current location using map view controller in simulator.
9. Write the program to create the submission form and save, update and delete the all value in database.
10. Write the program for pan gesture, pinch gesture, long press gesture, rotation gesture and swipe gesture on the label.

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Paper: 501 **Subject**: Mobile Computing

Unit-1: Mobile Computing Introduction:

- History of Wireless Communications
- Types
- Propagation modes Wireless network architecture
- Applications
- Security
- Concerns and Standards
- Benefits & Future
- Evolution of mobile computing
- What mobile users need
- SOC and AOC Client
- Mobile computing OS
- Architecture for mobile computing
- Three tier Architecture
- Design considerations for mobile computing
- Mobile computing through internet
- Making existing applications Mobile-Enabled.

Unit-2: Mobile Technologies:

- Bluetooth
- Radio frequency identification(Rfid)
- Wireless Broadband
- Mobile IP Introduction
    - Advertisement,
    - Registration,
    - TCP connections,
    - two level addressing,
    - abstract mobility management model,
    - performance issue,
    - routing in mobile host,
    - Adhoc networks,
- Mobile transport layer:
    - Indirect TCP,
    - Snooping
    - TCP,

  - Mobile TCP,
  - Time out freezing,
  - Selective retransmission,
  - Transaction
  - Oriented TCP. ,
  - IPv6
- Global system for mobile communication
- Global system for mobile communication,
- GSM architecture,
- GSM entities,
- Call routing in GSM
- PLMN interface,
- GSM addresses and identifiers,
- network aspects in GSM,
- GSM frequency allocation,
- authentication and security,
- Short message services,
- Mobile computing over SMS
- Value added services through SMS,
- Accessing the SMS bearer

Unit-3: General packet radio service (GPRS):

- GPRS and packet data network
- GPRS network architecture
- GPRS network
- data services in GPRS operation
- Applications of GPRS Types
- Billing and charging in GPRS

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Unit-4: Wireless Application Protocol (WAP) WAP, MMS, GPRS application CDMA And 3G

- Spread-spectrum Technology
- CDMA versus GSM,
- Wireless data,
- Third generation networks,
- applications in 3G Wireless LAN,
- Wireless LAN advantages,
- IEEE802.11 standards ,
- Wireless LAN architecture,
- Mobility in Wireless LAN,
- Deploying Wireless LAN,
- Mobile adhoc networks and sensor networks,
- wireless LAN security,
- WiFi v/s 3G
- Voice over Internet protocol and convergence,
- Voice over IP,
- H.323 framework for voice over IP,
- SIP,
- comparison between H.323 ad SIP,
- Real time protocols,
- convergence technologies,
- call routing,
- voice over IP applications,
- IMS,
- Mobile VoIP,
- Security issues in mobile
- Information security,
- security techniques and algorithms,
- security framework for mobile environment

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Text Books:

1. Mobile Computing , Asoke K Telukder, Roopa R Yavagal, TMH
2. The complete reference J2ME, TMH
3. Programming for Mobile and Remote Computers, G. T. Thampi, dreamtech
4. Handbook of Wireless Networks and Mobile Computing, Ivan Stojmenovic ,Wiley

Reference Books:

1. Principles of Mobile Computing, - Hansmann, Merk, Nicklous and Stober, Springer
2. Mobile Communications, Jochen Schiller, Pearson
3. Mobile Computing, Raj Kamal, Oxford
4. Mobile Computing, Wandra & Wandra, Akshat Pub.
5. Android Wireless Application Development, Shane Conder, Lauren Darcey, Pearson
6. Professional Android 2 Application development, Reto Meier, Wrox, Wiley India

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Paper: 502 **Subject**: Distributed Operating Systems

Unit-1: Introduction to Distributed Systems

- Definition and goals
- Hardware and Software concepts, Design issues

Unit-2: Communication in Distributed Systems

- Computer Network and Layered Protocols
- Message passing and related issues
- Synchronization
- Client Server model & its implementation
- remote procedure call and implementation issues
- Case Studies: SUN RPC, DEC RPC

Unit-3: Synchronization in Distributed Systems

- Clock synchronization and related algorithms
- mutual exclusion,
- Deadlock in distributed systems

Unit-4: Processes and Processors in Distributed Systems

- Threads
- system model, processor allocation,
- scheduling in distributed systems: Load balancing and sharing approach
- fault tolerance
- Real time distributed systems
- Process migration and related issues

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Unit-5: Distributed File Systems

- Introduction
- features & goal of distributed file system
- file models,
- file accessing models
- file sharing semantics
- file caching scheme
- file replication
- fault tolerance
- trends in distributed file system
- case study

Unit-6: Distributed Shared Memory

- Introduction
- general architecture of DSM systems
- design and implementation issues of DSM
- Granularity
- structure of shared memory space
- consistency models
- replacement strategy
- Thrashing
-

Unit-7: Case Study

- Amoeba
- Mach
- Chorus
- DCE

Reference Books:

1. Distributed Operating Systems Concepts and Design, Pradeep K. Sinha, PHI
2. Distributed Operating Systems by Andrew S Tannebaum, PHI

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Paper: 503 **Subject**: Computer Algorithm

Unit-1: Introduction:

- Introduction to Algorithms
- Analysis and design of algorithms
- Type of recurrences.

Unit-2: Sorting, Order Statistics and Data Structures:

- Heap sort
- Sorting in linear time
- Medians and other statistics
- Red-black trees
- Augmenting data structures

Unit-3: Advanced Data Structures:

- B-trees
- binomial heaps
- Fibonacci heaps
- Data structures for disjoint sets

Unit-4: Advanced Design and Analysis Techniques

- Dynamic programming
- Greedy algorithms
- Amortized analysis
- Probabilistic algorithms
- Binary search and traversal techniques.

Unit-5: Graph Algorithms

- Elementary graph algorithms
- Minimum spanning trees
- Single source shortest paths
- All- pairs shortest paths
- Maximum flow
- Backtracking
- Topological sorting

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Unit-6: Algorithms for Common Applications:

- Sorting networks
- Algorithms for parallel computers
- Approximation algorithms
- Heuristic algorithms String matching.

Unit-7: Algebraic Simplifications and Transformations:

- NP-Hard and NP-Complete problems

Reference Books:

1. Computer Algorithms by Coreman MIT Press
2. Design and Analysis of Computer Algorithms by Aho,Hopcroft and Ullman ,Pearson
3. The Algorithm Design Manual By Steve s. Skiena

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Paper: 504 **Subject**: iOS Programming

Unit-1: Fundamentals:

- OOP concepts and SQL Queries
- Basics of Designing
- Overview of MAC OS and X-Code

Unit-2: Learning the Language (Objective C):

- Data Types
- NS Integer,
- NS Number
- Operators
- Loop
- Intro to .H and .M
- Files Inheritance
- Method Overloading
- Mutable and Immutable Strings
- Mutable and
- Immutable Arrays
- File Management

Unit-3: IPhone OS:

- Introduction to iPhone Architecture
- Essential COCOA TouchClasses
- Interface Builder
- Nib File
- COCOA and MVC Framework
- Overview of features of latest ios

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Unit-4: Application Development in iPhone:

- Controls and Gestures
- Controllers and Memory Management
- Using Application Delegate
- Connecting Outlets
- Managing Application Memory
- Advance Controllers Programming
- Views (Alert View, Table Views, Picker, Date and Time, Image)
- Navigation Based Application Development
- Tab Bar and Tool Bar
- Audio and Video
- Releasing Memory
- Reading PDF File in iPhone Simulator
- Animation
- Accelerometer
- Location Services and 2-D Graphics
- Email Sending
- XML Parsing
- JSON Parsing
- Web Services Integration

Unit-5: Database:

- SqLite
- Creating Outlets and Actions
- Parsing Data with Sqlite
- Overview of Networking- SCNetwork
- CFHTTP
- CFFTP
- CFSocket
- Berkeley Sockets,
- Web Server

Reference Books:

1. Building iPhone and iPad Electronic Projects - MikeWesterfield - O'Reilly Media Pub.
2. Head First iPhone and iPad Development, 2nd Edition - Dan Pilone, Tracey Pilone - O'Reilly Media
3. Beginning iPhone and iPad Web Apps - ChrisApers, Daniel Paterson - Apress Pub