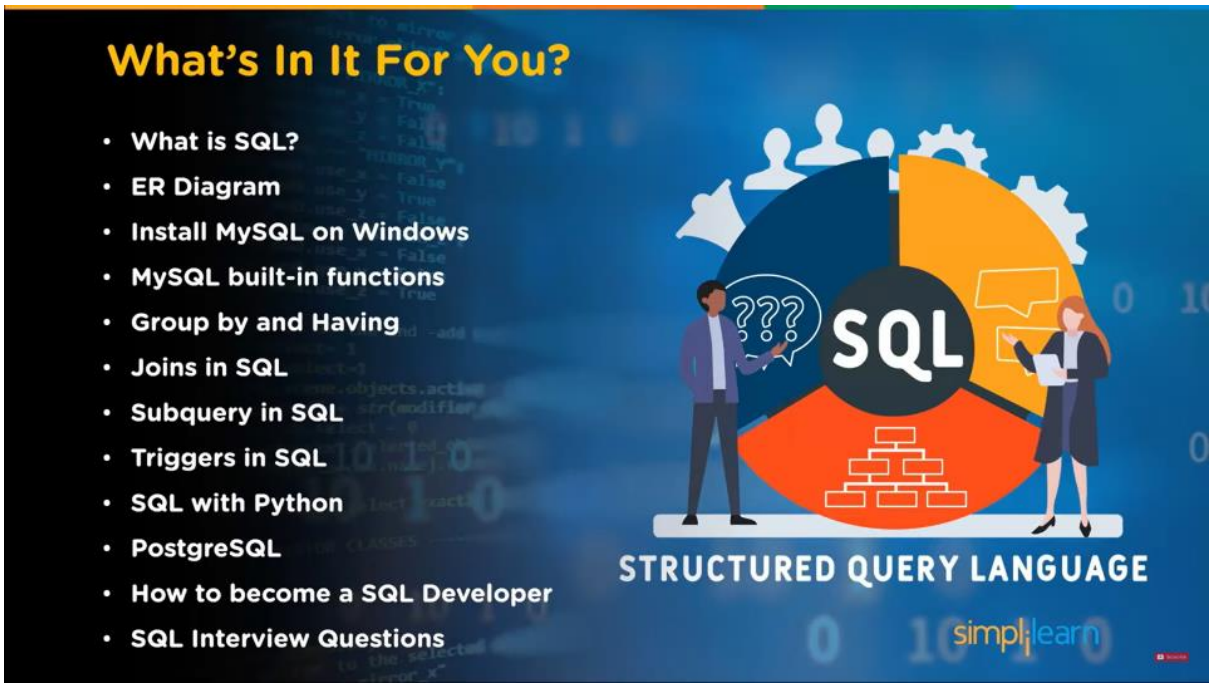
MYSQL:


What's In It For You?
What is SQL?
ER Diagram
Install MySQL on Windows
MySQL built-in functions
Group by and Having
Joins in SQL
Subquery in SQL
Triggers in SQL
SQL with Python
PostgreSQL
How to become a SQL Developer
SQL Interview Questions
SQL
STRUCTURED QUERY LANGUAGE
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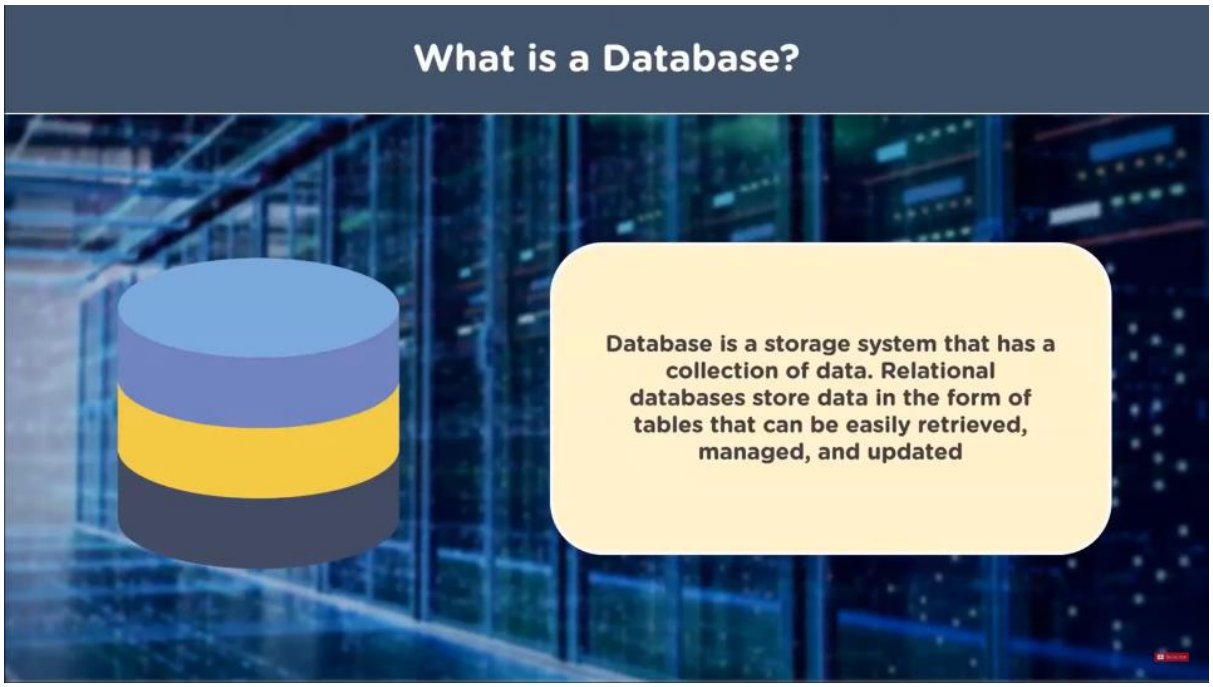
What is a Database?
Database is a storage system that has a collection of data. Relational databases store data in the form of tables that can be easily retrieved, managed, and updated

Popular Databases

What is SQL?

What is a Table?

Features of SQL

- SQL lets you access any data within the relational database
- SQL is very fast in retrieving large amounts of data very efficiently
- SQL is versatile as it works with database systems from Oracle, IBM, Microsoft, etc.
- SQL helps you manage databases without knowing lot of coding

ORACLE DATABASE

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Applications of SQL

SQL is used to create a database, define its structure, implement it and let's you perform many functions

SQL is also used for maintaining an already existing database. SQL is a powerful language for entering data, modifying data and extracting data in a database

SQL is extensively used as a Client/Server language to connect the front-end with the back-end thus supporting the client/server architecture

SQL when deployed as Data Control Language(DCL) helps protect your database from unauthorized access

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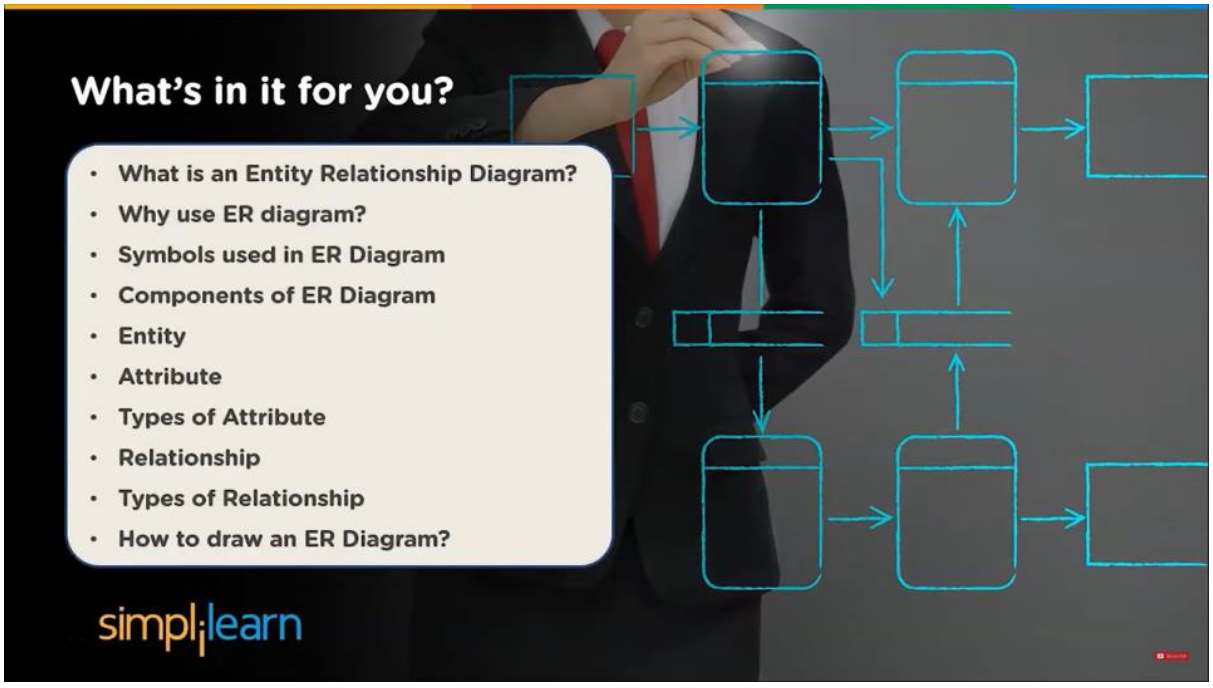

What is an Entity Relationship Diagram?

- An Entity-relationship Diagram (ER Diagram) describes the relationship of entities that need to be stored in a database
- ER Diagram is mainly a structural design for the database. It is a framework using specialized symbols to define the relationship between entities
- ER diagram is created based on three main components entities, attributes, and relationships

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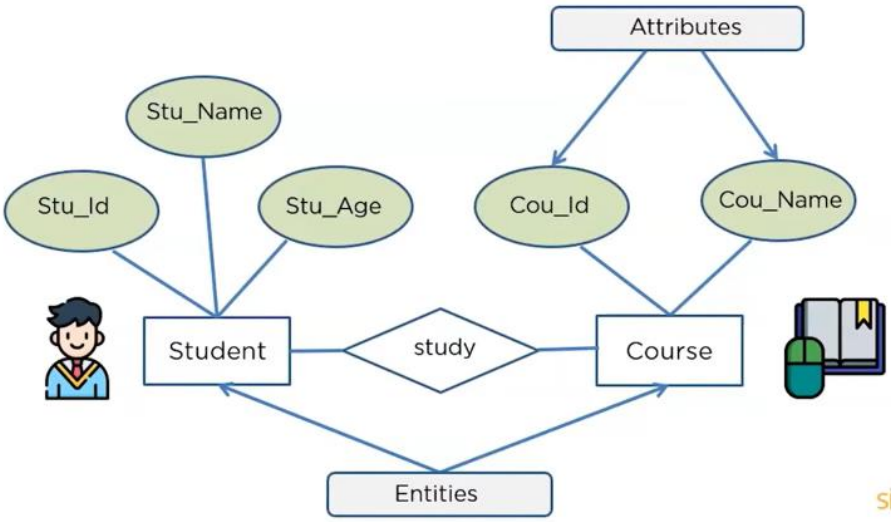
What is an Entity Relationship Diagram?



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Why use Entity Relationship Diagram?

- Helps us conceptualize the database and help us know which fields need to be embedded for a particular entity

- ER Diagram gives a better understanding of the information to be stored in a database

- Reduces complexity and saves time which allows you to build databases quickly

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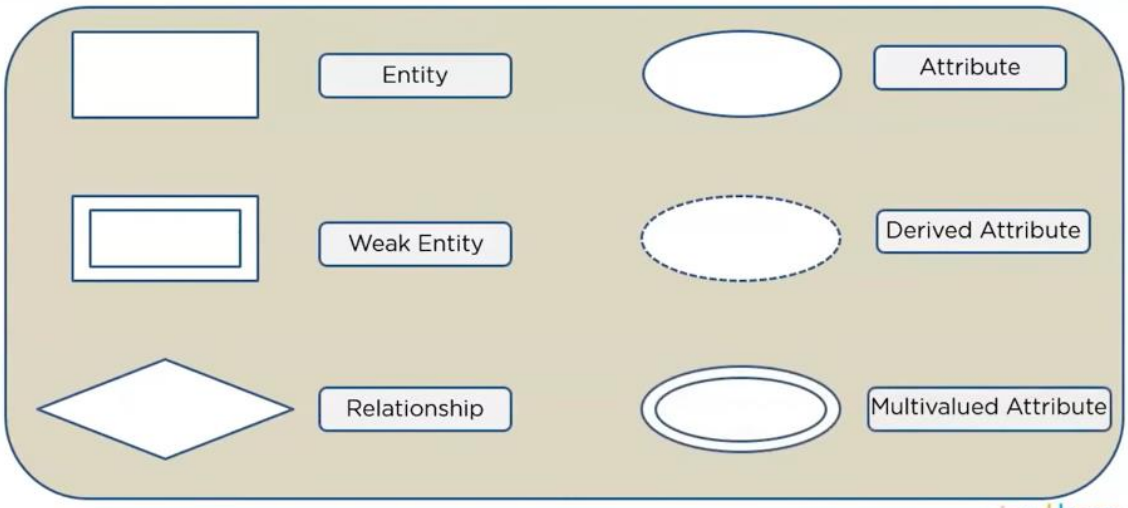
Symbols used in ER Diagram



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Components of ER Diagram

Entity
1

- Weak Entity

Attribute
2

- Key
- Composite
- Multivalued
- Derived

Relationship
3

- One to One
- One to Many
- Many to One
- Many to Many

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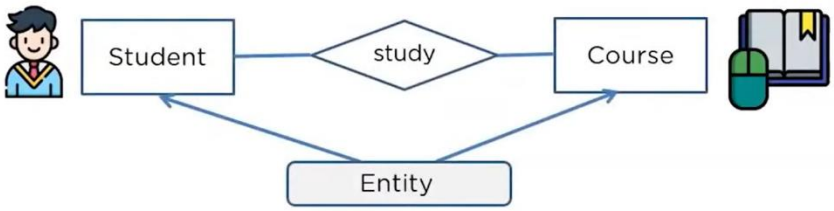
Entity

- An entity can be either living or non-living component
- An entity is showcased as a rectangle in an ER diagram
- For Example, Student study course, here both student and course are entities



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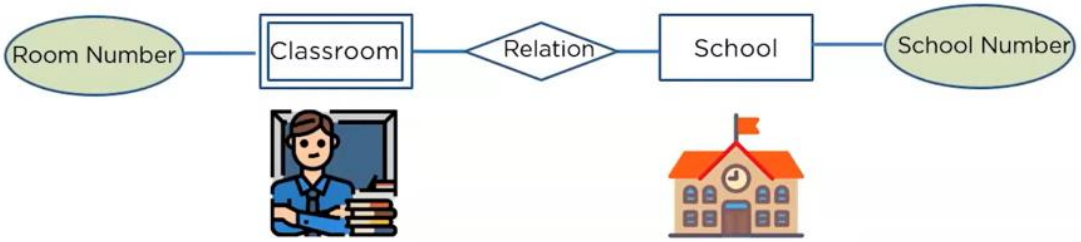
Weak Entity

- An entity that relies over another entity is called weak entity
- The weak entity is showcased as a double rectangle in ER Diagram



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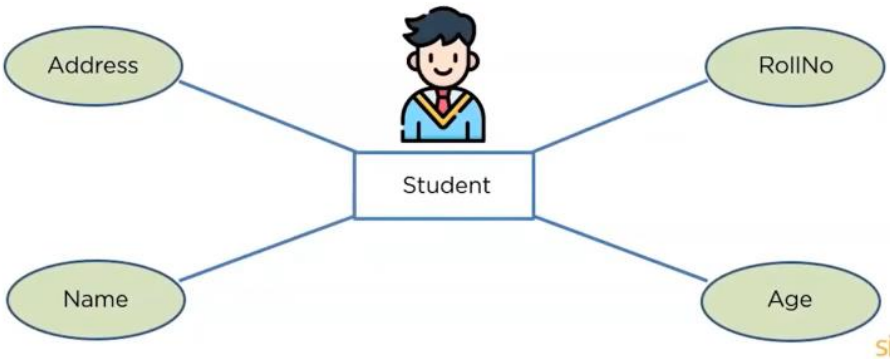
Attribute

- An attribute describes the property of an entity
- An attribute is represented as Oval in an ER diagram



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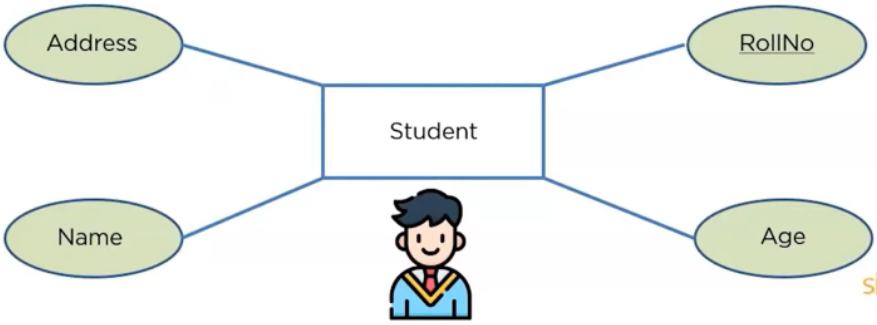
Key Attribute

- Key attribute uniquely identifies an entity from an entity set
- The text of key attribute is underlined
- For example, student RollNo can uniquely identify a student from a set of students



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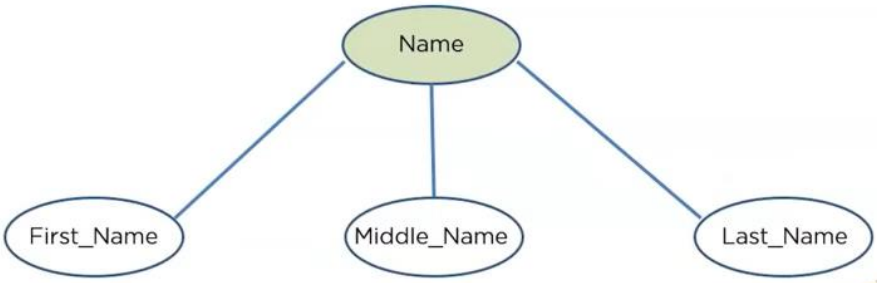
Composite Attribute

- An attribute that is composed of other attributes is known as a composite attribute
- The composite attribute is represented with an oval, and that attribute is further connected with other ovals



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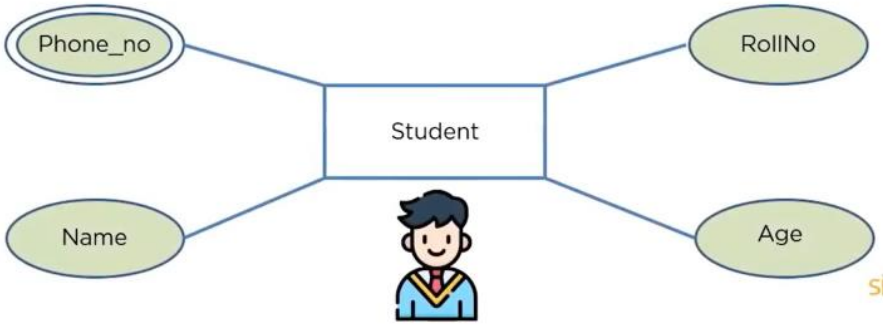
Multivalued Attribute

- An attribute that can possess more than one value, such attributes are called multivalued attributes
- The double oval is used to represent a multivalued attribute



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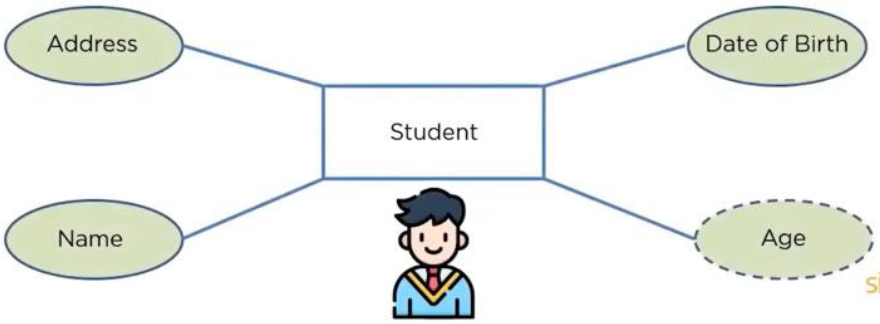
Derived Attribute

- An attribute that can be extracted from other attributes of the entity is known as derived attribute
- In ER diagram, derived attribute is represented by dashed oval



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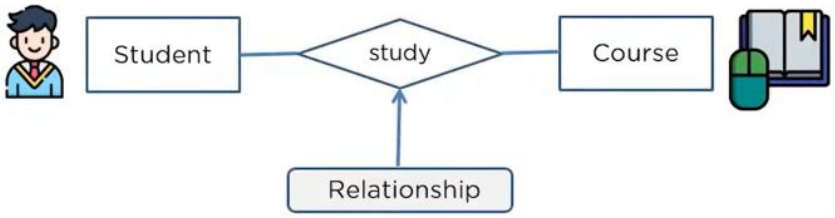
Relationship

- A relationship is showcased by diamond shape in ER diagram
- It shows the relationship among entities



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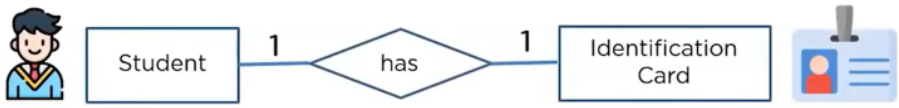
One to One Relationship

- When a single element of an entity is associated with a single element of another entity that is called one to one relationship
- For example, a student has only one Identification card and an Identification card is given to one person



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One to Many Relationship

- When a single element of an entity is associated with more than one element of another entity that is called one to many relationship
- For example, a customer can place many orders, but an order cannot be placed by many customers

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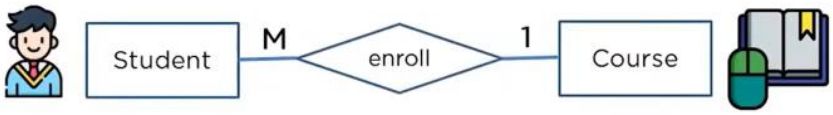
Many to One Relationship

- When more than one element of an entity is related with a single element of another entity then it is called many to one relationship
- For example, Student enrolls for only one course, but a course can have many students



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Many to Many Relationship

- When more than one element of an entity is associated with more than one element of another entity that is called many to many relationship
- For example, Employee can be assigned to many projects and project can have many employees

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How to Draw an ER Diagram?

- First, identify all the Entities. Embed all the entities in a rectangle and label them properly
- Identify relationships between entities and connect them using a diamond in the middle illustrating the relationship. Do not connect relationships to each other
- Connect attributes for entities and label them properly
- Eradicate any redundant entities or relationships
- Make sure your ER Diagram supports all the data provided to design the database
- Make effective use of colors to highlight key areas in your diagrams

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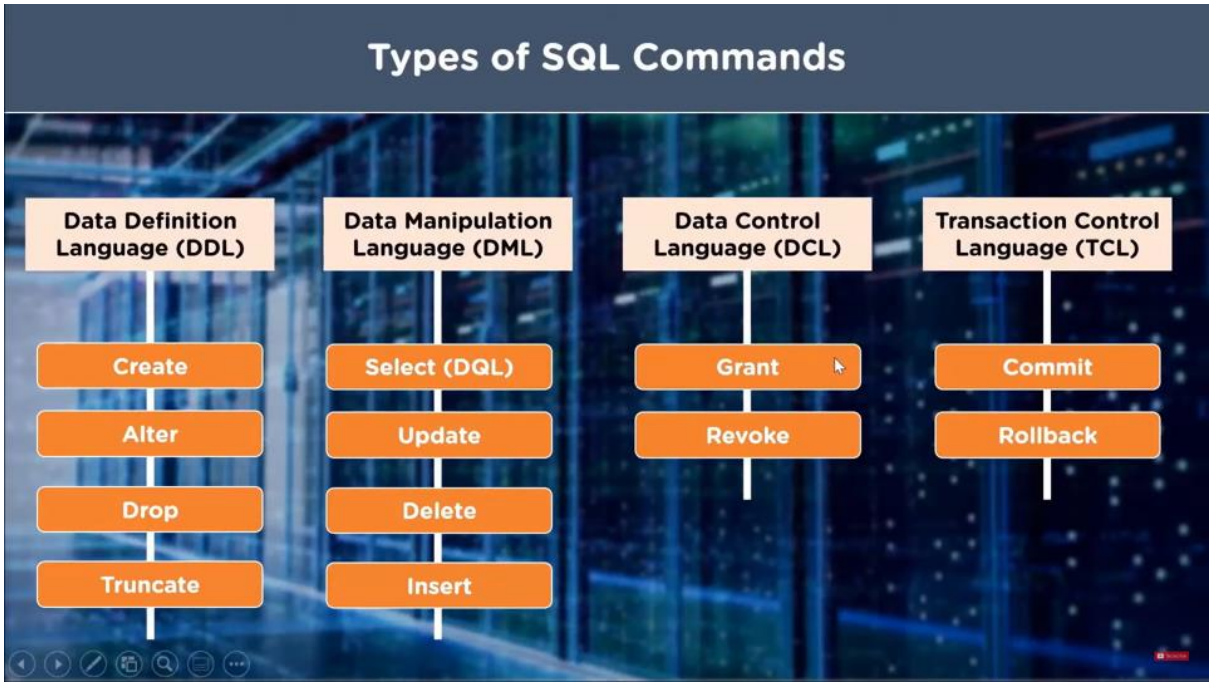
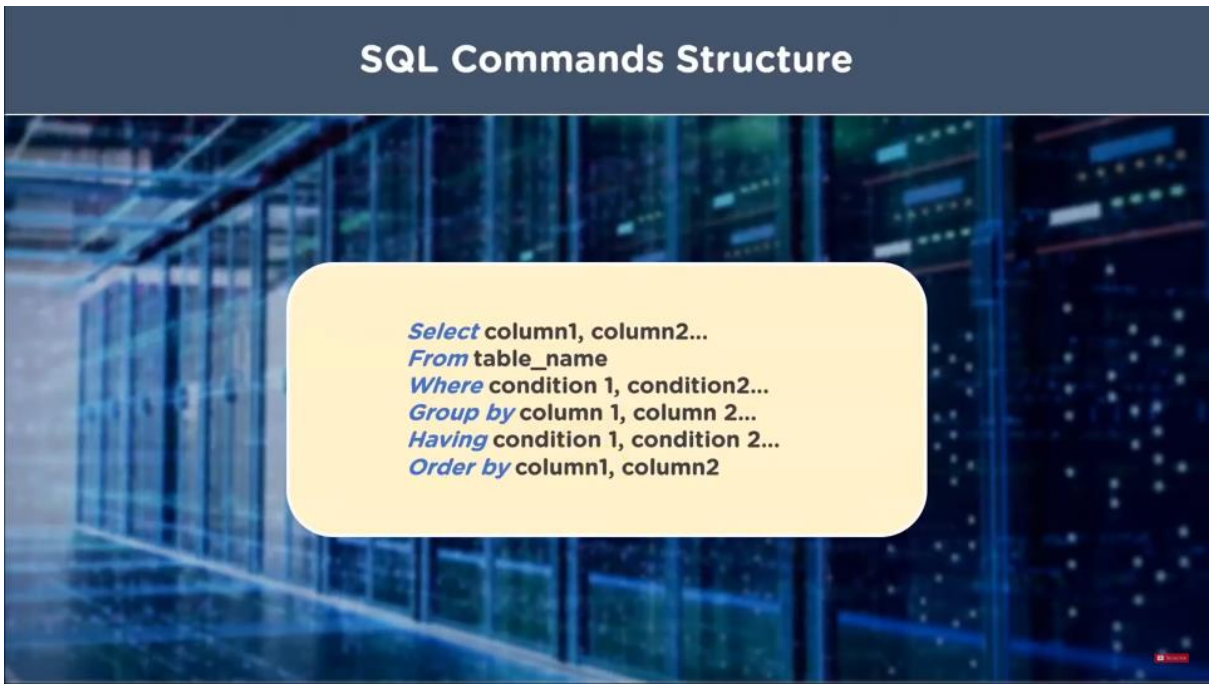
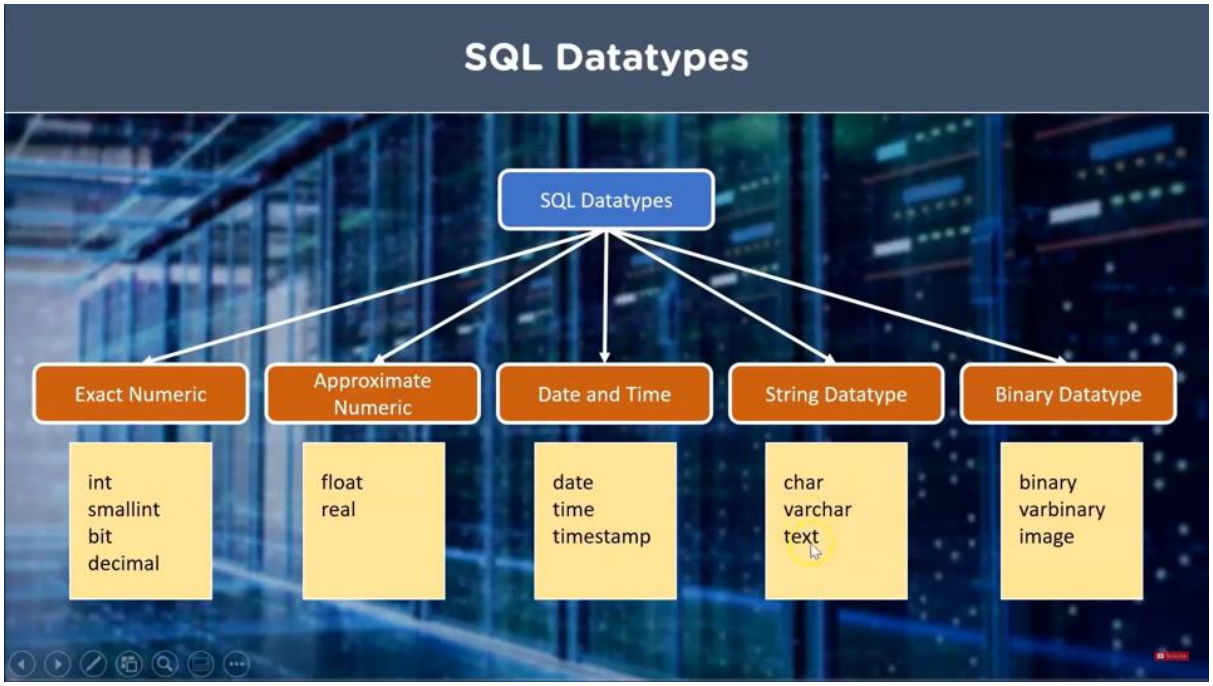
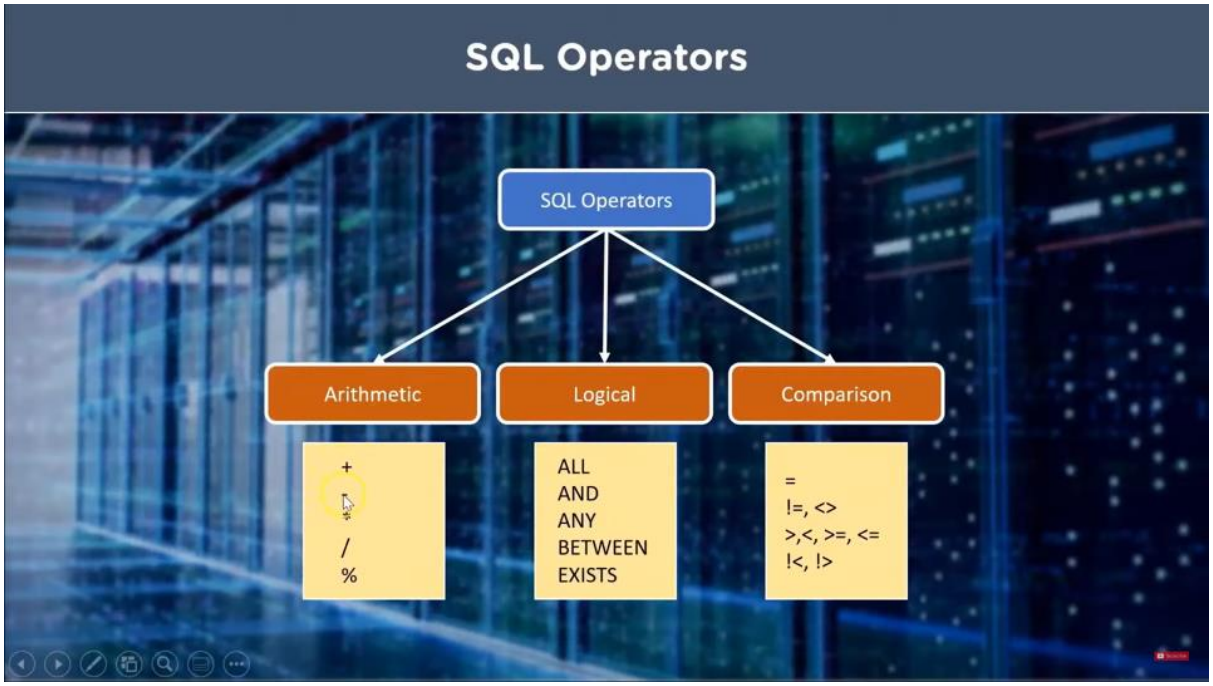

Types of SQL Commands
Data Definition Language (DDL)
Data Manipulation Language (DML)
Data Control Language (DCL)
Transaction Control Language (TCL)
Create
Alter
Drop
Truncate
Select (DQL)
Update
Delete
Insert
Grant
Revoke
Commit
Rollback


SQL Commands Structure
Select column1, column2...
From table_name
Where condition 1, condition2...
Group by column 1, column 2...
Having condition 1, condition 2...
Order by column1, column2


SQL Datatypes
SQL Datatypes
Exact Numeric
Approximate Numeric
Date and Time
String Datatype
Binary Datatype
int
smallint
bit
decimal
float
real
date
time
timestamp
char
varchar
text
binary
varbinary
image


SQL Operators
SQL Operators
Arithmetic
Logical
Comparison
+
-
*
/
%
ALL
AND
ANY
BETWEEN
EXISTS
=
!=, <>
>,<, >=, <=
!<, !>