

Final Term Preparation

DATE: by MS Rehman

DAY: 17/8/23

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Denormalization:

Process of transforming normalized relations into unnormalized physical record specifications

Partitioning

De-normalization leads to merging different relations, whereas Partitioning splits same relation into two

1. Reduce workload (eg. data access, ^{Communication Costs.})
2. Speed up the rate of useful work

Two types of Partitioning

Horizontal → basis of "rows".

Vertical → basis of "columns".

	Horizontal Partitioning	Vertical Partitioning
Types:	Range Partitioning → 1-1000	
	Hash → for Balance	
	List → for Categories	

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SQL Commands

Database

SQL is an language, stands for "Structured Query language" of ANSI its used in many Softwares like "MySQL, Microsoft, Oracle etc"

Sub-Categories :

i) DDL - Data Definition language

- used to Define Schema like structure

Create → to create a table

Drop → to Permanent delete from all.

Truncate → to delete ^{all} data from ^{it will exist in database} just table.

Alter → to modifying data

Rename → to rename

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ii) DML - Data Manipulation language

- deals with Manipulation of data, changing data

Insert → to insert data

Update → to update data

delete → to delete data one or ^{many} ~~more~~

iii) DQL - Data Query language

- also Data retrieval language, retrieving data from database.

SELECT → to see data which you insert in database

SELECT ColumnName From table Name

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iv) DCL: Data Control language

- to control database

GRANT → to give permission to user

REVOKE → to deny permission

v) TCL - Transaction Control language

COMMIT → used to permanently save the changes

ROLLBACK → used to undo the changes

SAVEPOINT → to set a savepoint within a

transaction for later change or use Rollback

* Properties of transactions: ACID

A - Atomicity

C - Consistency

I - Isolation

D - Durability

→ Serial Execution: where transactions are executed in a sequential order that is, one after another

→ Schedule: represents the order of execution of operations.

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Truncate Command → delete "all" the rows but rows would exist (row structure in database)

Drop Command → delete all the ~~files~~ rows also "structures" from database.

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Delete Command → delete "one or more" records.

Note: Read 207 Page One time

★ Dead Lock: occurs when 1st transaction has locks on the resources that the 2nd transaction wants to modify, 2nd has lock on resources that 1st want to modify.

→ Levels of Locking

- Attribute
- Record
- File
- Group of Files
- Database

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* Cartesian Product : (Cross Join)

A Cartesian Join is when you join every row of one table to every row of another table.

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-Types

* Inner Join: Only those rows from two tables are joined that have same values in the common attribute.

* Outer Join: SQL supports some interesting variants of Join that rely on null values, called Outer Join.

* Semi Join: when First inner join is performed on the participating table then resulting table is projected on attributes of one table.

* Self Join: In Self Join a table is joined with it self.

* Inference Rules

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- Transitivity :
if $A \rightarrow B$ and $B \rightarrow C$,
then $A \rightarrow C$
- Additivity or Union
if $A \rightarrow B$ and $A \rightarrow C$,
then $A \rightarrow BC$
- Projectivity or Decomposition
if $A \rightarrow BC$, then
 $A \rightarrow B$ and $A \rightarrow C$

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* Classifications of Indexes

- ⇒ Clustered vs Un-Clustered Indexes
- ⇒ Single Key vs Composite Indexes
- ⇒ Tree based, inverted files, Pointers

* Types of Indexes

- B-Tree Indexes
- Hash Index
- Bitmap Index
- Clustered Index
- Unique Index
- non-clustered

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DBMS - Database Management System

ANSI - American National Standard Institute

DML - Data Manipulation Language

SRS - Software Requirements Specification

SQL - Structured Query language

DDL - Data definition language

DML - Data Manipulation language

DQL - Data Query language

DCL - Data Control language

TCL - Transaction Control language

UCD - Use Case Diagram

ERD - Entity Relationship Diagram

GUI - Graphical User Interface

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*** SQL Statements ***

- to remove an index called IndexNum.

Ans DROP INDEX table-Name, IndexNum

- table name = COMPANY with fields
COMPANY-NAME, DESCRIPTION, ORDER-NUM

→ to display Company name in reverse order

Ans SELECT COMPANY-NAME
FROM COMPANY order by COMPANY-NAME
desc;

- to remove full table permanent

Ans TRUNCATE TABLE TableName

- basic syntax of adding record to table

Ans INSERT INTO tableName
VALUES (value1, value2, ...)

- delete all rows from table

Ans DELETE * FROM table-Name

- Basic syntax of INDEX

CREATE INDEX index-Name
ON table-Name (column-Name)

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Employee:

- Create a View on this table having Name, designation, Salary Column. Just those whose Salaries greater than 5000.

Name	Designation	Salary
A	---	1000
B	---	3000
C	---	2000
D	---	6000
E	---	4000

Ans. CREATE VIEW Employee_View AS
SELECT Name, designation, Salary
FROM Employee
WHERE Salary > 5000

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Today's Paper 17-08-2023

Q Table was given 5 marks

RAM	Main Memory
WORM	Optical and Read Only
SRAM	High Speed Static RAM
DRAM	Write only Read may disk
CD-ROM	Slower and cheaper

Q Create View -----

Ans. CREATE VIEW ViewName AS
SELECT intName, City
FROM Instructor
WHERE City IN ('Karachi', 'Islamabad')

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Q SQL Code to Create Simple Index named "stdDetails" on the CGPA field of STUDENT Table.

Ans: CREATE INDEX stdDetails ON STUDENT (CGPA);

Q Write Primary modes of Lock

(i) Shared Lock

(ii) Exclusive Lock

Q Basic Syntax of Create table

CREATE TABLE table-Name

(

Column1 datatype,

Column2 datatype,

);

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Q Write SQL to Count number of students records who's age less than 30 and greater than 25.

Ans. `SELECT COUNT (*) AS Numstudents
FROM Students
WHERE Age > 25 AND Age < 30;`

Q Create Database Schem - DDL

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Respectfully MS Rehman
17 August 2023

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