MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

Sponsored by CMR Educational Society

(Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – 'A' Grade - ISO 9001:2015 Certified)

Maisammaguda, Dhulapally (Post Via Hakimpet), Secunderabad – 500100, Telangana State, India.

Contact Number: 040-23792146/64634237, E-Mail ID: mrcet2004@gmail.com, website: www.mrcet.ac.in

MASTER OF TECHNOLOGY
COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE AND SYLLABUS

(Batches admitted from the academic year 2017 - 2018)

Note: The regulations hereunder are subject to amendments as may be made by the Academic Council of the College from time to time. Any or all such amendments will be effective from such date and to such batches of candidates (including those already pursuing the program) as may be decided by the Academic Council.

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VISION

❖ To acknowledge quality education and instill high patterns of discipline making and the students technology superior and ethically strong which involves the improvement in the quality of life in human race

MISSION

❖ To achieve and impart holistic technical education using the best infrastructure, outstanding technical and teaching expertise to establish the students into competent and confident engineers.

❖ Evolving the center of excellence through creative and innovative teaching learning practices for promoting academic achievement to produce internationally accepted competitive and world class professionals.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PE01: To provide an environment that gives hands on experience in Modeling, Designing, Implementing, and evaluating various software development concepts, processes and products.

PE02: To afford graduates with both fundamental and advanced knowledge which prepares them to posses integrated and ethical behavior as an individual, team member and a leader to handle diverse career paths.

PE03: To produce high quality graduates to design and implement solutions for rapidly changing computing and information system problems and to encourage lifelong learning to adapt innovation.

PROGRAM OUTCOMES (POs)

PO1: RESEARCH SKILLS

An ability to independently carry out research I investigation and development work to solve practical problems.

PO2: SOFT SKILLS

Ability to write and present a substantial technical report/ document.

PO3: SCHOLAR SHIP OF KNOWLEDGE

Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program at a level higher than the relevant bachelor program.

PO4: PROBLEM SOLVING

Apply the knowledge of engineering principles to develop software systems, products and processes thus to solve real world multifaceted problems.

POS5: COLLABORATIVE AND MULTIDISCIPLINARY WORK

Posses knowledge and understand group dynamics, collaborate and contribute in the design, development and conducting experiments, procedures and technical skills necessary for multidisciplinary engineering exploration to solve societal problems and environmental contexts for sustainable development."

PO6: ETHICAL PRACTICES AND SOCIAL RESPONSIBILITY

Acquire professional and intellectual integrity, professional code of conduct, ethics of research and scholarship, consideration of the impact of research outcomes on professional practices and to be responsible in contributing for the sustainable development of the society.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: DEVELOPMENT AND ASSESSMENTSKILLS:

Ability to Design, Develop and Analyze software development tools, processes and systems using formal methods in applying problem solving skills and be employable in product or service oriented Industry.

PSO2: RESEARCH & DEVELOPMENT& INNOVATION SKILLS:

Ability to take up effectively the challenges in higher Studies, Research & Development, and Entrepreneurship in the modern high speed computing environment.

M.Tech - I year I semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R17D5801	Data Structures and Algorithms	3	-	3	30	70
2	R17D5802	Advanced Operating Systems	3	-	3	30	70
3	R17D5803	Computer System Design	3	-	3	30	70
4	R17D5804 R17D5813 R17D5806	**Core Elective-I** 1) Software Process and Project Management. 2) Cloud Computing 3) Android Application Development	3	-	3	30	70
5	R17D5807 R17D5808 R17D5809	**Core Elective-II** 1) Machine Learning 2) Software Architecture and Design Patterns 3) Parallel and Distributed Algorithms	3	-	3	30	70
6	R17DEC51 R17DCS51 R17DME51 R17DAE51	**Open Elective-I** 1) Embedded Systems Programming 2) Scripting Languages 3) Non Conventional Energy Sources 4) Mathematical Modeling Techniques	3	-	3	30	70
7	R17D5881	Advanced Data Structures and Algorithms Lab	0	3	2	30	70
8	R17D5882	Technical Seminar-I	-	-	2	50	-
Total			**18**	**3**	**22**	**260**	**490**

M.Tech - I year II semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R17D5810	Network Programming	3	-	3	30	70
2	R17D5811	Advanced Databases	3	-	3	30	70
3	R17D5812	Internet Technologies and Services	3	-	3	30	70
4	R15D5805 R17D5814 R17D5815	**Core Elective-III** 1) Data Mining 2) Storage Area Networks 3) Natural Language Processing	3	-	3	30	70
5	R17D5816 R17D5817 R17D5818	**Core Elective-IV** 1) Soft Computing 2) Wireless Networks and Mobile Computing 3) Big Data Analytics	3	-	3	30	70
6	R17DEC52 R17DCS52 R17DME52 R17DCS53	**Open Elective-II** 1) Internet of Things 2) Information Security 3) Industrial Management 4) Research Methodologies	3	-	3	30	70
7	R17D5883	Internet Technologies and Services Lab	-	3	2	30	70
8	R17D5884	Technical Seminar-II	-	-	2	50	-
Total			**18**	**3**	**22**	**260**	**490**

M.Tech - II year I semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R17D5885	Technical Seminar-III	-	-	2	50	-
2	R17D5891	Project Review-I	-	-	10	100	-
3	R17D5892	Project Review-II			10	100	
Total			**-**	**-**	**22**	**-**	**-**

M.Tech - II year II semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R17D5886	Technical Seminar-IV	-	-	2	50	-
2	R17D5893	Project Review-III	-	-	10	100	-
3	R17D5894	Project Viva -voce			10		150
Total			**-**	**-**	**22**	**150**	**150**

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5801) DATA STRUCTURES AND ALGORITHMS

Objectives:

- The fundamental design, analysis, and implementation of basic data structures. Basic concepts in the specification and analysis of programs.
- Principles for good program design, especially the uses of data abstraction. Significance of algorithms in the computer field
- Various aspects of algorithm development Qualities of a good solution

UNIT I

Algorithms, Performance analysis- time complexity and space complexity, Asymptotic Notation-Big Oh, Omega and Theta notations, Complexity Analysis Examples. Data structures-Linear and non linear data structures, ADT concept, Linear List ADT, Array representation, Linked representation, Vector representation, singly linked lists -insertion, deletion, search operations, doubly linked lists-insertion, deletion operations, circular lists. Representation of single, two dimensional arrays, Sparse matrices and their representation.

UNIT II

Stack and Queue ADTs, array and linked list representations, infix to postfix conversion using stack, implementation of recursion, Circular queue-insertion and deletion, Dequeue ADT, array and linked list representations, Priority queue ADT, implementation using Heaps, Insertion into a Max Heap, Deletion from a Max Heap, java.util package-ArrayList, Linked List, Vector classes, Stacks and Queues in java.util, Iterators in java.util.

UNIT III

Searching–Linear and binary search methods, Hashing-Hash functions, Collision Resolution methods-Open Addressing, Chaining, Hashing in java.util-HashMap, HashSet, Hashtable. Sorting –Bubble sort, Insertion sort, Quick sort, Merge sort, Heap sort, Radix sort, comparison of sorting methods.

UNIT IV

Trees- Ordinary and Binary trees terminology, Properties of Binary trees, Binary tree ADT, representations, recursive and non recursive traversals, Java code for traversals, Threaded binary trees. Graphs- Graphs terminology, Graph ADT, representations, graph traversals/search methods-dfs and bfs, Java code for graph traversals, Applications of Graphs-Minimum cost spanning tree using Kruskal's algorithm, Dijkstra's algorithm for Single Source Shortest Path Problem.

UNIT V

Search trees- Binary search tree-Binary search tree ADT, insertion, deletion and searching operations, Balanced search trees, AVL trees-Definition and examples only, Red Black trees – Definition and examples only, B-Trees-definition, insertion and searching operations, Trees in java.util- TreeSet, Tree Map Classes, Tries(examples only),Comparison of Search trees. Text compression-Huffman coding and decoding, Pattern matching-KMP algorithm.

TEXT BOOKS:
1. Data structures, Algorithms and Applications in Java, S.Sahni, Universities Press.
2. Data structures and Algorithms in Java, Adam Drozdek, 3rd edition, Cengage Learning.
3. Data structures and Algorithm Analysis in Java, M.A.Weiss, 2nd edition,
4. Addison-Wesley (Pearson Education).

REFERENCE BOOKS:
1. Java for Programmers, Deitel and Deitel, Pearson education.
2. Data structures and Algorithms in Java, R.Lafore, Pearson education.
3. Java: The Complete Reference, 8th editon, Herbert Schildt, TMH.
4. Data structures and Algorithms in Java, M.T.Goodrich, R.Tomassia, 3rd edition, Wiley India Edition.
5. Data structures and the Java Collection Frame work,W.J.Collins, Mc Graw Hill.
6. Classic Data structures in Java, T.Budd, Addison-Wesley (Pearson Education).
7. Data structures with Java, Ford and Topp, Pearson Education.
8. Data structures using Java, D.S.Malik and P.S.Nair, Cengage learning.
9. Data structures with Java, J.R.Hubbard and A.Huray, PHI Pvt. Ltd.
10. Data structures and Software Development in an Object-Oriented Domain, J.P.Tremblay and G.A.Cheston, Java edition, Pearson Education.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5802) ADVANCED OPERATING SYSTEMS

Objectives:

- To understand main components of Real time Operating system and their working
- To study the operations performed by OS as a resource manager
- To understand the scheduling policies of DOS To implement the working principles of OS
- To study different OS and compare their features

UNIT I

Real-time operating systems: Design issues, principles and case study.

UNIT II

Distributed operating system: Design issues, features and principles of working, case study.

UNIT III

Network operating system: Design issues, working principles and characteristic features, case study.

UNIT IV

Kernel development: Issues and development principles, case study.

UNIT V

Protection, privacy, access control and security issues, solutions.

TEXT BOOKS:

1. A.Silberschatz - Applied Operating System Concepts, Wiley, 2000.
2. Lubemir F Bic and Alan C. Shaw - Operating System Principles, Pearson Education, 2003.

REFERENCE BOOKS:

1. Operating Systems : Internal and Design Principles - Stallings, 6th ed., PE.
2. Modern Operating Systems, Andrew S Tanenbaum 3rd ed., PE.
3. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 7th ed.,, John Wiley
4. UNIX User Guide – Ritchie & Yates.
5. UNIX Network Programming - W.Richard Stevens ,1998, PHI.
6. The UNIX Programming Environment – Kernighan & Pike, PE.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5803) COMPUTER SYSTEM DESIGN

Objectives:
- To apply the fundamentals of Computer Systems Design and IT in devising IT solutions. To Design, simulate, and analyze digital hardware.
- To Interface between basic hardware and software computing systems. To Simulate and evaluate different computing architectures.

UNIT I

Computer structure – hardware, software, system software, Von-Neumann architecture – case study. IA -32 Pentium: registers and addressing, instructions, assembly language, program flow control, logic and shift/rotate instructions, multiply, divide MMX, SIMD instructions, I/O operations, subroutines.
Input/output organization, interrupts, DMA, Buses, Interface circuits, I/O interfaces, device drivers in windows, interrupt handlers

UNIT II

Processing Unit: Execution of a complete instruction, multiple bus organization, hardwired control, micro programmed control.
Pipelining: data hazards, instruction hazards, influence on instruction sets, data path & control consideration, and RISC architecture introduction.

UNIT – III

Memory: types and hierarchy, model level organization, cache memory, performance considerations, mapping, virtual memory, swapping, paging, segmentation, replacement policies.

UNIT – IV

Processes and Threads: processes, threads, inter process communication, classical IPC problems, Deadlocks.

UNIT – V

File system: Files, directories, Implementation, Unix file system
Security: Threats, intruders, accident data loss, basics of cryptography, user authentication.

TEXT BOOKS:
1. Computer Organization – Car Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.
2. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson /PHI
2. Morris Mano- Computer System Architecture –3rd Edition-Pearson Education.
3. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
4. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5804) SOFTWARE PROCESS AND PROJECT MANAGEMENT
(CORE ELECTIVE – I)

Objectives:
- Describe and determine the purpose and importance of project management from the perspectives of planning, tracking and completion of project.
- Compare and differentiate organization structures and project structures.
- Implement a project to manage project schedule, expenses and resources with the application of suitable project management tools.

UNIT I
Software Process Maturity
Software maturity Framework**,** Principles of Software Process Change, Software Process Assessment, The Initial Process, The Repeatable Process, The Defined Process, The Managed Process, The Optimizing Process.
Process Reference Models
Capability Maturity Model (CMM)**,** CMMI, PCMM, PSP, TSP.

UNIT II
Software Project Management Renaissance
Conventional Software Management, Evolution of Software Economics, Improving Software Economics, The old way and the new way.
Life-Cycle Phases and Process artifacts
Engineering and Production stages, inception phase, elaboration phase, construction phase, transition phase, artifact sets, management artifacts, engineering artifacts and pragmatic artifacts, model based software architectures.

UNIT III
Workflows and Checkpoints of process
Software process workflows, Iteration workflows, Major milestones, Minor milestones, Periodic status assessments.
Process Planning
Work breakdown structures, Planning guidelines, cost and schedule estimating process, iteration planning process, Pragmatic planning.

UNIT IV
Project Organizations
Line-of- business organizations, project organizations, evolution of organizations, process automation.

Project Control and process instrumentation
The seven core metrics, management indicators, quality indicators, life-cycle expectations, Pragmatic software metrics, and metrics automation.

UNIT V
CCPDS-R Case Study and Future Software Project Management Practices
Modern Project Profiles, Next-Generation software Economics, Modern Process Transitions.

TEXT BOOKS:
1. Managing the Software Process, *Watts S. Humphrey*, Pearson Education.
2. Software Project Management, *Walker Royce,* Pearson Education.

REFERENCE BOOKS:
1. Effective Project Management: Traditional, Agile, Extreme, Robert Wysocki, Sixth edition, Wiley India, rp2011.
2. An Introduction to the Team Software Process, Watts S. Humphrey, Pearson Education, 2000
3. Process Improvement essentials, James R. Persse, O'Reilly, 2006
4. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition, TMH, 2006
5. Applied Software Project Management, Andrew Stellman & Jennifer Greene, O'Reilly, 2006.
6. Head First PMP, Jennifer Greene & Andrew Stellman, O'Reilly, 2007
7. Software Engineering Project Managent, Richard H. Thayer & Edward Yourdon, 2nd edition, Wiley India, 2004.
8. The Art of Project Management, Scott Berkun, SPD, O'Reilly, 2011.
9. Applied Software Project Management, Andrew Stellman & Jennifer Greene, SPD, O'Reilly, rp2011.
10. Agile Project Management, Jim Highsmith, Pearson education, 2004.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5813) CLOUD COMPUTING
(CORE ELECTIVE-I)

Objectives:
- To learn the new computing model which enables shared resources on demand over the network.
- To learn about the pay-per-use scenarios.
- To learn about the new kind of service models and deployment models.
- To learn about the virtualization technology.
- To learn the python programming or various services and models.
- To develop cloud applications in Python

UNIT-I
Principles of Parallel and Distributed Computing, Introduction to cloud computing, Cloud computing Architecture, cloud concepts and technologies, cloud services and platforms, Cloud models, cloud as a service, cloud solutions, cloud offerings, introduction to Hadoop and Mapreduce.

UNIT –II
Cloud Platforms for Industry, Healthcare and education, Cloud Platforms in the Industry, cloud applications. Virtualization, cloud virtualization technology, deep dive: cloud virtualization, Migrating in to cloud computing, Virtual Machines Provisioning and Virtual Machine Migration Services, On the Management of Virtual Machines for cloud Infrastructure, Comet cloud, T-Systems,

UNIT-III
Cloud computing Applications: Industry, Health, Education, Scientific Applications, Business and Consumer Applications, Understanding Scientific Applications for Cloud Environments, Impact of Cloud computing on the role of corporate IT. Enterprise cloud computing Paradigm, Federated cloud computing Architecture, SLA Management in Cloud
Computing, Developing the cloud: cloud application Design.

UNIT-IV
Python Basics, Python for cloud, cloud application development in python, Cloud Application Development in Python. Programming Google App Engine with Python: A first real cloud Application, Managing Data in the cloud, Google app engine Services for Login Authentication, Optimizing UI and Logic, Making the UI Pretty: Templates and CSS, Getting Interactive. Map Reduce Programming Model and Implementations.

UNIT-V

Cloud management, Organizational Readiness and change management in the cloud age, Cloud Security, Data security in the cloud, Legal Issues in the Cloud , Achieving Production Readiness for the cloud Services

TEXT BOOKS:

1. Cloud Computing: Raj Kumar Buyya , James Broberg, andrzej Goscinski, 2013 Wiley

2. Mastering Cloud Computing: Raj Kumar buyya, Christian Vecchiola,selvi-2013.

3. Cloud Computing: Arshdeep Bahga, Vijay Madisetti, 2014, University Press.

4. Cloud computing: Dr Kumar Saurab Wiley India 2011.

REFERENCES;

1. Code in the Cloud: Mark C.Chu-Carroll 2011, SPD.(Second part of IV UNIT)

2. Essentials of cloud computing : K Chandrasekharan CRC Press.

3. Cloud Computing: John W. Rittinghouse, James Ransome, CRC Press.

4. Virtualization Security: Dave shackleford 2013. SYBEX a wiley Brand.

5. Cloud computing and Software Services: Ahson , Ilyas.2011.

6. Cloud Computing Bible: Sosinsky 2012. Wiley India .

7. Cloud Computing: Dan C. Marinescu-2013, Morgan Kaufmann.

8. Distributed and Cloud Computing, Kai Hwang, Geoffery C.Fox, Jack J.Dongarra, Elsevier, 2012.

9. Fundamentals of Python Kenneth A.Lambert | B.L.Juneja

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5806) ANDROID APPLICATION DEVELOPMENT
(CORE ELECTIVE-I)

Objectives:
- To demonstrate their understanding of the fundamentals of Android operating systems
- To demonstrate their skills of using Android software development tools
- To demonstrate their ability to develop software with reasonable complexity on mobile platform
- To demonstrate their ability to deploy software to mobile devices
- To demonstrate their ability to debug programs running on mobile devices

Unit I:
Introduction to Android Operating System:
Android OS design and Features – Android development framework, SDK features, Installing and running applications on Eclipse platform, Creating AVDs, Types of Android applications, Best practices in Android programming, Android tools

Android application components – Android Manifest file, Externalizing resources like values, themes, layouts, Menus etc, Resources for different devices and languages, Runtime Configuration Changes

Android Application Lifecycle – Activities, Activity lifecycle, activity states, monitoring state changes

Unit II:
Android User Interface:
Measurements – Device and pixel density independent measuring units
Layouts – Linear, Relative, Grid and Table Layouts
User Interface (UI) Components – Editable and non editable TextViews, Buttons, Radio and Toggle Buttons, Checkboxes, Spinners, Dialog and pickers
Event Handling – Handling clicks or changes of various UI components
Fragments – Creating fragments, Lifecycle of fragments, Fragment states, Adding fragments to Activity, adding, removing and replacing fragments with fragment transactions, interfacing between fragments and Activities, Multiscreen Activities

Unit III
Intents and Broadcasts:
Intent – Using intents to launch Activities, Explicitly starting new Activity, Implicit Intents, Passing data to Intents, Getting results from Activities, Native Actions, using Intent to dial a number or to send SMS

Broadcast Receivers – Using Intent filters to service implicit Intents, Resolving Intent filters, finding and using Intents received within an Activity

Notifications – Creating and Displaying notifications, Displaying Toasts

Unit IV

Persistent Storage:

Files – Using application specific folders and files, creating files, reading data from files, listing contents of a directory

Shared Preferences – Creating shared preferences, saving and retrieving data using Shared Preference

Database – Introduction to SQLite database, creating and opening a database, creating tables, inserting retrieving and

deleting data, Registering Content Providers, Using content Providers (insert, delete, retrieve and update)

Unit V

Advanced Topics: Alarms – Creating and using alarms

Using Internet Resources – Connecting to internet resource, using download manager

Location Based Services – Finding Current Location and showing location on the Map, updating location

TEXT BOOKS:

1. Professional Android 4 Application Development, Reto Meier, Wiley India, (Wrox) , 2012
2. Android Application Development for Java Programmers, James C Sheusi, Cengage
        Learning, 2013

REFERENCES:

1. Beginning Android 4 Application Development, Wei-Meng Lee, Wiley India (Wrox), 2013

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5807) MACHINE LEARNING
(CORE ELECTIVE –II)

Objectives:

- To be able to formulate machine learning problems corresponding to different applications.
- To understand a range of machine learning algorithms along with their strengths and weaknesses.
- To understand the basic theory underlying machine learning.
- To be able to apply machine learning algorithms to solve problems of moderate complexity.
- To be able to read current research papers and understands the issues raised by current research.

UNIT I

INTRODUCTION - Well-posed learning problems, Designing a learning system, Perspectives and issues in machine learning

Concept learning and the general to specific ordering – Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias

UNIT II

Decision Tree learning – Introduction, Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning

Artificial Neural Networks – Introduction, Neural network representation, Appropriate problems for neural network learning, Perceptions, Multilayer networks and the back propagation algorithm, Remarks on the back propagation algorithm, An illustrative example face recognition Advanced topics in artificial neural networks

Evaluation Hypotheses – Motivation, Estimation hypothesis accuracy, Basics of sampling theory, A general approach for deriving confidence intervals, Difference in error of two hypotheses, Comparing learning algorithms

UNIT III

Bayesian learning – Introduction, Bayes theorem, Bayes theorem and concept learning, Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Minimum description length principle, Bayes optimal classifier,

Gibs algorithm, Naïve Bayes classifier, An example learning to classify text, Bayesian belief networks The EM algorithm

Computational learning theory – Introduction, Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space, Sample Complexity for infinite Hypothesis Spaces, The mistake bound model of learning - **Instance-Based Learning**-Introduction, k -Nearest Neighbour Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning

Genetic Algorithms – Motivation, Genetic Algorithms, An illustrative Example, Hypothesis Space Search, Genetic Programming, Models of Evolution and Learning, Parallelizing Genetic Algorithms

UNIT IV

Learning Sets of Rules – Introduction, Sequential Covering Algorithms, Learning Rule Sets: Summary, Learning First Order Rules, Learning Sets of First Order Rules: FOIL, Induction as Inverted Deduction, Inverting Resolution

Analytical Learning - Introduction, Learning with Perfect Domain Theories: Prolog-EBG Remarks on Explanation-Based Learning, Explanation-Based Learning of Search Control Knowledge

UNIT V

Combining Inductive and Analytical Learning – Motivation, Inductive-Analytical Approaches to Learning, Using Prior Knowledge to Initialize the Hypothesis, Using Prior Knowledge to Alter the Search Objective, Using Prior Knowledge to Augment Search Operators,

Reinforcement Learning – Introduction, The Learning Task, Q Learning, Non-Deterministic, Rewards and Actions, Temporal Difference Learning, Generalizing from Examples, Relationship to Dynamic Programming

TEXT BOOKS:
1. Machine Learning – Tom M. Mitchell, - MGH
2. Machine Learning: An Algorithmic Perspective, Stephen Marsland, Taylor & Francis (CRC)

REFERENCE BOOKS:
1. Machine Learning Methods in the Environmental Sciences, Neural Networks, William W Hsieh, Cambridge Univ Press.
2. Richard o. Duda, Peter E. Hart and David G. Stork, pattern classification, John Wiley & Sons Inc., 2001
3. Chris Bishop, Neural Networks for Pattern Recognition, Oxford University Press, 1995

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5808) SOFTWARE ARCHITECTURE AND DESIGN PATTERNS
(CORE ELECTIVE –II)

Objectives:
    After completing this course, the student should be able to:
- To understand the concept of patterns and the Catalog.
- To discuss the Presentation tier design patterns and their affect on: sessions, client access, validation and consistency.
- To understand the variety of implemented bad practices related to the Business and Integration tiers.
- To highlight the evolution of patterns.
- To how to add functionality to designs while minimizing complexity
- To understand what design patterns really are, and are not
- To learn about specific design patterns.
- To learn how to use design patterns to keep code quality high without overdesign.

UNIT I
Envisioning Architecture
The Architecture Business Cycle, What is Software Architecture, Architectural patterns, reference models, reference architectures, architectural structures and views.
Creating an Architecture
Quality Attributes, Achieving qualities, Architectural styles and patterns, designing the Architecture, Documenting software architectures, Reconstructing Software Architecture.

UNIT II
Analyzing Architectures
Architecture Evaluation, Architecture design decision making, ATAM, CBAM.
Moving from one system to many
Software Product Lines, Building systems from off the shelf components, Software architecture infuture.

UNIT III
Patterns
Pattern Description, Organizing catalogs, role in solving design problems, Selection and usage.
Creational and Structural patterns
Abstract factory, builder, factory method, prototype, singleton, adapter, bridge, composite, façade, flyweight.

UNIT IV

Behavioral patterns

Chain of responsibility, command, Interpreter, iterator, mediator, memento, observer, state, strategy, template method, visitor.

UNIT V

Case Studies

A-7E – A case study in utilizing architectural structures, The World Wide Web - a case study in interoperability, Air Traffic Control – a case study in designing for high availability, Celsius Tech – acase study in product line development,

TEXT BOOKS:
1. Software Architecture in Practice, second edition, Len Bass, Paul Clements & Rick Kazman, Pearson Education, 2003.
2. Design Patterns, Erich Gamma, Pearson Education, 1995.

REFERENCE BOOKS:
1. Beyond Software architecture, Luke Hohmann, Addison wesley, 2003.
2. Software architecture, David M. Dikel, David Kane and James R. Wilson, Prentice Hall
1. PTR, 2001
2. Software Design, David Budgen, second edition, Pearson education, 2003
3. Head First Design patterns, Eric Freeman & Elisabeth Freeman, O'REILLY, 2007.
4. Design Patterns in Java, Steven John Metsker & William C. Wake, Pearson education, 2006
5. J2EE Patterns, Deepak Alur, John Crupi & Dan Malks, Pearson education, 2003.
6. Design Patterns in C#, Steven John metsker, Pearson education, 2004.
7. Pattern Oriented Software Architecture, F.Buschmann & others, John Wiley & Sons.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem (Computer Science & Engg.)

(R17D5809) PARALLEL AND DISTRIBUTED ALGORITHMS
(CORE ELECTIVE –II)

Objectives:
- To learn parallel and distributed algorithms development techniques for shared memory and message passing models.
- To study the main classes of parallel algorithms.
- To study the complexity and correctness models for parallel algorithms.

UNIT-I
Basic Techniques, Parallel Computers for increase Computation speed, Parallel & Cluster Computing

UNIT-II
Message Passing Technique- Evaluating Parallel programs and debugging, Portioning and Divide and Conquer strategies examples

UNIT-III
Pipelining- Techniques computing platform, pipeline programs examples

UNIT-IV
Synchronous Computations, load balancing, distributed termination examples, programming with shared memory, shared memory multiprocessor constructs for specifying parallelist sharing data parallel programming languages and constructs, open MP

UNIT-V
Distributed shared memory systems and programming achieving constant memory distributed shared memory programming primitives, algorithms – sorting and numerical algorithms.

TEXT BOOK:
1. Parallel Programming, Barry Wilkinson, Michael Allen, Pearson Education, 2nd Edition.

REFERENCE BOOK:
1. Introduction to Parallel algorithms by Jaja from Pearson, 1992.

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(R17DEC51) EMBEDDED SYSTEMS PROGRAMMING
(OPEN ELECTIVE –I)

Unit 1 - Embedded OS (Linux) Internals
Linux internals: Process Management, File Management, Memory Management, I/O Management. Overview of POSIX APIs, Threads – Creation, Cancellation, POSIX Threads Inter Process Communication - Semaphore, Pipes, FIFO, Shared Memory
Kernel: Structure, Kernel Module Programming Schedulers and types of scheduling.
Interfacing: Serial, Parallel Interrupt Handling Linux Device Drivers: Character, USB, Block & Network

Unit 2 – Open source RTOS
Basics of RTOS: Real-time concepts, Hard Real time and Soft Real-time, Differences between General Purpose OS & RTOS, Basic architecture of an RTOS, Scheduling Systems, Inter-process communication, Performance Matric in scheduling models, Interrupt management in RTOS environment, Memory management, File systems, I/O Systems, Advantage and disadvantage of RTOS.

Unit 3 – Open Source RTOS Issues
POSIX standards, RTOS Issues - Selecting a Real Time Operating System, RTOS comparative study. Converting a normal Linux kernel to real time kernel, Xenomai basics.
Overview of Open source RTOS for Embedded systems (Free RTOS/ Chibios-RT) and application development.

Unit 4 – VxWorks / Free RTOS
VxWorks/ Free RTOS Scheduling and Task Management - Realtime scheduling, Task Creation, Intertask Communication, Pipes, Semaphore, Message Queue, Signals, Sockets, Interrupts I/O Systems - General Architecture, Device Driver Studies, Driver Module explanation, Implementation of Device Driver for a peripheral

Unit 5 – Case study
Cross compilers, debugging Techniques, Creation of binaries & porting stages for Embedded Development board (Beagle Bone Black, Rpi or similar), Porting an Embedded OS/ RTOS to a target board ().Testing a real time application on the board

TEXT BOOKS:
1. Essential Linux Device Drivers, Venkateswaran Sreekrishnan
2. Writing Linux Device Drivers: A Guide with Exercises, J. Cooperstein
3. Real Time Concepts for Embedded Systems – Qing Li, Elsevier

REFERENCES:
1. Embedded Systems Architecture Programming and Design: Raj Kamal, Tata McGraw Hill
2. Embedded/Real Time Systems Concepts, Design and Programming Black Book, Prasad, KVK

3. Software Design for Real-Time Systems: Cooling, J E Proceedings of 17the IEEE Real-Time Systems Symposium December 4-6, 1996 Washington, DC: IEEE Computer Society
4. Real-time Systems – Jane Liu, PH 2000
5. Real-Time Systems Design and Analysis : An Engineer's Handbook: Laplante, Phillip A
6. Structured Development for Real - Time Systems V1 : Introduction and Tools: Ward, Paul T & Mellor, Stephen J
7. Structured Development for Real - Time Systems V2 : Essential Modeling Techniques: Ward, Paul T & Mellor, Stephen J
8. Structured Development for Real - Time Systems V3 : Implementation Modeling Techniques: Ward, Paul T & Mellor, Stephen J
9. Monitoring and Debugging of Distributed Real-Time Systems: TSAI, Jeffrey J P & Yang, J H
10. Embedded Software Primer: Simon, David E.
11. Embedded Systems Architecture Programming and Design: Raj Kamal, Tata McGraw Hill

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(R17DCS51) SCRIPTING LANGUAGES
(OPEN ELECTIVE – I)

Objectives: The course demonstrates an in depth understanding of the tools and the scripting languages necessary for design and development of applications dealing with Bio-information/ Bio-data. The instructor is advised to discuss examples in the context of Bio-data/ Bio-information application development.

UNIT I
Introduction to PERL and Scripting Scripts and Programs, Origin of Scripting , Scripting Today, Characteristics of Scripting Languages, Web Scripting, and the universe of Scripting Languages. PERL- Names and Values, Variables, Scalar Expressions, Control Structures, arrays, list, hashes, strings, pattern and regular expressions, subroutines, advance perl - finer points of looping, pack and unpack, filesystem, eval, data structures, packages, modules, objects, interfacing to the operating system, Creating Internet ware applications, Dirty Hands Internet Programming, security Issues.

UNIT II
PHP Basics- Features, Embedding PHP Code in your Web pages, Outputting the data to the browser, Datatypes, Variables, Constants, expressions, string interpolation, control structures, Function, Creating a Function, Function Libraries, Arrays, strings and Regular Expressions.

UNIT III
Advanced PHP Programming Php and Web Forms, Files, PHP Authentication and Methodologies -Hard Coded, File Based, Database Based, IP Based, Login Administration, Uploading Files with PHP, Sending Email using PHP, PHP Encryption Functions, the Mcrypt package, Building Web sites for the World – Translating Websites- Updating Web sites Scripts, Creating the Localization Repository, Translating Files, text, Generate Binary Files, Set the desired language within your scripts, Localizing Dates, Numbers and Times.

UNIT IV
TCL Structure, syntax, Variables and Data in TCL, Control Flow, Data Structures, input/output, procedures, strings, patterns, files, Advance TCL- eval, source, exec and up level commands, Name spaces, trapping errors, event driven programs, making applications internet aware, Nuts and Bolts Internet Programming, Security Issues, C Interface. Tk- Visual Tool Kits, Fundamental Concepts of Tk, Tk by example, Events and Binding , Perl-Tk.

UNIT V
Python Introduction to Python language, python-syntax, statements, functions, Built-in-functions and Methods, Modules in python, Exception Handling, Integrated Web Applications in Python – Building Small, Efficient Python Web Systems, Web Application Framework.

TEXT BOOKS:
1. The World of Scripting Languages, David Barron, Wiley Publications.
2. Python Web Programming, Steve Holden and David Beazley, New Riders Publications.
3. Beginning PHP and MySQL, 3rd Edition, Jason Gilmore, Apress Publications (Dreamtech)

REFERENCE BOOKS:
1. Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP, J.Lee and B.Ware (Addison Wesley) Pearson Education.
2. Programming Python, M.Lutz, SPD.
3. PHP 6 Fast and Easy Web Development, Julie Meloni and Matt Telles, Cengage Learning Publications.
4. PHP 5.1,I.Bayross and S.Shah, The X Team, SPD.
5. Core Python Programming, Chun, Pearson Education.
6. Guide to Programming with Python, M.Dawson, Cengage Learning.
7. Perl by Example, E.Quigley, Pearson Education.
8. Programming Perl, Larry Wall, T.Christiansen and J.Orwant, O'Reilly, SPD.
9. Tcl and the Tk Tool kit, Ousterhout, Pearson Education.
10. PHP and MySQL by Example, E.Quigley, Prentice Hall(Pearson).
11. Perl Power, J.P.Flynt, Cengage Learning.
12. PHP Programming solutions, V.Vaswani, TMH.

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(R17DME51) NON CONVENTIONAL ENERGY SOURCES
(OPEN ELECTIVE-I)

UNIT-I
Introduction: Energy Scenario, Survey of energy resources. Classification and need for conventional energy resources.
Solar Energy: The Sun-sun-Earth relationship, Basic matter to waste heat energy circuit, Solar Radiation, Attention, Radiation measuring instruments.
Solar Energy Applications: Solar water heating. Space heating, Active and passive heating, Energy storage, Selective surface, Solar stills and ponds, solar refrigeration, Photovoltaic generation.

UNIT -II
Geothermal Energy: Structure of earth, Geothermal Regions, Hot springs. Hot Rocks, Hot Aquifers. Analytical methods to estimate thermal potential. Harnessing techniques, Electricity generating systems.

UNIT-III
Direct Energy Conversion: Nuclear Fusion, Fusion reaction, P-P cycle, Carbon cycle, Deuterium cycle, Condition for controlled fusion, Fuel cells and photovoltaic, Thermionic and Thermoelectric generation and MHD generator.
Hydrogen Gas as Fuel: Production methods, Properties, I.C. Engines applications, Utilization strategy, Performances.

UNIT-IV
Bioenergy: Biomass energy sources. Plant productivity, Biomass wastes, aerobic and anaerobic bioconversion processes, Raw material and properties of bio-gas, Bio-gas plant technology and status, the energetic and economics of biomass systems, Biomass gasification

UNIT-V
Wind Energy: Wind, Beaufort number, Characteristics, Wind energy conversion systems, Types, Betz model. Interference factor. Power coefficient, Torque coefficient and Thrust coefficient, Lift machines and Drag machines. Matching Electricity generation.
Energy from Oceans: Tidal energy, Tides, Diurnal and semi-diurnal nature, Power from tides, Wave Energy, Waves, Theoretical energy available. Calculation of period and phase velocity of waves, Wave power systems, submerged devices. Ocean thermal Energy, Principles, Heat exchangers, Pumping requirements, Practical considerations.

TEXTBOOKS:
1.Non-conventional Energy Sources / GD Rai/Khanna publications.
2.Non-Conventional Energy Sources and Utilisation (Energy Engineering)/ R KRajput/ S.Chand.
3.Renewable Energy Sources /Twidell & Weir/Taylor and Francis/ 2nd special Indian edition .

REFERENCE BOOKS:

1.Renewable Energy Resources- Basic Principles and Applications/ G.N.Tiwari and M.K.GhosalNarosa Publications.

2.Renewable Energy Resources/ John Twidell & Tony Weir/Taylor & Francis/2nd edition.

3.Non Conventional Energy   / K.Mittal/ Wheeler.

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(R17DAE51) MATHEMATICAL MODELING TECHNIQUES
(OPEN ELECTIVE-I)

UNIT-I: **INTRODUCTION TO MODELING AND SINGULAR PERTURBATION METHODS**
Definition of a model, Procedure of modeling: problem identification, model formulation, reduction, analysis, Computation, model validation, Choosing the model, Singular Perturbations: Elementary boundary layer theory, Matched asymptotic expansions, Inner layers, nonlinear oscillations

UNIT-II: **VARIATIONAL PRINCIPLES AND RANDOM SYSTEMS**
Variational calculus: Euler's equation, Integrals and missing variables, Constraints and Lagrange multipliers, Variational problems: Optics-Fermat's principle, Analytical mechanics: Hamilton's principle, Symmetry: Noether's theorem, Rigid body motion, Random systems: Random variables, Stochastic processes, Monte Carlo method

UNIT-III: **FINITE DIFFERENCES: ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS**
ODE: Numerical approximations, Runge-Kutta methods, Beyond Runge-Kutta, PDE: Hyperbolic equations-waves, Parabolic equations-diffusion, Elliptic equations-boundary values, **CELLULAR AUTOMATA AND LATTICE GASES:** Lattice gases and fluids, Cellular automata and computing

UNIT- IV: **FUNCTION FITTING AND TRANSFORMS**
Function fitting: Model estimation, Least squares, Linear least squares: Singular value decomposition, Non-linear least squares: Levenberg-Marquardt method, Estimation, Fisher information, and Cramer-Rao inequality, Transforms:Orthogonal transforms, Fourier transforms, Wavelets, Principal components
FUNCTION FITTING ARCHITECTURES: Polynomials: Pade approximants, Splines, Orthogonal functions, Radial basis functions, Over-fitting, Neural networks: Back propagation, Regularization

UNIT-V: **OPTIMIZATION AND SEARCH:** Multidimensional search, Local minima, Simulated annealing, Genetic algorithms **FILTERING AND STATE ESTIMATION:** Matched filters, Wiener filters, Kalman filters, Non-linearity and entrainment, Hidden Markov models

TEXT BOOK:
1. *The Nature of Mathematical Modeling*, Neil Gershenfeld, Cambridge University Press, 2006, ISBN 0-521-57095-6

REFERENCE BOOKS:
1. *Mathematical Models in the Applied Sciences*, A. C. Fowler, Cambridge University Press, 1997, ISBN 0-521-46140-5
2. *A First Course in Mathematical Modeling*, F. R. Giordano, M.D. Weir and W.P. Fox, 2003, Thomson, Brooks/Cole Publishers
3. *Applied Numerical Modeling for Engineers*, Donald De Cogan, Anne De Cogan, Oxford University Press, 1997

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(R17D5881) ADVANCED DATA STRUCTURES AND ALGORITHMS LAB

Objectives:
- The fundamental design, analysis, and implementation of basic data structures.
- Basic concepts in the specification and analysis of programs.
- Principles for good program design, especially the uses of data abstraction.

Sample Problems on Data structures:

1) Write Java programs that use both recursive and non-recursive functions for implementing the following searching methods:
   a) Linear search b) Binary search
2) Write Java programs to implement the following using arrays and linked lists
   a) List ADT
3) Write Java programs to implement the following using an array.
   a) Stack ADT b) Queue ADT
4) Write a Java program that reads an infix expression and converts the expression to postfix form. (Use stack ADT).
5) Write a Java program to implement circular queue ADT using an array.
6) Write a Java program that uses both a stack and a queue to test whether the given string is a palindrome or not.
7) Write Java programs to implement the following using a singly linked list.
   a) Stack ADT b) Queue ADT
8) Write Java programs to implement the deque (double ended queue) ADT using
   a) Array b) Singly linked list c) Doubly linked list.
9) Write a Java program to implement priority queue ADT.
10) Write a Java program to perform the following operations:
   a) Construct a binary search tree of elements.
   b) Search for a key element in the above binary search tree.
   c) Delete an element from the above binary search tree.
11) Write a Java program to implement all the functions of a dictionary (ADT) using Hashing.
12) Write a Java program to implement Dijkstra's algorithm for Single source shortest
13) path problem.
14) Write Java programs that use recursive and non-recursive functions to traverse the
15) given binary tree in
   a) Preorder b) Inorder c) Postorder.
16) Write Java programs for the implementation of bfs and dfs for a given graph.
17) Write Java programs for implementing the following sorting methods:
   a) Bubble sort d) Merge sort g) Binary tree sort
   b) Insertion sort e) Heap sort

    c) Quick sort f) Radix sort

18) Write a Java program to perform the following operations:

    a) Insertion into a B-tree b) Searching in a B-tree

19) Write a Java program that implements Kruskal's algorithm to generate minimum cost

20) spanning tree.

21) Write a Java program that implements KMP algorithm for pattern matching

REFERENCE BOOKS:

1. Data Structures and Algorithms in java, 3rd edition, A.Drozdek, Cengage Learning.
2. Data Structures with Java, J.R.Hubbard, 2nd edition, Schaum's Outlines, TMH.
3. Data Structures and algorithms in Java, 2nd Edition, R.Lafore, Pearson Education.
4. Data Structures using Java, D.S.Malik and P.S. Nair, Cengage Learning.
5. Data structures, Algorithms and Applications in java, 2nd Edition, S.Sahani, Universities
    Press.
6. Design and Analysis of Algorithms, P.H.Dave and H.B.Dave, Pearson education.
7. Data Structures and java collections frame work, W.J.Collins, Mc Graw Hill.
8. Java: the complete reference, 7th editon, Herbert Schildt, TMH.
9. Java for Programmers, P.J.Deitel and H.M.Deitel, Pearson education / Java: How to Program P.J.Deitel and H.M.Deitel , 8th edition, PHI.
10. Java Programming, D.S.Malik,Cengage Learning.
    A Practical Guide to Data Structures and Algorithms using Java, S.Goldman & K.Goldman, Chapman & Hall/CRC, Taylor & Francis Group.
    (Note: Use packages like java.io, java.util, etc)

(R17D5810) NETWORK PROGRAMMING

Objectives:

- Computer network programming involves writing computer programs that enable processes to communicate with each other across a computer network
- **Network programming is client–server programming**
- Interprocess communication, even if it is bidirectional, cannot be implemented in a perfectly symmetric way: to establish a communication channel between two processes, one process must take the initiative, while the other is waiting for it. Therefore, network programming unavoidably assumes a client–server model: The process initiating the communication is a client, and the process waiting for the communication to be initiated is a server. The client and server processes together form a distributed system. In a peer-to-peer communication, the program can act both as a client and a server.

UNIT – I

Linux Utilities- File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking utilities, Filters, Text processing utilities and Backup utilities. Bourne again shell(bash) - Introduction, pipes and redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples. Review of C programming concepts-arrays, strings (library functions), pointers, function pointers, structures, unions, libraries in C.

UNIT - II

Files- File Concept, File types File System Structure, Inodes, File Attributes, file I/O in C using system calls, kernel support for files, file status information-stat family, file and record locking-lockf and fcntl functions, file permissions- chmod, fchmod, file ownership-chown, lchown , fchown, linkssoft links and hard links – symlink, link, unlink. File and Directory management – Directory contents, Scanning Directories- Directory file APIs. Process-Process concept, Kernel support for process, process attributes. Process control – process creation, replacing a process image, waiting for a process, process termination, zombie process, orphan process.

UNIT - III

Signals- Introduction to signals, Signal generation and handling, Kernel support for signals, Signal function, unreliable signals, reliable signals, kill, raise , alarm, pause, abort, sleep functions. Interprocess Communication - Introduction to IPC mechanisms, Pipes- creation, IPC between related processes using unnamed pipes, FIFOs-creation, IPC between unrelated

processes using FIFOs(Named pipes), differences between unnamed and named pipes, popen and pclose library functions, Introduction to message queues, semaphores and shared memory. Message Queues- Kernel support for messages, UNIX system V APIs for messages, client/server

example. Semaphores-Kernel support for semaphores, UNIX system V APIs for semaphores.

UNIT – IV

Shared Memory- Kernel support for shared memory, UNIX system V APIs for shared memory, Client/Server Example. Network IPC - Introduction to Unix Sockets, IPC over a network, Client-Server model, Address formats(Unix domain and Internet domain), Socket system calls for Connection Oriented - Communication, Socket system calls for Connectionless-Communication, Example-Client/Server Programs- Single Server-Client connection, Multiple simultaneous clients, Socket options – setsockopt, getsockopt, fcntl.

UNIT-V

Network Programming in Java-Network basics, TCP sockets, UDP sockets (datagram sockets), Server programs that can handle one connection at a time and multiple connections (using multithreaded server), Remote Method Invocation (Java RMI)-Basic RMI Process, Implementation details-Client-Server Application.

TEXT BOOKS:
1. Unix System Programming using C++, T.Chan, PHI.(Units II,III,IV)
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH.(Unit I)
3. An Introduction to Network Programming with Java, Jan Graba, Springer, rp 2010.(Unit V)
4. Unix Network Programming ,W.R. Stevens, PHI.(Units II,III,IV)
5. Java Network Programming,3rd edition, E.R. Harold, SPD, O'Reilly.(Unit V)

REFERENCE BOOKS:
1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the UNIX environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. UNIX for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education.
4. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones, Wrox, Wiley India Edition.
5. Unix Network Programming The Sockets Networking API, Vol.-I,W.R.Stevens, Bill Fenner, A.M.Rudoff, Pearson Education.
6. Unix Internals, U.Vahalia, Pearson Education.
7. Unix shell Programming, S.G.Kochan and P.Wood, 3rd edition, Pearson Education.
8. C Programming Language, Kernighan and Ritchie, PHI

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(R17D5811) ADVANCED DATABASES

Objectives:

By the end of the course, you will know:

- History and Structure of databases
- How to design a database
- How to convert the design into the appropriate tables
- Handling Keys appropriately
- Enforcing Integrity Constraints to keep the database consistent
- Normalizing the tables to eliminate redundancies
- Querying relational data
- Optimizing and processing the queries
- Storage Strategies for easy retrieval of data through index
- Triggers, Procedures and Cursors ,Transaction Management
- Distributed databases management system concepts and Implementation

UNIT I

Database System Applications, Purpose of Database Systems, View of Data – Data Abstraction,

Instances and Schemas, Data Models – the ER Model, Relational Model, Other Models – Database Languages – DDL,DML, Database Access from Applications Programs, Transaction Management, Data Storage and Querying, Database Architecture, Database Users and Administrators, ER diagrams,. Relational Model: Introduction to the Relational Model – Integrity Constraints Over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design, Introduction to Views –Altering Tables and Views, Relational Algebra, Basic SQL Queries, Nested Queries, Complex Integrity Constraints in SQL, Triggers

UNIT II

Introduction to Schema Refinement – Problems Caused by redundancy, Decompositions – Problem related to decomposition, Functional Dependencies - Reasoning about FDS, Normal Forms – FIRST, SECOND, THIRD Normal forms – BCNF –Properties of Decompositions- Loss less- join Decomposition, Dependency preserving Decomposition, Schema Refinement in Data base Design – Multi valued Dependencies – FOURTH Normal Form, Join Dependencies, FIFTH Normal form.

UNIT III

Transaction Management: The ACID Properties, Transactions and Schedules, Concurrent Execution of Transactions – Lock Based Concurrency Control, Deadlocks – Performance of Locking – Transaction Support in SQL. Concurrency Control: Serializability, and recoverability – Introduction to Lock Management – Lock Conversions, Dealing with Dead Locks, Specialized Locking Techniques – Concurrency Control without Locking. Crash recovery: Introduction to Crash recovery, Introduction to ARIES, the Log, and Other

Recovery related Structures, the Write-Ahead Log Protocol, Check pointing, recovering from a System Crash, Media recovery

UNIT IV

Overview of Storage and Indexing: Data on External Storage, File Organization and Indexing – Clustered Indexes, Primary and Secondary Indexes, Index data Structures – Hash Based Indexing, Tree based Indexing Storing data: Disks and Files: -The Memory Hierarchy – Redundant Arrays of Independent Disks. Tree Structured Indexing: Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM) B+ Trees: A Dynamic Index Structure, Search, Insert, Delete. Hash Based Indexing: Static Hashing, Extendable hashing, Linear Hashing, Extendable vs. Linear Hashing.

UNIT V

Distributed databases: Introduction to distributed databases, Distributed DBMS architectures,

Storing data in a distributed DBMS, Distributed catalog management, Distributed query processing Updating distributed data, Distributed transactions, Distributed concurrency control, Distributed recovery

TEXT BOOKS:
1. Data base Management Systems, Raghu Ramakrishnan, Johannes Gehrke, TMH, 3rd Edition,2003.
2. Data base System Concepts, A.Silberschatz, H.F. Korth, S.Sudarshan, McGraw hill, VI edition, 2006.
3. Fundamentals of Database Systems 5th edition. Ramez Elmasri, Shamkant B.Navathe, Pearson Education, 2008.

REFERENCE BOOKS:
1. Introduction to Database Systems, C.J.Date,Pearson Education.
2. Database Management System Oracle SQL and PL/SQL, P.K.Das Gupta, PHI.
3. Database System Concepts, Peter Rob & Carlos Coronel, Cengage Learning, 2008.
4. Database Systems, A Practical approach to Design Implementation and Management Fourth edition, Thomas Connolly, Carolyn Begg, Pearson education.
5. Database-Principles, Programming, andPerformance, P.O'Neil&E.O'Neil, 2nd ed., ELSEVIER
6. Fundamentals of Relational Database Management Systems, S.Sumathi, S.Esakkirajan, Springer.
7. Introduction to Database Management, M.L.Gillenson and others, Wiley Student Edition.
8. Database Development and Management, Lee Chao, Auerbach publications, Taylor & Francis Group.
9. Distributed Databases Principles & Systems, Stefano Ceri, Giuseppe Pelagatti, TMH.

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(R17D5812) INTERNET TECHNOLOGIES AND SERVICES

Objective:
The student who has knowledge of programming with java should be able to develop web based solutions using multi-tier architecture. S/he should have good understanding of different technologies on client and server side components as Follows:
Client Side: HTML5, CSS3, Javascript, Ajax, JQuery and JSON
Server Side: Servlets, JSP
Database: MySQL with Hibernate and Connection Pooling
Framework: Struts with validation framework, Internationalization (I18N)
SOA: Service Oriented Architecture, Web services fundamentals, Axis framework for WS

UNIT I
Client Side Technologies:
Overview of HTML - Common tags, XHTML, capabilities of HTML5 Cascading Style sheets, CSS3 enhancements, linking to HTML Pages, Classes in CSS, Introduction to JavaScripts, variables, arrays, methods and string manipulation, BOM/DOM
(Browser/Document Object Model), accessing elements by ID, Objects in JavaScript
Dynamic HTML with JavaScript and with CSS, form validation with JavaScript, Handling Timer Events Simplifying scripting with JQuery, JASON for Information exchange.

UNIT II
Introduction to Java Servlets:
Introduction to Servlets: Lifecycle of a Servlet, Reading request and initialization parameters, Writing output to response, MIME types in response, Session Tracking: Using Cookies and Sessions Steps involved in Deploying an application Database Access with JDBC and Connection Pooling Introduction to XML, XML Parsing with DOM and SAX Parsers in Java
Ajax - Ajax programming with JSP/Servlets, creating XML Http Object for various browsers, Sending request, Processing response data and displaying it. Introduction to Hibernate

UNIT III
Introduction to JSP:
JSP Application Development: Types of JSP Constructs (Directives, Declarations, Expressions, Code Snippets), Generating Dynamic Content, Exception Handling, Implicit JSP Objects, Conditional Processing, Sharing Data Between JSP pages, Sharing Session and Application Data, Using user defined classes with jsp:useBean tag, Accessing a Database from a JSP

UNIT IV
Introduction to Struts Framework:
Introduction to MVC architecture, Anatomy of a simple struts2 application, struts configuration file, Presentation layer with JSP, JSP bean, html and logic tag libraries, Struts Controller class, Using form data in Actions, Page Forwarding, validation frame work, Internationalization

UNIT V
Service Oriented Architecture and Web Services
Overview of Service Oriented Architecture – SOA concepts, Key Service Characteristics, Technical Benefits of a SOA Introduction to Web Services– The definition of web services, basic operational model of web services, basic steps of implementing web services.
Core fundamentals of SOAP – SOAP Message Structure, SOAP encoding, SOAP message exchange models, Describing Web Services –Web Services life cycle, anatomy of WSDL
Introduction to Axis– Installing axis web service framework, deploying a java web service on axis. Web Services Interoperability **–** Creating java and .Net client applications for an Axis Web Service
(Note: The Reference Platform for the course will be open source products Apache Tomcat Application Server, MySQL database, Hibernate and Axis)

TEXT BOOKS:
1. Web Programming, building internet applications, Chris Bates 3rd edition, WILEY Dreamtech .
2. The complete Reference Java 7th Edition , Herbert Schildt., TMH.
3. Java Server Pages,Hans Bergsten, SPD, O'Reilly.
4. Professional Jakarta Struts - James Goodwill, Richard Hightower, Wrox Publishers.
5. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India, rp – 2008.
6. Understanding SOA with Web Services, Eric Newcomer and Greg Lomow, Pearson Edition – 2009
7. Java Web Service Architecture, James McGovern, Sameer Tyagi et al., Elsevier - 2009

REFERENCE BOOKS:
1. Programming the world wide web,4th edition,R.W.Sebesta,Pearson
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE
3. TECHNOLOGIES , Marty Hall and Larry Brown Pearson
4. Internet and World Wide Web – How to program , Dietel and Nieto PHI/Pearson.
5. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly.
6. Professional Java Server Programming,S.Allamaraju & othersApress(dreamtech).
7. Java Server Programming ,Ivan Bayross and others,The X Team,SPD
8. Web Warrior Guide to Web Programmming-Bai/Ekedaw-Cengage Learning.
9. Beginning Web Programming-Jon Duckett ,WROX.

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(R17D5805) DATA MINING
(CORE ELECTIVE –III)

Objectives:
- To develop the abilities of critical analysis to data mining systems and applications.
- To implement practical and theoretical understanding of the technologies for data mining
- To understand the strengths and limitations of various data mining models;

UNIT-I
Data mining Overview and Advanced Pattern Mining
Data mining tasks – mining frequent patterns, associations and correlations, classification and regression for predictive analysis, cluster analysis , outlier analysis; advanced pattern mining in multilevel, multidimensional space – mining multilevel associations, mining multidimensional associations, mining quantitative association rules, mining rare patterns and negative patterns.

UNIT-II
Advance Classification
Classification by back propagation, support vector machines, classification using frequent patterns, other classification methods – genetic algorithms, roughest approach, fuzz>set approach;

UNIT-III
Advance Clustering
Density - based methods –DBSCAN, OPTICS, DENCLUE; Grid-Based methods – STING, CLIQUE; Exception – maximization algorithm; clustering High- Dimensional Data; Clustering Graph and Network Data.

UNIT-IV
Web and Text Mining
Introduction, web mining, web content mining, web structure mining, we usage mining, Text mining – unstructured text, episode rule discovery for texts, hierarchy of categories, text clustering.

UNIT-V
Temporal and Spatial Data Mining
Introduction; Temporal Data Mining – Temporal Association Rules, Sequence Mining, GSP algorithm, SPADE, SPIRIT Episode Discovery, Time Series Analysis, Spatial Mining – Spatial Mining Tasks, Spatial Clustering. Data Mining Applications.

TEXT BOOKS:
1. Data Mining Concepts and Techniques, Jiawei Hang Micheline Kamber, Jian pei, Morgan Kaufmannn.

2. Data Mining Techniques – Arun K pujari, Universities Press.

REFERENCE BOOKS:

1. Introduction to Data Mining – Pang-Ning Tan, Vipin kumar, Michael Steinbach, Pearson.
2. Data Mining Principles & Applications – T.V Sveresh Kumar, B.Esware Reddy, Jagadish S Kalimani, Elsevier.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17D5814) STORAGE AREA NETWORKS
(CORE ELECTIVE-III)

Objectives:

- To understand Storage Area Networks characteristics and components.
- To become familiar with the SAN vendors and their products
- To learn Fibre Channel protocols and how SAN components use them to communicate with each other
- To become familiar with Cisco MDS 9000 Multilayer Directors and Fabric Switches
- Thoroughly learn Cisco SAN-OS features.
- To understand the use of all SAN-OS commands. Practice variations of SANOS features

UNIT I: Introduction to Storage Technology
Review data creation and the amount of data being created and understand the value of data to a business, challenges in data storage and data management, Solutions available for data storage, Core elements of a data center infrastructure, role of each element in supporting business activities

UNIT II: Storage Systems Architecture
Hardware and software components of the host environment, Key protocols and concepts used by each component ,Physical and logical components of a connectivity environment ,Major physical components of a disk drive and their function, logical constructs of a physical disk, access characteristics, and performance Implications, Concept of RAID and its components , Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1+0, RAID 6, Compare and contrast integrated and modular storage systems ,High-level architecture and working of an intelligent storage system

UNIT III: Introduction to Networked Storage
Evolution of networked storage, Architecture, components, and topologies of FC-SAN, NAS, and IPSAN, Benefits of the different networked storage options, understand the need for long-term archiving solutions and describe how CAS fulfills the need, understand the appropriateness of the different networked storage options for different application environments

UNIT IV: Information Availability & Monitoring & Managing Datacenter
List reasons for planned/unplanned outages and the impact of downtime, Impact of downtime,

Differentiate between business continuity (BC) and disaster recovery (DR) ,RTO and RPO, Identify single points of failure in a storage infrastructure and list solutions to mitigate these failures, Architecture of backup/recovery and the different backup/recovery topologies , replication technologies and their role in ensuring information availability and business continuity, Remote replication technologies and their role in providing disaster recovery and business continuity capabilities Identify key areas to monitor in a data center, Industry standards for data center monitoring and management, Key metrics to monitor for different components in a storage infrastructure, Key management tasks in a data center

UNIT V: Securing Storage and Storage Virtualization
Information security, Critical security attributes for information systems, Storage security domains, List and analyzes the common threats in each domain, Virtualization technologies, block-level and filelevel virtualization technologies and processes
Case Studies
The technologies described in the course are reinforced with EMC examples of actual solutions.
Realistic case studies enable the participant to design the most appropriate solution for given sets of criteria.

TEXT BOOK:
1. EMC Corporation, Information Storage and Management, Wiley.

REFERENCE BOOKS:
1. Robert Spalding, "Storage Networks: The Complete Reference", Tata McGraw Hill, Osborne, 2003.
2. Marc Farley, "Building Storage Networks", Tata McGraw Hill ,Osborne, 2001.
3. Meeta Gupta, Storage Area Network Fundamentals, Pearson Education Limited, 2002.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17D5815) NATURAL LANGUAGE PROCESSING
(CORE ELECTIVE-III)

Objectives:

- To acquire basic understanding of linguistic concepts and natural language complexity, variability.
- To acquire basic understanding of machine learning techniques as applied to language.
- To implement N-grams Models.

UNIT I

Introduction and Overview What is Natural Language Processing, hands-on demonstrations. Ambiguity and uncertainty in language. The Turing test.

Regular Expressions Chomsky hierarchy, regular languages, and their limitations. Finite-state automata. Practical regular expressions for finding and counting language phenomena. A little morphology. Exploring a large corpus with raged tools. **Programming in Python** An introduction to programming in Python. Variables, numbers, strings, arrays, dictionaries, conditionals, iteration. The NLTK (Natural Language Toolkit)

String Edit Distance and Alignment Key algorithmic tool: dynamic programming, a simple example, use in optimal alignment of sequences. String edit operations, edit distance, and examples of use in spelling correction, and machine translation.

UNIT II

Context Free Grammars Constituency, CFG definition, use and limitations. Chomsky Normal Form. Top-down parsing, bottom-up parsing, and the problems with each. The desirability of combining evidence from both directions

Non-probabilistic Parsing Efficient CFG parsing with CYK, another dynamic programming algorithms. Early parser. Designing a little grammar, and parsing with it on some test data.

Probability Introduction to probability theory Joint and conditional probability, marginals, independence, Bayes rule, combining evidence. Examples of applications in natural language.

Information Theory The "Shannon game"--motivated by language! Entropy, cross entropy, information gain. Its application to some language phenomena.

UNIT III

Language modeling and Naive Bayes

Probabilistic language modeling and its applications. Markov models. N-grams. Estimating the probability of a word, and smoothing. Generative models of language. Part of Speech Tagging and Hidden Markov Models**,** Viterbi Algorithm for Finding Most Likely HMM Path

Dynamic programming with Hidden Markov Models, and its use for part-of-speech tagging, Chinese word segmentation, prosody, information extraction, etc.

UNIT IV
Probabilistic Context Free Grammars
Weighted context free grammars. Weighted CYK. Pruning and beam search.
Parsing with PCFGs
A tree bank and what it takes to create one. The probabilistic version of CYK. Also: How do humans parse? Experiments with eye-tracking. Modern parsers.
Maximum Entropy Classifiers
The maximum entropy principle and its relation to maximum likelihood. Maximum entropy classifiers and their application to document classification, sentence segmentation, and other language tasks

UNIT V
Maximum Entropy Markov Models & Conditional Random Fields
Part-of-speech tagging, noun-phrase segmentation and information extraction models that combine maximum entropy and finite-state machines. State-of-the-art models for NLP.
Lexical Semantics Mathematics of Multinomial and Dirichlet distributions, Dirichlet as a smoothing for multinomial's.
Information Extraction & Reference Resolution- Various methods, including HMMs. Models of anaphora resolution. Machine learning methods for co reference.

TEXT BOOKS:
1. "Speech and Language Processing": Jurafsky and Martin, Prentice Hall
2. "Statistical Natural Language Processing"- Manning and Schutze, MIT Press
3. *"Natural Language Understanding".* James Allen. The Benajmins/Cummings Publishing Company

REFERENCES BOOKS:
1. Cover, T. M. and J. A. Thomas: Elements of Information Theory. Wiley.
2. Charniak, E.: Statistical Language Learning. The MIT Press.
3. Jelinek, F.: Statistical Methods for Speech Recognition. The MIT Press.
4. Lutz and Ascher - "Learning Python", O'Reilly

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17D5816) SOFT COMPUTING
(CORE ELECTIVE –IV)

Objectives:
To give students knowledge of soft computing theories fundamentals, i.e. Fundamentals of artificial and neural networks, fuzzy sets and fuzzy logic and genetic algorithms.

UNIT-I: AI Problems and Search: AI problems, Techniques, Problem Spaces and Search, Heuristic Search Techniques- Generate and Test, Hill Climbing, Best First Search Problem reduction, Constraint Satisfaction and Means End Analysis. Approaches to Knowledge Representation- Using Predicate Logic and Rules.

UNIT-II: Artificial Neural Networks: Introduction, Basic models of ANN, important terminologies, Supervised Learning Networks, Perceptron Networks, Adaptive Linear Neuron, Back propagation Network. Associative Memory Networks. Traing Algorithms for pattern association, BAM and Hopfield Networks.

UNIT-III: Unsupervised Learning Network- Introduction, Fixed Weight Competitive Nets, Maxnet, Hamming Network, Kohonen Self-Organizing Feature Maps, Learning Vector Quantization, Counter Propagation Networks, Adaptive Resonance Theory Networks. Special Networks-Introduction to various networks.

UNIT-IV: Introduction to Classical Sets (crisp Sets)and Fuzzy Sets- operations and Fuzzy sets. Classical Relations-and Fuzzy Relations- Cardinality, Operations, Properties and composition. Tolerance and equivalence relations. Membership functions- Features, Fuzzification, membership value assignments, Defuzzification.

UNIT-V: Fuzzy Arithmetic and Fuzzy Measures, Fuzzy Rule Base and Approximate Reasoning Fuzzy Decision making Fuzzy Logic Control Systems, Genetic Algorithm- Introduction and basic operators and terminology. Applications: Optimization of TSP, Internet Search Technique.

TEXT BOOKS:
1. Principles of Soft Computing- S N Sivanandam, S N Deepa, Wiley India, 2007
2. Soft Computing and Intelligent System Design -Fakhreddine O Karray, Clarence D Silva,. Pearson Edition, 2004.

REFERENCE BOOKS:
1. Artificial Intelligence and SoftComputing- Behavioural and Cognitive Modeling of the Human Brain- Amit Konar, CRC press, Taylor and Francis Group.
2. Artificial Intelligence – Elaine Rich and Kevin Knight, TMH, 1991, rp2008.
3. Artificial Intelligence – Patric Henry Winston – Third Edition, Pearson Education.
4. A first course in Fuzzy Logic-Hung T Nguyen and Elbert A Walker, CRC. Press Taylor and Francis Group.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17D5817) WIRELESS NETWORKS AND MOBILE COMPUTING
(CORE ELECTIVE –IV)

Objectives:

The main objective of this course is to provide the students with the competences required for understanding and using the communications component of an universal communications environment. Students will be provided, in particular, with the knowledge required to understand

- Emerging communications networks,
- Their computational demands,
- The classes of distributed services and applications enabled by these networks, and
- The computational means required to create the new networks and the new applications.

UNIT I: WIRELESS NETWORKS:

Wireless Network, Wireless Network Architecture, Wireless Switching Technology, Wireless Communication problem, Wireless Network Reference Model, Wireless Networking Issues & Standards.
MOBILE COMPUTING: Mobile communication, Mobile computing, Mobile Computing Architecture, Mobile Devices, Mobile System Networks, Mobility Management

UNIT II: WIRELESS LAN:

Infra red Vs radio transmission, Infrastructure and Ad-hoc Network, IEEE 802.11: System Architecture, Protocol Architecture, 802.11b, 802.11a, Newer Developments, HIPERLAN 1, HIPERLAN 2, Bluetooth : User Scenarios, Architecture.

UNIT III: GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS (GSM):

Mobile Services, System Architecture, Protocols, Localization & Calling, Handover, Security.
GPRS: GPRS System Architecture, **UMTS**: UMTS System Architecture. **LTE**: Long Term Evolution

UNIT IV: MOBILE NETWORK LAYER:

Mobile IP: Goals, Assumptions, Entities and Terminology, IP Packet Delivery, Agent Discovery, Registration, Tunneling and Encapsulation, Optimizations, Dynamic Host Configuration Protocol (DHCP)

UNIT V: MOBILE TRANSPORT LAYER:

Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery,

Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP, TCP over 2.5G/3G Wireless Networks.

TEXT BOOKS:

1. Jochen Schiller, "Mobile Communications", Pearson Education, Second Edition, 2008.
2. Dr. Sunilkumar, et al "Wireless and Mobile Networks: Concepts and Protocols", Wiley India.
3. Raj Kamal, "Mobile Computing", OXFORD UNIVERSITY PRESS.

REFERENCE BOOKS:

1. Asoke K Talukder, et al, "Mobile Computing", Tata McGraw Hill, 2008.
2. Matthew S.Gast, "802.11 Wireless Networks", SPD O'REILLY.
3. Ivan Stojmenovic, "Handbook of Wireless Networks and Mobile Computing", Wiley, 2007.
4. Kumkum Garg, "Mobile Computing", Pearson.
5. Handbook of Security of Networks, Yang Xiao, Frank H Li, Hui Chen, World Scientific, 2011.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17D5818) BIG DATA ANALYTICS
(CORE ELECTIVE –IV)

Objectives:
To understand about big data
To learn the analytics of Big Data
To Understand the MapReduce fundamentals

Unit I

Big Data Analytics : What is big data, History of Data Management ; Structuring Big Data ; Elements of Big Data ; Big Data Analytics; Distributed and Parallel Computing for Big Data;
Big Data Analytics:What is Big Data Analytics, What Big Data Analytics Isn't, Why this sudden Hype Around Big Data Analytics, Classification of Analytics, Greatest Challenges that Prevent Business from Capitalizing Big Data; Top Challenges Facing Big Data; Why Big Data Analytics Important; Data Science; Data Scientist; Terminologies used in Big Data Environments; Basically Available Soft State Eventual Consistency (BASE); Open source Analytics Tools;

Unit- II

Understanding Analytics and Big Data: Comparing Reporting and Analysis, Types of Analytics; Points to Consider during Analysis; Developing an Analytic Team; Understanding Text Analytics; Analytical Approach and Tools to Analyze Data: Analytical Approaches; History of Analytical Tools; Introducing Popular Analytical Tools; Comparing Various Analytical Tools.

Unit III

Understanding MapReduce Fundamentals and HBase : The MapReduce Framework; Techniques to Optimize MapReduce Jobs; Uses of MapReduce; Role of HBase in Big Data Processing; Storing Data in Hadoop : Introduction of HDFS, Architecture, HDFC Files, File system types, commands, org.apache.hadoop.io package, HDF, HDFS High Availability; Introducing HBase, Architecture, Storing Big Data with HBase , Interacting with the Hadoop Ecosystem; HBase in Operations-Programming with HBase; Installation, Combining HBase and HDFS;

Unit IV

Big Data Technology Landscape and Hadoop : NoSQL, Hadoop; RDBMS versus Hadoop; Distributed Computing Challenges; History of Hadoop; Hadoop Overview; Use Case of Hadoop; Hadoop Distributors; HDFC (Hadoop Distributed File System), HDFC Daemons, read,write, Replica Processing of Data with Hadoop; Managing Resources and Applications with Hadoop YARN.

Unit V

Social Media Analytics and Text Mining: Introducing Social Media; Key elements of Social Media; Text mining; Understanding Text Mining Process; Sentiment Analysis, Performing Social Media Analytics and Opinion Mining on Tweets; Mobile Analytics: Introducing Mobile Analytics; Define Mobile Analytics; Mobile Analytics and Web Analytics; Types of Results

from Mobile Analytics; Types of Applications for Mobile Analytics; Introducing Mobile Analytics Tools;

TEXT BOOKS:
1. BIG DATA and ANALYTICS, Seema Acharya, Subhasinin Chellappan, Wiley publications.
2. BIG DATA, Black BookTM , DreamTech Press, 2015 Edition.
3. BUSINESS ANALYTICS 5e , BY Albright |Winston

REFERENCE BOOKS:
1. Rajiv Sabherwal, Irma Becerra- Fernandez," Business Intelligence –Practice, Technologies and Management", John Wiley 2011.
2. Lariss T. Moss,ShakuAtre, " Business Intelligence Roadmap", Addison-Wesley It Service.
3. Yuli Vasiliev, " Oracle Business Intelligence : The Condensed Guide to Analysis and Reporting", SPD Shroff, 2012.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17DEC52) INTERNET OF THINGS
(OPEN ELECTIVE –II)

Unit 1: The IoT Networking Core :
Technologies involved in IoT Development: Internet/Web and Networking Basics OSI Model, Data transfer referred with OSI Model, IP Addressing, Point to Point Data transfer, Point to Multi Point Data transfer & Network Topologies, Sub-netting, Network Topologies referred with Web, Introduction to Web Servers, Introduction to Cloud Computing IoT Platform overview Overview of IoT supported Hardware platforms such as: Raspberry pi, ARM Cortex Processors, Arduino and Intel Galileo boards.

Unit 2: Network Fundamentals:
Overview and working principle of Wired Networking equipment's – Router, Switches, Overview and working principle of Wireless Networking equipment's – Access Points, Hubs etc. Linux Network configuration Concepts: Networking configurations in Linux Accessing Hardware & Device Files interactions.

Unit 3: IoT Architecture:
History of IoT, M2M – Machine to Machine, Web of Things, IoT protocols Applications: Remote Monitoring & Sensing, Remote Controlling, Performance Analysis. The Architecture The Layering concepts , IoT Communication Pattern, IoT protocol Architecture, The 6LoWPAN Security aspects in IoT

Unit 4: IoT Application Development:
Application Protocols MQTT, REST/HTTP, CoAP, MySQL. Back-end Application Designing Apache for handling HTTP Requests, PHP & MySQL for data processing, MongoDB Object type Database, HTML, CSS & jQuery for UI Designing, JSON lib for data processing, Security & Privacy during development, Application Development for mobile Platforms: Overview of Android / IOS App Development tools

Unit 5: Case Study & advanced IoT Applications:
IoT applications in home, infrastructures, buildings, security, Industries, Home appliances, other IoT electronic equipments. Use of Big Data and Visualization in IoT, Industry 4.0 concepts. Sensors and sensor Node and interfacing using any Embedded target boards (Raspberry Pi / Intel Galileo/ARM Cortex/ Arduino)

TEXT BOOKS:
1. 6LoWPAN: The Wireless Embedded Internet, Zach Shelby, Carsten Bormann, Wiley
2. Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems, Dr. Ovidiu Vermesan, Dr. Peter Friess, River Publishers
3. Interconnecting Smart Objects with IP: The Next Internet, Jean-Philippe Vasseur, Adam Dunkels, Morgan Kuffmann

REFERENCES:

1. The Internet of Things: From RFID to the Next-Generation Pervasive Networked Lu Yan, Yan Zhang, Laurence T. Yang, Huansheng Ning
2. Internet of Things (A Hands-on-Approach) , Vijay Madisetti , Arshdeep Bahga
3. Designing the Internet of Things , Adrian McEwen (Author), Hakim Cassimally
4. Asoke K Talukder and Roopa R Yavagal, "Mobile Computing," Tata McGraw Hill, 2010.
5. Computer Networks; By: Tanenbaum, Andrew S; Pearson Education Pte. Ltd., Delhi, 4th Edition
6. Data and Computer Communications; By: Stallings, William; Pearson Education Pte. Ltd., Delhi, 6th Edition
7. F. Adelstein and S.K.S. Gupta, "Fundamentals of Mobile and Pervasive Computing," McGraw Hill, 2009.
8. Cloud Computing Bible, Barrie Sosinsky, Wiley-India, 2010.
9. Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Ronald L. Krutz, Russell Dean Vines, Wiley-India, 2010

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17DCS52) INFORMATION SECURITY
(OPEN ELECTIVE-II)

Objective:
To introduce the fundamental concepts and techniques in computer and network security, giving students an overview of information security and auditing, and to expose students to the latest trend of computer attack and defense. Other advanced topics on information security such as mobile computing security, security and privacy of cloud computing, as well as secure information system development will also be discussed.

UNIT I
A model for Internetwork security, Conventional Encryption Principles & Algorithms (DES, AES, RC4, Blowfish), Block Cipher Modes of Operation, Location of Encryption Devices, Key Distribution.
Public key cryptography principles, public key cryptography algorithms (RSA, Diffie-Hellman, ECC), public Key Distribution.

UNIT II
Approaches of Message Authentication, Secure Hash Functions (SHA-512, MD5) and HMAC, Digital Signatures, Kerberos, X.509 Directory Authentication Service, Email Security: Pretty Good Privacy (PGP)
IP Security: Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

UNIT III
Web Security: Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET). Firewalls: Firewall Design principles, Trusted Systems, Intrusion Detection Systems

UNIT IV
Auditing For Security: Introduction, Basic Terms Related to Audits, Security audits, The Need for Security Audits in Organization, Organizational Roles and Responsibilities for Security Audit, Auditors Responsibility In Security Audits, Types Of Security Audits.

UNIT V
Auditing For Security: Approaches to Audits, Technology Based Audits Vulnerability Scanning And Penetration Testing, Resistance to Security Audits, Phase in security audit, Security audit Engagement Costs and other aspects, Budgeting for security audits, Selecting external Security Consultants, Key Success factors for security audits.

TEXT BOOKS:
1. Cryptography and Network Security by William Stallings, Fourth Edition, Pearson Education 2007.
2. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education, 2008.

3. Cryptography & Network Security by Behrouz A. Forouzan, TMH 2007.
4. Information Systems Security by Nina Godbole, WILEY 2008.

REFERENCE BOOKS:
1. Information Security by Mark Stamp, Wiley – INDIA, 2006.
2. Fundamentals of Computer Security, Springer.
3. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
4. Computer Security Basics by Rick Lehtinen, Deborah Russell & G.T.Gangemi Sr., SPD O'REILLY 2006.
5. Modern Cryptography by Wenbo Mao, Pearson Education 2007.
6. Principles of Information Security, Whitman, Thomson.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17DME52) INDUSTRIAL MANAGEMENT
(OPEN ELECTIVE-II)

UNIT- I
Concepts of Management and Organisation - Functions of Management - Evolution of Management Thought : Taylor's Scientific Management, Fayol's Principles of Management, Douglas Mc-Gregor's Theory X and Theory Y, Mayo's Hawthorne Experiments, Hertzberg's Two Factor Theory of Motivation, Maslow's Hierarchy of Human Needs - Systems Approach to Management.

UNIT –II
Designing Organisational Structures : Basic concepts related to Organisation - Departmentation and Decentralisation, Types of mechanistic and organic structures of organisation (Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organisation, Cellular Organisation, team structure, boundaryless organization, inverted pyramid structure, lean and flat organization structure) and their merits, demerits and suitability.

UNIT –III
Plant location, definition, factors affecting the plant location, comparison of rural and urban sites-methods for selection of plant- Matrix approach. Plant Layout - definition, objectives, types of production, types of plant layout - various data analyzing forms-travel chart. Work study - Definition, objectives, method study - definition, objectives, steps involved-various types of associated charts-difference between micromotion and memomotion studies. Work measurement- definition,time study, steps involved-equipment, different methods of performance rating- allowances, standard time calculation. Work Sampling - definition, steps involved, standard time calculations, differences with time study.

UNIT –IV
Materials Management-Objectives, Inventory - functions, types, associated costs, inventory classification techniques-ABC and VED analysis. Inventory Control Systems-Continuous review system-periodical review system. Stores Management and Stores Records. Purchase management, duties of purchase of manager,associated forms.Introduction to PERT / CPM : Project management, network modeling-probabilistic model, various types of activity times estimation-programme evaluation review techniques- Critical Path-probability of completing the project, deterministic model, critical path method (CPM)-critical path calculation-crashing of simple of networks.

UNIT –V
Inspection and quality control, types of inspections - Statistical Quality Control-techniques-variables and attributes-assignable and non assignable causes- variable control charts, and R charts, attributes control charts, p charts and c charts. Acceptance sampling plan- single sampling and double sampling plans-OC curves. Introduction to TQM-Quality Circles, ISO 9000 series procedures. Introduction to Human Resource Management, Functions of HRM,

Job Evaluation, different types of evaluation methods. Job description, Merit Rating.-difference with job evaluation, different methods of merit ratings, wage incentives, different types of wage incentive schemes. Marketing, marketing vs selling, marketing mix, product life-cycle.

TEXT BOOKS:

1. Amrine, Manufacturing Organization and Management, Pearson, 2nd Edition, 2004.
2. Industrial Engineering and Management O.P. Khanna Dhanpat Rai.
3. A.R.Aryasri, Management Science , Tata McGraw-Hill, 2002.

REFERENCE BOOKS:

1. Panner Selvam, Production and Operations Management, PHI, 2004.
2. Dr. C. Nadha Muni Reddy and Dr. K. Vijaya Kumar Reddy, Reliability Engineering & Quality Engineering, Galgotia Publications, Pvt., Limited.
3. Phillip Kotler, Marketing Management, Pearson, 2004.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17DCS53) RESEARCH METHODOLOGY
(OPEN ELECTIVE – II)

UNIT - I
Introduction: Research objective and motivation, Types of research, Research approaches, Significance, Research method vs. methodology, Research process.

UNIT - II
Formulating a research problem: Literature review, Formulation of objectives, Establishing Operational definitions, Identifying variables, constructing hypotheses.

UNIT - III
Research design and Data Collection: Need and Characteristics, Types of research design, Principles of Experimental research design, Method of data collection, Ethical issues in collecting data.

UNIT - IV
Sampling and Analysis of data: Need of Sampling, Sampling distributions, Central limit theorem, Estimation: mean and variance, Selection of sample size Statistics in research, Measures of Central tendency, Dispersion, asymmetry and relationships, Correlation and Regression analysis, Displaying data

UNIT - V
Hypothesis Testing: Procedure, Hypothesis testing for difference in mean, variance limitations, Chi-square test, Analysis of variance (ANOVA), Basic principles and techniques of writing a Research Proposal

Text Books:
1. R. C. Kothari, Research Methodology: Methods and Techniques, 2nd edition, New Age International Publisher, 2009
2. Ranjit Kumar, Research Methodology: A Step-by-Step Guide for Beginners, 2nd Edition, SAGE, 2005

References:
1. Trochim, William M. The Research Methods Knowledge Base, 2nd Edition. Internet WWW page, at URL: <http://www.socialresearchmethods.net/kb/>
2. (Electronic Version): StatSoft, Inc. (2012). Electronic Statistics Textbook. Tulsa, OK: StatSoft. WEB: http://www.statsoft.com/textbook/.(Printed Version): Hill, T. & Lewicki, P. (2007). STATISTICS: Methods and Applications. StatSoft, Tulsa, OK.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem (Computer Science & Engg.)

(R17D5883) INTERNET TECHNOLOGIES AND SERVICES LAB

Objectives:

- Write syntactically correct HTTP messages and describe the semantics of common HTTP methods and header fields
- Discuss differences between URIs, URNs, and URLs, and demonstrate a detailed understanding of http-scheme URLs, both relative and absolute
- Describe the actions, including those related to the cache, performed by a browser in the process of visiting a Web address
- Install a web server and perform basic administrative procedures, such as tuning communication parameters, denying access to certain domains, and interpreting an access log
- Write a valid standards-conformant HTML document involving a variety of element types, including hyperlinks, images, lists, tables, and forms
- Use CSS to implement a variety of presentation effects in HTML and XML documents, including explicit positioning of elements
- Demonstrate techniques for improving the accessibility of an HTML document

List of Sample Problems:

i) Internet Technologies

1. Develop static pages (using Only HTML) of an online Book store. The pages should resemble: www.amazon.com the website should consist the following pages. Home page, Registration and user Login User Profile Page, Books catalog Shopping Cart, Payment By credit card Order Conformation

2. Validate the Registration, user login, user profile and payment by credit card pages using JavaScript.

3. Create and save an XML document at the server, which contains 10 users information. Write a program, which takes User Id as an input and returns the user details by taking the user information from the XML document.

4. Install TOMCAT web server. Convert the static web pages of assignments 2 into dynamic web pages using Servlets and cookies. Hint: Users information (user id, password, credit card number) would be stored in web.xml. Each user should have a separate Shopping Cart.

5. Redo the previous task using JSP by converting the static web pages of assignments 2 into dynamic web pages. Create a database with user information and books information. The books catalogue should be dynamically loaded from the database. Follow the MVC architecture while doing the website.

6. Implement the "Hello World!" program using JSP Struts Framework.

ii)Additional Assignment Problems

Write an HTML page including any required Javascript that takes a number from one text field in the range of 0 to 999 and shows it in another text field in words. If the number is out of range, it should show "out of range" and if it is not a number, it should show "not a number" message in the result box.

Write a java swing application that takes a text file name as input and counts the characters, words and lines in the file. Words are separated with white space characters and lines are separated with new line character.

Write a simple calculator servlet that takes two numbers and an operator (+, -, /, * and %) from an HTML page and returns the result page with the operation performed on the operands. It should check in a database if the same expression is already computed and if so, just return the value from database. Use MySQL or PostgreSQL.

Write an HTML page that contains a list of 5 countries. When the user selects a country, its capital should be printed next to the list. Add CSS to customize the properties of the font of the capital (color, bold and font size).

Write a servlet that takes name and age from an HTML page. If the age is less than 18, it should send a page with "Hello <name>, you are not authorized to visit this site" message, where <name> should be replaced with the entered name. Otherwise it should send "Welcome <name> to this site" message.

Write a calculator program in HTML that performs basic arithmetic operations (+, -, /, * and %). Use CSS to change the foreground and background color of the values, buttons and result display area separately. Validate the input strings using JavaScript regular expressions. Handle any special cases like division with zero reasonably. The screen may look similar to the following:
Internet Technologies and Services

Write a Java program that creates a calculator GUI, as shown in figure. Extra components may be added for convenience:
The Color Scheme may be Black on White or Blue on Yellow (selectable) and accordingly all components colors must be changed. The values can be either entered or increased or decreased by a step of 10. The operators are +, -, / and * (selectable). Once any change takes place, the result must be automatically computed by the program.
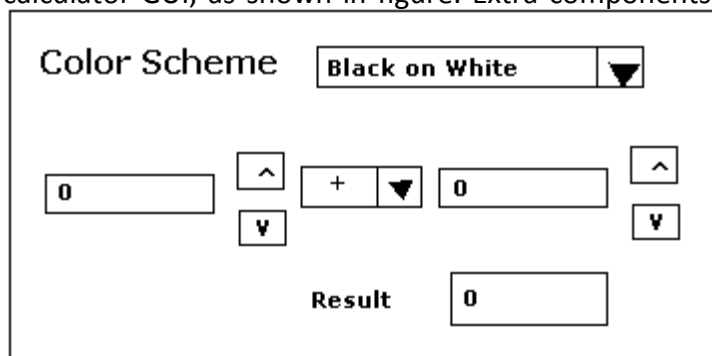
Write a Java Application that will read an XML file that contains personal information (Name, Mobile Number, age and place. It reads the information using SAX parser. After reading the information, it shows two input Text Fields in a window, one for tag name and the other for value. Once these two values are given, it should list all the records in the XML file that match the value of the given field in a text area (result box). For example, if the two text boxes are entered with "name" and "ABCD" then it should show all the records for which name is "ABCD"? An Illustration is given below that takes a mobile number and lists all the records that have the same mobile number.

Consider the following web application for implementation:

The user is first served a login page which takes user's name and password. After submitting the details the server checks these values against the data from a database and takes the following decisions.

If name and password matches, serves a welcome page with user's full name.

If name matches and password doesn't match, then serves "password mismatch" page

If name is not found in the database, serves a registration page, where users full name, present user name (used to login) and password are collected. Implement this application in:

1. Pure JSP
2. Pure Servlets
3. Struts Framework

Implement a simple arithmetic calculator with +, -, /, *, % and = operations using Struts Framework The number of times the calculator is used should be displayed at the bottom (use session variable).

iii) Internet Technologies and Services Lab - Additional Problems

Create a web Service in Java that takes two city names from the user and returns the distance between these two from data available from a table in MySql.

Write a java and a C# client which use the above service

Write a Java program that takes a file as input and encrypts it using DES encryption. The program should check if the file exists and its size is not zero.

Write a Java program that generates a key pair and encrypts a given file using RSA algorithm.

Write a Java program that finds digest value of a given string.

Consider the following xml file for encryption
<?xml version="1.0"> <transaction> <from>12345</from> <to>54321</to> <amount>10000</amount>
<secretcode>abc123</secretcode> <checksum></checksum> </transaction>

Replace <from> and <to> values with the RSA encrypted values represented with base64 encoding assuming that the public key is available in a file in local directory "pubkey.dat". Encrypt <secretcode> with AES algorithm with a password 'secret'. The checksum of all the field values concatenated with a delimiter character '+' will be inserted in the checksum and the xml file is written to encrypted.xml file.

Assume that a file 'config.xml', which has the following information:
<users>

<user> <name>abc</name> <pwd>pwd123</pwd> <role>admin</role> <md5>xxx</md5>
</user>
<user> <name>def</name> <pwd>pwd123</pwd> <role>guest</role> <md5>xxx</md5>
</user>
</users>

Replace name and role with DES encrypted values and pwd with RSA encrypted values (represent the values with base64 encoding). The public key is available in "public.key" file in current directory. Replace xxx with respective MD5 values of all the fields for each user. Write the resulting file back to config.xml.

Write an HTML page that gives 3 multiple choice (a,b,c and d) questions from a set of 5 preloaded questions randomly. After each question is answered change the color of the question to either green or blue using CSS. Finally on clicking OK button that is provided, the score should be displayed as a pop-up window. Use Java Script for dynamic content.

Write an HTML page that has 3 countries on the left side ("USA", "UK" and "INDIA") and on the right side of each country, there is a pull-down menu that contains the following entries: ("Select Answer", "New Delhi", "Washington" and "London"). The user will match the Countries with their respective capitals by selecting an item from the menu. The user chooses all the three answers (whether right or wrong). Then colors of the countries should be changed either to green or to red depending on the answer. Use CSS for changing color.

Write an HTML Page that can be used for registering the candidates for an entrance test. The fields are: name, age, qualifying examination (diploma or 10+2), stream in qualifying examination. If qualifying examination is "diploma", the stream can be "Electrical", "Mechanical" or "Civil". If the qualifying examination is 10+2, the stream can be "MPC" or "BPC". Validate the name to accept only characters and spaces.

Write an HTML page that has two selection menus. The first menu contains the states ("AP", "TN" and "KN") and depending on the selection the second menu should show the following items: "Hyderabad", "Vijayawada", "Kurnool" for AP, "Chennai", "Salem", "Madurai" for TN and "Bangalore", "Bellary", "Mysore" for KN.

Write an HTML page that has phone buttons 0 to 9 and a text box that shows the dialed number. If 00 is pressed at the beginning, it should be replaced with a + symbol in the text box. If the number is not a valid international number (+ followed by country code and 10 digit phone number) the color of the display should be red and it should turn to green when the number is valid. Consider only "+91, +1 and +44 as valid country codes. Use CSS for defining colors.

Write an HTML page that has a text box for phone number or Name. If a number is entered in the box the name should be displayed next to the number. If 00 is pressed at the beginning, it should be replaced with a + symbol in the text box. If a name is entered in the text box, it should show the number next to the name. If the corresponding value is not found, show it in red and show it in green otherwise. Use CSS for colors. Store at least 5 names and numbers in the script for testing.

A library consists of 10 titles and each title has a given number of books initially. A student can take or return a book by entering his/her HTNo as user ID and a given password. If there are at least two books, the book is issued and the balance is modified accordingly.
(a) Use RDBMS and implement it with JSP.
(b) Use XML File for data and Implement it with JSP
(c) Use RDBMS and implement it with Servlets
(d) Use XML File for data and Implement it with Servlets

A Bus Reservation System contains the details of a bus seat plan for 40 seats in 2x2 per row arrangement, where the seats are numbered from 1 to 40 from first row to last row. The customer can visit the website and can reserve a ticket of his choice if available by entering his details (Name, Address, Gender and Age). The customer can cancel the ticket by entering the seat number and his name as entered for reservation.
(a) Use RDBMS and implement it with JSP.
(b) Use XML File for data and Implement it with JSP
(c) Use RDBMS and implement it with Servlets
(d) Use XML File for data and Implement it with Servlets.

Implement a simple messaging system with the following details:
When a student logs in with his/her HTNO and a given password, they should get all the messages posted to him/her giving the ID of sender and the actual message. Each message may be separated with a ruler. There should be a provision for the user to send a message to any number of users by giving the IDs separated with commas in the "To" text box.
(a) Use RDBMS and implement it with JSP.
(b) Use XML File for data and Implement it with JSP
(c) Use RDBMS and implement it with Servlets
(d) Use XML File for data and Implement it with Servlets.
There is an image of 600x100 size which can be logically divided into 12 button areas with labels (0-9, +, =).
Write a javascript calculator program that uses this image as input virtual keyboard and three text areas for two input numbers and result of sum of these numbers. Add a CSS that can be used to change the colors of text and background of text areas and the page. The input numbers can be up to 4 digits each.

Develop a web application that takes user name and password as input and compares them with those available in an xml user database. If they match, it should display the welcome page that contains the user's full name and last used date and time retrieved from a client cookie. On logout it stores new time to the cookie and displays a goodbye page. If authentication fails, it should store the attempt number to the client cookie and displays an error page. Add necessary CSS that takes care of the font, color of foreground and background.

A web application has the following specifications:
The first page (Login page) should have a login screen where the user gives the login name and password. Both fields must be validated on client side for a minimum length of 4 characters, name should be lower case az characters only and password should contain at least one digit. On submitting these values, the server should validate them with a MySQL

database and if failed, show the login page along with a message saying "Login Name or Password Mismatch" in Red color below the main heading and above the form. If successful, show a welcome page with the user's full name (taken from database) and and a link to Logout. On logout, a good bye page is displayed with the total time of usage (Logout time – login time). Specify the Schema details of table and web.xml file contents.
Implement it using (a) JSP Pages (b) Servlets (c) Struts

Design a struts based web portal for an international conference with following specifications:
The welcome page should give the details of the conference and a link to login. If login fails, direct them back for re-login and also provide a link for registration. On successful registration/login, the user will be directed to a page where s/he can see the status (accepted/rejected) of their already submitted papers followed by a form for submitting a doc file to the conference. Provide a logout button on all pages including the home page, once the user logs in. Implement validation framework to check that the user name is in the form of CCDDCC and password is in the form of (CCSDDD) (C for character, S for special character (one of @, #, $, %, ^, & and !) and D for digit)., Database should be accessed through Connection Pool for MySql for user information. Provide scope for internationalization in future. Assume any missing information and mention it first.

COURSE COVERAGE
DATA STRUCTURES AND ALGORITHMS

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Data Structures and Algorithms	Data structures, Algorithms and Applications in Java	2,3,4	II,III,IV	S.Sahni	Universities Press	2nd
		Data structures and Algorithms in Java	1	I	Adam Drozdek	Cengage	4th
		Java for Programmers	5	V	Deitel and Deitel	Pearson education	----

Code No: R15D5801

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Semester Regular/supplementary Examinations, February 2017
Advanced Data Structures and Algorithms
(CSE)

Roll No		N	3					

Time: 3 hours   Max. Marks: 75

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

* * * * * *

SECTION - I

1. Explain Linked representation and vector representation.

(Or)

2. Explain sparse matrices and their representation.

SECTION – II

3. Explain Max heap insertion and deletion using Examples

(Or)

4. Explain infix to postfix conversion using stack

SECTION – III

5. What is a sorting? Explain the comparison of sorting methods.

(Or)

6. Explain Collision Resolution methods.

SECTION – IV

7. Explain BFS Traversal Method.

(Or)

8. Explain Dijkstra's algorithm for Single Source Shortest Path Problem.

SECTION – V

9. Insert 14, 17, 11, 7, 53, 4, 13 into an empty **AVL tree**

(Or)

10. Explain Pattern matching-KMP algorithm.

****

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Year - I Semester, February 2016
Advanced Data structures and Algorithms
(Computer Science Engineering)

Roll No:_____

Time: 3 hours   **Max. Marks: 75**

Note: Question paper Consists of 5 SECTIONS (One SECTION for each UNIT) and answer FIVE Questions, Choosing ONE Question from each SECTION. Each Question carries 15 marks.

* * * * * *

SECTION - I

1. a. write a program to merge two linked list one at the end of the other   8M
   b. write a program to transpose the matrix   7M

(Or)

2. a. Explain asymptotic notations   7M
   b. write a program to multiply two matrices   8M

SECTION – II

3. Convert the given infix expression into postfix expression x = (b + (b ^ 2 – 4*a*c)^1/2)/(2*a) and evaluate the postfix expression for the following values(a=1, b=4, c=3)   15M

(Or)

4. a. write a pseudo code to implement a queue using two stacks   8M
   b. construct a max heap for the sequence of the input 24, 12, 2, 13, 32, 42, 7, 9, 41, 65, 1, 18 and 15.   7M

SECTION – III

5. write a program to sort the elements using Quick sort   15M

(Or)

6. a. Given two arrays of unordered numbers, check both arrays have same set of numbers using hash tables   8M
   b. Implement binary search tree   7M

SECTION – IV

7. a. Draw the binary tree with node labels a, b, c, d, e, f and g for which the inorder and postorder traversals result in the following sequences. inorder: a f b c d g e, postorder: a f c g e d b

8M

b. Find the minimum cost spanning tree using kruskal's algorithm for the given graph

7M
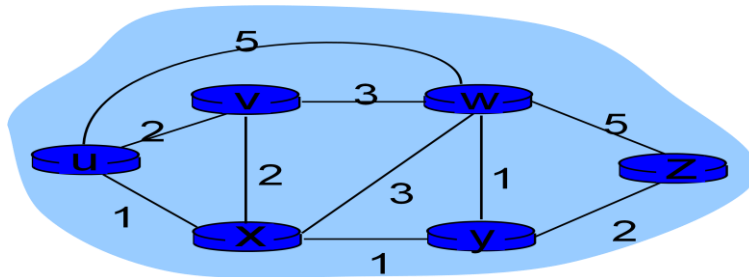
(Or)

8.

Consider the following directed graph. There are a multiple shortest paths between vertices S and T. Which one will be reported by Dijkstra's shortest path algorithm? Write the sequence of vertices and cost of the shortest path from S to T. Assume that, in any iteration the shortest path to a vertex v is updated only when a strictly shorter path to v is discovered.

15M
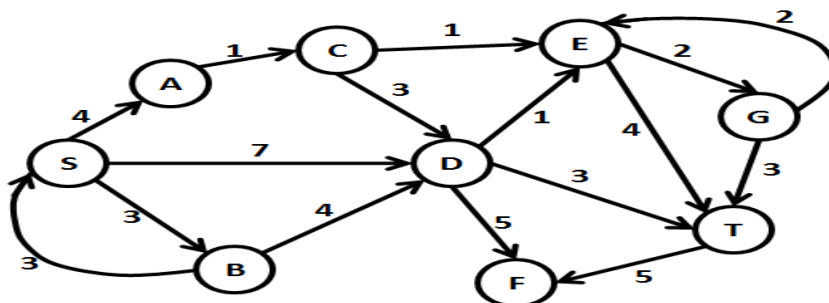
SECTION – V

9. Suppose eight characters have a distribution A(1), B(1), C(1), D(2), E(3), F(5), G(5), H(10). Draw a Huffman tree and calculate average number of bits needed for each character.

15M

(Or)

10. Construct a binary search tree by inserting in the following sequence of integers: 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60 and 24. Check whether the BST is balanced or not and if not balanced make it balanced.   15M

Code No: R15D5801-151-S

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R15

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester supplementary Examinations, Aug 2016

Advanced Data structures and Algorithms)

(CSE)

Roll No	1	5	N	3					

Time: 3 hours   **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

* * * * * *

SECTION - I

1. a. Discuss the asymptotic notations. How does one measure the efficiency of the algorithm?   7M

 b. How do you insert the data into and delete data from linked list without traversing the list? Write down the code for the same.   8M

(Or)

2. write a program to construct singly linked list. Also include insertion, deletion and searching operations on it.   15M

SECTION – II

3. a. Implement circular queue using array representation.   7M

 b. Evaluate the postfix expression 6, 2, 3, +, -, 3, 8, 2, /, +, *, 2, ^, 3, +   8M

(Or)

4. a. construct max heap for the following sequence of input: 25 14 16 13 10 7 12. What is the resultant max heap after 2nd delete.   8M

 b. write a recursive function for finding GCD of two integer numbers   7M

SECTION – III

5. a. The Keys 12, 18, 13, 2, 3, 23, 5 and 15 are inserted into an initially empty hash table of length 10 using open addressing with hash function $h(k) = k$ mod 10 and linear probing. What is the resultant hash table?   7M

 b. write a program to sort the elements using Insertion sort   8M

(Or)

6. a. A natural bubble sort is to be used to sort the file of integers: 12, 30, 36, 9, 5, 7, 50, 40, 42, 90. What is the order of the numbers after 3rd pass.   7M

 b. write a program to sort the elements using merge sort   8M

SECTION – IV

7. Write and explain Kruskal's algorithm for finding the minimum spanning tree. Also find the MST for the following graph   15M
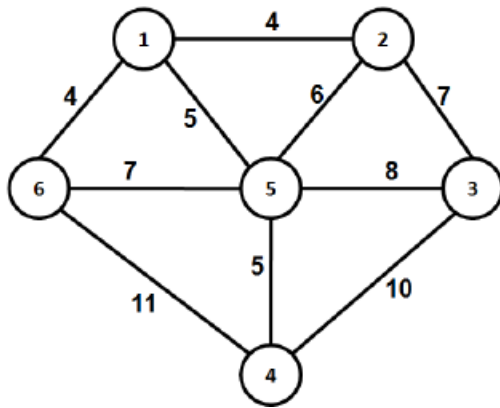
(Or)

8. a. Discuss the threaded binary tree. What are its applications, advantages and disadvantages over binary tree.   7M

   b. explain DFS and BFS with an example   8M

SECTION – V

9. a. Construct AVL tree for the following numbers 14, 8, 12, 36, 23, 5, 67, 78, 20.   8M

   b. write a program to find maximum element in the Binary search tree.   7M

(Or)

10. a. What is B-tree? How do you construct the B-tree? Explain with example.   8M

b. Explain KMP Algorithm with example

Code: 9D58101

M. Tech I Semester Regular & Supplementary Examinations, April/May 2013
ADVANCED DATA STRUCTURES & ALGORITHMS
(Common to CSE, CS, SE and CN)

Time: 3 hours   Max. Marks: 60

Answer any FIVE questions.
All questions carry equal marks.

*****

1 (a) What are the applications of stack with an examples?
   (b) Explain the linked list representation with a clear example.

2 (a) What are asymptotic notations explain them briefly?
   (b) Briefly explain about 'O-notation'.
   (c) Define average best and worst case complexities.

3   Write and explain a non recursive algorithm for post order traversal of a binary tree with an example.

4 (a) What do you mean by AVL trees? How do we calculate the height of it? Explain by giving an example.
   (b) Explain how an AVL tree can be used to sort a sequence of n elements in $O(n \log n)$ time.

5 (a) What is a red-black tree? Explain about the representation of a red-black tree.
   (b) Write the algorithm to search for an element of a red-black tree. What is its complexity?

6 (a) Derive the time complexity of quick sort in average case.
   (b) Write a non recursive algorithm for pre order traversal of a tree.

7 (a) What is the time complexity of traversing sales person's problem using dynamic programming?
   (b) What is dynamic programming technique? How does it differ from divide & conquer technique.

8 (a) Solve the Knapsack problem by considering the instance n=3, m=6. (1 2 3) =(2 3 4) & (1 2 3) = (1 2 5).
   (b) Explain 8 – Queen's problem with an example.

COURSE COVERAGE
ADVANCED OPERATING SYSTEMS

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Advance Operating Systems	Applied Operating System Concepts	1,2,3,5,6	I,II	A.Silberschatz	Wiley, 2000	6th
		Operating System Principles	3,45,6	III,IV	Lubemir F Bic and Alan C. Shaw	Pearson Education	6th
		Modern Operating Systems	5,6,7	V	Andrew S Tanenbaum	Pearson Education	3rd

Code No: R15D5802

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Semester Regular/supplementary Examinations, February 2017
Advanced Operating System
(CSE, VLSI & SSP)

Roll No			N	3				

Time: 3 hours

Max. Marks: 75

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.
* * * * * *

SECTION – I

1. Explain Linux Real –Time Scheduling and Non-real –Time Scheduling?

(Or)

2. What is a Real Time Operating System and Explain the Characteristics of RTOS

SECTION – II

3. What is a Distributed Operating system and explain the issues in designing a Distributed operating system

(Or)

4. Explain Software and Hardware Architecture of the V-Systems?

SECTION – III

5. Explain Network Operating System and Explain NFS(Network Fole System)

(Or)

6. Explain Client –Server model with an Example?

SECTION – IV

7. Define Process and Thread and Explain User-Level Threads and Kernel-Level Threads?

(Or)

8. Explain Windows Thread States with neat Diagram?

SECTION – V

9. Explain Security Threats and Protection?

(Or)

10. Explain the Taxonomy of Malicious Program?

* * * * * * * * * *

Code No: R15D5802-151

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Year - I Semester, February 2016
Sub: Advanced Operating Systems
(Common to CSE & SSP)

Roll No_____

Time: 3 hours   **Max. Marks: 75**

Note: Question paper Consists of 5 SECTIONS (One SECTION for each UNIT) and answer FIVE Questions, Choosing ONE Question from each SECTION. Each Question carries 15 marks.

SECTION - I

1. (a) Differentiate between RTOS and LINUX with one example to each of the difference.
   (b) Explain design issues for hard bound embedded systems?

(Or)

2. (a) List and explain any 4 different types of embedded OS in detail?.
   (b) Explain how the process to process calls are handled in Vxworks?

SECTION – II

3. (a) What are the issues in implementing Inter Pipe Communication?
   (b) Briefly explain features of embedded UNIX operating System.

(Or)

4. (a) What are the design issues to be addressed in the design of
           Distributed operating   systems? Give justification with your own example?.
   (b) Explain features and principles of various buses used in recent systems design?

SECTION – III

5. (a) What is the importance of unmount service in MACH-OS?.
   (b) What are the services provided by memory management unit of network operating
           system?

(Or)

6. (a) Differentiate between RTLinux and VXWORKS.
   (b) List and explain features of IBM operating Systems.

SECTION – IV

7. (a) What are the design principles of UNIX kernel?
   (b) Explain types of RTOS calls with example?

(Or)

8. (a) Explain various features of RTOS kernel with examples?
   (b) Explain the life cycle of kernel development?

SECTION – V

9. (a) Explain Multiple Independent Levels of Security (MILS) architecture?
   (b) What is kernel service? Write about its implementation methods

(Or)

10. (a) Explain about Real time scheduler?
    (b) Explain how Real time scheduler helps for the protection of the data?

Code No: R15D5802-151-S

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R15

(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Year - I Semester supplementary Examinations, Aug 2016
Advanced Operating Systems
(COMMON TO CSE, SSP)

Roll No	1	5	N	3					

Time: 3 hours   **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

* * * * * *

SECTION - I

1. (a) Differentiate between RTOS and MACH-OS with examples to each?
   (b) Explain design issues for soft time bound embedded systems?

(Or)

2. (a) List and explain at least 4 different types of RTOS in detail?
   (b) Explain how semaphores are implemented in Vxworks?

SECTION – II

3. (a) What are the issues in implementing FTP over RTLinux?
   (b) Briefly explain features of QNX operating System

(Or)

4. (a) What are the design issues to be addressed in the design of
       eCOS operating   systems? Give justification with your own example?
   (b) Explain features and principles of various buses used in RTLinux?

SECTION – III

5. (a) What is the importance of SMTP service in VXWORKS?
   (b) What are the services provided by REMOTE PROCEDURE CALL of network
           operating system?

(Or)

6. (a) Differentiate between ECOS and QNX operating system
   (b) Explain features of GNU operating Systems

SECTION – IV

7. (a) What are the design principles of ECOS kernel?
   (b) Explain types of RTOS with examples?

(Or)

8. (a) Explain various features of BERTOS kernel with examples?
    (b) Explain the design cycle of kernel development?

SECTION – V

9. (a) Explain COSCOX operating system
   (b) What is RTAI kernel service? Write about its implementation methods

(Or)

10. (a) Explain about Real time process scheduler?
    (b) Explain how it helps for the protection of the data?

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M. Tech – I Year – I Sem. (Computer Science & Engg)

ADVANCED OPERATING SYSTEMS

Objectives:
- To understand main components of Real time Operating system and their working
- To study the operations performed by OS as a resource manager
- To understand the scheduling policies of DOS
- To implement the working principles of OS
- To study different OS and compare their features

UNIT I
Real-time operating systems: Design issues, principles and case study.

UNIT II
Distributed operating system: Design issues, features and principles of working, case study.

UNIT III

Network operating system: Design issues, working principles and characteristic features, case study.

UNIT IV

Kernel development: Issues and development principles, case study.

UNIT V

Protection, privacy, access control and security issues, solutions.

TEXT BOOKS:

1. A. Silberschatz - Applied Operating System Concepts, Wiley, 2000.
2. Lubemir F Bic and Alan C. Shaw - Operating System Principles, Pearson Education, 2003.

REFERENCE BOOKS:

1. Operating Systems : Internal and Design Principles - Stallings, 6th ed., PE.
2. Modern Operating Systems, Andrew S Tanenbaum 3rd ed., PE.
3. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 7th ed., John Wiley
4. UNIX User Guide – Ritchie & Yates.
5. UNIX Network Programming - W.Richard Stevens ,1998, PHI.
6. The UNIX Programming Environment – Kernighan & Pike, PE.

COURSE COVERAGE
COMPUTER SYSTEM DESIGN

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Computer System Design	Computer Organization	1,2 ,3,5	I,II	Car Hamacher, Zvonks Vranesic, SafeaZaky	McGraw Hill	Vth Edition
		Modern Operating Systems	3,4,6,7	III,IV	Andrew S Tanenbaum	Weiley India	2nd edition
		Computer Organization and Architecture	5	V	William Stallings	Pearson	6th

Code No: R15D5803

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Semester Regular/supplementary Examinations, February 2017

Computer System Design

(CSE)

Roll No			N	3					

Time: 3 hours   Max. Marks: 75

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

* * * * * *

SECTION - I

1.   (a)What are the different performance measures used to represent a computer systems
performance?   [7]
(b) Explain the data transfer procedure handled in DMA.   [8]

(Or)

2(a)) Write the three differences between Von-newmann architecture and Harvard
architecture.   [7]
(b) Name and explain five operating system routines.   [8]

SECTION – II

3(a) What is the basic idea of instruction pipelining? Explain a 4-stage pipeline in detail.[8]
(b) Briefly discuss about the multiple bus organization of a processing unit   [7]

(Or)

4(a) what is a Hazard? Discuss about the various instruction Hazards.   [8]
(b) Differentiate between the micro program control unit and hardwired control unit. [7]

SECTION – III

5. What is virtual memory? Explain different type of page replacement algorithms. [15]

(Or)

6. What is mapping? Explain set associative mapping with the help of example. [15]

SECTION – IV

7. Explain inter process communication with the help of producer consumer problem. [15]

(Or)

8.(a)Explain necessary and sufficient condition for deadlock.[8]
(b) Explain Banker's algorithm with the help of example. [7]

SECTION – V

9. (a)Discuss the different user authentication mechanisms in detail[7]
(b) Discuss the methods for intrusion detection and virus protections.[8]

(Or)

10 (a) Explain File management system in UNIX. [7]
(a) Explain types of viruses.   [8]

****

Code No: R15D5803-151-S

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R15

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester supplementary Examinations, Aug 2016

Computer System Design

(CSE)

Roll No	1	5	N	3					

Time: 3 hours **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

* * * * * *

SECTION - I

1. Discuss about I/O operations in IA – 32 and SIMD Instructions.

(Or)

2. Explain about Peripheral Component Interconnect Bus and Universal Serial Bus.

SECTION – II

3. Define Register Transfers. Explain execution of the following instruction with suitable control sequence ADD (R3),R1.

(Or)

4. Explain about Data Hazards and Instruction Hazards.

SECTION – III

5. What is the need of Virtual Memory? Explain Address Translation concept with TLB.

(Or)

6. State and explain Page Replacement Algorithms with an example.

SECTION – IV

7. Discuss about Classical InterProcess Communication Problems.

(Or)

8. Explain Banker's algorithm for Deadlock avoidance with suitable example.

SECTION – V

9. Discuss about file system implementation in detail.

(Or)

10. What is Digital Signature? Write about various user authentication schemes.

Code No: **R15D5803-151**

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Year - I Semester, February 2016
Sub: COMPUTER SYSTEM DESIGN
(Computer Science Engineering)

Time: 3 hours **Max. Marks: 75**

Note: Question paper Consists of 5 SECTIONS (One SECTION for each UNIT) and answer FIVE Questions, Choosing ONE Question from each SECTION. Each Question carries 15 marks.

* * * * * *
SECTION - I
1. Write about IA – 32 Addressing modes with an example program.

(Or)

2. Discuss about Direct Memory Access transfer and Device drivers in windows Operating System.

SECTION – II
3. Explain about Microprogram Sequencing and Wide Branch Addressing with a neat sketch.

(Or)

4. Explain about Pipeline Performance and Superscalar operation.

SECTION – III
5. Write about Cache Memory mapping functions with an example.

(Or)

6. What is Segmentation? Explain Segmentation with paging scheme.

SECTION – IV
7. What is a Semaphore? Explain Producer – Consumer Problem using Semaphores.

(Or)

8. Discuss about Deadlock Detection and Recovery.

SECTION – V
9. Discuss about file system directory structures and UNIX file system.

(Or)

10. Explain in detail how cryptography is used as a security tool.

Code: 9D58103

COMPUTER SYSTEM DESIGN
(Common to CSE and CS)

Time: 3 hours   Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks

xxxxx

1.   Explain the organization & architecture of IA32 Pentium Processor.

2. (a) Compare and contrast DMA with interrupt handlers.
    (b) Give an overall view of device drivers in windows.

3. (a) Explain clearly micro programmed control with hardware approach.
    (b) Differentiate between hired wired and micro programmed control units.

4.   Explain data hazards and instruction hazards with examples. Explain their influence on instruction sets.

5. (a) Explain any two replacement policies in detail with examples.
    (b) Explain the memory hierarchy with reference to their cost, speed and size.

6.   Enumerate and explain any two classical IPC problems and suggest suitable solutions for them with explanation.

7. (a) Give a through account of UNIX file systems.
    (b) Explain how directories will be implemented.

8. (a) Explain the relevant issues and concepts of cryptography.
    (b) Write short notes on threats and intruders.

xxxxx

COURSE COVERAGE
SOFTWARE PROCESS AND PROJECT MANAGEMENT

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Software Process And Project Management	Managing the Software Process	1,6,13	I,II	*Watts S. Humphrey*	Pearson	2nd
		Software Project Management	6,7,8,9	III,IV	*Walker Royce*	Pearson Education	2nd
		Effective Project Management: Traditional	5	V	Robert Wysocki	Wiley India	6th

Code No: **R15D5804**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Semester Regular/supplementary Examinations, February 2017
Software Process and Project Management
(CSE)

Roll No			N	3					

Time: 3 hours   **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

* * * * * *

SECTION - I

1. a) Write the basic inspection principles. (7)
   b) Discuss why software organizations are chaotic. (8)

(Or)

2. a) Demonstrate the role of SQA with its responsibilities. (7)
   b) Explain the five assessment principles required to assess a software process. (8)

SECTION–II

3. a) Illustrate with a neat diagram the top five principles of a modern process. (7)
   b) Write the primary objectives and essential activities of an inception phase. (8)

(Or)

4. a) Illustrate with a neat diagram the life cycle evolution of the artifact sets. (7)
   b) Explain from the management perspective the three different aspects of an architecture. (8)

SECTION–III

5. a) Illustrate with a neat diagram the workflow of an iteration. (7)
   b) Discuss minor milestones. (8)

(Or)

6. a) Discuss conventional WBS issues. (7)
   b) Explain the cost and schedule estimating process. (8)

SECTION–IV

7. a) What are the necessary things to implement a complete software project control panel. (7)
   b) Discuss the typical automation and tool components that support the process workflows. (8)

(Or)

8. a) With a neat diagram explain the evolution of organizations. (7)
   b) Discuss with a neat diagram software architecture team activities. (8)

SECTION–V

9. a) Explain the responsibilities of the core team of the CCPDS-R software organization. (7)
   b) Discuss modern project profiles. (8)

(Or)

10. a) Explain the CCPDS-R software artifacts. (7)
    b) Discuss early risk resolution. (8)

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Code No: **R15D5804-151-S**

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Year - I Semester supplementary Examinations, Aug 2016
Software Process and Project Management
(CSE)

Roll No	1	5	N	3					

Time: 3 hours   **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

Section-1

1. Explain the characteristics of process maturity levels.

Or

2. What is process assessment explain? What is the need for optimizing process?

Section-2

3. Discuss the model based Architectures

Or

4. What are the management and engineering artifacts? Explain.

Section-3

5. What is a process checkpoint? Explain about various checkpoints in detail

Or

6. Explain the work break down structure

Section-4

7. Explain the Tools for process automation of building blocks.

Or

8. Explain the roles and responsibilities of Line –of – business organizations in detail.

Section-5

9. Explain the modern software management process culture.

Or

10. Explain the modern software economics.

Code No: R15D5804-151

$\boxed{\textbf{R15}}$

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Year - I Semester, February 2016
Sub: Software Process and Project Management
(Computer Science Engineering)
Roll No_____

Time: 3 Hours **Max. Marks: 75**

Answer one from each section **one** from the following questions.
Each Question carries **15** marks

Section-1

1. What are process reference models? Explain any two of them.

Or

2. Explain strategy for implementing process change.

Section-2

3. Explain the principles of modern software management it in detail.

Or

4. Explain the various Life-Cycle Phases.

Section-3

5. Discuss about software process work flows.

Or

6. Explain the process planning guidelines.

Section-4

7. Explain the management and quality indicators.

Or

8. Explain the project organization

Section-5

9. Explain the modern software management process culture.

Or

10. Explain the software management best practices.

Code: 9D25106b

Time: 3 hours   Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks
*****

1   Explain the conventional software management performance.

2   Explain about improving software processes.

3   (a) Explain the principles of conventional software engineering.
    (b) Write about inception phase.

4   (a) Explain life cycle focus on artifact sets.
    (b) Write about engineering artifacts.

5   (a) Explain the minor mile stones.
    (b) Explain the cost and schedule estimating process.

6   (a) Explain line of business organizations.
    (b) Explain change management.

7   (a) Write about the seven core metrics.
    (b) Explain pragmatic software metrics.

8   (a) Write about modern software economics.
    (b) Explain modern process transitions.

*****

COURSE COVERAGE
CLOUD COMPUTING

S.no	Subject	Text Book Title	Chapters in Text Book	Units /Topics Covered	Authors	Publications	Editions
1	Cloud Computing	Cloud Computing	2,3,4	I,II	Raj Kumar Buyya	wiley	2013
		Mastering Cloud Computing	1,2,3	III,IV	Raj Kumar Buyya	Christian Vaccholia selvi	2013
		Cloud Computing	5,6	V	Arshdeep Bhagya	University press	2014

COURSE COVERAGE
ANDRIOD APPLICATION DEVELOPMENT

S.no	Subject	Text Book Title	Chapters in Text Book	Units /Topics Covered	Authors	Publications	Editions
1	Android application Development	Professional android application 4 development	2,3,5,6	I,II	Reto meier	Wrox	2012
		Android application development for java programming	2,3,4	II,IV	James C Shesui	Cengage Learning	2013
		Beginning Android 4 application development	3,4,5	V	Wei-meng Lee	Wiley	2013

COURSE COVERAGE
SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Software Architecture and Design Pattern	Software Architecture in Practice	2,3,4	I,II	Len Bass, Paul Clements & Rick Kazman	Pearson Education	2003
		Design Patterns	3,4,6	III,IV	Erich Gamma	Pearson Education	1995
		Beyond Software architecture	5,6,7	V	Luke Hohmann	, Addison wesley	2003

Code No: **R15D5808-151-S**

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Year - I Semester supplementary Examinations, Aug 2016
Software Architecture and Design Patterns
(CSE)

Roll No	1	5	N	3					

Time: 3 hours   **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

SECTION - I

1. What is meant by software architecture and what makes good software architecture? Explain why software architecture is important?

(Or)

2. What is reconstructing software architecture? Explain various activities of it?

SECTION – II

3. What is architecture evaluation? Elaborate on ATAM in detail.

(Or)

4. What is meant by Software Product Lines? Explain briefly about software architecture in future?

SECTION – III

5. What is a design pattern? Explain the role of them in solving design problem.

(Or)

6. Explain motivation, applicability, Structure, Participants, Collaborations, Consequences and Implementation of Abstract Factory trend.

SECTION – IV

7. Explain any two behavioral patterns with some applications of them

(Or)

8. Write short notes on the following
   Mediator pattern
   Template method
   Visitor

SECTION – V

9. Describe the three views of Celsius Tech architecture case study.

(Or)

10. Discuss the case study of the World Wide Web in interoperability.

Code No: C5807

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I SEMESTER EXAMINATIONS, APRIL/MAY-2013
SOFTWARE ARCHITECTURE AND DESIGN PATTERNS
(COMPUTER SCIENCE AND ENGINEERING)

Time: 3hours   Max.Marks:60

Answer any five questions
All questions carry equal marks
- - -

1.   What is the significance of Software Architecture? Discuss the activities of software architecture reconstruction.

2.   Discuss the most important qualities of good Software Architecture? Discuss various scenarios of a quality attributes in practice.

3.a) Explain the benefits that flow from holding architectural inspections.
  b) What are the outputs produced by ATAM based evaluation.

4.a) What makes software product lines work? Describe the steps involved.
  b) Describe the methodology for finding the Design Patterns suitable for the required problem.

5.   Explain the purpose of Creational Design Patterns and discuss Abstract Factory and Bridge Patterns.

6.   With suitable examples, explain the usage of Interpreter Architectural styles.

7.   Explain the purpose of Structural Patterns? List all the Structural Patterns and explain any three of them.

8.a) Explain the case study for Air Traffic Control.
  b) Discuss the Applicability, Structure and Implementation issues of Mediator, Strategy Patterns.

M.Tech - II Semester Supplementary Examinations, April 2013
SOFTWARE ARCHITECTURE & DESIGN PATTERNS
(Software Engineering)

Time: 3 hours   Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks

xxxx

1. (a) What is software architecture? Why is software architecture important?
   (b) Write the difference between reference model and reference architecture.

2. Define tactic. List and explain different tactics.

3. What is architecture evaluation? Explain about ATAM in detail.

4. (a) What makes software product lines difficult?
   (b) Explain what makes software product lines work?

5. (a) What is a design pattern? How design patterns solve design problems?
   (b) Elaborate on organizing catalogs of design patterns.

6. Write short notes on any four creational patterns.

7. (a) Explain template method.
   (b) Describe behavioral pattern and explain any two behavioral patterns.

8. (a) Write the requirements and qualities of A-TE avionics system.
   (b) How to achieve quality goals in the case study of interoperability (world wide web)?

M.Tech II Semester Supplementary Examinations, April 2013

SOFTWARE ARCHITECTURE

(Common to CSE & CS)

Time: 3 hours   Max. Marks: 60

Answer any FIVE questions.

All questions carry equal marks.

*****

1 (a) Describe the business cycle of software architecture.
   (b) What is software architecture? What are the activities involved in creating a software architecture?

2 (a) What is meant by even-based implies invocation? Explain.
   (b) Give the list of common architectural styles. Briefly describe each one of them.

3   What are should information systems? Explain the evolution of shared information systems in business data processing.

4   Explain in detail architectural design guidance.

5   Write brief notes on the following:
   (a) Creational patterns.
   (b) Structural patterns.
   (c) Behavioral patterns.

6   Briefly explain CORBA - a case study on computing infrastructure.

7 (a) Describe how to capture architectural information in an ADL.
   (b) Describe some examples of ADL.

8   Explain how to reuse architectural assets with in an organization. What are its advantages?

COURSE COVERAGE
NETWORK PROGRAMMING

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
Network Programming	Unix system programming using in C++	2,3,4	II,III,IV	T Chan	PHI	2nd
	Unix concepts and applications	1	I	Sumitabha das	TMH	4th
	Java networking programming	5	V	ER Harold,SPD	O'Reilly	----

Roll No	1	5	N	3					

Time: 3 hours   Max. Marks: 75
Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE
Question from each SECTION and each Question carries 15 marks.
* * * * * *

SECTION - I

1(a) Explain about Shell meta characters
(b)Explain about Networking utilities
                                    (Or)
2(a) Explain about security provided by file permissions?
(b)Explain about text processing utilities and backup utilities

SECTION – II

3(a) Explain about process creation and process termination
  (b)Explain aboutchown,lchown,fchown
                                    (or)
4(a) Explain about file types and file system structure?
(b)Explain about chmod ,fchmod

SECTION – III

5(a) What are named and unnamed pipes?How are they created?
(b)What are the various IPC mechanisms ?Explain in short where would these
different IPC mechanisms will used for
                                    (Or)
6(a) Explain popen and pclose library functions?
(b)Explain about posix signal handling process

SECTION – IV

7(a) Explain client/server program –using single server –client connection
(bExplain about socket options –setsockopt, getsockopt
                                    (Or)
8(a) Explain socket system calls for connection less service?
(b)Discuss the uses of the following functions
(i) getservby name (ii) getservbyport

SECTION – V

9(a) Explain UDP Echo server function
(b)Discuss the uses of the following TCP socket options
(i) TCP_MAXSEG (ii) TCP_NODELAY
                                    (Or)
10(a) Explain the purpose and syntax of raw sockets
  (b)Explain RMI process implementation?

* * * * * * * * * *

Code No: R15D9310-151
MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
MTECH (I/II Semister)
Advanced Network Programming
(Model Paper-I)   Max.Marks:75
Part-A
Answer ALL of the following

1. Draw the OSI seven layred model along with the approximate mapping to the internet protocol ?

2. Expalin TCP suite changes using TCP state transition diagram ?

3. Explain the TCP based client server programming using echo server/client example ?

4. write a program that print the default TCP,UDP, send and receive buffer server ?

5. a).explain the concept of file locking system calls ?
   b).explain how semaphore are used to synchronize the access to the shared memory segments ?

6. a).write in detail in with example usage on getsocketopt and setsocketopt system call ?
   b).write in details with the example usage on select and poll system call

7. Explain the function gethostbyname,gethostbyaddr,getserverbyname, with signature ?

8. Explain the how the terminal line disciplines are used in UNIX ?

COURSE COVERAGE
ADVANCE DATABASE

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
ADVANCE DATABASES	Database management system	1,2,3,5,6	I,II	Raghuramakrishanan	TMH	3rd
	Database system concepts	3,45,6	III,IV	A silberschartz,HF korth	TMH	6th
	Fundamentals of database systems	5,6,7	V	Ramesh elmerts	Pearson	8th

Code No: R15D5811

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
M.Tech. I Year - II Semester supplementary Examinations, February 2017
Advanced Databases
(CSE)

Roll No	1	5	N	3					

Time: 3 hours   Max. Marks: 75

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

* * * * * *

SECTION - I

1. What are the responsibilities of a DBA? Does the DBA still need to understand query Optimization? Why?

(Or)

2. Construct an E-R diagram for a Hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests & examinations conducted ?

SECTION – II

3. Define BCNF how does BCNF differ from 3 NF ? Explain with an example?

(Or)

4. Define the term functional dependence? Explain why 4NF is a normal form more Desirable than BCNF?

SECTION – III

5. a. List the ACID properties. Explain the use fullness of each?
   b. Explain the need for cursors with one example?

(Or)

6. What benefit does strict two-phase locking provide with one example?

SECTION – IV

7. What is the space utilization for B$^+$ Tree index .Explain with one example

(Or)

8. Describe the insertion and searching operations on B$^+$-Trees? with one suitable example

SECTION – V

9. Explain the following terms

   i) Homogeneous and heterogeneous DDBMS   ii) Operator tree of a query

(Or)

10 . Explain the following terms

   i) Query Optimization   ii) Concurrency control in distributed database

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MallaReddy College Of Engineering & Technology
(UGC Autonomous)
MTECH (I/II Semister)
Advanced databases
(Model Paper-I)   **Max.Marks:75**
Part-A
Answer ALL of the following   **5*5=25**

1. (a) What are Agregate functions?
    (b) Explain the difference between Candidate key and Primary key?
    (c) Define Persistent with example.
    (d) What is Serilazability?
    (e) What are the problems caused by data redundancy?

Part-B

2. (a) Draw an ERD for Library Managemnet System and explain the various
        notations used.

                              OR   (10)

   (b) Define Normaization. Discuss in detail 1NF, 2 NF, 3 NF with example.

3. (a)   How are the transactions executed in distributed data bases?

                              OR   (10)

   (b) Discuss in detail the various techniques that can be used for database
        recovery form failures in databases.

4. (a) Define a Trigger. Explain how triggers are useful for preserving database
        intigrity with an example?

                              OR   (10)

   (b) Why should prefer database instead of storing data in operating system
        files.

5. (a) Explain Clustered, Primary and Secondary indexes.

                              OR   (10)

    (b) Explain Hash Based Indexing in detail.

6. (a) Explain ACID properties with examples.

                              OR   (10)

    (b) Explain Distributed DBMS architecture.

MallaReddy College Of Engineering & Technology
(UGC Autonomous)
MTECH (I/II Semister)
Advanced databases
(Model Paper-II)   **Max.Marks:75**
Part-A

Answer ALL of the following   **5*5=25**

1. (a) What is Data Inconsistency?
   (b) Define Schema. Write different Schemas in database.
   (c) What is Foreign Key?
   (d) Explain DML Commands.
   (e) What is Recoverable Schedule?

Part-B
2. (a) Explain the structure of DBMS with a neat sketch.
                           OR   (10)
   (b) Explain the Set Comparison Operators with example queries.
3. (a) Define View. Explain DDL, DML on views. How views offer security?
                           OR   (10)
   (b) What is Schema Refinement. Explain BCNF, 3 NF with example.
4. (a) What is Conflict Serilazability? Explain with example schedules.
                           OR   (10)
   (b) Explain Concurrency Control Mechanisms with out locking.
5. (a) Explain ISAM.
                           OR   (10)
   (b) Explain Hash Based Indexing.
6. (a) Explain how query processing in distributed databases.
                           OR   (10)
   (b) Explain Concurrency Control in distributed databases.

MallaReddy College Of Engineering & Technology
(UGC Autonomous)
MTECH (I/II Semister)
Advanced databases
(Model Paper-III)   **Max.Marks:75**
Part-A

Answer ALL of the following   **5*5=25**

1. (a) Explain ER-Model.

   (b) Explain Database Application Architectures.

   (c) Explain TCL commands.

   (d) What is Lock Conversion?

   (e) What are Conflict Operations?

Part-B

2. (a) Explain the Conceptual Design with ER-Model for Large Enterprise.

                            OR

(10)

   (b) Explain differences between TRC and DRC.

3. (a) Explain different types of intigrity constraints in Relational Model.

                            OR   (10)

   (b) What is Data Abstraction? Explain different levels of abtraction offered
       by DBMS?

4. (a)What is Multi-Valued Dependecy? Explain 4 NF with example.

                            OR   (10)

   (b) What is Functional Dependency? How to compute clouser for given
       FD set?

5. (a) Explain Lock Based Concurrency Control with examples.

                            OR   (10)

   (b) Explain ARIES algorithm.

6. (a) Explain different RAID levels.

                            OR   (10)

   (b) Explain B+ Trees.

COURSE COVERAGE
INTERNET TECHNOLOGIES AND SEVICES

S.no	Subject	Text Book Title	Chapters in Text Book	Units /Topics Covered	Authors	Publications	Editions
1	INTERNET TECHNOLOGIES AND SERVICES	Web programming, building internet applications	2,3,5,6	I,II	Chris Bates	Wiley Dreamtech	3rd
		The complete reference java	2,3,4	II,IV	Hertbert Schildt	TMH	7Th
		Professional jakartha Structs	3,4,5	V	James good will	Wrox	

COURSE COVERAGE
DATA MINING

S.no	Subject	Text Book Title	Chapters in Text Book	Units /Topics Covered	Authors	Publications	Editions
1	DATA MININING	Data mining techniques and concepts	2,3,5,6	I,II	Jiawai hang Micheline	GSP algorithms	3rd
		Data mining Techniques	2,3,4	II,IV,	Arun K Pujari	University press	7Th
		Introduction to Datamining	3,4,5	V	Pang-ning Tan	Pearson	3rd

COURSE COVERAGE
STORAGE AREA NETWORKS

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
STORAGE AREA NETWORKS	Storage Networks: The Complete Reference	2,3,4	I,II	Robert Spalding	Tata McGraw Hill	2003
	Building Storage Networks	3,4,6	III,IV	Marc Farley	Tata McGraw Hill	2002
	Storage Area Network Fundamentals	5,6,7	V	Meeta Gupta	, Pearson Education Limited	2001

Code No: R15D5814

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - II Semester supplementary Examinations, February 2017

Storage Area Networks

(CSE)

Roll No	1	5	N	3				

Time: 3 hours   Max. Marks: 75

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

* * * * * *

SECTION - I

1. Discusses in detail about the core elements of a data center infrastructure.   (15)

(Or)

2. (a) Explain the major challenges in data storage and data management.   (8)
   (b) Briefly explain about the data center infrastructure.   (7)

SECTION – II

3. Explain about the hardware and software components of the host environment. (15)

(Or)

4. (a) Explain briefly how parity blocks are calculated in RAID4 and RAID5.   (10)
   (b) How RAID5 overcomes limitations of RAID4?   (5)

SECTION – III

5. Explain the hardware and software architecture of NAS.   (15)

(Or)

6. (a) Explain about the evolution of networked storage in detail.   (10)
   (b) List out the advantages and disadvantages of NAS.   (5)

SECTION – IV

7. Write short notes on
   (a) Different backup/recovery topologies   (8)
   (b) Differentiate between business continuity and disaster recovery.   (7)

(or)

8. Briefly explain about
   (a) Industry standards for data center monitoring and management   (8)
   (b) Key metrics to monitor for different components in a storage infrastructure. (7)

SECTION – V

9. (a) Explain about the critical security attributes for information systems.   (8)
   (b) Discuss about storage security domains.   (7)

(Or)

10. (a) Explain briefly general requirements and considerations for implementation of virtualization.   (7)
    (b) Explain symmetric and asymmetric storage virtualization.   (8)

* * * * * * * * * *

Code No: C2510

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April 2011
STORAGE AREA NETWORKS
(SOFTWARE ENGINEERING)

Time: 3hours   Max.Marks:60

Answer any five questions
All questions carry equal marks
- - -

1. a. Discuss the Client/Server storage model.
   b. Mention the core elements of a data center infrastructure.
      Explain the role of each element.   [12]

2. a. Briefly explain different levels of RAID.
   b. Discuss fundamental laws to govern disk performance.   [12]

3. a. Compare and contrast Integrated and Modular storage systems.
   b. Explain physical and logical components of a storage environment.[12]

4. a. Explain Fiber Channel architecture. Discuss any one Fiber channel
      topologies.
   b. List the components of NAS. Discuss the factors affecting NAS
      performance and availability.   [12]

5. a. Explain about Replication technologies and their role in ensuring
      information availability and business continuity.
   b. Explain about local and remote replication technologies.   [12]

6. a. Discuss key metrics to monitor for different components in a storage
      infrastructure.
   b. Discuss key management tasks in a data center.   [12]

7. a. Explain Security implementations in Storage networking.
   b. Discuss Critical Security attributes for information systems.   [12]

8. Explain block-level and file-level Virtualization technologies.   [12]

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R09

Code No: C6209

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
STORAGE AREA NETWORKS
(WEB TECHNOLOGIES)

Time: 3hours   Max.Marks:60

Answer any five questions
All questions carry equal marks
- - -

1. a) Describe the challenges in data storage and management.
   b) Discuss the overview of database server configuration.   [12]

2. a) Mention the components of a Storage system environment and explain.
   b) What is RAID? Explain the implementation of RAID.   [12]

3. a) Explain High-level architecture and working of an intelligent storage system.
   b) Write a short note on Intelligent Storage Array.   [12]

4. a) Explain the architecture of SAN and its components.
   b) Distinguish General purpose Servers and NAS devices.   [12]

5. a) Distinguish between business continuity (BC) and disaster recovery (DR).
   b) Explain single points of failure in a Storage infrastructure and list solutions to mitigate these failures.   [12]

6. a) Identify key areas to monitor in a data center.
   b) Explain the architecture of backup/recovery. Discuss backup granularity. [12]

7. Explain Storage security framework and storage security domains. List and analyze the common threats in each domain.   [12]

8. a) What is a Storage Virtualization? Explain different type of storage Virtualizations.
   b) Write short notes on SNIA storage virtualization taxonomy.   [12]

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COURSE COVERAGE
SOFT COMPUTING

S.no	Subject	Text Book Title	Chapters in Text Book	Units /Topics Covered	Authors	Publications	Editions
1	SOFT COMPUTING	Principles of soft computing	2,3,5,6	I,II	S N Sivanadam	Wiley	2007
		Soft Computing ang intelligent soft design	2,3,4	II,IV,	Fakhreddin	Pearson	2004
		Artificial intelligent and soft computing	3,4,5	V	Elaine ritch	CRC Press	3rd

COURSE COVERAGE
WIRELESS NETWORK AND MOBILE COMPUTING

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
WIRELESS NETWORK AND MOBILE COMPUTING	Mobile communications	1,6,13	I,II	Johen schiller	Pearson	2nd
	Wireless and mobile networks	6,7,8,9	III,IV	Dr.sunil kumar	Wiley india	----
	Mobile computing	5	V	Raj kamal	Tata Mcgraw hill	2nd

Code No: R15D5817

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - II Semester supplementary Examinations, February 2017

Wireless Network and Mobile Computing

(CSE)

Roll No	1	5	N	3					

Time: 3 hours   Max. Marks: 75

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

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SECTION-1

1. a) Describe the wireless switching technologies.   [7]
   b) Explain the wireless network reference models.   [8]

(Or)

2. a) Discuss the networking issues .   [10]
   b) Explain the need of mobilty management.   [5]

SECTION-II

3. a) Compare the Infrared vs radio transmisson.   [8]
   b) Describe the IEEE 802.11 protocol architecture.   [7]

(Or)

4. a) Explain the IEEE 802.11 MAC layer frames.   [8]
   b) Describe the Bluetooth architecture.   [7]

SECTION-III

5. a) Describe the different types of GSM services.Give some examples and reasons why these services have been separated.   [8]
   (b) Explain the UMTS system architecture.   [7]

(Or)

6. a) Draw the protocol architecture of GSM for signalling and explain.   [8]
   b) Why cellular systems require handover procedures? Describe four possible handover scenarios in GSM .   [7]

SECTION-IV

7. a) Discuss the goals,assumptions and requirements of Mobile IP.   [8]
   b) Describe the change of the foreign agent with an optimized Mobile IP   [7]

(Or)

8. Explain hoe tunnelling works in general and especially for mobile IP using IP-in_IP, minimal, and generic routing encapsulation respectively.Discuss the advantages and disadvantages of three methods.

                                                                                                                    [15]

SECTION-V

9. a) Explain the mechanisms of Traditional TCP.   [8]
   b) Write the overview of classical enhancement to TCP for mobility.   [7]

(Or)

10. a) Discuss the operation of Indirect TCP .   [7]
    b) Explain the TCP over 2.5G/3G wireless networks.   [8]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Regular Examinations March/April 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours   Max.Marks:60
Answer any five questions
All questions carry equal marks
- - ---

1. a) What is Mobile Computing? Describe the characteristics, limitations, and applications
   of   Mobile Computing?
   b) What is the main difference between Infrastructure based Network and Adhoc
   Network?

2. a) Explain GSM Architecture with neat sketches.
   b) What is Handover? Why it is required? Explain the types of handovers used in
   GSM Network.

3. a) What is tunneling? Why is it used in Mobile IP? Justify your answer.
   b) What is Mobile IP Optimization? Why it is required?

4. a) Explain the principle of DSR routing algorithm in MANETs.
b) What is DHCP? Explain the applications and limitations of DHCP.

5. a) What is the difference between Indirect TCP and Snooping TCP?
   b) What is fast retransmit and fast Recovery? Why does it occur?
6. a) What is Multimedia object transfer protocol?
    b) Explain the application of Digital Video Broadcasting in the Internet.

7. a) With neat sketch diagram explain WAP Architecture.
   b) What is Bluetooth? Explain the Architecture of Bluetooth Network.

8. a) Explain different types of security threats in wireless mobile environments.
   b) Describe about WDP and WTLS.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Regular Examinations September 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours   Max.Marks:60
Answer any five questions
All questions carry equal marks
- - --

1. Explain the different generations of wireless networks?

2. a) Enumerate the differences between wired and wireless networks?
   b) Explain the following characteristics of wireless medium
    i) radio propagation mechanics
    ii) path-loss modeling and signal coverage

3. In wireless networks, explain the following
a) Spread spectrum transmissions
b) Fixed-assignment medium access for voice-oriented networks
c) UWB pulse transmission

4. a) Explain cellular network architecture and operation?
   b) Discuss the constraints and features related to network planning for CDMA systems?

5. Discuss about the mobility management issues in wireless network operation?

6. a) Explain design and principles of operation of Wireless Application Protocol (WAP)?
   b) Give the WTLS specifications?

7. a) What are features of Bluetooth?
   b) Explain the logical link control protocol in Bluetooth technology?

8. a) List out the benefits of WLANs?
   b) Explain the features and different versions of IEEE802.11 standards?

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Supplementary Examinations March 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours   Max.Marks:60
Answer any five questions
All questions carry equal marks
- - --

1. a) Discuss about different generations of wireless networks?
   b) Explain channel measurement and modeling techniques.

2. a) What is spread spectrum? Explain about high-speed modems supporting spread spectrum technology.
   b) Give an overview and comparison of modulation schemes.

3. Explain about wireless medium access methods for voice and data-oriented networks.

4. a) What is Signal to noise Ratio? How is it calculated in wireless network?
   b) Explain about network planning for CDMA systems.

5. Write short notes on the following:
a) Mobility management
b) Power management in wireless networks.

6. a) Write about WAE Model.
   b) Explain about WAP Architecture and protocol stack.

7. a) What is Picoret? Explain Blue tooth principle of operation?
   b) List and explain functions of various layers, protocols in Bluetooth stack.

8. a) List the applications and types of WCANs?
   b) Write short notes on IEEE 802.11.