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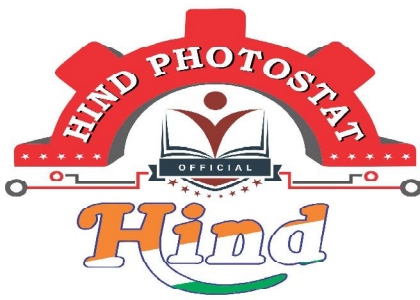
MADE EASY

Computer Science Engineering / IT
Toppers Handwritten Notes
Database Management System
By-Ravi sir

- Theory
- Explanation
- Derivation
- Example
- Shortcuts
- Previous Years Question With Solution

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PUBLICATIONS BOOKS -

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Database Management System :

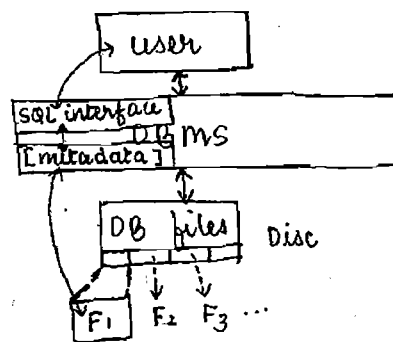
1. Integrity constraints and ER Model 1-2 marks
2. Normalization 2-4 marks
3. Queries (relational algebra, SQL, relational calculus) 4 marks
4. File organization and Indexing (B/B+ Tree) 2-4 marks
5. Transactions and concurrency control. 2-4 marks

Reference Books -

- 1) DBMS - Raghuramkrishnan
- 2) DBMS - Navathe

→ Introduction :

- Database - structured collection of related data which is stored in computer system to access data when it is required.
- University DB
 - students info
 - faculty info
 - course info etc.
 [collection of files]
- Database management system - application software to define, manipulate and access data from database.



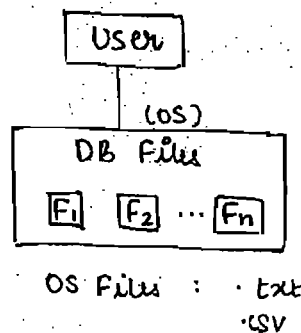
} Interface b/w user and DB files

- Metadata - data about data
- Also called data dictionary
- Format of file
- Format of row and column
- All storage info related to DB files

• Flat file system [OS files] - user manage database file without using DBMS.

• Small database is managed.

Flat file system fails to manage huge DB.



Limitations of Flat File System

- i) Too complex to manage appⁿ programs. Complete info of the program should be managed by user.
(DBA
• DB developer
• end user)
- ii) more I/O cost (and access cost) to access required data from db files
- iii) less degree of concurrency
- iv) Too complex to maintain non-redundant data
- v) Too complex to maintain different levels of access control.

Adv. of DBMS File System

- i) Easy to develop appⁿ programs because of data independency:
(changes of file structure is not affected for user appⁿ, user can use db files without knowing storage info)
- ii) less I/O to access required data from db files from using indexing.
- iii) more degree of concurrency
- iv) easy to maintain non-redundant data by using normalization.
- v) By using views (virtual tables) can maintain different levels of access control.

→ Integrity constraints : based on RDBMS model

→ correctness of data

• Data model - logical structure of DB files

- RDBMS (in syllabus)
- ODBMS
- NWDBMS
- Hierarchical DBMS

- is widely used
- Codd's data model (By EFCodd)
- Codd proposed 12 rules to design RDBMS software. (RDBMS guidelines)

• RDBMS Guidelines -

(set of rows & cols)

- i) data in db files must be in tabular format.
- ii) no two rows of the table should be same.
- iii) Every RDBMS table must have atleast one candidate key.
- iv) Every attribute of RDBMS table must be single valued (atomic)

Eg:

Sid	Sname	Cid
S ₁	A	{C ₁ , C ₂ }
S ₂	B	{C ₂ , C ₃ }

← multivalued attribute not allowed in RDBMS

- v) Number of columns for each row and no. of rows for each col. must be same
- vi) Name of one column is called attribute (or field)
- vii) Name of one row is called record or tuple
- viii) Set of all records of the table is called relational instance (or snapshot)

Stud

Sid	Sname	DOB
S ₁	A	2000
S ₂	B	2000
S ₃	C	2002
S ₄	D	2004

relational instance

Attribute field

: set of all records of DB Table

cardinality : 4
arity : 3