# 14-Day Advanced SQL + NoSQL Study Plan

## 📌 Week 1 – Advanced SQL

### Day 1: Normalization (1NF–3NF)

✅ Tasks: اقرأ عن Normal Forms + طبّق على جدول Requests → Departments.

📚 Resources: GeeksForGeeks – Normalization, YouTube: Database Normalization in 10 minutes.

### Day 2: Joins & Subqueries

✅ Tasks: طبّق INNER, LEFT, RIGHT Joins + subquery في جداولك.

📚 Resources: SQL Joins Visualizer, W3Schools SQL Joins.

### Day 3: Transactions + ACID

✅ Tasks: اعملي Transaction فيه Insert → Rollback → Commit.

📚 Resources: ACID Properties – GeeksForGeeks, MySQL Docs: START TRANSACTION.

### Day 4: Stored Procedures

✅ Tasks: اعملي Procedure يولد إشعار لما يتعمل Insert في Requests.

📚 Resources: W3Schools – Stored Procedures, YouTube: MySQL Stored Procedures Tutorial.

### Day 5: Triggers

✅ Tasks: Trigger يولّد مستند Approval Letter أو إشعار جديد عند تغيير حالة الطلب.

📚 Resources: MySQL Triggers Tutorial.

### Day 6: Query Optimization

✅ Tasks: جرّبي EXPLAIN, Indexes على user\_id, department\_id.

📚 Resources: MySQL Optimization Guide, YouTube: SQL Indexing Explained.

### Day 7: Mini SQL Project

✅ Tasks: ابنِ schema بسيط (Users, Departments, Requests, Routing) وجرّب Transactions + Trigger + Index.

## 📌 Week 2 – MongoDB (NoSQL)

### Day 8: Mongo Basics

✅ Tasks: Install MongoDB / Mongo Atlas, اعملي collection “documents”.

📚 Resources: MongoDB Basics Crash Course (Traversy Media), MongoDB Docs – Intro.

### Day 9: CRUD Operations

✅ Tasks: جرّبي insertOne(), find(), updateOne(), deleteOne().

📚 Resources: MongoDB CRUD Docs.

### Day 10: Queries & Indexes

✅ Tasks: Query doc\_type=Complaint, أضف Index وشوف الفرق.

📚 Resources: Mongo Queries – W3Schools, Mongo Indexing Docs.

### Day 11: Linking SQL + Mongo

✅ Tasks: Conceptual → اربطي request\_id في MySQL مع document\_id في Mongo.

📚 Resources: Hybrid SQL + NoSQL Systems (MongoDB vs SQL).

### Day 12: Aggregation

✅ Tasks: Pipeline: count كل documents من نوع Leave.

📚 Resources: Mongo Aggregation Docs, YouTube: MongoDB Aggregation Framework Tutorial.

### Day 13: Hybrid Simulation

✅ Tasks: Insert Request في MySQL → خزّني OCR text في Mongo → استرجع البيانات من الاتنين.

### Day 14: Final Mini-Project

✅ Tasks: اعملي Workflow end-to-end (User يرفع طلب → SQL → OCR/NLP Output في Mongo → Routing في SQL).

📚 Resources: Project docs (Graduation Project), Kaggle / GitHub hybrid DB samples.

Resources:

<https://www.youtube.com/watch?v=-_wLgK0IKfo&list=PL1DUmTEdeA6J6oDLTveTt4Z7E5qEfFluE>

<https://www.youtube.com/watch?v=nUiuyejbemc&list=PLoRh0POuk1Rw-BZU-DPI6cA_c5W9_2uF_>

<https://www.youtube.com/watch?v=rWQyb1RCLI4&list=PLd6o9p13Lc5387FWk_GXU0Rh5AhrBGod5> (mongo)

<https://www.youtube.com/watch?v=OIHnhNvCWBU&list=PLesfn4TAj57XGGSmVzzpxY69-lha1EWEI> (mogo iti)