AccioJob SQL Curriculum

(PostgreSQL + pgAdmin 4 + Azure Data Studio Edition)

Instructor: Shiraj Ahmad

Duration: 6 Weeks ¦ 18 Sessions (Thu, Sat & Sun)

Platform: PostgreSQL 16 · pgAdmin 4 · Azure Data Studio (ADS)

Database: RetailMart (10+ Tables, 10k–50k Rows)

WEEK 1 – FOUNDATIONS & ENVIRONMENT

Module Objectives: Set up PostgreSQL, understand RDBMS concepts, and practice basic DDL/DML operations.

Day 1 (Sat) – PostgreSQL Installation & Setup

Concepts: DBMS vs RDBMS, PostgreSQL installation, pgAdmin & ADS configuration, first database creation.
Demo Example:

CREATE DATABASE retailmart;

\c retailmart;

CREATE TABLE customers (cust_id SERIAL PRIMARY KEY, name VARCHAR(50), city VARCHAR(30));

Hands-on Practice: Connect using pgAdmin and ADS, create sample tables customers and products.

Assignment: Document installation steps and connect PostgreSQL through both tools.

Day 2 (Sun) – Data Types, ACID Properties & Normalization

Concepts: Understanding PostgreSQL Data Types, ACID Properties, and Database Normalization.
1. Data Types: Numeric, Character, Date/Time, Boolean, JSON, UUID, ARRAY.
2. ACID Properties: Atomicity, Consistency, Isolation, Durability.
3. Normalization: 1NF, 2NF, 3NF with RetailMart examples.
Demo Example:

CREATE TABLE products (prod_id SERIAL PRIMARY KEY, prod_name VARCHAR(50), category VARCHAR(30), price NUMERIC(10,2));

Hands-on Practice: Create normalized tables, experiment with data types, and test transaction rollback.

Assignment: Write notes on ACID, normalize a table to 3NF, and update data columns.

WEEK 2 – AGGREGATION & GROUPING

Module Objectives: Learn SQL aggregation, grouping, and conditional logic for data summarization.

...