

## Linneuniversitetet

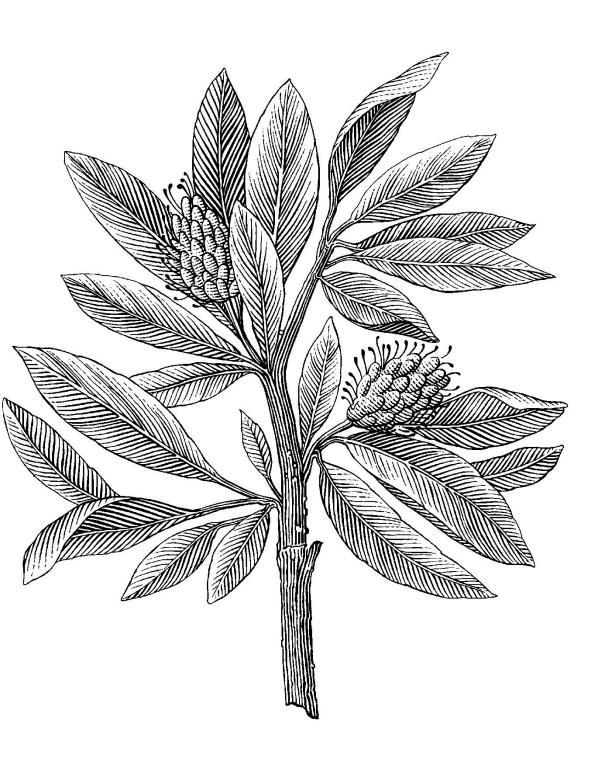
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**Test Cases** 

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## 1.Introduction

This document is about all steps required to do manual tests. There are some general prerequirements necessary to run these manual tests, which are described in a separate sub-section. There would be a test case number for each test case to make it possible to track each test case relates to which of the mentioned requirements.

#### 1.1General pre-condition

- 1. Install JDK 13 or higher.
- 2. Download the application MyWebServer form <a href="https://github.com/dntoll/MyWebServer">https://github.com/dntoll/MyWebServer</a> and unzip it to a desired path.
- 3. Open Chrome browser.
- 4. Open Command Prompt in windows 10.
- 5. Change direction to where the unzipped MyWebServer-master is.
- 6. After changing direction to MyWebServer-master now write cd MyWebServer-master and press "enter".
- 7. Compile all the required java files using command javac -sourcepath src -d bin -cp bin/se/lnu/http src/se/lnu/http/\*.java.
- 8. Change direction to bin by using command cd bin in Command Prompt.

#### 1.2Pre-condition for Postman

- General pre-condition.
- Install Postman
- Run postman.

## 2.Manual Test Cases

#### TC 1.1.1 Start the server on a specific port number

Requirements under test:1, 1.1, 1.7

UC tested: use case1 Start Server

## **Test description**

This manual test will test first part of main successful scenario of UC1(only starting the server).

#### **Precondition**

General precondition.

## **Test steps**

- Run the command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resources/inner/".
- In Chrome browser address bar write <a href="http://localhost:9000">http://localhost:9000</a> and press "enter".

#### **Expected result**

(expected result shows server when started before starting browser and connecting client to server)

• In command prompt should be 3 lines as follow:

"HTTP Server object constructed

HTTP Server started

Accept"

• In browser:

Shows a text "It works" and two provided images in path bin/se/lnu/http/resources/inner/images which are identical images saying "It works"

#### **Actual results**

In command prompt:

```
C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/r
esources/inner/
HTTP Server object constructed
HTTP Server started
Accept
```

## In browser:



## TC1.1.2 Start the server and write a note in the access log

requirements under test: 1, 1.1, 1.7.

Use case tested: use case1Start Server

**Pre-condition** 

General pre-condition

#### **Description**

This test case tests manually whole main scenario of UC 1. This test case also tests the alternative scenario of UC 1 where "The access log could not be written to"

#### **Test steps**

- Run the command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resources/inner/".
- In Chrome browser address bar write <a href="http://localhost:9000">http://localhost:9000</a> and press "enter".

## **Expected results**

(expected result shows server when started before starting browser and connecting client to server)

• In command prompt should be 3 lines as follow:

"HTTP Server object constructed

HTTP Server started

Accept"

A note in the access log was written, that the server was started.

In browser→Show a text "It works" and two provided images in path
 bin/se/lnu/http/resources/inner/images which are identical images saying "It works"

#### **Actual result**

In command prompt



There was not a file named "access log" to be written to.

## TC1.1.3 Server could not be started as port was taken

Requirements under test:1, 1.1, 1.7

Use case tested: use case 1 Start Server Pre-condition

- General pre-condition.
- Open another Command Prompt and do the general pre-condition steps 5-6-7-8.

#### **Description**

This test case, tests first alternative scenario of use case 1 where the chosen port is taken.

#### **Test steps**

- Run the command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resources/inner/".
- In Chrome browser address bar write <a href="http://localhost:9000">http://localhost:9000</a> and press "enter".
- In the second Command Prompt run command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resources/inner/".

## **Result expected**

In second command prompt: "HTTP

Server object constructed

Port is taken".

#### **Actual result**

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/r esources/inner/ HTTP Server object constructed Port is taken

# TC1.1.4 The web server could not be started due to restriction on the shared resource container

Requirements under test:1, 1.1, 1.7.

Use case tested: use case1 Start Server Pre-condition

- General pre-condition.
- Change the permission to resource folder as follow:
- Open Command Prompt as administrator
- Run command "cacls <file path to sharing resource> (in test lead's system
   C:\Users\sas4n\Downloads\MyWebServer master\MyWebServermaster\bin\se\lnu\http\resources) /p everyone:n" to restrict the
   resource directory.

## **Test description**

This test case checks if client can have access to a restricted folder or not and what would be the error message.

#### **Test steps**

• Run the command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resources/inner/".

#### **Expected result**

The system presents an error message: "No access to resource folder" Actual

#### result

Exception in thread "main" se.lnu.http.exceptions.NotADirectoryException: se.lnu.http.exceptions.NotADirectoryException: directory does not exists

# TC1.1.5 server could not start with a malformed sharing folder name (not a directory or a directory that does not exist)

**Requirements under test**:1, 1.1, 1.7.

Use Case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

#### **Test description**

This test case checks if server can start with a directory that does not exist or when user write directory path wrong(misspelled).

## Test steps

 Run the command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resourcedre/inner"

## **Expected result**

System shows an error of

"Exception in thread "main" se.lnu.http.exceptions.NotADirectoryException: se.lnu.http.exceptions.NotADirectoryException: directory does not exists".

#### **Actual result**

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http. ServerConsole 9000 se/lnu/http/resourcedre/inner Exception in thread "main" se.lnu.http.exceptions.NotADirectoryException: se.lnu.htt ceptions.NotADirectoryException: directory does not exists

## TC1.1.6 server could not start without shared resource directory argument.

**Requirements under test**: 1, 1.1, 1.7.

Use Case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

## **Test description**

This test case checks if server can start with only port number as an initial argument.

## **Test steps**

• Run the command "java se.lnu.http.HTTPServerConsole 9000"

## **Expected result**

System shows an error

"Exception in thread "main" se.lnu.http.exceptions.NotADirectoryException: java.lang.ArrayIndexOutOfBoundsException: Index 1 out of bounds for length 1".

#### **Actual result**

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http ServerConsole 9000 Exception in thread "main" se.lnu.http.exceptions.NotADirectoryException: java.lang yIndexOutOfBoundsException: Index 1 out of bounds for length 1

## TC1.1.7 browser shows error "404 Not found" for using any path other

than "se/lnu/http/resources/inner"

**Requirements under test**: 1, 1.1, 1.5, 1.7.

Use case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

## **Test description**

This test case checks what happens when server starts with a directory other than specified sharing resource directory.

#### **Test steps**

Run the command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resources"

## **Expected result**

(expected result shows server when started before starting browser and connecting client to server) Server starts successfully and show output:

"HTTP Server object constructed

HTTP Server started Accept".

Browser display:

"404 Not found".

#### **Actual result**

In command prompt

```
C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTT
ServerConsole 9000 se/lnu/http/resources
HTTP Server object constructed
HTTP Server started
Accept
```

Browser



## 404 Not found

# TC1.1.8 Server could not start using a URL instead of directory for sharing resource argument.

Requirements under test: 1, 1.1, 1.7.

Use case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

## **Test description**

This test case checks if server can start when path to the index.html file is used instead of path to the shared resource directory.

## **Test steps**

 Run the command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resources/inner/index.html"

#### **Expected result**

System shows error:

"Exception in thread "main" se.lnu.http.exceptions.NotADirectoryException:

se.lnu.http.exceptions.NotADirectoryException: url is not a directory". Actual

#### result

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTTP
ServerConsole 9000 se/lnu/http/resources/inner/index.html
Exception in thread "main" se.lnu.http.exceptions.NotADirectoryException: se.lnu.http.ex
ceptions.NotADirectoryException: url is not a directory

## TC1.1.9 server could not start if port number is not first argument

**Requirements under test**: 1, 1.1, 1.7.

Use case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

## **Test description**

This test case checks if server can start when first argument is not a valid integer number.

## **Test steps**

• Run the command "java se.lnu.http.HTTPServerConsole se/lnu/http/resources/inner/"

#### **Expected result**

System shows error: "Enter a valid port 1-65535 and a optional URL".

#### **Actual result**

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTTP ServerConsole se/lnu/http/resources/inner/ Enter a valid port 1-65535 and a optional URL

## TC 1.1.10 Server could not start with a port number less than 1.

Requirements under test: 1, 1.1, 1.7

Use case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

## **Test description**

This test case if server can start with a port number less than 1.

## **Test steps**

• Run the command "java se.lnu.http.HTTPServerConsole -1 se/lnu/http/resources/inner/"

#### **Expected result**

System shows error: "Enter a valid port 1-65535 and a optional URL".

#### **Actual result**

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTTP ServerConsole -1 se/lnu/http/resources/inner/ Enter a valid port 1-65535 and a optional URL

## TC1.1.11 Server could not start with a port number greater than 65535.

Requirements under test: 1, 1.1, 1.7

Use case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

#### **Test description**

This test case checks if server can start with a port number greater than 65535.

#### **Test steps**

 Run the command "java se.lnu.http.HTTPServerConsole 65536 se/lnu/http/resources/inner/"

#### **Expected result**

System shows error: "Enter a valid port 1-65535 and a optional URL".

#### **Actual result**

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTTP ServerConsole 65536 se/lnu/http/resources/inner/ Enter a valid port 1-65535 and a optional URL

## TC 1.1.12 Server could not start without initial arguments

Requirements under test: 1, 1.1, 1.7.

Use case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

#### **Test description**

This test case checks if server can start without any arguments.

#### **Test steps**

Run the command "java se.lnu.http.HTTPServerConsole"

#### **Expected result**

System shows error: "Exception in thread "main"

se.lnu.http.exceptions.WrongNumberOfArgumentsException: This program should only have one or two arguments".

## **Actual result**

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTTP ServerConsole Exception in thread "main" se.lnu.http.exceptions.WrongNumberOfArgumentsException: This program should only have one or two arguments

## TC 1.1.13 Server could not start with more than 2 initial arguments

Requirements under test: 1, 1.1, 1.7

Use case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

## **Test description**

This test case check if server can start with more than 2 arguments.

#### **Test steps**

 Run the command "java se.lnu.http.HTTPServerConsole 9000 se/lnu/http/resources/inner/ rt"

## **Expected result**

System shows error:

"Exception in thread "main" se.lnu.http.exceptions.WrongNumberOfArgumentsException: This program should only have one or two arguments".

#### **Actual result**

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http.HTTF ServerConsole 9000 se/lnu/http/resources/inner/ rt Exception in thread "main" se.lnu.http.exceptions.WrongNumberOfArgumentsException: This program should only have one or two arguments

## TC 1.1.14 Server should start with one argument

Requirements under test: 1, 1.1, 1.7.

Use case tested: use case 1 Start Server

#### **Pre-condition**

General pre-condition.

## **Test description**

This test case is for checking if the error message displayed by system when administrator try to start the server with more than 2 arguments which is "This program should only have one or two arguments" is correct or not.

## **Test steps**

• Run the command "java se.lnu.http.HTTPServerConsole 9000"

#### **Expected result**

Server should run successfully.

```
C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.h
ttp.HTTPServerConsole 9000
Exception in thread "main" se.lnu.http.exceptions.NotADirectoryException: java.l
ang.ArrayIndexOutOfBoundsException: Index 1 out of bounds for length 1
```

## TC 1.2.1 Server should stop when client wants to close the connection

**Requirements under test**: 1, 1.2, 1.7.

Use case tested: use case2 Stop Server

#### **Pre-condition**

The web server is started and running.

#### **Description**

This test case will check if server stopped after writing "stop" in command prompt or not( writing to log access file will check in next test case).

## **Test steps**

• Write "stop" in Command Prompt when server is running and press "enter".

### **Expected result**

Server stopped and following displayed as output:

"HTTP Server Accept thread stopped

HTTP Server stopped".

#### **Actual result**

```
C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.http
ServerConsole 9000 se/lnu/http/resources/inner
HTTP Server object constructed
HTTP Server started
Accept
stop
HTTP Server Accept thread stopped
HTTP Server stopped
```

## TC1.2.2 Server should stop when user press CTRL + C

Requirements under test:1, 1.2, 1.7.

Use case tested: Use case 2 Stop Server

#### **Pre-condition**

The web server is started and running.

## **Description**

This test case checks if server stops after pressing CTRL+C in command prompt.

#### **Test steps**

Press CTRL + C in command prompt to stop the server.

#### **Expected result**

Server stops.

#### Actual result Server

stops.

## TC1.2.3 Server should not stop if user write anything other than "stop"

Requirements under test: 1, 1.2, 1.7

Use case tested: use case 2 Stop Server

#### **Pre-condition**

The web server is started and running.

## **Description**

This test case will check if server stops after writing something other than "stop" in Command Prompt or not (writing to log access file will check in next test case).

#### **Test steps**

- Write "hello" in Command Prompt and press "enter".
- Write "do not stop" in Command Prompt and press "enter".
- Write "stoppp" in Command Prompt and press "enter".

## **Expected result**

Server does not stop.

#### **Actual result**

#### Server does not stop

```
C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master\bin>java se.lnu.h
ttp.HTTPServerConsole 9000 se/lnu/http/resources/inner/
HTTP Server object constructed
HTTP Server started
Accept
hello
do not stop
stoppp
```

## TC1.2.4 After stopping the server a note should be written in the access log file

Requirements under test:1, 1.2, 1.7

Use case tested: use case 2 Stop Server

#### **Pre-condition**

The web server is started and running.

## **Description**

This test case checks if a note is written in access log file after stopping the server.

## **Test steps**

• Write "stop" and press "Enter" in Command Prompt to start server

## **Expected result**

A note is written in access log file regarding server is stopped.

#### **Actual results**

Access log file does not exist in provided codes and files.

## TC 1.3.1 request a shared source- HTTP 200 ok

**Requirements under test**: 1, 1.3, 1.5, 1.7.

**Use case tested**: Use case 3 Request shared resource

#### **Pre-condition**

Pre-condition for Postman

## **Description**

This test case check if a status code of 200 displayed after a successful request sent.

#### **Test steps**

- Choose "GET" option in Postman.
- Write <a href="http://localhost:9000">http://localhost:9000</a> in URL text-field and press "Send".

## **Expected result**

- Postman shows status code "200 Ok".
- Postman shows:
- " <h1>It works</h1>

```
<img src="images/works.png"/>
```

<img src="images/works2.png"/>" in "Body" tab.



## TC1.3.2 request shared resource – HTTP 403 Forbidden

**Requirements under test**:1, 1.3, 1.5, 1.7.

Use case tested: use case 3 Request shared resource

#### **Pre-condition**

Pre-condition for Postman

#### **Description**

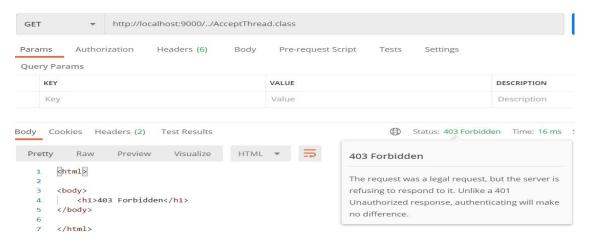
This test case checks if a status code of 403 displayed after a forbidden request sent by client.

## **Test steps**

- Choose "GET" option in Postman.
- Write <a href="http://localhost:9000/../AcceptThread.class">http://localhost:9000/../AcceptThread.class</a> in URL text-field and press "Send".

## **Expected result**

- Postman displays a status code of "403 Forbidden".
- Postman displays "<h1>403 Forbidden<h1>" in "Body" tab.



## TC 1.3.3 Request shared resource- HTTP 404 Not found

**Requirements under test**: 1, 1.3, 1.5, 1.7.

Use case tested: use case 3 Request shared resource

#### **Pre-condition**

Pre-condition for Postman.

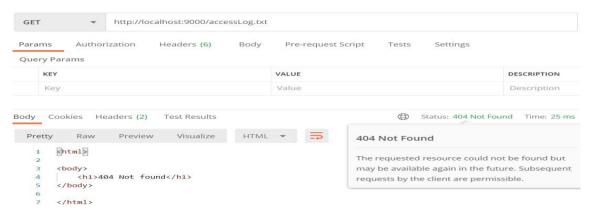
#### **Description**

This test case checks if a status code of 404 displayed after a client sent a request for a file or path which does not exist or is not accessible now. **Test steps** 

- Choose "GET" option in Postman.
- Write <a href="http://localhost:9000/accessLog.txt">http://localhost:9000/accessLog.txt</a> in URL text-field and press "Send".

## **Expected result**

- Postman displays status code of "404 Not Found"
- Postman displays "<h1>404 Not found</h1>" in "Body" tab.



## TC1.3.4 Request shared resource – HTTP 405 Method not Supported

Requirements under test: 1, 1.3,1.5, 1.7

Use case tested: use case 3 Request shared resource

#### **Pre-condition**

Pre-condition for Postman.

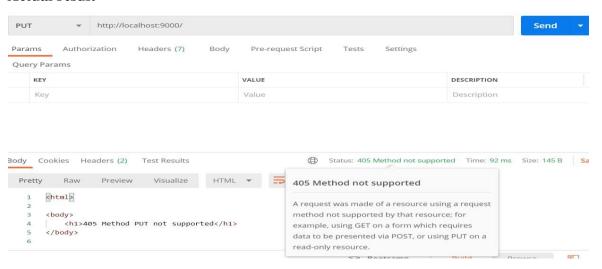
#### **Description**

This test case checks if any request other than "GET" is supported or not. **Test** steps

- Choose "PUT" option in Postman.
- Write http://localhost:9000/ in URL text-field and press "Send".

## **Expected result**

- Postman displays status code of "405 Method not supported"
- Postman displays "<h1>405 Method Put not supported</h1>" in "Body" tab.



#### TC1.4.1 The source code should be released under GPL-2.0

Requirements under test: 1, 1.4.

#### **Pre-condition**

General pre-condition steps 2-4-5-6.

#### **Test steps**

Run command "type LICENCE" in Command Prompt.

## **Expected result**

Source code released under GPL-2.0.

#### **Actual result**

It can be seen source code released under MIT license.

C:\Users\sas4n\Downloads\MyWebServer-master\MyWebServer-master>type LICENSE The MIT License (MIT)

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## TC1.6.1 The web server should be responsive under high load

## Requirement under test: 1.6

#### **Pre-condition**

- General pre-condition
- Download Apache Jmeter(zip file)
- Unzip file to a desired destination
- Open unzipped file and go to "bin" direction.
- Double click on "jmeter.bat"

## **Test description**

This test case checks if server can handle massive number of clients (100) without difficulty.

#### **Test steps**

- Right click on" test plan" then choose Thread (Users) → Thread Group.
- Right click on "Thread Group" then Add→Sampler→HTTP Request.
- Right click on "Thread Group" then Add→Listener→View Results in Table.
- On Thread Group menu in Number of Threads (Users) field enter "100".
- On HTTP Request menu on Server Address or IP field enter "localhost" and in Port number enter "9000".
- Save the file.
- Run application.

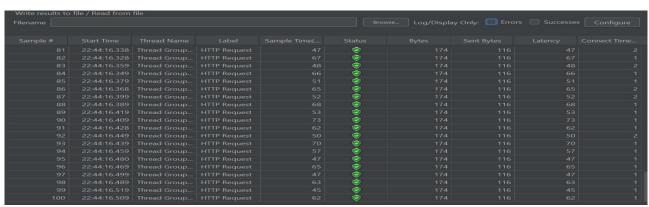
#### **Expected result**

Server should continue running without any problem and status in results table in Jmeter should be green. **Actual result** 

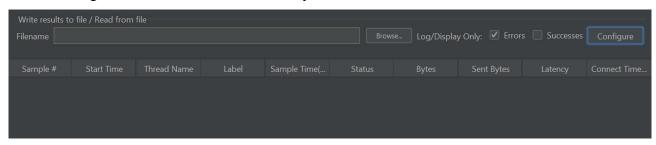
In Command Prompt

```
ClientThread started nr: 92
ClientThread 92 served file : index.html
ClientThread stopped nr: 92
Accept
ClientThread started nr: 93
ClientThread 93 served file : index.html
ClientThread stopped nr: 93
Accept
ClientThread started nr: 94
ClientThread 94 served file : index.html
ClientThread stopped nr: 94
Accept
ClientThread started nr: 95
ClientThread 95 served file : index.html
ClientThread stopped nr: 95
Accept
ClientThread started nr: 96
ClientThread 96 served file : index.html
ClientThread stopped nr: 96
Accept
ClientThread started nr: 97
ClientThread 97 served file : index.html
ClientThread stopped nr: 97
Accept
ClientThread started nr: 98
ClientThread 98 served file : index.html
ClientThread stopped nr: 98
Accept
ClientThread started nr: 99
Accept
ClientThread started nr: 100
ClientThread 99 served file : index.html
ClientThread stopped nr: 99
ClientThread 100 served file : index.html
ClientThread stopped nr: 100
```

#### In Jmeter:



#### After selecting Errors radio button to show only errors the result would be



## TC1.8.1 The access log should be viewable from a text editor.

**Requirement under test**: 1.8.

## **Pre-condition**

General pre-condition step 2.

## **Test description**

After searching in provided source code, a file named "access log" could not be found.

## **Expected result**

A file named "access log" exist in source code which can be edited using text editor.

## **Actual result**

There is no file named "access log" in source code.