NORTH MAHARASHTRA UNIVERSITY, JALGAON

MASTER IN COMPUTER MANAGEMENT

Introduction

1. The name of the programme shall be Master's Degree Course in Computer Management (M.C.M)

2. The knowledge and skills required to plan design and build complete Application Software Systems are highly valued in all industry sectors including business,health,education and the arts.The basic objective of the Master's Programme in Computer Management (MCM) is to provide to the country a study stream of competent young men and women with the necessary knowledge,skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of information technology.

3. The Job Opportunities are:

   a) Many graduates begin their careers as junior programmers and after some experience are promoted to programmers,systems analysts,programmer/analystes. Others seek entrepreneurial roles in the computer world as independent suppliers of systems and equipments,Career opportunities exist in such areas as management,software and hardware sales,technical writing,training others on computers,consulting,software development and technical support.

   b)Application areas include transaction processing (such as order processing,airline reservations,banking systems), accounting function,sales analysis, games, Forecasting and simulations database management,desion support and data communications.

4. Specific elective course to be offered in functional areas have to depend on student preferences,faculty availability and needs of the user systems in the region in which the educational instituation is located.

5.a) The first year of the programme is a mix of computer related and general business courses. The computer-related course use microcomputers to introduce standard techniques of programming, the use of software packages including word processors,spreadsheets and databases ; systems analysis and design The general business courses include the functional areas of management like accounting,sales,purchase,inventory and production.The course world emphasise the study and creation of business applications, rather than mere programming.

b)In the second year, students are exposed to system development in the information processing environment, with special emphasis on management information systems and software Engineering for small and medium computer systems.Also, exposure to microcomputer technology micro based systems design and micro applications software including networks and graphical user interface system is provided.

6.   Duration : The M.C.M. programme will be a full time two year's master's Degree course in computer management.

7.   The new curricula would focus on imparting skills,rather than knowledge to students.In other words, less theory,more practicals.

8.   The Institutes should organise placement for the MCM students, by interacting with industries and software consultancy houses in and around the region in which the educational institution is located.

9.   Intake : IN each class, not more than 60 students will be admitteed.

(1) ELIGIBILITY FOR ADMISSION

     Graduates prossessing 45% or more marks of any faculty of any statutory university shall be eligible for admission to the M.C.M course.

III) NUMBER OF LECTURES AND PRACTICALS

Lectures and practicals should be conducted as per the scheme of lectures and practicals.

(V) PRACTICAL TRAINING AND PROJECT WORK

At the end of the second year of study, a student will be examined in the course "Project Work".

a)   Project work should be done individually

b)   Students should take guidance from an internal guide and prepare a project report on "project work " in 2 copies to be submitted to the Director of the Institute by 31st December.

c)   The project should contain an introduction to the project, which should clearly explain the project scope in detail. Also , Data Dictionary,.DFDS ,ERDs, File designs and a list of output reports should be included.

d) The project work should be of such a nature that it could prove useful or be relevant from the commercial management angle.

e) The project report will be duly assessed by the internal guide of the subject and marks will be communicated by the Director to the University after receiving the seat numbers from the University along with the marks of the internal credit for theory and practicls to be communicated for all other courses.

f) The project report should be prepared in a formate prescribed by the University which also specifies the contents and the method of presentation.

g) The project work will carry 40 marks for internal assessment and 60 marks for external viva. The external viva shall be conducted by two external examiners.

h) Project work can be carried out in the Institute or outside with prior permission of the Institute.

i) The external viva-voce examination for project work would be held in march/April of the second year of study, by a panel of two external examiners.

V) ASSESSMENT

1. The final total assessment of the candidate is made in terms of an internal assessment and an external assessment for each course.

   a) For each paper, 40 marks will be for internal assessment and 60 marks for year end examination (external assessment), unless otherwise stated.

   b) The division of the 40 marks allotted to internal assessment of theory papers shall be on the basis of tutotial work and written test.

   c) The practical examination for papers No. 106,206,306 and 406 shall be conducted by two external examiner appointed by the University which shall carry 60 marks and the internal assessment of practical examination shall be conducted by the institute which shall carry 40 marks.

   d) The internal marks will be communicated to the university at the end of each semester but before the semester examination. These marks will be considered for the declaration of the results.

c)in theory papers there shall be in all 8 questions out of which any five question shall be attempted by the candidate. For MIS Papers minimum weightage of 20 marks be given for case studies and 40 marks theory question be given.

V. EXAMINATION

Examinations shall be conducted at the end of the semester i.e. during April/May and also in October/November

VII. STANDARD OF PASSING

a)Every candidate must secure 40% marks in each head of passing and in aggregate 50% mark.

b)The passing marks for external examination will thus be 24 out of 60 and for internal examination 16 out of 40.

VIII. MEDIUM OF INSTRUCTION

The medium of Instruction will be English.

IX. CLARIFICATION OF THE B.O.S

It may be necessary to clarify certain points regarding the course.The B.O.S shall study and clarify any difficulties from the Institues.

X. REVISION OF THE SYLLABUS

As the computer technology is changing very fast , revision of the syllabus should be considered every 3 years.

XI. DURATION OF THE PRACTICAL SESSION

Each session will be of 1 hours duration.

XII. ADDITIONAL ELECTIVE

Students who have obtained their M.C.M. degree, can do an additional elective course. This could be done at any of the recognised Institutes offering the M.C.M.programme. The fees for this elective would be Rs. 5000 per additional elective course. The University will issue only a statement of marks for this elective course undertaken. Original marks/class obtained by the student will not be changed.

XIII. LAST ATTEMPT FOR OLD SYLLABUS

The last attempt fot student enrolled for M.C.M. Part I 1996 will have to clear their subjects under the old syllabus by 2000 University examination and for students enrolled for M.C.M. Part II in 1997, will

have to clear their subject as per old course by April 2001
University examination. Therefore, the equivalence to the
old syllabus would be as detailed below:

Equivalence

Existing Paper and Title   Proposed Paper and Title

1. Computer Fundamentals and   1. Elements of Information
   Data Processing   Technology
2. System analysis & Design   2. Software Engineering.
3. Programming Language.   3. FOXPRO - I
4. Accounting & Financial Mgt   4. Financial a/c & costing
5. Quantitative Techniques   5. Q.T.
6. M.I.S.   6. M.I.S.
7. Data structure & algo.   7. Data structure & algo.
8. Data Base Mgt system   8. Data Base Mgt system
9. Unix   9. Unix
10. Application   10. Bussiness Application
11. C Programming   11. C Programming - I
12. Project Report   12. Project Report
13. Internals - Part -I   13. Practical -sem I
14. Internals - part -II   14. Practical - sam II

x-x-x- x-x-x-x-x-x-x—

NORTH MAHARASHTRA UNIVERSITY, JALGAON

STRUCTURE OF M.C.M.COURSE
(With effect from July,1997)
2 Years (4 Semesters) Course

Semester I

Paper   101. Elements of Information Technology
Paper   102. FOXPRO
Paper   103. C. Programming
Paper   104. Windows and M.S. Office
Paper   105. Financial Accounting and Costing
Paper   106. Practicals

Semester II

Paper 201. Software Engineering
Paper 202. Foxpro II
Paper 203. C Programming II
Paper 204. Financial Accounting and Applications
Paper 205. Principles and Practice of Management
Paper 206. Practicals

SEMESTER III & IV (With effect from July,1998)

Semester III

Paper 301. Data base Management Systems
Paper 302. M.I.S.
Paper 303. Quantitative Techniques I
Paper 304. Data Structure
Paper 305. Elective I
Paper 306. Practicals

Semester IV

Paper 401. Unix
Paper 402. Business Applications
Paper 403. Quantitative Techniques II
Paper 404. Project work
Paper 405. Elective II
Paper 406. Practicals

NORTH MAHARASHTRA UNIVERSITY, JALGAON

SYLLBUS FOR M.C.M.COURSE
SEMESTER - I.
(With effect from July,97)

Paper 101. Elements of Information Technology

1. Computer :

Block diagram of elements of digital computer-their
functions. Memory, CPU, I-Q devices. Secondary storages,
magnetic Tape,Disk, CD ROM.
Other recent development Scanners, Digitizer, Plotters.
Hardware and Software.
Micro. Mini and Main frame computers-their features

2. Representation of Data :

Binary,OCtal, Hexadecimal, BCD, EBCDIC, ASCII,Conversions.
Simple Additions, Subtractions, Multiplications, Divisions
(in Octal and Hexadecimals).

3. Boolean Algebra :(ONLY Basic knowledge & introduction to basic
concepts)

Algebra Rules and DeMorgan's rules.
Simplification of equatons.
Logic Circuits - AND, OR, NAND, NOR,Exclusive or and NOR
truth tables. Gated flip flops, Registers, Accumulators.

4. Introduction to 8086/8088 microprocessors-architecture
Buses Data, Address, Control.

5. Software :

Introductionto Programming, Flowcharts and Algorithms.
System software, application software, firmware.
Machine, Assembly, and Higher level Languages Cobol,C.C++
Java, Stored program concept.

6. Operating System Introduction :(ONLY types & function of
operating system)

Process management-FCFS. Round Robbin, Priority Based.
Memory management-segmentation, paging, virtual memory.
I-Q management Concept of I/Q port.
File management FAT, file handling functions.
Software and Hardware interrupts, I/Q and Memory based
addresses, DMA channels,

7. File :
Concept of file., File organisation and accessing
techniques Indexed, Line sequential , Hashed.
File handling functions : Sorting , Merging, Indexing,
Updating.

8. Instruction and Addressing Techniques :

Instruction execution cycle.
Direct, Indirect, Relative, Paging, Indexed.

9. Broad View of operating systems :
MS-DOS, Unix, MS-Windows 95.

10. Basic concepts of Networking and Data Communications :
Introduction to LAN and Basic communication concepts.
OSI 7 layers. Topologies, Protocols, ethemet, Arnet.
TCP/IP.

11. Introduction to virus and Vaccines, applications, DTP
E-Mail and internet.

BOOKS :

1. Computer Today, Hunt & Shelly
2. Computer & Commsese, Sander
3. V.Rajaraman

PAPER 102 : FOXPRO

A. USING FOXPRO 2.5 UNDER DOS (USAGE LEVEL)

1. What is a database
2. Simple and Relational Databases
3. Limitations of DBase III Plus
4. Advantages of using FOXPRO
5. Introduction to FOXPRO menu structure
6. Introduction to FOXPRO dialog boxes.
7. Using FOXPRO Command Window
8. Creating a database structure.
   (a) Defining structures of a database file
   (b) Entering field names.
   (c) Saving database file.
   (d) Copying and modifying structures of database files.
9. Adding Editing and Viewing Data
   (a) Appending data
   (b) Changing or Editing data
   (c) Resizing or Changing the order of fields
   (d) Partitioning the Window
   (e) deleting a record
   (f) Moving the record pointer.
10. Understanding Indexes and Expressions
    (a) Types of Indexes (Single, Comound, Structural
        Comogound, Compound)
    (b) Overview of Index Dialog Box
    (c) Indexing Commands.
    (d) Understanding Expressions
    (e) Selecting and Controlling Index Files.
11. Generating Reports
    (a) Designing the report form.
    (b) Page Layout
    (c) Page Preview

(d) Layout Toos
            (e) Title/summary
            (f) Data Grouping
           (g) Variables.

Books: R.K. Taxali
       Gran 2.5

              LIST OF PRACTICALS FOR FOXPRO (MCM I 102)

N.B. : First seven (7) practicals are sem. I and remaining for
       sem. II
       Use of command window is expected.

(1)   Create the strucutre of a database file (minimum 5 fields
      must be inclused). add the records in it and display the
      selected   fields (minimum 3 fields) for the   records
      satisfying given conditions. Copy the file to another
      specified file, copy the selected records to another file.

(2)   Add the records in a database file whose structure is
      given. Sort the all the records in a specified order. sort
      the records satisfying given conditions.

(3)   Create the index files for a given database file. add the
      records from original and indexed database file.

(4)   Edit and delete the records satisfying the given conditions
      for a given database file.

(5)   Create the report with suitable titles for a given database
      file. The report should display only the field values of
      database file without any condition and grouping.

(6)   Create the report for a given database file with suitable
      titles to display the records satisfying given conditions
      (without grouping).

(7)   Create the report for a given database file with data
      grouping.

   PAPER 103. : 'C' PROGRAMMING
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   1. C Fundamentals :

           C Character Set, Identifiers and Keywords, under ANSI C.
           Data Types Constants int., float. double. char. Qualifiers :
           long, short, unsigned and signed. Escape sequences (like \n,
           \b etc). Arithmetic Expressions and different Operators.
           Preprocessor directives (like #include, #define). Symbolic
           constants, Comments. sizeof, cast

   2. Loop Control Structure :
           The for statement, Nested for Loop : for loop variants, the
           while statement, Increment/decrement operators, Use of break
           and continue.the do-while loop.

3. Decision and Case Control Structure :

   If statement, if-else construct, use of logical operators
   and Compund Relational Tests, Nested if statements. The else

   if constaruct, the relational operators, the conditional
   expression (ternary) operator. The switch Statement with or
   without break.

4. Arrays:

   Declaration. Referring individual elements, Entering data
   into an array, reading data from an array. Array
   initialisation, Bounds checking, Passing array elements to
   a function. Passing Array to a function.

5. Storage Classes:

   Automatic, Register, static (local and global), External,
   Scope.

6. Functions :

   Arguments and local variabres, Returning Function Results,
   Default Return type and the type void, Passing values
   between functions. Declaration of function type, Recursion.
   Functions with variable arguments.

7. Input/Output in C :
   Console I/O functions, printf ( ), Scanf( ), Getch( ),
   getchar ( ), puchar ( ), gets ( ), puts ( ).
   Disk I/O Functions. High level file I/O or standard
   functions fopen ( ), putc ( ), fclose( ), fgets ( ), fputs
   ( ), fruad ( ), fwrite ( ), fseek ( ), feof ( ), fflush ( ).
   Use of above ftio handling functions for standard devices
   like stdin, stdout, stderr and stderr.

8. Dynamic Memory Allocation and Memory functions :(ONLY
   INTRODUCTION)

   memcpy ( ), memset ( ), calloc ( ), malloc ( ), free ( ),
   realloc ( ).

9. Other features and Miscellaneous functions :

   Enumerated data types, typedef, atof ( ), atoi ( ), atol
   ( ), toupper ( ), tolower ( ), isalnum ( ), isalpha ( ),
   isdigit   ( ), exit ( ). Use of command line arguments.

10. C Preprocessor :
    Micro expansion, Macros with arguments, File inclusion.

11. Single-user Btrieve : (ONLY INTRODUCTION)
    Concept of Btrieve record manager, Usage of btrieve. exe.
    butil. exe, turcbtrv. c, Butil description file, status code
    and messages, Btrieve function call BTRV and its usage,

Btrieve record operations in Clanguage for open, close, insert, update, delete, get equal, get next, get previous get greater get greater or equal, get less than, get less than or equal, get first, get last.

Books:
    1.Spirit of 'C,
    (2) Let us'C' Principal; Yashwant Kanetkar
    (3)Programing in 'C'   Godfred . .
    (4) Balagurusamy 'C' Programming

PRACTICAL ASSIGNMENTS   C   LANGUAGE

1. Write a program to calculate the sum of the digits of an integer number.
    Ex. :- 1234 = 1+2+3+4 = 10

2. Write a program to find the compound interest and print the table which would give the value of compound interest for p = 1000, 2000, 3000, 4000, 5000, ... 10,000

    Compound intrerst = p x (1 + r/100)^N

    $$Compound\ intrerst = p \times (1 + r/100)^N$$

    Where   p = Principal amount
             R = rate of interest
             N = Number of years

3. Write a program to find the number and sum of numbers greater than 100 and less than 200 that are divisible by 7.

4. A manufacturing company has classified its executives into four levels for the benefits of certain perks. The levels and corresponding perks shown below.

Level	Perks	
	Conveyance Allowance	Entertainment Allowance
1.	1000	500
2.	750	200
3.	500	100
4.	250	Nil

An executives gross salary includes basic pay, house rent allowance at 25 % of basic pay and other perks. Income tax is with held from the slary on a percentage basics as follows.

11

8.   Write a program, using function word length () which compute
     the word length of the host machine that is the number of
     bit in an int and meatnt.

9.   Sort the number using any sorting methods.
10. Conversion of decimal number to any base number (2 to 16)
     main ()

     Function of the program. The program will arbitarily be
     restricted to 10 clients. the last name of each client will
     be 20 character total field length. There will be five
     procedures in the operation of the program. They are:

1. Enter a client.
2. Find and display a client.
3. Update a client.
4. Delete a client.
5. Exit the program.

11. Using a top-down approach, you will first write the main()
function of the program. The program will arbitrarily be
restricted to 100 address of the clients. The structure of the
record is as follows :

     1. Name
     2. Address
     3. Pin code of the city.

There will be five procedure on the operation of the program.
They are :

     1. Enter a Record.
     2. Display a Record
     3. Save the data file
     4. Load the data file
     5. Exit the program

PAPER 104. WINDOWS AND/ M.S. OFFICE
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1. Environment of a Windows Application

     The Graphics oriented User Interface, The pros & cons of the
     Visual Interface. MS Windows' window component, The Graphics
     device Interface, The display context, The GDI I/P Routines,
     A Multitasking Environment, H/W Independence.

2. Basic Concepts of Window Program

     Hardware and Software requirements, derived Data types,
     Handles, Hungarian notation, STRICT, windows;h; argsused
     pragma, WinMain () and it arguments-hInstance, hPrevInst,
     lpszCmdLine, nCmdShow, Comments,Instances, API functions,
     message boxes macros, icons, main window, window class,
     WNDCLASS structure, event-driven programming, window
     procedure, window messages, message loop, basic working of a

Message System. Message format.
The sources of a Message, Some Common Message types. The Sequence of Message Processing. The Role of Messages.

3. Resource Handling

Using a text Resource, Message Box, Message Box types, Menus-Receiving commands from the User, Creating Pop-up Menus, displaying & Processing a Menu, Accelarators, Dialog Boxes : Receiving data from the user, Defining a dialog box using the Dialog Box Editor, Programming for the Dialog Box, Device Context, Resources and Projects, Icons, Stock Cursors, Disk Files, File Common dialogs.

4. M.S. Office

Introduction to MS-Office, Installing MS-Office, The office Manages, sharing information with MS Office. The clipboard, Ullternation to the clipboard, Using the clipboard to cut, copy & parte. The clipboard viewer object linking & embedding (OLE), editing, linking information, editing embedded objects. word processing with MS-WORD for windows, Word basics. undo, redo, repeat. inserting text. Replacing text, formating text. copying from one word document to another, Printing auto format.

Working with headers, footers & footnotes. tabs, tables & sorting, converting table to text & vice-verssece. Working with graphics such as importing graphics, Sciring & copying graphics with the picture command. Using Words drawing features. Drawing objects, colour firling tampltes, Wirards & sample document, Writers tools, Typing symbols & special bulleted list commands. spall check, auto text grammar checker, word count & other statustic, table & contents, creating an index, macros, Introduction to mail-merge.

Excel basics. The usual spread shret features, overview of Excel feateer. Creating a new cell, selecting cells, Rearrainging worksheet, moving cell, Deleting parts of worksheet, moving part of worksheet, Excel page setup, changing columns, Using border buttons & commands, changing colours & shading, Inserting & removing page breaks, Hiding rows & columns, Working with multiple worksheet, Viewing multiple windows, summering information from multiple windows.

Books : Pit Zeld - Window 3.11
Lafper - Window Prof. Notes
Wondow Programmings Principals   Jim Concar

List of Programs for Windows
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1. Introduction to windows

2. Accessories : File manager, Calculator, Time, Date,
   Sound recorder etc.
3. Creating document using WR
4. Creating, editing, Saving. Formating document using ms word
5. Mail merge using ms word
6. Creating a worksheet.
   (Entering data, calculating formulas. saving & closing the
   worksheet)
7. Editing & formating the worksheet
   a] Inserting & deleting columns & rows
   b] Copy & Paste commands
   c] Printing a worksheet
8. Creating charts [graphs]
9. Working with Database in Excell
   Sorting data
   Auto filler
   Query.

10. Creating picture in paintbrush & copy it into word, write,
    & excell.

105 FINANCIAL ACCOUNTING AND COSTING - I
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1. Concept of Management Accounting
2. Financial Accounting
   Type of Accounts—Principles of Double Entry—
   daybooks and Ledger account and Trial Balance Sheet
   —Profit and Loss Account and Balance Sheet of a Proprietor
   and a Limited Company.

3. Financial Analysis.
   Cash Flow and Funds Statements
   Ratio Analysis.

4. Cost Accounting
   Elements of Cost—Material, Labour and Overheads

   Materials   1) Methods of valuing Material issues i.e.LIFO,
                       FIFO Simple & Weighted Average
                    2) Economics Ordering quantity
                    3) Various stock levels

   Labours   Methods of wage payment
                    1) Taylors system and Meorick system
                    2) Halsey plan (3) Rowan plan (4) Gantt task
                    bonus plan

   Overhead   1) Primary and Secondary distribution machine hour
                       rate, and methods of absorption of overheads.

Books :1.Saxena & Vasit - Costing
       2.Accounting-duguples
       3.B.K.Bhar - Costing
       4.Management Accounting - ManMohan , S.N.Goyal,Agra
         Prakashan

105. PRACTICALS

The practicals should cover programming on the computer related courses. At least 20 program assignments should be done by each student. In addition, the students should be taught how to use a wordprocessor, spreadsheet and basic commands of DOS and the operational aspects of MS-WINDOWS.

The practical examination shall be conducted by two external examiner appointed by the University which shall carry 60 marks and the internal assessment of practical examination shall be conducted by the institute which shall carry 40 marks.(20 marks for curriculam & 20 marks for Business communication)

Business Communications should be taught to the students internally with introducting aspects. The syllabus for Business Communications is :

1. Nature, scope, function, limitations.
2. Communication process and principles of communication.
3. Inter-personal communication (face to face), telephonic meetings and group communications, board and union meetings, leadership qualities, Body language and KINESICS.
4. Public speaking (verbal and non verbal communication).
5. Communication with media.
6. Listening skills.
7. Barrier of communication.
. Written communications.

Preparation, analysis and interpretation of reports, business letter writing.
List of Practicals : Foxpro   6
                      C language 6
                      Windows   6

                      Total :   20

Books : Urmile Roy   Business communication

201. SOFTWARE ENGINEERING

1. System concept, Intergrated systems, sub systems, modules.
2. Role of Systems analysts and others in system development.
3. General phases of System development Life Cycle. Feasibility Study. Requirements capture, Detailed. Systems Analysis. Systems Design. Testing. On Site Implementation and Maintenance.
4. Fact Finding Methods.
5. Different Approaches to Software Development.
   *Classic Method : Waterfall Model.
   *Prototyping.
   *Sprial Model.
   *4 GL or Data Oriented Approach.
6. Structured Analysis and Design method and Software Engineering
   techniques, Tools and Methodologies in Systems Development.
   Application System Modelling.
   Data Modelling : Entity Relationship method
   Process Modelling :Data Flow Diagrams
   Concepts of Object Oriented Modelling
   Temporal Modelling : State transition Diagrams
   Database Design Methods
   Mapping E-R model to arrive at the Database Design
   Normalisation Technique for Database Design
   Controlled De-Normalisation
   System Documentation Techniques
   System Flow Charts
   Functional Decomposition Diagrams
   Structure Charts
   Structured Flow Charts (N S Diagrams)
   Logic Representation Techniques
   Decision Trees
   Decision Tables
   Pseudocode and Structured English

7. User Interface Design
   Menu, Screen and Report layouts designing
   The Mode/style of interaction between the system and user.

8. Codes Designing for field values
   Designing Code-less system

9. Introduction to Computer Aided Software Engineering (CASE)
   Centralised Data Dictionaries
   Diagrammers, Database Designer. Code generator in CASE tools, tools for Static and Dynamic Analysis of programs and Impact analysis for introducting changes.
   The concept of Reverse Engineering.

10. Types of Data Processing
    Batch, On-line and Real Time processing.

Books : Roger Pretman   Software Engineering
        James Sen   System Analysis

202 FOXPRO   II
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PROGRAMMING WITH FOXPRO 2.5
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1. Brief Introduction to Structural Programming
2. Input/Output Variables.
      (a) Variables
      (b) Formatted I/O.
3. Control Statements
      (a) Looping
      (b) Selection.
4. Procedures and Parameters.
5. Screen Builder
6. Menu Builder
7. Compilation and Execution of files
      (a) Creating Executive files.

8. Windows
      Defining
      Activating
      Deactivating
      Hiding
      Releasing
      -Showing
9. Popup
      Defining
      Activating
      Deactivating
      Hiding
      Reireasing
      -Snowing
10. Menus
      -Defining
      -Activating
      Deactivating
      Hiding
      Reireasing
      -Showing
11. SQL statements
12. Usage of Rushmore technology
13. Commands and function.
14. Arrays.
      (a) Arrays
      (b) Using Arrays as Memory tables
15. Macris
      (a) Macris Substitutions

... OTHER ADDITIONAL FEATURES OF FOXPRO

   1. RQBE
   2. FOX Gran
   3. FOX DOC

D. APPLICATION DEVELOPMENT

1. Sample Application including the following :
   (a) The Main Program
   (b) The Insert Program
   (c) The Edit Program
   (d) The Delete Progam
   (e) Reports

2. Applications should be any one of the following :
   Payroll, Inventory, Financial Accounting.

LIST OF PRACTICALS FOR FOXPRO (202)

(1) Write a program to group a given set of observations into
    given classes. (At least 5 classes and at least 25
    observations must be given)
(2) Write a program to prepare and display a table with suitable
    titles, giving interest and amount on a given fixed
    principa, fixed time and varying rates of interest.
(3) Write a program using procedure\function to convert a given
    amount in figure into the amount in words.
(4) Write a program to add the records in a database file whose
    structure is given, using custom screen. The program should
    given the facility to add as many records as needed. At
    least 5 fields must be given.
(5) Write a program to display the records of a given database
    file either on screen or printer depending upon the request
    of the user (use of report creating facility is not expected
(6) Write a program to edit and delete the records from a given
    database file, using custom screen.
(7) Write a program to creat a simple menu to (1) display all
    the records from a selected file, (2) copy all the records
    from one specified file to another specified file, (3)
    delete all the records of a specified file.
(8) Write a program to create a pull-down menu (1) to display
    the records satisfying given conditions, (2) to copy the
    records satisfying given conditions.

(9) Write a program to add the new records in one database file
    and at the same time update the corresponding records in
    another related database file.
(10) Write a program to print the formatted report either on the
    screen or printer (depending upon the request of the user)
    by making use of more then two database files.
(11) Use of Foxgraph utility to draw business diagrams.

203. 'C' PROGRAMMING - II

1. Introduction : Difference between C & C++. The Object-Oriented Approach, Object oriented methodologies in Analysis. Design an dia programming Characteristics of Object-Oriented Languages, Classes, Objects, Encapsulation, Inheritance, Polymorphism, C++ and C.

2. Structures : An introduction, Other Structure Features, Structures within Structures, Enumerated Data Types.

3. Functions : Simple Functions, Passing Arguments to Functions, Returning Values from Functions, Reference Argument, Overloaded Functions, Address of an overloaded function, passing an address of an overloaded function as an argument to another function, Inline Functions, Default Arguments, Variables and Storage Classes.

4. Objects and Classes : A Simple Class, Difference between class, structure and union in C++, C++ Objects, Constructors and Destructors, Concept of an ADT, Constant member function, Objects as Function Arguments, Returning Objects from Functions, Classes, Objects and Memory, Static Class Data.

5. Operator Overloading Introduction, Overloading, Unary and Binary Operators, Concatenating Strings, Comparison operators, Arithmetic Assignments Operators, Data Conversion-Between Basic Types, Between Objects and Basic Types, When to Use What.

6. Inheritance : Derived Class and Base Class, Derived Class Constructors, Class Hierarchies, Public and Private Inheritance, Multiple Inheritance, Containership-Classes within Classes, Inheritance and Program Development.

7. Pointers : The Delete and New Operator, Pointers to Object, An Array of Pointers to Objects, Pointers to Pointers, Debugging Pointers, Difference between pointers and references.

8. Virtual Functions and Other Subtleties : Virtual Function, Pure Virtual Functions, Friend Functions, Static Functions, Assignments and Copy Initialization, The Copy Constructor, The this Pointer, Abstract Classes.

9. Introduction to templates and exception handling, Function with Templates.

10. Files and Streams : Streams, String I/O, Character I/O, File Pointers, Error Handling, Redirection, Command-Line Arguments, Pointer Output, Overloading the << and >> Operators.

11. Linkage of C and C++.
    Internal assignments :
    The internal assignments should be such that the design aspects of Object Oriented Programming be highlighted.

Practicals for C Programming

1. Write and run a program that read three integers and prints the minimum and minimum. Use the conditional expression operator.

2. Write and run a program that reads four integers and prints them in the opposite order.

3. Write a C++ program that will ask for a temperature in Fahrenneit and display it in Celsius.

4. An electricity board charges the following rates to domestic users to discourage large consumption of energy :
   For the first 100 units   40 P per unit
   For next 200 units   50 P per unit
   Beyond 300 units   60 P per unit.

   All users are charged a minimum of Rs. 500. If the total cost is more than Rs. 250.00 then an additional surcharge of 15% is added.
   Write a program to read the names of users and number of units consued and print out the charges with names.

5. Write programs to evaluate the following functions to 0.0001%
   accuracy.

   a) $\sin x = x - \dfrac{x^3}{3!} + x \dfrac{x^5}{5!} - \dfrac{x^7}{7!} + \ldots$

   b) $SUM = 1 + (1/2)^2 + (1/3)^3 + (1/4)^4 + \ldots$

   c) $\cos x = 1 - \dfrac{x^2}{2!} + \dfrac{x^4}{4!} - \dfrac{x^6}{6!} + \ldots$

6. Write a program that reads one line of text and then prints the number of vowels that were read.

7. Write and test the following function that deletes all occurrences in s1 of characters in s2:
        void del (char* s1, const char* s2)

   for example, if s1 is the string "ABRACADABRA", and s1 is the string "AB", and then after the call del(s1, s2) the string s1 would be reduced to "RCDR".

8. Write and test the function

   int frequency (float a[], int n, int x)

   This function counts the number of times the item x appears among the first n elements of the array a and returns that count as the frequency of x in a.

9. Let us consider a shopping list of items for which we place an order with a dealer every month. The list includes details such as the code number and price of each item. We would like to perform operations such as adding an item to the list, deleting an item from the list and printing the total value of the order.

10. A file contains a list of telephone numbers in the following form :

    John   23456
    Ahmed   9876

    The names contain only one word and the names and telephone numbers are separated by white spaces. Write a program to read the file and output the list in two columns. The names should be left justified and the numbers right-justified.

11. Updating is a routine task in the maintenance of any data file. The updating would include one or more of the following tasks:
    . Displaying the contents of a file.
    . Modifying an existing item.
    . Adding a new item.
    . Deleting an existing item.

12. Write a program which reads a text from the keyboard and display the following information on the screen in two columns.
    (1) Number of lines.
    (2) Number of words.
    (3) Number of characters.
    String should be left justified and numbers should be right-justified in a suitable field width.

204. FINANCIAL ACCOUNTING AND APPLICATION.

1. Methods of Costing — Job, Contract and Process Costing
2. Marginal Costing- Break Even Analysis, Cost-volume,Profit Ration and its application
3. Budgets and Budgetary Control
4. Computer Application in financial accounting systems, need, problems and advantages, Process of conversion of manual accounting system into computerised accounting system.

Books : Costing — B.K.Bhar
        Management Accounting — Man Mohan Goyal

205. PRINCIPLES AND PRACTICE OF MANAGEMENT

1. Basic concepts of Management. Nature & scope of Management.
2. Principles of Management General Mgt. Administration & organisation.

3. Process-
   Planning stepts promay function effective planning &
   Decision Making.
   Organising - Types of Organisation Structure,
   Deligation of authority Authority & responsibility.
   Stuffing - Selection Training & Development.
   Directing _ Leadership
   Controlling - Communication & Motivation
                 Control technique.
   Co-ordinative need & imp.

4. Techniques _ M.B.O. & Organisation Development.

Ref. Books

Management   -   Harold Koontz
                     William Stanton,
                     Burton

Principles of Management - L. M. Prasad
                     Shrinivas & Chunawala.
                     Sherlekar & Sherlekar
                     Tripathi & Reddy

206 PRACTICALS :

The Practicals should cover Programming on the computer related
courses. At least 10 program assignments should be done by each
student.

   The practical examination shall be conducted by two external
examinor appointed by the University which shall carry 60 marks
and the internal; assesment of practical examination shall be
conducted by the institute which shall carry 40 marks.(20 marks
for curriculum & 20 marks for business communication)

Foxpro -   10
C++ language 10

Total .   20

301. Data Base Management Systems (DBMS)

1. Introduction

    History : Advantages and limitations of DBMS, Users of DBMS,
    Software Modules in DBMS, architecture of DBMS.

2. Modelling Techniques
    Different Types of Models, introduction to ERD.

3. Hierarchical Database
    Introduction.

4. Network Database
    introduction

5. Relational Database
    introduction, Codd's 12 rules, Concept of Domain, Tuple,
    cardinality, comparison between RDB_NDB_FDB.

6. Normalisation
    Advantages and disadvantages of Normalisaton, 1NF-2NF-3NF-
    4NF 5NF-BCNF DKNF rules with examples, Anomalies

7. Integrity Constraint :
    Entity-Domain Referential integrity rules, Assertion and
    Trigger concept.

8. Recovery Mechanisms
    Recovery from various problems of volatile and non-volatile
    storage devices, Concept-properties-states of Transaction,
    Introduction to mechanisms such as Log, Checkpoint and
    Shadow Paging.

9. Concurrency Controls
    Problems of concurrent transactions, Control Mechanisms such
    as Locks, Time Stamps, optimistic scheduling and MV?.

10. Distributed Databases
    Concepts, Data Distributions techniques.

11. Security and Privacy.

12. ANSI-SQL commands.

Note :
1. ERD technique not to be covered in details as the same is
    expected to be covered in Course 104.

Books : 1. Henry Korth - Data Base Concepts
        2. C.J.Date - Systems Concepts
        3. Desai - Data Base Systems.

PRACTICAL
DATABASE MANAGEMENT SYSTEM   PAPER 301

1. Designing & Creating a database & adding data by using

CREATE TABLE command

2. Modifying Database & Data entry screen forms using

ALTER TABLE   table name
Add (newcolname datatype(size)

Modifying existing coloumn

ALTER TABLE tablename
MODIFY (coloumname newdatatype(size)

3. Using SQL
   i] Nested queries using IN,EQUAL, IS etc.
   ii] Aggrigate function

AVG,MIN,MAX,COUNT,SQRT
   III] Group by clause
   iv] Having Clause

4. Using DML
   i] INSERT clause
   ii] UPDATE clause
   iii] DELETE clause
   vi] DROP clause

5. Trigger concept

302. M.I.S.

-organisational structure and functions.
-Systems approach to organisation
-Dynamics to Decision   Making
-Control / Control by exception / feedback control
Law of requisite variety
-Systems approach to MIS design
-Factoring / Boundaries / Coupling
-Decision support systems
-DSS concepts
-Simple models
-Dialogue Manager
-Executive Information Systems
-Information requirement
-Method of access
-Presentation
-Workflow Management
-Concepts
-Task definition
-Client & Server
-Design

303. QUANTITATIVE TECHNIQUES   I

1. Role of quantitative techniques in decision making.

2. Linear Programming
   Problem formulation
   Simplex method

3. Transportation problem
   (algorithmic approach), Initial Basic, Feasible solutions,
   North west corner rule, Matrix Minima Method & Vogel's
   Approximation, U.V. Method to find Optimum solutions

Books : Q.T. - L.C. Jhamb
        Q.R. Jha
        Q.R. - Gupta & Hira

304. DATA STRUCTURE

1. Concept of datatype, data object, data structure and
    representation, abstract data structures, introduction to
    analysis of data structure and algorithms.

2. Arrays as ADT, implementation of arrays, Single dimensional
    and multidimensional.

3. Stacks as ADT, implementation of stack, push and pop
    operations, conversion of infix to postfix notation.
    Evaluation of postfix notation, concept of back-tracking,
    recursion using stacks (concept only)

4. Queues as ADT, implementation of queues, Application of
    queues to priority scheduling in transaction processing,
    Circular queues using arrays.

5. Linked list as ADT, singly linked list, operations on linked
    list, implementations of stacks and queues using linked
    lists, Doubly linked lists, application of double linked
    lists, dynamic storage management, concept of generalized
    link list.

6. Trees as ADT, basic terminology, binary tree representation
    using arrays and linked lists, binary tree traversal-
    inorder, postorder, preorder (both recursive and non-
    recursive versions), threaded binary trees, traversal of
    threaded binary trees, Binary tree representation of trees.

7. Symbol Table : Concept of table, static tree table, binary
    search, tree definition and search algorithms, Huffman
    algorithm, Dynamic tree table as binary search tree. Concept
    of height-balance (AVL) trees, introduction to reblancing
    techniques (concept only), insertion and deletion of node in
    dynamic binary search tree, Hash table, Hashing techniques.

8. Searching : Linear search, binary search, depth first
    search and breadth first search on binary trees.

9. sorting : Bubble sort, insertion sort, quick sort, heap sort.

Books : Data Structure   Treambley & Sorenson

PRACTICAL

1. Implement PUSH,Pop operation of stock.
2. Program to convert INFIX to PUSTFIX expression.
3. Implement INSERT & DELETE operations of Queue.
4. Circular linked list using pointers.
5. Based on all tree traversal methods.
6. Binary Search
7. Quick Sort.

305. ELECTIVE - I

Oracle   or   Ingres or Informux

ELECTIVE 305   A
ORACLE 7.1

1. Introduction to Oracle
2. Introduction to SQL
3. Substitution variables
      Define command
      Using file Command
      Accept command
4. Single Row functions
5. Group Functions
6. Querying multiple tables
7. Subqueries
8. Reporting
      SQL * plus Enviornment
9. Data definition Language
10.Data Manipulation language
11.Cursor Managemnt
12.Database Triggers..
      developer 2000 and Pro C Compiler to be studied.

List of Practicals

Oracle
----

1. Desig a database
2. Querrying it with SQL & SQL * PLUS
3. defining, using & querying one table views & Multiple table views.
4. data maniputation them views.
5. Working with SQL * report writer, SQL* forms, SQ* Menu
6. Programing with ORACLE Using pro *c

305 B

*Ingres:

Overview, Basic objects & operairons data defination, Data maniputation,   Data Rehival Operations,   Updata operations, Practicals
Minimum 9 Practicals best on above topics should be conducted.

book: A Guide to SYBASE & SQL sower.
       D Megover an & C.J. Data, Narora.

305 C

*Informix

All basic topic mentioned in sybase.
INFORMIX - SQL & databases:

Creating database, Using PERFORM - PERFORM Screns, Basic database enquires, ACE reports, Multitable forms, Advanced RDSRL - Report layout & statistical : User menus, Advanced INFORMIX SQL - Advanced forms, inter joins, unique & self joins, Ad. Reports, DBA: tables, inders, portissies, Transactions, audit trails, & backups.

Practicals

Minimum 9 Practicals base on above topics should be conducted.

Books: Using INFORMIX SQL
Jonathan Least & J. Baras..

Use PRACTICALS: There should be minimum 20 practicals

The practical examination shall be conducted by two external examiner appointed by the University which shall carry 60 marks and the internal assessment of practical examination shall be conducted by the institute which shall carry 40 marks.(20 marks for curriculum & 20 marks for business communication)

DATABASE MANAGEMENT SYSTEM   4 Practicals
Data Structure   , Practicals
Electives   7 Practicals

                    Total :   20 Practicals

401. UNIX

1. File systems and Concepts of Files, directories and inodes.
2. File oriented commands like cat, cp, ln, mv, rm, etc.
3. File permissions.
4. Directory oriented commands like ls, a ''', cd, rmdir, pwd.
5. Inter user communication commands like write, mail, mesg, at, wall.
6. Common commands like kill, date, wc, sleep, who, ps.
7. Pipes and redirection, Background tasks (& nohup).
8. UNIX utilities : grep,pr,cpio,tr,cut,paste,diff,cmp, comm, uniq,sort, ar, lp, init, shutdown, halt, sys, mkfs, fsck, script, tar,cron, find, file, nice.
9. Shell programming : (Bourne Shell only) Shell meta characters, shell variables, environment variables, profile, positional parameters, command line arguments, for/while/until loop, if and case structure, test, trap, interactive shell script, arithmetic on shell variables, error checking.

10. AWK programming : Operators, variables, constants, tokens, patterns and meta, characters, arithmetic and string functions, special variables, if-else, while, for, array, report generation.

11. DOS related commands : doscp, dosrm.

Practicals

1) Write a shell script to create an output file which contain roll no from file 1 and corresponding names and marks from file 2 and file 3.
   The output format is as follows:

Roll No.	Name of the students	Marks1	Marks2	Marks3
---

the file1 contains only rollno of student.
the file2 contains rollno and name of student.
the file3 contains rollno and marks occurs in three subject.
Enter the program and execute the same
Note: Create input files and enter 10 records.

2) Write a shell script to create a file which contains file name and time for each file in the current directory. Where the time should be either morning, afternoon or evening.
   For Examples : jin.dat morning
                  mjc.dat afternoon
   Enter the program and execute the same
   Note: Create input file with 15 lines.

3) Write a AWK program to create a text file "ODD" containing only ODD lines and text file "EVEN" containing only EVEN lines from the input file. Enter the program and execute the same.
   Note : Create input file with 15 lines.

4   Write a AWK program to print greatest common deviser of given
    two number.
        GIVEN : First number ...
                Second number ...

5   Write a AWK program to catut an output file containing
    employee number designation and increased salary of an
    employee from an input file "SALARY".
    The increased in salary is as follows:
        Designation   Increase in salary
        Manager   10%
        Clerk   15%
        Peon   20%

    the input file "SALARY" having following record layout
    employee No. designation salary
    enter the program and execute the same.
    Note: The file must contain 10 records

6   write a shell script to count the number of words of each file
    in the current directory and to create a summary file with the
    following details
    First file containing words < 100
    second file containing words > 100 and <=200
    Third file containing words >200
    enter the program and execute the same

7. Write a shell script to send "Happy Birthday" message to
    another user. if the user isn't login then execute the same
    program in background after every 15 seconds.
    Enter the program and execute the same
    Note: Create necessary files.

8. Write a shell script to generate the N terms of following
    Series. :
        2, 1, 4, 3, 6, 7, 8, 9 ....
    enter the program and execute the same

9   write a AWK program to print the contentwise population with
    country Name respective in countrywise Name
    enter the program and execute the same.
    Note: Create necessary files and assume suitable restrictions.

10 Write a shell script to create output file with following
    format :
    _____   _____   _____
    Item No.   Description   Balance Quantity
    _____   _____   _____

    file Master contains   : item no. description, qty
    file Trans   contains   : item no. Trans code, qty

        If trans code = 1   : Material is Sold
        If trans code = 2   : Material is Purchased

11> Write a AWK program which will create FIRST file containg
1 to 5 ,11 to 15, ... records &
LAST file containing records
6 to 10, 16 to 20 , 26 to 30 from the input file.
Create input file iNF & enter 15 records

102. BUSINESS APPLICATIONS
. . .. ----------- ....

1. Financial Accounting :
Introduction to computerised accounting system Coding
Methods
Day Books, Ledger, Trial Balance, Balance Sheet, Profit and
Loss Account.
Input Controls, audit trail.
Management and statutory reporting.

2. Fixed Deposit system :
Types of deposit schemes. Category or Depositors Statutory
Provisions.
Interest Warrants and Deposit Register.
Maturity and Renewal Procedures.
Statutory and Management Reports.
Payroll Processing :
Payslip Printing.

statutory Reports such as P.F., E.S.I, and Labour Welfare
Fund.
Payment of Bonus.
Costing and Management Reports.

4. Sales Order Processing :
Order acceptance and Recording
Sales Invoicing.
Sales Analysis based on Products, Customers and Terms.

5. Inventory Management :
Purchase order processing.
Stores accounting.
Stores transactions Receipts, Issues and Adjustments.
Bin Cards and Stock Ledger.
Inventory Levels EOU ABC analysis.
Inventory Control Reports such as Slow Moving/Non-Moving
Items.

6. Material Planning :
Bill of Material
Computing Gross/Net requirements.

7. Banking :
Functions and Reports related to Savings Bank Accounting.

a. Hotel Management :
　　Department Organisation of Hotel such as Room Occupancy,
　　Room Service, Restaurants, House-keeping, Conferencing,
　　Publications, Parties, etc.
　　Medical Stores Accounting.
　　reservation, Check In and Check out.
　　Service Accounting and Bill Printing,
　　Management Reports.

b. Hospital Management :
　　Departmental Organisation of Hospital such as In-Patient,
　　Out patient, Laboratories, Pharmacy, Surgical Rooms etc.
　　Medical Stores Accounting.
　　Registration, shifting and Discharge of patients.
　　Service Accounting and Bill Printing.
　　Management Reports.

(b) COMPUTER APPLICATIONS - II

Theory ... ...
Practical ... ...
Seminar ... ...
Marks ... ...

(c) Practical exam and Viva : minimum Assessment shall be carry
4 marks ... internal assessment shall carry 40 marks
Distribution :
　　...

Power Builder 5.0
Editing and history database, introduction to SQL and using SQL :
Retrieval of comp/no value, Retrieval operations. Update
operations, mass operational and operations, control and objects,
power builder power window script functions, graph.

Practical
Minimum 16 practicals based on the above topics should be conducted

Topic : Visual Basic

1. Introduction to the ... tool box, Project window, Properties Window,
　　menu... form window, etc.

2. writing programs ... drawing the interface. Setting a few properties
　　writing some program code.

3. Input, output and program code using specific types of controls-
　　Labels, Text boxes, Command buttons, Frames, Check Boxes, etc.

4. Handling data in the file and Various ... Handling with text and numbers

5. Making decisions ... If ....then, If ....Then.......Else, Select ca
　　For ...... Next, Do ..... Loops ....

6. ... program with file ..

7) Using Menu Design Windows, Adding items to a Menu. Assigning shortcut
Keys, Creating a Dialog Box

8) Error handling using .... on Error statement, on Error GOTO, etc.

9) Using Arrays and Creating files.

Practicals

1. Design an application to explain the use of all control
   classes.

2. Develop an application to
   a. Manipulate objects on different forms.
   b. event Model of Visual BASIC

3. Develop a graphical editor

4. Manipulation of tabledef & queryedef objects.

5. Designing new classes using MFC

6. Drawing in the workclient area of a window.

7. Creating popup menu.

8. Develop application allows you to
   a. Hook sounds to various windows system events, text
      buttons & window actions
   b. Animate your icons
   c. Create & edit your own icons, currsors & small
      bitmaps
   d. Provide a popup program launcher.

Max PRACTICALS

Based on Electives & Unix, there should be minimum 20
practicals based on Electives (10 Practical)and Unix (10
Practicals)

The practical examination shall be conducted by two external
examiners appointed by the University which shall carry 60 marks
and the internal assessment or practical examination shall be
conducted by the Institute which shall carry 40 marks.(20 marks
for curriculum & 20 marks for business communication)

End