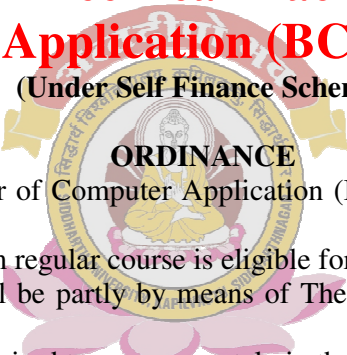


**Ordinance for Three Year Bachelor of Computer
Application (BCA)**
(Under Self Finance Scheme)



1. The duration for the Bachelor of Computer Application (BCA) shall be of 6 Semesters each of six months duration.
2. A candidate having 10+2 from regular course is eligible for admission.
3. (a) The Examination shall be partly by means of Theory papers and partly by practical/Project Works.
(b) Candidate shall be required to pass separately in theory and practical/ project examinations.
4. Candidate shall be required to pay admission, Tuition and examination fees as may be laid down from time to time.
5. The mode of admission to Bachelor of Computer Application (BCA) should be through written test.
6. The total number of seats for Bachelor of Computer Application (BCA) will be 60 in number.
7. Each candidate will have to pay Rs. 30,000 per year (Rs. 15,000 per semester) as laboratory charge, tuition fees. This amount will be payable to BCA (Bachelor of Computer Application) account.

EXAMINATION REGULATIONS (Revised) of Bachelor of Computer Application(BCA)

1. There shall be six examinations one for each semester and the examination shall be by means of theory papers and practical(s). In addition there shall be a Project Work in 6th semester.
2. The duration of examination of each theory paper will be 3 hours and that of the practical will also be 3 hours.
3. Each paper of the course (including theory/practical) will comprise of 100 marks. The project examination in 6th semester will comprise of 200 marks. To pass a semester a candidate must score atleast 20% marks in each theory paper, 33% marks in the aggregate of theory papers and 33% marks in practical/project work.
4. The student will be promoted to the next semester provisionally without waiting for the result of 1st/3rd/5th semester.
5. A student who obtains 33% or more marks in the aggregate of theory papers, but fails to obtain 20% in a paper will be promoted to next semester. Such student will have to appear in back paper in the next year of the corresponding regular semester examination and will have to obtain minimum pass marks(20 per cent)
6. A Student who fails to obtain 33% in the aggregate of theory papers in a semester, but obtains minimum pass mark i.e. 20 % in each theory paper shall be promoted to next semester. Such student may choose at most 2 papers of the concerned semester to secure atleast 33% in the aggregate of theory papers of that semester. He/she will have to appear in back paper/papers in the next year of the corresponding regular semester examination.
7. After third year(i.e. final year), the candidate will be given only one year to clear his/her back paper/papers, if any.

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8. If a candidate fails in a semester, he/she will be allowed to appear in the examination next year as ex-student.
9. An ex- student is not required to appear in the examination of the that semester which he/she has already passed; his/her marks will be remain reserved. The internal marks of each theory paper will also be reserved.
10. For practical and project examinations there will be one external and one internal examiner.
11. The distribution of marks in practical/project Examination shall be as follows:
- a.** Ist Semester, 2nd Semester, 3rd Semester ,4th Semester and 5lh Semester
- | | | |
|----|---------------|------------------------|
| 1. | One Practical | 60 marks |
| 2. | Record. | 20 marks |
| 3. | Viva-voce | 20 marks |
| | | Total 100 marks |
- b.** Project Work in 6th semester of 200 marks. The distribution of marks for project work will be as follows:
- | | | |
|-----|-------------------|------------------------|
| i. | Project Report | 100 marks |
| ii. | Presentation/Viva | 100 marks |
| | | Total 200 marks |
12. A candidate will be assigned division on the following basis:
- | | |
|-----------------|-----------------------------|
| First Division | 60% and above |
| Second Division | 45% and above but below 60% |
- All other candidates will be assigned Third Division if they obtain minimum pass marks in each semester.

BCA COURSE STRUCTURE

Semester-1		L	T	P	Internal	External	Total
BCA-101	IT Tools & Applications	3	1	0	25	75	100
BCA-102	Mathematics (Bridge Course)	3	1	0	25	75	100
BCA-103	Basic Accounting	3	1	0	25	75	100
BCA-104	Programming in 'C'	3	1	0	25	75	100
BCA-105	Communication Skills (Practical Only)	0	0	2	25	75	100
BCA-106	Software Lab-I (BCA-101 & 103)	0	0	2	25	75	100
BCA-107	Software Lab-II (BCA-104)	0	0	2	25	75	100
Total							700

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Semester-2		L	T	P	Internal	External	Total
BCA-201	Business System	3	1	0	25	75	100
BCA-202	Software Engineering	3	1	0	25	75	100
BCA-203	Mathematics -I (Discrete)	3	1	0	25	75	100
BCA-204	Introduction to Object Oriented Programming & C++	3	1	0	25	75	100
BCA-205	Digital Ckt & Logic Design	3	1	0	25	75	100
BCA-206.	Hardware lab-I (BCA-205)	0	0	2	25	75	100
BCA-207	Software Lab-III (BCA-201 & 204)	0	0	2	25	75	100
Total							700

Semester-3		L	T	P	Internal	External	Total
BCA-	Operating System	3	1	0	25	75	100.
BCA-302	Mathematics-2 (Computer Oriented)	3	1	0	25	75	100
BCA-	Computer Networks	3	1	0	25	75	100
BCA-	Data Structures	3	1	0	25	75	100
BCA-	Introduction To Microprocessor	3	1	0	25	75	100
BCA-	Software Lab IV (BCA-304)	0	0	2	25	75	100
BCA-307	Hardware Lab II (BCA-305)	0	0	2	25	75	100
Total							700

Semester-4		L	T	P	Internal	External	Total
BCA-401	Computer System Architecture	3	1	0	25	75	100
BCA-402	Introduction to Data Base Management System	3	1	0	25	75	100
BCA-403	Networking through Linux	3	1	0	25	75	100
BCA-404	Network Security	3	1	0	25	75	100
BCA-405	Multimedia and Animation	3	1	0	25	75	100
BCA-406	Software Lab V (BCA-402)	0	0	2	25	75	100
BCA-407	Software Lab VI (BCA-405)	0	0	2	25	75	100
						Total	700

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Semester-5		L	T	P	Internal	External	Total
BCA-501	Introduction To Internet & Java	3	1	0	25	75	100
BCA-502	Oracle and Developer 2000	3	1	0	25	75	100
BCA-503	Flash and Director multimedia tools	3	1	0	25	75	100
BCA-504	Software Lab VII (Major Project- 1)	0	0	4	25	75	100
BCA-505	Software Lab VIII (BCA-501)	0	0	2	25	75	100
BCA-506	Software Lab IX (BCA-502)	0	0	2	25	75	100
BCA-507	Software Lab X (BCA-503)	0	0	2	25	75	100
						Total	700

Semester-6		L	T	P	Internal	External	Total
BCA-601	Web Development Tools & Techniques	3	1	0	25	75	100
BCA-602	Advance Networking	3	1	0	25	75	100
BCA-603	Software Lab -XI (Major Project-II)	0	0	4	25	75	100
BCA-604	Software Lab -XII (BCA-601)	0	0	4	25	75	100
BCA-605	Software Lab -XIII (BCA-602)	0	0	2	25	75	100
BCA-606	Seminar (BCA-603)	0	0	0	100	0	100
BCA-607	Comprehensive Viva-Voce	0	0	0	0	0	100
						Total	700

Detailed Syllabus of BCA

BCA- 101 IT Tools and Applications

SYLLABUS:

Computer Appreciation:

Characteristics of Computers, Input, Output, storage units, CPU, Computer system, Binary number system, Binary to Decimal Conversion, Decimal to Binary Conversion; Binary Coded Decimal(BCD) Code, ASCII Code.

Computer Organization:

Central Processing Unit: Control Unit, Arithmetic Unit, Instruction Set, Register and Processor Speed.

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Memory: Main Memory: -Storage Evaluation Criteria, Memory Organization, Capacity, RAM, Read only Memories. Secondary Storage Devices: - Magnetic Disks, Floppy and Hard Disks, Optical Disks CD- ROM, Mass storage Devices.

Input Devices: Keyboard, Mouse, Trackball, joystick, Scanner, OMR, Bar-code Reader, MICR Digitizer, Card Reader, Voice Recognition, web cam, video cameras.

Output Devices: Monitors, Printers- Dot matrix, InkJet, laser, Plotters, Computer Output Microfilm (COM), Multimedia projector, Speech synthesizer, dumb, smart and intelligent terminal.

Multimedia: What is Multimedia, Text, Graphics, Animation, Audio, Images, video, Multimedia Application in Education, Entertainment; and Marketing.

Computer Software: Relationship between Hardware and Software, system software, application software, compiler, names of some high level languages, free domain software.

Operating Systems:

Disk Operating systems: simple DOS commands, simple file operations, Directory related commands.

Microsoft Windows: An overview of different versions, of Windows, basic Windows elements, file management through Window; Using essential accessories: - system tools Disk cleanup, Disk defragmenter, Entertainment, Games, Calculator, Imaging- Fax, Notepad. Paint, WordPad.

Linux: An overview of Linux, basic Linux elements: - system features, software features, file structure, file handling in Linux, Installation of Linux: - H/W and S/W requirements, preliminary steps before installation, specifics on Hard drive repartitioning and booting a Linux system.

Word Processing:

Word Processing concepts; saving, closing, opening an existing document, selecting text, editing text, finding and replacing text, printing documents, creating and printing merged documents, character and paragraph formatting, page design and layout.

Editing and proofing Tools: checking and correcting spellings, handling graphics, creating tables and charts, document templates and Wizards.

Spreadsheet Package:

Spreadsheet concepts, creating, saving and editing a workbook, inserting, deleting worksheets, entering data in a cell / formula copying and moving data from selected cells, handling operators in formula, functions: - mathematical, logical, statistical, text, financial, date and time functions, using function Wizard.

Formatting a worksheet: formatting cells- changing data alignment, changing date, number, character or currency format, changing font, adding borders and colors, printing worksheets, charts and graphs- creating, previewing and modifying charts.

Integrating word processor, spreadsheets, web pages.

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Presentation Package:

Creating, opening and saving presentations, creating the look of your presentation, working in different views, working, with slides, adding and formatting text, formatting paragraphs, checking spelling and correcting typing mistakes, making notes pages and handouts, drawing and working with objects, adding clip art and other pictures, designing slide shows, running and controlling a slide show, printing presentations.

Information Technology and Society:

Application of Information Technology in Railways, Airlines, Banking, Insurance. Inventory control, Financial systems. Hotel management. Education, Video games. Telephone exchanges. Mobile phones, information kiosks, special effects in movies.

References:

1. P.K. Sinha, "Foundation of Computing" First Edition, 2002, BPB Publication.
2. S. Sagman, "Microsoft Office. 2000 for Windows", Second Indian Prim, 2001, Pearson Education.
3. Turban, Mclean and Wetherbe, "Information Technology and Management. Second edition 2001, John Wiley & Sons.

BCA-102: MATHEMATICS

SYLLABUS:

Set relations and functions: elements of a set, methods of describing a set, types of set, Venn diagram, Operations on sets, union, intersection and difference of set, Duality, partitioning of a set, trigonometric .functions. Binomial theorem and principle of mathematics induction.

Introduction to matrix, properties of matrix; evaluation of determinant, minor and cofactors and Properties of determinant

Statistics: introduction to statistics, collection, and tabulation of data, mean, median and mode.

Reference:

Refresher Course on Mathematics Vol: 2— Mahjit Singh.

ABC of Mathematics J.P. Mahendru.

Note: This course is compulsory for all the students.

BCA-103: BASIC ACCOUNTING

SYLLABUS:

Basic Accounting: Introduction, importance and scope, concepts and conventions-Generally .accepted accounting principles double entry framework Basic concepts of Journals, ledgers, purchase book, sales book, cashbook.

Preparation of financial statements: Profit and loss account and balance sheet. Nature, scope, advantage and limitations of management accounting.

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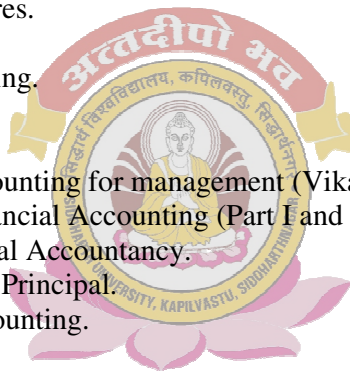
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Sources of raising of capital in corporate undertaking -simple treatment to issue of shares, forfeiture of Shares and re - issue of forfeited shares.

Application of computers in accounting.

References:

1. Bhattacharya & Deaden Accounting for management (Vikas 1986).
2. R.L Gupta & V.K Gupta Financial Accounting (Part I and Part II).
3. S.N. Maheshwari Fundamental Accountancy.
4. Antony & Reece Accounting Principal.
5. Jawahar Lai Managerial Accounting.



BCA-104: PROGRAMMING IN 'C' LANGUAGE

SYLLABUS:

Introduction to Programming

The Basic Model of Computation, Algorithms, Flow-charts, Programming Languages, Compilation, Linking and Loading, Testing and Debugging, documentation.

Algorithms, for Problem solving.

Exchanging Values of two variables, summation of a set of numbers, Decimal Base to Binary Base Conversion. Reversing digits of an integer, GCD (Greatest Common (Division) of two numbers Test whether a number is prime, Organize numbers In ascending order. Find square root of a number, factorial computation, Fibonacci sequence, Evaluate sin x as sum of a series, Reverse order of elements of an array. Find largest number in an array, Print elements of upper triangular matrix, multiplication of two matrices, Evaluate a Polynomial

Introduction 'C' Language

Character set, Variables, and Identifiers, Built-in Data Types, Variable Definition.

Arithmetic operators and Expressions, Constants and .Literals. Simple Assignment statement Basic input/output statement, Simple 'C' programs.

Conditional Statements and Loops:

Decision making within a program, Conditions, Relational Operators. Logical Connectives. If-statements. If-else statement.

Loops: while loop, do- while, for loop, Nested loops, Infinite loops, Switch.statement, Structured Programming.

Arrays

One dimensional arrays: -Array manipulation; Insertion. Deletion of an element from an array; Finding the largest/smallest element in an array; two dimensional arrays, Addition Multiplication of two matrices. Transpose of a square matrix; Null terminated strings as array of characters, Representation sparse matrices.

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Functions

Top-down approach of problem solving, Modular programming and functions. Standard Library of C functions, Prototype of a function: formal parameter list; Return Type, Function call, Block Structure, Passing arguments to a Function: call by reference, call by value, Recursive Functions, Arrays as function arguments.

Structures and Unions

Structure variables, initialization, structure assignment, nested structure structures and functions, structures and arrays: arrays of structures, structures containing arrays. Unions.

Pointers

Address operators, pointer type declaration, pointer assignment, pointer initialization, pointer arithmetic, functions and pointers, Arrays and Pointers, pointer arrays.

Self Referential Structures and Linked Lists

Creation of a singly connected linked list, traversing a linked list, Insertion into a linked list, Deletion from a linked list.

File Processing: Concept of files, File opening in various modes and closing of a file, Reading from a file, writing onto a file.

References:

1. Byron Gottfried "Programming with C" Second Edition, Tata McGrawhiiL.2000
2. R.G. Dromey, "How to solve it by Computer" Seventh Edition, 200KPrentice Hall of India.
3. E. Balaguruswami, "Programming with ANSI-C" First Edition,1996,Tata McGraw Hill.
4. A. Kamthane, "Programming with ANSI & Turbo C", First Edition. 2000, Pearson Education.
5. Venugopal and Prasad," Programming with "C" First Edition, 1997 Tata McGraw Hill.
6. B.W. Kemighan & D.M. Ritchie,"the C Programming Language," Second Edition, 2001, Prentice Halll of India.

BCA-106: PRACTICAL S/W LAB - I

(Based on BCA 101 &BCA 103)

Familiarizing with PC and WINDOWS commands file creation, editing and directory creation. DOS commands. Learning, to use MS Office: MS WORD, MS EXCEL & MS PowerPoint.

Familiarizing with any accounting package.

BCA-107: PRACTICAL SOFTWARE LAB –II

(Based on BCA-104)

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Note: Program should be fully documented with simple I/O data. Flow charts should be developed wherever necessary.

Write program in 'C' language

1. Using input and output statements.
2. Using control statements.
3. Using functions.
4. Using arrays.
5. Using structure.
6. Using files.
7. To sort an array using different methods.
8. To search an element from array.



BCA-201: BUSINESS SYSTEM

SYLLABUS:

Introduction to Business Data Processing:

Overview of Business Systems: Management functions, Levels of management, information requirements for planning, coordination and control for various levels In Business, Industry and Government.

Profile of data in Business systems: Large volumes of data and data handling implicit, Identification of relevant data. Classification of data elements by function and by source, Primary and Secondary. Historical data for reference and analysis. Need for ensuring accurate, reliable and timely processing of data. Basic tasks in Business data processing, data origination, capture, sorting, merging, calculating, summarizing, managing output-results, storing and retrieving transmission, both interim and final Examples of business data processing and applications, Payroll, Financial, Accounting, Inventory, etc.

Computer system as a potential tool to meet business data processing needs, facilities available in computerized systems for Data capture; online and offline; validation; storage; storage; processing and output; Transmission.

Concept of Files

Master and transaction files, File organization: sequential, relative and indexed, Modes of processing; batch, online and real-time.

Principles and Techniques of Programming

Introduction to programming: Program definition, life cycle, characteristics of a good program, data handling (flowcharts, pseudo codes). Report production and file updation, simple report generation, overview of control break procedure for report production. Operation of files: Input, output and I/O; processing a file, multiple handling file updation, sequential file updation, random file update. Programming paradigms: Unstructured programming, structured programming, procedural programming, modular programming. Program design: Top down and bottom up design, program documentation.

Visual FoxPro

Introduction to Visual FoxPro: The menu system, File Types, The Toolbars, Visual Design and Wizards, "The Command Window and the View Window. Other features of Visual FoxPro Interface. Tables in visual

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FoxPro: Creating a New Table, Table, Wizard, Using Table Designer, Using Tables, Opening a table, Working on a table, Modifying a

Data, Appending data, Editing data, Moving through a Table, Go To Record command, find and Replace, Deleting a Record, Altering the Display of the Browse Window. **Using Queries:** Creating a Query, Query Wizard. Query Designer. Running the Query, Using the Query, the Cross Tab Wizard, modifying the Query, the Query Designer. Using Form: Auto Forms, the Form Wizard, choosing fields, choosing a Style, choosing sort Order, Generating the Form, Using Forms, running a Form, using the form's Control Panel.

Using the Report Wizard: Auto Reports, using the Report Wizard, using the Group/Total Report Wizard, Printing Reports, filtering records for the printed report, Mailing Labels and Mail Merge, Working with Mail Labels, the Label Wizard, Using Mail Merge, the Mail Merge Wizard.

Working from the command Window: Using the Command Window, creating a new table, modifying the structure of the table, displaying and editing the data, deleting and Recalling the records, using commands: RUN, SET DEFAULT, DISPLAY, LIST? Using logical expressions, logical functions, relational operators, logical operators. IF() function, sorting a table, creating Indexes. Setting the index- order, Re indexing. Filtering data, Use of Macro (&) command, Date Functions, Use of multiple tables.

Working with Relational Databases in visual FoxPro: Concept of relational databases, Entering and Viewing data using the form Wizard, Query Wizard to work with Relational databases, Using One-to many Report Wizard, using the view Window, Using Queries and SQL, Queries Versus Views, The Query designer, working with multiple. tables, directing output, viewing SQL code, maximizing the Table view, running the query, One-to many and Many-to one Queries, filtered Joins, a grouped Query. The SQL SELECT command, Other SQL commands, Using Visual FoxPro databases.

Visual FoxPro Utilities; Importing and Exporting data, using import Wizard, Editing text, Edit menu, Format Menu, Spelling toll, Object Linking and Embedding, Programming and developing applications using visual FoxPro; An overview of Programming, Creating files, running the program, input/output Variables, simple output using? Command, Getting Input from the User, @ SAY GET command. Picture clauses. Control flow, Looping, Selection. EXIT, arid LOOP, Procedures and Parameters, Scope of Variables, and Passing Parameters, User-Defined Functions. Using the Menu Designer, Using the Project Manager, Techniques of writing efficient FoxPro programming codes.

Business Applications

Design, analysis and development of: Computerized Financial Accounting, Computerized Inventory control, computerized Payroll, computerized Invoicing Application.

References:

1. CS French, "Data Processing and Information Technology", Tenth Edition 1998, BPB Publication.
2. MM Lipschutz and S Lipschutz," Theory and Problems of Data processing", 1997, Schaum Series.
3. N. King, "Visual FoxPro 5.0 for Windows", First Indian Edition, 1997 BPB Publication.
4. TM Ramachandran," Computerized Business Application" First Edition 1995, Galgotia.
5. B Sosinsky, "Building Visual FoxPro 5 Application" first Edition, 1997, IDG Book.

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BCA- 202: SOFTWARE ENGINEERING

SYLLABUS:

Software: Characteristics, Components. Applications, Software Process Models: Waterfall, Spiral. Prototyping, Fourth Generation Techniques, Concepts of Project Management, Role of Metrics & Measurements.

S/W Project Planning: Objectives, Decomposition techniques: S/W Sizing, Problem-based estimation, Process based estimation. Cost Estimation Models: COCOMO Model, The S/W Equation, and System.

Analysis: Principles of Structured Analysis, Requirement analysis, DFD, Entity Relationship diagram, Data dictionary.

S/W Design: Objectives, Principles; Concepts, Design methodologies: Data design, Architectural Design, procedural design, Object -oriented concepts

Testing fundamentals: Objectives, principles, testability. Test cases: White box & Black box testing,

testing strategies: verification & validation, unit test, integration testing, validation testing, system Testing

References:

1. Roger. S. Pressman, "Software Engineering - A Practitioner's Approach", Third Edition, McGraw Hill, 1992.
2. R.E. Fairley, "Software Engineering Concepts", McGraw-Hill, 1985.
3. Jalota, "An Integrated Approach to Software Engineering", (Narosa Publishing House, 1992).

BCA-203: MATHEMATICS-I (DISCRETE MATH)

SYLLABUS:

Section A

Set theory. Relations and functions; Set notations and description, subsets, basic set operations. Venn Diagrams, laws of set theory, partition of sets, min sets, duality principle, basic definitions of relations and functions, graphics of relations, properties of relations; injective, surjective and bijective functions. Composition.

Combinations: Rule of products, permutations, combinations.

Algebra of Logic: Propositions and logic operations, truth tables and propositions generated by set, Equivalence and implication laws of logic, mathematical system, and propositions over a universe, Mathematical induction, quantifiers.

Section B

Recursion and recurrence: The many faces of recursion, recurrence, relations, and some common Recurrence relations, generating functions.

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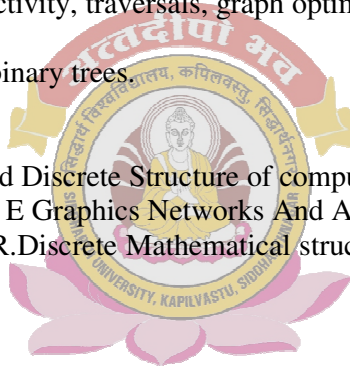
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Graph theory: Various types of graphics, simple and multigraphs, directed and undirected graphs, Eulerian and Hamiltonian graph, graph connectivity, traversals, graph optimizations. Graph coloring,

Trees: spanning trees, rooted trees, binary trees.

References:

1. Doerr A& Kenneth L. Applied Discrete Structure of computer Science (GaJgotia).
2. Swami M. N.S & Thisiraman E Graphics Networks And Algorithms (John Wiley & Sons).
3. Tremblay J.P. and Manohar R. Discrete Mathematical structure. with application to computer science. (McGraw Hill).



BCA- 204 Introduction to Object Oriented Programming & C++

SYLLABUS:

Principles of Object Oriented Programming (OOP)

Basic Concepts of OOP, Comparison of procedural programming and OOP, Advantages of OOP, OOP Languages, Definitions: .Class, Objects, Concepts of inheritance and encapsulation, Operator overloading, Dynamic binding. Over view of OOP using C++, Basic Program construction: main and functions, Program statements, class declaration, comments++ compilation.

Elements of C++ Language

Tokens and identifiers: Character set and symbols, Keywords. C++, identifiers. Variables and constants: Integers & characters, Constants and symbolic constants, Dynamic initialization of variables, Reference variables, Enumerated variables, Data Types: Basic data types, Arrays and strings, User defined data types; Operators: Arithmetic, relational operators and operator precedence, Logical operators, Manipulators, type conversions and type cast operators, Console I/O : cin, cout functions, Control statements: The if statement, if else; else.... if: switch statements, Loops: for and while do statements, Break, continue, go to,

Functions

Simple functions: Declaration of functions. Calling functions, Function definition, Passing arguments and returning values: Passing constants and variables, Pass by value. Return statement, types of functions, Passing and returning structure variables: Reference variables and arguments: Overloaded functions, Inline functions, Default arguments, returning by reference.

Classes and Objects

Declaration of classes and objects in C++, Class definition. Declaration of members, objects as date time, Objects as function arguments. Array of objects, Returning objects from function, Structures and classes.

Constructors and Destructors

Basic constructors, Parameterized constructors. Constructors with default arguments. Dynamic initialization of objects, use of copy constructor, shallow copying and deep copying, Dynamic constructors. Destructors, constraints on constructors and destructors.

Operator Overloading

Overloading unary operators: Operator keyword, Arguments and return values, Laminations of increment operators, overloading binary operators. Arithmetic operators Examples: Addition of polar coordinates and concatenation of strings Multiple overloading, Comparison" operators, Arithmetic assignment operators.

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Data and type conversions: Conversion between basic types, Conversion between objects and basic types, conversion between objects of different classes, Constraints on type conversion.

Derived Classes and Inheritance

Derived, classes and base class: Defining a derived class, accessing the bases class members, the protected access specifier, specifier. Derived class constructors. Overriding the member functions, Class hierarchies: Abstract base class. Constructors and member functions, Inheritance: Public and private inheritance, Access combinations and usage of access specifiers, Classes and structures. Multiple inheritance: Member functions in multiple . inheritance, constructors in multiple inheritance, Ambiguity in multiple inheritance.

Pointers

Addresses and pointers: the address of operator & Pointer variables, accessing the Variable pointed to pointer to void. Pointers and Arrays. Pointers and functions: Passing simple variables, Passing arrays, Pointers and strings: Pointers to string constants, Strings as function arguments, Arrays of pointers to strings. Memory management using new and " delete operators. Pointers to objects. Pointers to pointers.

Virtual Functions

Virtual functions and polymorphism, Fired functions. Static functions, Comparison of macros and inline function.

Streams

Stream classes: Streams class hierarchy. Header files. Los flags Stream manipulators. String streams, character stream classes, Object I/O File streams Disk I/O with member function.

Exception Handling

Use of exception handling, Try block, Catch handler. Throw statement Exception . specification.

Class Libraries

Class Libraries: String class, stack class, Container class hierarchy, Array class, Date, list & queue classes. User defined classes. Microsoft Foundartion Classes (MFC) (overview)

Advanced Classes

Generic functions, Generic Class. Template: class and template functions. Over-riding of generic functions. Containers and nested classes, Aggregation.

Testing and debugging simple programs.

References:

1. S.B.Lippman,"C" Primer;"third Edition, 1998 Addison Wesley.
2. W.Savitch, "Problem Solving with C++", Second Edition, 1999 Pearson Education.
3. R.Lafore, "Object Oriented Programming in C-H-, Fourth Edition.2001 Techmedia,
4. B.Stroustrup, "The Elements of C++ Programming," Third Edition, 2000 Addison Wesley.
5. K.V. Venugopal, R. Kumar and T, Tavishankar," Mastering C++, First Edition.

BCA-205: DIGITAL, CIRCUITS & LOGIC DESIGN

SYLLABUS:

Introduction: Overview of number system and codes. Elements and functions of digital Logic gates, Gate propagation delay time, logic gates applications.

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Boolean algebra: Boolean operations, SOP and POS forms, and simplification using karnaugh maps, Realization of expressions using goals.

Combinational logical circuits: design of Binary Adder-Serial, Parallel, Carry look ahead . type. Full subtracter, code converters, MUX and DEMUX, encoders and decoders.

Sequential logic circuits: Flip flop: R-S, J-K, Master slave J-K, D and T flip-flops using nand gates.

Counters: Design of asynchronous and synchronous, updown and programmable counters.

Registers: shift registers, various types and their applications. Detection and correction codes, detecting and correcting an error.

References:

1. D. Morris Mano Digital Circuits of logic design (PHI)
2. T.C. Bartee Digital and electronic circuits (McGraw Hill)
3. Malvino Digital computer electronics
4. Floyd Digital fundamentals.
5. R.P, Jain Modern digital electronics.
6. Tauls and Schillings Digital integrated electronics.

BCA-206: PRACTICAL HARDWARE LAB -1

(Based on Paper BCA 205)

Note: A subset of following experiments has to perform.

1. To study the functions of basic logic gates and verify the truth table of AND, NOT, X-OR, NAND, NOR.
2. To study applications of AND, OR, NAND, X-OR gates for gating digital signals.
3. To develop the different Arithmetic Circuits:
(a) Half-Adder and Subtractor (b) Full-Adder and Subtractor.
4. To study the BCD to Binary and Binary to BCD Code converter.
5. Study of Decoder Circuits:
(a) BCD-to-Decimal Decoder (b) BCD-to-7-Segment Decoder
6. Study of Encoder Circuits:
(a) BCD-to-Decimal Encoder (b) Octal-to-Binary Encoder
7. To study the flip-flop circuit using Gates:
(a) R-S Flip Flop (b) J-K Flip Flop
(c) Master Slave J-K Flip Flop (d) D-Flip Flop
8. To study the H-S, J-K and D Flip Flop Using IC's
9. Study-of Shift Register.
10. Study of Ring Counter.
11. Study of Asynchronous and Synchronous Counters.

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BCA- 207: PRACTICAL SOFTWARE LAB – III

(Based on Paper BCA -201 & BCA -204)

Practical on Visual FoxPro based on BCA-201.

Practical on following based on BCA-204.

Note: Program should be fully documented with sample I/O data Flow charts should be developed wherever necessary.

Write program in 'C'.

1. To insert and delete a node in a linked list.
2. To add two polynomials using linked list.
3. To insert and delete a node in a circular linked list.
4. To implement a stack using arrays and linked list.
5. To implement a queue using arrays and linked list.
6. To invert a linked list.
7. To merge two arrays.
8. To solve polish expression using stacks.
9. For tower of Hanoi problem using recursion.
10. To insert and delete node in binary search tree.
11. To find traversals of expressions using binary tree.
12. To search an element using binary tree.

BCA-301: OPERATING SYSTEMS

SYLLABUS:

Introduction to Operating System, its need and Operating System services: Operating System Classification - single user, multi-user, simple batch processing, Multiprogramming, Multitasking, Parallel system, Distributed system, Real time system.

Process Management: Process Concept, Process scheduling, Overview of Inter-Process communication.

CPU Scheduling, Basic concepts, Scheduling Criteria, Scheduling Algorithms.

Memory Management: Logical Versus Physical addresses space, Swapping Partition, paging and Segmentation, concepts of Virtual Memory.

File Management: File concept, access methods, Directory Structure, file protection. Allocation methods: Contiguous, linked and index allocation.

Deadlocks: Deadlock Characteristics, Prevention, Avoidance, Detection and Recovery, critical section, Synchronization hardware, semaphores, combined approach to deadlock handling.

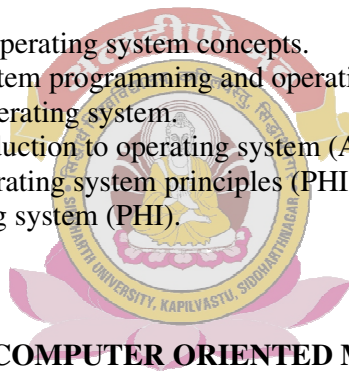
Security: Authentication, Program Threats, System Threats, and Encryption.

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References:

1. Silberschatz Galvin Operating system concepts.
2. D.M. Dhamdhare System programming and operating system.
3. Milan Milenkovic Operating system.
4. Deital H.M. An introduction to operating system (Addison Wesley).
5. P.Brinch Hansen Operating system principles (PHI).
6. Stalling, W., operating system (PHI).



BCA-302: MATHEMATICS - II (COMPUTER ORIENTED METHODS)

SYLLABUS:

SECTION A

Matrix Algebra: Introduction of a matrix, its different kinds, matrix addition and scalar multiplication, Multiplication of matrices, Square matrix, Rank of a matrix; Transpose. Adjoint and Inverse of a matrix.

Solving simultaneous equations using Gauss elimination method, Gauss Jordan Method and matrix Inversion method.

Statistics; Measures of central tendency. Preparing frequency distribution table, arithmetic mean. Geometric mean, harmonic mean, median and mode. Measures of dispersion: Range, mean deviation, Standard deviation, co-efficient of variation, moments, Skewness and Kurtosis.

SECTION B

Differential Calculus: Introduction, Differentiation, Derivative of a. Function of One Variable, Power Function, Sum and Product of Two. Functions, Function of a Function. Differentiation by method of Substitution, Maxima and Minima.

Integral Calculus: Indefinite Integral, Integration by substitution, integration by parts. Integration by Partial fractions, definite integral.

Numerical integration: Trapezoidal method, Simpson's 1/3 rule, and Simpson's 3/8 rules.

References:

1. Raja Raman Computer Oriented numerical methods.
2. B.S. Grewal Numerical methods to Engg.
3. D.C. Sancheti Business Mathematics.

BCA-303 COMPUTER NETWORKS

SYLLABUS:

Data communications concepts: Digital and analog parallel and serial synchronous and asynchronous, Simplex, half duplex, full duplex, multiplexing.

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Communication channels: Wired transmissions: Telephone lines, leased lines, switch line, coaxial cables-base band, broadband, optical fiber transmission.

Wireless transmission: Microwave transmission, infrared transmission, laser transmission, radio transmission, and satellite transmission.

Communication switching techniques: Circuit switching, message switching, packet switching.

Network reference models: Network topologies, OSI references model, TCP/IP reference model, and comparison of OSI and TCI reference model.

Data link layer design issue: Services provided to the network layer, framing, error control, flow control, HDLC, SDLC, data link layer in the internet (SLIP, PPP).

MAC sub layer: CSMA/CD, IEEE standards, FDM, TDM, CDMA.

The Network Layer: Design Issues, Routing Algorithms: Optimally principled, shortest path routing, Concept of Internet Working.

References:

1. Tanne Bauru Andrew Computer Networks (PHI).
2. S.K. Bansandra Computer Today (Galgotia).
3. Black, Ullysee Data Communication System (PHI).
4. Stalling Data and Computer Communications (PHI).

BCA – 304 DATA STRUCTURE

SYLLABUS:

Basic concepts of data representation

Abstract data types: Fundamental and derived data types. Representation, Primitive data Structures.

Introduction to algorithms Design and Data Structures

Design and analysis of algorithm: Algorithm definition, comparison of algorithms. Top-down and bottom up approaches to algorithm Design. Analysis of algorithm; Frequency count, complexity measures in terms of time and space, structured approach to programming.

Arrays:

Representation of arrays: single and multidimensional arrays, Address calculation using column and row major ordering, various operations on Arrays. Vectors. Application of arrays: Matrix multiplication, sparse polynomial representation and addition.

Stacks and Queues:

Representation of stacks and queues using arrays and linked list. Circular queues, Priority Queue and D-Queue, Applications of stacks: Conversion from infix to postfix and prefix expressions, Evaluation of postfix expression using stacks.

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Linked Lists:

Singly linked list; operations on list, Linked, stacks and. queues. Polynomial representation and manipulation using linked lists. Circular linked lists, Doubly linked lists. Generalized list structure. Sparse Matrix representation using generalized list structure.

Trees:

Binary tree traversal methods: Preorder. In-order Post ordered traversal. Recursive and non-recursive Algorithms for above mentioned Traversal methods. Representation of trees and its applications; Binary, tree representation of a tree. Conversion of forest into tree. Threaded binary trees; Lexical binary trees. Decision and game trees. Binary search tree: Height balanced (AVL) tree, B-trees.

Searching, Sorting and complexity

Searching: Sequential and binary searches, Indexed search, Hashing Schemes. Sorting: Insertion, Selection, bubble. Quick, merge, radix shell, Heap son. Comparison of time complexity.

Graphs

Graph representation: Adjacency matrix, Adjacency list Adjacency Multicasts. Traversal schemes: Depth first search, Breadth first search. Spanning tree: Definition, Minimal spanning tree algorithms. Shortest Patch algorithms (Prime's and Kruskal's).

References:

1. Y. Langsam, M.J. Augenstein and A.M. Tanebaum, "Data Structures Using C and C++", Second Edition, 2000 Prentice Hall of India.
2. R.Kruse, C.L. Tonodo and B.Leung, "Data Structures and Program Design in C", Second Edition 1997, Pearson Education.
3. S.Chottopadhyay. D. Ghoshdastidar & M.ChottQpadhyay," Data Structures through,"C" Language", First Edition, 2001 BPB Publication.
4. G.L. Heileman", Data Structures, algorithms and Object Oriented programming," First Edition, 2002 Tata McGraw Hill.
5. E. Horowitz, Sahni and D Mehta," Fundamentals of Data Structures in C++", 2002, Galgotia Publication 2002.

BCA- 305: INTRODUCTION TO MICROPROCESSOR

SYLLABUS:

Introduction to Microprocessor, its historical background and its applications.

INTEL 8085

Introduction. Microprocessor Architecture and its operations, 8085 MPU and its architecture, 8085 Instruction cycle, 8085 Instructions: Data Transfer instructions, Arithmetic instructions, logical Instructions, Branch instructions, RISC v/s CISC processors.

INTEL 8086

Introduction: 8086Architecture, real and Protected mode memory Addressing, Memory Paging, Addressing, Modes.

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Various types of instructions: Data movement, Arithmetic and logic; and program control. Type of Instructions, Pin diagram of 8086 clock generator (8284A).

INTERRUPTS: Introduction, 8257 Interrupt controller, basic DMA operation and 8237 DMA Controller, Arithmetic coprocessor, 80X87 Architecture.

References:

1. B. Brey, The Intel microprocessors 8086/8086, 80186/80188, 80186, 80386, 80486, Pentium pro processor Architecture, Programming and interfacing 4th Edition.
2. B. Ram Fundamentals of microprocessors and HI microcomputers Dhanpat Rai Publication.
3. Ramesh S. Gaonkar, Microprocessor Architecture, Programming and Applications with 8085, 4th edition, Penram International Publishing (India).

BCA-306: Practical S/W Lab-IV

(Based on Paper BCA-304)

Note: Program should be fully documented with simple I/O data. Flow charts should be developed wherever necessary.

Write program in 'C++' language.

1. Using input and output statements.
2. Using control statements.
3. Using functions.
4. Using array.
5. Using Classes and implementation of Constructor and Destructor.
6. Using files.
7. Using OOP's Concepts (Inheritance, Polymorphism, Encapsulation, Friend and Static Functions).

BCA-307: Practical Hardware Lab -11

(Based on Paper BCA 305)

Using 8085 and 8086 microprocessor kits do the following programs: 8085

1. To examine and modify the contents of a register and memory location.

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2. To add two hexadecimal nos.
3. To subtract two hexadecimal nos.
4. To add two hexadecimal nos. The result should not be greater than 199.
5. To add two sixteen bit nos.
6. To subtract two sixteen bit nos.
7. For addition of 8 bit no series neglecting the carry generated.
8. To separate hexadecimal number into two digits (Breaking the byte into two nibbles).

8086

1. To add two binary nos each 8 bit long.
2. To add two binary nos each 8 bit long.
3. To find the maximum no in a given string (16 bytes long) and store it in a particular location.
4. To find the minimum no in a given string (16 bytes long) and store it in a particular location.
5. To sort a string of a no of bytes in descending order.
6. To multiply an ASCII string of eight numbers by single ASCII digit.
7. To calculate the no. of bytes in a string starting from a particular location up to an Identifier (data byte) placed in AL register. Store the actual count in a particular memory location.
8. To multiply two nos.

BCA-401: COMPUTER SYSTEM ARCHITECTURE

SYLLABUS:

Computer Organization & Design: Instruction codes, op-codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory reference instructions.

CPU: Stack Organization, Instruction format. Addressing Formats.

Control Unit Architecture, I/O Architecture: transfer of Information among I/O devices, CPU, Memory and I/O ports.

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Memory System, Storage technologies, Memory hierarchy, Memory mapping, Main memory and Auxiliary memory, Associative and Cache memory.

Introductory study of 8-bit Microprocessor

References:

1. M. M. Mano, Computer System Architecture PHI.
2. J. P. Hayes, TMH Computer Organization and Architecture TMH.
3. R. P. Jain, Modern Digital Electronics TMH.
4. Stailings, Computer System Architecture PHI.



BCA-402: INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS

SYLLABUS:

Introduction to Database Management systems (DBMS)

Why Database, characteristics of Data in Database, DBMS, what is database Advantage of DBMS.

Database Architecture and Modeling.

Conceptual, Physical and logical database models. Role of DBA, Database Design Entity Relationship Model.

Components of ER Model, ER Modeling symbols. Super class and sub class types, Attribute inheritance. Specialization. Generalization. Categorization.

Relational DBMS.

Introduction to Relational DBMS. RDMBS Terminology. Database normalization.

Keys, Relationships, First Normal Form, Functional dependencies, Second Normal form, third Normal form, Boyce-Codd Normal form, fourth Normal form, Eifth Normal form, case study.

Relational Algebra and Relational Calculus.

Relational Algebraic operations, tuple Relational calculus, Domain Relational Calculus.

Introduction to SQL

History of SQL. Characteristics of SQL. Advantages of SQL. SQL in Action. SQL data types and Literals. Types of SQL commands. SQL Operators and their precedence. Tables. Views and indexes. Queries and Sub queries. Aggregate functions. Insert. Update and Delete operations. Joins. Unions. Inter section. Minus. Cursors in SQL. Embedded SQL.

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Backup and Recovery

Database backups. Why plan backups? Hardware protection and redundancy. Transaction logs. Importance of backups. Database recovery. Data storage. Causes, of failures. Recovery concepts and terminology. Data security Recovery techniques. Detached transaction actions. Disaster Database Management System.

Database Security and Integrity

Types of Integrity constraints. Restrictions on integrity constraints. Data security risks. Complex user management requirements, Dimensions of security. Data security requirements. Database users. Protecting data with in the database. Granting and revoking key privileges and roles. System viability factors. Authenticating users to the database.

Design and Development of database Applications on commercial RDMBS Platforms:

Students is expected to achieve a level of competence in at least one of the standard commercial RDBMS products under desktop or muti user environment to be able to develop a small to medium application; the student must also acquire skills for independently designing on line database applications. The skills required for design and developments are; Database design.

Applications design. SQL Embedded SQL, .trouble shooting, Performance tuning and documentation. In application design. Focus should be on - on line applications in database environments, the students should get sufficient insight into issues in menu design, screen design, data validations in data entry screens, report designs and an overview of GUI design. These skills must be demonstrated through the course project including the project report and viva-voce.

References:

1. A. Leon and M. Leoh, ."Database Management Sysiems", First Edition 2002 Vikas Publishing house (P) Ltd.
2. R. Eimasri, S. Navathe, "Fundamentals of Database Systems, third Edition, 2000 Addison Wesley.
3. H, Korth, A Silbeschatz, "Database System Concepts", third Edition 1997, McGraw-Hill International.
4. B. Desai, "An Introduction to Database systems", Galgotia Publication.
5. D. K. Kroenke, "Database Processing: Fundamentals, Design implementation", Prentice Hall of India.
6. P. Bhattacharya and A. K. Majumdar, "Database Management Systems. First Edition 1996 McGraw Hill.

BCA-403: Networking Through Linux

SYLLABUS:

INTRODUCTION TO LINUX & ITS DIFFERENT DISTRIBUTIONS

Introduction to Linux, different distributions of Linux and their relative merits and demerits, hardware requirements of installation of Linux.

INSTALLATION OF RED HAT LINUX

Hardware requirements for the installation, creating of boot diskette, choosing a partitioning scheme, swap partitions root partitions, Classes of installation, workstation class installation, server class installation,

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custom class installation. Server installation-disk partitioning, configuring mouse, configuring networking, configuring time zone, specifying the root password and creating additional user accounts, installing the grub boot loader, selection of package groups, boot disk creation, Workstation installation.

STARTUP & SHUTDOWN OF LINUX SYSTEM

Loading the Boot Sector, Loading Linux from DOS or Windows. Loading the Kernel with Grub, Grub configuration options, setting server security, single user mode, changing the default operating system for booting, Hardware device driver initialization, and Kernel version no, console initialization, speed index and memory calculation, CPU check PCI bus initialization and probing, TCP/IP initialization. Disk drive initialization, Shutdown process.

WORKING WITH RED HAT LINUX

Logging into the Red Hat Linux, the login session, the shell interface Checking your login session. Checking directories and permissions, checking system activity exiting the shell meaning of Red Hat Linux shell, use of Red Hat Linux, command locations in the file system running the commands already run, command line editing keystrokes for editing command lines, command line completion, connecting and expanding commands, piping commands, sequential commands, background, expanding commands. Red Hat Linux file system, creation of new files and directories in Linux, using men characters in . filenames, using file-redirection meta-characters, file permissions, moving copying and deleting files, text editor, vi, starting vi, moving around the file, searching the text, using numbers with commands for command repetitions.

Introduction, Configuring X Windows using X configuration utility, Starting and stopping X, Windows managers, the function of windows managers in X setting the Windows manager, widget sets, desktop environments. The role of desktop environment, Available desktops-GNOME, KDE, Xfce, CDE. mixing Desktop environment components, X applications.

LINUX SYSTEM ADMINISTRATION

Creating and maintaining user accounts, user accounts, the/etc/passwd file, shadow, passwords, creating of new users, adding new users, creating of users from command prompt, migrating users from other Unix systems, modifying user accounts manually, modifying user accounts, disabling user account's, deleting user accounts, user groups, the function of groups, /etc/group file, adding new groups, changing group membership, modifying groups, deleting groups.

NETWORKING WITH LINUX USING TCP/IP

Understanding TCP/IP Networking, Network stacks, Network addresses, ports, TCP/IP configuration, configuring Network Hardware, using DHCP for configuration, Manually configuring TCP/IP setting the hostname, activating and interface, configuring the routing table specifying the DNS servers, testing the setup. File sharing, sharing with Unix or Linux. NFS Sharing with Windows Samba, Samba configuration options Setting global options, setting password options configuring file shares, using Samba as a client, Internet Servers, available servers using a super server. General Super server Considerations.

References:

1. Red Hat Fedora and Enterprises Linux 4 Bible. Christopher Negus ISBNP: 0-7645-95-76-8 -Wiley Publication.
2. Red Hat Linux Security and Optimization. Ben Rothke, Red Hat Press ISBN: 0764547542.
3. Red Hat Enterprise Edition Reference Guide Manual- Ped Hat Press.
4. System Administration Primer for Red Hat Linux Enterprise Edition. Red. Hat Press.
5. Red Hat Linux Enterprise Edition Security Manual. Red/Hat Press.

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BCA-404: NETWORK SECURITY

SYLLABUS:

Information Security Fundamental

Background, Importance, Statistics, National & International Scenario. Identification and Authentication, Confidentiality, Privacy Integrity, Non-repudiation, Availability. Goals of Security-Prevention. Detection and Recovery e-commerce Security.

Security Threats & Vulnerabilities

Weaknesses-Buffer overflow, brute force attacks, protocol attacks, cross site and other GG1 vulnerabilities etc, Spoofing, Denial of Service.

System & Network Administration and Security.

Security consideration in OS, OS Hardening, Internet Protocols and Security; SSL/TLS, IPSec, Application Security-WWW security, Secure Emails, Access control-Physical and Logical

Tools & Technologies.

Firewalls, IDS, AntiVirus, Log Analysis, Cryptography, Security Infrastructure: PK1, VPN, Network Scanners, Forensics.

Security Audits

Asset Classification and Risk Analysis Audit Trails, Reporting Security Management Security Policies and Procedures. DRP/BCP, International Standards (CC/BS7799/ITSEC/GLB/HIPAA).

References:

1. Network Security Bible by Eric Cole and Ronald L. Krutz. Wiley Dreamtech India Pvt. Ltd. New Delhi.
2. Network Security Essentials: Applications and Standards by Stallings. Pearson Education Private Ltd. New Delhi.
3. Cryptography and Network Security: Principal and Practice by William Stallings, Prentice Hall.
4. Hack Attacks Revealed: A complete Reference for UNIX, Windows and Linus with Custom Security Toolkit, by John Chirillo, Wiley Dreamtech, India Private Ltd. New Delhi.

BCA-405: MULTIMEDIA AND ANIMATION

SYLLABUS:

Introduction to Multimedia:

Concept of Multimedia, Multimedia applications, Advantage of Digital Multimedia, Multimedia system Architecture, Objects of Multimedia.

Text Editing:

Basics of Word Processing. Creating, Saving and Printing of document, use of menus and ' toolbars, character, paragraph and page ' formatting, importing and exporting of documents.

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Image Editing:

Introduction to Scanner (concept of DPI), File formats (BMP, JPG, TIP, GIF etc), acquiring, importing, exporting Images, Image editing using Adobe Photoshop.

Computer Graphics:

Prepress Image preparation, color correction, retouching, enhancement, special effects, file formats, conversion and web graphic formatting, image composition, close cropping, superimposition and high-end layering effects.

Digital Audio:

Hardware requirements (sound blaster card, speakers, micro phone etc), types of CD and CD Drives, file formats (wav, midi, tracks etc), recording of audio (mono stereo), audio mixing and editing, audio compression and decompression, sound forge illustrations.

Digital Video:

Basics of video (conventional video recording & play back devices), introduction to video capture card, AVI file format, video capturing software, difference between AVI and MPEG, difference between analog and digital video. MPEG encoder card, MPEG compression and decompression, MPEG decoder card, video editing software, player for MPEG files.

Animation:

Animation basics, 2D editor and animation, 2D to 3D conversion, 3D editing and rendering, material editor and rendering, light, camera concepts, key framer. menu and toolbar, file formats, conversion from AVI to MPEG, encoding and decoding of MPEG pictures, Knowledge of 3D animation, modeling, character animation, painting, lighting and textures.

Creating Special Effects:

Mixing of images, morphing, transition effects (one scene to next scene), graphic designing, managing an application development team, project planning and implementation, Adobe Illustrator.

References:

1. Multimedia System Design by Prabhat K. Andleign, Kiran thakrar - prentice hall Publication.
2. Multimedia -an introduction by Villamil-Casanova & M.olina.
3. Multimedia- sound and video by Lozano.
4. A guide to filmmaking with software tools- Adobe premiere & sound forge. NIIT.
5. 3D animation, an overview, NIIT.

BCA-406: PRACTICAL S/W LAB - V

(Based on BCA-402)

1. SQL Command.
2. Creating Table.
3. Insert record in to the table.
4. Create a database file to keep record.
5. Entering records in to the data base file.

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6. Checking database records.
7. Queries and sub queries.
8. Designing a report with multiple queries.
9. Implementation cursors in SQL.

BCA-407: Practical S/W Lab – VI

(Based on Paper BCA 403 and BCA-404)

(BCA-403):

1. To install RHEL (Red Hat Enterprise Linux).
2. To study basic commands in Linux.
3. To study various shell interfaces in Linux and
4. To study GNOME desktop.
5. To study KDE desktop.
6. To manage RPM packages.
7. To study user and group management.
8. To study network configuration (IP addressing, TCP/IP).
9. To configure and manage Telnet.
10. To configure and manage FTP (File Transfer Protocol).
11. To configure and manage DHCP Server using dhcpd daemon.
12. To configure and manage DNS Server (Domain Name System).
13. To configure and manage SQUID (PROXY Server) and Proxy clients.
14. To configure and manage NFS File server.
15. To configure and manage NIS (Network Information Service) Server & clients.
16. To; configure and manage SAMBA Server.
17. To configure and manage APACHE Server (Web Server).
18. To configure and manage E-mail services.
19. To configure and manage a Print Server (CUPS).
20. To configure your Linux system for using Internet.

1. Demonstration of packet Sniffing Tool "ETHERREAL".
2. Demonstration on Discovery and Scanning Techniques (whois domain search query, ping, nslookup, traceroute (Visualroute), DNS query, Sitequery (Tiger suite site query scan module), OS finger printing using Nmap.
3. SNMP auditing using Snmpwalk.
4. Demonstration on network vulnerabilities, assessment tools like, NetReconNmap
5. Configuring IPSec on windows 2000 OS
6. Configuring and securing VPN
7. Configuring a simple proxy server
8. Configuring a Firewall (Linux/windows)
9. To study intrusion detection system using Snort/Tripwire
10. To configure SSH and SSL
11. Managing Web and certificate services
12. Ftp security

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13. Kerberos configuration.
14. NetBIOS auditing using NBTSTAT.
15. Securing files and folders (Linux/windows)
16. Monitoring System process.
17. To study on viruses, worms, trojan horses and viruses protection, detection and Recovery.
18. User administration (Linux/windows).
19. To study on denial of services, IP spoofing.
20. User administration (Linux/windows).
21. Practical on firewall testing using nmap.
22. Practical on NAT (network address translation).
23. Practical on DNS spoofing using cache poisoning, DNS ID prediction Scheme.
24. Practical on password cracking tools John crack. L0phtcrack
25. Demonstration on useful utility for security administrator like Neteat, TCP dump Lsof, Ngrep (Linux).

BCA-501: INTRODUCTION TO INTERNET & JAVA

SYLLABUS:

Introduction: Internet Architecture board, understanding the Internet.

Concept: Working, Surfing and security on the Internet.

Internet protocols Internet addressing, Internet routing protocols Internet message protocol, Internet Group management protocols, Internet mail protocol.

Internet applications: E-mail, multi cost backbone, net news.

Web: World Wide Web advantages of web, web terminology, web access using web browser, locating Information on the web.

Introduction to Java:

Applets, application & JDK; different b/w Java & C-H-, working with Java objects:

Encapsulation, inheritance & polymorphism, constructors. Garbage collection & finalisers. data types, Modifiers & expressions, array & , flow control statements,

Exception handling threads, event handling,

Network programming & Java virtual machines, Java & databases.

References:

1. Andews Staunebaum Computer Networks (Tata McGraw Hill).
2. Harley Haun The Internet Complete Reference (PHI).
3. Mastering Java (BPB Publications).

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BCA-502:Oracle and Developer 2000

SYLLABUS:

Introduction to managing Data:

Basic database concepts: What is a database, Characteristics of a database Management system

Interactive SQL:

Invoking SQL *PLUS Oracle data types.

Two Dimension matrixes Creation: Creating a table, creating a table from a table Insertion of data into tables: Inserting a single row of data into a table, inserting data into a table from another table. Insertion of selected data into a table from another table

Updating the contents of a table

Deletion operations: Deletion of all rows, Deletion of a specified number of rows

The many faces of the select command: Global data extract, the retrieval of specific columns from a table, Elimination of duplicates from the select statement, Sorting of data in a table, Selecting a data set from table data

Modifying the structure of tables: Adding new columns, modifying existing columns, Restrictions on the Alter table. Removing/ Deleting/Dropping tables

Data constraints: Column level and table level constraints, NULL value concepts, Primary key concepts, Unique key concepts, Default value concepts. The foreign key/references constraint, CHECK Integrity constraints. Defining different constraints on the table, Defining Integrity constraints in the ALTER TABLE command, Dropping Integrity constraints in the ALTER TABLE command

Computation in expression lists used to select data: Arithmetic operators, Renaming Columns used with expression lists

Logical operators

Range searching

Pattern matching: The use of the like predicate, the in and not in predicates

Oracle functions

Grouping data from tables in SQL: The concept of grouping

Manipulating dates in SQL

Joins: Joining multiple tables (equi joins), joining a table to itself (self joins)

Sub queries

Using the union, intersect and minus clause: Union clause. Intersect clause, minus clause

Views: Creation of views, renaming the columns of a view, using views (visual concept), selecting a data set from a view, Updateable views. Destroying a view

Granting permissions: Permission on the objects created by the user. Granting permissions using GRANT statement, Object privileges, With grant option. Referencing, table belonging to another user, granting permissions to users when the grantor has been given GRANT permission.

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Revoking the permissions given: Revoking permissions using the REVOKE statement
Creation of reports in SQL *PLUS:
Formatting commands used in SQL *PLUS

PL/SQL:

Introduction: Performance, Performance improvement, Portability, PL/SQL data types, what PL/SQL can do for programmers

The PL/SQL execution environment: PL/SQL in the oracle RDBMS, Using PL/SQL blocks in the SQL *PLUS environment, Running a PL/SQL block written via any editor.

The PL/SQL syntax: The character set, Literals, Comments, Data types, Variables, Assigning values to variables, Picking up a variable's parameters from a table cell, Declaring a constant, Using logical comparisons in PL/SQL.

Understanding the PL/SQL block structure: An identifier in the PL/SQL block, Displaying user messages on the screen, Conditional control in PL/SQL, Iterative control.

Oracle transactions: Using commit using rollback, Using save point.

Cursors: How are SQL statements processed by oracle? What is a cursor? Use of cursors in PL/SQL, Explicit cursor, Why use an explicit cursor? Explicit cursor management, Declaring a cursor. Opening a cursor, Fetching a record from the cursor, Closing a cursor, Explicit cursor attributes, Cursor for loops, Implicit cursor, Implicit cursor attributes, Parameterized cursor.

Error handling in PL/SQL: Declaring exceptions (i.e. user-defined error conditions), Pre-determined internal PL/SQL exceptions

Stored procedures:

What are procedures: Declarative part, Executable part, Exception handling part
Advantages of procedures.

Syntax for creating stored procedure: Keywords and parameters.

An application using a procedure. Deleting/ stored procedure.

Stored functions:

What are functions: Declarative part, Executable part. Exception handling part
Advantages of functions

Syntax for creating a stored function: Keywords and parameters

An application using a function

Deleting a stored function

Database triggers:

Introduction

Use of database triggers; Database triggers vs. procedures, Database triggers vs. SQL *Forms, Database triggers vs declarative integrity constraints

How to apply .database triggers

Types of triggers: Row triggers, Statement triggers, Before VS. After triggers, before triggers, after triggers, Combinations.

Syntax for creating trigger: Keywords and parameters

Deleting a trigger

An application using database triggers

Raise_application_error procedure

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Working with forms:

Basic concepts:

Application development in forms: Forms, Menu, Library.

Form module: Blocks, Items, Canvas-view, Windows.

Using the forms designer: Parts of forms designer windows, Tools available, with the forms designer, Creating a form
Generating and running a form: Data retrieval and manipulation operations, using the layout editor, Positioning and Sizing
an item, setting the properties of the items, placing
push buttons on the form

Master form:

Product master data entry screen

Triggers: Interface events. Internal processing events, the sequence of trigger execution, Writing triggers The
behavior of an oracle form in a commercial application Form behavior which viewing data, Form behavior
while updating data [primary key problems, Form behavior while deleting data, Form behavior while inserting
data, The forms mode of operation.

Data navigation via an oracle form: Multiple rows being retrieved from the table, a single row being
retriever from the table.

Procedures: Writing, procedures Validations: Table data input/output validations Including search function
in the master form Alerts: Creating an alert, Displaying balloon help

Master detail form:

Creating a master-detail form: The relation object

Running a master detail form: Data retrieval and manipulation operations

Working with list objects: Creating a list of values

Using a radio button group

Creating and using a list item; Pop list, Text list, Combo list. Creating a list item

Working with menus:

Using the default menu

Using the custom menu; Creating a menu module, to assign a command to a menu item

Attaching a menu module to a form

Opening a form through the menu: Invoking other products from oracle forms or menus

Working with reports:

Features: Basic concepts

Denning a data model for a report: Queries, Groups, Columns, Parameters, Data links.

Specify the layout for a report: Repeating frames, Frames, Fields, Boilerplate, Anchors,

Creating a default tabular report: Creating a new report definition, connecting to the database, Specifying the
data for the report, Specify a default layout for the report. Save and run the report.

Creating computed columns: Summaries columns, Formula columns, Create a formula using the formula
column tool. Create serial nos field using summary column tool,

Create a report summary using summary column tool.

Arranging the layout: Change layout settings, Fill color tool, Line color tool and Text color tool.

Master/detail report:

Concepts: Data link object, Data relationships, Layout,

Creating a master/detail report: Creating the report definition. Queries object. Data link
object, Creating formula and summary columns. Formula column. Default layout.

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Arranging the layout.

Creating a matrix report:

Matrix data model: Number of queries. Group structure, Summaries and product order, Matrix layout, Matrix/ cross product object, Creating query, Creating groups, Creating default layout, Creating summary columns, Adding zeroes in place of non-existent values.

References:

1. Commercial Application Development using Oracle Developer 2000 By Ivan Bayross BPB Publication.
2. SQL and PL/SQL by Ivan Bayross BPB Publication.
3. Oracle 9i complete reference (Oracle Press).
4. Oracle 10g SQL (Oracle Press).
5. Oracle 10g PL/SQL (Oracle Press).

BCA-503: FLASH AND DIRECTOR MULTIMEDIA TOOLS

SYLLABUS:

Introduction to interactive communication

Communication: An overview, Type of communication, Effective communication, Role of interactivity in effective communication.

Introduction to multimedia: Components of multimedia, text, Graphics, Audio, Video, Animation.

Multimedia authoring: Multimedia authoring tools, Multimedia authoring guide lines

Executing a Multimedia project

Project execution: An overview, Pre production phase, Production phase, and Postproduction phase

Getting started with Director

Macromedia director: An overview, Benefits of Macromedia director, Director workspace Menu bar, Stage window, Tool palette, Cast window, Vector space window, Point window, Score window, Inspectors, Shock wave 3D window. Control Panel.

Working with images and text in Director

Working with images: Creating an image, Modifying images, Importing Graphics from other Software.

Working with text; Adding text in a director movie, Importing text, Embedding fonts, Specifying the properties of text. Formatting text.

Introduction to Sprite: Creating a Sprite, Layering a Sprite.

Working with animations in Director

Creating Animations: Frame-by-frame animation. Twined animation. Stop recording animation, Real - time recording animation

Animation enhancement techniques: Film loops, creating transition effects

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Working with audio & video in director

Adding audio: Importing audio files, controlling audio.

Adding video: Importing video Setting the properties of an imported video file, controlling video

Adding interactivity by using Director

An introduction to Behaviors. Type of behavior, Attaching behaviors to objects

Using the Library palette: Animation, Controls, Media, and. Navigation, Paint box, Text, 3-D, Internet.

Using Behavior Inspector: Creating Behaviors. Handling Mouse interactions Handling. Keyboard Interactions

Distributing a Director Movie

Distribution: an overview, creating Shockwave movies, creating projectors.

Getting started with Flash

Flash: An Overview, Benefits of Flash, Differences between flash and Director. Flash user interface

Working with graphics: Creating graphics, modifying graphics. Working with text: Types of text, adding text, modifying text shape-Creating reusable components in Flash Introduction to symbols: Types of symbols, Methods of creating symbols.

Using symbols from library: Including symbols, creating a link to a symbol.

Creating animations in Flash

Introduction to layers: Creating layers, specifying the properties of a layer.

Animation in Flash: Frame-by-Frame Animation. Twined Animation, Previewing an Animation

Masking: Masking graphics, Masking text.

Working with Audio in Flash

Adding audio to an animation: Importing an audio file. Synchronization of audio with animation, Adding effects to audio.

Interactivity in Flash

Introduction to action scripting: Events and actions. Components of action window. Writing an action scripts,

Debugging and testing action scripts: Using the debugger windows, using output window

Publishing and exporting Flash movies

Publishing: An Overview.-Publishing Flash Movies.

Exporting flash Movies: Exporting to movie format. Exporting to graphic format.

References:

1. Interactive Communication through Multimedia, NIIT Series
2. Macromedia Flash MX2004 by Jen Dehaan.
3. Certified Macromedia Flash Developer Study Guide by Tanksley, Bayes & Elstad. Macromedia Director MX 2004 Bible.
4. Macromedia Flash 8, a tutorial Guide by Jay Armstrong, Jen de Haan.

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BCA-504: SOFTWARE LAB - VII (MAJOR PROJECT PHASE - I)

Starting of Major Project (Feasibility Study, Requirement Analysis. Design)

BCA-505: Practical S/W Lab-VIII

(Based on BCA-501)

Java Programming and Practical on Internet access to:

Create E-mail address

Perform transactions

Send and Receive messages

Use of search engines



BCA-506: Practical S/W Lab-IX.

(Based on Paper BCA- 502)

1. Write a PL/SQL block to accept a year and check whether it is a leap year
2. Creating tables using PL/SQL
3. Table updation using PL/SQL .
4. Cursor implementation using PL/SQL
5. Procedure implementation using PL/SQL
6. Trigger implementation using PL/SQL.
7. Form designing using Developer 2000.
8. Report creation using Developer 2000.

BCA-507: Practical S/W Lab - X

(Based on Paper BCA-503)

Creating Multimedia Documents using Flash and Director Multimedia tools.

BCA-601: WEB DEVELOPMENT TOOLS AND TECHNIQUES

SYLLABUS:

Getting Started with Dream weaver:

Overview of web technology; Static web pages, Dynamic web contents.

Installing Dream weaver

Installing a web server

Exploring Reweave: creating your first web page.

Dream weaver Workspace: Panel groups and Panels, Property inspector, Insert panel group.

Setting up the preview browsers

Creating a Website:

Creating your fist website: Physical directories and virtual directories, site definition features

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Creating a web page

Adding metadata and Header information

Building the page design: The table structure, Browser compatibility, Preparing the workspace, Building the top table, Adding contents to top table, Building the middle table, Building the bottom table.

Site structure, Navigation and content:

Site Structure and Navigation: Expanding the site. Building a Navigation system, Implementing Navigation buttons. Pop-up menus, Behavior. .

Organizing the site with Files panel: Site synchronizing, Site map

Tools to assist the web developer team: Check in/out Design Notes, Managing links, Site reports,

Adding Contents to pages: Inserting and formatting tables, Inserting text, Inserting graphics in text, Adding links to text.

Style sheets and templates:

Cascading style sheets: HTML and structure, How style works, CSS Rules, Creating and implementing a CSS style sheet. Adding more styles to a style sheet, Techniques for inserting CSS,. Editing styles. Creating embedded CSS, CSS Classes. Class and logical markup. Pseudo classes and pseudo elements.

Templates; Creating a template, Creating new pages form template. Editable and Non-editable regions, Editing template based documents, Applying a template to an existing document. Breaking the template links, Libraries.

Layers, Behaviors and Dynamic effects:

An overview of Browser Scripting, Dynamic HTML, Targeting a Browser. Attaching multiple Behaviors to an elements layers, Hidden layers Using Layers to provide extra information, Swapping images, Using image map with behaviors.

User interaction with ASP and Forms

HTML Forms: The <input>tag, the <select>tag. Sending form data to the server.

Form validation

Improving forms with CSS

Introduction to dynamic contents: Dynamic web pages, Active server pages, Creating and ASP page, Using form with ASP, Conditional output.

Adding Logic to your pages

Passing Values form page to page: Creating a form that uses GET, Sending and Receiving values using POST, Using post back to post back to the current page.

Using information on multiple pages: The session object, enabling the session stage, Exploring the session state. The global Asp file, The application object, Creating a hit counter.

Keeping track of users:

Saving information about a page: on the server, on the client, cookies,

Site.Tracking: Grouping code together, using include files, Page monitoring.

Securing web sites:

Creating a login: form, enhancing the login form, protecting your pages.

Improving Usability: using the Referrers

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Getting information form a data base:

What is a Database

The sample database: Different kinds of databases, securing a database.

Creating a database driven website: DSN connection strimps, DSN-less connection strimps.

Enhancing the login page

Fine-Tuning Access to your site with access levels

Extending Access level functionality.

Retrieving and displaying data from databases:

Displaying a list of events.

Extending the repeat Region: Filtering database values using a dropdown list filtering values by date.

Viewing details of an event: Linking the event list to the details page, Showing details of an event, and adding error handling.

Paging data: Limiting the events list, navigating the data, Performance Consideration with paging data, improving the Navigation system.

Storing information in a Database:

Maintaining your events

Introducing JOINS

Viewing available events

Creating new events: Adding a simple insert form, Spicing up the form.

Changing existing events

Deleting events

Overview of Advanced topics:

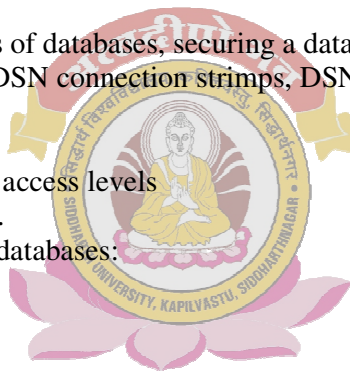
Using ASP NET with Dream weaver MX 2004, Using PHP and MYSQL with Dream weaver MAX 2004,

Using Java Server pages with Dream weaver MAX 2004, Using cold fusion with Dream ever max 2004,

Using a remote server, Integrating Dream weaver max 2004 with Fireworks max 2004 and flash max 2004.

References:

1. Beginning Dream weaver MX2004, Wrox Publication.



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BCA-602: ADVANCE NETWORKING

SYLLABUS:

Internetworking:

Internetworking Basics, Internetworking Models, The Cisco Three Hierarchical Model-Core Layer, Distribution Layer & Access Layer.

Bridging / Switching:

Switching Services, Spanning Tree Protocols, LAN Switch types- Cut Through, Fragment Free, Store-and-forward, Configuration of Switches, Virtual LANs. (VLANs):

VLAN Basics, VLAN Membership, VLAN Trunking Protocols (VTP), Routing between VLANs, Configuration of VLAN.

Routing Protocols:

Define Flow Control and Describe the Three Basic Method Used In Networking. Add The RIP, IGRP, EIGRP, OSPF-Routing Protocols and Configuration.

WAN Protocols:

Introduction of WAN, Cabling the WAN, HDLC, PPP, LCP, Frame Relay, ISDN, DSL/ADSL.

Network Management:

Configure Standard Access Lists to Filter IP Traffic. Configure Extended Access Lists to Filter IP Traffic, Monitor and Verify Selected Access List Operations on the Router. Troubleshoot Network Congestion Problem.

Cisco Basics, IOS & Network Basics:

Examine Router Elements, Router Boot Sequence, Managing Configuration Registers, Identify Main Cisco IOS Command, Prepare to Backup, Upgrade and Restore Cisco IOS Software Image. Prepare the Initial Configuration of Router.

References:

1. CCNA Cisco certified Network Associate Study Guide By Todd Lammle 5th edition (BPB)
2. CCNA Deluxe Edition By Todd Lammle
3. CCNA Study Guide By Richard Deal (Tata McGraw Hill)
4. CCNA for Dummies By Ron Gilster
5. CCNA Certification Library By Wendell Odom.
6. CCNA Virtual Lab Platinum Edition By Todd Lammle.

BCA-603: Software Lab - XI (Major Project Phase - II)

Continuation of Major Project started in V semester (Code Generation, system testing, Installation and operations & maintenance)

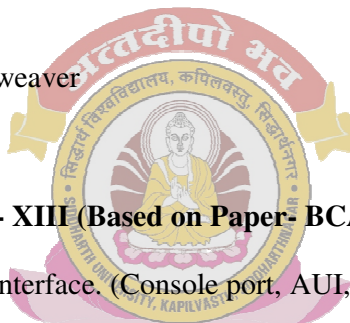
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BCA-604: Practical Software Lab - XII (Web Designing)

(Based on BCA-601)

Designing a Web sites using Dream weaver



BCA-605; Practical Software Lab - XIII (Based on Paper- BCA-602)

1. To study Cisco Router & its interface. (Console port, AUI, Serial, Auxiliary, Ethernet, Fast Ethernet, BRI)
2. To study. Switch & its interface. (Console port, Ethernet, Fast Ethernet)
3. To bring up a router first time, logging into a router, basic commands, saving NVRAM configuration.
4. To configure a router for different LAN segments.
5. To study IP Routing by creating Static Routes. (Static Routing)
6. To study IP Routing by using RIP .(Routing Information Protocol) - Dynamic Routing.
7. To study IP Routing by using IGRP (Interior Gateway Routing Protocol) - Dynamic Routing.
8. To study IP Routing by using EGRP (Enhanced IGRP)- Dynamic Routing.
9. To study IP Routing by using OSPF (Open Shortest Path First) - Dynamic Routing.
10. To study about Switch Basic Administrative configurations and verifying it.
11. To study VLANs and Routing between VLANs.
12. To study Inter VLAN Routing
13. To back up Router IOS (Internetworking Operating System).
14. To Upgrade or restore Router IOS.
15. To perform password recovery by changing configuration register value to 0x2142
16. To backup router configuration and restoring it.
17. To use Telnet for configuring and/or checking router and switch
18. To study CDP (Cisco Discover) Protocol)
19. To manage traffic using standard IP Access list.
20. To manage traffic using Extended IP Access List
21. To study Frame relay.
22. To study ISDN and BR1 interface.
23. To study DSL/ADSL.

BCA-6Q6: Seminar

(Based on Paper- BCA-603)

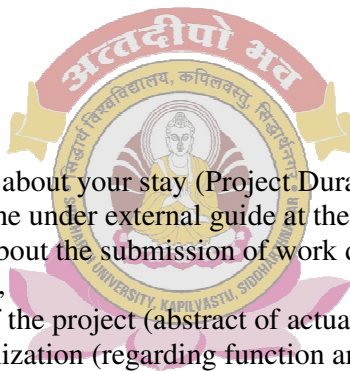
Seminar based on any Industrial Assignment.

BCA-6Q7: Comprehensive Viva Voce

Viva of Full syllabus studied under BCA course.

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Format of Project Report

- * Title Cover
- * Certificate from organization about your stay (Project Duration) at that place and about submission of work done under external guide at the place of training.
- * Certificate from your guide about the submission of work done under his/her guidance, Internal Supervisor,
- * Table of Contents, abstract of the project (abstract of actual work done).
- * A brief overview of the organization (regarding function area, location, division in which you are working, turnover)
- * Profile of problems assigned.
- * Study of existing system, if any.
- * System requirements
 - > Product Definition
 - * Problem Statement
 - * Function to be provided
 - * Processing Environment: H/W, S/W.
 - * Solution Strategy
 - * Acceptance Criteria
 - > Feasibility Analysis
 - > Project Plan
 - * Team Structure
 - * Development Schedule
 - * Programming Languages 'And Development Tools
- * System Requirement Specifications
 - > Developing/ Operating / Maintenance Environments.
 - > External Interface And Data Flows
 - * User display and report format, user command summary
 - * High-level DFD and data dictionary
- * Functional and performance specifications
- * Design
 - > Detailed DFD's and structure diagrams
 - > Data structures, database and file specifications
 - > Pseudocode.
- Test Plan
 - > Functional, Performance, Stress tests etc.
- Implementation / Conversion Plan
- » Project Legacy
 - > Current status of project
 - > Remaining areas of concern
 - > Technical and managerial lessons learnt
 - > Future recommendations
- » Bibliography
 - Source Code (if available)

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Note: - The above is meant to serve as a guideline for preparation of your project report. You may add to modify or omit some of the above-mentioned points depending upon their relevance to your project. You toy also consult your infernal supervisor for thee same.

