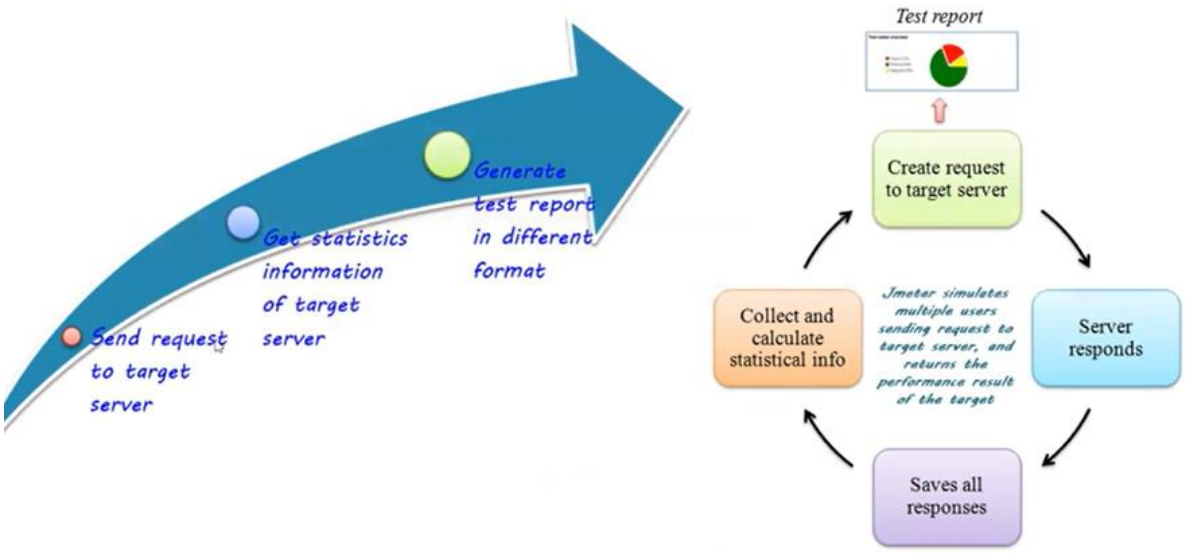
Jmeter GUIDE

What is JMeter? Why it is used?

- The **Apache JMeter** is pure Java **open source** software, which was first developed by Stefano Mazzocchi of the Apache Software Foundation, designed to load test functional behavior and measure performance.
- You can use JMeter to analyze and measure the performance of web application or a variety of services.
- Performance Testing means testing a web application against heavy load, multiple and concurrent user traffic.
- JMeter originally is used for testing Web Application or FTP application. Nowadays, it is used for a functional test, database server test and API testing etc.

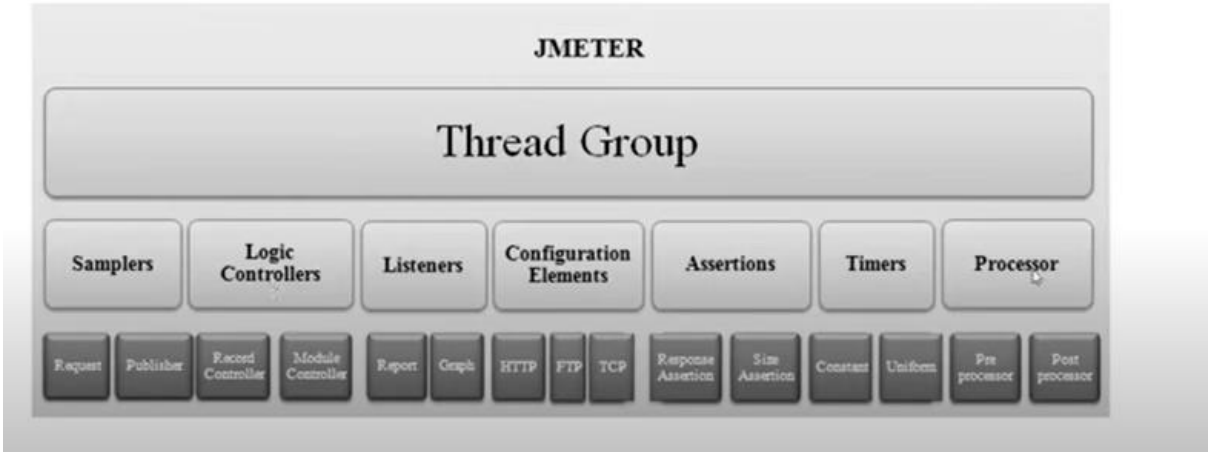
JMeter Advantages

How does JMeter work?



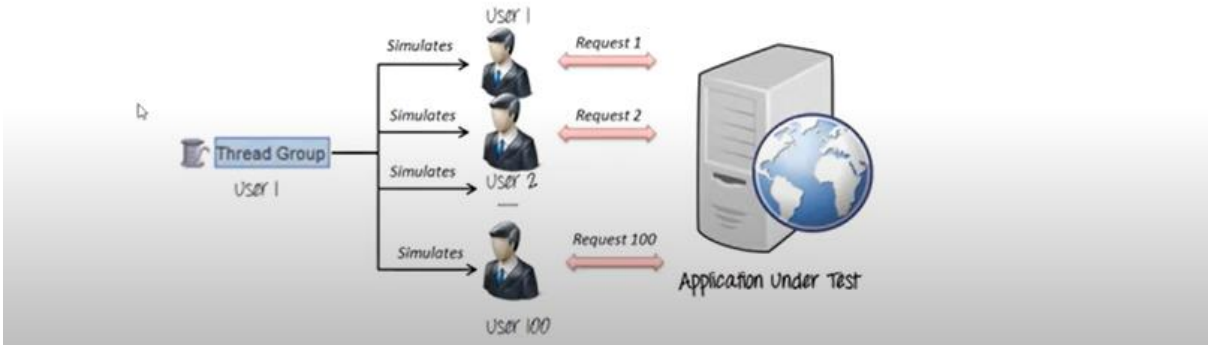
What is Element in JMeter?

- The different components of JMeter are called Elements. Each Element is designed for a specific purpose.



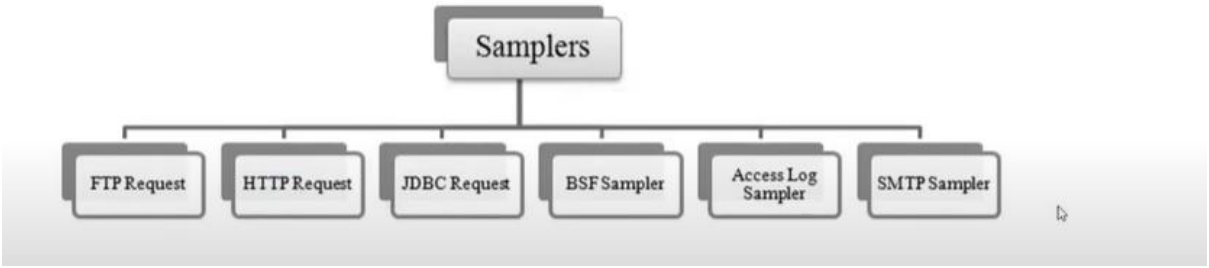
Thread Group

- Thread Groups is a collection of Threads. Each thread represents one user using the application under test. Basically, each Thread simulates one real user request to the server.
- The controls for a thread group allow you to Set the number of threads for each group.
- For example, if you set the number of threads as 100; JMeter will create and simulate 100 user requests to the server under test



Samplers

- Samplers are different type of requests send by Thread group.
- The user request could be FTP Request, HTTP Request, JDBC Request...Etc.

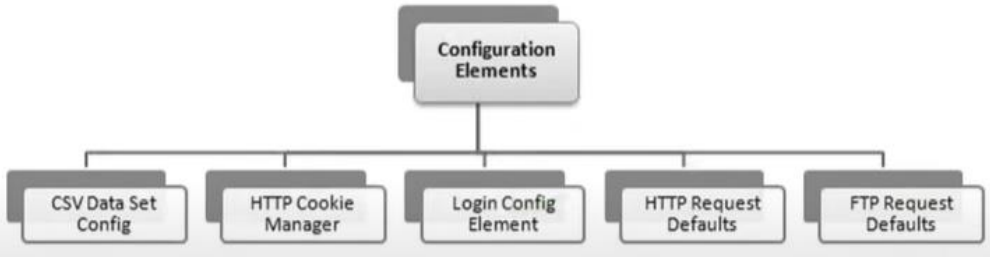


Listeners

- Listeners shows the results of the test execution.
- They can show results in a different format such as a tree, table, graph or log file
- Graph result listeners display the server response times on a Graph
- View Result Tree show results of the user request in basic HTML format
- Table Result show summary of a test result in table format
- Log show summary of a test results in the text file

Configuration Elements

- Set up defaults and variables for later use by samplers.
- **Commonly used configuration elements in Jmeter:**



Create First JMeter Test

- Step 1 - Start Jmeter
- Step 2 - Create a TestPlan
- Step 3 - Create a Thread Group (Users)
- Step 4 - Add a Sampler (Http)
- Step 5 - Add Listeners
- Step 6 – Run Test Plan
- Step7 – Save Test Plan

How To Create Thread Group

Right Click on Test Plan > Add > Thread > Thread Group

Number of Thread = No of users
Ramp up Period = Time difference b/w 2 requests
Loop Count = How many times selected user can send request

How to create HTTP Request

Right Click on Thread > Add > Sampler > HTTP Request

Server or IP = Will take target URL

Path = / - Means Home Page of target url. If we want to go on specific page then it will be like this:

/index.html

How to Add Listener To See The Result of the Test

Right Click on Thread > Add > Listener > Select desired listener

We can select multiple listener

How To Run And See the Result

Once everything is done and test is saved then hit play button. If everything is configured well then it will turn into black and white and will be disabled for some time. Which means that our request is in progress and after some time it will turn back to colorful icon which means request is completed and now we can check the status of our request by clicking on the added listeners. If we see the tick mark with all the request it means it a successful request and if there is cross with it then it will be mean that our requests were failed.

Timers

- **What are Timers?**
- JMeter sends requests without applying any delay between each sampler/request.
- If you perform load/stress testing on your server without any delay, it will be overloaded. Then, it won't be able to give you realistic results and fail to simulate real world user traffic experience.
- ***JMeter Timers*** are the solution to all these problems.
- Timer element can be added in a test plan to apply wait between each sampler/request.

Various Types of Timers in JMeter

- Constant Timer
- Uniform Random Timer
- Gaussian Random Timer
- BeanShell Timer
- BSF Timer
- JSR223 Timer

- Uniform Random Timer

  Random Delay Max

  Constant Delay Offset
- Formula:
  - 0.X * Random Delay Max + Constant Delay Offset
- X : 0-9
- Example:

  0.X * 100 + 0

  0 - 99 milli sec

Constant Time

Right click on test plan > add > timer > Constant

Then add the time in millisecond

We can add this timer at request level, thread level and plan level.

If we want to add it on thread level then need to right click on it and same for other 2

Uniform Random Time

Right click on test plan > add > timer > Constant

Then add the time in millisecond

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LOGIN CONTROLLER

Controllers in JMeter

- **Logic Controller** let you handle the order of processing Samplers/Requests in a Thread.
- Logic Controllers will decide "When & How" to send a request to a web server.
- JMeter provides several Logic Controller, which are as follows:
  - Critical Section Controller
  - ForEach Controller
  - If Controller
  - Include Controller
  - Interleave Controller
  - Loop Controller
  - Module controller
  - Once Only Controller
  - Random Controller
  - Random Order Controller
  - Recording Controller
  - Runtime Controller
  - Simple Controller
  - Switch Controller
  - Throughput Controller
  - Transaction Controller
  - While Controller

Loop Controller

- Loop Controller makes the user request run **a specified number of times** or run **forever**.

It will help if we want to execute any specific page multiple time the we can add loop controller

e.g we have sent 10 request to 3 pages but we want to run this request 3 times for home page and 5 times for about us page then we can add 2 loop controller one with 3 times and 5 times and then move the home page under the controller which 3 count and about page under controller which has count 5.

Right Click on request > Add > Logic Controller > Loop Controller

We can also move the listener under loop controller if needed. In this case listener will only record and show the result of that request which are under loop controller.

Recording in JMeter

1) Add NonTestElement – http Recording
2) Set Proxy on Browser
3) Start Recording in different Recording Controller
4) Start Scenario Recording
5) Stop Recording and Save.

Agenda

- Simple Controller
- Modular Controller
- Test Fragment
- Include Controller