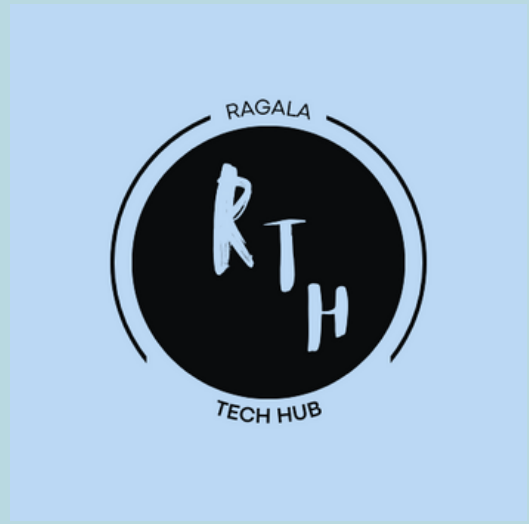
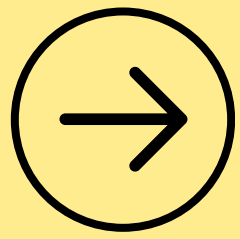


Jmeter Basics

By Rupendra Ragala

Why JMeter is a Key Tool?

- Open Source: Free to use with active community support.
- Platform-Independent: Written in Java, runs on all platforms.
- Flexible: Supports multiple protocols (HTTP, FTP, JDBC, SOAP, REST).
- Extensible: Add plugins for additional features.
- Easy-to-Learn UI: Intuitive interface for new testers.
- Distributed Testing: Handles large-scale tests across multiple machines.
- Integration Support: Works well with CI/CD tools like Jenkins.



Key Testing Types with JMeter

- Load Testing
- Stress Testing
- Spike Testing
- Endurance Testing
- Scalability Testing
- Database Testing
- Web Services/API Testing
- Functional Testing

Basic Understanding of JMeter Keywords

1. Test Plan : A Test Plan is the container for all test elements in JMeter. It defines the execution sequence of test scenarios.

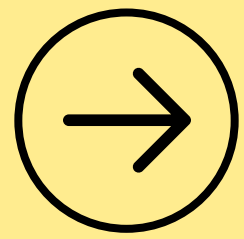
- Example: A Test Plan could include multiple Thread Groups, Samplers, and Listeners.

2. Thread Group: A Thread Group represents a group of virtual users (threads) executing test scenarios.

- Example: If you configure a Thread Group with 100 threads and a Ramp-Up Period of 10 seconds, JMeter will start 10 threads per second.

3. Sampler: A Sampler sends requests to a server and waits for the response.

- Example: HTTP Sampler for web applications or JDBC Sampler for database testing.



Basic Understanding of JMeter Keywords

4. HTTP Request: A type of sampler used to send HTTP/HTTPS requests to a server.

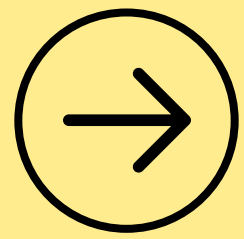
- Example: Sending a GET or POST request to https://example.com/api.

5. HTTPS Request: Similar to HTTP but adds encryption for secure communication.

- Example: Making a secure API call to an e-commerce platform.

6. CSV Data Set Config: A configuration element for parameterizing tests using external CSV files.

- Example: Using a CSV file with usernames and passwords for login testing.



Basic Understanding of JMeter Keywords

7. Listeners: Components to visualize and analyze test results.

- Example: View Results Tree or Aggregate Report to display request success rates and response times.

8. Assertions: Conditions to validate responses during tests.

- Example: Use a Response Assertion to verify if a response contains "Login Successful".

9. Response Time: The time taken by the server to respond to a request.

- Example: A web page loading in 2 seconds.

10. Throughput: The number of requests processed by the server per second.

- Example: A server handling 200 requests/sec during a load test.

Basic Understanding of JMeter Keywords

11. Load Testing: A testing technique to simulate normal or peak user load on an application.

- Example: Simulating 1,000 users accessing a website simultaneously.

12. Stress Testing: Testing the system under extreme load to find its breaking point.

- Example: Simulating 10,000 users on a website to identify the maximum capacity.

13. Distributed Testing: Running tests across multiple systems to simulate a larger load.

- Example: Using 5 machines to simulate 5,000 users collectively.

14. Ramp-Up Period: The time JMeter takes to start all the threads in a Thread Group.

- Example: A Ramp-Up of 20 seconds for 100 threads starts 5 threads per second.

Basic Understanding of JMeter Keywords

15. Scheduler: Enables running tests at specific start and end times.

- Example: Running a test from 2:00 PM to 2:30 PM.

16. Controllers: Elements that control the execution flow of a test plan.

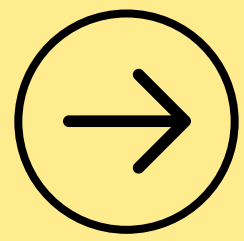
- Example: If Controller runs only if a specific condition is met.

17. Logic Controllers: Control how samplers are executed.

- Example: Loop Controller runs a set of samplers repeatedly.

18. Timers: Used to pause between requests to mimic real-world usage.

- Example: Adding a Constant Timer to delay requests by 1 second.



Basic Understanding of JMeter Keywords

19. JDBC Request: A sampler for testing database queries.

- Example: Executing a SELECT query on a database table.

20. Beanshell Scripting: Allows writing custom scripts for complex test scenarios.

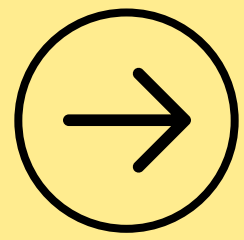
- Example: Custom login scripts to handle dynamic tokens.

21. Plugins Manager: A feature to install additional plugins for enhanced functionality.

- Example: Installing the JMeter PerfMon Plugin for server monitoring.

22. Heap Memory: The memory allocated to JMeter for execution.

- Example: Increasing heap size in jmeter.bat for large-scale tests.



Basic Understanding of JMeter Keywords

23. Correlation: Extracting and reusing dynamic data in subsequent requests.

- Example: Extracting session tokens using a Regular Expression Extractor.

24. Dynamic Data: Test data that changes with each request or session.

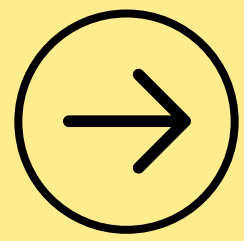
- Example: Using unique order IDs in an e-commerce application.

25. Post-Processors: Used to process the server response after a request is made.

- Example: Extracting a specific JSON field using a JSON Extractor.

26. Pre-Processors: Components that execute before a sampler is run to modify requests.

- Example: Using a User Parameters Pre-Processor to dynamically assign variables before sending a request.



Basic Understanding of JMeter Keywords

27. Regular Expression Extractor: Extracts dynamic values from server responses using regular expressions.

- Example: Extracting a session ID from a login response with the pattern: sessionID=(\w+).

28. JSON Extractor: Extracts values from JSON responses.

- Example: Extracting a token value from the response

29. XPath Extractor: Extracts data from XML or HTML responses using XPath queries.

- Example: Extracting a value from an XML node: <user><id>123</id></user> using XPath /user/id.

30. Assertions
- Types: Response Assertion, Duration Assertion, Size Assertion.

- Example: A Duration Assertion ensures the response time does not exceed 2 seconds.

Basic Understanding of JMeter Keywords

31. Config Elements: Elements to configure requests or other test components.

- Example: HTTP Header Manager to add headers like Content-Type: application/json to requests.

32. Debug Sampler: Displays variables and properties during test execution for debugging.

- Example: Viewing the extracted value of a variable in the Results Tree.

33. Timers
- Types: Constant Timer, Gaussian Random Timer, Uniform Random Timer.
- Example: A Gaussian Random Timer introduces a random delay between 0-100ms.

34. Transaction Controller: Groups multiple requests into a single transaction for measuring overall time.

- Example: Grouping login, search, and checkout requests as a single transaction.

Basic Understanding of JMeter Keywords

35. Aggregate Report: A Listener that provides summary statistics like average response time, max time, throughput, etc.

- Example: Showing an average response time of 1.5 seconds for a test.

36. Save Responses to a File: A Listener that saves server responses to external files.

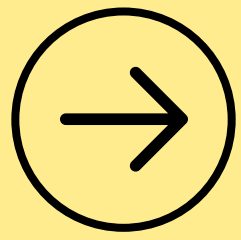
- Example: Saving API responses to a local file for debugging.

37. Random Variable: Generates random values for testing dynamic scenarios.

- Example: Generating random user IDs from a range like 1000-9999.

38. HTTP Cookie Manager: Manages cookies between requests automatically.

- Example: Storing session cookies during login tests.



Basic Understanding of JMeter Keywords

39. HTTP Cache Manager: Simulates browser caching behavior.

- Example: Caching static assets like CSS or images.

40. Keystore Configuration: Manages client certificates for secure HTTPS communication.

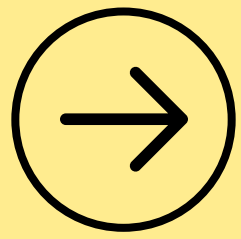
- Example: Adding an SSL certificate for API testing.

41. Assertions on JSON Data: Validating specific JSON response data.

- Example: Checking if the status field in the response equals success.

42. Backend Listener: Sends test metrics to external tools for analysis, like Grafana or InfluxDB.

- Example: Real-time monitoring of response times in Grafana dashboards.



Basic Understanding of JMeter Keywords

43. Proxy Server: Captures browser traffic for recording test scenarios.

- Example: Setting up a proxy to record interactions with a web application.

44. BeanShell PostProcessor: A Post-Processor to execute custom Java code after a sampler.

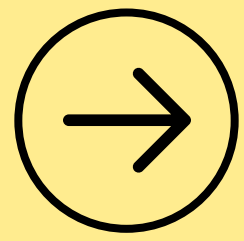
- Example: Writing a script to manipulate extracted variables.

45. Non-GUI Mode: Running tests from the command line for better performance.

- Example: jmeter -n -t testplan.jmx -l results.jtl

46. BlazeMeter: A cloud-based platform for running JMeter scripts at scale.

- Example: Upload a JMeter script and simulate 10,000 users globally.



Basic Understanding of JMeter Keywords

47. Thread Lifetime: Configures whether threads run indefinitely or for a fixed duration.

- Example: Setting a test duration of 10 minutes for a Thread Group.

48. Samplers for FTP: Tests file transfer protocols like FTP.

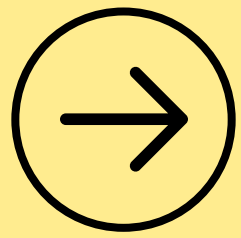
- Example: Uploading a file to an FTP server and verifying its success.

49. JMeter Variables: User-defined variables that can be reused in test plans.

- Example: Define baseURL as https://example.com and use it across requests.

50. Assertions on Response Codes: Ensures the response status code matches expectations.

- Example: Validating a 200 OK status for successful API calls.



Thank You