

IT314: Software Engineering

Non-Functional Testing



Group: 15 Conference Management System

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1) Security

Authentication: Our Conference management system(CMS) has a secure authentication process to ensure only authorized users can register in conferences.

Encryption: All the sensitive data such as user's password is encrypted while storing into MongoDB Database using the inbuilt encryption library of javascript called 'bcrypt'.

2) Reliability

Upto 100 authorized users our website ensures that more than 99% users can access our system without any failure. However, the website's ability to handle traffic and maintain high availability may depend on various factors, including the website's infrastructure, server capacity, network load, and the users' internet connectivity etc.

3) Availability

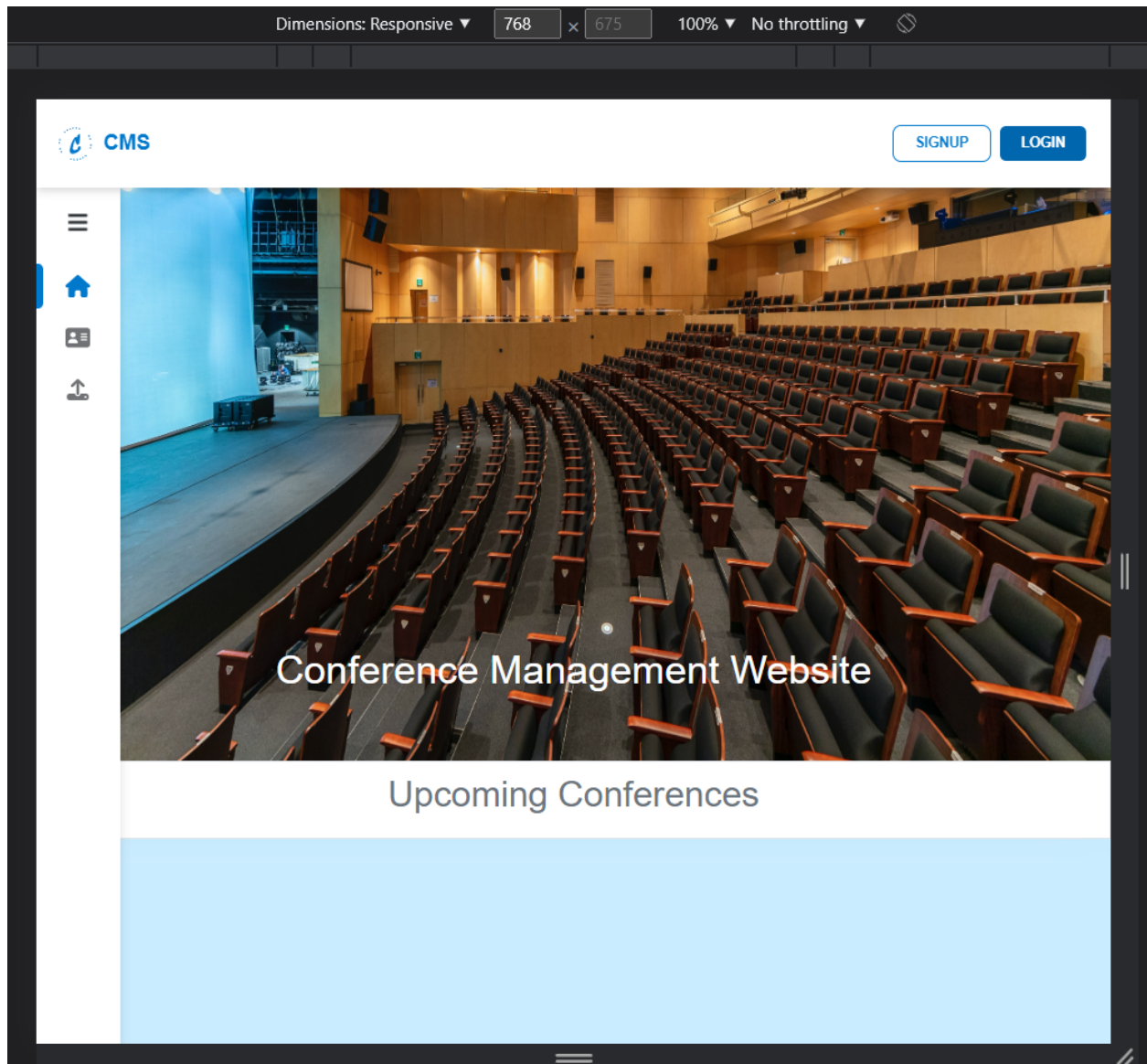
Our system is 24x7 available for any user from anywhere. Our server serves any request in less than 5 seconds in idle case.

4) Flexibility

Our system is able to accommodate any future changes as per requirement of organizations and users of our websites. CMS is flexible and easy to use for any user or organization

5) Responsiveness

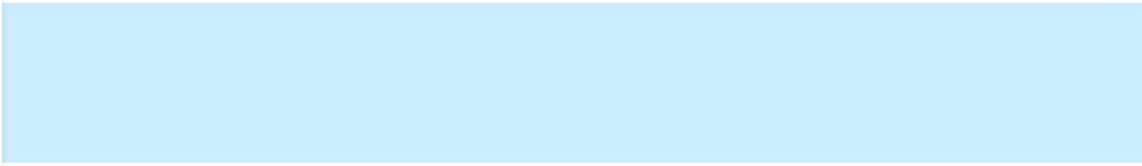
We try to make our system as responsive as we can., Such that any users can interact with the system easily using any device.





Conference Management Website

Upcoming Conferences



Organizations

6) Performance Testing (Load Testing)

Tool used for load testing : *Apache Jmeter*

Running Tests on (web pages) our *deployed* website

1) Home Page

The screenshot shows the 'HTTP Request' configuration in Apache JMeter. The 'Name' field is set to 'Home Page'. The 'Basic' tab is selected, showing the 'Web Server' section with 'Protocol [http]:' set to 'http', 'Server Name or IP:' set to 'it-314-project-g15.vercel.app', and 'Port Number:' empty. The 'HTTP Request' section shows 'Method' set to 'GET' and 'Path' set to '/'. Below this, there are checkboxes for 'Redirect Automatically' (unchecked), 'Follow Redirects' (checked), 'Use KeepAlive' (checked), 'Use multipart/form-data' (unchecked), and 'Browser-compatible headers' (unchecked). The 'Parameters' tab is also visible, showing a table for 'Send Parameters With the Request:'.

Name:	Value	URL Encode?	Content-Type	Include Equals?
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2) Organization's conferences

The screenshot shows the 'HTTP Request' configuration in Apache JMeter for the 'Organization's conferences' test. The 'Name' field is set to 'organization's conferences'. The 'Basic' tab is selected, showing the 'Web Server' section with 'Protocol [http]:' set to 'http', 'Server Name or IP:' set to 'it-314-project-g15.vercel.app', and 'Port Number:' empty. The 'HTTP Request' section shows 'Method' set to 'GET' and 'Path' set to '/conferences'. Below this, there are checkboxes for 'Redirect Automatically' (unchecked), 'Follow Redirects' (checked), 'Use KeepAlive' (checked), 'Use multipart/form-data' (unchecked), and 'Browser-compatible headers' (unchecked). The 'Parameters' tab is also visible, showing a table for 'Send Parameters With the Request:'.

Name:	Value	URL Encode?	Content-Type	Include Equals?
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3) User Profile Page

HTTP Request

Name:

Comments:

Basic Advanced

Web Server

Protocol [http]: Server Name or IP: Port Number:

HTTP Request

GET Path: Content encoding:

☐ Redirect Automatically ☒ Follow Redirects ☒ Use KeepAlive ☐ Use multipart/form-data ☐ Browser-compatible headers

Parameters Body Data Files Upload

File Path	Parameter Name	MIME Type
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Test 1

- Test Parameter

Thread Group

Name:

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):

Ramp-up period (seconds):

Loop Count: ☐ Infinite

☒ Same user on each iteration

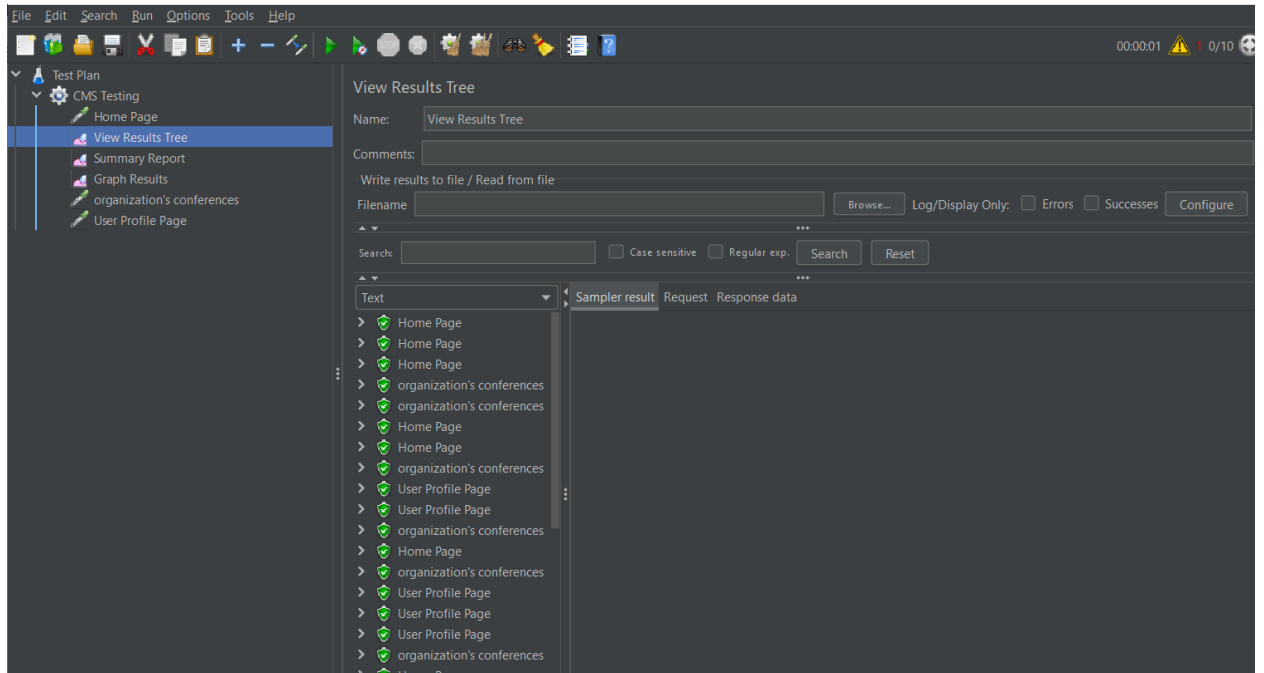
☐ Delay Thread creation until needed

☐ Specify Thread lifetime

Duration (seconds):

Startup delay (seconds):

- Result Obtained



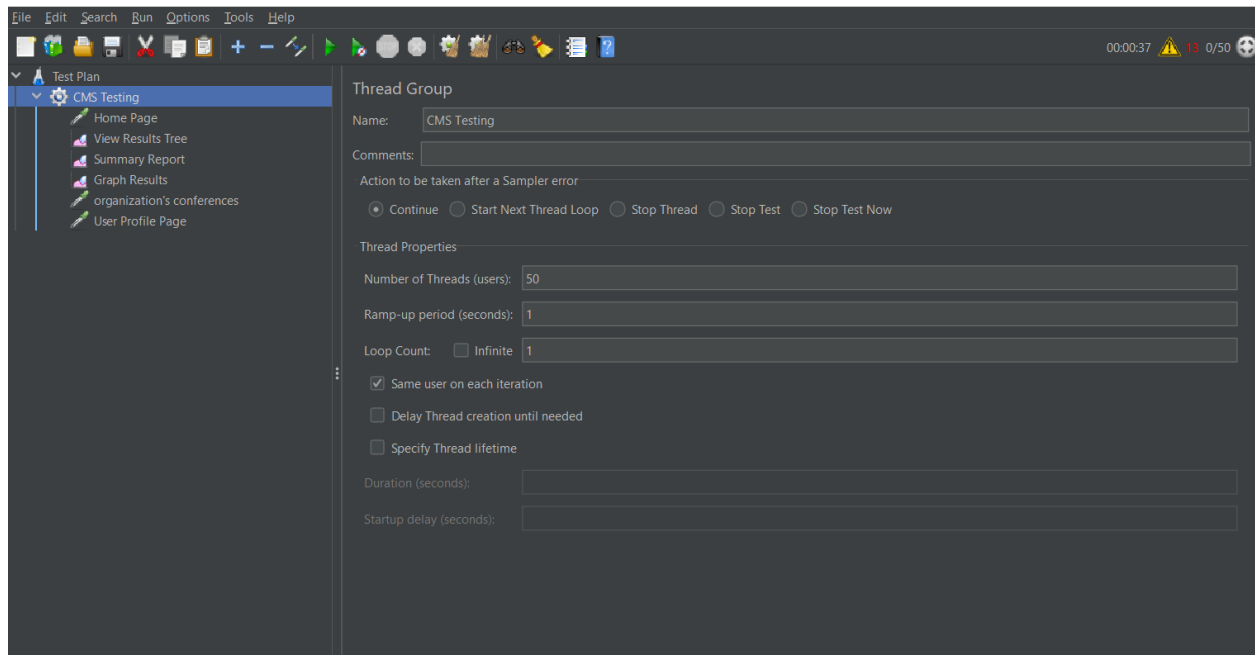
The screenshot shows the 'Summary Report' window in JMeter. The left sidebar is the same as the previous screenshot, but 'Summary Report' is now selected. The main area displays a table with performance metrics for the test components. The table has the following columns: Label, # Samples, Average, Min, Max, Std. Dev., Error %, Throughput, Received K..., Sent KB/sec, and Avg. Bytes.

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received K...	Sent KB/sec	Avg. Bytes
Home Page	10	222	160	372	66.26	0.00%	8.9/sec	12.33	2.30	1417.0
organizatio...	10	123	88	246	48.08	0.00%	10.0/sec	14.20	2.80	1450.0
User Profile ...	10	119	85	240	45.19	0.00%	10.1/sec	14.17	3.20	1438.0
TOTAL	30	155	85	372	71.97	0.00%	20.3/sec	28.44	5.78	1435.0

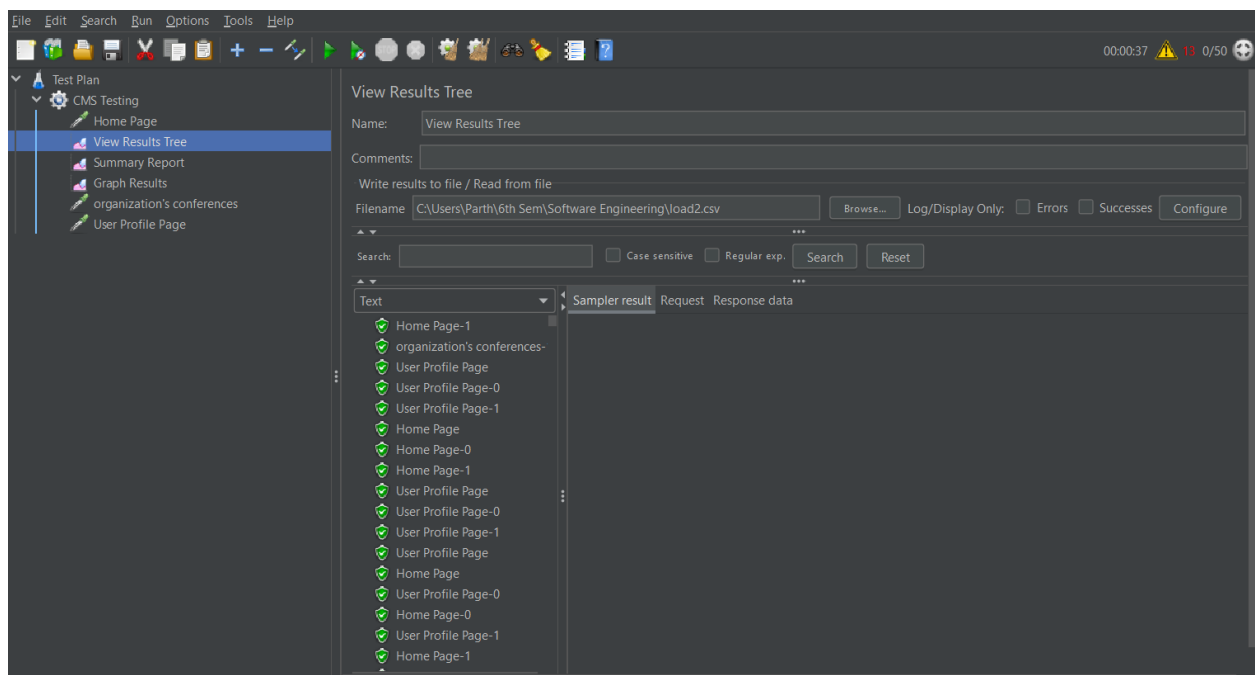
At the bottom of the window, there are checkboxes for 'Include group name in label?' (unchecked), 'Save Table Data' (checked), and 'Save Table Header' (checked).

Test 2

- Test Parameter



- Result Obtained



File Edit Search Run Options Tools Help

00:00:37 13 0/50

Test Plan

- CMS Testing
 - Home Page
 - View Results Tree
 - Summary Report
 - Graph Results
 - organization's conferences
 - User Profile Page

Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

Filename: C:\Users\Parth\6th Sem\Software Engineering\load2.csv Browse... Log/Display Only: ☐ Errors ☐ Successes Configure

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received K...	Sent KB/sec	Avg. Bytes
Home Page	50	298	196	384	41.52	0.00%	41.4/sec	57.25	10.67	1416.3
organization...	50	2331	114	36202	8553.09	0.00%	1.3/sec	1.91	0.38	1449.4
User Profile ...	50	5922	99	36232	13214.42	0.00%	1.3/sec	1.89	0.43	1437.5
TOTAL	150	2850	99	36232	9380.78	0.00%	4.0/sec	5.59	1.14	1434.4

☐ Include group name in label? Save Table Data ☒ Save Table Header

Test 3

• Test Parameter

File Edit Search Run Options Tools Help

00:01:13 1 0/100

Test Plan

- CMS Testing
 - Home Page
 - View Results Tree
 - Summary Report
 - Graph Results
 - organization's conferences
 - User Profile Page

Thread Group

Name: CMS Testing

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): 100

Ramp-up period (seconds): 1

Loop Count: ☐ Infinite 1

☒ Same user on each iteration

☐ Delay Thread creation until needed

☐ Specify Thread lifetime

Duration (seconds):

Startup delay (seconds):

● Result Obtained

The screenshot shows the 'View Results Tree' window in JMeter. The left sidebar lists the test plan components: Test Plan, CMS Testing, Home Page, View Results Tree (selected), Summary Report, Graph Results, organization's conferences, and User Profile Page. The main area displays the 'View Results Tree' results. The 'Text' tab is selected, showing a list of test results. The 'Sampler result' tab is also visible, showing the request and response data. The results list includes multiple entries for 'organization's conferences' and 'Home Page', all marked with green checkmarks indicating successful execution.

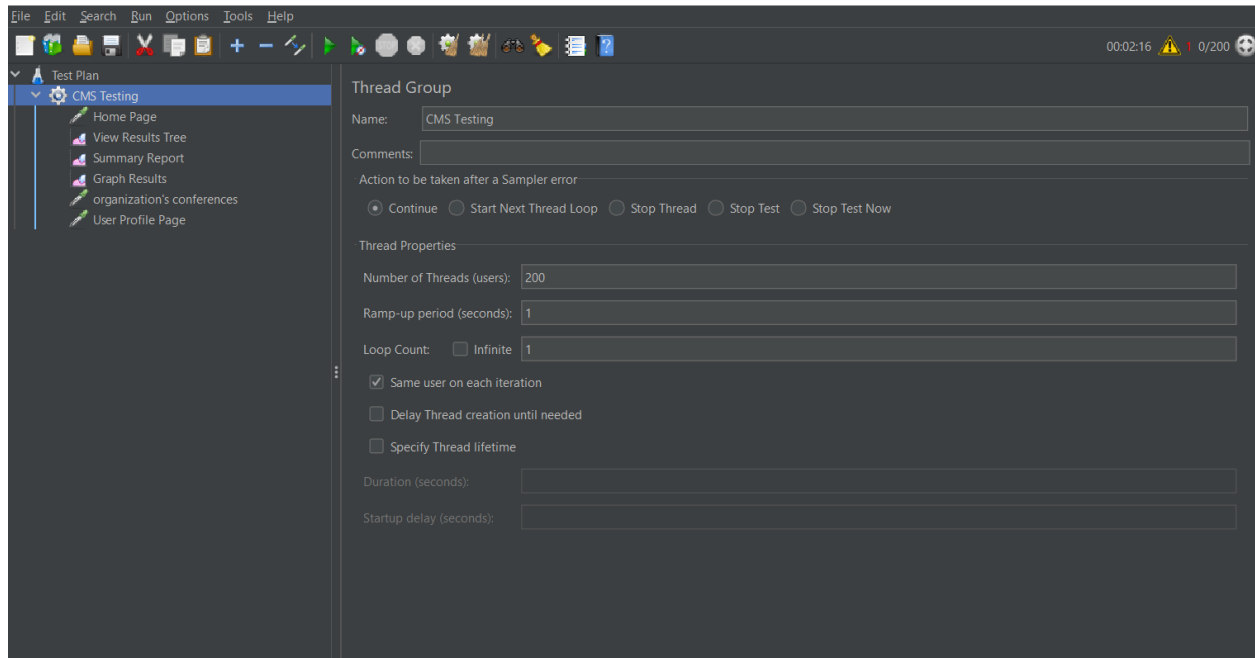
Text
> organization's conferences
> organization's conferences
> Home Page
> Home Page
> organization's conferences
> Home Page
> organization's conferences
> organization's conferences
> organization's conferences
> organization's conferences
> Home Page
> Home Page
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> organization's conferences

The screenshot shows the 'Summary Report' window in JMeter. The left sidebar lists the test plan components: Test Plan, CMS Testing, Home Page, View Results Tree, Summary Report (selected), Graph Results, organization's conferences, and User Profile Page. The main area displays the 'Summary Report' results. The 'Text' tab is selected, showing a table of test results. The 'Sampler result' tab is also visible, showing the request and response data. The results table includes columns for Label, # Samples, Average, Min, Max, Std. Dev., Error %, Throughput, Received K..., Sent KB/sec, and Avg. Bytes. The table shows data for 'Home Page', 'organization's conferences', 'User Profile ...', and a 'TOTAL' row.

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received K...	Sent KB/sec	Avg. Bytes
Home Page	100	28281	162	72697	27511.81	3.00%	1.4/sec	1.94	0.34	1460.6
organization's conferences	100	13198	105	36405	17072.17	0.00%	1.4/sec	1.93	0.38	1449.2
User Profile ...	100	13937	68	36719	17542.60	0.00%	1.4/sec	1.91	0.43	1437.0
TOTAL	300	18472	68	72697	22365.93	1.00%	4.1/sec	5.74	1.14	1449.0

Test 4

- Test Parameter



- Result Obtained

The screenshot shows the 'Summary Report' window in JMeter. The 'Name' field is set to 'Summary Report'. The 'Comments' field is empty. The 'Write results to file / Read from file' section has 'Filename' set to 'C:\Users\Parth\6th Sem\Software Engineering\load4.csv' and 'Log/Display Only' checked. The 'Table' section displays the following data:

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received K...	Sent KB/sec	Avg. Bytes
Home Page	200	36250	671	78359	24837.03	48.50%	2.5/sec	5.66	0.39	2287.6
organizatio...	200	37830	208	66409	16487.04	61.50%	1.5/sec	3.53	0.18	2446.8
User Profile ...	200	40533	120	66426	17683.06	49.50%	2.0/sec	4.54	0.38	2326.5
TOTAL	600	38205	120	78359	20089.57	53.17%	4.4/sec	10.08	0.69	2353.6

The 'Include group name in label?' checkbox is unchecked. The 'Save Table Data' checkbox is checked. The 'Save Table Header' checkbox is checked.

