

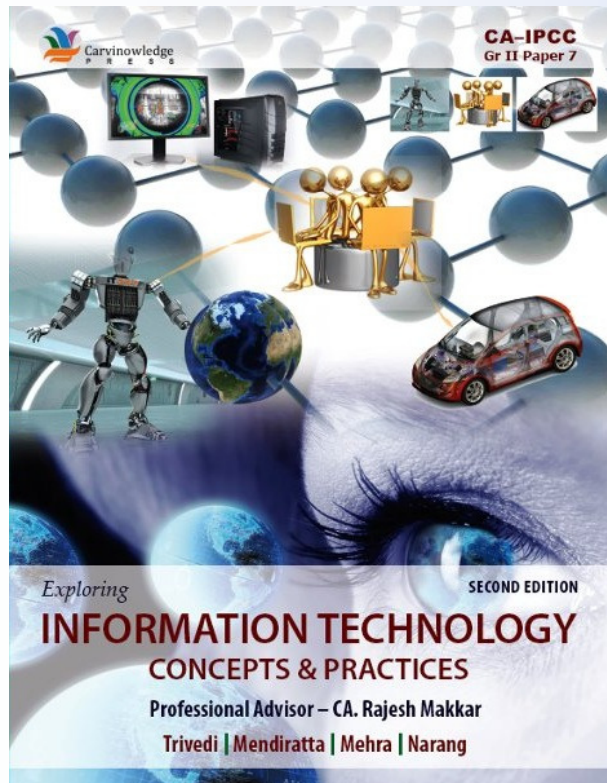
EXPLORING INFORMATION TECHNOLOGY

CA IPCC Paper: 7 A

IT Marks: 50

**Book Name: Exploring Information
Technology Concepts And Practices**

Database Chapter



**Copyright: Navneet Mehra,
Ethical Hacker, IT Security Consultant and
Executive Secretary, Cyber Crime Awareness Society**



Management Problems in File Processing System

- ❖ Data is stored in form of separate files.
- ❖ Separate application program needed for creation, updation and report generation from independent data files.
- ❖ Problems:
 - Data Duplication
 - Lack of data integration
 - Data Dependence
 - Data Security

Database

- ❖ Database is a collection of data. Data item – field, record –row, file-table.
- ❖ DBMS advantages and limitations (from book)
- ❖ Relationships in database:
 - ❖ One-to-one (husband-wife)
 - ❖ One-to-many (one teacher teaches 3 diff. courses)
 - ❖ Many-to-one (Two or more authors writing single book)
 - ❖ Many-to-many (two or more students enrolled in two or more courses)



Architecture of Database(from Book)

- External (Individual User)
- Conceptual(Global view)
- Internal/Physical/Storage

Database Structure

➤ Hierarchical

- Records are logically organized into hierarchy of relationship
- Parent/root record
- Implement one-to-one and one-to-many
- Less flexible/ unable to handle ad-hoc queries

➤ Network

- Variation of hierarchical model- more flexible
- Implement all relationships
- Only disadvantage – complexity design



Database Structure

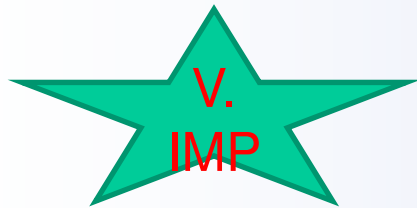
➤ Relational (Use table to organize data)

- Single database spread across several tables
- There can not be two identical records
- Each field contain single value
- Highly flexible
- Handle ad-hoc queries



Other Models

- **ER Model - entity (physical- house/Concept- transaction)-relationship**
- **Object Oriented Model- object oriented programming- OODBMS**
- **Client Sever Model**
- **Knowledge Model – collection of knowledge of experts, Expert system, Decision support system**



Database Components

➤ DDL

- Used to define data i.e conceptual schema of database
- Define data type, name, size etc.
- Provide link b/w logical(the way user view data) & physical structure (the way data physically stored)
- Contain statements like CREATE, ALTER

➤ DML

- Used to manipulate created database
- Used to insert, delete and update select database
- Contain statements like SELECT, INSERT INTO, DELETE.



STRUCTURE OF DBMS

- Data Dictionary – contains data about data i.e metadata
- DDL Compiler – converts data definition statements into a set of tables
- Data manager- database control system
- File manager- Manages space for data files on disk, file structure
- Disk manager- part of operating system, carries all I/O operations
- Query manager- convert user queries into set of operations
- DBA

SQL

- ❖ SQL – A query language in which set of commands are used to create, update and access data from database.
- ❖ 4GLs
- ❖ DDL, DML, DCL (Grant, revoke)

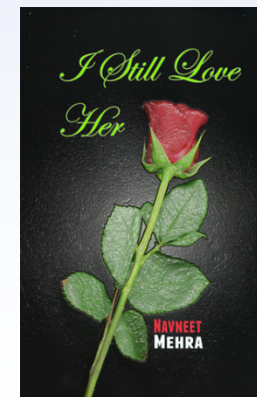
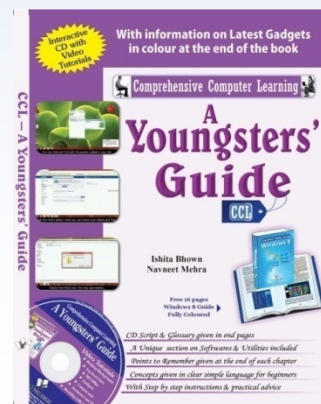
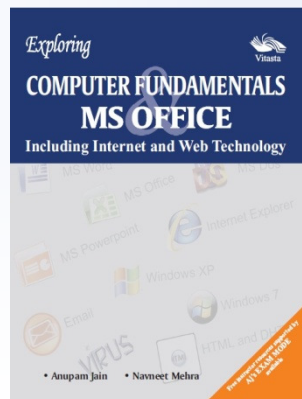
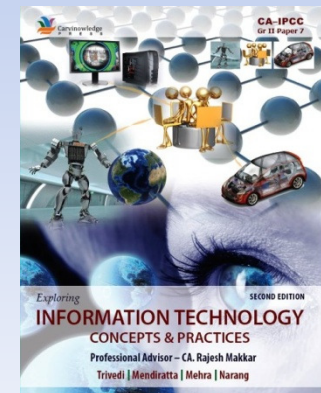
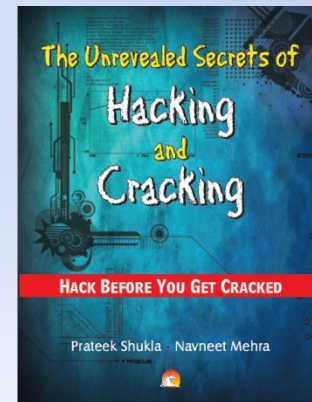
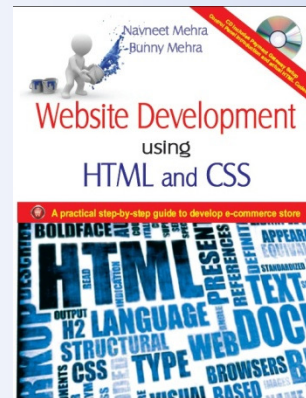
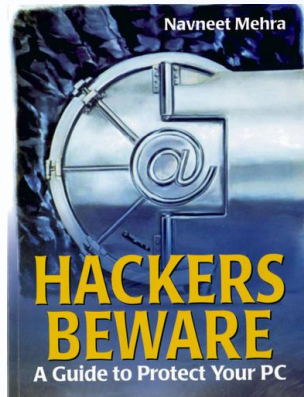
Data Warehouse
Offline operational database

ALL THE BEST



My Books

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Questions ?

Clear your Doubts/Ask your Queries:

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