

FastAPI Chapter-wise Guide

Chapter 1: Introduction to FastAPI

- What is FastAPI?
- Key features and advantages
- Installing FastAPI and Uvicorn
- Understanding ASGI and WSGI

Chapter 2: FastAPI Fundamentals

- Creating a basic FastAPI app
- Routing and endpoints
- Path parameters and query parameters
- Request and response bodies
- HTTP methods (GET, POST, PUT, DELETE, PATCH, OPTIONS, HEAD)
- Path operations with different methods

Chapter 3: Request Handling and Validation

- Using Pydantic for data validation
- Form data and file uploads
- Path, query, and body validation
- Data serialization and deserialization
- Request headers and cookies
- Request body with Pydantic models

Chapter 4: Advanced Routing and Response Handling

- Path converters and nested routes
- Custom response models

- Handling different status codes
- JSON, HTML, and File responses
- Response headers and cookies
- Streaming responses

Chapter 5: Middleware and Background Tasks

- Adding middleware for logging and security
- Using background tasks for async processing
- CORS and security headers
- Adding global and route-specific middleware

Chapter 6: Authentication and Authorization

- OAuth2 and JWT authentication
- Role-based access control
- API keys and session management
- Password hashing and verification
- Implementing user authentication flows

Chapter 7: Database Integration

- Connecting to databases (PostgreSQL, MongoDB)
- Using SQLAlchemy and Tortoise ORM
- Database migrations and relationships
- Database transactions and connection pooling
- Data validation with database models

Chapter 8: Testing and Debugging

- Writing test cases for FastAPI apps

- Using pytest and TestClient
- Mocking and patching in tests
- Error handling and logging
- Debugging FastAPI apps

Chapter 9: Deployment and Scaling

- Deploying FastAPI to AWS, GCP, and Heroku
- Dockerizing FastAPI apps
- Scaling with Gunicorn and ASGI servers
- Using Nginx as a reverse proxy
- Performance tuning and optimization

Chapter 10: Building Real-World Projects

- Building a RESTful API
- Building a microservices architecture
- Creating a real-time chat application
- Building a multi-user blogging platform
- Creating a full-stack web application