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IT SUPPORT

Databases & SQL Roadmap & Syllabus

Every application depends on its data. Learn to design schemas, write efficient queries and choose the right database for the job — a skill every developer interview tests.

SQL · MySQL · PostgreSQL · MongoDB · Redis · Indexes · Data modelling

FRESHERS & STUDENTS	EXPERIENCED (JOB SWITCHERS)	WORKING PROFESSIONALS
2–3 months	**6–8 weeks**	**2–4 months (alongside work)**

Durations are approximate and assume about 2–3 hours of focused study a day. Move faster or slower as you need — understanding matters more than speed.

Contents: 1. Freshers & Students · 2. Experienced (Job Switchers) · 3. Working Professionals · 4. Complete Syllabus

Freshers & Students

Starting from the basics and preparing for a first developer job.

Approximate duration: 2–3 months — Write correct, readable SQL and design simple schemas with confidence.

1 Relational Basics & Queries — 4 weeks

- Keys, constraints and normalization
- SELECT, filters and sorting
- Joins and aggregations

Milestone: Answer real business questions with SQL.

2 Interview SQL — 3 weeks

- Subqueries and CTEs
- Nth highest salary, duplicates, running totals
- Practise 50+ query problems

Milestone: Solve common SQL interview problems without help.

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3

Using a Database from Code

2 weeks

- Connect from Java (JDBC/JPA) or Node.js
- Basic MongoDB CRUD

Milestone: Read and write data from your own application.

Projects to build

- Schema and queries for a college or hospital system
- Sales report queries with joins and aggregations
- Small app backed by MySQL or PostgreSQL

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Experienced (Job Switchers)

1–4 years of experience, preparing to switch jobs or move to a stronger role.

Approximate duration: 6–8 weeks — Write fast queries, understand indexes and handle transactions correctly.

1

Advanced SQL

3 weeks

- Window functions
- Complex reporting queries
- Views and stored procedures

Milestone: Replace application-side loops with efficient SQL.

2

Performance & Transactions

3 weeks

- Index design and EXPLAIN plans
- Isolation levels and locking
- Query tuning on real data

Milestone: Diagnose and fix a slow query.

3

NoSQL & Trade-offs

2 weeks

- MongoDB schema design and aggregation
- Redis caching
- Choosing SQL vs NoSQL

Milestone: Justify a database choice in an interview.

Projects to build

- Tune a slow reporting query with indexes
- Analytics queries with window functions
- Add Redis caching in front of a database

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Working Professionals

Working developers upskilling toward senior, lead or architect responsibilities.

Approximate duration: 2–4 months (alongside work) — Design data architecture that stays fast, safe and maintainable as the product grows.

1

Data Modelling at Scale

4 weeks

- Modelling for read vs write workloads
- Partitioning and sharding concepts
- Schema evolution and migrations

Milestone: Design a data model for a growing product.

2

Reliability & Operations

4 weeks

- Replication and failover
- Backups and recovery testing
- Monitoring database health

Milestone: Write a backup and recovery plan.

3

Modern Data & AI

Ongoing

- Vector search for AI features (pgvector, MongoDB Atlas Vector Search)
- Data privacy and access control

Milestone: Add semantic search to an existing database.

Projects to build

- Migration plan for a schema change with zero downtime
- Read-replica setup with monitoring
- Semantic search with vector embeddings

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Complete Databases & SQL Syllabus

Everything this track covers, grouped by topic. Use it as a checklist.

01 Relational Basics

- Tables, rows, columns and data types
- Primary and foreign keys
- Constraints
- Normalization (1NF–3NF)

02 SQL Queries

- SELECT, WHERE, ORDER BY
- Joins (inner, left, right, self)
- GROUP BY and HAVING
- Subqueries and CTEs
- CASE expressions

03 Advanced SQL

- Window functions: ROW_NUMBER, RANK, LAG
- Views
- Stored procedures and functions
- Common interview queries

04 Performance

- Indexes and how they work
- Reading EXPLAIN plans
- Avoiding N+1 queries
- Pagination strategies

05 Transactions

- ACID properties
- Isolation levels
- Locking and deadlocks

06 NoSQL

- MongoDB documents and schema design
- Aggregation pipeline
- Redis for caching
- SQL vs NoSQL trade-offs

07 Operations

- Backups and restore
- Replication basics
- Migrations
- Security and access control

Roles this track prepares you for

Backend Developer · Database Developer · Data Analyst · Full Stack Developer

Want a personal plan or interview preparation?

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Roadmaps are for learning guidance and do not guarantee jobs or placements.

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