

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Year Integrated Course]
M.Sc. (Information Technology)
Semester IX

Paper No : 904

L: 4, T:0, P:0 Hrs

Paper Title : Elective–II (Data Warehousing)

1. Introduction

Data Warehouse, Objectives, Difference between OLTP and Data Warehouse, Critical success factors, Data mining and its advantages , META data, Issues related to Data Warehouse

2. Project Planning and Management

Scope, Role and Responsibilities, Life Cycle approach

3. Data Warehouse Architecture- System Process

Introduction, Process flow within an data warehouse, Extract and Load Process, Clean and Transform data, Backup and Archive Process, Query Management Process

4. Data Warehouse Architecture- Process Architecture

Introduction, Load and Warehouse Manager, Query Manager, Detailed and Summary Information, Metadata, Data Marting

5. Database Design – Logical

Database Schema – Starflake, Partitioning strategy, Aggregations, Data Marting Metadata, System and Data Warehouse Process Manager

6. Database Design – H/W and Operational

H/W Architecture, Physical Layout, Security, Backup and Recovery, Service ,Level Agreement, Operating Data Warehouse

References:

1. S. Anahory & D. Murray: Data Warehousing in the real world – Addison Wesley
2. R. Kinball: Data Warehouse Toolkit – John Wiley & Sons
3. R. Kinball, L.Reeves : The Data Warehouse Lifecycle Toolkit – John Wiley & Sons
4. Efreem G. Mallach : Decision Support and Data Warehouse Systems – TMH
5. Paulraj Pulliah : Data Warehousing Fundamentals – Wiley

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Paper Title : Elective – II (Language Processor)

- 1. Introduction to System software, utility Software, systems programming.**
- 2. Assemblers:**
Introduction, Cross assembler, Micro Assembler , Meta Assemble, Single pass Assembler, Two Pass Assembler , Design of Operation code table , Symbol table , Literal table.
- 3. Macro processor**
Introduction of Macros, macro processor design, Forward reference, Backward reference, positional parameters, keyword parameters, conditional assembly, Macro calls within Macros, Implementation of macros within Assemblers. Designing Macro name table, Macro Definition table, Kew word parameter table, Actual parameter table, Expansion time variable storage etc.
- 4. Compilers**
Introduction, Analysis of the programme, Lexical Analysis, syntax analysis, phase of a compiler, Scanning, Parsing, Type checking and conversion, Storage organization and allocation strategies, Symbol tables, parameter passing, local and non local variables, Intermediate code generation of declaration, Assignment statement. Boolean Expression, Conditional Statement etc., Code generation, Code optimization, Compiler writing tools e.g. (Lex , Yacc) , Incremental Compiler , Interpreter.
- 5. Loader and Linkage Editor**
Absolute Loader , Relocation - Relocating loader , Dynamic loader , Bootstrap loader , Linking loader , Program relocatibility , design of Absolute Loader , Design of direct - linking editor , other loader scheme e.g. (Binders , Linking Loaders , Overlays , Dynamic Binders etc .)

References:

1. D.M. Dhamdhare : systems Programming & Operating System , TMH Edition , 2 nd edition , 1996.
2. John J . Donovan : Systems Programming , McGraw-Hill International Edition , 1993 Reprint.
3. Houlb : Compiler Design in C , PHI , EEE , 1995.

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Paper No : 904 **L: 4, T:0, P:0 Hrs**
Paper Title : Elective–II (Algorithm analysis and design)

- 1 Introduction:** Concept of an algorithm, program, problem; Review of elementary data structures; asymptotic Complexity, Notation - Priori, Posteriori analysis
- 2 Divide & Conquer :** General method - Control abstraction - MAXMin recurring relations; Sorting; Merge Sort, Quick Sort, Selection sort; Computing time
- 3 Greedy method:** General details, Optional Storage on tapes; Knapsack problem - Job Sequencing - Merge patterns - Minimum Spanning trees - Shortest path.
- 4 Dynamic Programming:** General details, Multistage graphs; All pair shortest paths, Optimal bin; each trees; 0/1 knapsack, Traveling Salesman Problem
- 5 Backtracking:** General details, Eight Queens problem, Sum of subsets - Graph coloring, Hamiltonian Cycles; Knapsack
- 6 Branch & Bound :** Method; 0/1 Knapsack problem – TSP
- 7 NP-Hard and NP-Complete Theory :** Basic concepts; Nondeterministic algorithms - $O(n)$ Sorting - P-complete & NP-Hard theory - Example problems
- 8 Advanced topics.**

References :

1. Horowitz E & Sahni S - Fundamentals of Computer Algorithms, Galgotia Publications, Reprint 1994
2. Brassard & Bratley - Fundamentals of Algorithmics, PHI EEE. 1994