

JMETER Performance Testing

CHAPTER 1: PERFORMANCE TESTING BASICS

- Introduction to Non-Functional testing
- Introduction to web application performance testing
- Understanding the infrastructure concepts & related performance KPIs [Load balancer, Cluster, Threads, Instances, Data operations center]
- Introduction to Client & Server architecture
- API Request & API Response
 - HTTP & HTTPS protocols
 - HTTP Methods/HTTP verbs
 - HTTP Request Headers
 - HTTP Response Headers
 - Response Codes & Description
- What is Performance testing & types ?
 - Stress testing
 - Load Testing
 - Endurance/Soak Testing
- Understanding Performance parameters/metrics
- Response code & message
 - Connection time
 - Latency
 - Response time
 - Throughput
 - Error rate
 - Size sent and received in bytes
 - RAM % utilization
 - CPU % utilization
 - 90% percentile, 95% percentile, 99% percentile

CHAPTER 2: INTRODUCTION TO JMETER, JMETER TEST PLAN & WALK-THROUGH OF JMETER TEST ELEMENTS

- Why JMeter
- JMeter download/installation
- JMeter Test Plan
- Thread Group
- Defining vUsers, Ramp-up time, Loop count
- Samplers
- Logic Controllers

- Listeners
- Timers
- Assertions
- Configuration Elements
- Pre-Processor Elements
- Post-Processor Elements
- Test Fragment
- HTTPS Test Script Recorder
- Execution Order of Test Elements

CHAPTER 3: BUILDING A TEST PLAN

- Adding Virtual Users
- Adding ramp-up time
- Adding loop count/thread-life-time
- Adding HTTP requests samplers
- Conducting load/stress tests
- Conducting soak/endurance tests
- Adding Listeners to view/generate test results
- Analyze the load test results

CHAPTER 4: WORKING WITH JMETER THREAD GROUPS & SAMPLERS

- Introduction to Thread groups
 - Thread Group
 - Setup thread group
 - Teardown thread group
 - Custom thread groups
- Introduction & Practical usage of Samplers
 - HTTP Request sampler
 - FTP Request sampler
 - Debug sampler
 - Beanshell sampler
 - Graph-QL HTTP request
 - JDBC request
 - SMTP sampler
 - Mail reader sampler
 - Dummy sampler
- Conduct load test and monitor the performance of database systems [MySQL]
- Creating and running load test, stress test, soak/endurance test on Web applications & APIs
- Running the tests and analyzing the sampler results using JMeter listeners

CHAPTER 5: WORKING WITH JMETER LISTENERS

- Introduction to Listeners & its practical usage
 - View Results Tree
 - View Results in Table
 - Summary Report
 - Aggregate Report
 - Graph Results
 - Save Responses to file
 - Listener plugins
 - Assertion Results
- Running the tests and analyzing the listener results

CHAPTER 6: UNDERSTANDING THE JMETER CONFIG ELEMENTS

- Introduction to Configuration elements
- Practical usage of different types of Config elements
 - HTTP header manager
 - CSV data set config
 - HTTP cookie manager
 - HTTP cache manager
 - HTTP request defaults
 - DNS Cache Manager
 - User Defined Variables
 - Counter
 - FTP request defaults
 - HTTP authorization manager
 - Random variable
 - JDBC Connection Configuration
- Running the tests and analyzing the configuration results

CHAPTER 7: CONFIGURING THE JMETER ASSERTIONS

- What are Assertions
- Understanding the types of JMeter assertions
 - Response Code Assertion
 - Response Message Assertion
 - Response Body Assertion
 - Response Headers Assertion
 - Duration Assertion
 - Size Assertion
 - HTML/XML Assertion
 - JSON Assertion
 - Beanshell Assertion
- Running the tests and analyzing the Assertion results

CHAPTER 8: CONFIGURING THE JMETER TIMERS

- What is a Timer & usage of timers in a test plan
- Introduction of various times in JMeter
 - Constant Timer
 - Gaussian Random Timer
 - Uniform Random Timer
 - Poisson Random Timer
 - Synchronizing Timer
- Running the tests and analyzing the timer results

CHAPTER 9: ADDING THE JMETER LOGIC CONTROLLERS

- What are Logic Controllers
- Introduction to JMeter logic controllers
 - Once only controller
 - Simple Controller
 - Transaction Controller
 - Random Controller
 - Random Order Controller
 - Loop Controller
 - Run-time Controller
 - Throughput Controller
 - Critical Section Controller
 - Interleave Controller
 - Recording Controller
 - If Controller
 - Module Controller
 - Include Controller
 - Switch Controller
- Running the tests and analyzing the logic controller results

CHAPTER 10: WORKING WITH HTTP PROXY SERVER, BLAZEMETER & BADBOY RECORDING TOOLS

- Explore the 3 recording strategies of JMeter
- Installing JMeter CA certificate for HTTP(s) recording
- Recording steps on a website using HTTP(s) Test Script recorder
- Configure the browser for recording test script
- Using a 3rd party tool 'Badboy' for recording
- Capture the web requests using Blazemeter or browser dev tools
- Configuring & running the performance/load tests from cloud test platforms such as Blazemeter
- Distribution of load testing across geographical locations using Blazemeter cloud platform

- Setting up the failure KPI criteria in Blazemeter cloud platform
- Configuring network simulation in Blazemeter cloud platform
- Reporting the performance KPI metrics in Blazemeter cloud platform

CHAPTER 11: HOW TO LOAD TEST APIs/WEB-SERVICES WITH JMETER

- Introduction to API's and types of APIs
- Building a load test plan for RESTful API's
- Building a load test plan for SOAP APIs
- Building load test plan for Graph-QL APIs
- Running the load tests for back-end APIs
- Analyzing the load test results for APIs

CHAPTER 12: CONDUCTING DATA DRIVEN AUTOMATION LOAD TESTING FOR WEB APPs & APIs [HANDS-ON-EXERCISE]

- What is data parameterization
- Identifying the test data for AUT
- Creating test-data setup
- Automating the test-data creation process using Jmeter built-in functions
- Using the CSV data config in JMeter tests
- Conducting DDT tests for web applications, REST APIs & SOAP APIs
- Analyzing the load test results

CHAPTER 13: CONFIGURING THE JMETER PRE-PROCESSORS

- What is a Pre-Processor & the usage in JMeter
- Introduction to JMeter Pre-Processor elements
 - HTML link parser
 - Sample Timeout
 - User Parameters
 - JDBC Pre-Processor
 - Beanshell Pre-Processor
- Running the tests and analyzing the Pre-Processor results

CHAPTER 14: CONFIGURING JMETER POST-PROCESSORS TO HANDLE DYNAMIC SERVER VALUES FOR WEB APPLICATIONS & APIs

- What is a Post-Processor & the usage in JMeter

- Introduction to JMeter Post-Processor elements
 - Debug Post Processor
 - Achieving Correlation
 - Regular expression extractor
 - JSON Extractor
 - Result status action handler
 - JDBC Post-Processor
 - Beanshell Post-Processor
- Running the tests and analyzing the Post-Processor results

CHAPTER 15: GENERATING TEST REPORTS USING JMETER & INTEGRATION WITH OTHER TOOLS

- Understanding how to generate .CSV test reports from GUI mode and NON-GUI mode
- Understanding how to generate .HTML test reports from GUI mode and NON-GUI mode
- Monitor the system performance to analyze the test results
- Collect and analyze the hardware resources utilization during load testing
- Configuring multiple thread groups in JMeter for load test execution
- Running different thread groups in sequential order and parallel order
- Integration of JMeter tests with 3rd party tools like Postman, Jenkins, Github, Influx DB & Grafana
- Interpret the performance test results from the generated .html test report to understand its impact on AUT
- Identify the performance bottlenecks in the applications and infrastructure

CHAPTER 16: USAGE OF JMETER PLUGIN-MANAGER & JMETER PLUGINS

- What is Plugin manager & its purpose
- Installation of Plugin Manager
- Installation of various JMeter plugins
 - 3 Basic Graphs
 - 5 Additional Graphs
 - Composite Graph-Merge results
 - Distribution/Percentile Graphs
 - Auto Stop Listener
 - Blazemeter auto correlation
 - Custom Thread Groups/Pacing
 - Random CSV dataset
 - Custom JMeter Functions

- Console Status Logger
- PerfMon (Server Monitoring)
- Selenium Web Driver support
- Blazemeter Step by Step debugger

CHAPTER 17: USAGE OF JMETER-FUNCTIONS, JMETER-VARIABLES, JMETER TEMPLATES & DEBUGGING

- Understanding JMeter Functions & usage
- Creating JMeter templates & their usage
- Understanding JMeter Properties file
- Understanding JMeter User Properties file
- JMeter best practices to be followed
- Understanding JMeter Variables & usage
 - JMeter user defined variables using Config element
 - JMeter sampler scope variables using Pre-Processor
 - JMeter global scope variables using Test Plan
- Debugging JMeter tests:
- View Results Tree [RegExp Tester]
- View Results Tree [JSON Path Tester]
- View Results Tree [XPath Tester]
- Debug Sampler
- Debug Post Processor