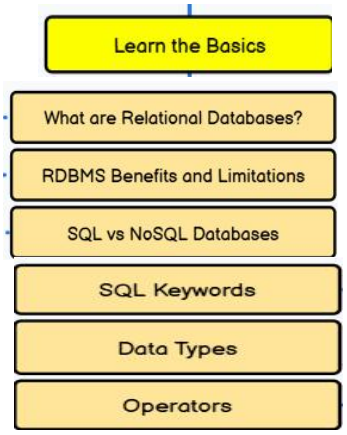
SQL Roadmap Biginner to Advance

By: Dashing Data

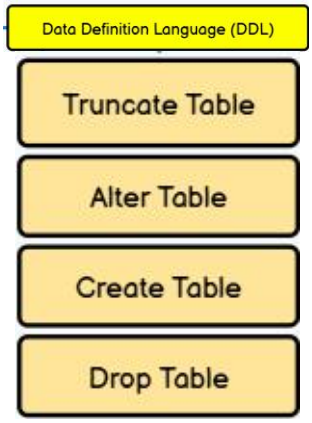
1. Fundamentals of SQL



Get familiar with the basics concepts.

- What are realational databases?
- RDBMS benifits and limitations
- SQL vs NOSQL Databases
- SQL Keywords
- Data Types
- SQL operators
- Types of Data Constraints and its importan

2. Data Definition Language (DDL)



⛔DDL is more than just CREATE or ALTER.

How to learn practically:

Create Your Own Schema: Design a Demo ecommerce DB with Columns of your choice (Products, Users, Orders etc)

Imagine the situation, you are creating real databse for ecommerce client. Draft first in paper what exactky you will create and which type of constraints you will use.

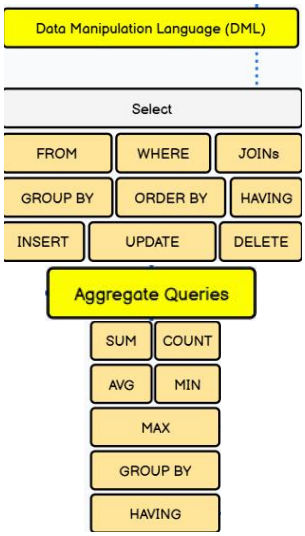
Break Stuff Intentionally

Alter the columns datatypes, drop columns, drop table.
Understand irreversible vs reversible DDL
If you want to go further you can recover dropped table using backup Sql file.

Track Schema changes

Save every command you use, revisit weekly and write why you used each command.
Additionally use can use Version Control (like Git) for DB scripts

3. Data Manipulation Language (DML)



How to learn practically:

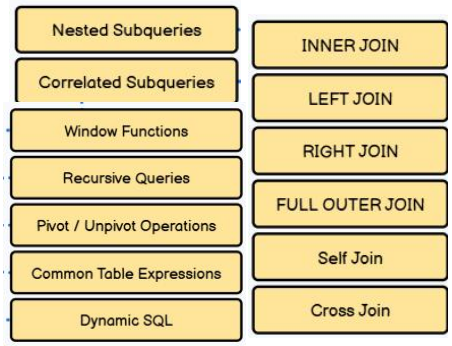
Create tables: Customers, Products, Orders, Employees.
Insert sample data (Create 100+ customers and orders)
Create SQL “forms” to: Add new customer
Update customer contact info
Delete inactive customers
Fulfill table by placing and order data with transaction

Analyze Data

Find top 10 best-selling products
Monthly revenue totals
Customers who havent ordered in 10+ days
Aggregare queries with functions
Build summary tables for visualization

4. Advance Queries and Joins

Here is where SQL become challenging. Don't worry you will learn with project: Employee Timesheet Management.

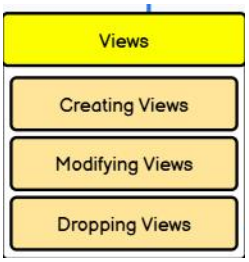


How to do the prject? Here are the steps:

Create tables: Employees, Projects, Departments, Timesheets (Fill tables with data)
Write queries to find:

- Totoal hours per project by employee with joins
- Find departments with >5 active projects
- Use CTE to Calculate the working hours of employee and select only employees who worked 40 hours/Week using subquereis
- USe CASE statement to find work levels category like (Low, Normal, Overworked)
- Use Windows Functions to assign ranks where rank should not be repeated

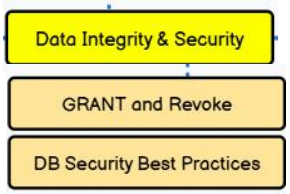
5. Views, Indexes, and Stored Procedures



These are the advance topics, which require your real attentions.
How to learn practically:
Create tables: IT jobs, Candidate, Interview (Create columns and fill data accordingly)

- Create views for weekly interviews
- Create views for Recruiter Availabe slots
- Create index frquently filtered fields like, Job_id, interview_date
- Write Stored Procedures for booking interview
  Write Sored Procedure Sending interview reminder to Candidate.

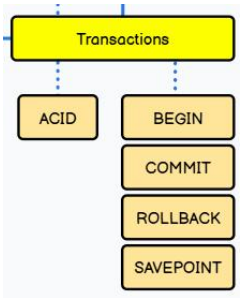
6. Data Integrity and Security



How to practice this part:

- Create new users for your Database.
- Assign role and give access to selected tables
- Grant or revoke access with query

7. Transaction control and Isolation Levels



This part you need to use inside the Stored procedures.
Mostly on real data and problem scenario.

DM me T-SQL, I will create a sample procedures similar from my work data with explanations.

Remarks: Projects query you can create using the ChatGPT or other AI tool. I will suggest you to use only w3school webistes. There is simple explanation of all the topics and create projects on your own. You can use Chatgpt to not type 100 dummy data before using Inster statement ;)

Once you will undertand each topic and complete those small projects. Stored those queries in GitHub then you are good to take job.

Good Luck.