

MADURAI KAMARAJ UNIVERSITY

(University with Potential for Excellence)

Directorate of Distance Education

Program Project Report for B.Sc., Computer science (Semester)

I. Overview

About the Department

The Department of Computer Science in the Directorate of Distance Education of Madurai Kamaraj University is one of the oldest departments in the Directorate started in late 1970s. The department currently offers both P.G. and U.G programs in Computer Science. Every year many students are pursuing their degree in Department of Computer Science - DDE. The department has organized 1 National seminar (Sponsored DST-PURSE) during the year 2018. Two days National webinar July 13 & 14, 2020 and one International Conference was conducted during September 23rd – 25th, 2020, (online mode due to Covid-19), respectively and carrying out research activities between the facilities and scholars Department of Computer science -DDE and the respective universities.

II. Program Overview

The B.Sc Computer Science program (Bachelor of Computer Science) at the Directorate is a conventional program focusing on Information Technology. It stresses the development of applied analytic tool skills, advanced cognitive abilities, and topical specialties allowing students to tailor the program to their interest.

i) Objectives of the Program

- a. To prepare the students to manage the software components in a computer independently and to be a Programmer.
- b. To motivate the students to take up higher studies in computer science and other streams.

(ii) Relevance of the programme with HEI's Mission and Goals:

- a. The programme is to extend higher education in different parts of the state/country and to provide access to different skill enhancing educational programmes at affordable cost to the underprivileged and needy and to facilitate lifelong learning to aspiring learners. The programme is designed specifically for in-service teachers and other allied personnel in industries who wish to enhance their skills and analytical techniques. This course provides intensive practical training to develop, associate and apply various aspects of the subjects in day to day affairs.

- b. The programme prepares the students to achieve success in competitive examinations and make developments of needs of their life.

(III) Nature of prospective target group:

Nature of Prospective Target Group of Learners:

The B.Sc. Computer Science is in demand for large number of human resource in the field of teaching, IT Industries and banking sectors. Basically, this program is offered for those who do not have opportunity to attend class on regular days. The prospective target group of learners are:

- ❖ Working Professionals
- ❖ Unemployed Graduates
- ❖ Academic Faculty
- ❖ Government Officials
- ❖ Home Makers

(IV) Appropriateness of Programme to be conducted in distance learning mode to acquire skills and competence:

The program will meet the learning aspiration for computer science by providing "second chance" to those who had to discontinue their formal education or could not join regular colleges or universities owing to social, economic and other constraints.

Besides imparting theoretical knowledge, a lot of stress is laid on hands-on training and overall development of the personality. The University provides the opportunity to the human resource, basically to the poor and rural people to get a quality education in computer science, which can fulfill the demand of the society.

(V) Instructional Design:

The curriculum of the Programme is adapted from the graduate computer science course as per the approval of the Board of Studies, Academic Council of Madurai Kamaraj University. The learners will have to complete the papers in given in Annexure-I in three years. Details on course structure and syllabus can also be had from our website. The study material is Self-Learning (SLM) format, which is the essence of standard distance learning Programmes. Thus, Institution has developed all materials in SLM format. Subject experts prepare the study materials on the specific guidelines laid down by the statutory body. Curriculum design and detailed syllabi is annexed (Annexure-II).

(VI) Procedure for admission:

Course duration: 3 Years. (6 Semesters)

Admission procedure: Centralised admission process is conducted through online mode. Admission fees also collected through online payment gateway service.

Eligibility for admission - Higher Secondary (+2) pass with Computer science (or) Mathematics and any other equivalent examination accepted by the syndicate, as equivalents thereto. Advertisement vide university website and also through in leading dailies.

Course Fee: Rs.10000/- per year (All three years excluding examination fees)

Scheme of Examination:

Duration: 3 Hrs.

Maximum: 100 Marks

Passing Min.: 40 Marks

Evaluation: The evaluation system is maintained as per the norms of the semester examinations of the university. The examiners for evaluation are drawn from the panel of examiners available for the DDE disciplines.

(VII) Requirement of the laboratory support & library resources:

1. **Library & Documentation unit:** The Directorate has a main library with standard text book and reference books pertinent to the program of study.
2. **Computer Laboratory:** The Department of Computer Science has high configuration computers with a well-equipped laboratory for conducting practical for the UG and PG programmes.

(VIII) Cost estimate of the Programme:

Programme development: 21 subjects x Rs.9,000/- = 1,89,000/-
(Study material preparation)

Delivery (Seminar classes): 21 subjects x 30 hrs x Rs.175/- =1,10,250 /-

(IX) Quality assurance mechanism and expected Programme outcomes:

B.Sc., Computer Science is a 3 year undergraduate program which deals with subjects and topics related to Computer Science, application and services. Technological implementation of computer systems is the main agenda of the program. The program ranges widely from creating quality professionals and research fellows who are working in every sector of the world today.

(X) Program Structure: Annexure I

**B.Sc., (Computer science) Contact classes on Saturday and Sunday
For 12 hours x 3 rounds = 36 hours**

The B.Sc., Computer Science Program in Computer Science is designed as core and elective course papers; for each semester in the first semesters, there will be two language papers, two core papers, one allied paper and one skill based subject. In the third and fourth semester, two language papers, two core papers and one allied paper. In the fifth semester, four core papers and one EVS paper and in the sixth semester, Three core papers, project work and VE paper. There are practical, internal assessment and project preparation as part of this program.

Annexure I

I SEMESTER

S.No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T1	Tamil	6	3	25	75
2	E1	English	6	3	25	75
3	CS1	Programming in C	4	4	25	75
4	CS2	Lab 1 : Programming in C	6	4	40	60
5	AS1	Mathematical Foundations I	4	4	25	75
6	SBS1	Lab 2 : Office Automation	2	2	40	60
		Total	28	20		

II SEMESTER

S.No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T2	Tamil	6	3	25	75
2	E2	English	6	3	25	75
3	CS3	Object Oriented Programming with C++	4	4	25	75
4	CS4	Lab 3 Object Oriented Programming with C++	6	4	40	60
5	AS2	Mathematical Foundations II	4	4	25	75
6	SBS2	Lab 4 : Linux Programming	2	2	40	60
		Total	28	20		

III SEMESTER

S.No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T3	Tamil	6	3	25	75
2	E3	English	6	3	25	75

3	CS5	Data Structures and Computer Algorithms	4	4	25	75
4	CS6	Lab 5: Data Structures and Computer Algorithms	4	3	40	60
5	AS3	Resource Management Techniques	4	4	25	75
		Total	24	17		

IV SEMESTER

S.No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T4	Tamil	6	3	25	75
2	E4	English	6	3	25	75
3	CS7	Java Programming	4	4	25	75
4	CS8	Lab 6: Java Programming	4	3	40	60
5	AS4	Numerical Methods	4	4	25	75
		Total	24	17		

V SEMESTER

S.No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	CS9	Relational Database Management Systems	5	4	25	75
2	CS10	Operating System	5	4	25	75
3	CS11	Software Engineering	5	4	25	75
4	CS12	Lab 7: Relational Database Management Systems	6	4	40	60
5	EVS	Environmental Studies	2	2	25	75
		Total	23	18		

VI SEMESTER

S.No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	CS13	Data Communication and Computer Networks	5	4	25	75
2	CS14	Lab8 : Web Technology	6	4	25	75
3	CS15	Data Mining	5	4	40	60
4	ES1	Project Work / Viva-Voce	5	5	25	75
5	VE	Value Education	2	2	25	75
		Total	23	19		

(XI) Details of Syllabi

Each course has a detailed syllabus structured in terms of Units.

(XII) Time Table for Contact Class & Counseling

The ODL Regulations insists of minimum 30 hours of study for each course in a semester of which minimum 16 hours are for face-to-face contact classes i.e. 3 rounds of Saturday and Sunday may be allocated for face to face interaction of 36 hours covering all subjects. A separate schedule may be allocated for conducting practical training and exams covering a minimum of 30 hours.

A) Pattern of Examination

Internal and External marks respectively **25 + 75 = 100 marks**

B) Scheme for Internal Exam

Two Assignments - 12.5 marks each

Total - 25 Marks

C) External Exam

External Examination – Maximum 75 marks; Grand Total 100 marks

XIII. Passing Minimum

1. 40 % of the aggregate (Internal + External).
2. 30 marks out of 75 is the pass minimum for the External.

Syllabi

CS 1 - PROGRAMMING IN C

UNIT I

Overview of C: History of C-Importance of C-Basic structure of C-Programming style-Constants, Variables and Data types-declaration of variables, storage class- defining symbolic constants- declaring a variable as constant, volatile-overflow and underflow of data. Operator and expressions: arithmetic, relational, logical, assignment operators- increment and decrement operators, conditional operators, bitwise operators, special operators- arithmetic expression- evaluation of expressions- precedence of arithmetic operators – type conversions in expression –operator precedence and associativity – mathematical functions – managing I/O Operations: reading and writing a character – formatted input, output.

UNIT II

Decision making and branching: if statement, if... else statement-nesting of

if...else statement- Else if ladder-Switch statement- the?: Operator- goto statement.The While statement – do statement – The for statement –jumps in loops.

UNIT III

Arrays: One dimensional array – declaration, initialization – two dimensional array – multi dimensional array – initialization. Strings: declaration, initialization of string variables –reading and writing string – arithmetic operations on strings – putting strings together – comparison – sting handling function –table of string –features of string.

UNIT IV

User defined functions: need – multi function program –elements of user defined functions –definition – return values and their types – function calls, declaration, category of all types of arguments and return values –nesting of functions – recursion – passing arrays ,strings to functions – scope visibility and life time of variables. Structure and unions: defining a structure – declaring structure variables – accessing structure members – initialization – copying and comparing – operations on individual members – arrays of structures – arrays within structures –structure within structures – structures and functions – Unions – size of structures – bit fields.

UNIT V

Pointers: accessing the address of s variable –declaring, initialization of pointer variable –accessing a variable through its pointer – chain of pointers – pointer expressions – pointer increment and scale factors – pointer and arrays – pointers and character strings – array of pointers – pointers as function arguments – function returning pointers – pointers to functions – pointers and structures. Files: defining opening, closing a file. I/O Operation on files –error handling during I/O Operations –random access to file – command line arguments.

Text Book:

1. E. Balagurusamy, “Programming in ANSI C”, Edition3, Tata McGraw Hill Publishing Company,2005.

UNIT I: Chapters: 1-5

UNIT II: Chapter 6

UNIT III: Chapters 7,8

UNIT IV: Chapters:9,10

UNIT V: Chapter 11,12

CS 2 - LAB1 : PROGRAMMING IN C

1. To reverse a given number and check if it is a palindrome.
2. To evaluate Sine Series.
3. To find the nth Fibonacci number.
4. To check if a number is Prime or not.
5. To Sort an Array.
6. To check if a number is Adam or Not.
7. To reverse a given String and check if it is a Palindrome.
8. To find Factorial value using Recursion
9. To add and subtract two Matrices
10. To multiply two Matrices
11. To solve Quadratic Equation –Switch
12. To find NCR and NPR values using Function
13. To prepare Pay Bill – Structure

14. To prepare Mark Sheet – Structure
15. To demonstrate the use of bitwise operators
16. To prepare Mark Sheet – File

AS 1: Mathematical Foundations I

(4 Hours – 4 Credits)

Unit I:

Propositional Logic: Introduction- Statements and Notation – Connectives – Negation – Conjunction – Disjunction – Statement Formulas and Truth Tables — Conditional and Bi-conditional –Equivalence of formulas-Tautological Implications – Formulas with Distinct Truth Tables —Theory of Inference– Rules of Inference – Inconsistency Premises- Rule CP and Indirect Method of Proof.

Unit II:

Predicate Logic: – Predicates – The Statement Function, Variables, and Quantifiers – Predicate Formulas – Free and Bound Variables – The Universe of Discourse – Inference Theory of the Predicate Calculus – Valid Formulas and Equivalences – Some Valid Formulas over Finite Universes – Special Valid Formulas Involving Quantifiers – Theory of Inference for the Predicate Calculus – Formulas Involving More Than One Quantifier.

Unit III:

Relations: Types of Relations--Some operations on relations – Composition of relations – Properties of relations- Equivalence Relation – Matrix representing of relations and the graph of relations-partial ordering –Partial ordered set : representation and associated Terminology.

Unit IV:

Counting: The basic of counting- Principle of Inclusion and Exclusion -- The pigeonhole principle – Permutation and Combinations :Pascal’s Identity- Vandermonde’s Identity- Permutation with repetition- Circular Permutation— Recurrence relations- Particular solutions- Solving Linear recurrence relations (All theorems and Results statement only)

Unit V:

Matrices: Introduction – Adjoint– Properties - Inverse - solution of simultaneous linear equations by Matrix Inversion method – Rank of a Matrix-Elementary transformation on a Matrix- Echelon form of a matrix- consistency of a system of linear algebraic equations: Rouche’s Theorem- system of Homogeneous Linear equations.

Text Books:

1. Discrete Mathematics and its applications, Seventh Edition, Kenneth.H.Rosen, McGrawHill Publishing Company, 2012.
2. Discrete Mathematics, M.Venkataraman, N.Sridharan and N.Chandrasekaran, The National Publishing Company, 2009.

Unit I	:	Textbook 1	Chapter 1: Sections: 1.1, 1.2, 1.3
Unit II	:	Textbook 1	Chapter 1: Sections: 1.4,1.5,1.6
Unit III	:	Textbook 1	Chapter 9: Sections: 6.1, 6.2, 6.3
Unit IV	:	Textbook 1	Chapter 6: Sections:6.1, 6.2, 6.3
Unit V	:	Textbook 2	Chapter 6 :Sections :6.1 to 6.5, and 6.7)

Reference Books :

1. Modern Algebra - S.Arumugam and A. Thangapandi Isaac, Scitech publications 2005.
2. Invitation to Graph Theory-S.Arumugam and S.Ramachandran, Scitech Publications,2005, Chennai.
3. Discrete Mathematical Structures with applications to Computer Science - Tremblay and Manohar, McGraw Hill,1997.

SBS1: Lab 2: -OFFICE AUTOMATION (SBS1)**MS-WORD**

1. Open a word document to prepare your Resume by performing the following operations.
 - a. Formatting the Text-Alignment & Font style
 - b. Page setup (margin alignment, page height & width)
2. Create a word document to prepare an application form (College, Bank, etc)
3. Create a student mark sheet using table, find out the total & average marks and display the result.
4. Design an invitation of your course inauguration function using different fonts, font sizes, bullets and Word Art / Clip Art.
5. Mail Merge concept
 - (a) Prepare a business letter for more than one company using mail merge.
 - (b) Prepare an invitation and to be sent to specific addresses in the data source.

MS – EXCEL

6. Create suitable work sheet with necessary information and use Data sort to display results. Also use Data filters to answer at least five different criteria.
7. Create suitable work sheet with necessary information and make out a suitable chart showing gridlines, legends and titles for axes.
8. Prepare salary bill in a worksheet showing Basic Pay, DA, HRA, Gross salary, PF, Tax and Net salary using suitable Excel Functions.
9. Create, display and interact with data using Pivot Tables and Pivot Charts of Excel feature.

POWER POINT

10. Create a power point presentation to explain various aspects of your college using Autoplay.
11. Create a power point presentation to explain the sales performance of a company over a period five years. Include slides covering the profile of the company, year wise sales and graph with gridlines, legends and titles for axe. Use Clip Art and animation features.

12. Create a power point presentation from template.
13. Prepare a power point presentation using Auto Wizard and see its various views.
14. Prepare a power point presentation with audio and video effect.

MS-ACCESS

15. Create a table for storing marks of 10 students. The fields of the table are given below: Reg. No., Name, Mark1, Mark2, Mark3, Test average (Best Two/2), assignment seminar and total marks (test average + alignment + seminar). The fields Mark1, Mark2, Mark3 should not allow the user to enter a mark greater than 25 and should display proper message in such case. Similar constraint for the field „Assignment“ is 5 marks and for the field „seminar“, it is 10 marks.

16. Create a table showing names of authors of at least 10 different books, title of books, the prices of these books, name of publishers and year of publication. Also create select, action and cross-tab queries to display the records from this table meeting the criteria used in these queries.

17. Create a form to enter the data directly into this form. The fields required are: Basic Pay, DA, HRA, Gross salary, PF, Income tax and Net salary.

18. Create a report that displays the customer name, address, phone number, Item code, product quantity of the customers whose orders have been pending for over a month.

CS3 - OBJECT ORIENTED PROGRAMMING IN C++

UNIT I

Basic concepts of Object oriented programming – Benefits of OOP's – Application of OOP – Structure of C++ program – Basic data type – Derived data type – User defined data type, operators in C++, Control statements, inline function, function overloading .

UNIT II

Class Introduction: Specifying a class – defining member function- nesting of member function-array of object – friend function –constructor- parameterized constructor- copy constructor- destructor.

Defining operator overloading- overloading unary operator –overloading binary operator –rules for operator overloading

UNIT III

Inheritance-single inheritance-multilevel inheritance-multiple inheritance-hierarchical inheritance-hybrid inheritance- virtual base class- polymorphism- pointer – pointer to object- this pointer-virtual function-pure virtual function - pointers to object-this pointer-pointers to derived class-virtual function-pure virtual function.

UNIT IV

I/O Operation: Introduction- C++ Streams –C++ stream classes-unformatted I/O operations-formatted console I/O Operation, Managing Output with manipulators

UNIT V

Files: Introduction-class for file stream operations-opening and closing files-detecting end of file-more about open ()- File modes-File pointer and their manipulation-sequential input and output operations-updating a file: Random access-error handling during file operation-Command line argument.

Text Book:

1. E. Balagurusamy, “Object Oriented Programming with C++”, Edition3, Tata McGraw Hill Publishing Company,2007.

Reference Books:

1. The Complete reference , Schildt, Tata McGraw Hill, 2006.
C++ Programming ,AL Stevensen ,Wiley 7th Edition ,2003.

CS4: Lab 3: Object Oriented Programming with C++

(6 Hours - 4 credits)

Section A

1. Printing Prime numbers between two given numbers.
2. Printing 3 digit numbers as a series of words. (Ex. 543 should be printed out as Five Four Three).
3. Finding area of geometric shapes using function overloading.
4. Inline functions for simple arithmetic operations.
5. Demonstrating the use of Pre-defined Manipulators.
6. Demonstrating the use of friend function.
7. Creating student mark list using array of objects,
8. Demonstrating constructor overloading.
9. Overloading the unary – operator.
10. Demonstrating single inheritance.
11. Demonstrating the use of **this** pointer.
12. Designing our own manipulator.
13. Illustrating function templates.
14. Illustrating class templates.

Section B

1. Overloading the binary + operator.
2. Demonstrating multiple inheritance.
3. Demonstrating Multilevel inheritance.
4. Demonstrating Hierarchical inheritance.
5. Demonstrating Virtual functions.
6. Processing mark list using binary file.
7. Count number of objects in a file.
8. Demonstrating the use of Command-line arguments.

AS2: MATHEMATICAL FOUNDATIONS II

(4 Hours – 4 Credits)

Unit I:

Measures of dispersion: Absolute Measure of dispersion: Range- Quartile deviation- Mean deviation – standard deviation-Relative Measure of dispersion :Coefficient of range- Coefficient Quartile deviation- Coefficient Mean deviation- Coefficient of Standard Variations – characteristics of Range- Quartile deviation- Mean deviation – Standard deviation.

Unit- II:

Moments -Grouped & Ungrouped data- Short cut method – Step deviation Method– skewness-Positive Skewness – Negative Skewness -Pearson's coefficient of skewness - Bowley's coefficient of Skewness – Coefficient of skewness based upon moments- Kurtosis-Importance of Moments

Unit III:

Linear correlation – Karl Pearson's coefficient – properties of Correlation Coefficient- Rank correlation – Regression- lines of regression: Equation of the regression Line Y on X- Equation of the regression Line X on Y— Properties of regression coefficient.

Unit IV:

Events and sets – sample space – concept of probability – addition and multiplications Theorem on probability – conditional probability and independence of evens – Baye's Theorem – Random variables- Discrete random variable- Probability Function- Continuous Random variable- Probability density function- CDF- Properties of CDF

Unit V:

Concept of sampling distributions – standard error – Tests of significance based for small samples-students t distribution-properties of t-distribution-Uses of t-distribution-degree of freedom- F distributions – Properties of F-distribution- Use of F- Distribution- Chi- square distribution-Properties of Chi-Square distribution- Use of Chi-Square distribution-Goodness of fit- Chi-Square test of Independence of Attributeswith respect to mean, variance.

Text Book:

Statistical Methods, S.P.Gupta, Sultan chand and sons, 2004.

Unit I : Chapters 1, 2.2, 2.2.1, 2.2.2, 2.2.3 – 2.2.5

Unit II : Chapters 7 and 8

Unit III : Chapters 9, 9.1, 9.2, 9.3, 10, 10.1, 10.2, 10.2.1, 10.2.2, 10.2.3, 10.3

Unit IV : Chapter 16

Unit V : Chapters 18.3, 18.4, 18.7.1, 18.7.2, 19

Reference Books:

1. Statistics, Dr. S.Arumugam and A.Thangapandi Issac, New Gamma Publication house, 2002.
2. Kishor S.Trivedi - Probability and statistics with reliability queuing and Computer Science Applications - Prentice Hall of India(P) Ltd., New Delhi - 1997.
3. Discrete Mathematics - Seymour Lipschutz, Marc Lars Lipson Schaum's

Outlines- by, 3rd Edition., Tata McGraw Hill, Education Pvt. Ltd., New Delhi.
5th Reprint 2012.

Text Books

“Statistical methods”, S.P.Gupta, Sultan chand and sons, 2004.

Unit I - Chapter 1, 2.2, 2.2.1, 2.2.2, 2.2.3, 4, 5.

Unit II - Chapter 7, 8

Unit III - Chapter 9, 9.1, 9.2, 9.3, 10, 10.1, 10.2, 10.2.1, 10.2.2, 10.2.3, 10.3.

Unit IV - Chapter 16.

Unit V - Chapter 18.3, 18.4, 18.7.1, 18.7.2, 19.

Reference Book

“Statistics”, Dr.S.Arumugam, and A.Thangapandi Issac, New Gamma Publication House, 2002.

SBS2: Lab 4: Linux Programming

(2 Hours – 2 Credits)

Section-A

1. Write a Linux script to see the current date, user name and current directory.
2. Write a Linux script to print the numbers 5,4,3,2,1 using While loop.
3. Write a Linux script to set the attributes of a file.
4. Write a Linux script to convert lowercase to uppercase using tr utility.
5. Write a Linux script to copy and rename a file.
6. Write a Linux script to add 5 numbers and find the average.
7. Write a Linux script to convert a decimal number to hexadecimal conversion.
8. Write a Linux script to find the factorial of a number.
9. Write a Linux script to check for palindrome.

Section-B

1. Write a Linux script to display Hello World in Bold, Blink effect and in different colors like red, green etc.
 2. Write a Linux script to display a multiplication table.
 3. Write a Linux script to perform arithmetic operations using case.
 4. Write a Linux script to add two real numbers.
-
1. Write a Linux script to find the sum of digits and reversing of a given number.
 2. Write a Linux script to display the student mark details.
 3. Write a Linux script to prepare electricity bill.
 4. Write a Linux script to sort the numbers in ascending order.

CS5: Data Structures and Computer Algorithms

(4 Hours - 4 credits)

Unit I

Introduction and Overview – Introduction – Basic Terminology; Elementary Data Organization – Data Structure Operations – Complexity of Algorithms – Other Asymptotic Notations for Complexity of Algorithms.

Arrays – Introduction – Linear Arrays – Representation – on Linear Arrays in Memory – Traversing Linear Arrays – Inserting and Deleting – Sorting: Bubble Sort – Searching; Linear Search – Binary Search – Multidimensional Arrays. **Linked List** – Introduction – Linked Lists – Representation of Linked Lists in Memory – Traversing a Linked List – Memory Allocation; Garbage Collection – Insertion into a Linked List – Deletion from a Linked list.

Unit II

Stack: Introduction – Stacks – Array Representation of Stacks – Linked Representation of Stacks – Recursion - Tower of Hanoi - Implementation of Recursive Procedures by Stacks - Queue –Linked Representation of Queues – D – Queue

Unit III

Trees – Introduction – Binary Trees – Representing Binary Trees in memory – Traversal Binary Tree – Traversal algorithms using Stacks – Header Nodes; Threads – Binary Search Trees – Searching and Inserting in Binary Search Trees – Deleting in a Binary Search Trees.

Graphs – Introduction – Graph Theory - Terminology – Sequential Representations of Graph – Adjacency Matrix; Path Matrix – Warshall’s Algorithm; Shortest Paths.

Unit IV:

Algorithms: Introduction: What is an Algorithm? – Algorithm Specification – Performance Analysis – Divide and Conquer: General method – Binary Search – Finding the maximum and minimum – Merge Sort – Quick Sort – Selection – Strassen’s Matrix Multiplication.

Unit V:

The Greedy Method: General Method – Knapsack problem – Job Sequencing with deadlines – **Minimum cost spanning trees:** Prim’s Algorithm – Kruskal Algorithm – Optimal Storage on tapes – Optimal merge patterns – single source shortest path.

Text Books:

1. Data Structures – Seymour Lipschutz –Tata McGraw-Hill - 2006
2. Fundamentals of Computer Algorithms, Ellis Horowitz, Sartaj Sahni, Galgotia Publications Pvt. Ltd, New Delhi

Unit I	: Textbook 1	Chapter 1 (1.1 to 1.4) , Chapter 2 (2.5 , 2.6), Chapter (4.1 to 4.9), Chapter 5 (5.1 to 5.8)
Unit II	: Textbook 1	Chapter 6 (6.1 to 6.4, 6.7 to 6.12)
Unit III	: Textbook 1	Chapter 7 (7.1 to 7.9)

Unit IV : Textbook 2 Chapter 1 (Except 1.4), Chapter 3 (Except 3.2, 3.9)
Unit V : Textbook 2 Chapter 4 (Except 4.2, 4.6.3)

Reference Books:

1. Data Structure and Algorithm Analysis in C – Mark Allen Weiss – Second Edition, Addison Wesley publishing company, 1997.
2. C and C++ Programming Concepts and Data Structures -
P.S.Subramanyam - BS Publications, 2013.
3. Data Structures and Algorithms- Alfred V.Aho, John E.Hopcraft and Jeffrey D.Ullman - Pearson Education - Fourteenth Impression - 2013.

CS6 – LAB 5: Data Structures and Computer Algorithms

(4 Hours – 3 credits)

Section A

(Programs from Data Structures Using C)

1. Implementing Stack as an array.
2. Implementing Stack as a linked list.
3. Convert Infix expression to Postfix expression using stack.
4. Convert Infix expression to Prefix expression using Stack.
5. Implementing Queue as an Array.
6. Implement Queue as a linked list.
7. Binary tree traversals.
8. Implement Binary Search Tree.

Section B

(Programs from Computer Algorithms Using C++)

1. Linear Search
2. Binary Search
3. Bubble Sort
4. Insertion Sort
5. Merge Sort
6. Quick Sort
7. Selection Sort

Reference Book:

C and C++ Programming concepts and Data Structures, P.S.Subramanyam, BS Publications, 2013.

AS3 - Resource Management Techniques

(4 Hours – 4 Credits)

Unit I:

Development of OR: Definition of OR – Modeling - Characteristics and Phases - Tools, Techniques & Methods - scope of OR.

Unit II:

Linear Programming Problem: Formulation of LPP -Basic Assumptions of LPP- Graphical solution of LPP- procedure for Graphical method- a unique optimal solution- an infinite number of solutions- unbounded solutions- no solutions- Advantage of LPP- Limitations of LPP

Unit III:

Simplex Method: Introduction- Slack variable- surplus Variable- Canonical and standard form of LPP- Characteristics of Canonical and standard form of LPP-basic definition – Simplex Algorithm—Simplex method to solve **LPP**- Artificial Variable Method-Big-M method

Unit IV:

Assignment Problem: Introduction-- Mathematical formulation of assignment problem –Difference between transportation and Assignment Problem- Assignment Algorithm (Hungarian method) Method for solving assignment problem: unbalanced Assignment Problem-Maximization case in assignment Problem- Restriction in Assignment Problem

Unit V:

Transportation Problem: Introduction-Mathematical formulation of Transportation Problem- Basic definition- Methods for finding IBFS: North west corner rule- Least cost method- Vogel's Approximation technique- Transportation Algorithm (MODI)by VAM- Degeneracy – Unbalanced- Maximization case transportation Problem

Text Book:

Operations Research, S.D.Sharma, Kedar Nath Ram Nath & Co.

- Unit I** : Chapter-1(1.1, 1.2, 1.4,1.,1.8,1.9,1.10,1.11)
Unit II : Chapter-3 (3.1, 3.2, 3.3, 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.4,3.5)
Unit III : Chapter-5 (5.1, 5.2, 5.2.1, 5.3,5.4,5.5.4)
Chapter- 7 (7.1,7.2,7.3,7.4)
Unit IV : Chapter-7 (7.5) (Statements only); 7.6, 7.7
Chapter 11(11.2,11.3,11.4)
Unit V : Chapter-12 (12.2 to 12.8)

Reference Books:

- 1.Operation Research, Nita H.Shah, Ravi M.Gor and Hardik soni,Prentice-Hall of India Pvt. Ltd., New Delhi 2008.
- 2.Operation Research, R.Sivarethinamohan, Tata McGraw Hill, 2005.
- 3.Operations Research – An Introduction by Hamdy A.Taha. Ninth Edition, Dorling Kindersley Pvt. Ltd., Noida, India, 2012.

CS7- PROGRAMMING IN JAVA

UNIT I

Java evolution: java Features- how java differs from C and C++ - java and Internet – Java and World Wide Web –Web Browsers – Hardware and Software Requirements –Java Environment. Overview of Java Language: Simple Java Program- java program structure- java tokens-java statement- implementing java program-java virtual machine-command line arguments. Constants – variables-data types- declaration of variables-giving values to variables- scope of variables-symbolic constants- type casting.

UNIT II

Operators and Expressions: Arithmetic Operators –relational operators-logical operators- Assignment operators-Increment and Decrement Operators –Conditional Operators – Bitwise Operators-Special operators-Arithmetic Expression-Evaluation of Expression-Precedence of Arithmetic Operators-Operator precedence and associativity-Mathematical Functions. Decision Making and Branching: Decision making with if statement- Simple if statement- if else statement –Nesting if else statement-the else if ladder- the switch statement- the? : Operator. Decision Making and Looping: the while statement –the do statement-the for statement – jumps in Loops. Class, Objects and Methods: Defining a class- fields declaration- methods declaration-creating object-accessing class members-constructors –Methods overloading- static members-nesting of methods- Inheritance-Overriding Methods-Final Variable and Methods- Final Classes-Finalizer Methods-Abstract

Methods and classes-Visibility Control.

UNIT III

Arrays, strings and vectors: one dimensional Arrays- creating an Array- Two dimensional Array –Strings –Vectors- Wrapper classes-Enumerated types. Interfaces :Multiple Inheritance: Defining Interfaces-extending Interfaces- Implementing Interfaces-Accessing Interface variables. Packages: Defining Interfaces-Extending Interfaces- Implementing Interfaces-Accessing interface variables. Package: Java API Packages-Using system package-adding a class to a package- hiding classes- static import.

UNIT IV

Multithreaded programming: creating threads- extending the thread class- stopping and blocking a thread- life cycle of a thread – using thread methods- thread exceptions-thread priority-synchronization-implementing the runnable interfaced- Managing errors and exceptions: types of errors- exceptions- syntax of exception handling code-multiple catch statement-using finally statement- throwing our own exceptions-using exception for debugging. Applet Programming: how applets differ from applications-preparing to write Applets-Building Applet Code-Applet Life cycle-creating an executable applet-designing a webpage-applet tag-adding applet to html file-running the applet

UNIT V:

Graphics Programming: the graphics class-Lines and rectangles-circles and ellipses, drawing polygons-line graphs- using control in applets-drawing bar charts. Managing Input/output Files in Java: concept of streams – stream classes- byte stream classes-character stream classes- using streams-other useful I/O Classes-using the file class- I/O

exceptions-creation of files-reading/writing character and buffering files-random access files-interactive input and output.

Text book:

1.Programming with Java, A Primer, Third Edition, E.Balagurusamy, TATA McGraw-Hill Company,2008

UNIT I: Chapters: 1,2,3,4

UNIT II: Chapter 5,6,7,8

UNIT III: Chapters9,10,11

UNIT IV: Chapters:12,13,14

UNIT V: Chapter 15,16

Reference book:

Java and object oriented programming paradigm: Debasish Jana,Prentice-Hall in India Private Limited, New Delhi,2008.

CS8 - Lab 6: Java Programming
(4 Hours – 3 Credits)

Write Programs in Java for the following:

Section A

5. To implement a simple temperature conversion program.
6. To perform addition and subtraction of complex numbers using class and objects.
7. To perform volume calculation using method overloading.
8. Using command line arguments, test if the given string is palindrome or not.
9. String manipulation using String Methods (Use of any five String methods are preferred).
10. Write a program to fill names into a list .Also, copy them in reverse order into another list. If the name contains any numeric value throw an exception “Invalid Name”
11. Program to demonstrate the use of any two built-in exceptions in Java.

Section B

1. To perform multiplication of matrices using class and objects.
2. Using multilevel inheritance process student marks.
3. Implement multiple inheritance for payroll processing.
4. Implement interface for area calculation for different shapes.
5. Create a package called “Arithmetic” that contains methods to deal with all arithmetic operators. Also write a program to use the package.
6. Create two threads such that one of the thread generate Fibonacci series and another generate perfect numbers between two given limits.
7. Define an exception called “: **Marks Out of bound:**” Exception, that is thrown if the entered marks are greater than 100.
8. Program to demonstrate the use of Wrapper class methods.

9. File Processing using Byte stream.
10. File Processing using Character Stream.
11. Write applets to draw the following Shapes:
(a). Cone (b). Cylinder (c). Square inside a Circle (d). Circle inside a Square
12. Write an applet Program to design a simple calculator.
13. Write an Applet Program to animate a ball across the Screen.

AS4: Numerical Methods

(4 Hours – 4 Credits)

Unit I:

Algebraic and Transcendental Equations: Errors in numerical computation- Iteration method-Bisection method-Regula-Falsi method-Newton-Raphson method

Unit II:

Simultaneous Equations: Introduction-Simultaneous equations-Back substitution-Gauss Elimination method-Gauss –Jordan Elimination method-Calculation of Inverse of a matrix Gauss Jordan-Iterative methods-Gauss-Jacobi Gauss seidal Iteration method.

Unit III:

Interpolation & Introduction: Newton’s forward interpolation Formulae-Newton’s backward interpolation formulae- Lagrange’s interpolation formulae-Divided differences- Newton’s divided difference formula.

Unit IV:

Numerical Differentiation and Integration: Introduction-Derivates using Newton’s forward difference formula-Derivates using Newton’s backward difference formula- Numerical Integration-Newton-cotes quadrature formula-Trapezoidal Rule-Simpson’s one third rule-Simpson’s 3/8 th rule.

Unit V:

Numerical Solution of Ordinary Differential Equations: Introduction-Taylor series method -Euler’s method-Runge-kutta method of fourth order- Predictor & corrector methods-Mile’s method.

Text Book:

Numerical Methods, Second Edition, S.Arumugam, A.Thangapandi Issac, A.Somasundaram, SCITECH publications, 2009.

Unit I	: Chapter-3
Unit II	: Chapter-4 (excluding Relation method and its related problems)
Unit III	: Chapter-7 (Sections: 7.0, 7.1, 7.2((i), (ii) and related problems); 7.3,7.4,7.5,7.6)
Unit IV	: Chapter-8 (Sections: 8.0,8.1,8.2 related problems, 8.5 (excluding Weddles rule, Booles rule, Romberg’s method and related problems))

Unit V : Chapter-10 (Sections : 10.0,10.1,10.2,10.3(excluding modified Euler's method & its related problems) 10.4,10.5,10.6)

CS9 - RELATIONAL DATABASE MANAGEMENT SYSTEMS

UNIT I

OVERVIEW OF DATABASE SYSTEMS: Managing Data – A Historical Perspective – File Systems Versus a DBMS – Advantages of a DBMS – Describing and Storing Data in a DBMS – Queries in a DBMS – Transaction Management – Structure of a DBMS – People Who Work with Databases.

INTRODUCTION TO DATABASE DESIGN: Database Design and ER Diagrams – Entities, Attributes, and Entity Sets – Relationships and Relationship Sets – Additional Features of ER Model – Conceptual Design With the ER Model.

UNIT II

THE RELATIONAL MODEL: Introduction to the Relational Model – Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data – Logical Database Design: ER to Relational – Introduction to Views – Destroying / Altering Tables and Views.

RELATIONAL ALGEBRA AND CALCULUS: Preliminaries – Relational Algebra: Selection and Projection – Set Operations – Renaming – Joins – Division Relational Calculus: Tuple Relational Calculus – Domain Relational Calculus

UNIT III

SQL:QUERIES, CONSTRAINTS, TRIGGERS: The Form of a Basic SQL Query – UNION, INTERSECT, and EXCEPT – Nested Queries – Aggregate Operators – Null Values – Complex Integrity Constraints in SQL – Triggers and Active Databases – Designing Active Databases

UNIT IV

SCHEMA REFINEMENT AND NORMAL FORMS: Introduction to Schema Refinement – Functional Dependencies – Reasoning about FD's – Normal Forms – Properties of Decompositions – Normalization – Schema Refinement in Database Design – Other Kinds of Dependencies

UNIT V

OVERVIEW OF TRANSACTION MANAGEMENT: The ACID Properties – Transactions and Schedules – Concurrent Execution of transactions – Lock Based Concurrency Control – Performance of Locking – Transaction Support in SQL – Introduction to Crash Recovery.

SECURITY AND AUTHORIZATION: Introduction to Database Security - Access Control – Discretionary Access Control – Mandatory Access Control – Security for Internet Applications – Additional Issues Related to Security.

TEXT BOOK

Database Management Systems – Raghu Ramakrishnan & Johannes Gehrke, McGraw Hill International Edition – Third Edition – 2003

CHAPTERS:

UNIT – I	: 1.1 – 1.9 , 2.1 – 2.5
UNIT – II	: 3.1 – 3.7 , 4.1 – 4.3
UNIT – III	: 5.2 – 5.9
UNIT – IV	: 19.1 – 19.8
UNIT – V	: 16.1 – 16.7 , 21.1 – 21.6

REFERENCE BOOKS:

1. Database Management Systems - Alexis leon & mathews Leon, “Leon Vikas Publishing, Chennai, 2002.
2. Modern Database Management - Frad R. McFadden, Jeffrey A.Hoffer & Mary. B. Prescott, 5th Edition, Pearson Education Asia, 2001.
3. Database System Concepts – Abraham Silberschatz, Henry F.Korth, S.Sudarshan, McGraw Hill, 2006

CS - 10 Operating Systems (4 Hours – 4 Credits)

Unit I:

Introduction to Operating Systems: Introduction, What is an Operating systems, Operating system components and goals, Operating systems architecture. Process Concepts: Introduction, Process States, Process Management, Interrupts, Interprocess Communication.

Unit II:

Asynchronous Concurrent Execution: Introduction, Mutual Exclusion, Implementing Mutual Exclusion Primitives, Software solutions to the Mutual Exclusion Problem, Hardware solution to the Mutual Exclusion Problem, Semaphores. Concurrent Programming: Introduction, Monitors.

Unit III:

Deadlock and Indefinite Postponement: Introduction, Examples of Deadlock, Related Problem Indefinite Postponement, Resource concepts, Four Necessary conditions for Deadlock, Deadlock solution, Deadlock Prevention, Deadlock Avoidance with Dijkstra’s Banker’s algorithm, Deadlock Detection, Deadlock Recovery. Processor Scheduling: Introduction, Scheduling levels, Preemptive Vs Non-Preemptive Scheduling Priorities, Scheduling objective, Scheduling criteria, Scheduling algorithms.

Unit IV:

Real Memory Organization and Management: Introduction, Memory organization, Memory Management, Memory Hierarchy, Memory Management Strategies, Contiguous Vs Non-Contiguous Memory allocation, Fixed Partition Multiprogramming, Variable Partition multiprogramming. Virtual Memory Management: Introduction, Page Replacement, Page Replacement Strategies, Page Fault Frequency (PFF) Page replacement, Page Release, Page Size.

Unit V:

Disk Performance Optimization: Introduction, Why Disk Scheduling is necessary, Disk Scheduling strategies, Rotational optimization. File and Database Systems: Introduction, Data Hierarchy, Files, File Systems, File Organization, File Allocation, Free Space Management, File Access control.

Text Book:

Operating Systems, Deitel & Deitel Choffnes, Pearson education, Third edition, 2008.

Unit I: Chapters 1.1, 1.2, 1.12, 1.13 & 3.1 to 3.5

Unit II: Chapters 5.1, 5.2, 5.3, 5.4(up to 5.4.2), 5.5, 5.6 & 6.1, 6.2

Unit III: Chapters 7.1 to 7.10 & 8.1 to 8.7

Unit IV: Chapters 9.1 to 9.6, 9.8, 9.9 & 11.1, 11.5, 11.6, 11.8, 11.9, 11.10

Unit V: Chapters 12.1, 12.4 to 12.6 & 13.1 to 13.8

Reference Books

1. An introduction to Operating systems concepts and Practice, Pramod Chandra P. Bhatt, PHI, Second Edition, 2008.
2. Operating System Concepts, Abraham Silberschatz Peter Galvin Greg Gagne, 6th edition Windows XP Update, Wiley India edition, 2007.
3. Operating Systems Principles and Design, Pal Choudhury, PHI Learning, 2011.
4. Operating Systems, A Concept Based Approach Dhananjay M. Dhamdhare Tata McGraw Hill, 3rd Edition, 2012.

CS11- SOFTWARE ENGINEERING

UNIT I

Introduction to software engineering: Some definitions –Some size factors –Quality and productivity factors - Managerial issue.

Planning a software project: Defining the problem –Developing a solution strategy – planning the development process –planning an organization structure–other planning activities.

UNIT II

Software Cost Estimation: Software – Cost factors - Software cost estimation techniques - Specification techniques staffing –level estimation –estimating software maintenance costs.

UNIT III

Software requirements definition: The software requirements specification – format languages and processors for requirements specification.

UNIT IV

Software Design : Fundamentals Design concepts- Modules and modularizing Criteria Design Notations –Design techniques –Detailed Design Consideration –Real time and distributed system design –Test plan- Mile stones walk through and inspection –Design guide lines.

UNIT V

Verification and validation Techniques: Quality assurance –Static analysis – symbolic exception – Unit testing and Debugging –system testing – formal verification.

Software maintenance : Enhancing maintainability during development – managerial aspects of software maintenance –configuring management –source code metrics –other maintenance tools and techniques.

TEXT BOOK:

SOFTWARE ENGINEERING CONCEPTS – RICHARD FAIRLEY – Tata McGraw - Hill Publishing Company Limited, NewDelhi 1997.

Chapters

Unit – I: 1. 1 – 1.4, 2.1-2.5, Unit – II: 3.1 - 3.4, Unit – III :4.1–4.3
Unit – IV: 5.1 – 5.9 & Unit – V: 8.1, 8.3 – 8.7, 9.1 – 9.5

REFERENCE BOOKS:

1. FUNDAMENTALS OF SOFTWARE ENGINEERING – RAJIB MALL, Prentice Hall of India Pvt. Ltd. , New Delhi – 2003
2. Software Engineering: A practitioner's approach by Roger S. Pressman McGrawHill International Book Company, 2001.

3. SOFTWARE ENGINEERING – K. L. JAMES, Prentice Hall of India Pvt. Ltd. , New Delhi – 2009.

CS 12 LAB7 - RELATIONAL DATABASE MANAGEMENT SYSTEM

1. Introduction to SQL, an exercise on data types in SQL & Data Definition Language
2. Commands.
3. Exercise on Data Manipulation Language and transaction control commands.
4. Exercise on Types of Data Constraints.
5. Exercise on Joins (single-table or multi-table) and using normalization
6. Exercise on group-by clause and date arithmetic
7. Exercise on different functions (aggregate, math and string)
8. Exercise on different types of sub queries
9. Introduction to PL/SQL, Control Structures, Procedures and Functions, view
10. Introduction to triggers and cursors
11. Write a program that creates the function and calculating area of circle
12. Write a program that uses the concept of user defined exception

CS - 13 Data Communication and Computer Networks

(5 Hours – 4 Credits)

Unit I:

Introduction: A Brief History – Applications – Computer Networks – Categories of Networks – Standards and Standards Organizations – Network Architecture – Open Systems and OSI Model – TCP/IP Architecture. **Communication Media and Data Transmission:** Fourier Analysis – Analog and Digital Data Transmission – Modulation and Demodulation – Transmission Media – Wireless Communications – Data Transmission Basics – Transmission Mode – Interfacing – Multiplexing. **Error Detection and Correction:** Types of Errors – Error Detection – Error Correction.

Data Link Control and Protocol Concepts: Flow Control – Error Control – Asynchronous Protocols – Synchronous Protocols – High-Level Data Link Control (HDLC).

Unit II:

Local Area Networks: Types of Networks and Topology – LAN Transmission Equipment – LAN Installation and Performance.

Ethernet: IEEE Standard 802.3 **Token Bus:** IEEE Standard 802.4 **Token Ring:** IEEE Standard 802.5 – Fiber Distributed Data Interface (FDDI) – **Distributed Queue Dual Bus (DQDB):** IEEE Standard 802.6 – LAN Operating Systems and Protocols – Ethernet Technologies.

Wide Area Networks: WAN Transmission Methods – WAN Carrier Types – WAN Transmission Equipments – WAN Design and Multicast Considerations – WAN Protocols.

Unit III:

Integrated Services and Routing Protocols: Integrating Services – ISDN Services – ISDN Topology – ISDN Protocols – Broadband ISDN – Asynchronous Transfer Mode (ATM) – Principal Characteristics of ATM – Frame Relay – Comparison of ISDN, ATM and Frame Relay.

Wireless LANS: WLAN Applications – Wireless LAN Requirements – Planning for Wireless LANs – Wireless LAN Architecture – IEEE 802.11 Protocol Layer – IEEE 802.11 Physical Layer – Designing the Wireless LAN Layout – WAP Services.

Unit IV:

Internet Working: Principles of Internet Working – Routing Principles – Internetwork Protocols (IP) – Shortcomings of IPv4 – IP Next Generation.

TCP Reliable Transport Service: Transport Protocols – The Service TCP Provides to Applications – End-to-End Service and Datagrams – Transmission Control Protocol – User Datagram Protocol.

Unit V:

Network Applications: Client-Server Model – Domain Name System (DNS) – Telnet – File Transfer and Remote File access – Electronic Mail – World Wide

Web (WWW)

Network Management: Goal of Network Management – Network Management Standards – Network Management Model – Infrastructure for Network Management – Simple Network Management Protocol (SNMP).

Text Book:

Data Communications and Computer Networks, Brijendra Singh, Second Edition, PHI, 2006.

Unit I	: Chapters 1,2,3,5
Unit II	: Chapters 6, 7
Unit III	: Chapters 8, 9
Unit IV	: Chapters 10,11
Unit V	: Chapter 12

Reference Books:

1. Computer Networks, Andrew S Tanenbaum, 4th Ed, Prentice Hall of India, 2006.
2. Data Communications and Computer Networks, Prakash C. Gupta, Prentice Hall of India, 2005.
3. Data and Computer Communications, William Stallings, PHI, 2007.
4. Data Communication and Networking, Behrouz A. Forouzan, TMH, 2005.
5. Data Communications and Networks, Achyut S Godbole, TMH, 2005.

CS 14 - Lab 8 - Web Technology

(6 Hours – 4 Credits)

HTML PROGRAMS

1. To create a simple HTML file to demonstrate the use of different tags
 - a. Different heading tags (h1 to h6)
 - b. Paragraph
 - c. Horizontal line
 - d. Line break
 - e. Pre tags
 - f. Different logical styles tags
(<cite>,<code>,,<dfn>,,<ins>,<kbd>,<samp>,<var>,)
 - g. Different physical styles tags
(,<big>,<i>,<s> or <strike>,<small>,<sub>,<sup>,<tt>,<u>)
2. To create a web portal for college which contains different links for different departments (courses offered).
3. To create an html page with different types of frames such as floating frames, navigation frames and mixed frames.

CSS

1. Create a mini site using HTML, CSS
2. Create an image gallery
3. To Create a Website using CSS for 2D Transforms
4. To Create a Website using CSS for Animations

JAVA SCRIPT

1. Write a java script program to define a user defined function for sorting the values in an array.
2. write a java script program to explain various predefined string functions ,like
 - 1.charAt()
 - 2.concat()
 - 3.indexOf()
 - 4.length()
 - 5.replace()
 - 6.search()
 - 7.substr()
 - 8.substring()
 - 9.toLocaleLowerCase()
 - 10.toLocaleUpperCase()
3. Write a java script program to display the student mark details using array.
4. Write a java script program to demonstrate exception handling.
5. Write a java script program to display calendar by getting the year from the user.
6. Write a java script program to validate employee details form.
7. Write a java script program to change the background color for every click of a button.
8. Write a java script program with two combo box populated month and year to display the calendar for the selected month and year from combo box.
9. Write a java script program to create animation like car animation.

10. Write a java script program to draw an India map and hotspot the countries with different colors.
11. Write a java script program for railway reservation form.

CS15: Data Mining

Unit I:

Introduction - Why Data Mining? - What is Data Mining? - What Kinds of Data Can Be Mined? - What Kinds of Patterns Can Be Mined? - Which Technologies Are Used? Which Kinds of Applications Are Targeted? Major Issues in Data Mining. Getting to Know Your Data: Data Objects and Attribute Types - Basic Statistical Descriptions of Data - Data Visualization –Measuring Data Similarity and Dissimilarity.

Unit II:

Data Preprocessing: Data Preprocessing An Overview - Data Cleaning - Data Integration - Data Reduction - Data Transformation and Data Discretization. Data Warehousing and Online Analytical Processing: Data Warehouse: Basic Concepts - Data Warehouse Modeling: Data Cube and OLAP - Data Warehouse Design and Usage - Data Warehouse Implementation.

Unit III:

Mining Frequent Patterns, Associations, and Correlations: Basic Concepts and Methods - Frequent Item set Mining Methods - Which Pattern Are Interesting? - Pattern Evaluation Methods. Advanced Pattern Mining: Pattern Mining: A Road Map - Pattern Mining in Multilevel, Multidimensional Space - Constraint - Based Frequent Pattern Mining - Mining High -Dimensional Data and Colossal Patterns - Mining Compressed or Approximate Patterns - Pattern Exploration and Application.

Unit IV:

Classification: Basic Concepts - Basic Concepts - Decision Tree Induction - Bayes Classification Methods - Rule-Based Classification- Model Evaluation and Selection - Techniques to Improve Classification Accuracy.

Unit V:

Cluster Analysis Basic Concepts and Methods: Cluster Analysis - Partitioning Methods - Hierarchical Methods - Density Based Methods - Grid Based Methods - Evaluation of Clustering.

Reference Books:

1. Data Mining Concepts and Techniques - Third Edition, Jiawei Han, MichelineKamber, Jian Pei
2. Insight into Data mining Theory and Practice K.P. Soman, ShyamDiwakar and V. Ajay, Easter Economy Edition, Prentice Hall of India, 2006.
3. Introduction to Data Mining with Case Studies,G. K. Gupta, Easter Economy Edition, Prentice Hall of India, 2006.
4. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, “Introduction to Data Mining”, Pearson Education, 2007.

5. Modern Data Warehousing, Mining, and Visualization, MARAKAS, GEORGE M, Pearson Education, 2011.

