

INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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API Management and Testing

Introduction to APIs

- Overview of APIs: Definition, types (REST, SOAP, GraphQL), and importance
- API Lifecycle: Design, Development, Testing, Deployment, and Management
- API Economy: Role of APIs in modern application architectures and integration patterns

API Design Principles

- RESTful API Design: Principles of REST, URI design, HTTP methods
- API Versioning: Versioning strategies and best practices
- API Documentation: Tools and standards (Swagger/OpenAPI) for documenting APIs

API Testing Fundamentals

- Introduction to API Testing: Differences between API testing and UI testing
- Types of API Testing: Unit testing, Integration testing, End-to-end testing
- Tools for API Testing: Postman, Insomnia, curl, and command-line tools

Testing RESTful APIs

- Setting up API Testing Environment: Using mock servers and Docker containers
- Automating API Tests: Writing test scripts with Postman/Newman, RestAssured, etc.
- Validating Responses: Assertions, Status codes, Response headers, and Body content validation

API Security Testing

- API Security Fundamentals: Authentication (OAuth, JWT), Authorization, Encryption
- OWASP API Security Top 10: Common vulnerabilities and how to mitigate them
- Tools for API Security Testing: OWASP ZAP, Burp Suite, API testing plugins/extensions

Performance Testing of APIs

- Performance Testing Basics: Load, Stress, and Endurance testing for APIs
- API Performance Metrics: Response time, Throughput, Concurrent users
- Tools for API Performance Testing: Apache JMeter, Gatling, LoadRunner

API Management Platforms

- Introduction to API Management: Features and benefits of API gateways
- Popular API Management Platforms: Apigee, AWS API Gateway, Azure API Management
- Key Features: Rate limiting, Authentication, Logging, Analytics, Developer Portal

API Governance and Monitoring

- API Governance Framework: Policies, Standards, and Compliance
- Monitoring APIs: Health checks, Metrics, Alerts, and Dashboards
- API Analytics: Usage patterns, Performance trends, and Business insights

API Versioning and Lifecycle Management

- API Versioning Strategies: URI versioning, Header versioning, Query parameter versioning
- API Lifecycle Management: Planning, Design, Implementation, Retirement
- Continuous Integration and Deployment (CI/CD) for APIs

API Documentation and Developer Experience (DX)

- Importance of API Documentation: API Reference, Tutorials, Code Samples
- Tools for API Documentation: Swagger/OpenAPI, RAML, API Blueprint
- Improving Developer Experience: API Design best practices, SDKs, API Changelog

Real-world Use Cases and Case Studies

- Implementing API Management and Testing in Industry: Use cases across domains
- Best Practices and Lessons Learned from Successful API Implementations

Hands-on Projects and Practical Application

- Designing and Implementing APIs: Hands-on projects to create and test APIs
- Integrating APIs with Frontend Applications: Using APIs in real-world applications

Career Development and Job Preparation

- Building a Career in API Management and Testing: Skills and certifications
- Interview Preparation: API-related interview questions and scenarios