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 2018 - 2020)

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.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
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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.

I Year I Semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/ P/ D	C	MAX MARKS	
						INT	EXT
1	R18D5801	Data Structures and Algorithms	3	-	3	30	70
2	R18D5802	Advanced Operating Systems	3	-	3	30	70
3	R18D5803	Computer System Design	3	-	3	30	70
4	R18D5807 R18D5808 R18D5809	ELECTIVE-I 1. Software Process and Project Management 2. Machine Learning 3. Wireless Sensor Networks	3	-	3	30	70
5	R18D5810 R18D5811 R18D5812	ELECTIVE-II 1. Distributed Systems 2. Software Architecture and Design Patterns 3. Data Science	3	-	3	30	70
6	OE I	OPEN ELECTIVE –I	3	-	3	30	70
7	R18D5881	Advanced Data Structures and Algorithms Lab	-	3	2	30	70
8	R18DHS54	Audit Course I - Value Education	2	-	-	50	-
Total			20	3	20	260	490

***Audit course: Non-credit course, 50% of scoring is required for the award of the degree**

OPEN ELECTIVE I	
Subject Code	Subject Name
R18DME51	Non-Conventional Energy Sources
R18DME52	Industrial Safety
R18DME53	Operations Research
R18DHS51	Business Analytics
R18DCS51	Scripting Languages
R18DAE51	Mathematical Modeling Techniques
R18DEC51	Embedded Systems Programming

I Year II Semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R18D5804	Network Programming	3	-	3	30	70
2	R18D5805	Advanced Databases	3	-	3	30	70
3	R18D5806	Internet Technologies and Services	3	-	3	30	70
4	R18D5813 R18D5814 R18D5815	ELECTIVE – III 1. Data Mining 2. Secure Software Design & Enterprise Computing 3. Computer Vision	3	-	3	30	70
5	R18D5816 R18D5817 R18D5818	ELECTIVE- IV 1. Human and Computer Interaction 2. Digital Forensics 3. Big Data Analytics	3	-	3	30	70
6	OE II	OPEN ELECTIVE- II	3	-	3	30	70
7	R18D5882	Internet Technologies and Services Lab	-	3	2	30	70
8	R18DHS55	Audit Course II - English for Research Paper Writing	2	-	-	50	
Total			20	3	20	260	490

***Audit course: Non-credit course, 50% of scoring is required for the award of the degree**

OPEN ELECTIVE II	
Subject Code	Subject Name
R18DME54	Composite Materials
R18DME55	Waste to Energy
R18DME56	Industrial Management
R18DHS52	Cost Management of Engineering Projects
R18DCS52	Information Security
R18DAE52	Unmanned Aerial Vehicles
R18DEC52	Research Methodology

II Year I Semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R18D5883	Seminar I	-	-	2	50	-
2	R18D5891	Mini Project	-	-	4	100	-
3	R18D5892	Project Review I	-	-	8	100	-
Total			-	-	14	250	-

II Year II Semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R18D5884	Seminar II	-	-	2	50	-
2	R18D5893	Project Review II	-	-	8	100	-
3	R18D5894	Project Viva-voce	-	-	8	-	100
Total			-	-	18	150	100

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

(R18D5801) 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.

COURSE COVERAGE
DATA STRUCTURES AND ALGORITHMS

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Advance d 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: R18D5801 **R18**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech I-Year - I Semester Supplementary Examinations, June 2019

Data Structures and Algorithms

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

****

SECTION-I

1	lo you find the complexity of algorithm? What is the relation between the time and space complexities of an algorithm? Justify your answer with an example?	**[14M]**
	OR	
2	ıat is sparse matrix? How it can be represented give one example?	**[7M]**
	at is singly linked list? How insertion and deletion operations are performed?	**[7M]**

SECTION-II

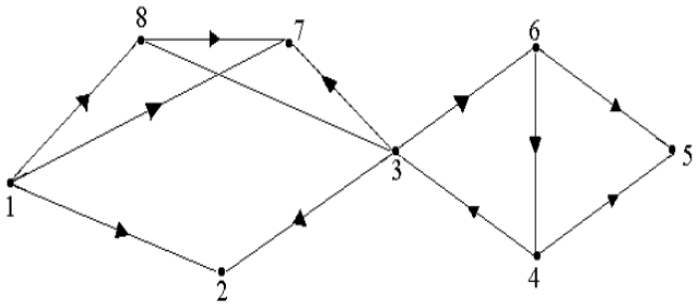
3	ne max tree, max heap and min heap with suitable examples?	**[7M]**
	w the result of inserting 10, 12, 1, 14, 6, 5, 8, 15, 3 and 9 one at a time into an initially empty min heap?	**[7M]**
	OR	
4	Define Circular Queue. What are the advantages for Circular Queue over ordinary Queue? Explain all the operations of Circular Queue with diagrammatical representation?	**[14M]**

SECTION-III

5	What is collision in hashing? Explain various collision resolution techniques along with their advantages and disadvantages using suitable example?	**[14M]**
	OR	
6	Write the status of the list (12, 2, 16, 30, 8, 28, 4, 10, 20, 6 and 8) at the end of each phase of Heap sort. Analyze the Heap sort?	**[14M]**

SECTION-IV

7	a) Construct a Binary Tree for the following sequence of nodes in pre-order and in-order respectively PREORDER: 20, 15, 10, 18, 17, 30, 25, 40, 35, 38, 50 INORDER : 10, 15, 17, 18, 20, 25, 30, 35, 38, 40, 50	**[7M]**
	b) Explain about the recursive and Non-recursive traversals?	**[7M]**
	OR	
8	Show the result of BFS and DFS on the directed graph given below using vertex 3 as source. Show the status of the data structure used at each stage	**[14M]**



SECTION-V

9	a) What are the different rotations used to insert an element into AVL Tree?	**[7M]**
	b) Show result of inserting 2, 1, 4, 5, 9, 3, 6 and 7 into an empty AVL tree?	**[7M]**
	OR	
10	a) Define B-Tree? Write about insert and searching operations on B-Trees with examples?	**[7M]**
	b) Write short notes on pattern matching-KMP algorithm?	**[7M]**

Code No: R15D5801-151 **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

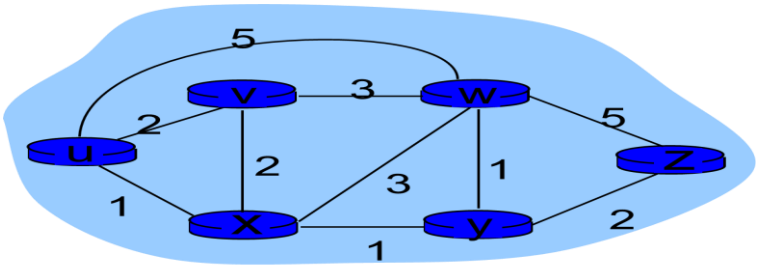
5. write a program to sort the elements using Quick sort 15M

(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

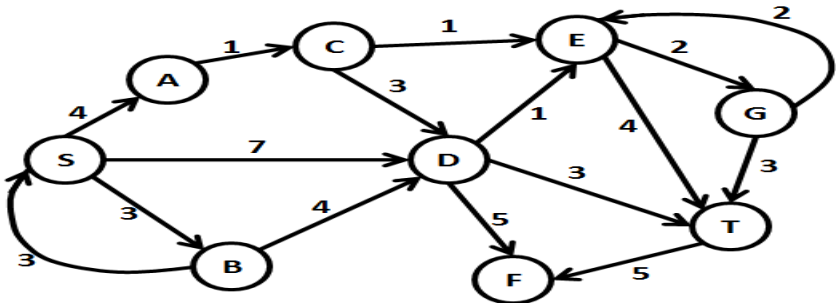
SECTION – IV

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 $h(k) = k \bmod 10$ and linear probing. What is the resultant hash table? 7M

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

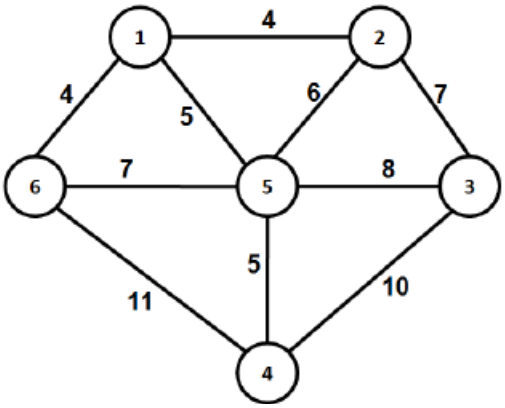
(Or)

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.

Code: 9D58101

M.Tech - I Semester Supplementary Examinations, November 2012

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) Write any four applications of a queue justify your answer.

(b) Write an algorithm to evaluate postfix expression using stack. Explain how priorities of the operators are taken care of during the process of conversion of infix to postfix form.

2 (a) Define an AVL tree. Construct a height balanced tree or the following list of elements 4, 6, 12, 8, 4, 2, 15, 7, 3.

(b) Write an algorithm to insert and delete a node in a binary-search tree.

3 (a) Differentiate polynomial and exponential algorithms.

(b) Explain the best case, worst-case, average case complexities using asymptotic notation illustrate.

4 (a) Differentiate BFs and DFs. Write an algorithm for the BFs graph traversal with an example.

(b) Construct a tree from the given preorder traversal preorder * - + EAB + CD

5 (a) Illustrate red-black trees with examples.

(b) Explain hashing techniques. Differentiate hashing and indexing.

6 (a) Explain the Dijksha's algorithm for single source shortest path problem using an example.

(b) Prove that any weighted connected graph with distinct weights has exactly one minimum spanning tree.

7 With a numerical example, explain dynamic:

(a) Programming scheme that can be adopted in solving O/I knapsack problem.

(b) Define merging and purging rule of the above problem and write the O/I knapsack algorithm.

8 (a) Differentiate between dynamic knapsack and branch and bound knapsack problem.

(b) How branch-and-bound methods is efficient in implementation than dynamic programming?

*****

Model Question Paper

for ADVANCED DATA STRUCTURES AND ALGORITHMS

Time: 3 hours **Max Marks: 60**

Answer any FIVE Questions. All Questions carry equal marks
All parts of the questions must be answered in one place only

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1		Consider the following arithmetic p, written in postfix notation. P: 12, 7, 3, -, /, 2, 1, 5, +, *, +. Evaluate it in Infix Expression.	12M
2	a)	Which of the given options provides the increasing order of asymptotic complexity of the functions: f_1, f_2, f_3 and f_4? $f_1(n)=2^n$ $f_2(n)=n^{3/2}$ $f_3(n)=n\ log_2 n$ $f4(n)=n^{log_2 n}$	6M
	b)	What does the following recurrence relation evaluates to? T(0)=1, T(n)=T(n-1)+3^n	6M
3	a)	A complete *n* array tree is a tree in which each node has *n* children or no children. Let *I* be the number of internal nodes and *L* be the number of leaves in a complete *n* array tree. If *L*=41 and *I*=10, then what is the value of *n*?	4M
	b)	What is the total number of distinct binary trees with 'n' nodes? Draw all the distinct binary trees with '5' nodes.	4M
	c)	How many vertices and how many edges are there in complete bipartite graphs $K_{4,7}$ and $K_{7,11}$? If the graph $K_{r,12}$ has 72 edges, what is r?	4M
4	a)	A binary search tree is generated by inserting in order of the integers: 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24. What is the total number of nodes in the left sub-tree and the right sub-tree?	4M
	b)	What is the maximum height of any AVL tree with 7 nodes? Assume that the height of a tree with a single node is 0.	4M
	c)	The following numbers are inserted into an empty binary search tree in the given order one by one: 15, 32, 20, 9, 3, 25, 12, 1. i. Show the final binary search tree after the insertions. ii. Draw the binary search tree after deleting 15 from it.	4M
5	a)	What is a red black tree? Explain, in detail, its operations and applications.	6M
	b)	Insert the characteristics of the string: K R P C S N Y T J M into a hash table of size 10. Use the hand function: h(x) = (ord(x) – ord('a')+1) mod 10 and linear probing to resolve collisions. i. Which insertions cause collisions? ii. Obtain the final hash table.	6M
6	a)	Write a short notes on KNAPSACK PROBLEM.	4M
	b)	Consider the following instances of the Knapsack problem: n=3, m=20, (p_1,p_2,p_3)=(25,24,15) and (w_1,w_2,w_3)=(18,15,10). Find optimal solution.	8M

7 a) What is the average successful search time taken by binary search on a sorted array of 10 data items? 4M

b) Consider a complete undirected graph with vertex set {0, 1, 2, 3, 4}. Entry W_{ij} in the matrix W below is the weight of the edge $\{i, j\}$. 8M

$$W = \begin{bmatrix} 0 & 1 & 8 & 1 & 4 \\ 1 & 0 & 12 & 4 & 9 \\ 8 & 12 & 0 & 7 & 3 \\ 1 & 4 & 7 & 0 & 2 \\ 4 & 9 & 3 & 2 & 0 \end{bmatrix}$$

i. What is the minimum possible weight of a spanning tree T in this graph such that vertex 0 is a leaf node in the tree T?

ii. What is the minimum possible weight of a path P from vertex 1 to vertex 2 in this graph such that P contains at most 3 edges?

8 a) Prove that if G is a connected undirected graph with n vertices and n-1 edges, there is a tree. 6M

b) Explain and describe n-queens problem. 6M

Code: 9D58101

M.TECH - I Semester Regular and Supplementary Examinations, April/May 2012

ADVANCED DATA STRUCTURES AND 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) Write a procedure to evaluate postfix expression and explain it with an example.
(b) Write a procedure to insert an element into a queue using linked list.

2 (a) Explain with an example, the space complexity of algorithms.
(b) Write short notes on asymptotic notations.

3 (a) Give brief description about the threaded binary trees.
(b) Write the recursive algorithms for the various tree traversal techniques.

4 What re the draw backs of binary search trees? Explain the L-R and R-R rotations of an AVL tree.

5 (a) Write algorithms for insertion and deletion operations on splay trees.
(b) Write short notes on red black trees.

6 (a) Give brief description about the Strassen's matrix multiplication.
(b) Explain the minimum cost spanning trees by using prim's algorithm.

7 (a) Explain the method to solve a 0/1 knapsack problem using dynamic programming technique.
(b) Give brief description about the reliability design.

8 (a) Write about the general method of back tracking technique.
(b) Write the control abstraction for branch and bound.

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MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.TECH – I YEAR – I SEM(COMPUTER SCIENCE & ENGG.)

(R18D5802) 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.

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: R15D5802-151 **R15**

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?
   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.
   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?
   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

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(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?
   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?
   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?
   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
   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
   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?

M. TECH. COMPUTER SCIENCE ENGINEERING-R13 Regulations

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.

R09

Code No: C5510

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY 2012
ADVANCED OPERATING SYSTEMS
(EMBEDDED SYSTEMS)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

1.a) Explain the objectives of an Operating System.
b) What is meant by Memory Hierarchy?

2.a) What is Filter? Mention any five filters in UNIX and write about any two.
b) Differentiate-Shell and Kernel. Mention and brief the various features of Shell Programming.

3.a) What is a System call? Give its classification. Write about the system calls for Process creation & termination.
b) Compare and contrast IPC mechanisms – FIFOs & Message Queues.

4. With a neat sketch write about Remote procedure call (RPC) mechanism.

5.a) Elaborate the Lamport's Logical Clock Concept giving its merits and demerits.
b) Write about Bully algorithm.

6. Compare and contrast the various algorithms for distributed deadlock detection.

7. Mention and brief the various design issues of Distributed Systems.

8. Write short notes:
a) ATM Networks
b) Atomic Transactions.

NR

Code No: A0608

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY-2012
ADVANCED OPERATING SYSTEMS
(DIGITAL SYSTEMS & COMPUTER ELECTRONICS)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

\- - -

1. Explain briefly the significance of a UNIX file, and the relation it has to a process. Why do UNIX systems predominantly use text files?

2.a) What is meant by recursive behaviour of a command? Name four commands, along with suitable example of each that can operate recursively.
b) What is the significance of these commands:
i) mv $HOME/include.
ii) cp – r bar 1 bar 2
iii) mv *,, / bin

3.a) Explain FIFOS in terms of creation, usage.
b) Explain the rules followed by FIFO'S for reading and writing.
c) Explain the significance of O – NDE LAY flag with respect to FIFO reading and writing.

4.a) Explain in detail the system calls: Fork and Wait.
b) Explain which of these process attributes change with a fork and exec:
i) PID ii) PPID iii) Kernel I /O buffers
iv) Pending signals mask.

5. Draw the diagram of a local area network for a typical university campus that houses three different departments on these different floors. Include hosts, repeaters, bridges, routers and gateways. Indicate what equipment (token ring, Ethernet etc) is being used at the physical layer.

6. What are the types of operating systems you have worked with so for and enumerate the advantages and disadvantages of each one of them.

7. Linux runs on a variety of plat forms. What steps must the Linux developers take to excuse that the system is portable to different processors and memory management architectures.

8.a) Explain the Linux porc file system.
b) Explain the input and output devices as per the Linux classipeat of
a) Block devices b) Characteristics devices c) Network devices

****

MODEL PAPER

ADVANCED OPERATING SYSTEM

1. Answer the following
(a) Trap and interrupts
(b) Sockets
(c) Location Transparency
(d) Mutual exclusion
(e) SONET
(f) RUTEX
(g) NFS

2. (a) What is distributed system? Explain with examples.
(b) Narrate the advantages and disadvantages of distributed and centralized systems.

3. (a) Why Omega Network is better than network with cross bar switching.
(b) How hyper cube topology can be extended?

4. (a) Explain ATM reference model.
(b) Write about ATM Switching.

5. Explain Message-passing primitives in client-sever model.

6. (a) Describe RPC operation.
(b) Briefly explain ISIS group communication system.

7. (a) What are logical and physical clocks?
(b) How a distributed algorithm works for mutual exclusion?

8. What are design issues for processor allocation algorithms?

Reg. No. :

Question Paper Code : 31106

M.E./M.Tech. DEGREE EXAMINATION, JUNE 2011.

Common to M.E. – Computer Science and Engineering/M.E. Mobile and Pervasive Computing

Second Semester

241205 — ADVANCED OPERATING SYSTEMS

(Regulation 2010)

Time : Three hours Maximum : 100 marks

Answer All questions.

PART A — (10 × 2 = 20 marks)

1. Mention the functions of operating systems.

2. Why does the interrupt disable method to achieve mutual exclusion not work for multiprocessor systems?

3. State the purpose of control site in completely centralised deadlock detection.

4. How does Lamport's algorithm guarantee mutual exclusion?

5. Sender-initiated algorithms cause system instability at high system loads. Predict analytically at what system load the instability will occur. Assume probe limit is 3, average service requirement of a task is 1 sec, overhead incurred by a processor to poll or to reply to a poll is 2 msec.

6. Why is mapping function required in the central server algorithm?

7. Differentiate between forward-error and backward-error recovery.

8. Define global atomicity. Give an example.

9. List out the issues in preprocessor scheduling that causes performance degradation in multiprocessor systems.

10. Write the difference between tightly coupled system and loosely coupled system with an example.

NR

Code No: A0608

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I Semester Regular Examinations March 2010

ADVANCED OPERATING SYSTEMS

(COMMON TO DIGITAL ELECTRONICS & COMMUNICATION SYSTEMS, DIGITAL SYSTEMS & COMPUTER ELECTRONICS)

Time: 3hours **Max.Marks:60**

Answer any five questions

All questions carry equal marks

- - -

1. What is an operating system? What are the functions performed by it? Classify various operating systems.

2. Explain about system kernel of UNIX operating system. What are file permissions? Explain.

3. What is a filter in UNIX O.S? What are different filters? Explain each one with their formats.

4. What system calls are related to file structures? Explain about input and output system calls.

5. Explain about basic client - server IPC in UNIX system. What are message queues and semaphores?

6. Explain clearly about TCP/IP internet protocols.

7. What are various types of editors in LINUX system? Explain clearly each one.

8. Explain clearly about LINUX file system and file management.

****

R09

Code No: C5510

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
ADVANCED OPERATING SYSTEMS
(EMBEDDED SYSTEMS)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

\- - -

1. a) Explain about Computer Instruction Cycle with Interrupt.
   b) Explain various I/O Communication Techniques with examples. [12]

2. Explain the following filters:
   a) wc
   b) egrep
   c) fgrep
   d) tr & dd. [12]

3. a) Write an algorithm for creating a file.
   b) How to create a new process in UNIX? Write an algorithm for fork ( ) system call. [12]

4. Explain the following:
   a) Message queues
   b) Semaphores
   c) Shared memory. [12]

5. a) Explain about Multiprocessor Time sharing systems.
   b) Describe about Network Operating System. [12]

6. Explain the working of Remote Procedure Call using a stack. [12]

7. What is Mutual Exclusion? Explain Token ring algorithm to achieve Mutual Exclusion. [12]

8. What is an Atomic Transaction? Explain various Concurrency Control mechanisms. [12]

R09

Code No: C5510

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY 2012
ADVANCED OPERATING SYSTEMS
(EMBEDDED SYSTEMS)

Time: 3hours Max.Marks:60

Answer any five questions
All questions carry equal marks

\- - -

1.a) Explain the objectives of an Operating System.
b) What is meant by Memory Hierarchy?

2.a) What is Filter? Mention any five filters in UNIX and write about any two.
b) Differentiate-Shell and Kernel. Mention and brief the various features of Shell Programming.

3.a) What is a System call? Give its classification. Write about the system calls for Process creation & termination.
b) Compare and contrast IPC mechanisms – FIFOs & Message Queues.

4. With a neat sketch write about Remote procedure call (RPC) mechanism.

5.a) Elaborate the Lamport's Logical Clock Concept giving its merits and demerits.
b) Write about Bully algorithm.

6. Compare and contrast the various algorithms for distributed deadlock detection.

7. Mention and brief the various design issues of Distributed Systems.

8. Write short notes:
a) ATM Networks
b) Atomic Transactions.

(R18D5803) 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

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: R18D5803

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech I-Year - I Semester Supplementary Examinations, June 2019

Computer System Design

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

****

SECTION-I

Q. No. 1 a) Analyze the SIMD instructions and I/O operations with illustration. [8M]
b) Discuss interrupt and interrupt handlers with suitable example? [6M]

OR

Q. No. 2 a) Describe hardware, software and system software with their applications? [6M]
b)Explain IA -32 Pentium: registers and addressing with illustrations?.[8M]

SECTION-II

Q. No. 3 a) Define an instruction and explain the complete instruction execution. [9M]
b)What are the types of hazards and explain with example? [5M]

OR

Q. No. 4 a).Distinguish multiple bus organization and hardwired control [6M]
b)Describe data hazards, instruction hazards and micro programmed control. [8M]

SECTION-III

Q. No. 5 a)Interpret about replacement policies with illustrations. [8M]
b)Demonstrate about model level organization of memory? [6M]

OR

Q. No.6 a)Correlate Paging and swapping in detailed manner? [7M]
b)Define and explain mapping, virtual memory and swapping. [7M]

SECTION-IV

Q. No. 7a)Distinguish between processes and threads? [7M]
b Define and discuss various characteristics of deadlock? [7M]

OR

Q. No. 8 a)Explain Inter process communication problems with examples? [7M]
b)Define and describe Deadlocks with example? [7M]

SECTION-V

Q. No. 9 a). Describe accident data loss and basics of cryptography? [7M]
b) Describe Files, directories in computer system design. [7M]

OR

Q. No. 10 a)Explain user authentication, Files, directories and Implementation [7M]
b)Interpret about threats, intruders and accident data loss? [7M]

Code No: R15D5803-151-S

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

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

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.

R09

Code No: C0502, C5802, C4002

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY- 2012
COMPUTER SYSTEM DESIGN
(COMMON TO COMPUTER SCIENCE, COMPUTER SCIENCE AND ENGINEERING, INFORMATION TECHNOLOGY)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

- - -

1.a) Write the three differences between Von-newmann architecture and Harvard architecture.
b) Explain the data transfer procedure handled in DMA.

2.a) Differentiate between the micro program control unit and hardwired control unit.
b) Briefly describe how instruction level parallelism takes place using pipelining technique with examples.

3.a) Illustrate the LRU page replacement policy with example.
b) Describe the direct mapping method in cache memory organization.

4.a) Define process and thread. Write the structure and usage of process control block.
b) Explain the deadlock detection algorithm.

5.a) Describe the structure of files in Unix operating systems.
b) Distinguish between the threats and intruders.

6.a) List the arithmetic and logic instructions and its function in Pentium architectures.
b) What are data hazards? Explain any two types of data hazards with examples.

7.a) Explain the concepts of virtual memory.
b) Describe the inter process communication using semaphores.

8. Write short notes on:
a) Interrupt service routines
b) CISC and RISC processors.

Code: 9D58103

M.Tech - I Semester Regular & Supplementary Examinations, April/May 2013

COMPUTER SYSTEM DESIGN

(Common to CSE and CS)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions

All questions carry equal marks

*****

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.

*****

R09

Code No: D109115802

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Regular Examinations March 2010
COMPUTER SYSTEM DESIGN
(COMMON TO COMPUTER SCIENCE& ENGINEERING, COMPUTER SCIENCE, INFORMATION TECHNOLOGY)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

1.a) What is meant by performance of a machine? Give a reasonable metric for it.
b) Explain various Interface Circuits with examples.

2.a) Compare and contrast Hardwired control and Microprogrammed control.
b) Explain about Address Sequencing capabilities in Microprogrammed control unit.

3. Explain various Data Hazards with necessary examples.

4. Illustrate Associative mapping and Set Associative mapping mechanisms in Cache memory.

5. Explain Paging mechanism using Multilevel Page Table.

6. What is a Semaphore? How the Producer Consumer Problem does solved using semaphores?

7. What is a Dead Lock? Explain Banker's algorithm with a numerical example.

8. What is a Directory? Explain the Hierarchical directory systems and Directory operations.

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

(R18D5807) SOFTWARE PROCESS AND PROJECT MANAGEMENT
(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.

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: R15D5804-151-S

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R15

(Autonomous Institution – UGC, Govt. of India)

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

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 **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.

NR

Code No: B5810

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, October/November 2011
SOFTWARE PROJECT MANAGEMENT
(COMPUTER SCIENCE AND ENGINEERING)

Time: 3hours Max. Marks: 60

Answer any five questions
All questions carry equal marks

---

1. What is conventional software management? Explain the principles of it in detail. [12]

2. Explain the significance of automation in software development. How would you improve automation? [12]

3. Explain the activities in various phases of software life cycle. [12]

4. What is an Engineering artifact? Explain about various engineering artifacts in detail. [12]

5. What is a process checkpoint? Explain about various checkpoints in detail. [12]

6. Elaborate on line –of – business organizations in detail. [12]

7. Explain about tailoring the process in detail. [12]

8. Write short notes on the following.
   (a) Water fall model
   (b) Project environment
   (c) Pragmatic planning. [4+4+4]

Code: 9D25106b

M. Tech I Semester Regular & Supplementary Examinations, April/May 2013

SOFTWARE PROJECT MANAGEMENT

(Software Engineering)

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.

*****

Code No: B5810 **NR**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, October/November 2011
SOFTWARE PROJECT MANAGEMENT
(COMPUTER SCIENCE AND ENGINEERING)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

---

1. What is conventional software management? Explain the principles of it in detail. [12]

2. Explain the significance of automation in software development. How would you improve automation? [12]

3. Explain the activities in various phases of software life cycle. [12]

4. What is an Engineering artifact? Explain about various engineering artifacts in detail. [12]

5. What is a process checkpoint? Explain about various checkpoints in detail. [12]

6. Elaborate on line –of – business organizations in detail. [12]

7. Explain about tailoring the process in detail. [12]

8. Write short notes on the following.
   (a) Water fall model
   (b) Project environment
   (c) Pragmatic planning. [4+4+4]

Jawaharlal Nehru Technological University Hyderabad

M. Tech I-Semester Supplementary Examinations September-2009

SOFTWARE PROCESS AND PROJECT MANAGEMENT

Time : 3 Hours Max. Marks: 60

Answer Any Five Questions

All Questions Carry Equal Marks

1.a) What are the six basic principles of software process change? Explain.

b) Briefly explain Assessment process in software process Assessment.

2. Write notes on configuration Management Process.

3.a) What are the benefits of SQA?

b) What are the responsibilities of SQA?

c) Write short notes on SQA reporting.

4.a) What are the basic objectives of software Inspections?

b) Write short notes on software tests.

5.a) What are the activities of risk management?

b) Write short notes on software life cycle models.

6. Write notes on project Tracking.

7.a) Briefly explain closure Analysis report.

b) Write short notes on modern process Transitions.

8. Explain briefly the following:

a) Quality Indicators

b) Issue Tracking

c) Reviews and Inspections.

AWAHARLAL NEHRU TECHNOLOGY UNIVERSITY, HYDERABAD

M.Tech. I Semester Regular Examinations, March – 2009

SOFTWARE PROCESS PROJECT MANAGEMENT

Time: 3 hours Max. Marks.60

Answer any Five questions

All questions carry equal marks

1.a) Explain process maturity levels with neat diagram.

b) Write short notes on software commitment process.

2.a) Explain maturity levels in CMM with a neat diagram

b) Write short notes on IDEAL.

3.a) What is the role of SQA?

b) What are the goals of SQA?

c) Write short notes on SQA functions.

4.a) What are the basic principles of soften are Inspection?

b) List the seven types of software tests and explain.

5. Write notes on risk assessment.

6. Explain principles of software defect prevention.

7.a) Explain the role of closure Analysis with a neat diagram.

b) Write short notes on modern project properties.

8. Explain briefly the following:

a) Seven care metrics

b) Status reports

c) Defect analysis.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.TECH – I YEAR – I SEM(COMPUTER SCIENCE & ENGG.)

(R18D5808) MACHINE LEARNING
(ELECTIVE –I)

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

M.TECH – I YEAR – I SEM
(R18D5809) WIRELESS SENSOR NETWORKS
(ELECTIVE –I)

COURSE OBJECTIVE

- Architect sensor networks for various application setups.
- Devise appropriate data dissemination protocols and model links cost.
- Understanding of the fundamental concepts of wireless sensor networks and have a basic
- knowledge of the various protocols at various layers.
- Evaluate the performance of sensor networks and identify bottlenecks.

UNIT I

FUNDAMENTALS OF SENSOR NETWORKS Introduction and Overview - Overview of sensor network protocols, architecture, and applications, Challenges, Main features of WSNs; Research issues and trends, Platforms-Standards and specifications-IEEE802.15.4/Zigbee, Hardware: Telosb, Micaz motes ,Software: Overview of Embedded operating systems-Tiny OS, Introduction to Simulation tools-TOSSIM, OPNET, Ns-2.

UNIT II

COMMUNICATION CHARACTERISTICS AND DEPLOYMENT MECHANISMS Wireless Communication characteristics - Link quality, fading effects, Shadowing, Localization, Connectivity and Topology - Sensor deployment mechanisms, Coverage issues, Node discovery protocols.

UNIT III

MAC LAYER Fundamentals of Medium access protocol- Medium access layer protocols - Energy efficiency, Power allocation and Medium access control issues.

UNIT IV NETWORK LAYER AND TRANSPORT LAYER Network layer protocols-Data dissemination and processing, multichip and cluster based routing protocols- Energy efficient routing- Geographic routing, Transport layer- Transport protocol Design issues- Performance of Transport Control Protocols.

UNIT V

MIDDLEWARE AND SECURITY ISSUES Middleware and Application layer -Data dissemination, Data storage, Query processing, Security -Privacy issues, Attacks and Countermeasures

TEXT BOOKS:

1. W. Dargie and C. Poellabauer, “Fundamentals of Wireless Sensor Networks –Theory and Practice”, Wiley 2010

2. Kazem Sohraby, Daniel manoli , “Wireless Sensor networks- Technology, Protocols and Applications”, Wiley InterScience Publications 2010.

REFERENCE BOOKS:

1. Bhaskar Krishnamachari , “ Networking Wireless Sensors”, Cambridge University Press, 2005. 4. C.S Raghavendra, Krishna M.Sivalingam, Taieb znati , “Wireless Sensor Networks”, Springer Science 2004.,

2. Takahiro Hara,Vladimir I. Zadorozhny, and Erik Buchmann, “Wireless Sensor Network Technologies for the Information Explosion Era”, springer 2010

M.TECH – I YEAR – I SEM
(R18D5810) DISTRIBUTED SYSTEMS
(ELECTIVE –II)

COURSE OBJECTIVE

To introduce the fundamental concepts and issues of managing large volume of shared data in a parallel and distributed environment, and to provide insight into related research problems.

UNIT 1:

INTRODUCTION

Data Fragmentation; Replication; and allocation techniques for DDBMS; Methods for designing and implementing DDBMS, designing a distributed relational database; Architectures for DDBMS: cluster federated, parallel databases and client server architecture.

UNIT 2:

DISTRIBUTED DATABASE DESIGN

Alternative design strategies; Distributed design issues; Fragmentation; Data allocation

SEMANTICS DATA CONTROL

View management; Data security; Semantic Integrity Control

QUERY PROCESSING ISSUES

Objectives of query processing; Characterization of query processors; Layers of query processing; Query decomposition; Localization of distributed data

UNIT 3:

DISTRIBUTED QUERY OPTIMIZATION

Factors governing query optimization; Centralized query optimization; Ordering of fragment queries; Distributed query optimization algorithms

TRANSACTION MANAGEMENT

The transaction concept; Goals of transaction management; Characteristics of transactions; Taxonomy of transaction models

CONCURRENCY CONTROL

Concurrency control in centralized database systems; Concurrency control in DDBSs; Distributed concurrency control algorithms; Deadlock management

UNIT 4:

RELIABILITY

Reliability issues in DDBSs; Types of failures; Reliability techniques; Commit protocols; Recovery protocols

Unit 5:

PARALLEL DATABASE SYSTEMS

Parallel architectures; parallel query processing and optimization; load balancing,

Mobile Databases, Distributed Object Management, Multi-databases,Spatial Database and Web Databases.

TEXT BOOKS:

1.Distributed Databases - Principles and Systems; Stefano Ceri; Guiseppe Pelagatti;TMH
2.Fundamental of Database Systems; Elmasri & Navathe; Pearson Education,Asia
3.Database System Concepts; Korth & Sudarshan; TMH

REFERENCE BOOKS:

1.Principles of Distributed Database Systems; M. Tamer Özsu; and Patrick Valduriez Prentice Hall
2.Data Base Management System; Leon & Leon; Vikas Publications
3.Introduction to Database Systems; Bipin C Desai; Galgotia
4. Distributed Database Systems, D. Bell and J. Grimson, Addison-Wesley, 1992.

M.TECH – I YEAR – I SEM
(R18D5811) SOFTWARE ARCHITECTURE AND DESIGN PATTERNS
(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.

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

R18

Code No: R18D5811

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech I-Year - I Semester Supplementary Examinations, June 2019

Software Architecture and Design Patterns

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 ו different types of architectural styles by achieving qualities. [14M]

OR

2 ו about architecture business cycles in detail. [14M]

SECTION-II

3 ו the process of moving software project from one architecture to another. [14M]

OR

4 Describe about the building systems with the help of shelf components. [14M]

SECTION-III

5 about different design patterns by giving suitable pattern prototype. [14M]

OR

6 are the different features and attributes of pattern? Explain. [14M]

SECTION-IV

7 about different attributes that influence the behavior of pattern. [14M]

OR

8 s about any two behavior patterns in detail. [14M]

SECTION-V

9 interoperability with respective to WWW. [14M]

OR

10 utilization of architectural structures. [14M]

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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.

R09

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

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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.

Code: 9D58206c

M.Tech II Semester Supplementary Examinations, April 2013

DESIGN PATTERNS

(Common to CSE & CS)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions.

All questions carry equal marks.

*****

1 (a) What are class and object diagrams? Explain their role in design of an application.
(b) List and explain the operations of iterator.
(c) What is a constructor? Write the constructor for listiterator.

2 (a) Explain how to find the appropriate objects for design patterns.
(b) Distinguish between inheritance and composition.

3 (a) How can we define the document? What are its advantages? Explain the lexi's document structure in detail.
(b) What is monoglyph? Explain it in detail.

4 (a) What are the consequences of builder pattern? List and explain the implementation issues of a builder.
(b) List and explain the benefits of prototype pattern.
(c) Draw and explain the structure of singleton pattern.

5 (a) What are the motivational factors for composite pattern? Explain.
(b) Explain the advantages and liabilities of decorator pattern.
(c) Who are participants in adapter pattern? Explain them in detail.

6 (a) Explain the importance of behavioral patterns in design of patterns.
(b) Draw and explain the B Tree structure for font information.

7 (a) Explain in detail about the state pattern.
(b) What are the different methods that are called by the template pattern? Explain them in detail.

8 (a) Explain the role of collaborations in visitor pattern.
(b) Write short notes on decoupling senders and receivers.

M.Tech II Semester Supplementary Examinations, April 2013

DESIGN PATTERNS

(Common to CSE & CS)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions.

All questions carry equal marks.

*****

1 (a) What are class and object diagrams? Explain their role in design of an application.
(b) List and explain the operations of iterator.
(c) What is a constructor? Write the constructor for listiterator.

2 (a) Explain how to find the appropriate objects for design patterns.
(b) Distinguish between inheritance and composition.

3 (a) How can we define the document? What are its advantages? Explain the lexi's document structure in detail.
(b) What is monoglyph? Explain it in detail.

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(b) What are the different methods that are called by the template pattern? Explain them in detail.

8 (a) Explain the role of collaborations in visitor pattern.
(b) Write short notes on decoupling senders and receivers.

*****

M.Tech - II Semester Supplementary April/May 2012 Examinations

(for students admitted in 2009- 10 & 2010-11 only)

SOFTWARE ARCHITECTURE

(Common to CSE, CS & CN)

Time: 3 hours **Max. Marks: 60**

Answer any FIVE Questions

All Questions carry equal marks

*****

1. What is architecture business cycle? Elaborate on it in detail.

2. (a) What are the advantages of interpreter's architecture style?
   (b) Explain with a neat diagram the interpreter's architecture style.

3. (a) Explain how a information will be shared in the architecture structures.
   (b) What is the flow of information and the flow of data shares by the software development environments?

4. Explain the architectural design guidance for world wide web.

5. What is a pattern? Explain briefly the architecture patterns in detail.

6. (a) What is meant by specification?
   (b) Explain how formal models and specifications help in the industry standard computing.

7. (a) Mention some of the architectural description languages (ADL).
   (b) What are the major applications of ADLs in system development?

8. (a) What makes software product lines difficult?
   (b) Explain the future of software architecture system.

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?

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

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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)?

Subject Code: B4004
M.Tech II Semester Supplementary Examinations June 2010
Design Patterns
(CSE-Information Technology)
Time: 3 Hours Max Marks: 60
Answer any FIVE questions All questions carry EQUAL marks

1. a). What is a Design Pattern? Briefly describe the describing of design patterns and catalogue of design patterns.
b). Describe "How to select a design pattern".
2. a). With a case study, describe the structure of a Document.
b). With an example, describe Embellishing the user interface.
3. What is Abstract Factory? What is the purpose of Abstract Factory? With example, describe in detail about Abstract Factory.
4. What is Structural Pattern? With an example, briefly describe Bridge, Composite and Decorator.
5. "Façade pattern hides the complexities of system from the client and provides a simpler interface", with sample code, justify the statement.
6. a). What is Behavioral pattern? What is principle of decoupling? With a simple example, briefly describe chain of responsibility.
b). Briefly describe Command and Interpreter patterns.
7. With code, describe in detail about Mediator, Momento and Observer patterns.

DESIGN PATTERNS JNTU previous years question papers

1. (a) Discuss about implementation issues in builder design pattern.
(b) Explain sample code of builder design pattern. [8+8]

2. (a) Explain the features of structural patterns in detail.
(b) Explain the motivation of adapter design pattern. [8+8]

3. (a) State the di erences between Traversal and Traversal actions.
(b) Explain visitor class and subclasses in detail. [8+8]

4. Explain with a neat diagram the Design Pattern relationships. [16]

5. (a) Explain the Known uses & related patterns of Visitor pattern.
(b) What is the structure & participants of Momento pattern? [8+8]

6. Explain the class design structure of an editor for music scores with suitable design pattern. [16]

7. (a) Explain the motivation of Iterator pattern.
(b) Explain the structure & participants of chain of Responsibility with one example. [8+8]

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.TECH – I YEAR – I SEM (COMPUTER SCIENCE & ENGG.)

(R18D5812)DATA SCIENCE

(ELECTIVE II)

COURSE OBJECTIVE

Provide you with the knowledge and expertise to become a proficient data scientist.

- Demonstrate an understanding of statistics and machine learning concepts that are vital for data science;
- Produce Python code to statistically analyze a dataset;
- Critically evaluate data visualizations based on their design and use for communicating stories from data;

UNIT 1:

Introduction to core concepts and technologies: Introduction, Terminology, data science process, data science toolkit, Types of data, Example applications.

UNIT 2:

Data collection and management: Introduction, Sources of data, Data collection and APIs, Exploring and fixing data, Data storage and management, Using multiple data sources

UNIT 3:

Data analysis: Introduction, Terminology and concepts, Introduction to statistics, Central tendencies and distributions, Variance,Distribution properties and arithmetic, Samples/CLT, Basic machine learning algorithms, Linear regression,SVM, Naive Bayes.

UNIT 4:

Data visualisation:Introduction, Types of data visualisation,Data for visualisation:Data types, Data encodings, Retinal variables, Mapping variables to encodings, Visual encodings.

UNIT 5:

Applications of Data Science,Technologies for visualisation, Bokeh (Python) Recent trends in various data collection and analysis techniques, various visualization techniques, application development methods of used in data science.

TEXT BOOKS:

1. Cathy O'Neil and Rachel Schutt. Doing Data Science, Straight Talk From The Frontline. O'Reilly.

REFERENCE BOOKS:

1. Jure Leskovek, Anand Rajaraman and Jeffrey Ullman. Mining of Massive Datasets. v2.1, Cambridge University Press.

M.TECH – I YEAR – I SEM
(R18DME51) 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.

M.TECH – I YEAR – I SEM
(R18DME52) INDUSTRIAL SAFETY
(OPEN ELECTIVE I)

Objectives:

- To explain the concept of various industrial safety methods.
- To outline division aspects measurements of safety performance .

UNIT-I :

Importance of Safety, health and environment. Health safety and environmental policy, fundamentals of safety, classification of accidents, Managements responsibility, objectives of safety management, National safety council, Employees state insurance act 1948, approaches to prevent accidents, principles of safety management, safety organization, safety auditing, maintenance of safety, measurements of safety performance, industrial noise and noise control, Industrial Psychology, Industrial accidents and prevention. Introduction to OSHAS 18001 AND OSHA.

UNIT II:

Process safety management (P.S.M) as per OSHA, legal aspects of safety, safety with respect to plant and machinery, the explosive act 1884, Petroleum act 1934, personal protective equipment, classification of hazards, protection of respiratory system, work permit system, hazards in refineries and process plants, safety in process plants, pollution in some typical process industry.

UNIT III:

Safe working practices, housekeeping, safe working environment, safety device and tools, precaution in use of ladders, safety instruction during crane operation, safety instruction for welding, burning and cutting and gas welding equipment, electrical safety, case studies, safety in use of electricity, electric shock phenomena, Occurrence of electric shock, medical analysis of electric shock and its effect, safety procedures in electric plants, installation of Earthing system,

UNIT IV:

Safety in hazardous area, hazard in industrial zones, classification of industrial Enclosures for gases and vapors. Mechanical, Chemical, Environmental and Radiation hazards, Machine guards and safety devices, slings, load limits, lifting tackles and lifting equipment, hydrostatic test, Chemical hazards, industrial toxicology, toxic chemicals and its harmful effects on humans, factors influencing the effect of toxic materials, Units of concentration, control measure, environmental hazards, devices for measuring radiation, safety analysis and risk analysis, risk management, First aid, Safety measures to avoid occupational diseases.

UNIT V

Factories act – 1948 Stuatutory authorities – inspecting staff, health, safety, provisions relating to hazardous processes,welfare, working hours, employment of young persons – special provisions – penalties and procedures- Indian Boiler Act 1923, static and mobile pressure vessel rules (SMPV), motor vehicle rules, mines act 1952, workman compensation act, rules – electricity act and rules

Text books :

1. Industrial safety management By: L.M. Deshmukh Publishers: Tata Megraw Hill ,New Delhi Year: 2006 Edition: First
2. The Factories Act 1948, Madras Book Agency, Chennai, 2000

References:

1. Industrial safety health and environment Management system By: R.K. Jain & Sunil S. Rao Publishers: Khanna Publishers Year: 2008 Edition: Second
2. The Indian boilers act 1923, Commercial Law Publishers (India) Pvt.Ltd., Allahabad.
3.”Accident prevention manual for industrial operations”, N.S.C.,Chicago, 1982.
4. Industrial Safety and Environment by Amit Gupta
5. “Safety in Industry” N.V. Krishnan JaicoPublishery House, 1996.

Outcome of course:

- Educate students about how to reduce work place hazards and to encourage the standard of Safety ,Health & Environment programme , so as to aim 0% accidents and 100% safety in different industries in which Industrial Safety plays an important role.

This has the blending mixture of both Learning and Skills.

M.TECH – I YEAR – I SEM
(R18DME53) OPERATIONS RESEARCH
(OPEN ELECTIVE I)

Objectives:

- To familiarize the students with the use of practice oriented mathematical applications for optimization functions in an organization.
- To familiarize the students with various tools of optimization, probability, statistics and simulation,
- To applicable in particular scenarios in industry for better management of various resources.

UNIT–I

Introduction: Development – Definition– Characteristics and Phases – Types of models – operation Research models– applications.

Allocation: Linear Programming Problem Formulation – Graphical solution – Simplex method – Artificial variables techniques -Two–phase method, Big-M method.

UNIT–II

Transportation Problem – Formulation – Optimal solution, unbalanced transportation problem – Degeneracy.Assignment problem – Formulation – Optimal solution - Variants of Assignment Problem-Traveling Salesman problem.

Sequencing – Introduction – Flow **–**Shop sequencing – n jobs through two machines – n jobs through three machines – Job shop sequencing – two jobs through 'm' machines.

UNIT–III

Replacement: Introduction – Replacement of items that deteriorate with time – when money value is not counted and counted – Replacement of items that fail completely, group replacement.

Theory of Games: Introduction – Minimax (maximin) – Criterion and optimal strategy – Solution of games with saddle points – Rectangular games without saddle points – 2 X 2 games – dominance principle – m X 2 & 2 X n games -graphical method.

UNIT–IV

Waiting Lines: Introduction – Single Channel – Poisson arrivals – exponential service times – with infinite population and finite population models– Multichannel – Poisson arrivals – exponential service times with infinite population single channel Poisson arrivals.

Inventory: Introduction – Single item – Deterministic models – Purchase inventory models with one price break and multiple price breaks – shortages are not allowed – Stochastic models – demand may be discrete variable or continuous variable – Instantaneous production. Instantaneous demand and continuous demand and no set up cost.

UNIT–V

Dynamic Programming: Introduction – Bellman's Principle of optimality – Applications of dynamic programming- capital budgeting problem – shortest path problem – linear programming problem.

Simulation: Definition – Types of simulation models – phases of simulation– applications of simulation – Inventory and Queuing problems – Advantages and Disadvantages – Simulation Languages.

TEXT BOOKS :

1. Operations Research / S.D.Sharma-Kedarnath
2. Introduction to O.R/Hiller &Libermann (TMH).
3. Introduction to O.R /Taha/PHI

REFERENCE BOOKS:

1. Operations Research /A.M.Natarajan,P.Balasubramani,A. Tamilarasi/Pearson . Education.
2. Operations Research / R.Pannerselvam,PHI Publications.
3. Operation Research /J.K.Sharma/MacMilan.

OUTCOMES:

- Student will be able to Illustrate the need to optimally utilize the resources in various types of industries.
- Apply and analyze mathematical optimization functions to various applications.
- Demonstrate cost effective strategies in various applications in industry.

6. Harvey M Wagner, Principles of Operations Research: Prentice Hall of India 2010

M.TECH – I YEAR – I SEM
(R18DHS51) BUSINESS ANALYTICS
(OPEN ELECTIVE I)

Learning Objective: To understand the importance of ever-increasing volume, variety and velocity of data in organization and application of data analytical tools for decision making.

Learning Outcome: Students will be able to understand a) Importance of Analytics b) Understanding the analytical tools c) Application of Analytical tools to solve business problems.

UNIT I:

Business Analytics

Overview of Business analytics, Scope of Business analytics, Business Analytics Process, Relationship of Business Analytics Process and organization, competitive advantages of Business Analytics, Statistical Tools: Statistical Notation, Descriptive Statistical methods, Review of probability distribution and data modelling, sampling and estimation methods overview

UNIT II:

Trendiness and Regression Analysis

Modelling Relationships and Trends in Data, simple Linear Regression, Important Resources, Business Analytics Personnel, Data and models for Business, analytics, problem solving, Visualizing and Exploring Data, Business Analytics, Technology.

UNIT III:

Organization Structures of Business analytics:

Team management, Management Issues, Designing Information Policy, Outsourcing, Ensuring Data Quality, Measuring contribution of Business analytics, Managing Changes, Descriptive Analytics, predictive analytics, predicative Modelling, Predictive analytics,analysis, Data Mining, Data Mining Methodologies, Prescriptive analytics and its step in the business analytics Process, Prescriptive Modelling, nonlinear Optimization.

UNIT IV:

Forecasting Techniques

Qualitative and Judgmental Forecasting, Statistical Forecasting Models, Forecasting Models for Stationary Time Series, Forecasting Models for Time Series with a Linear Trend, Forecasting Time Series with Seasonality, Regression Forecasting with Casual Variables, Selecting Appropriate Forecasting Models.

Monte Carlo Simulation and Risk Analysis: Monte Carle Simulation Using Analytic Solver Platform, New-Product Development Model, Newsvendor Model, Overbooking Model, Cash Budget Model.

UNIT V:

Decision Analysis

Formulating Decision Problems, Decision Strategies with the without Outcome Probabilities, Decision Trees, The Value of Information, Utility and Decision Making. Recent Trends in Embedded and collaborative business intelligence, Visual data recovery, Data Storytelling and Data journalism

TEXT BOOKS:

1. Business analytics Principles, Concepts, and Applications by Marc J. Schniederjans, Dara G.Schniederjans, Christopher M. Starkey, Pearson FT Press.
2. Business Analytics by James Evans, persons Education.

M.TECH – I YEAR – I SEM
(R18DCS51) 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.

R18

Code No: R18D5811

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech I-Year - I Semester Supplementary Examinations, June 2019

Software Architecture and Design Patterns

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 ɳ different types of architectural styles by achieving qualities. [14M]

OR

2 ɳ about architecture business cycles in detail. [14M]

SECTION-II

3 ɳ the process of moving software project from one architecture to another. [14M]

OR

4 Describe about the building systems with the help of shelf components. [14M]

SECTION-III

5 about different design patterns by giving suitable pattern prototype. [14M]

OR

6 are the different features and attributes of pattern? Explain. [14M]

SECTION-IV

7 about different attributes that influence the behavior of pattern. [14M]

OR

8 s about any two behavior patterns in detail. [14M]

SECTION-V

9 interoperability with respective to WWW. [14M]

OR

10 utilization of architectural structures. [14M]

****

Code No: R18DCS51

R18

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech I-Year - I Semester Supplementary Examinations, June 2019

Scripting Languages

(CSE)

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

****

SECTION-I

Q. No. 1 a) Explain in detail about subroutines. Describe at least two subroutines used in PERL? [8M]

b) Explain array, list and strings in PERL. [6M]

OR

Q. No. 2a)Describe how to use package and modules in PERL? [6M]

b) How to create hashes and manipulate hashes in PERL? [8M]

SECTION-II

Q. No. 3 a)Describe expressions in PHP and write a sample code on it. [6M]

b) Discuss about string interpolation in PHP with sample program? [8M]

OR

Q. No. 4 a) Write the way to output data to the browser in PHP? [8M]

b)Discuss in detail about creating internet aware applications? [6M]

SECTION-III

Q. No. 5 a)List out the statements that are used to connect PHP with MySQL? [6M]

b) Write a PHP program for simple calculator? [8M]

OR

Q. No.6a) Write a PHP program for shopping cart application by using cookies? [5M]

b)Explain segmentation and performance considerations of memory. [9M]

SECTION-IV

Q. No. 7 a) Explain events and its usage in TK with examples and list out fundamental concepts of TK? [8M]

b) Illustrate Nuts and Bolts of internet programming? [6M]

OR

Q. No. 8a) Discuss about variables and data types in TCL with suitable program? [8M]

b) Explain data structures and procedures in TCL. [6M]

SECTION-V

Q. No. 9 a) List out some built in function in Python? [9M]

b)Write a program to sort a data frame in Python in descending order? [5M]

OR

Q. No. 10 a) Explain modules in Python? [7M]

b).Explain the built in functions in python code? [7M]

Code No: R17DCS51

R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech I-Year - I Semester Supplementary Examinations, June 2019

Scripting Languages

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

****

SECTION-I

Q. No. 1 a) Explain in detail about subroutines. Describe at least two subroutines used in PERL? [8M]

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OR

Q. No. 2a) Describe how to use package and modules in PERL? [6M]

b) How to create hashes and manipulate hashes in PERL? [8M]

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SECTION-IV

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OR

Q. No. 8a) Discuss about variables and data types in TCL with suitable program? [8M]

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SECTION-V

Q. No. 9 a) List out some built in function in Python? [9M]

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OR

Q. No. 10 a) Explain modules in Python? [7M]

b).Explain the built in functions in python code? [7M]

M.TECH – I YEAR – I SEM
(R18DAE51) 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,

M.TECH – I YEAR – I SEM
(R18DEC51) 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

M.TECH – I YEAR – I SEM

(R18D5881) 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)

M.TECH – I YEAR – I SEM
(R18DHS54)VALUE EDUCATION
(AUDIT COURSE I)

UNIT I:

Values and self-development

Social values and individual attitudes, Work ethics, Indian vision of humanism, Moral and non-moral valuation. Standards and principles, Value judgements

UNIT II:

Importance of cultivation of values

Sense of duty, Devotion, Self-reliance, Confidence, Concentration, Truthfulness, Cleanliness, Honesty, Humanity. Power of faith, National Unity, Patriotism, Love for nature, Discipline

UNIT III:

Personality and Behavior Development

Soul and Scientific attitude, Positive Thinking, Integrity and discipline, Punctuality, Love and Kindness ,Avoid fault Thinking, Free from anger, Dignity of labour, Universal brotherhood and religious tolerance, True friendship, Happiness Vs suffering, love for truth, Aware of self-destructive habits, Association and Cooperation, Doing best for saving nature

UNIT IV:

Character and Competence

Holy books vs Blind faith, Self-management and Good health, Science of reincarnation, Equality, Nonviolence ,Humility, Role of Women, All religions and same message, Mind your Mind, Self-control, Honesty, Studying effectively

TEXT BOOKS:

1. Chakroborty, S.K. “Values and Ethics for organizations Theory and practice”, Oxford University Press, New Delhi

II- SEMESTER

M.TECH – I YEAR – II SEM
(R18D5804) 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

COURSE COVERAGE
NETWORK PROGRAMMING

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
Advance 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	----

Code No: 5158K **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, April-2015
ADVANCED NETWORK PROGRAMMING
(Computer Science Engineering)

Time: 3 Hours **Max. Marks: 60**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A

5 × 4 marks = 20

1.a) Write a short note on pattern matching commands in Linux.
b) What is a shell? Explain how one can change the environment of the working shell?
c) Differentiate between wait() and waitpid() system calls.
d) What is port number? Describe different types of port numbers.
e) Write a short note on InetAddress class.

PART - B

5 × 8 marks = 40

2. Explain various process and Networking utilities in Linux. [8]

OR

3. Write about the different looping and flow control statements available in Bourne shell. [8]

4. Write a short note on the following file and directory management system calls.
a)opendir(). b)readdir(). c)closedir(). d) telldir(). [8]

OR

5. Explain the significance of fork() and wait() system calls in the context of process management. [8]

6. What is a signal? Explain different signal handling mechanisms. [8]

OR

7. What is a message queue? Discuss various structures and APIs for message queues in Unix. [8]

8. Explain any two APIs associated with shared memory. [8]

OR

9. Explain the TCP connection establishment and termination with the help of a state transition diagram. [8]

10. Explain the various methods in TCP/IP server socket class. [8]

OR

11. Write a simple client - server application using java's Datagram sockets. [8]

MALLAREDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)
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 ?

M.TECH – I YEAR – II SEM
(R18D5805) 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.

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

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 redundency?

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.

M.TECH – I YEAR – II SEM
(R18D5806) 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.

M.TECH – I YEAR – II SEM
(R18D5813) DATA MINING
(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.

M.TECH – I YEAR – II SEM
(R18D5814)SECURE SOFTWARE DESIGN & ENTERPRISE COMPUTING
(ELECTIVE –III)

COURSE OBJECTIVE:

- To fix software flaws and bugs in various software.
- To make students aware of various issues like weak random number generation, information leakage, poor usability, and weak or no encryption on data traffic
- Techniques for successfully implementing and supporting network services on an enterprise scale and heterogeneous systems environment.
- Methodologies and tools to design and develop secure software containing minimum vulnerabilities and flaws.

UNIT 1:

Secure Software Design

Identify software vulnerabilities and perform software security analysis, Master security programming practices, Master fundamental software security design concepts, Perform security testing and quality assurance.

UNIT 2:

Enterprise Application Development Describe the nature and scope of enterprise software applications, Design distributed N-tier software application, Research technologies available for the presentation, business and data tiers of an enterprise software application, Design and build a database using an enterprise database system, Develop components at the different tiers in an enterprise system, Design and develop a multi-tier solution to a problem using technologies used in enterprise system, Present software solution.

UNIT 3:

Enterprise Systems Administration Design, implement and maintain a directory-based server infrastructure in a heterogeneous systems environment, Monitor server resource utilization for system reliability and availability, Install and administer network services (DNS/DHCP/Terminal Services/Clustering/Web/Email).

UNIT 4:

Obtain the ability to manage and troubleshoot a network running multiple services, Understand the requirements of an enterprise network and how to go about managing them.

UNIT 5:

Handle insecure exceptions and command/SQL injection, Defend web and mobile applications against attackers, software containing minimum vulnerabilities and flaws.

Case study of DNS server, DHCP configuration and SQL injection attack.

Text Books:

1. Theodor Richardson, Charles N Thies, Secure Software Design, Jones & Bartlett

2. Kenneth R. van Wyk, Mark G. Graff, Dan S. Peters, Diana L. Burley, Enterprise Software Security, Addison Wesley.

M.Tech – I Year – II Sem
(R18D5815)Computer Vision
(ELECTIVE –III)

COURSE OBJECTIVE

- Be familiar with both the theoretical and practical aspects of computing with images.
- Have described the foundation of image formation, measurement, and analysis.
- Understand the geometric relationships between 2D images and the 3D world.
- Grasp the principles of state-of-the-art deep neural networks.

UNIT 1:

Overview, computer imaging systems, lenses, Image formation and sensing,
Image analysis, pre-processing and Binary image analysis

UNIT 2:

Edge detection, Edge detection performance, Hough transform, corner detection

UNIT 3:

Segmentation, Morphological filtering, Fourier transform

UNIT 4:

Feature extraction, shape, histogram, color, spectral, texture, using CVIPtools,
Feature analysis, feature vectors, distance /similarity measures, data preprocessing

UNIT 5:

Pattern Analysis:
Clustering: K-Means, K-Medoids, Mixture of Gaussians
Classification: Discriminant Function, Supervised, Un-supervised, Semisupervised
Classifiers: Bayes, KNN, ANN models; Dimensionality Reduction: PCA, LDA,
ICA, and Non-parametric methods.
Recent trends inActivity Recognition, computational photography, Biometrics.

Text Books:

1. Computer Vision: Algorithms and Applications by Richard Szeliski.
2. Deep Learning, by Goodfellow, Bengio, and Courville.
3. Dictionary of Computer Vision and Image Processing, by Fisher et al.

M.TECH – I YEAR – II SEM
(R18D5816)HUMAN AND COMPUTER INTERACTION (ELECTIVE –IV)

COURSE OBJECTIVE

- Learn the foundations of Human Computer Interaction
- Be familiar with the design technologies for individuals and persons with disabilities
- Be aware of mobile Human Computer interaction.
- Learn the guidelines for user interface.

Unit 1:

Human: I/O channels – Memory – Reasoning and problem solving; The computer: Devices – Memory – processing and networks; Interaction: Models – frameworks – Ergonomics – styles – elements – interactivity- Paradigms.

Unit 2:

Interactive Design basics – process – scenarios – navigation – screen design – Iteration and prototyping. HCI in software process – software life cycle – usability engineering – Prototyping in practice – design rationale. Design rules – principles, standards, guidelines, rules. Evaluation Techniques – Universal Design.

Unit 3:

Cognitive models –Socio-Organizational issues and stake holder requirements –Communication and collaboration models-Hypertext, Multimedia and WWW.

Unit 4:

Mobile Ecosystem: Platforms, Application frameworks- Types of Mobile Applications: Widgets, Applications, Games- Mobile Information Architecture, Mobile 2.0, Mobile Design: Elements of Mobile Design, Tools.

Unit 5:

Designing Web Interfaces – Drag & Drop, Direct Selection, Contextual Tools, Overlays, Inlays and Virtual Pages, Process Flow. Case Studies.
Recent Trends: Speech Recognition and Translation, Multimodal System

Text Books:

1. Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, “Human Computer Interaction”, 3rd Edition, Pearson Education, 2004 (UNIT I , II & III)
2. Brian Fling, “Mobile Design and Development”, First Edition , O□Reilly Media Inc., 2009
3. Bill Scott and Theresa Neil, “Designing Web Interfaces”, First Edition, O□Reilly, 2009.(UNIT-V)

M.TECH – I YEAR – II SEM

(R18D5817)DIGITAL FORENSICS (ELECTIVE –IV)

COURSE OBJECTIVE:

- Provides an in-depth study of the rapidly changing and fascinating field of computer forensics.
- Combines both the technical expertise and the knowledge required to investigate, detect and prevent digital crimes.
- Knowledge on digital forensics legislations, digital crime, forensics processes and procedures, data acquisition and validation, e-discovery tools
- E-evidence collection and preservation, investigating operating systems and file systems,network forensics, art of steganography and mobile device forensics

UNIT 1:

Digital Forensics Science: Forensics science, computer forensics, and digital forensics.Computer Crime: Criminalistics as it relates to the investigative process, analysis of cyber-criminalistics area, holistic approach to cyber-forensics

Unit 2:

Cyber Crime Scene Analysis: Discuss the various court orders etc., methods to search and seizure electronic evidence, retrieved and un-retrieved communications, Discuss the importance of understanding what court documents would be required for a criminal investigation.

Unit 3:

Evidence Management & Presentation: Create and manage shared folders using operating system, importance of the forensic mindset, define the workload of law enforcement, Explain what the normal case would look like, Define who should be notified of a crime, parts of gathering evidence, Define and apply probable cause.

Unit 4:

Computer Forensics: Prepare a case, Begin an investigation, Understand computer forensics workstations and software, Conduct an investigation, Complete a case, Critique a case, Network Forensics: open-source security tools for network forensic analysis, requirements for preservation of network data.

Unit 5:

Mobile Forensics: mobile forensics techniques, mobile forensics tools. Legal Aspects of Digital Forensics: IT Act 2000, amendment of IT Act 2008. Recent trends in mobile forensic technique and methods to search and seizure electronic evidence

Text Books:

1. John Sammons, The Basics of Digital Forensics, Elsevier
2. John Vacca, Computer Forensics: Computer Crime Scene Investigation, Laxmi Publications

M.TECH – I YEAR – II SEM
(R18D5818)BIG DATA ANALYTICS (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.

M.TECH – I YEAR – II SEM
(R18DME54) COMPOSITE MATERIALS (OPEN ELECTIVE II)

UNIT–I:

Introduction:

Definition – Classification and characteristics of Composite materials,Advantages and application of composites. Functional requirements of reinforcement and matrix,Effect of reinforcement (size, shape, distribution, volume fraction) on overall composite
performance.

UNIT – II:

Reinforcements

Preparation-layup, curing, properties and applications of glass fibers, carbon fibers, Kevlar fibers and Boron fibers. Properties and applications of whiskers, particle reinforcements. Mechanical Behavior of composites: Rule of mixtures, Inverse rule of mixtures, Isostrain and Isostress conditions.

UNIT – III:

Manufacturing of Metal Matrix Composites:

Casting – Solid State diffusion technique, Cladding – Hot isostatic pressing. Properties and applications. Manufacturing of Ceramic Matrix Composites: Liquid Metal Infiltration – Liquid phase sintering. Manufacturing of Carbon – Carbon composites: Knitting, Braiding, Weaving. Properties and applications.

UNIT–IV:

Manufacturing of Polymer Matrix Composites:

Preparation of Moulding compounds and prepregs – hand layup method – Autoclave method – Filament winding method – Compression moulding – Reaction injection, Moulding, Properties and applications.

UNIT – V:

Strength

Laminar Failure Criteria-strength ratio, maximum stress criteria, maximum strain criteria, interacting failure criteria, hygrothermal failure. Laminate first play failure-insight strength; Laminate strength-ply discount truncated maximum strain criterion; strength design using
caplet plots; stress concentrations.

TEXT BOOKS:

1. Material Science and Technology – Vol 13 – Composites by R.W.Cahn – VCH, West
Germany.
2. Materials Science and Engineering, An introduction. WD Callister, Jr., Adapted by R.
Balasubramaniam, John Wiley & Sons, NY, Indian edition, 2007.

References:

1. Hand Book of Composite Materials-ed-Lubin.
2. Composite Materials – K.K.Chawla.
3. Composite Materials Science and Applications – Deborah D.L. Chung.
4. Composite Materials Design and Applications – Danial Gay, Suong V. Hoa, and Stephen W.Tasi.

M.TECH – I YEAR – II SEM
(R18DME55) WASTE TO ENERGY (OPEN ELECTIVE II)

UNIT-I:

Introduction to Energy from Waste

Classification of waste as fuel – Agro based, Forest residue, Industrial waste - MSW – Conversion devices – Incinerators, gasifiers, digestors

UNIT-II:

Biomass Pyrolysis

Pyrolysis – Types, slow fast – Manufacture of charcoal – Methods -Yields and application – Manufacture of pyrolytic oils and gases, yields and applications.

UNIT-III:

Biomass Gasification

Gasifiers – Fixed bed system – Downdraft and updraft gasifiers –Fluidized bed gasifiers – Design, construction and operation – Gasifier burner arrangement for thermal heating – Gasifier engine arrangement and electrical power – Equilibrium and kinetic consideration in gasifier operation.

UNIT-IV:

Biomass Combustion:

Biomass stoves – Improved chullahs, types, some exotic designs,Fixed bed combustors, Types, inclined grate combustors, Fluidized bed combustors, Design,construction and operation - Operation of all the above biomass combustors.

UNIT-V:

Biogas

Properties of biogas (Calorific value and composition) - Biogas plant technology and status - Bio energy system - Design and constructional features - Biomass resources and their Classification - Biomass conversion processes - Thermo chemical conversion - Direct combustion - biomass gasification - pyrolysis and liquefaction - biochemical conversion - anaerobic digestion -Types of biogas Plants – Applications - Alcohol production from biomass - Bio diesel production -Urban waste to energy conversion - Biomass energy programme in India.

References:

1. Hand Book of Composite Materials-ed-Lubin.
2. Composite Materials – K.K.Chawla.
3. Composite Materials Science and Applications – Deborah D.L. Chung.
4. Composite Materials Design and Applications – Danial Gay, Suong V. Hoa, and Stephen W.Tasi.

M.TECH – I YEAR – II SEM
(R18DME56) INDUSTRIAL MANAGEMENT (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.

M.TECH – I YEAR – II SEM

(R18DHS52) COST MANAGEMENT OF ENGINEERING PROJECTS (OPEN ELECTIVE II)

UNIT I:

Introduction and Overview of the Strategic Cost Management Process

Cost concepts in decision-making; Relevant cost, Differential cost, Incremental cost and Opportunitycost. Objectives of a Costing System; Inventory valuation; Creation of a Database for operational control; Provision of data for Decision-Making.

UNIT II:

Project:

Meaning, Different types, why to manage, cost overruns centres, various stages of project execution: conception to commissioning. Project execution as conglomeration of technical and nontechnical activities. Detailed Engineering activities. Pre project execution main clearances and documents Project team: Role of each member,Importance Project site: Data required with significance. Project contracts. Types and contents. Project execution Project cost control,Bar charts and Network diagram.

UNIT III:

Project commissioning

mechanical and process Cost Behavior and Profit Planning Marginal Costing; Distinction between Marginal Costing and Absorption Costing; Break-even Analysis, Cost-Volume-Profit Analysis. Various decision-making problems. Standard Costing and Variance Analysis.

UNIT IV:

Pricing strategies

Pareto Analysis. Target costing, Life Cycle Costing. Costing of service sector. Just-in-time approach, Material Requirement Planning, Enterprise Resource Planning, Total Quality Management and Theory of constraints.Activity-Based Cost Management, Bench Marking; Balanced Score Card and Value-Chain Analysis.

UNIT V:

Budgetary Control

Flexible Budgets, Performance budgets; Zero-based budgets. Measurement of Divisional profitability pricing decisions including transfer pricing. Quantitative techniques for cost management, Linear Programming, PERT/CPM, Transportation problems, Assignment problems, Simulation, Learning Curve Theory.

TEXT BOOKS:

1. Cost Accounting A Managerial Emphasis, Prentice Hall of India, New Delhi
2. Charles T. Horngren and George Foster, Advanced Management Accounting

M.TECH – I YEAR – II SEM
(R18DCS52) 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

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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.

M.TECH – I YEAR – II SEM

(R18DAE52) UNMANNED AERIAL VEHICLES (OPEN ELECTIVE II)

UNIT-I:

INTRODUCTION TO UNMANNED AIRCRAFT SYSTEMS

Applications of UAS, categories of UAV systems, roles of unmanned aircraft, composition of UAV system.

UNIT-II:

DESIGN OF UAV SYSTEMS-I

Introduction to design and selection of the systems-conceptual phase, preliminary design, detailed design; Aerodynamics and airframe configurations-Lift-induced Drag, Parasitic Drag, Rotary-wing Aerodynamics, Response to Air Turbulence, Airframe Configurations; Medium-range, Tactical Aircraft, Characteristics of Aircraft Types-Long-endurance, Long-range Role Aircraft, Medium-range, Tactical Aircraft, Close-range/Battlefield Aircraft, MUAV Types, MAV and NAV Types, UCAV, Novel Hybrid Aircraft Configurations, Aspects of Airframe Design: Scale Effects, Packaging Density, Aerodynamics, Structures and Mechanisms, Selection of power- plants, Modular Construction, Ancillary Equipment, Design for Stealth: Acoustic Signature, Visual Signature, Thermal Signature, Radio/Radar Signature, Payload Types: Non-dispensable and dispensable payloads.

UNIT-III:

DESIGN OF UAV SYSTEMS-II

Communications-Communication Media, Radio Communication, Mid-air Collision (MAC) Avoidance, Communications Data Rate and Bandwidth Usage, Antenna Type; Control and Stability: HTOL Aircraft, Convertible Rotor Aircraft, Payload Control, Sensors, Autonomy; Navigation: NAVSTAR Global Positioning System (GPS), TACAN, LORAN C, Inertial Navigation, Radio Tracking, Way-point Navigation; Launch and Recovery.

Design for Reliability: Determination of the Required Level of Reliability, Achieving Reliability, Reliability Data Presentation, Multiplexed Systems, Reliability by Design, Design for Ease of Maintenance; Design for Manufacture and Development

UNIT-IV:

THE DEVELOPMENT OF UAV SYSTEMS

System Development and Certification-System Development, Certification, Establishing Reliability; System Ground Testing: UAV Component Testing, UAV Sub- assembly and Sub-system Testing, Testing Complete UAV, Control Station Testing , Catapult Launch System Tests, Documentation; System In- flight Testing: Test Sites, Preparation for In-flight Testing, In- flight Testing, System certification.

UNIT-V:

DEPLOYMENT AND FUTURE OF UAV SYSTEMS

Operational trials and full certification; UAV System Deployment- Network-centric Operations (NCO), Teaming with Manned and Other Unmanned System; Naval, arm and air force roles, civilian, paramilitary and commercial roles.

Text Books:

1. Reg Austin, Wiley, “Unmanned Aircraft Systems, UAVS Design and Deployment”, 2nd Edition, 2010.

Reference Books:

1. Richard K. Barnhart, Stephen B. Hottman, Douglas M. Marshall, Eric Shappee, (eds.), “Introduction to Unmanned Aircraft Systems”, CRC Press, 2012.
2. Valavanis, Kimon P., Vachtsevanos, George J. “Handbook of Unmanned Aerial Vehicles” AIAA series, 3rd Edition, 2004.

M.TECH – I YEAR – II SEM
(R18DEC52) 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.

(R18D5882) 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

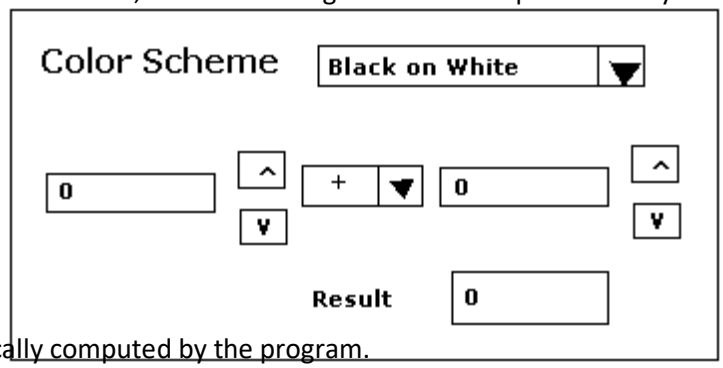
Write an HTML page including any required Javascript that takes a number from one text field in the range of 0 to 999 and shows it in another text field in words. If the number is out of range, it should show “out of range” and if it is not a number, it should show “not a number” message in the result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

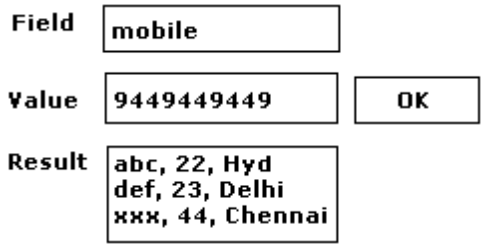
Write a simple calculator servlet that takes two numbers and an operator (+, -, /, * and %) from an HTML page and returns the result page with the operation performed on the operands. It should check in a database if the same expression is already computed and if so, just return the value from database.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

(R18DHS55)ENGLISH FOR RESEARCH PAPER WRITING (AUDIT COURSE II)

UNIT I:

Planning and Preparation, Word Order, Breaking up long sentences, Structuring Paragraphs and Sentences, Being Concise and Removing Redundancy, Avoiding Ambiguity and vagueness

UNIT II:

Clarifying Who Did What, Highlighting Your Findings, Hedging, and Critics in paraphrasing and Plagiarism, Sections of a Paper, Abstracts, Introduction

UNIT III:

Review of the Literature, Methods, Results, Discussion, Conclusions, The Final Check.

UNIT IV:

key skills are needed when writing a Title, key skills are needed when writing an Abstract, key skills are needed when writing an Introduction, skills needed when writing a Review of the Literature

UNIT V:

skills are needed when writing the Methods, skills needed when writing the Results, skills are needed when writing the Discussion, skills are needed when writing the Conclusions: useful phrases, how to ensure paper is as good as it could possibly be the first- time submission

TEXT BOOKS:

1. Goldbort R (2006) Writing for Science, Yale University Press (available on Google Books)
2. Day R (2006) How to Write and Publish a Scientific Paper, Cambridge University Press
3. Highman N (1998), Handbook of Writing for the Mathematical Sciences, SIAM. Highman's book .
4. Adrian Wallwork , English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011

OUTCOMES:

Students will be able to:

1. Write in a clear, coherent, and direct style appropriate for academic research
2. Draft coherent and unified paragraphs with adequate supporting details.
3. Develop the strategy to use lexical terms effectively.
4. Adopt appropriate syntactic and semantic techniques
5. Demonstrate analytical and inferencing skills.

DESIRE

Education is a progressive discovery of our own ignorance. As knowledge is power, a focus must be given in grooming dynamic leaders, not just graduates. Education is transmission of civilization. Our society needs Enthusiasts with passion to transform India into a "Force to reckon with". I believe that the aim of Education is the knowledge not of facts but of values.

Ch. Malla Reddy

MRCET

A thought beyond horizons of success
committed for Professional Excellence

GLIMPSES OF MRCET

Vision:

- To become a model institution in the fields of Engineering, Technology and Management.
- To have a perfect synchronization of the ideologies of MRCET with challenging demands of International Pioneering Organizations.

Mission:

- To establish a pedestal for the integral innovation, team spirit, originality and competence in the students, expose them to face the global challenges and become pioneers of Indian vision of modern society

MRCET Philosophy:

- To pursue continual improvement of teaching learning process of Undergraduate and Post Graduate programs in Engineering & Management vigorously.
- State of the art infrastructure and expertise to impart the quality education.
- To nurture the students to become emotionally balanced, intellectually creative and professionally competitive.
- Attitude with blend of technology will constitute you to the greatest horizon ever possible.
- To groom the students to become intellectually creative and professionally competitive.

Special Achievements:

- UGC Autonomous Institution, Govt. of India.
- Accredited by NBA, AICTE, New Delhi.
- Accredited by NAAC-A Grade, UGC, Govt. of India.
- Institute has been certified with ISO 9001:2015
- UGC 2f & 12(B) recognized institution, UGC New Delhi
- Research Centre Status, JNTUH, Hydearbad
- MoU with NRDC, Govt. of India.
- MoU with University of New Orleans, USA
- MoU with International Technological University, USA
- MoU with University Malaysia Sarawak (UNIMAS), MALAYSIA
- MoU with ECPI University, USA
- MoU with Lincoln University College, MALAYSIA
- Recognized e.Gov Campus by Engineering Watch, Re-Engineering India.
- MoU with National Aerospace Laboratories (NAL), Bangalore.
- Industry Institute Partnership Cell (IIPC)
- MRCET is a life member of NHRD Network
- CISCO International Certification Authorized Centre.
- MoU with ESOL Examinations (BEC) University of Cambridge, UK.
- Approved to admit Foreign Students/PIO's
- Nodal Center: IIT – Bombay/Kharagpur for Technology Transfer
- Microsoft Innovative Center.
- NASSCOM Nodal Center for NAC-Test Assessment
- JAVA Certification through Oracle Academy
- MoU with Zensar Technologies for the Technology Transfer
- MoU with Tech Mahindra
- Academic Partner – Wipro Technoloiges
- Business Incubation Centre – MSME, Govt. of India
- Global Education and Career Counseling Centre
- Patents award – 4 No's

Principal:
Dr. VSK Reddy
B.Tech, M.Tech, Ph.D (IIT-KGP), FIETE, MIEEE, MISTE, MCSI

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