DataBase

Difference Between Data, Database, DBMS and RDBMS ?

Data: Raw Facts , numbers, text, images, …
Database: Contains data and metadata(anything describe the data)
DBMS: Database Management System, software make us interact with data base, data stored in it as a text file
RDBMS: Relational Database Management System, data stored in it as a tables/entities

Difference Between Entities and Schemas?

Entities: tables that consists of rows and columns
Schemas: Structure/plan that organize the entity

Difference between Drop, Truncate: and Delete?

Drop: drop table itself
Delete: Delete specific rows but not table itself
Truncate: Delete all rows but not table itself

Difference between Candidate Keys, Composite Key?

Candidate Keys:
Table that have more than one key/ columns that can be considered as keys.
مجموعات الكولومز اللي ينفع تبقي كيز

Composite Key:
كذا كولوم مع بعض ينفعوا برايمري كي

Difference between Primary Key and Foreign Key?

Primary Key / Super Key:

- Key that have minimum number of columns from candidate keys→
- مجموعه الكيز اللي فيها اقل عدد من الكولومز -
- Unique
- Can't be Null
- Represented by underline
- Key / Column that connect tables with others

Foreign Key:

- Column shared between tables and it's a primary key in another table

هو كولوم موجود في التيبل ده و في التيبل الاخر علي انه برايمري كي

- Not necessary to be same name of primary key, but must be same data type
- Accept Nulls
- Represented by dashed line

Difference between OLTP and OLAP?

OLTP:

- Online Transaction Processing → بسجل كل حاجه في الداتا بيز
- CRUD Operation(Create, Read, Update, Delete)
- Important to be Normalized(Best Performance)
- Managed by RDBMS.

OLAP:

- Online Analytical Processing→ الغرض هنا اني اعمل ريبورت من الداتا اللي عندي
- Get data and make report(Read ONLY) → Expensive
- Important to be De-normalized اخليها في جدول واحد لان الريد اوبريشن كده كده مكلفه فمش هيبقي) زياده مساحه كمان)
- Managed by Data Warehouse(Optimized on Write-Once Read-minitanse)

Difference between DDL, DML, DQL and DCL?

DDL:

- Data Definition Language
- اي حاجه بتعدل في الاستراكشر بتاع الداتا نفسها
- create, modify, and delete database

DML:

- Data Manipulation Language
- التعامل مع الداتا نفسها اعدل فيها و احط و اعدل و امسح و اسيليكت
- Manipulate Data through CRUD operation

DQL:

- Data Query Language
- Select + anything(joins, having, ….)

DCL:

- Data Control Language
- Permisions
- السماح وعدم السماح

Time Complexity?

Select: Depend on the retrived rows

Update: O(1)

Insert: O(1)

Delete: O(1) for single row

Drop , Truncate: O(1)

Joins: between O(n) and O(n^2)

Indexes: O(log n)→ clustered (B-tree)

Read Operation: Difficult in its execution

Normalization: save space