Scheme and Syllabus

of

B. Sc. (Computer Science) Hons.
I to VI Semester

w.e.f. July 2011
(2011 – 2014 Batch onwards)

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**Proposed Syllabus & Scheme for B. Sc. Computer Science (Hons.) Semester System
(Effective from July 2011 session for 2011-14 batch onwards)**

CLASS /SEMESTER	B. Sc.(CS) Hons.	CCE	MIN. MARKS	TERM END EXAM	MIN. MARKS	TOTAL 100%	MIN. MARKS
FIRST SEM.	CS/IT-1101--Computer Organization	15	5	85	28	100	33
	CS/IT-1101P- Practical on Computer Org. & MS Office	---	---	---	---	50	17
SECOND SEM.	CS/IT-1201- Programming & Problem Solving through C	15	5	85	28	100	33
	CS/IT-1201P- Practical on C Language	---	---	---	---	50	17
THIRD SEM.	CS/IT-2301-Data Structure using C Language	15	5	85	28	100	33
	CS/IT-2301P-Practical on Data Structure using C	---	---	---	---	50	17
	CS-2302 H Operating System using Linux	15	5	85	28	100	33
FOURTH SEM.	CS/IT-2401-Data Base Management System	15	5	85	28	100	33
	CS/IT-2401P-Practical on Data Base Management System	---	---	---	---	50	17
	CS-2402H System Programming	15	5	85	28	100	33
FIFTH SEM	CS/IT-3501 Object Oriented Programming using C++	15	5	85	28	100	33
	CS/IT-3501P-Practical on C++	---	---	---	---	50	17
	CS-3502H Computer Graphics	15	5	85	28	100	33
	CS-3502PH Practical on Computer Graphics	--	---	---	---	50	17
	CS-3503H Computer Oriented Numerical Method	15	5	85	28	100	33
	CS- 3503PH Practical on CONM using C++	--	---	---	---	50	17
SIXTH SEM	CS-3601-Computer Network	15	5	85	28	100	33
	CS-3601P-Practical on Computer Network	---	---	---	---	50	17
	CS-3602H Computer Architecture	15	5	85	28	100	33

CS-3603H VB .NET	15	5	85	28	100	33
CS-3603PH Practical on VB .NET					50	17
CS-3604H Minor Project					50	17

PS :- CCE ----- CONTINUOUS COMPREHENSIVE EVALUATION, **INDIVIDUAL PASSING REQUIRED FOR THEORY AND PRACTICAL SUBJECTS**

CS/IT – 1101 COMPUTER ORGANIZATION
Commencing from 2011-12 onwards

UNIT I

Evolution of Computers and Computer Generations, Computer Classification Processing speed of a computer, Technology Trends, Measuring Computer Performance, MIPS.von Neumann Machine Architecture, Functional Units and Components in Computer Organization, Computers – Block diagram, Memory addressing capability of a CPU, Word length of a computer Basic components of a Digital Computer - Control unit, ALU, IO Subsystem of a Computer, Bus Structures, Uses of Program Development Tool, Editor, Compiler, Assembler, Interpreter)

UNIT II

Number systems – Decimal Number system, Binary number system and Hexa-decimal number system,1's & 2's complement, Representation of Positive and Negative Numbers Binary Fixed-Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow. Floating Point Representation, Codes, ASCII Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates. Counters, Registers, Shift Registers

UNIT III

Storing data and Program in Memory, Memory Hierarchy in a Computer Internal Organization of Semiconductor Main Memory Chips, Semiconductor Memory RAM and ROM Auxiliary Memory Peripheral Devices, Secondary Storage Memory, Magnetic Memories and Hard Disk Optical Disks and CD Memories

UNIT IV

Algorithm, Flowchart, Logic Development & Problem solving. Algorithms for simple problems involving conditional manipulation of memory variables The 8085 Programming Model, 8085 Hardware Model, Block Diagram and uses of Registers, Accumulator, Flag, Program counter and stack pointer How to write, assemble and execute a simple program: Illustrate Program –Adding two hexadecimal numbers.

UNIT V

Input Devices, keyboard, Mouse, Output Devices, CRT Monitor, LCD Displays, Touch Screen Displays Print Devices Multiprocessor and Multi core Architecture Flynn Classification SISD, SIMD, MISD, MIMD.

TEXT BOOK
Computer Fundamentals – B. Ram – New Age International Publishers
REFERENCE BOOKS
1. Rashid Sheikh, "**Computer Organization & Architecture**"
2. William Stallings, "**Computer Organization & Architecture**", Pearson.
3. BARTEE, *"Digital Computer Fundamentals"* TMH Publication
4. *MORRIS MANO, "Computer System Architecture"* PHI
5. W. Hayes, Computer Architecture, McGraw-Hill
Problems Solving Skills Book
1. Nicholas P Carter, Schaum Outline on Computer Architecture and Organization, TMH, Special Indian Edition Adaptation,, 2010

Note: Faculty teaching the subject will also given to students the besides 50 hours teaching the appropriate exercises and assignments.

CS/IT-1101P - Practical on Comp. Org. and MS-Office

Practical Session -01 - Practical on MS-OFFICE:
WINDOWS
1. Creating folder, cut, copy, paste, managing file and folder in windows.
2. Arrange icons, set display properties
3. Adding and removing software and hardware
4. Setting date and time, screen saver and appearance.
5. Using windows accessories.
6. Settings of all control panel items
7. Search file

MS-Word
1. Creating & Editing Document
2. Formatting Document
3. Use of Auto-text, Autocorrect, Spelling and Grammar Tool,
4. Page Formatting, Page Border, Background,
5. Creation of MS-Word-Mail Merge, Macros, Tables.
6. Practice of Printing, page setup etc.

MS-Excel
1. Creating & Editing Worksheet, Fill Handle
2. Use Formulas and Functions
3. Preparing Charts

MS-PowerPoint
1. Creating, Manipulating & Enhancing Slides,
2. Inserting Organizational Charts, Excel Charts
3. Using Word Art
4. Putting Animations and Sounds
5. Inserting Animated Pictures
6. Inserting Recorded Sound Effect

Computer Organization
Practical Session 02 - Using Debug/MASM/TASM

To Study of DEBUG visit the following website:
http://kipirvine.com/asm/debug/Debug_Tutorial.pdf

Practical on Flip-flops, Logic Gates and Registers.

Do the following tasks: -
1. Add 3, 4 and 7 and display result in only AX register
2. Add 3, 8 and 9 using three different registers and show result of all registers
3. Take dump of location 110 and display
4. Add your name and date of birth at location 120. Move only the date of birth to location 200. Search through 100 to 300 to find the date
5. Move 3 to AX register and multiply it with 3 to show the result.
6. Use int 21 in all your assembled codes
7. Use comparison command to compare the date of birth at location 120 and 100.

Write complete assembly codes for the following tasks. Submit code and output trace:

1. A program that displays your name and date of birth.
2. A program that adds the following numbers
a.   1000   b.
4000 c. 1700

3. A program that does the following a.
Add two numbers X and Y
b. Multiply the result with C
c. Increment the result

4. A program that subtracts
a. Two numbers X and Y such that X>Y
b. Two numbers X and Y such that Y>X

5. A program that divides
a. Two numbers X and Y such that X%Y = 0
b. Two numbers X and Y such that X%Y != 0 c.
Two numbers X and Y such that Y = 0

CS/IT – 1201- PROGRAMMING AND PROBLEM SOLVING THROUGH C
Commencing from 2011-12 onwards

UNIT I

Algorithm, Flowchart, Logic Development & Problem Solving. Structure of C program, C declarations, keywords, identifiers, constants, variables, Data types, type conversion, Types of operators and expressions, Input and output functions in C.

UNIT II

Decision Statement – IF-ELSE statement, break, continue, goto, switch() case and nested IF statement. Loop Control Statements – For loop, While loop , Do-while loop and nested loops. Arrays – Definition, Initialization, characteristics, One, Two, Three and Multi-dimensional Arrays Working with scanf, printf, Strings & Standard Functions.

UNIT III

Pointers – Introduction, Features, Declaration & Arithmetic operations on pointers. Pointers and Arrays, Array of pointers. Pointers to pointers, pointers and strings, Void pointers Functions – Declaration, Prototype, Types of functions, Call by value and reference, Function with operators

UNIT IV

Function with decision statements, function with Loop statements. Function with Arrays and Pointers.Types of Storage Classes. Introduction to Files, Streams and File Types, Steps for file operations, File IO,

UNIT V

Files – Streams and file types, file operations Write and Other file functions.Command line arguments, Application of Command Line Arguments Structure and Union – Declaration, Initialization, structure within structure. Array of structure, Enumerated data types, Union of structure

TEXT BOOKS
1. *E. Balaguruswamy, **“Programming In C ”**, TMH Publications*
2. *Kanetkar, **“Let Us C”***

REFERENCES BOOKS
1. Ashok N. Kamthane, "Programming with ANSI and Turbo C", Pearson Education
2. Ashok N. Kamthane et. al., Computer Programming and IT (for RTU), Pearson Education, 2011 (ISBN 978-81-317-5970-7)
3. *Mahapatra, **“ Thinking In C ”,** PHI Publications*

Problem Solving Skills Book:
1. *Gottfried, Schaums Outline Series, **“ Programming With C ”,** TMH Publications*

Note: Faculty teaching the subject will also given to students the besides 50 hours teaching the appropriate exercises and assignments. l.

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CS/IT – 1201P - Practical on C Language

(*Student Must Write 50 Programs including following 25 Programs in their Computer Practical Book with* **Algorithm/Flowchart)**

1. Write a program for swapping two variables without using third variable.
2. Write a program to calculate simple Interest and Compound Interest.
3. Write a program to convert temperature entered into centigrade to Fahrenheit.
4. Write a program to find maximum of three numbers.
5. Write a program to read in a three digit number produce following output (assuming that
the input is 539)
5 hundreds
3 tens
9 units
6. Write a program to find sum of digits of accepted number.
7. Write a program to find student grade using IF-ELSE ladder
8. Write a program that prints given three integers in ascending order using IF- ELSE
9. Write a program for simple calculator using switch/case loop.
10. Write a program for print Fibonacci series up to N number.
11. Write a program to find sum of first 50 odd numbers and even numbers.
12. Write a program to find reverse of given number.
13. Write a program to find factorial of accepted number.
14. Write a program to find all prime number between two given numbers
15. Write a program to find minimum, maximum, sum and average of given one dimensional
array.
16. Write a program for sparse matrix.

17. Write a program to find addition, subtraction, multiplication of matrix.
18. Write a program to print terms of each of the following series
i. Sin(x) ii. Cos(x)
19. Display the following output on the screen
a. b. c.
* 1 A
** 12 AB
*** 123 ABC
**** 1234 ABCD
***** 12345 ABCDE
20. Write a program to read and write a structure.
21. Write a program for factorial function.
22. Write a program to read a string and print its reverse.
23. Write a program to find a$_b$ using Call by reference.
24. Write a program for create, open and append a file.
         25. Write a program to copy the contents of one file to another.

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CS/IT-2301 DATA STRUCTURE USING C LANGUAGE
Commencing from 2012 onwards

Unit- I
Introduction to Data Structures: Definition of Data structure and Abstract data type Classification of Data structures: Linear, Non-linear, homogeneous, non-homogeneous, static & dynamic. Arrays: Definition & types of array, Memory representation of one & two dimensional array, Operations: Insertion ,Deletion, Traversal Sparse Matrix: Definition & memory representation.

Unit- II
Stack : Definition, Array implementation of stack (static stack) : Operations PUSH, POP, TRAVERSE .Applications of stack : Infix, Prefix , Postfix representation and evaluation using stack, Use of stack in recursive implementation. Queue : Definition, Array implementation of queue (static queue) : Operations INSERT, DELETE, TRAVERSE.
Introduction to Circular queue: Definition & implementation, Priority queue, Double ended queue Applications of queue

Unit- III
Introduction to Linked List: Definition, advantages, Types of linked list: single, doubly, circular linked list Operations: Creation, insertion, deletion & traversal of linked list

Unit- IV
Complexity of Algorithms: Time & space complexity, Best-case, worst-case, average-case, Big – oh notation. Searching Algorithm: Linear or sequential search, Binary search, Interpolation search using array. Complexity of Linear search, Binary search, Interpolation Search Sorting Algorithm: Bubble sort, Selection sort, Insertion sort, Merge sort Complexity of sorting algorithm.

Unit- V
Introduction to Tree: Definition, Binary tree: Definition, representation, Operations: Traversal, insertion, deletion Binary search Tree(BST): Definition and creation, Search using BST Introduction to B-Tree & B+ tree. Introduction to graph: Definition & representation, Graph Traversal: Depth First Search (DFS),Breadth First Search(BFS) algorithm.

Text Books:
1. Yedidyah Langsam Moshe J. Augenstein, Aaron M. Tenenbaum," Data Structures using C & C++", PHI New Delhi,2nd Edition

Reference Books:
1. G.S.Baluja," Data Structures Through C", Dhanpat Rai & Co.,4th Edition
2. Seymour Lipschutz,"Data Structures", Schaum's Outline Series, Tata McGraw Hill Publishing Company Ltd.
3. Adam Drodzek," Data Structures & Algorithm in C++", 2nd Edition

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CS/IT 2301P Practical Exercise on Data Structure using C
Commencing from 2012-13 onwards

1. Write a program for address calculation of an element in one and two dimensional array (row major order and column major order).
2. Write a program for insertion, deletion and traversal of elements of an array.
3. Write a program for sparse matrix implementation.
4. Write a program for complete implementation of stack using array with push, pop and traversal operations.
5. Write a program for conversion of an infix expression into postfix representation and evaluation of that postfix form.
6. Write a program for complete implementation of queue using array with insertion, deletion and traversal operations.
7. Write a program for complete implementation of circular queue using array with insertion, deletion and traversal operations.
8. Write a program for complete implementation of double ended queue using array with insertion, deletion and traversal operations.
9. Write a program to create singly link list (creation, insertion, deletion and traversal).
10. Write a program to create doubly link list (creation, insertion, deletion and traversal).
11. Write a program to create circular singly link list (creation, insertion, deletion and traversal).
12. Write a program to create circular doubly link list (creation, insertion, deletion and traversal).
13. Write a program for complete implementation of stack using link list with push, pop and traversal operations.
14. Write a program for complete implementation of queue using link list with insertion, deletion and traversal operations.
15. Write a program for implementation of binary tree (creation, insertion, deletion), with preorder, inorder and postorder traversal.
16. Write a program for implementation of binary search tree (creation, insertion, deletion), with preorder, inorder and postorder traversal.
17. Write a program for implementing graphs and showing depth first search and breadth first search traversals.
18. Write a program for linear search.
19. Write a program for Binary search.
20. Write a program for interpolation search.
21. Write a program for bubble sort.
22. Write a program for selection sort.
23. Write a program for insertion sort.
24. Write a program for merge sort.

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CS – 2302H OPERATING SYSTEM USING LINUX
Commencing from 2012-13 onwards

UNIT-I

Evolution of operating system, Definition of operating system, Objectives & Function of operating system, Operating system as a resource manager, Types of operating systems, features of linux, basic architecture of Linux system, features of kernel and shell. Differentiate DOS, Windows and Linux.

UNIT-II

Structure of file system, Essential Linux commands – Commands for files and directories, creating and viewing files using cat, cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, file comparisons – cmp and comm., view files, disk related commands, checking disk free spaces, chmod with its options, cal, date, who, tty, lp, stty.

UNIT-III

Filters and pipes: head, tail, wc, pr, cut, paste, sort, unique, grep, egrep, fgrep, tee. The process: shell process, parent and children, process status, system process, multiple jobs in background and foreground, changing process priority with nice, premature termination of process, mathematical commands – bc, expr, factor, units.

UNIT-IV

Creating and editing files with VI editor with their command options, Operators, Text deletion, Text movement, changing text, yanking text, filtering text, the ex mode, moving text from one file to another.
Communication: the bulletin board – news, write, mesg, talk, mail, elm, pine, finger, vacation and connecting to the remote machine.

UNIT-V

System administration Common administrative tasks, identifying administrative files – configuration and log files, role of system administrator, managing user accounts – adding and deleting users, changing permissions and ownerships,
Installation of Linux system – Linux installation requirement, complete procedure steps, Partitioning the Hard drive, system start up and shut down process, init and run levels. File system mounting, lpstat. Backup strategies, installing software on Linux.

Text Book:
1. Unix concepts and application – Sumitabha Das – Tata Mcgraw Hill.

Reference Books:
1. Unix – Syed Mansoor Sarwar, Robert Kortskey – Pearson education.
2. Using Linux – David Bandel and napier – Pearson Education.

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CS/IT–2401 DATABASE MANAGEMENT SYSTEM
Commencing from 2012-13 onwards

Unit – 1

Fundamentals of DBMS: Data, Information, Database & Computers, DBMS Definition, DBMS versus file processing system, Components of DBMS Environment, Instances & Schemas, Three Levels Architecture, Data Independence, Data Dictionary, Database Users, Data Administrators.

Unit – 2

Modeling the Real World, Various Data Models & their Comparison, Entity Relationship Models. RDBMS –Concept, Components, Data Integrity, Keys, Relational data Manipulations and Relational Algebra, Tuple Calculus.

Unit – 3

Normalization: Definition, Decomposition, Basic Concepts like FD, Objectives of Normalization. Normal Forms- First, Second, Third Normal Form, BCNF, Concept of Multi Valued Dependencies & Higher Normal Forms.

Unit – 4

Introduction to SQL, DDL, DML, and DCL statements, Creating Tables, Adding Constraints, Altering Tables, Update, Insert, Delete & various Form of SELECT- Simple, Using Special Operators for Data Access. Nested Queries & Exposure to Joins, Aggregate Functions.

Unit – 5

Transaction: Concept of Transaction, Concurrency Control-Problem & its Basis, Concurrency Control -Locks & Deadlocks. Recovery-Kind of Failures, Recovery Techniques, Security-Authentication, Authorization, Access Control.

Text Book:
1. H. F. Korth & A. Silverschatz, Database Concepts, Tata McGraw Hill, New Delhi

References Books:
1. Elmasri & Navathe, Fundamentals of Database systems, Addison & Weisely, New Delhi.
2. C. J. Date, Database Systems, Prentice Hall of India, New Delhi.
3. Ivan Bayrros, SQL, Pl/SQL, BPB Publications New Delhi.

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CS/IT-2401P-Practical on Data Base Management System

1. Write a command to create following table structure, item-master .

   Column name   datatype

   Itemcode   char(4)

   Itemdesc   varchar(25)

   No_of_item_available int

   Price   int.

   Condition are:- (1) itemcode is primary key

           (2) Itemdesc is not NULL

           (3) No_of_item_available is non zero .

           (4) Price value should be 200 Rs.

2. The Department of an employee Raj Sharma table changed from finance to marketing. The department code of marketing is 003 & the employee code of raj Sharma 0015.both the department code & employee code are of char data type. Write update statement to update table employee.

3. News paper attribute   data type

   Newspapercode   char (4)

   Newspaper name   char(25)

   Region   varchar(25)

   Type of news paper   varchar(25)

   City   char(20)

   Country code   char(3)

   Phnno   Char(15)

   Second table

   Newpaperadver

   Newsadvo   varchar (4)

   Adstart date   dates time

   Write SQL command for:-

   (a) Phnno should be [0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]

   (b) Country code should be 001 by default.

   (c) News paper code should primary key.

     Modify table->

     (a) Newsadvo Should be primary key

     (b) News paper code should be foreign key.

4. Write a command to display the detail of all those employee who name at least 3-5 year experience.

   Attribute   data type

   Employ code   char

   Employ name   char

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Department code	char
DOJ	date
YOE	int
Employ grade	char

5. The employee tables contain the employee name, address, age, salary of each employ. Write SQL command for-
   (a) Display all the detail of the employee
   (b) Whose age less than 40 year.
   (c) Salary is greater than 15000.

6. In a bank the customer table store's the detail of each customer. the bank has decided to give a 10% discount on all credit card's you want to generate a list of all customer who don't available the credit card facility. How do you generate the list? The structure of customer table.

Column	data type
Customecode	char
Customername	char
Customeraddress	char
Credit card	int

7. Consider title table with column name, title, title type pub ID of char type, while price advance, royalty, ytd-sales is off int type.
   (a) Display the highest advance paid.
   (b) Display the lower advance paid.
   (c) Display the total no. of book.
   (d) Display total sales of book.
8. Write appropriate SQL command for following-
   (a) Increase the price of all items by 5%.
   (b) Update the quantity hold to 500 for item code 1oo1.
   (c) Delete a row from the item table where item code is 1oo1.
   (d) Update the price of item to 20 RS .
9. Write SQL definition command for each of the following
   (a) How would you add an attribute, CLASS, to the STUDENT table.
   (b) How would you remove the IS_REGISTERED table?
   (c) How would you change the field for FACULTY_NAME from 25 characters to 40 characters?
10. Consider employee table
    Employee (empno., Name, depid, Basic, HRA, Deduction, Tax)
    (a) Get the name of employee in the department 'D1' and basic pay less than 6000.
    (b) Get the average HRA of an employee.

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(c) Find the total basic pay for all the employee in the department 'D1' whose basic pay is greater than 6000.

(d) Find the name of the employee who get the maximum and minimum basic pay.

11. Consider the following table

Emp_master(emp_no, fname, mname, lname, dept, design, branch_no)

Branch_mastr(name, branch_no)

List the employee details along with branch names to which they belong.

12. Consider the following table

Cust_mstr (custno, fname, mname, lname)

Addr_dtls (code_no,addr1,addr2,city,state,pincode)

List the customer along with their multiple address details.

13. Consider table

Book (Bookid, title, author, Publisher, year, price)

Order_details (Orderno, bookid, quantity)

Publisher (pubid, name, city, country)

Catalog (Bookid, title, authorid, pubid, category_id, year, price)

Author (authorid, name, city, country)

1. Get the title and price of all the books whose price is less than the average price of the books.
2. Get the name of all authors who have more than two books in the catalog.
3. Get the name of all the books for which an order has been placed.

14. Consider table Order (ordered, order_detail, qty, price)

   a) Alter table Order add column amount.
   b) Modify data type of price column from character to int.

15. Consider table

Product_master(Product_no,description,profit_percent,unit_measure,qty_on_hand,reorder, sell _price, cost_price).

Client_master(Clientno, name, city, pincode, state , bal_due)

Salesman_master(Salesmanno, salesmanname,address1,address2, city, pincode , state , sal_amt, tgt_to_get, Ytd_sales, remark)

1. Find out the names of all the clients.
2. Retrieve the entire contents of the client_master table.
3. Retrieve the list of names and the cities of all the clients.
4. List the various products available from the product_master table.
5. List all the clients who are located in Bombay.
6. Find the names of the salesman who have a salary equal to Rs. 3000.

16. Consider table

Client_master (Client_no, name, city, pincode, state, bal_due).

Product_master (Product_no, description, profit_percent, unit_measure, qty_on_hand, reorder, sell _price, cost_price).

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Salesman_master (Salesmanno, salesmanname, address1, address2, city, pincode , state , sal_amt, tgt_to_get, Ytd_sales, remark)

1. Change the city of client_no 'C00005' to 'Bombay'.
2. Change the bal_due of client_no 'C00001' to Rs. 1000.
3. Change the cost price of '1.22 Floppies' to Rs. 950.00.
4. Change the city of the salesman to Mumbai.

17. Consider table

Product_master(Product_no,description,profit_percent,unit_measure,qty_on_hand, reorder,
    sell _price, cost _price).
    Client_master(Clientno, name, city, pincode, state , bal_due)
    Salesman_master(Salesmanno, salesmanname,address1,address2, city, pincode , state , sal_amt, tgt_to_get, Ytd_sales, remark)

1. Delete all salesman from salesman_master whose salaries are equal to Rs. 3500.
2. Delete all products from product_master where the quantity on hand is equal to 100.
3. Delete from client_master where the column state hold the value 'Tamil Nadu'.

18. Consider employee table
Employee (empno, name, depid, basic, hra, deduction, tax)
    1. Get the number of rows in a table
    2. Find the department wise average pay of the employees.
    3. Find the name of the employees whose basic pay is greater than the average basic pay.
    4. Find the name of the employee who gets the basic pay.

19. The employee table stores the details of employees such as employee code, employee name, department code, date of joining, years of experience and the employee grade. Display only those grades in which the number of employees is more than 100.
The table structure of the employee table is shown below:
    Employee(emp_code, emp_name, Dept_code, Doj, Yrs_exp, Emp_grade)

20. Explain set operation command with example.

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CS-2402H SYSTEM PROGRAMMING
Commencing from 2012-13 onwards

UNIT I FUNDAMENTALS

System software and machine architecture – The Simplified Instructional Computer(SIC) Machine architecture – Data and instruction formats – Addressing modes Instruction sets – I/O and programming.

UNIT II ASSEMBLERS

Basic assembler functions – A Simple SIC assembler – Assembler algorithm and data structures Machine dependent assembler features – Instruction formats and addressing modes Program relocation – Machine independent assembler features Literals – Symbol – Defining statements – Expressions – One pass assemblers and multi pass assemblers – Implementation example – MASM assembler.

UNIT III LOADERS AND LINKERS

Basic loader functions – Design of absolute loader – Simple bootstrap loader Machine dependent loader features – Relocation – Program linking Algorithm and data structures for linking loader – Machine independent loader features – Automatic library search – Loader options – Loader design options – Linkage editors – Dynamic linking Bootstrap loaders – Implementation example– MSDOS linker.

UNIT IV MACRO PROCESSORS

Basic macro processor functions – Macro definition and expansion – Macro processor algorithm and data structures – Machine independent macro processor features –Concatenation of macro parameters – Generation of unique labels – Conditional macro expansion – Keyword macro parameters – Macro within macro – Implementation Example – MASM Macro Processor – ANSI C Macro Language.

UNIT V SYSTEM SOFTWARE TOOLS

Text editors – Overview of the editing process – User interface – Editor Structure Interactive debugging systems – Debugging functions and capabilities Relationship with other parts of the system – User interface criteria.

TEXT BOOK
1. Donovan, J.J., "Systems Programming", Tata McGraw-Hill, 1972.

REFERENCES BOOKS:
1. Dhamdhere, D. M., "Systems Programming and Operating Systems", 2nd Revised Edition, Tata McGraw-Hill, 1999.
2. Beck, L.L. "System Software - An Introduction to Systems Programming", 3rd Edition, Pearson Education, 2000.

(Effective from July 2011 session for 2011-14 batch onwards)

CS/IT-3501 Object Oriented Programming using C++
Commencing from 2013-14 onwards

Objective : To introduce the concept of object oriented programming through C++.
UNIT I
Introduction, OOPS languages, characteristics of OOP's languages, application of OOP's, OOP's paradigm, concepts: object, class, data abstraction, data encapsulation, inheritance, and polymorphism. Static and dynamic binding, message passing, benefits of OOP's, disadvantage of OOP's. Application of OOP's.

UNIT II
C++ programming basics, basic program structure ,preprocessor directive, data types, operators, manipulator, type conversions, C++ stream class. Control statement: for, do, while, do-while, Decision statement if, if-else, switch-Case. Jump statement: break, continue, go to, exit.

UNIT III
Function and arrays. Classes and instances, defining classes in object oriented language, building and destroying instances (constructors and destructors), modifiers, friend and inline functions, string handling function.

UNIT IV
Data encapsulation, polymorphism, operator overloading, function overloading, virtual functions.

UNIT V
Inheritance, reusability of code through inheritance, type of inheritance, data abstraction, abstract classes. Templates and exception handling.

TEXT BOOK:
1. Object oriented programming with C++ by Balaguruswamy, TMH Publishing

REFERENCE BOOKS:
1. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.
2. C++ Primer, 3rd Edition, S.B. Lippman and J. Lajoie, Pearson Education.
3. The C++ Programming Language, 3rd Edition, B. Stroutstrup, Pearson education.
4. OOP in C++, 3rd Edition, T. Gaddis, J. Walters and G. Muganda, Wiley
   DreamTech Press.
5. Object Oriented Programming in C++, 3rd Edition, R.Lafore, Galigotia Publications pvt ltd.
6. Computer Science, A Structured Programming Approach Using C++, B.A.Forouzan and
   R.F. Gilberg, Thomson

(Effective from July 2011 session for 2011-14 batch onwards)

CS/IT-3501P PRACTICAL (OBJECT ORIENTED PROGRAMMING THROUGH C++)

1. Write a program to find the maximum of three using conditional operator.
2. Write a program to find the largest, second largest and third largest in a givenarray.
3. Write a program to generate Armstrong series.
4. Write a program to find the factorial of a given number.
5. Write a program to generate the Fibonacci series.
6. Write a program to check whether the given number is palindrome or not.
7. Write a program to find the GCD and LCM of two no's.
8. Write a program to print the diagonal elements of matrix.
9. Write a Program to demonstrate use of array of objects.
10. Program to demonstrate use of function overloading.
11. Write a function which accept object as a parameter and returns object.
12. Write a Program to demonstrate the virtual base class.
13. Write a Program to demonstrate use of polymorphism (virtual function).
14. Write a program to overload ++ operator to increment age of person by one month.
15. Write a program to illustrate the use of scope resolution operator.
16. Write a program to find the square root using inline function.
17. Write a program to illustrate the use of friend function.
18. Create two employee objects and display each object's yearly salary.
19. Give each employee a 10% raise and display each Employee's yearly salary again..
20. Write C++ program to create five object of book, get information of book using getdata() function including name, price, publication and author.

(Effective from July 2011 session for 2011-14 batch onwards)

CS-3502 H COMPUTER GRAPHICS
Commencing from 2013-14 onwards

UNIT – I
Introduction to computer graphics, application of computer graphics, Hardware and software requirements for computer graphics, Pixel, frame buffer, Resolution, aspect ratio. Types of graphics Display Devices: Video Display Devices: Random Scan, Raster Scan Monitors, Color CRT Monitor, DVST, flat panel and Plasma Panel display devices. Input Devices: mouse, Trackball, Light pen, Scanner, Digital Camera and Hard copy devices: Printers & plotters

UNIT – II
Basic Raster Graphics algorithms for drawing 2-D Primitives: Algorithms for line Generation, circle generation, polygon generation and polygon filling algorithm, Anti aliasing. Windowing and clipping: window, viewport, window to viewport transformation, clipping operations: point clipping, line clipping, text clipping, polygon clipping.

UNIT – III
2D Transformation: Translation, Scaling, Rotation, Reflection, shearing, composite transformation, homogeneous Coordinates. 3-D Transformation: Translation, Scaling, Rotation, Reflection, shearing, composite transformation. 3-D Viewing: Viewing pipeline, Projections: parallel and perspective.

UNIT – IV
Hidden Surface removal—Depth comparison, Z-Buffer Algorithm, Back-Face Removal, The Painter's Algorithm, Scan-Line Algorithm, Subdivision Algorithm.

UNIT – V
Light and Color, Different color models, RGB, CMY, YIQ, Introduction to multimedia, Computer animation, Raster animation, Computer animation languages.

Text Books:
1. Computer Graphics by Donald Hearn and M. Pauline Baker.

Reference Books:
1. Computer Graphics by Zhigang Xiang and Roy Plasock, Schaum's Outlines.
2. Computer Graphics and Multimedia by G.S.Baluja, Dhanpat Rai and Co.

(Effective from July 2011 session for 2011-14 batch onwards)

CS-3502PH Practical on Computer Graphics
Commencing from 2013-14 onwards

1. Write program for DDA line Method.
2. Write program for Brasnham's line drawing Algorithm.
3. Write program for Brasnham's Circle drawing Algorithm.
4. Write program for drawing a polygon.
5. Write program for Scan – Filling a Polygon.
6. Write program for translation transformation for an object.
7. Write program for rotation transformation for an object.
8. Write program for scaling transformation for an object
9. Write program for Sutherland Hodgeman Polygon Clipping.
10. Write program for Cohen- Sutherland line clipping method and clip a line using this.

(Effective from July 2011 session for 2011-14 batch onwards)

CS-3503H Computer Oriented Numerical Methods
Commencing from 2013-14 onwards

Unit I
Computer Arithmetic and Solution of Non-Linear Equations : Introduction – Floating Point Arithmetic and Errors: Floating point represent of Numbers – Sources of Errors – Non-Associativity of Arithmetic – Propagated Errors – Pitfalls in Computation.

Unit-II
Solution of Non-Linear equations: Bisection – Fixed point – Regula falsi – Newton's Raphson – Secant method. Convergence criteria of Iterative methods.

Unit III
Solution of simultaneous Linear Algebraic Equations and ordinary differential equations :
Cramer's Rule - Gauss elimination method – Pivoting Strategies - Gauss Jordan method – Jacobi Iterative method – Gauss Seidal method –Comparison of Direct and Iterative methods.

Unit IV
Interpolation and Curve Fitting : Problem of Interpolation – Lagrange's method of Interpolation – Inverse Interpolation – Newton's interpolation formulae – Error of the Interpolating Polynomial - Interpolation at equally spaced points : Forward and Backward differences – Newton's forward and backward difference formulas. Fitting of polynomials and other curve - Least square approximation of functions, linear and polynomial regressions.

Unit V
Numerical differentiation and Integration : Differentiation based on polynomial fit - Numerical integration using Simpson's rule and Gaussian quadratic formula - Numerical solution of differential equations of the form $dy/dx=f(x,y)$ using Euler's method and Runge-Kutta method

Textbook:
 1. V. Rajaraman, Computer Oriented Numerical Methods, PHI.

Reference Books:

1. Numerical methods for Scientific and Engineering Computation by M.K.Jain, S.R.K.Iyengar, R.K. Jain.
2. Elementary Numerical Analysis by Samuel D. Conte and Cart de Boor, McGraw Hill International Edition.
3. Numerical methods for Science and Engineering, PHI by R.G.Stanton
4. Computer based numerical algorithms by E.V. Krishnamoorthy
5. Introduction to Numerical Analysis by E. Atkinso

(Effective from July 2011 session for 2011-14 batch onwards)

CS-3601 Computer Network
Commencing from 2013-14 onwards

UNIT-I

Computer Network, Goals and Applications, Reference models – OSI and TCP/IP. A Comparative study. Network hardware – LAN, MAN and WAN and topologies, LAN components – File server, Workstations, Network Adapter Cards. Connection Oriented and Connection less services,

UNIT-II

Data communication system, data communication links, character codes, digital data rates, serial data formats, encoded data formats, error detection & correction. Transmission media- guided and unguided media, Switching Techniques – Circuit Switching, Packet Switching, Message Switching.

UNIT-III

Data link protocol, character oriented protocol & bit oriented protocol, network architecture protocols, Ethernet, token bus & token ring.

UNIT-IV

Internet basics: - Elements of the web, viewing web pages with a browser, using a browser for a mail, News and chat, security and privacy issues. Internet: advantage and disadvantage. Internet Services
Web server and proxy server, Web caches, Web browser like Internet Explorer, Netscape Navigator, and Communication Suit, Internet Security issues, Embedded and Software based firewall, Data encryption and Digital Signature and Certificates

UNIT-V

The art of creating the website and home page, The HTML programming basics, Syntax and rules, Tables, Frames, Forms, Example of HTML page, Choice of colour, banners, Linking with HTML page, Div, Span, met tags, span, Introduction to DHTML, JavaScript, Use of JavaScript, JavaScript Syntax, Data type, Variable , Array , Operator and Expressions.

Text Books:
1. Data & Network Communication by Michael A. Miller

Reference Books:
2. Deitel & Deitel, Goldberg, "Internet and World Wide Web – How to Program", Pearson Education Asia, 2001.

3. Computer Networks – A.S. Tanenbaum

(Effective from July 2011 session for 2011-14 batch onwards)

1. Create a webpage that prints your name to the screen.
2. Create a webpage that print the numbers 1 - 10, each number being a different colour.
3. Print a paragraph with 4 - 5 sentences. Each sentence should be a different font.
4. Print two lists with any information you want. One list should be an ordered list, the other list should be an unordered list.
5. Print a paragraph that is a description of a book, include the title of the book as well as its Author. Names and titles should be underlined, adjectives should be italicized and bolded
6. Print some preformatted text of your choosing
7. Create a page with a link at the top of it that when clicked will jump all the way to the bottom of the page. At the bottom of the page there should be a link to jump back to the top of the page
8. Display an image that has a border of size 2, a width of 200, and a height of 200.
9. Display five different images. Skip two lines between each image. Each image should have a title
10. Display an image that when clicked will link to a search engine of your choice
11. Add a simple table to for storing Train information (Train No, Name, Source, Destination, Time) without borders. Do the following
    1. Add border value of 1, save and view.
    2. Add a border value of 5, save and view.
    3. Make the top row a table header, save and view.
    4. Align all data elements to the middle of their cells, save and view.
    5. Divide Time into Departure Time, Arrival Time.
12. Write a JavaScript, which calculate sum or product depending on the drop down menu selection of two numbers, accepted using textbox and display the result in the third textbox. The action performs on click event on button.
13. Write a JavaScript which displays current date and time when page loads.
14. Write a JavaScript that prompts the user for his or her name as the page load (via dialog box) and then welcome the user by name in the body of the page.
15. Create a Webpage using two image files, which switch between one another as mouse pointer mover over the images.
16. Write a JavaScript, which calculate factorial a number, accepted using textbox and display the result in second textbox. The action performs on click event on button.
17. Write a JavaScript which reverse the number accepted in textbox.
18. Create a HTML form that has number of textboxes like First Name, Last Name, Address and Pincode. Write a JavaScript code to verify following on click event of a button:
    1. Pop Up an alert indicating which textbox has left empty and set focus on that specific textbox.
    2. Give message "Thank You" if all text boxes are filled
    3. Pop Up an alert message if text within Pin code is not numeric value and greater than 6 digits and set focus on it till it is given proper value.

(Effective from July 2011 session for 2011-14 batch onwards)

CS-3602H COMPUTER ARCHITECTURE
Commencing from 2013-14 onwards

UNIT I

A brief history of Computers. structure and function ,Pentium and power evolution, computer components, computer function, interconnection structure, bus interconnection, PCI ,

UNIT II

Computer Memory System, Semiconductor main memory, cache memory, advance DRAM organization, Magnetic Disk, Optical memory, Magnetic tap.

UNIT III

Machine Instruction Characteristics, Types of Operand, Type of Operations, Addressing, Instruction formats. CPU Structure & function : Process Organization, register organization, The Instruction Cycle, Instruction Pipelining.

UNIT IV

Micro Operations, control of the CPU, Hardwired implementation, Basic Concepts of Micro programmed control, microinstruction sequencing, and microinstruction execution, applications of micro programming

UNIT V

External Devices, I/O modules, Programmed I/O Interrupt-Driven I/O, Direct Memory Access, I/O Channels and processors, parallel processor, RAID, Introduction to Assembly Language.

TEXT BOOK:

1. Computer Organization and Architecture by William Stallings, Fifth Edition 1999 PHI (Text).

REFERENCE BOOK :

1. Computer Architecture and Organisation, Nicholas carter, Schaum Series TMH Adaptation, 2nd Ed. 2010
2. Computer Organization and Architecture by Hayes (Tata McGraw Hill)

(Effective from July 2011 session for 2011-14 batch onwards)

CS-3603H Visual Basic .NET
Commencing from 2013-14 onwards

UNIT 1

Introduction to VB.NET, Event   Driven Programming, NET as better, Programming Platform NET Framework, NET Architecture, CLR, The Just-In-Time Compiler, Garbage Collection,.NET Framework class library introduction VB.NET Development Environment, Creating Applications, Visual development & event drive Programming -Methods and events.

UNIT-2

The VB.NET Language- Variables -Declaring variables, Data Type of Variables,Arrays, Handling and Using Interfaces, Control flow statements: conditional statement, loop statement. Message box & Input box, Function creation.

UNIT 3

VB.NET Language Controls: Text Boxes, Buttons, Labels, Check Boxes, and Radio Buttons. List Boxes, Combo Boxes. Picture Boxes, Scrollbars, Splitters, Timer, Menus, Built-in Dialogs Image List, Tree Views, List Views, Toolbars, Status Bar and Progress bars, OpenFileDilog, SaveFileDialog, Font Dialog,

UNIT -4

Understanding Delegates. Class Library Overview. Creating a Class Library. Working with the Class Library Understanding Built-In Classes. Creating User-Defined Classes. Understanding Constructors and Instance Variables., Introduction to Error Types: Understanding Syntax Errors, Understanding Runtime Errors and Using Exception Handling, Understanding Logical Errors and Using Break Points.

UNIT 5

Database : Connections, Data adapters, and datasets, Data Reader, Connection to database with server explorer Multiple Table Connection Data
binding with controls like Text Boxes, List Boxes, Data grid etc.Navigating data source Data Grid View, Data form wizard Data validation
Connection Objects, Command Objects, Data Adapters, and Dataset Class.

REFERENCE BOOKS
1. Mastering VB.NET by Evangelos petroutsos- BPB publications
2. Introduction to .NET -Worx publication
3. Introduction to .NET –Unleashed

(Effective from July 2011 session for 2011-14 batch onwards)

CS-3603 PH Practical on VB.Net

1. Create a window application for simple Calculator.
2. Create a window application to compare b/w two no, compare b/w 3 no.
3. Create a login form for a user.
4. Create a program with a textbox and one button control to check no is even or odd.
5. Create a program with a textbox and one button control check the year is leap year or not.
6. Create a windows application to calculate simple interest.
7. Create a windows application to calculate factorial of a number.
8. Create a windows application to calculate for storing and displaying 10 numbers in an array.
9. Create a windows application to display your name scrolling using timer.
10. Create a windows application to calculate to generate Fibonacci series.
11. Create a windows application to display same menu as in MS-WORD 2003.
12. Create a windows application to calculate Sum and Average of 10 numbers stored in a array.
13. Create a program to determine whether a given angle forms a valid triangle.
14. Create a program which allow user to select gender using checkbox control.
15. Create a program to change the case of text box according to selected radio button.
16. Create a program to add a record in SQL-SERVER Database.
17. Create a program with a textbox and two button control to set the buttons to open a file and to save a file dialog box.
18. Create a windows application that contains text boxes and a button. The click event of the button displays the percentage of student on the basis of marks entered in the text boxes.

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