INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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API Testing

Introduction to API Testing

- Overview of APIs: Definition, types (REST, SOAP, GraphQL), and their importance
- API Testing vs. UI Testing: Key differences and why API testing is crucial
- API Testing Lifecycle: Planning, Design, Execution, Reporting, and Automation

Basics of RESTful APIs

- Understanding REST Principles: Resources, URIs, HTTP methods (GET, POST, PUT, DELETE)
- Request and Response Structure: Headers, Body, Status Codes, and Error Handling
- Tools for Exploring APIs: Postman, Insomnia, cURL, and command-line tools

API Testing Fundamentals

- Types of API Tests: Unit Testing, Integration Testing, Functional Testing, and End-to-End Testing
- Testing Techniques: Boundary Value Analysis, Equivalence Partitioning, Error Guessing
- Automating API Tests: Introduction to API testing frameworks (e.g., Postman, RestAssured, HTTParty)

API Testing with Postman

- Setting Up Postman: Installation and Configuration
- Creating and Managing Collections: Organizing API requests and tests
- Writing Test Scripts: Using JavaScript for assertions and validations

API Security Testing

- Introduction to API Security: Authentication (Basic Auth, OAuth, JWT), Authorization, Encryption
- OWASP API Security Top 10: Common vulnerabilities and how to test for them
- Tools for API Security Testing: OWASP ZAP, Burp Suite, Postman for security testing

Performance Testing of APIs

- Introduction to API Performance Testing: Goals and Metrics (Response Time, Throughput)
- Tools for Performance Testing: Apache JMeter, LoadRunner, Gatling
- Load Testing APIs: Simulating concurrent users, Analyzing performance bottlenecks

API Test Automation

- Introduction to API Test Automation: Benefits and Challenges
- Automating API Tests with Postman/Newman: Running collections in CI/CD pipelines
- Writing Test Scripts: Using pre-request scripts, tests, and environment variables in Postman

Continuous Integration and Delivery (CI/CD) for APIs

- Integrating API Tests in CI/CD Pipelines: Jenkins, GitLab CI, Azure DevOps
- Running API Tests in Docker Containers: Containerized testing environments

- Monitoring API Tests: Reporting test results and integrating with monitoring tools

API Mocking and Virtualization

- Introduction to API Mocking: Using tools like WireMock, MockServer
- Creating Mock APIs for Testing: Simulating responses and behaviors
- Using Mock Data for API Testing: Data-driven testing and scenarios

API Documentation and Specification

- Importance of API Documentation: Writing clear and comprehensive API documentation
- API Specification Formats: Swagger (OpenAPI), RAML, API Blueprint
- Validating API Documentation: Tools for validating API specifications

Advanced Topics in API Testing

- Contract Testing: Implementing consumer-driven contracts with Pact or Spring Cloud Contract
- Stateful API Testing: Testing APIs with session and state management
- API Testing for Microservices Architecture: Challenges and strategies

Real-world Use Cases and Case Studies

- Implementing API Testing in Industry: Case studies and success stories
- Best Practices and Lessons Learned from Real-world API Implementations

Hands-on Projects and Practical Application

- Designing and Implementing API Tests: Hands-on projects covering various scenarios
- Integration Testing with APIs: Testing integrations between different APIs and systems

Career Development and Job Preparation

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