

index of all express js topics that all professional backend engineer should know

Here's a **practical, professional-level index of Express.js topics** a strong backend engineer is expected to know. It's organized from fundamentals → advanced → production-level concerns so you can use it as a roadmap or checklist.

ChatGPT 5.2 ▾

Temporary Chat

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## 1) Core Fundamentals

### Node.js Foundations (Prerequisite)

- Event loop & async model
- CommonJS vs ES Modules
- Streams & buffers
- Environment variables
- File system basics

### Express Basics

- What is Express & how it works
- Creating a server
- Routing basics (GET, POST, PUT, DELETE)
- Request & Response objects
- Route parameters & query strings
- Express application structure

## 2) Routing & Middleware (Very Important)

### Routing

- Router module (`express.Router`)
- Route grouping & modular routes

- Route chaining
- Dynamic routes
- Regex routes

## Middleware

- What middleware is
  - Application vs router middleware
  - Built-in middleware (`express.json`, `express.static`)
  - Third-party middleware
  - Custom middleware
  - Error-handling middleware
  - Middleware order & execution flow
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## 3) Request Handling

- Handling form data
  - JSON payload handling
  - File uploads (Multer)
  - Headers & cookies
  - CORS handling
  - Validation (Joi, Zod, express-validator)
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## 4) Templating & Views (Optional but useful)

- Template engines (EJS, Pug, Handlebars)
  - Rendering dynamic views
  - Layouts & partials
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## 5) REST API Design

- REST principles
- Resource naming conventions
- Versioning APIs

- Pagination & filtering
  - Status codes best practices
  - Idempotency
  - HATEOAS (optional advanced)
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## 6) Databases Integration

### SQL

- Connecting with PostgreSQL/MySQL
- ORMs (Sequelize, Prisma, TypeORM)
- Migrations & schema design

### NoSQL

- MongoDB integration
  - ODM (Mongoose)
  - Indexing & performance
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## 7) Authentication & Authorization

- Sessions vs JWT
  - OAuth basics
  - Passport.js
  - Role-based access control (RBAC)
  - Refresh tokens
  - Secure password hashing (bcrypt/argon2)
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## 8) Security Best Practices (Critical for pros)

- Helmet.js
- CORS configuration
- Rate limiting
- XSS & CSRF protection
- Input sanitization

- Preventing SQL/NoSQL injection
  - Secure cookies
  - HTTPS & TLS
  - Environment variable management
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## 9) Error Handling & Logging

- Centralized error handling
  - Custom error classes
  - Structured logging
  - Winston / Pino logging
  - Handling uncaught exceptions & rejections
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## 10) Performance & Scalability

- Compression middleware
  - Caching strategies (Redis)
  - Load balancing
  - Clustering (Node cluster/PM2)
  - Horizontal scaling
  - Memory leak detection
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## 11) Testing

- Unit testing (Jest, Mocha)
  - Integration testing
  - API testing (Supertest)
  - Mocking databases
  - Test coverage
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## 12) Production & DevOps

- Environment configs

- Dockerizing Express apps
  - CI/CD pipelines
  - Reverse proxies (Nginx)
  - Process managers (PM2)
  - Monitoring & health checks
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## 13) Advanced Concepts

- Microservices architecture
  - API Gateway pattern
  - WebSockets (Socket.io)
  - GraphQL with Express
  - Background jobs & queues (BullMQ)
  - Event-driven architecture
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## 14) Code Quality & Architecture

- MVC architecture
  - Clean architecture principles
  - Dependency injection
  - Repository pattern
  - Service layer pattern
  - Modular folder structure
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## 15) Documentation

- Swagger / OpenAPI
  - Postman documentation
  - API version documentation
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## Pro-Level Bonus Topics

- Multi-tenancy

- Internationalization (i18n)
  - Feature flags
  - Rate limiting strategies
  - Serverless Express
  - Observability (metrics, tracing)
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If you want, I can next give:

- A learning roadmap (beginner → job-ready)
- A project-based roadmap
- A backend engineer interview checklist
- A “Top 20% topics that get you hired fastest” list

Just tell me 

