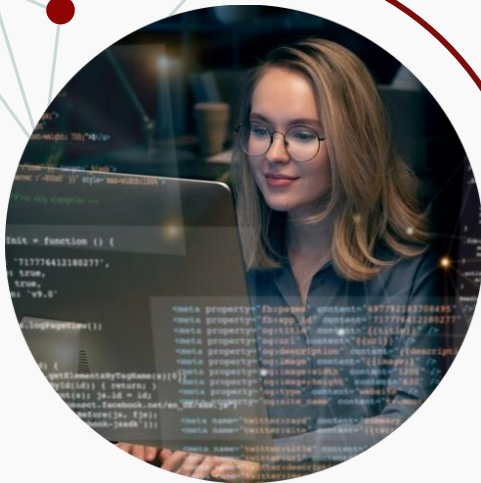


End-to-End Testing Strategy for Trello Web App: Manual, API, Performance, and Automation Testing Approach



Our Team

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01.

Objective and Description

Objective: Create an automated testing with Selenium for end-to-end testing of Trello web application.

Description: Develop an automated testing suite using Selenium to test the functionality of Trello web application. Implement test cases for UI, functionality, and performance testing.
Generate reports and analyze test results.



02.

Technologies have been used

ISTQB 4

Jira

Postman

Automated Testing with Selenium

Test Case Development

Performance Testing with JMeter



03.

Samples Of test cases

UI responsive design, cross-browser compatibility:

SWATFTWA-TC-51	1	UI Responsiveness (Mobile)
SWATFTWA-TC-50	1	UI Responsiveness (Tablet)
SWATFTWA-TC-49	1	UI Responsiveness (Desktop)
SWATFTWA-TC-48	1	Browser Compatibility (Microsoft Edge)
SWATFTWA-TC-47	1	Browser Compatibility (Mozilla Firefox)
SWATFTWA-TC-37	1	Browser Compatibility (Google Chrome)

Login functionality:




SWATFTWA-TC-31	1	Successful Login
SWATFTWA-TC-32	1	Unsuccessful Login with Invalid Email
SWATFTWA-TC-33	1	Unsuccessful Login with Invalid Password
SWATFTWA-TC-34	1	Login with Empty Fields
SWATFTWA-TC-35	1	Password Recovery Link
SWATFTWA-TC-36	1	Login with Remember Me Option

UI functionality (Boards):

SWATFTWA-TC-2	1	Create a New Board
SWATFTWA-TC-5	1	Delete a Board
SWATFTWA-TC-7	1	Share a Board with a User
SWATFTWA-TC-8	1	Change Board Background
SWATFTWA-TC-3	1	Rename an Existing Board
SWATFTWA-TC-9	1	Create a Board Template
SWATFTWA-TC-10	1	Convert a Board Template into a Board
SWATFTWA-TC-11	1	Change Board Visibility
SWATFTWA-TC-17	1	Create a Board Without a Name
SWATFTWA-TC-18	1	Create a Board with Invalid Characters
SWATFTWA-TC-20	1	Delete a Board Without Confirmation




03.1

Samples Of test cases

SWATFTWA-TC-6	1	Add a Valid List
SWATFTWA-TC-40	1	Add Multiple Lists Sequentially
SWATFTWA-TC-38	1	Add a List with Empty Name
SWATFTWA-TC-58	1	   Change name of a List
SWATFTWA-TC-39	1	Add a List with Duplicate Name
SWATFTWA-TC-14	1	Drag and Drop to Reorder Lists
SWATFTWA-TC-42	1	Reorder Lists with Refresh
SWATFTWA-TC-41	1	Reorder Lists via Context Menu
SWATFTWA-TC-43	1	Archive a List
SWATFTWA-TC-46	1	Verify Archived List is Not Visible on Board
SWATFTWA-TC-45	1	Restore an Archived List
SWATFTWA-TC-44	1	Delete a List on the board

UI functionality (Lists):

UI functionality (Cards):

SWATFTWA-TC-29	1	Invalid Card Creation
SWATFTWA-TC-21	1	Verify "Open card" button functionality
SWATFTWA-TC-28	1	Verify "Archive" functionality
SWATFTWA-TC-24	1	   Verify "Change cover" functionality
SWATFTWA-TC-22	1	Verify "Change members" functionality
SWATFTWA-TC-27	1	Verify "Copy" functionality
SWATFTWA-TC-25	1	Verify "Edit dates" functionality
SWATFTWA-TC-13	1	Verify card title display
SWATFTWA-TC-19	1	Verify that the "Edit labels" option allows users to add, edit, and remove labels from the card

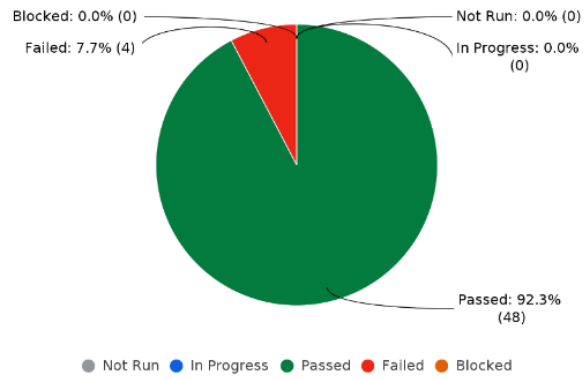
04.

tracking test cases and bugs

Cycle Statistics

Statistic	Value	Explanation
Total Cases	52	Cases associated with the Cycle
Incomplete Cases	0 (0.0%)	Cases in status marked as execution not completed Not Run : 0 In Progress : 0 Blocked : 0
Cases in Passed type	48 (92.3%)	Cases in status having PASSED type Passed : 48
Cases in Failed type	4 (7.7%)	Cases in status having FAILED type Failed : 4
Estimated Effort	2h	Estimated Effort
Actual Effort	0m	Actual Effort. (Includes effort logged for all Runs.)
All Defects	4 (Open: 4)	All Defects associated with the Cycle. (Includes defects from all Runs.)
Latest Run Defects	4 (Open: 4)	Defects associated with the Cycle at present. (Includes only the defects associated with Latest Run.)

Execution Distribution

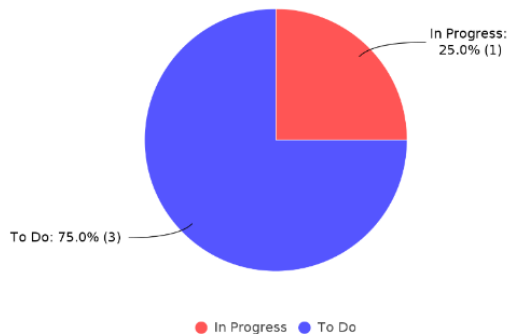


04.1

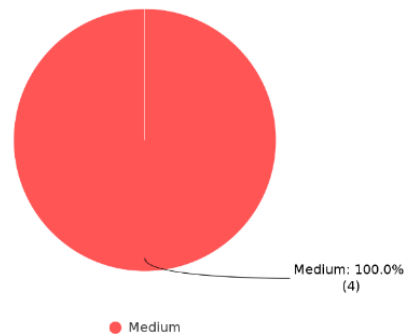
Tracking test cases and bugs

Defect Summary:

Status Distribution



Priority Distribution



Key	Summary	Issue Type	Priority	Status	Resolution	Assignee	Reporter
SWATFTWA-30	Failed : Add a List with Duplicate Name	Bug	Medium	In Progress	-	Shurooq Ataallah	Shurooq Ataallah
SWATFTWA-31	Failed : Add a List with Empty Name	Bug	Medium	To Do	-	Shurooq Ataallah	Shurooq Ataallah
SWATFTWA-33	Failed : Invalid Card Creation	Bug	Medium	To Do	-	samar Ahmed	samar Ahmed
SWATFTWA-34	Failed : Create a Board with Invalid Characters	Bug	Medium	To Do	-	samar Ahmed	samar Ahmed



05.

Automated test scripts



Let's Share with you Selenium screen.





06.

Detailed test report with test results using TestNG

Join us in watching this video collectively.

07.

Basic test cases to verify API responses with Postman

The screenshot displays the Postman application interface. On the left, the 'My Workspace' sidebar shows a tree view of API collections, with 'Boards' API expanded to show 'Get a single board' selected. The main workspace shows a REST client request for 'GET https://api.trello.com/1/boards/6712a1db150cfc3bc014cebd?key={{key}}&token={{token}}'. The 'Scripts' tab is active, showing pre-request and post-response scripts. The post-response script contains two test cases: 'Status code is 200' and 'Response time is less than 500ms'. The 'Test Results' tab at the bottom shows both tests passing. The status bar indicates a 200 OK response with a 352 ms response time and 3.68 KB body size.

GET `https://api.trello.com/1/boards/6712a1db150cfc3bc014cebd?key={{key}}&token={{token}}` **Send**

Params • Authorization Headers (7) Body **Scripts** Settings Cookies

Pre-request

```
1 pm.test("Status code is 200", function () {
2   pm.response.to.have.status(200);
3 });
```

Post-response •

```
4 pm.test("Response time is less than 500ms", function () {
5   pm.expect(pm.response.responseTime).to.be.below(500);
6 });
```

Body Cookies (1) Headers (44) **Test Results (2/2)** 200 OK • 352 ms • 3.68 KB Save Response

All Passed Skipped Failed

PASS Status code is 200

PASS Response time is less than 500ms

Activate Windows
Go to Settings to activate Windows.

07.

Basic test cases to verify API responses with Postman

The screenshot displays the Postman API client interface. The top navigation bar includes a search bar, an 'Invite' button, and a 'Upgrade' button. The main workspace is titled 'My Workspace' and shows a collection of API requests under 'Boards' API. The selected request is 'GET Get All Boards', which is a GET request to the URL 'https://api.trello.com/1/members/me/boards?key={{key}}&token={{token}}'. The request is configured with a 'Pre-request' script that checks the status code is 200. The response is displayed in the 'Body' tab, showing a 200 OK status with a response time of 760 ms and a body of JSON data. The JSON data includes board information such as 'id', 'nodeId', 'name', 'desc', 'descData', 'closed', 'dateClosed', 'idOrganization', 'idEnterprise', 'limits', 'attachments', and 'perBoard'.

GET Get All Boards

GET https://api.trello.com/1/members/me/boards?key={{key}}&token={{token}}

Params Authorization Headers (7) Body Scripts Settings

Pre-request

```
1 pm.test("Status code is 200", function () {
2   pm.response.to.have.status(200);
3 });
4
```

Post-response

Body Cookies (1) Headers (47) Test Results (1/1)

200 OK 760 ms 14.78 KB

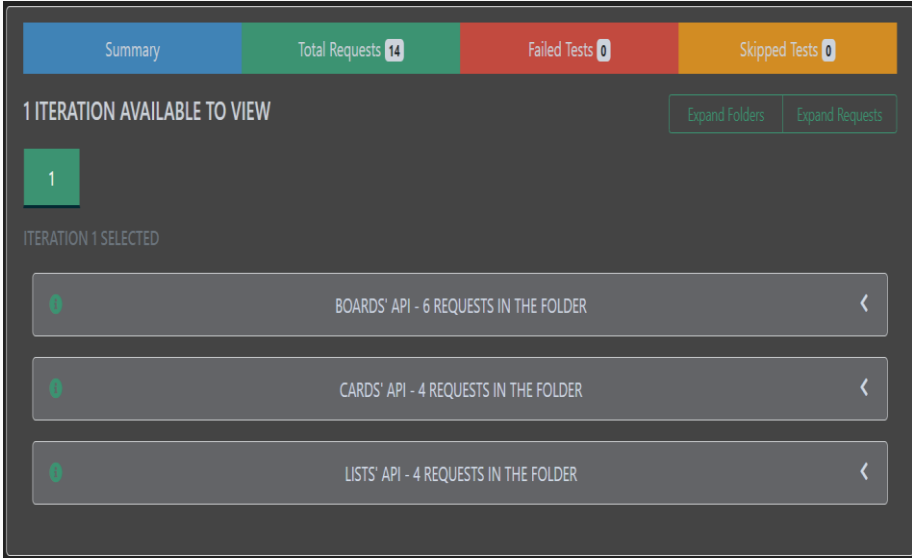
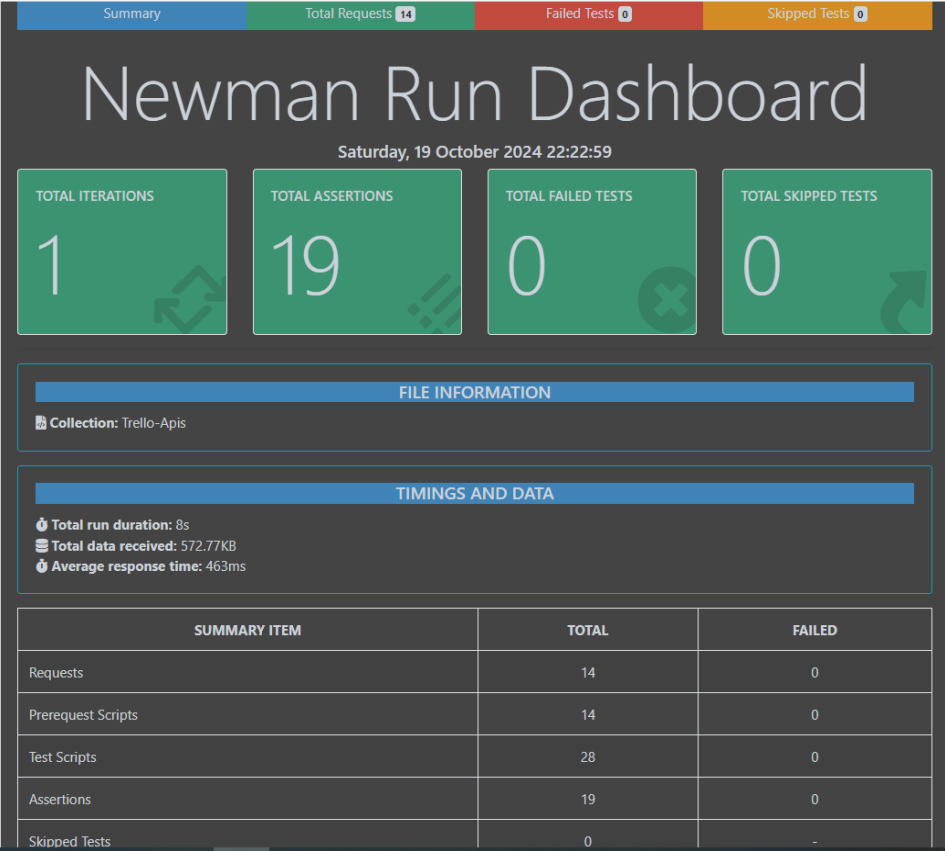
Save Response

Pretty Raw Preview Visualize JSON

```
586 {
587   {
588     "id": "6714081482cec83c0f6fa78d",
589     "nodeId": "ari:cloud:trello::board/workspace/670d7abc274c1c099666c926/6714081482cec83c0f6fa78d",
590     "name": "DEPI",
591     "desc": "",
592     "descData": null,
593     "closed": false,
594     "dateClosed": null,
595     "idOrganization": "670d7abc274c1c099666c926",
596     "idEnterprise": null,
597     "limits": {
598       "attachments": {
599         "perBoard": {
600           "status": "ok",
601           "disableAt": 36000,
602           "warnAt": 28000
603         },
604         "perCard": {
605           "status": "ok",
606           "disableAt": 1000,
607           "warnAt": 800
```

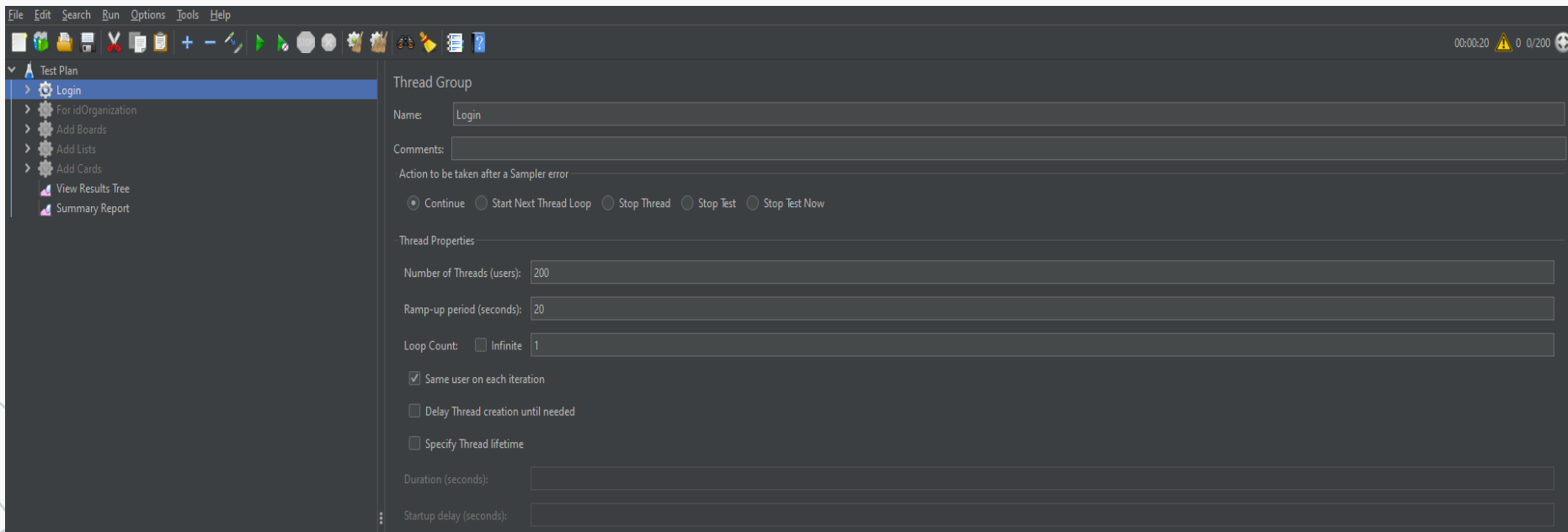
07.1

FINAL HTML REPORT FOR API'S WITH NEWMAN



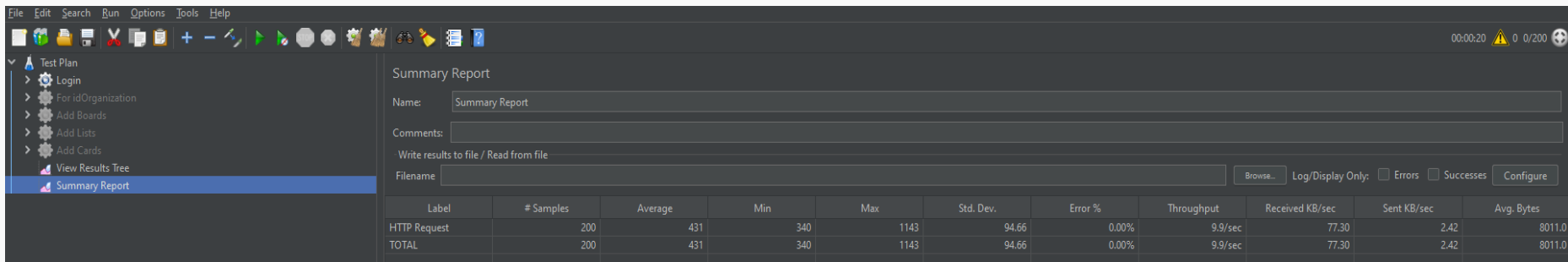
08.

Performance test (Login) executed, and results analyzed for Load Performance



08.1

Performance test (Login) executed, and results analyzed for Load Performance

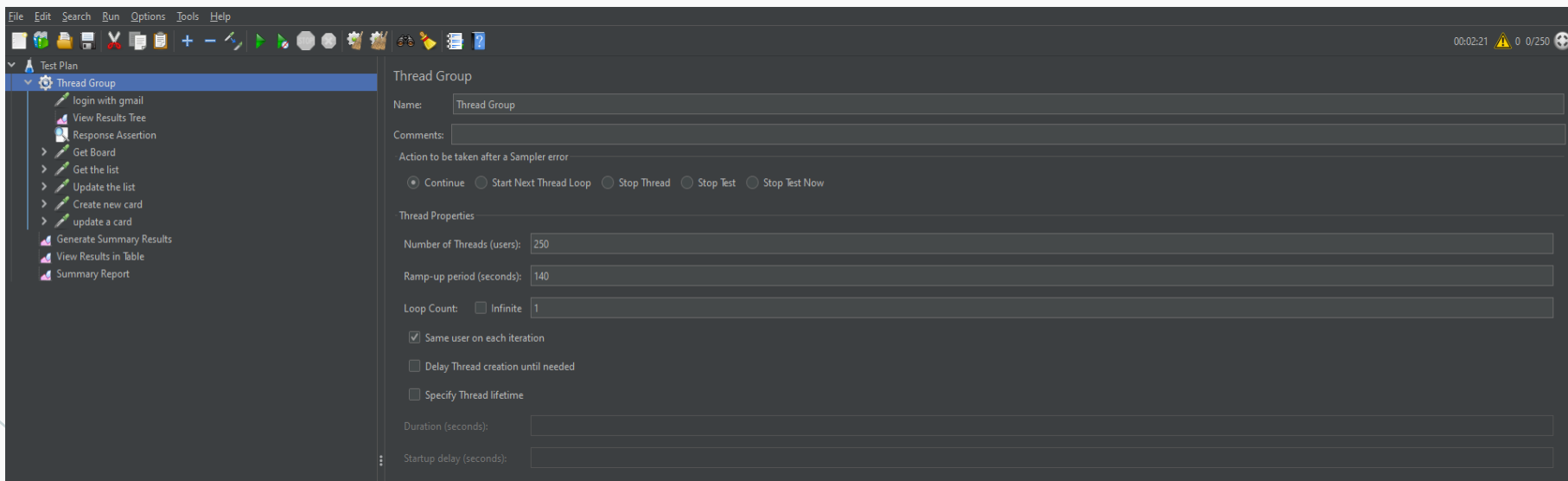


The screenshot shows the JMeter Summary Report window. The left sidebar lists the test plan hierarchy: Test Plan, Login, For idOrganization, Add Boards, Add Lists, Add Cards, View Results Tree, and Summary Report (selected). The main area displays the summary report for the 'Login' test plan. The report includes fields for Name, Comments, and a checkbox for 'Write results to file / Read from file'. Below these fields is a table with performance metrics.

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/sec	Sent KB/sec	Avg. Bytes
HTTP Request	200	431	340	1143	94.66	0.00%	9.9/sec	77.30	2.42	8011.0
TOTAL	200	431	340	1143	94.66	0.00%	9.9/sec	77.30	2.42	8011.0

08.2

Performance test (Login) executed, and results analyzed for Stress Performance



08.3

Performance test (Login) executed, and results analyzed for Stress Performance

File Edit Search Run Options Tools Help

00:02:21 0 0/250

Test Plan

- Thread Group
 - login with gmail
 - View Results Tree
 - Response Assertion
 - Get Board
 - Get the list
 - Update the list
 - Create new card
 - update a card
 - Generate Summary Results
 - View Results in Table
 - Summary Report

Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

Filename: C:\Users\Areeg\Desktop\jmetertrport\summary Browse... Log/Display Only. Errors Successes Configure

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/sec	Sent KB/sec	Avg. Bytes
Thread Group:login ...	250	419	322	1054	85.09	5.60%	1.8/sec	6.99	0.44	4001.6
Thread Group:Get Bo...	250	468	319	850	82.48	5.20%	1.8/sec	37.21	0.66	21226.3
Thread Group:Get th...	250	297	208	676	52.05	6.00%	1.8/sec	4.32	0.68	2461.6
Thread Group:Updat...	250	296	207	725	59.12	6.00%	1.8/sec	3.98	0.63	2270.0
Thread Group:Create ...	250	524	207	1516	135.20	6.80%	1.8/sec	5.67	1.02	3238.7
Thread Group:update...	250	328	208	977	73.59	7.60%	1.8/sec	5.66	1.05	3226.7
TOTAL	1500	388	207	1516	122.46	6.20%	10.6/sec	62.71	4.40	6070.8

08.3

Performance test (Login) executed, and results analyzed for Stress Performance

File Edit Search Run Options Tools Help

00:02:21 0 0/250

Test Plan

- Thread Group
 - login with gmail
 - View Results Tree
 - Response Assertion
 - Get Board
 - Get the list
 - Update the list
 - Create new card
 - update a card
 - Generate Summary Results
 - View Results in Table
 - Summary Report

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: C:\Users\Areeg\Desktop\jmeterport\summary Browse... Log/Display Only: ☐ Errors ☐ Successes Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1467	14:34:33.622	Thread Group 1-246	Get Board	399	✓	22299	374	395	110
1468	14:34:33.621	Thread Group 1-244	Create new card	460	✓	3364	580	460	0
1469	14:34:33.860	Thread Group 1-245	Update the list	271	✓	2317	361	271	0
1470	14:34:33.699	Thread Group 1-247	login with gmail	492	✓	4139	251	492	96
1471	14:34:34.021	Thread Group 1-246	Get the list	269	✓	2511	387	269	0
1472	14:34:34.082	Thread Group 1-244	update a card	281	✓	3366	600	281	0
1473	14:34:34.319	Thread Group 1-246	Update the list	272	✓	2317	361	272	0
1474	14:34:34.192	Thread Group 1-247	Get Board	399	✓	22298	374	394	103
1475	14:34:34.259	Thread Group 1-248	login with gmail	363	✓	4139	251	363	107
1476	14:34:34.132	Thread Group 1-245	Create new card	608	✓	3364	580	608	0
1477	14:34:34.592	Thread Group 1-247	Get the list	278	✓	2511	387	278	0
1478	14:34:34.623	Thread Group 1-248	Get Board	411	✓	22299	374	404	109
1479	14:34:34.762	Thread Group 1-245	update a card	279	✓	3366	600	279	0
1480	14:34:34.592	Thread Group 1-246	Create new card	469	✓	3363	580	469	0
1481	14:34:34.870	Thread Group 1-247	Update the list	284	✓	2317	361	284	0
1482	14:34:34.820	Thread Group 1-249	login with gmail	365	✓	4139	251	365	117
1483	14:34:35.034	Thread Group 1-248	Get the list	337	✓	2511	387	337	0
1484	14:34:35.061	Thread Group 1-246	update a card	363	✓	3366	600	363	0
1485	14:34:35.154	Thread Group 1-247	Create new card	487	✓	3363	580	487	0
1486	14:34:35.372	Thread Group 1-248	Update the list	307	✓	2317	361	307	0
1487	14:34:35.187	Thread Group 1-249	Get Board	556	✓	22298	374	499	189
1488	14:34:35.380	Thread Group 1-250	login with gmail	480	✓	4139	251	480	104
1489	14:34:35.642	Thread Group 1-247	update a card	360	✓	3366	600	360	0
1490	14:34:35.786	Thread Group 1-249	Get the list	277	✓	2511	387	277	0
1491	14:34:35.679	Thread Group 1-248	Create new card	483	✓	3363	580	482	0
1492	14:34:36.064	Thread Group 1-249	Update the list	286	✓	2317	361	286	0
1493	14:34:35.861	Thread Group 1-250	Get Board	529	✓	22298	374	521	208
1494	14:34:36.162	Thread Group 1-248	update a card	278	✓	3366	600	278	0
1495	14:34:36.390	Thread Group 1-250	Get the list	370	✓	2511	387	370	0
1496	14:34:36.351	Thread Group 1-249	Create new card	509	✓	3363	580	509	0
1497	14:34:36.793	Thread Group 1-250	Update the list	278	✓	2317	361	278	0
1498	14:34:36.860	Thread Group 1-249	update a card	302	✓	3366	600	301	0
1499	14:34:37.072	Thread Group 1-250	Create new card	500	✓	3363	580	500	0
1500	14:34:37.571	Thread Group 1-250	update a card	309	✓	3366	600	308	0

☐ Scroll automatically? ☐ Child samples?

No of Samples 1500 Latest Sample 309 Average 383 Deviation 122



THANK YOU!