R Square
IT SUPPORT

Backend Development Roadmap & Syllabus

Build the server side of applications: APIs, business logic, authentication, data access and the systems that keep it all fast and reliable.

Java + Spring Boot | or Node.js + Express | REST APIs | SQL & NoSQL | Redis | Docker | Kafka / RabbitMQ

FRESHERS & STUDENTS	EXPERIENCED (JOB SWITCHERS)	WORKING PROFESSIONALS
5–6 months	**3 months**	**3–6 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: 5–6 months — Choose Java or Node.js, then learn to build secure, tested, database-backed APIs.

1 Language & Problem Solving — 6 weeks

- Java or JavaScript/TypeScript fundamentals
- OOP (for Java) or async patterns (for Node.js)
- Basic data structures and 50+ coding problems

Milestone: Write clean code to solve common interview problems.

2 HTTP, REST & a Framework — 5 weeks

- HTTP and REST principles
- Spring Boot or Express.js
- Controllers, validation and error handling

Milestone: Build a well-structured REST API.

3

Databases & Security

5 weeks

- SQL design and queries
- ORM usage
- JWT authentication and password hashing

Milestone: Secure your API and persist data correctly.

4

Testing, Deployment & Interview Prep

4 weeks

- Unit and API tests
- Docker basics and deployment
- API documentation
- Backend interview questions and mock interviews

Milestone: Deploy a documented, tested API and explain its design.

Projects to build

- Authentication service with roles and refresh tokens
- Booking or appointment API with availability checks
- URL shortener with analytics

R² IT Support

Experienced (Job Switchers)

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

Approximate duration: 3 months — Learn the performance, reliability and design depth that mid-level interviews test.

1

Performance & Caching

3 weeks

- Query optimisation and indexing
- Redis caching patterns
- Pagination, rate limiting

Milestone: Make a slow endpoint measurably faster.

2

Reliability & Messaging

4 weeks

- Message queues (Kafka/RabbitMQ)
- Retries, idempotency, circuit breakers
- Background jobs

Milestone: Design a process that survives failures.

3

System Design & Interviews

4 weeks

- Designing common systems
- Trade-offs: SQL vs NoSQL, sync vs async
- Scenario questions
- Mock interviews

Milestone: Lead a system-design discussion with clear trade-offs.

Projects to build

- Order processing with a message queue and retries
- Rate-limited public API with caching
- Notification service (email/SMS) with background jobs

R IT Support

Working Professionals

Working developers upskilling toward senior, lead or architect responsibilities.

Approximate duration: 3–6 months (alongside work) — Design and operate backend systems at scale and guide technical decisions.

1

Distributed Systems

6 weeks

- Consistency and availability trade-offs
- Sagas and event sourcing (concepts)
- Data partitioning and replication

Milestone: Write a design document a team can build from.

2

Cloud, Kubernetes & Observability

6 weeks

- Containers and Kubernetes
- Infrastructure as code (concepts)
- Metrics, logs, traces and alerts

Milestone: Operate a service with dashboards and on-call alerts.

3

Leadership & AI Integration

Ongoing

- Architecture reviews and mentoring
- Cost awareness
- Integrating LLM APIs safely (rate limits, cost, data privacy)

Milestone: Guide architecture choices across a team.

Projects to build

- Design document for a high-traffic feature
- Kubernetes deployment with autoscaling and alerts
- AI-powered summarisation or search endpoint with usage limits

R² IT Support

Complete Backend Development Syllabus

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

01 Programming Language

- Java or JavaScript/TypeScript in depth
- Data structures and algorithms basics
- Error handling
- Concurrency basics

02 Web & HTTP

- HTTP methods and status codes
- Headers, cookies and CORS
- REST principles
- Idempotency

03 Frameworks

- Spring Boot or Express.js
- Routing and controllers
- Validation
- Dependency injection / middleware
- Configuration and environments

04 Databases

- SQL design and queries
- ORMs (JPA/Hibernate, Prisma, Mongoose)
- Transactions
- Indexing
- When to use NoSQL

05 Security

- Authentication vs authorisation
- JWT and OAuth 2.0 basics
- Password hashing
- OWASP Top 10
- Secrets management

06 Performance & Reliability

- Caching with Redis
- Pagination and rate limiting
- Message queues
- Timeouts, retries, circuit breakers

07 Testing & Deployment

- Unit and integration tests
- API documentation (OpenAPI)
- Docker
- CI/CD
- Logging and monitoring

08 System Design

- Scalability and load balancing
- Microservices vs monolith
- Event-driven architecture
- Designing common systems

Roles this track prepares you for

Backend Developer · API Developer · Java Developer · Node.js Developer

Want a personal plan or interview preparation?

Visit rsquareitsupport.com or contact us: rsquareitsupport@gmail.com · +91 90190 83213 · +91 87679 68300.

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

R² IT Support