2DV610 Software Testing

Test Report

Assignment 2

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Table of Contents

1 Project Overview

Project Name	Test mywebserver
Product Description	Open source web server application
Project Description	Conduct testing to the web server application to ensure that the web server is easy to deploy and works on multiple platforms. Manual and Automated tests have been performed and details are presented
Project Type	Test and Verification
Project Duration	Start: 2019- 12- 03 End Date: 2019- 12- 13

2 Test Objective

The main objective is to fulfill the requirements and offer a fully tested web server application that can deploy on various platforms.

Four-members test team will check the functionality of the web server and deliver the results of the testing and one of the testers responsible for the communication and report handling.

❖ Operating Systems used:
- Windows 10
- Mac
- Linux

The system tests are carried in following ways:

❖ Manual Tests

➢ Tools used:
- Apache JMeter

❖ Automated Tests

➢ Tools used:
- Java IDE (Eclipse)
- Java IDE (Intellij)
- Testing Frameworks Junit, Mockito
- Ratproxy

2.1 Manual Tests

2.1.1 Start Server

TUC1.1	Start Server
Requirement 3	The web server must work on Linux, Mac, Windows.
Use Case	UC 1 Start Server
Expected result	"HTTP Server started". This is shown in the terminal window. "It works" is shown on the web page that is constructed
Actual Result	The web server opens a page with the output image "It works" Snipped [pic 1]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.2 Wrong Socket

TUC1.2	Wrong Socket
Requirement 3	The web server must work on Linux, Mac, Windows
Use Case	UC1 Start Server
Expected result	"Enter a valid port 1-65535 and an optional URL" is shown in the terminal window
Actual Result	Same as the expected result Snipped [pic 2]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.3 Taken Socket

TUC1.3	Socket Taken
Requirement 3	The web server must work on Linux, Mac, Windows
Use Case	UC1 Start Server
Expected result	"Port is taken" is shown in the console window.
Actual Result	The expected output is shown in the console Snipped [pic 3]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.4 Server start Access log written

TUC1.4	Access log written
Requirement 5	The access log should be viewable from a text editor.
Use Case	UC1 Start Server
Expected result	Log is created. The access log is viewable in a text-editor.
Actual Result	Neither an access log is written nor an error message is shown Snipped [pic 4]

OS/ Status		
Windows	Mac	Linux
Failed	Failed	Failed

2.1.5 Stopping Server

TUC2.1	Stop server
Requirement 3	The web server must work on Linux, Mac, Windows
Use Case	UC 2 Stop Server
Expected result	"HTTP Server stopped" is shown in the terminal window. The web page does not load
Actual Result	The actual result is same as the expected result Snipped [pic 5]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.6 Server stopped access log written

TUC2.2	Server stopped then access log is written
Requirement 5	The web server must work on Linux, Mac, Windows
Use Case	UC 2 Stop Server
Expected result	"HTTP Server stopped" is shown in the end of the access log file.
Actual Result	Neither an access log is written, nor an error message is shown

OS/ Status		
Windows	Mac	Linux
Failed	Failed	Failed

2.1.7 Status Tests using JMeter

2.1.7.1 HTTP 1.1 Status 200

TUC3.1	HTTP 1.1 Status 200
Requirement 2	The web server must follow minimum requirements for HTTP 1.1
Use Case	UC 3 Request Shared Resource
Expected result	Server responds with status code 200
Actual Result	The server responds with the expected result "Response code: 200 Response message: OK" Snipped [pic 6]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.7.2 HTTP 1.1 Status 400

TUC3.2	HTTP 1.1 Status 400
Requirement 2	The web server must follow minimum requirements for HTTP 1.1
Use Case	UC 3 Request Shared Resource
Expected result	Server responds with status code 400
Actual Result	The server responds with the expected result "Response code: 400 Response message: Bad Request" Snipped [pic 7]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.7.3 HTTP 1.1 Status 403

TUC3.3	HTTP 1.1 Status 403
Requirement 2	The web server must follow minimum requirements for HTTP 1.1
Use Case	UC 3 Request Shared Resource
Expected result	Server responds with status code 403
Actual Result	The server responds with the expected result "Response code: 403 Response message: Forbidden" Snipped [pic 8]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.7.4 HTTP 1.1 Status 404

TUC3.4	HTTP 1.1 Status 404
Requirement 2	The web server must follow minimum requirements for HTTP 1.1
Use Case	UC 3 Request Shared Resource
Expected result	Server responds with status code 404
Actual Result	The server responds with the expected result "Response code: 404 Response message: Not Found" Snipped [pic 9]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.7.5 HTTP 1.1 Status 405

TUC3.5	HTTP 1.1 Status 405
Requirement 2	The web server must follow minimum requirements for HTTP 1.1
Use Case	UC 3 Request Shared Resource
Expected result	Server responds with status code 405
Actual Result	The server responds with the expected result "Response code: 405 Response message: Method not supported Snipped [pic 10]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.8 Load Tests using JMeter

2.1.8.1 High Load (1000 users)

THL1.1	High Load (2000 users)
Requirement 1	The web server should be responsive under high load
Use Case	None
Expected result	The Server responds for 2000 user thread
Actual Result	Server is responsive Snipped [pic 11]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.8.2 High Load (200 users 250 loops)

THL1.2	High Load (200 users 250 loops)
Requirement 1	The web server should be responsive under high load
Use Case	None
Expected result	The Server does not crash
Actual Result	Server is still responsive Snipped [pic 12]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.9 Requirement 3: Operating System

TOS1.1	Run on various Operating System
Requirement 3	The web server must work on Linux, Mac, Windows*
Use Case	None
Expected result	The web server deploys on various operating systems
Actual Result	The web server works on various operating systems

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.1.10 Requirement 4: GPL 2.0

TGPL1.1	Test GPL-2.0
Requirement 4	The source code should be released under GPL-2.0.
Use Case	None
Expected result	The code is released under GLP-2.0
Actual Result	No license is found.

OS/ Status		
Windows	Mac	Linux
Failed	Failed	Failed

2.1.11 Additional Tests

2.1.11.1 Browser compatibility

TBC1.1	Browser compatibility
Requirement	None
Use Case	None
Expected result	The server works on different browsers
Actual Result	The server works on different browsers

Browers			
Status			
Chrome	Safari	Microsoft Edge	Mozilla Firefox
Passed	Passed	Passed	passed

2.1.11.2 Acceptance

TA1.1	Acceptance
Requirement	-
Use Case	-
Expected result	All tests succeed.
Actual Result	All tests succeed.

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.2 Automated Tests

2.2.1 Junit Testing

2.2.1.1 Integration Test:

Junit T1	Integration
Requirement 1	The web server should be responsive under high load
Use Case	None
Expected result	All tests passed. A string shows how many times the server is created successfully, fails or throws an exception.
Actual Result	SocketClientTest failed Snipped [pic 12]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.2.1.2 Response test

Junit T2	Response
Requirement 2	The web server must follow minimum requirements for HTTP 1.1
Use Case	-
Expected result	All tests pass. Response statuses should pop up as expected
Actual Result	All tests passed. Snipped [pic 13]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.2.1.3 View Test

Junit T3	View
Requirement	-
Use Case	-
Expected result	All tests pass. Console shows what is expected from the server.
Actual Result	All test passed Snipped [pic 14]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.2.1.4 Grouped Test

Junit T4	Grouped
Requirement	-
Use Case	-
Expected result	All tests pass
Actual Result	All tests pass Snipped [pic 5]

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

2.2.2 Security Test

TV1.1	Vulnerability check
Requirement	
Use Case	UC1.1 Start Server
Expected result	No vulnerabilities are found
Actual Result	The website passed the minimum vulnerability check (Tested with Ratproxy)

OS/ Status		
Windows	Mac	Linux
Pass	Pass	Pass

3 Test Summary

TEST CYCLE	System test (Automated + Manual Tests)

EXECUTED	PASSED	19
	FALIED	3
	(*Total*) TESTS EXECUTED (PASSED + FAILED)	22
PENDING		None
IN PROGRESS		None
BLOCKED		None
(Sub-Total) TEST PLANNED		
(PENDING+ IN PROGRESS+ BLOCKED+ TESTS EXECUTED)		

Tests Carried out	Description	% TCs Executed	% TCs passed	% TCs failed	Priority
Use Case 1 TUC1.1 TUC1.2 TUC1.3 TUC1.4	**Start Web Server** Start Server Wrong Socket Taken Socket Access log written	100%	75%	25%	High
Use Case 2 TUC2.1 TUC2.2	**Stop Web Server** Stop Server Server stopped written to access log	100%	50%	50%	High
Use Case 3 & Requirement 2 TUC3.1 TUC3.2 TUC3.3 TUC3.4 TUC3.5	**Request shared resource**	100%	100%	0%	High
Requirement 1 THL1.1 THL1.2	Load Tests using JMeter	100%	100%	0	
Requirement 3 TOS1.1	Web Server deploys on various Operating Systems	100%	100%	0%	High

Requirement 4 TGPL1.1	The code is released under GPL-2.0	100%	0%	100%	Medium
Junit T1	Integration	100%	100%	0%	High
Junit T2	Response	100%	100%	0%	High
Junit T3	View	100%	100%	0%	High
Junit T4	Grouped	100%	100%	0%	High
TV1.1	Vulnerability check	100%	100%	0%	Medium

5 Traceability Matrix

Requirement Identifiers	REQS Tested	REQ1	REQ2 UC 1	REQ2 UC2	REQ2 UC3	REQ3	REQ4	REQ5
Test Cases	45	10	6	5	8	10	2	4
TUC 1.1	3		x			x		x
TUC 1.2	1					x		
TUC 1.3	1					x		
TUC 1.4	3	x	x			x		
TUC 2.1	2			x		x		
TUC 2.2	2			x				x
TUC 3.1	3	x			x	x		
TUC 3.2	4	x			x	x		x
TUC 3.3	2	x			x			
TUC 3.4	2	x			x			
TUC 3.5	2	x			x			
THL 1.1	1	x						
THL 1.2	1	x						
TOS 1.1	1					x		
TGPL 1.1	1						x	
Junit T1	1	x						
Junit T2	3		x	x	x			
Junit T3	-	-	-	-	-	-	-	-
Junit T4	3		x	x	x			
TV1.1	1		x					
TBC1.1	1					x		
TA1.1	7	x	x	x	x	x	x	x

Ratio of Tests Passed v/s Tests Failed

Tests

14%

86%

Passed
Failed
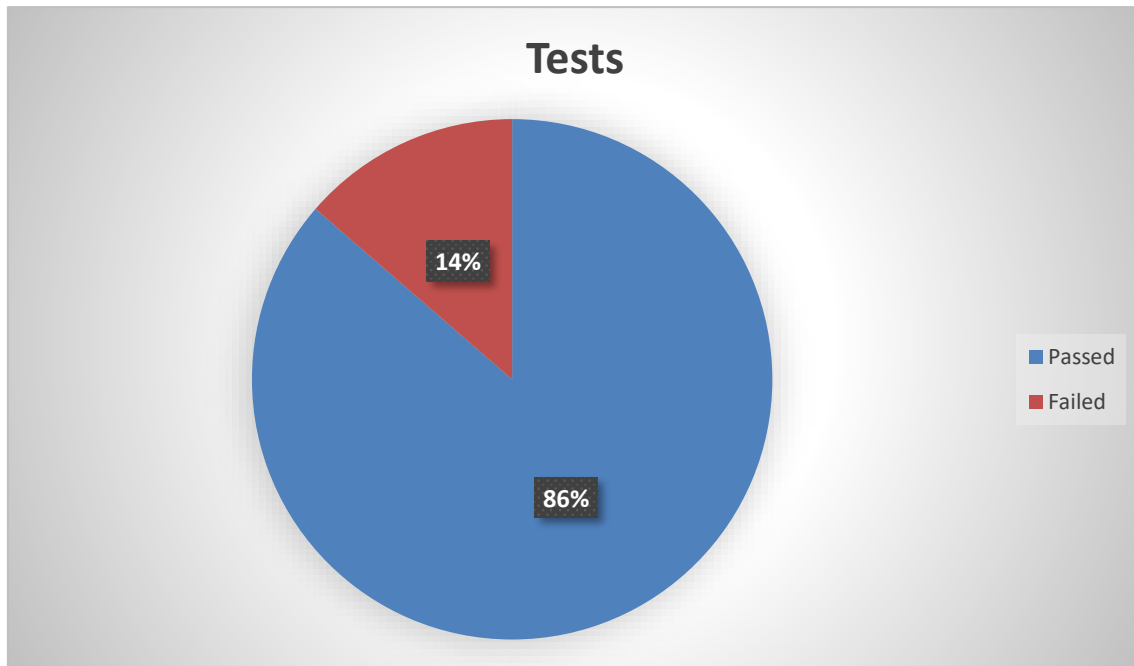
Code Coverage

| Coverage: se.lnu.http in MyWebServer ×			
5% classes, 1% lines covered in 'all classes in scope'			
Element	Class, %	Method, %	Line, %
se.lnu.http	0% (0/28)	0% (0/99)	0% (0/456)
se.lnu.http.client	100% (2/2)	66% (2/3)	45% (10/22)
se.lnu.http.exceptions	0% (0/5)	0% (0/5)	0% (0/10)
se.lnu.http.integration	16% (1/6)	4% (1/21)	2% (3/133)
se.lnu.http.resources	100% (0/0)	100% (0/0)	100% (0/0)
se.lnu.http.resources.inner	100% (0/0)	100% (0/0)	100% (0/0)
se.lnu.http.resources.inner.images	100% (0/0)	100% (0/0)	100% (0/0)
se.lnu.http.response	0% (0/10)	0% (0/21)	0% (0/111)
se.lnu.http.view	0% (0/2)	0% (0/26)	0% (0/118)

6 Test Results

Snipped [pic 1]
HTTP Server started


```
C:\Users\Dator\Desktop\MyWebServer-master\out\artifacts\MyWebServer_master_jar>java -jar mywebserver-master.jar 1412 C:\Users\Dator\Desktop\MyWebServer-master\tests\se\lnu\http\resources\inner
HTTP Server object constructed
HTTP Server started
Accept
```


localhost:1412

It works

localhost:8080
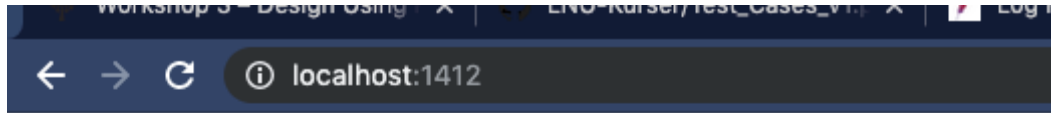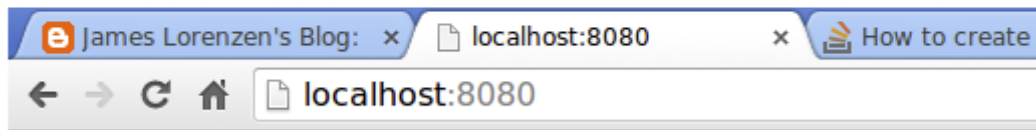
It works
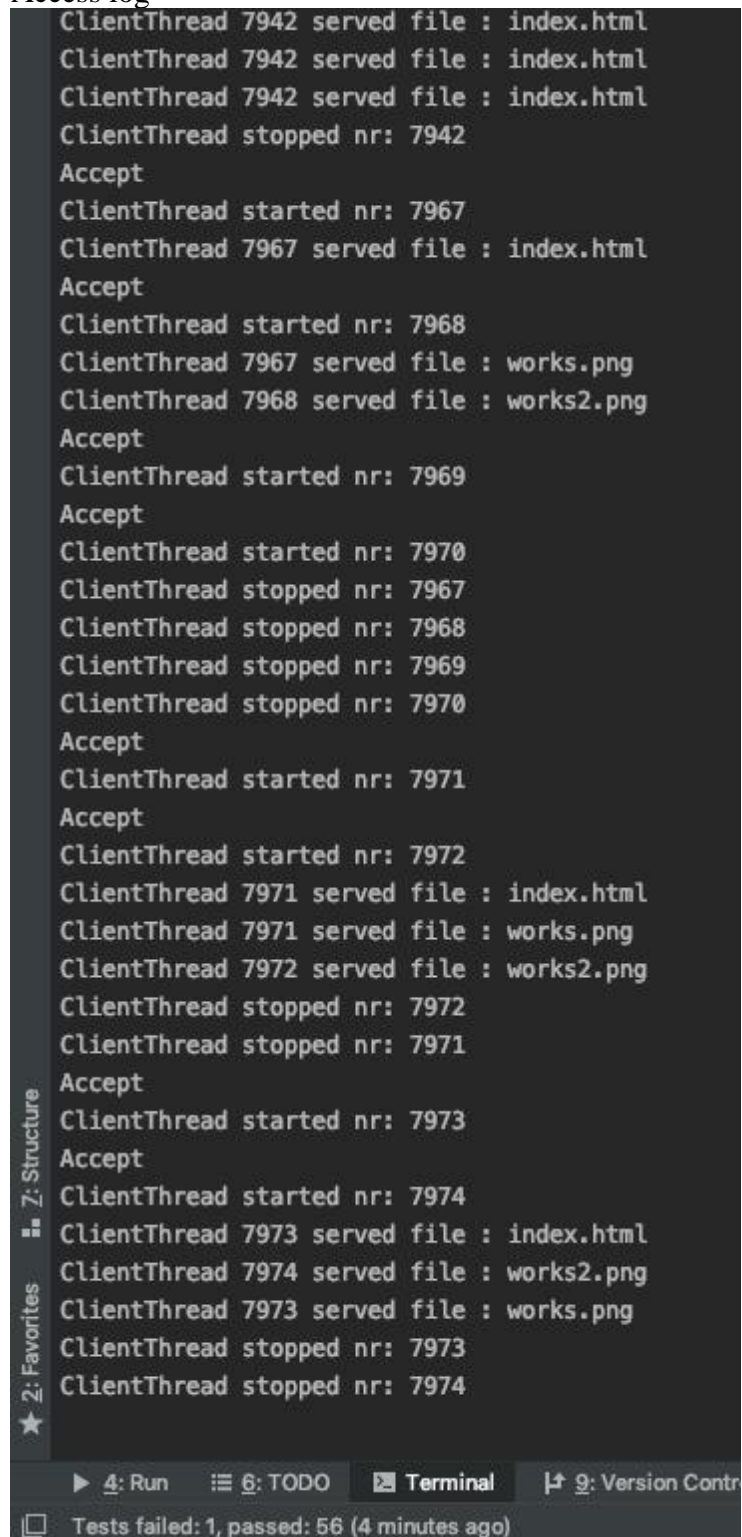
Snipped [pic 3]
Port is taken


```
Run:    HTTPServerConsole X
        C:\Users\Dator\Downloads\openjdk-11+28_windows-x64_bin\jdk-11\bin\java.exe "-javaagent:
        HTTP Server object constructed
        Port is taken

        Process finished with exit code 0
```
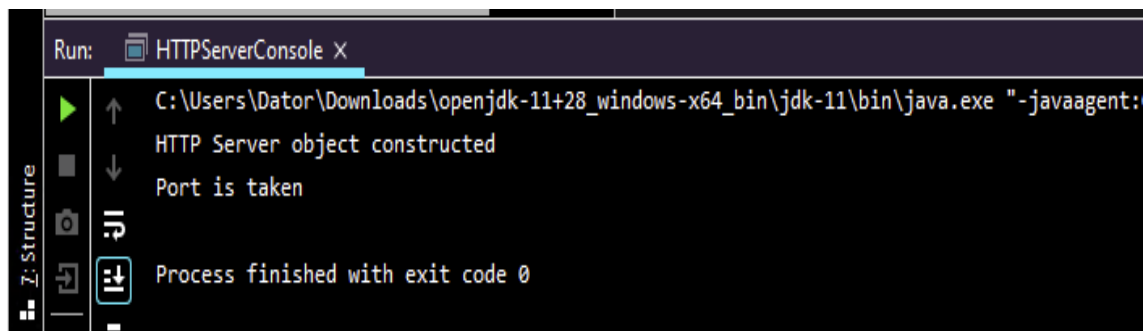
Snipped [pic 4]

Access log

```
ClientThread 7942 served file : index.html
ClientThread 7942 served file : index.html
ClientThread 7942 served file : index.html
ClientThread stopped nr: 7942
Accept
ClientThread started nr: 7967
ClientThread 7967 served file : index.html
Accept
ClientThread started nr: 7968
ClientThread 7967 served file : works.png
ClientThread 7968 served file : works2.png
Accept
ClientThread started nr: 7969
Accept
ClientThread started nr: 7970
ClientThread stopped nr: 7967
ClientThread stopped nr: 7968
ClientThread stopped nr: 7969
ClientThread stopped nr: 7970
Accept
ClientThread started nr: 7971
Accept
ClientThread started nr: 7972
ClientThread 7971 served file : index.html
ClientThread 7971 served file : works.png
ClientThread 7972 served file : works2.png
ClientThread stopped nr: 7972
ClientThread stopped nr: 7971
Accept
ClientThread started nr: 7973
Accept
ClientThread started nr: 7974
ClientThread 7973 served file : index.html
ClientThread 7974 served file : works2.png
ClientThread 7973 served file : works.png
ClientThread stopped nr: 7973
ClientThread stopped nr: 7974
```

```
▶ 4: Run    ≣ 6: TODO    ▣ Terminal    |↑ 9: Version Contr
▢ Tests failed: 1, passed: 56 (4 minutes ago)
```

Snipped [pic 5].

HTTP Server Stopped

Snipped [pic 6]

Status 200

```
Text ▼                          Sampler result  Request  Response data

  🛡 HTTP Request              Thread Name:THSS.1.1 1-1
                                Sample Start:2019-12-08 16:12:40 CET
                                Load time:107
                                Connect Time:85
                                Latency:106
                                Size in bytes:174
                                Sent bytes:126
                                Headers size in bytes:65
                                Body size in bytes:109
                                Sample Count:1
                                Error Count:0
                                Data type ("text"|"bin"|""):text
                                Response code:200
                                Response message:OK


                                HTTPSampleResult fields:
                                ContentType: text/html
                                DataEncoding: null
```

Snipped [pic 7]

Status 400 Bad request

```
Text ▼                          Sampler result  Request  Response data

  ⊗ HTTP Request              Thread Name:THSS.1.2 1-1
                                Sample Start:2019-12-08 16:43:44 CET
                                Load time:8
                                Connect Time:3
                                Latency:7
                                Size in bytes:142
                                Sent bytes:182
                                Headers size in bytes:92
                                Body size in bytes:50
                                Sample Count:1
                                Error Count:1
                                Data type ("text"|"bin"|""):text
                                Response code:400
                                Response message:Bad request


                                HTTPSampleResult fields:
                                ContentType: text/html
                                DataEncoding: null
```

Snipped [pic 8]

Status 403 Forbidden
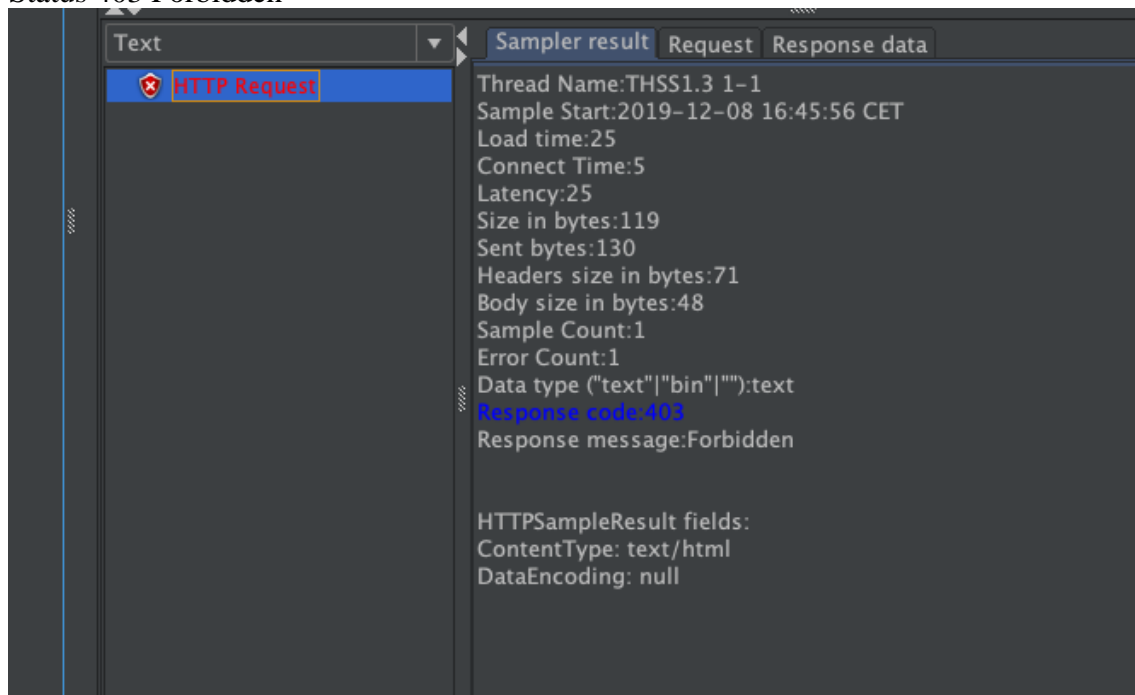
Snipped [pic 9]

Status 404 Not Found
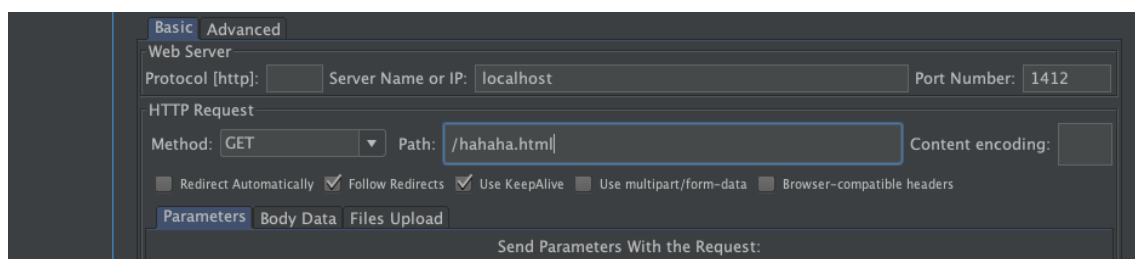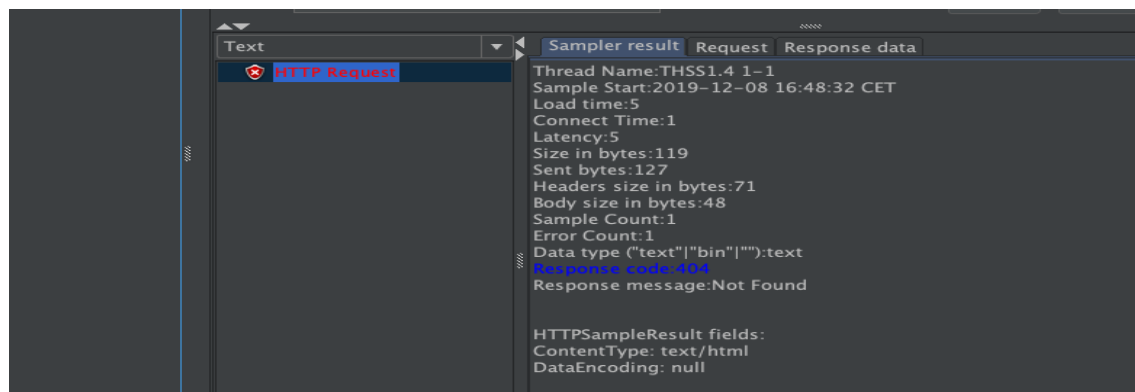
Snipped [pic 10]
Status 405
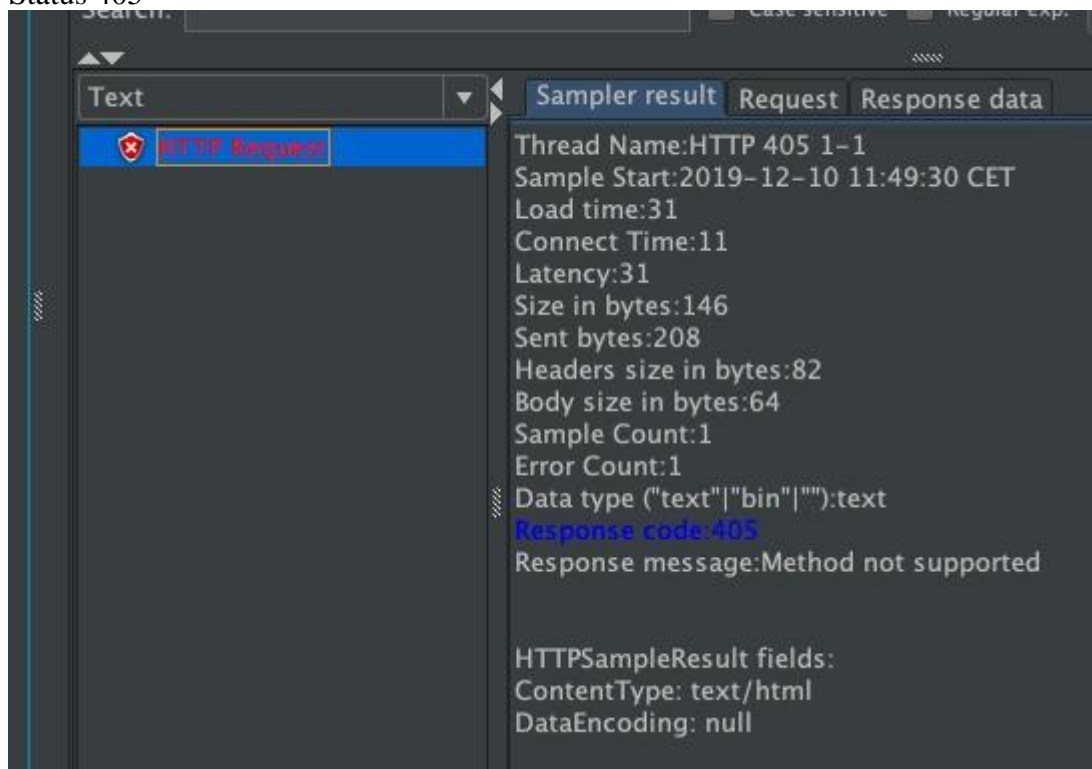
Snipped [pic 11]
High load 2000
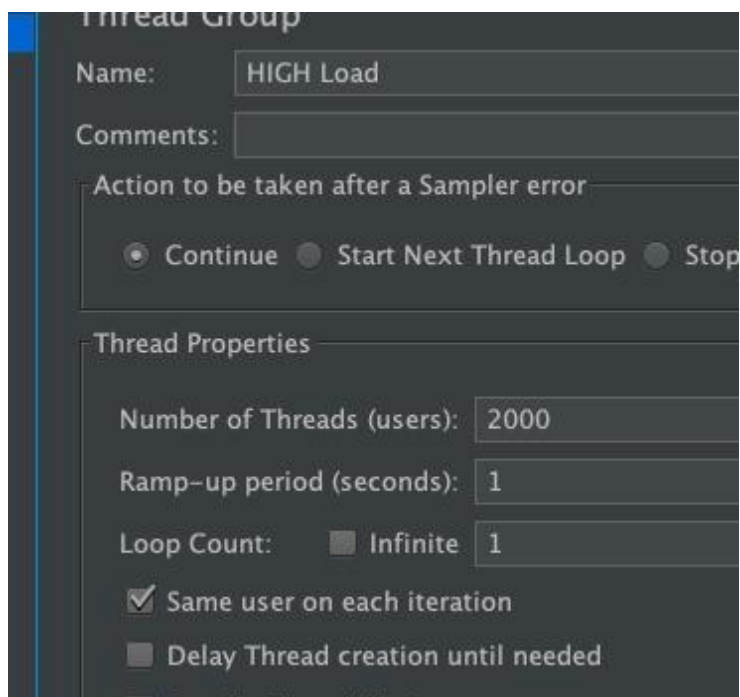
1988	13:08:27.412 HIGH Load 1-1... HTTP Request	4576		174	126
1989	13:08:27.412 HIGH Load 1-1... HTTP Request	4576		174	126
1990	13:08:27.507 HIGH Load 1-1... HTTP Request	4554		174	126
1991	13:08:26.305 HIGH Load 1-7... HTTP Request	5756		174	126
1992	13:08:26.304 HIGH Load 1-7... HTTP Request	5757		174	126
1993	13:08:27.512 HIGH Load 1-1... HTTP Request	4553		174	126
1994	13:08:26.309 HIGH Load 1-7... HTTP Request	5757		174	126
1995	13:08:27.090 HIGH Load 1-1... HTTP Request	5636		174	126
1996	13:08:27.092 HIGH Load 1-1... HTTP Request	5635		174	126
1997	13:08:27.094 HIGH Load 1-1... HTTP Request	5635		174	126
1998	13:08:27.093 HIGH Load 1-1... HTTP Request	5636		174	126
1999	13:08:25.907 HIGH Load 1-3... HTTP Request	7825		174	126
2000	13:08:25.915 HIGH Load 1-4... HTTP Request	7827		174	126

Scroll automatically? ☐ Child samples?   No of Samples **2000**   Latest Sample **7827**   Average 3147

Snipped [pic 12]

High load 200

Snipped [pic 13]

Integration Test

Snipped [pic 14]

Response Test

Snipped [pic 15]

view Test

Snipped [pic 16]

Group Test