**Prompt :** Summarize the uploaded document.

**🧪 API Testing Workbook & Assignment Guide**

**📂 Module 1: Fundamentals of API Testing**

**Objective:** Understand core concepts and terminology.

**✅ Concepts to Master**

* API endpoints and HTTP methods (GET, POST, PUT, DELETE)
* Request payloads and parameters
* Response status codes and headers
* Assertions and validation strategies

**📝 Assignment**

| **Task** | **Description** |
| --- | --- |
| 1 | List 5 sample API endpoints and classify their HTTP methods |
| 2 | Create a table of common status codes (200, 400, 401, 500) with meanings |
| 3 | Write assertions for a sample response using Postman or REST Assured |

**🧪 Module 2: Functional & Security Testing**

**Objective:** Design test cases for core functionality and security.

**✅ Concepts to Master**

* Positive, negative, and edge case testing
* Authentication & authorization
* Input sanitization and encryption
* Rate limiting and token expiry

**📝 Assignment**

| **Task** | **Description** |
| --- | --- |
| 1 | Write 3 test cases for a login API (valid, invalid, expired token) |
| 2 | Simulate SQL injection and validate API response |
| 3 | Test role-based access control for a protected endpoint |

**🚀 Module 3: Performance & Load Testing**

**Objective:** Evaluate API responsiveness and scalability.

**✅ Concepts to Master**

* Response time, load, stress, and spike testing
* Resource monitoring and caching

**📝 Assignment**

| **Task** | **Description** |
| --- | --- |
| 1 | Use JMeter or Postman Runner to simulate 100 concurrent requests |
| 2 | Measure response time and identify bottlenecks |
| 3 | Document caching behavior for frequently accessed endpoints |

**🧰 Module 4: Tool-Based Automation**

**Objective:** Practice using Postman, SoapUI, and REST Assured.

**✅ Concepts to Master**

* Collections, environments, and scripting in Postman
* Test suites and Groovy scripts in SoapUI
* Fluent API and JSON/XML validation in REST Assured

**📝 Assignment**

| **Tool** | **Task** |
| --- | --- |
| Postman | Create a collection with chained requests and test scripts |
| SoapUI | Build a TestSuite with data-driven tests using Excel |
| REST Assured | Write a Java test for GET and POST endpoints with assertions |

**🧪 Module 5: Advanced Techniques**

**Objective:** Explore parameterization, mocking, and CI integration.

**✅ Concepts to Master**

* Data-driven testing
* Mock servers and stubs
* CI/CD pipeline integration

**📝 Assignment**

| **Task** | **Description** |
| --- | --- |
| 1 | Create a mock server in Postman and simulate a 500 error |
| 2 | Parameterize login tests using a JSON data file |
| 3 | Integrate REST Assured tests into a Jenkins pipeline (mock setup allowed) |

**🎯 Module 6: Interview Prep & Final Checklist**

**Objective:** Prepare for real-world scenarios and interviews.

**✅ Concepts to Master**

* Scenario-based test design
* Error handling and logging
* Final checklist for automation readiness

**📝 Assignment**

| **Task** | **Description** |
| --- | --- |
| 1 | Write a test case for a secured API using OAuth 2.0 |
| 2 | Simulate and validate 401, 403, and 404 errors |
| 3 | Complete the final checklist for a sample API suite (template below) |

**📋 Final Checklist Template**

| **Category** | **Checklist Item** | **Status** |
| --- | --- | --- |
| Functional | Validated all CRUD operations | ✅/❌ |
| Error Handling | Simulated error responses | ✅/❌ |
| Security | Tested invalid tokens and credentials | ✅/❌ |
| Performance | Measured response times under load | ✅/❌ |
| Automation | Created reusable scripts and reports | ✅/❌ |