

## **2CSDE80 Software Testing and Quality Assurance**

### **Lab-7 Task**

**Submitted by: Labdhi Sheth 18BCE101**

**Aim: To demonstrate a performance-based testing experiment**

**Tasks:**

- **To fully understand the JMeter operations.**
- **To use JMeter for Volume Testing with any website of your choice.**
- **To use JMeter for Spike Testing with any website of your choice.**
- **To use JMeter to record all scripts between client and server for any website of your choice.**

**Methodology:**



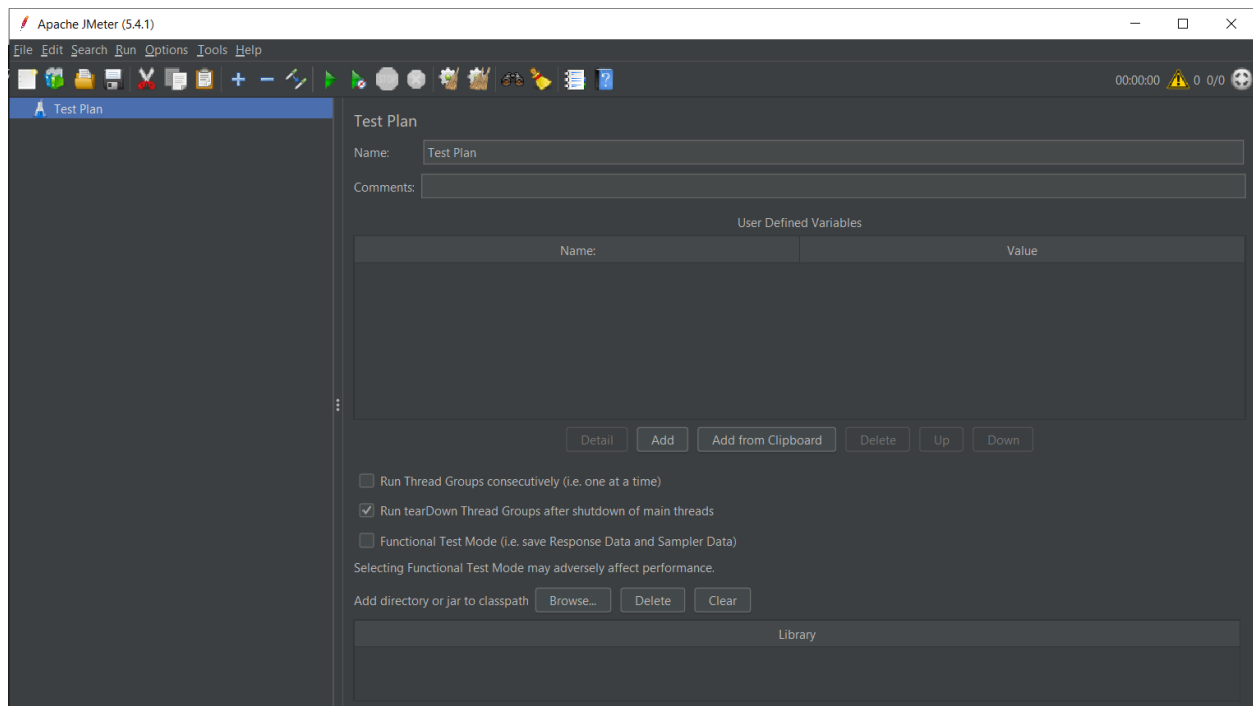
Performance testing is Non-functional testing performed to determine how a system performs in terms of responsiveness and stability under a particular workload for ex. - number of requests increases.

It is designed to load test functional behavior and measure performance. You can use JMeter to analyze and measure the performance of web applications 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 Applications or FTP applications.

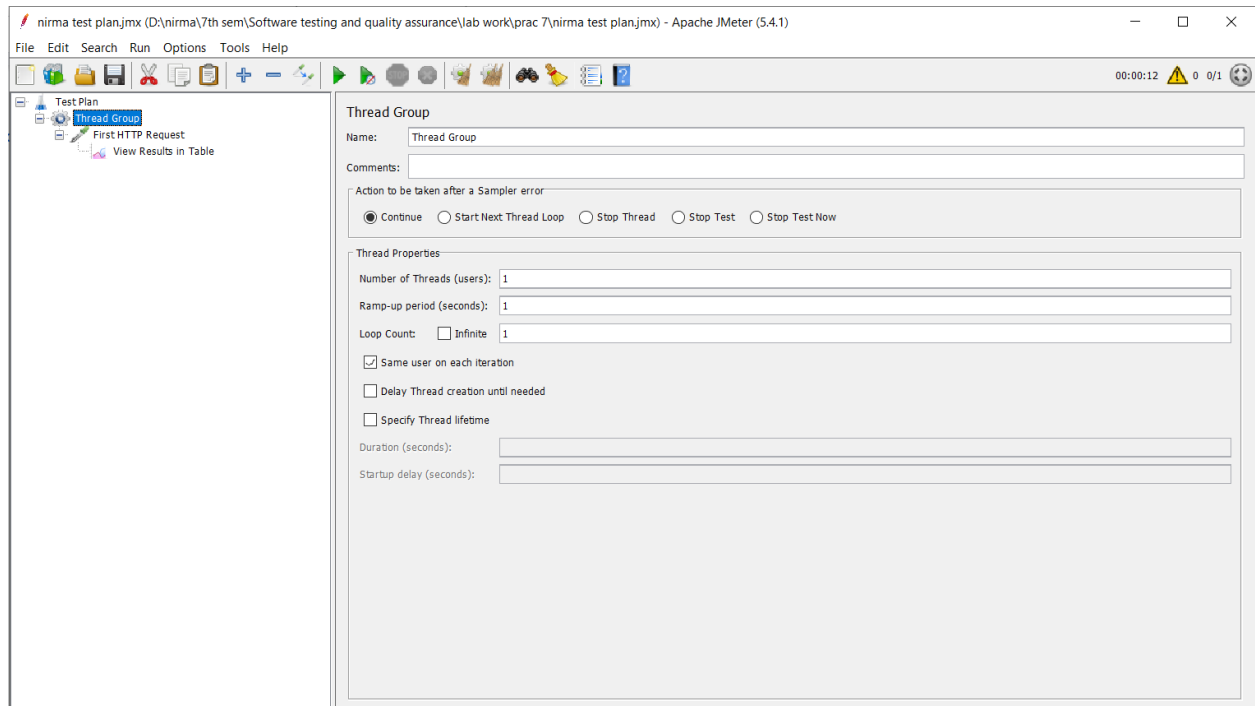
JMeter is totally free, allows developers to use the source code for the development. It is extremely easy to use and doesn't take time to get familiar with it. JMeter is a 100% pure Java desktop application. So it can run on multiple platforms. Jmeter can be integrated with Bean Shell & Selenium for automated testing.

Understanding Jmeter operations using a sample test plan:

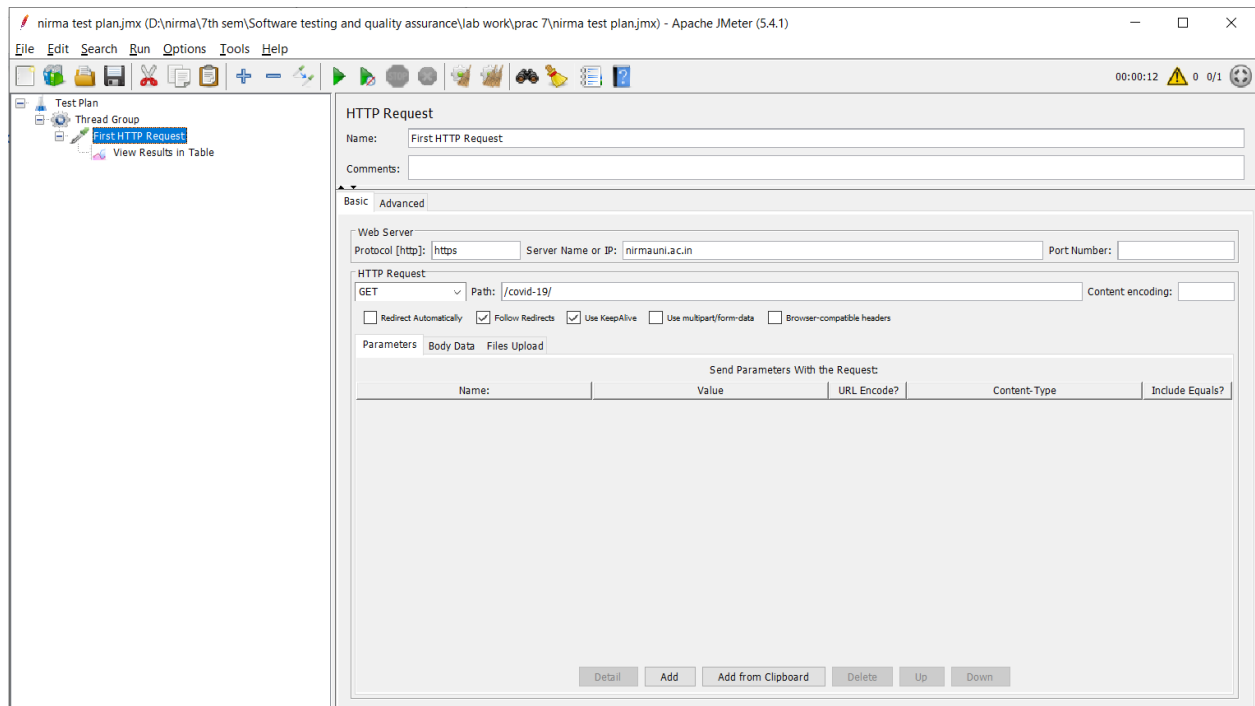
### 1. Create a new test plan



### 2. Making the thread group with default settings



### 3. Creating first HTTP request on Nirma website



### 4. Adding the listener and saving the plan thereafter Running the test plan

nirma test plan.jmx (D:\nirma\7th sem\Software testing and quality assurance\lab work\prac 7\nirma test plan.jmx) - Apache JMeter (5.4.1)

File Edit Search Run Options Tools Help

Test Plan  
Thread Group  
First HTTP Request  
View Results in Table

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes Configure

Sample #	Start Time	Thread Name	Label	Sample Time(...)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	09:32:45.917	Thread Group 1-1	First HTTP Requ...	12178	✓	248392	125	6134	1769

☐ Scroll automatically? ☐ Child samples? No of Samples 1 Latest Sample 12178 Average 12178 Deviation 0

## 5. Performing spike testing:

nirma test plan.jmx (D:\nirma\7th sem\Software testing and quality assurance\lab work\prac 7\nirma test plan.jmx) - Apache JMeter (5.4.1)

File Edit Search Run Options Tools Help

Test Plan  
Thread Group  
First HTTP Request  
View Results in Table

Thread Group

Name: Thread Group

Comments:

Action to be taken after a Sampler error

☒ Continue ☐ Start Next Thread Loop ☐ Stop Thread ☐ Stop Test ☐ Stop Test Now

Thread Properties

Number of Threads (users): 20

Ramp-up period (seconds): 1

Loop Count: ☐ Infinite 10

☒ Same user on each iteration

☐ Delay Thread creation until needed

☐ Specify Thread lifetime

Duration (seconds):

Startup delay (seconds):

nirma test plan.jmx (D:\nirma\7th sem\Software testing and quality assurance\lab work\prac 7\nirma test plan.jmx) - Apache JMeter (5.4.1)

File Edit Search Run Options Tools Help

Test Plan  
Thread Group  
First HTTP Request  
View Results in Table

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes Configure

Sample #	Start Time	Thread Name	Label	Sample Time(...)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	09:32:45.917	Thread Group 1-1	First HTTP Req...	12178	✓	248392	125	6134	1769
2	09:40:38.341	Thread Group 1-1	First HTTP Req...	10744	✓	248392	125	7167	870
3	09:40:38.642	Thread Group 1-7	First HTTP Req...	10997	✓	248392	125	7616	800
4	09:40:38.395	Thread Group 1-2	First HTTP Req...	11767	✓	248400	125	8349	869
5	09:40:38.440	Thread Group 1-3	First HTTP Req...	11733	✓	248400	125	8149	845
6	09:40:38.691	Thread Group 1-8	First HTTP Req...	11830	✓	248392	125	8220	827
7	09:40:38.542	Thread Group 1-5	First HTTP Req...	12030	✓	248400	125	8407	794
8	09:40:38.748	Thread Group 1-9	First HTTP Req...	12055	✓	248392	125	8389	938
9	09:40:38.889	Thread Group ...	First HTTP Req...	11984	✓	248392	125	8664	1405
10	09:40:38.793	Thread Group ...	First HTTP Req...	12434	✓	248400	125	8841	1317
11	09:40:38.488	Thread Group 1-4	First HTTP Req...	13179	✓	248392	125	8946	843
12	09:40:38.840	Thread Group ...	First HTTP Req...	13034	✓	248392	125	9459	1464
13	09:40:38.989	Thread Group ...	First HTTP Req...	13224	✓	248400	125	9773	2129
14	09:40:38.590	Thread Group 1-6	First HTTP Req...	13952	✓	248400	125	9031	817
15	09:40:39.241	Thread Group ...	First HTTP Req...	13427	✓	248392	125	10080	2898
16	09:40:38.940	Thread Group ...	First HTTP Req...	13783	✓	248400	125	10384	2178
17	09:40:39.037	Thread Group ...	First HTTP Req...	13795	✓	248392	125	10307	2293
18	09:40:39.289	Thread Group ...	First HTTP Req...	14022	✓	248392	125	10573	2840
19	09:40:39.139	Thread Group ...	First HTTP Req...	14257	✓	248397	125	10845	2980
20	09:40:39.088	Thread Group ...	First HTTP Req...	15068	✓	248397	125	10747	2907
21	09:40:39.187	Thread Group ...	First HTTP Req...	15231	✓	248392	125	10890	2940
22	09:40:49.086	Thread Group 1-1	First HTTP Req...	7355	✓	248392	125	5200	0
23	09:40:49.638	Thread Group 1-7	First HTTP Req...	8288	✓	248392	125	6208	0
24	09:40:50.162	Thread Group 1-2	First HTTP Req...	9224	✓	248392	125	7355	0
25	09:40:50.521	Thread Group 1-8	First HTTP Req...	10153	✓	248392	125	7606	0

☐ Scroll automatically? ☐ Child samples? No of Samples 101 Latest Sample 8852 Average 10860 Deviation 1824

nirma test plan.jmx (D:\nirma\7th sem\Software testing and quality assurance\lab work\prac 7\nirma test plan.jmx) - Apache JMeter (5.4.1)

File Edit Search Run Options Tools Help

Test Plan  
Thread Group  
First HTTP Request  
View Results in Table

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

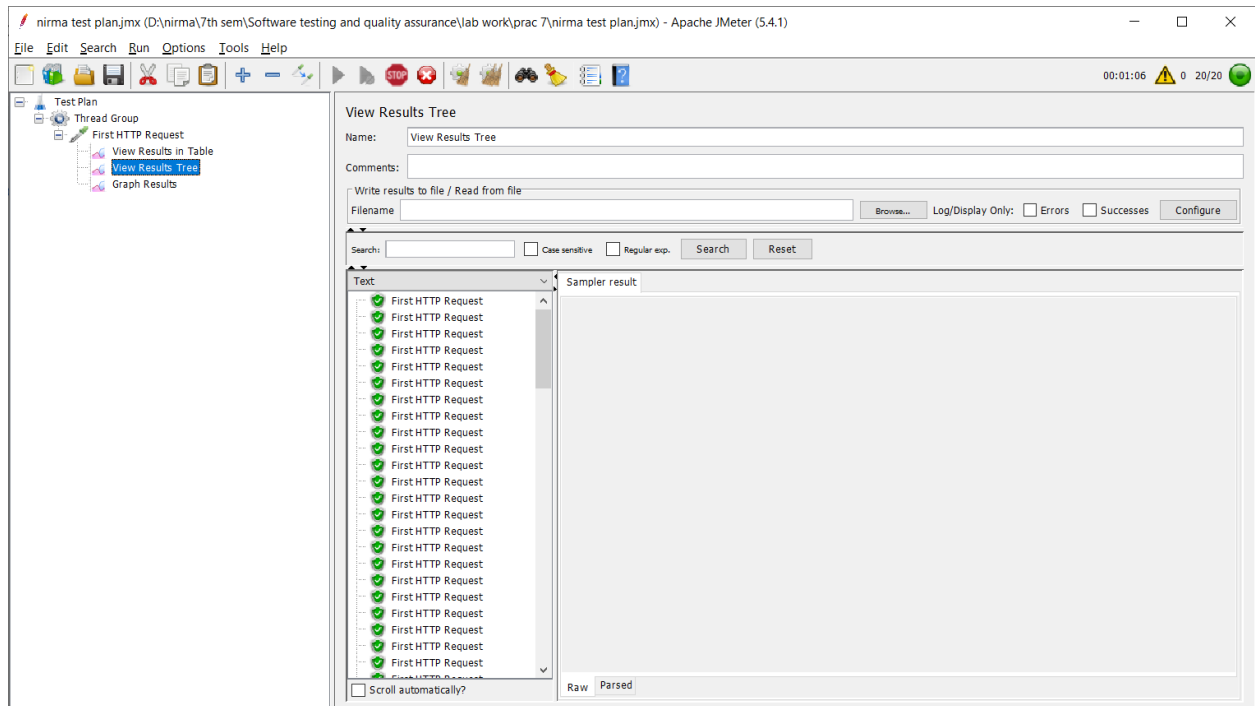
Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes Configure

Sample #	Start Time	Thread Name	Label	Sample Time(...)	Status	Bytes	Sent Bytes	Latency	Connect Time...
95	09:41:26.028	Thread Group ...	First HTTP Req...	8638	✓	248392	125	7308	0
96	09:41:27.120	Thread Group ...	First HTTP Req...	7983	✓	248392	125	6680	0
97	09:41:27.757	Thread Group 1-1	First HTTP Req...	8413	✓	248392	125	6791	0
98	09:41:28.289	Thread Group 1-7	First HTTP Req...	8298	✓	248392	125	6985	0
99	09:41:27.981	Thread Group ...	First HTTP Req...	8671	✓	248400	125	7031	0
100	09:41:28.246	Thread Group ...	First HTTP Req...	9221	✓	248400	125	6795	0
101	09:41:28.901	Thread Group 1-2	First HTTP Req...	8852	✓	248392	125	7532	0
102	09:41:29.430	Thread Group ...	First HTTP Req...	9500	✓	248392	125	8193	0
103	09:41:29.901	Thread Group 1-8	First HTTP Req...	9174	✓	248392	125	7875	0
104	09:41:29.888	Thread Group 1-6	First HTTP Req...	9462	✓	248400	125	7739	0
105	09:41:30.123	Thread Group 1-9	First HTTP Req...	9341	✓	248392	125	7934	0
106	09:41:29.666	Thread Group 1-4	First HTTP Req...	10398	✓	248392	125	7530	0
107	09:41:30.237	Thread Group ...	First HTTP Req...	9948	✓	248392	125	8647	0
108	09:41:30.460	Thread Group ...	First HTTP Req...	10343	✓	248392	125	8674	0
109	09:41:30.500	Thread Group 1-5	First HTTP Req...	10328	✓	248392	125	9022	0
110	09:41:31.228	Thread Group 1-3	First HTTP Req...	9918	✓	248400	125	8013	0
111	09:41:32.950	Thread Group ...	First HTTP Req...	9334	✓	248400	125	8020	0
112	09:41:33.605	Thread Group ...	First HTTP Req...	9673	✓	248392	125	8358	0
113	09:41:34.559	Thread Group ...	First HTTP Req...	9962	✓	248400	125	8614	0
114	09:41:34.162	Thread Group ...	First HTTP Req...	10371	✓	248392	125	9041	0
115	09:41:34.667	Thread Group ...	First HTTP Req...	10174	✓	248397	125	8853	0
116	09:41:35.103	Thread Group ...	First HTTP Req...	10574	✓	248400	125	9180	0
117	09:41:36.588	Thread Group 1-7	First HTTP Req...	10603	✓	248400	125	9303	0
118	09:41:36.170	Thread Group 1-1	First HTTP Req...	11154	✓	248400	125	9526	0
119	09:41:36.652	Thread Group ...	First HTTP Req...	11196	✓	248392	125	9797	0

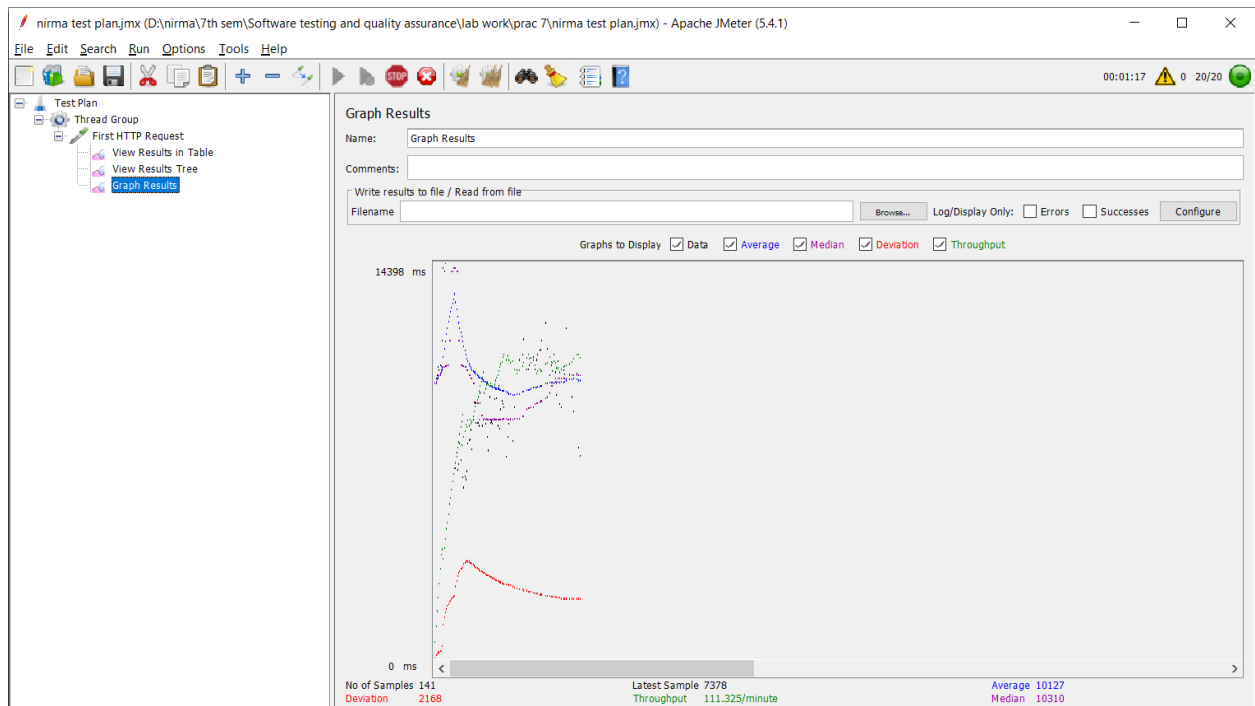
☐ Scroll automatically? ☐ Child samples? No of Samples 121 Latest Sample 12334 Average 10761 Deviation 1712

## 6. Adding listener in other forms:

### a. Tree form:



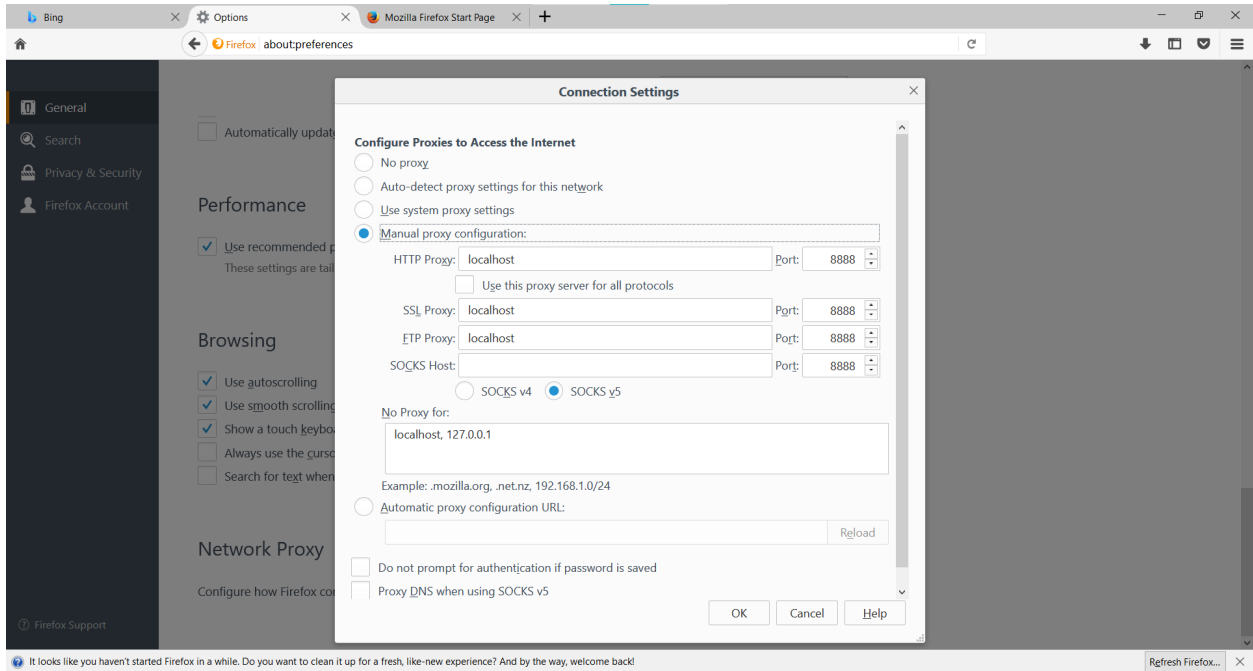
## b. Graph form:



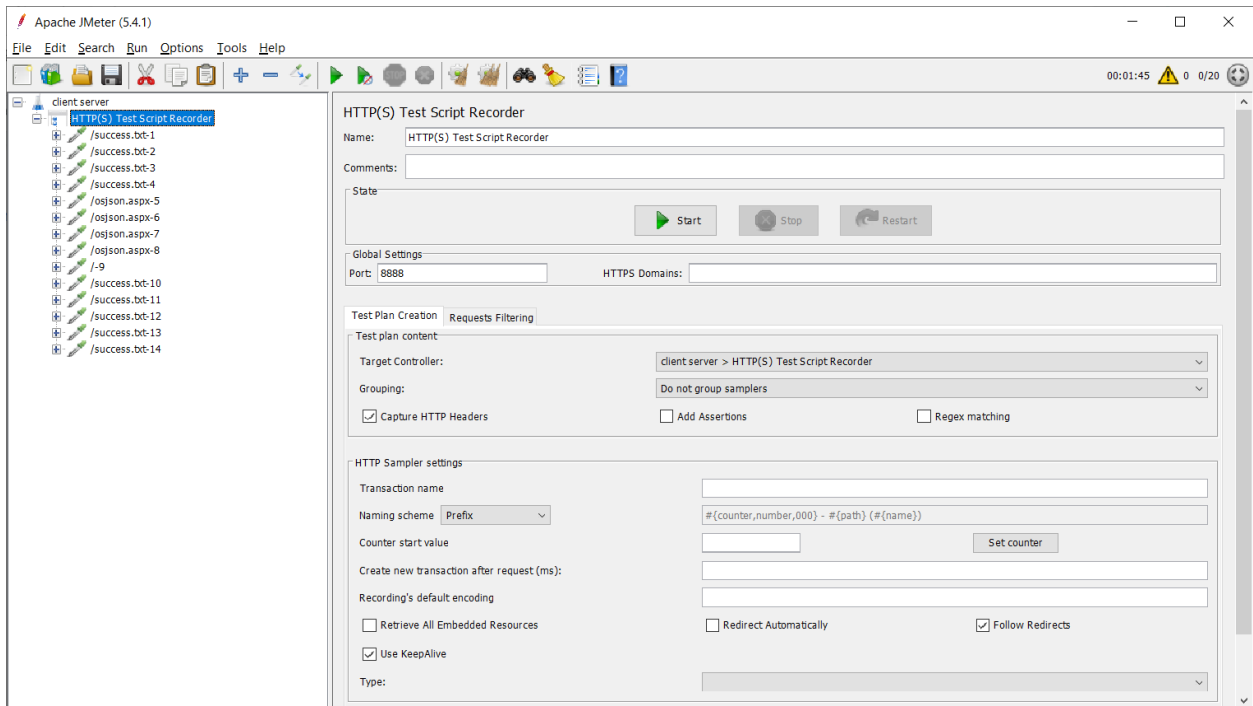
## 7. Record HTTP and HTTPS Scripts:

Jmeter by default works on localhost:8888.

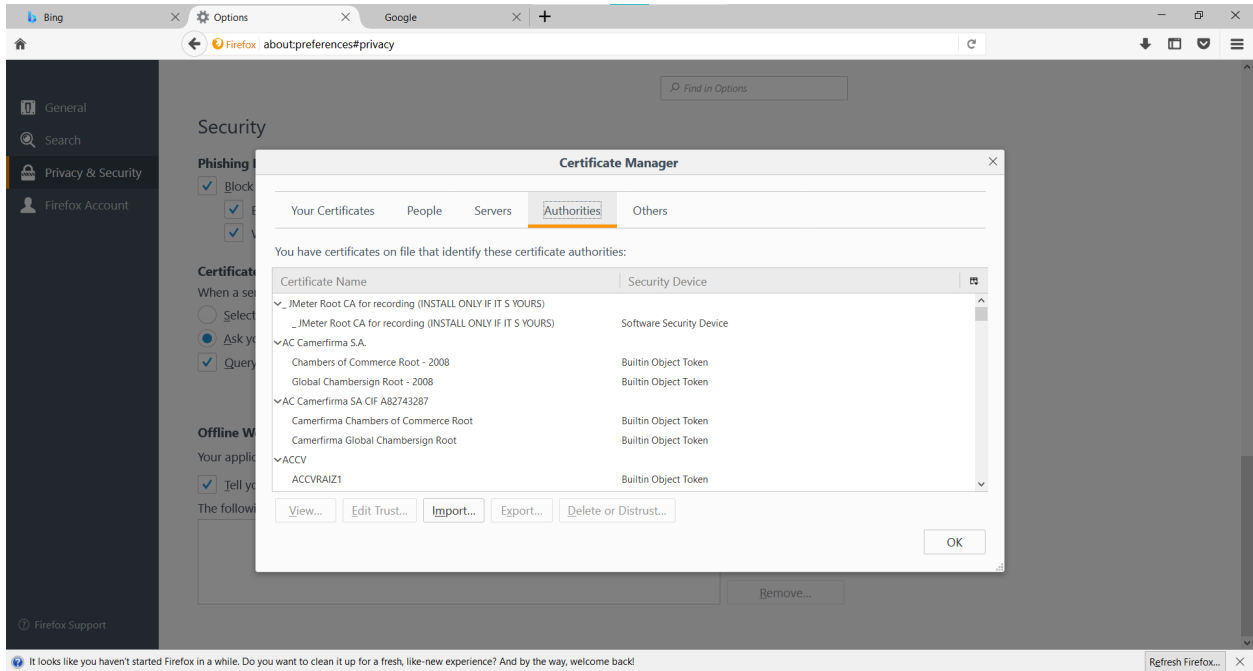
Configuring internet settings:



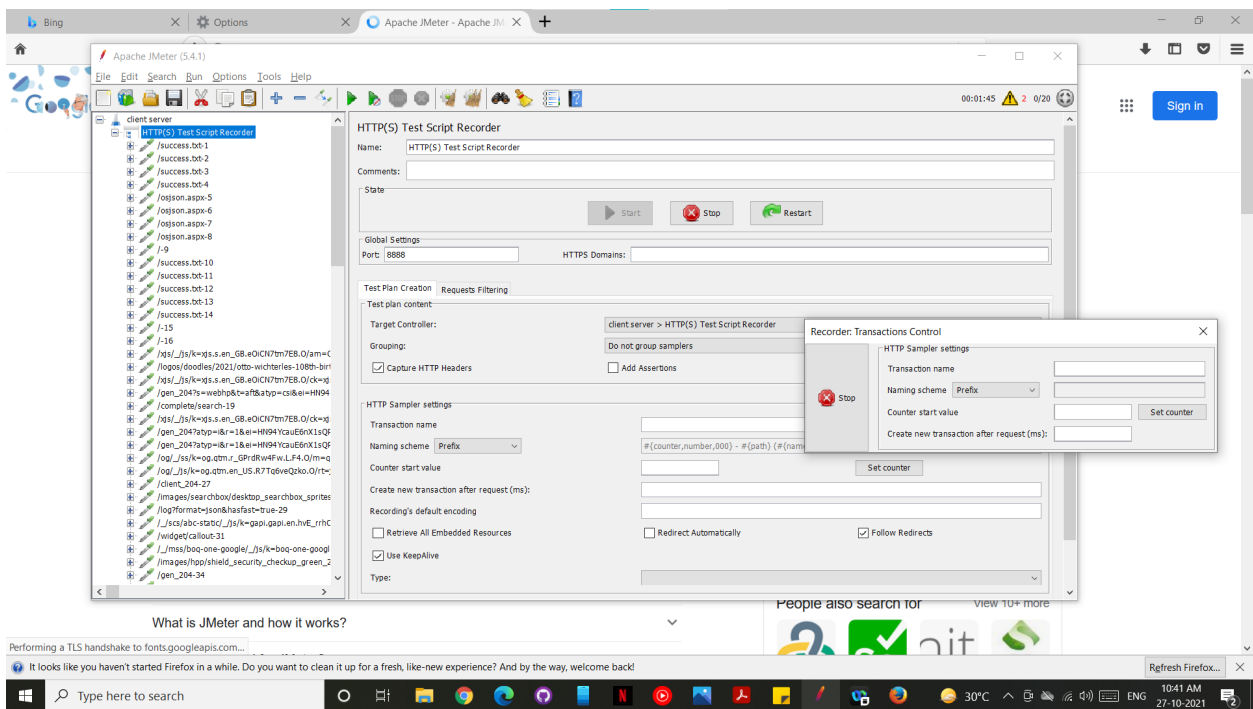
Add test script recorder:  
For site classic.crmpro.com:



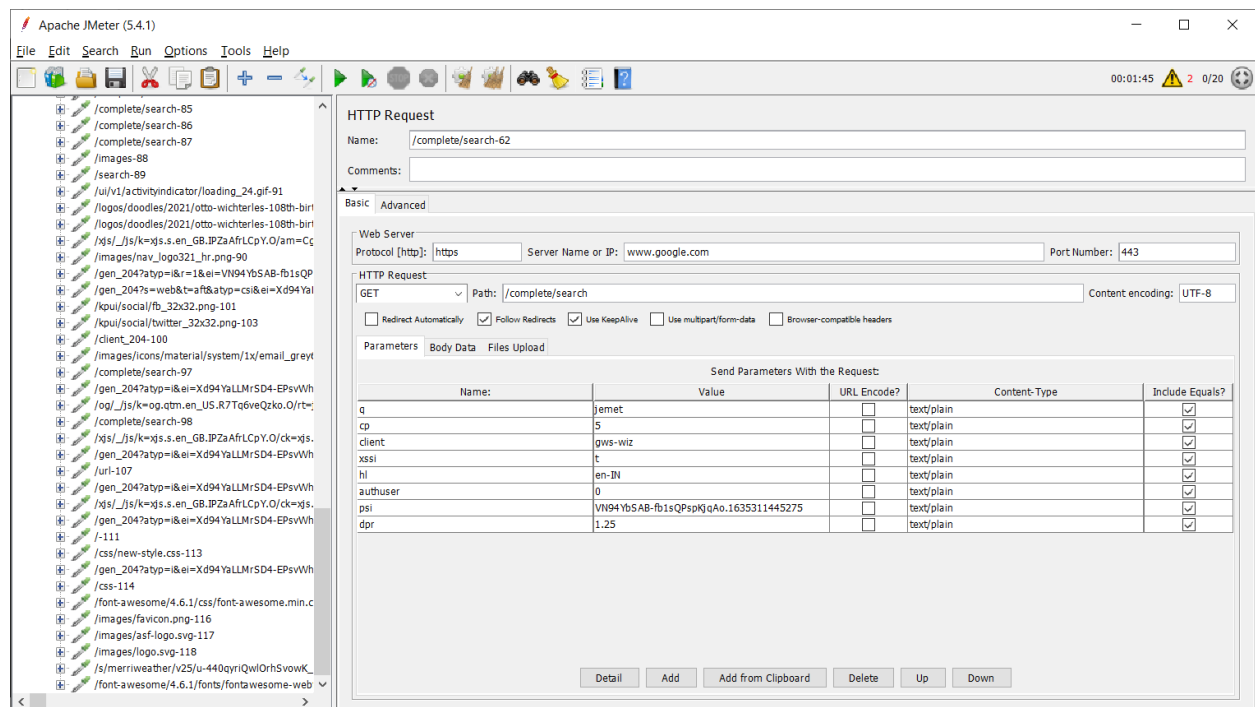
For HTTPS site:





For google.com:







Test plans saved:

 client server.jmx	27-10-2021 10:43 AM	JMX File	469 KB
 nirma test plan.jmx	27-10-2021 09:45 AM	JMX File	9 KB

## Conclusion:

Jmeter is easy to use without extensive knowledge of programming. It has a user-friendly UI and one can also use CLI. Provides integration with Jenkins and reporting, easy installation on any operating system, jey features like the Thread Group, helps to see whether software performance is good. Test IDE allows test recording from browsers or native applications. Allows API testing, Database Testing, and MQ testing with ease. When there's a high number of TPS, one can achieve more transactions per second given the hyper-limitations.