

RESTFUL API development

Day 1

1. Introduction to REST
 - What is API and REST?
 - Principles of RESTful architecture
 - Understanding HTTP methods (GET, POST, PUT, DELETE, etc.)
 - Interacting with the database to parse/retrieve parameters
 - Representational State Transfer (REST) constraints
2. HTTP BASICS
 - Overview of HTTP protocol
 - Understanding HTTP requests and responses
 - Headers, status codes, and response formats (JSON, XML, etc.)
 - URL structure and query parameters

Day 2

3. Building Blocks of RESTful APIs:
 - Resources and endpoints
 - CRUD operations (Create, Read, Update, Delete)
 - Request payloads and data formats
 - Handling authentication and authorization (API keys, tokens, OAuth)
 - Rate limiting and throttling
 - Handling CORS (Cross-Origin Resource Sharing)
4. RESTful API Design Principles:
 - URI design and naming conventions
 - Versioning and backward compatibility
 - Pagination and filtering
 - Error handling and status codes
 - Idempotency

Day 3

5. API Documentation and Testing:
 - Importance of API documentation
 - Tools for documenting RESTful APIs (Swagger, OpenAPI, API Blueprint)
 - API testing using tools like Postman or cURL
6. API Security and Best Practices:
 - Authentication methods (Basic Auth, JWT, OAuth)
 - Rate limiting and throttling
 - Input validation and data sanitization

- API versioning and deprecation strategies
- Data Encryption

Day 4

7. Hypermedia and HATEOAS:
 - Hypermedia as the Engine of Application State (HATEOAS)
 - Linking resources and navigation
 - Benefits of hypermedia-driven APIs
 - Practical Examples of HATEOAS
8. Advanced API Concepts:
 - Caching and performance optimization
 - Asynchronous processing and messaging
 - Webhooks and event-driven architectures
 - API versioning strategies

Day 5

9. API Testing and Monitoring:
 - Unit testing API endpoints
 - Integration testing with mocks and stubs
 - API monitoring and logging
 - Performance testing and load balancing
10. API Governance and Lifecycle Management:
 - API governance and API management platforms
 - Version control and release management
 - API analytics and reporting
 - API documentation maintenance and update