Test Report
My Web Server

Version 1.0

Dated: 22rd December 2017

Functional Testing

Test case 1.0 The server starts on Windows 10

Test ID: 1.0		Tester: Test-leader	
Test Name: Web server on Windows 10		**Requirement Covered:** 1	
Test Type: Functional Testing		**Execution Date:** 18/12/2017	
Description: Run the web server on Windows 10			
Pre-Condition: - Have java IDE - Have the web server code			
Post-Condition: - Run the web server			
Step	**Action**	**Expected Outcome**	**Actual Outcome**	**Pass/Fail**
1	Set up port and path as arguments to the class HTTPServerConsole			
2	Compile the project	The web server should start	The server starts	**Pass**
3	Open a browser and request the URL = localhost:portnumber	The should pictures "it works" appears in the browser	The pictures "it works" appears in the browser	**Pass**

Test case 1.1 The server starts on Windows 10 and a note written to the access log file

Test ID: 1.1		Tester: Test-leader	
Test Name: Web server on Windows 10 and write a note		**Requirement Covered:** 1	
Test Type: Functional Testing		**Execution Date:** 18/12/2017	
Description: Run the web server on Windows 10 and a note writes			
Pre-Condition: - Have java IDE - Have the web server code			
Post-Condition: - Run the web server - A note written to the access log file			
Step	**Action**	**Expected Outcome**	**Actual Outcome**	**Pass/Fail**
1	Set up port and path as arguments to the class HTTPServerConsole			
2	Compile the project	The web server should start	The server starts	**Pass**

3	Open a browser and request the URL = localhost:portnumber	The pictures "it works" appears in the browser and a note written to the access log file	The pictures "it works" appears in the browser but **no** note was written in the access log	**Fail**

Test case 1.2 The web server could not be started due to socket was taken

Test ID: 1.2		**Tester:** Test-leader		
Test Name: Socket was taken		**Requirement Covered:** 1		
Test Type: Functional Testing		**Execution Date:** 18/12/2017		
Description: Couldn't run the server due to socket was taken				
Pre-Condition: - Have java IDE - Have the web server code				
Post-Condition: - An error message: "Socket XX was taken" written in the console				
Step	**Action**	**Expected Outcome**	**Actual Outcome**	**Pass/Fail**
1	Set up port and path as arguments to the class HTTPServerConsole			
2	Compile the project	The web server should start	The server starts	**Pass**
3	Compile the project again	An error message: "Socket XX was taken" written in the console	The compiler shows an error message: "Socket XX was taken"	**Pass**

Test case 1.3 The web server could not be started due to restriction on shared resource

Test ID: 1.3		**Tester:** Test-leader		
Test Name: Restriction on shared resource		**Requirement Covered:** 1		
Test Type: Functional Testing		**Execution Date:** 18/12/2017		
Description: Couldn't run the server due to restriction on shared resource				
Pre-Condition: - Have java IDE - Have the web server code				
Post-Condition: An error message: "No access to folder XX" written in the console				
Step	**Action**	**Expected Outcome**	**Actual Outcome**	**Pass/Fail**

1	Change the permission to the resource container to none.				
2	Set up port and path as arguments to the class HTTPServerConsole				
3	Compile the project	The web server should not start and an error message: "No access to folder XX" written in the console	The server **doesn't** start but **no** error message is shown	**Fail**	

Test case 1.4 Wrong with the access log file

Test ID: 1.4	**Tester:** Test-leader
Test Name: Couldn't run Web server and a wrong with the access log file	**Requirement Covered:** 1
Test Type: Functional Testing	**Execution Date:** 18/12/2017
Description: Couldn't run the web server and the system presents an error message "Cannot write to server log file log.txt"	
Pre-Condition: - Have java IDE - Have the web server code	
Post-Condition: - An error message "Cannot write to server log file log.txt" written in the console	

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Set up port and path as arguments to the class HTTPServerConsole			
2	Compile the project	The web server shouldn't start and an error message "Cannot write to server log file log.txt" written in the console	The server starts and no error message "Cannot write to server log file log.txt" written in the console	**Fail**

Test case 1.5 Stop the web server

Test ID: 1.5	**Tester:** Test-leader
Test Name: Stop the web server	**Requirement Covered:** 2
Test Type: Functional Testing	**Execution Date:** 18/12/2017
Description: Stop the web server successfully	

Pre-Condition:				
- The web server has been started				

Post-Condition:				
- The web server should stop				

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Stop the server by clicking the stop-sign in the IDE.	The web server should stop	The server stops	**Pass**

Test case 1.6 Stop the web server and write a note to the access log file

Test ID: 1.6	**Tester:** Test-leader
Test Name: Stop the web server	**Requirement Covered:** 2
Test Type: Functional Testing	**Execution Date:** 18/12/2017

Description: Stop the web server successfully and a note should be written
Pre-Condition: - The web server has been started
Post-Condition: - The web server should stop - A note written to the access log file

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Stop the server by clicking the stop-sign in the IDE.	The web server should stop, and a note should be written in the access log file	The server stops but **no** note written in the access log file	**Fail**

Test case 1.7 The access log file is viewable

Test ID: 1.7	**Tester:** Test-leader
Test Name: Access log file viewable	**Requirement Covered:** 5
Test Type: Functional Testing	**Execution Date:** 18/12/2017

Description: The access log file is viewable from a text editor
Pre-Condition: - The web server has been started at least once - Have a text editor
Post-Condition:

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Open the folder ".metadata" in the server folder			

2	Open the file ".log" in the text editor	The file can be opened by a text editor, and the content is viewable.	As expected	**Pass**

Test case 1.8 Successful access the recourse folder

Test ID: 1.8		**Tester:** Test-leader
Test Name: Successful access the recourse folder		**Requirement Covered:** 3 - 4
Test Type: Functional Testing		**Execution Date:** 19/12/2017
Description: Browser Successfully access the recourse folder and show the content of the "inner" folder		
Pre-Condition: - Having files in the "inner" folder		
Post-Condition: - Show the content in the browser		

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Set up port and path as arguments to the class HTTPServerConsole			
2	Open a browser and request the URL = localhost:portnumber	Browser show the content of the "inner" folder	As expected	**Pass**

Test case 1.9 Successful access the recourse folder and write a note to the access log

Test ID: 1.9		**Tester:** Test-leader
Test Name: Successful access the recourse folder and write a note to access log		**Requirement Covered:** 3 - 4
Test Type: Functional Testing		**Execution Date:** 19/12/2017
Description: Browser Successfully access the recourse folder and show the content of the "inner" folder and a note should be written to the access log indicating this.		
Pre-Condition: - Having files in the "inner" folder		
Post-Condition: - Show the content in the browser - Write a note to the access log file		

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Set up port and path as arguments to the class HTTPServerConsole			

2	Open a browser and request the URL = localhost:portnumber	- Browser should show the content of the "inner" folder - A note written to the access log file	Browser shows the content of the "inner" folder bot **no** note written to the access log file	**Fail**

Test case 1.10 404 Not found error

Test ID: 1.10		**Tester:** Test-leader	
Test Name: 404 Not found error		**Requirement Covered:** 3 - 4	
Test Type: Functional Testing		**Execution Date:** 19/12/2017	
Description: Resource folder not found, and the browser shows 404 Not found error.			
Pre-Condition: - The web server has been started			
Post-Condition: - The browser shows 404 Not found error			
Step	**Action**	**Expected Outcome**	**Actual Outcome**	**Pass/Fail**
1	Open a browser and request the URL = localhost:portnumber/XX, where XX is a file name isn't in the folder "inner"	- Browser show the error 404 Not found	As expected	**Pass**

Test case 1.11 404 Not found error and write a note in the access log

Test ID: 1.11		**Tester:** Test-leader	
Test Name: 404 Not found error and write a note to access log		**Requirement Covered:** 3 - 4	
Test Type: Functional Testing		**Execution Date:** 19/12/2017	
Description: Resource folder not found, and the browser shows 404 Not found error and a note should be written in the access log			
Pre-Condition: - The web server has been started			
Post-Condition: - The browser shows 404 Not found error - A note written in the access log			
Step	**Action**	**Expected Outcome**	**Actual Outcome**	**Pass/Fail**
1	Open a browser and request the URL = localhost:portnumber/XX,	- Browser should show the error 404 Not found	Browser shows the error 404 Not found but **no** note	**Fail**

	where XX is a file name isn't in the folder "inner"	- A note written in the access log indicating this	written to access log	

Test case 1.12 403 Forbidden error and write a note in the access log

Test ID: 1.12		**Tester:** Test-leader
Test Name: 403 Forbidden error and write a note to access log		**Requirement Covered:** 3 - 4
Test Type: Functional Testing		**Execution Date:** 20/12/2017
Description: Shared resource is outside the shared resource container which is "inner" folder, the browser shows 403 Not Forbidden error, and a note should be written in the access log		
Pre-Condition: - The web server has been started		
Post-Condition: - The browser shows 403 Forbidden error - A note written in the access log		

Step	**Action**	**Expected Outcome**	**Actual Outcome**	**Pass/Fail**
1	Open a browser and request the URL = localhost:portnumber/../secret.html, where the file secret.html is outside the folder "inner".	- Browser show the error 403 Forbidden - A note written in the access log indicating this	Browser **doesn't** show the error 403 Forbidden and **no** note written to access log	**Fail**

Test case 1.13 400 Bad request error and write a note in the access log

Test ID: 1.13		**Tester:** Test-leader
Test Name: 400 Bad request error and write a note to access log		**Requirement Covered:** 3 - 4
Test Type: Functional Testing		**Execution Date:** 20/12/2017
Description: Request is invalid or malformed, the browser shows 400 Bad request error, and a note should be written in the access log		
Pre-Condition: - The web server has been started		
Post-Condition: - The browser shows 400 Bad request error - A note written in the access log		

Step	**Action**	**Expected Outcome**	**Actual Outcome**	**Pass/Fail**

1	Open a browser and request the URL = localhost:portnumber./index.html	- Browser show the error 400 Bad request - A note written in the access log indicating this	Browser **doesn't** show the error 400 Bad request and **no** note written to access log	**Fail**

Test case 1.14 An error when trying to process the request.

Test ID: 1.14	Tester: Test-leader
Test Name: Error when trying to process the request	Requirement Covered: 3 - 4
Test Type: Functional Testing	Execution Date: 20/12/2017
Description: Server encounters an error when trying to process the request, and a note should be written in the access log	
Pre-Condition: - The web server has been started	
Post-Condition: - A note written in the access log that the system presents that the system has an internal error	

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Open a browser and request the URL = localhost:portnumber/images	- System present an internal error - A note written in the access log indicating this	Browser **doesn't** present an internal error and **no** note written to access log	**Fail**

Unit Testing

Test case 2.0 Run the existing JUnit test suites

Test ID: 2.0	Tester: Test-leader
Test Name: JUnit tests	Requirement Covered: 7
Test Type: Unit Testing	Execution Date: 21/12/2017
Description: Run the existing unit suites	
Pre-Condition: - The web server has been started	
Post-Condition:	

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail

| 1 | Start Junit tests of the project | - All tests run
- All tests pass successfully | All tests run properly without any failure or error except testPortTaken has Failures | **Fail** |

Integration Testing

Test case 3.0 Run the existing automated JUnit test suites

Test ID: 3.0	**Tester:** Test-leader
Test Name: Integration Junit tests	**Requirement Covered:** 8
Test Type: Integration Testing	**Execution Date:** 21/12/2017
Description: Run the existing automated integration test suites	
Pre-Condition: - The web server has been started	
Post-Condition:	

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Start the Junit tests of the integration folder in the project	- All tests run - All tests pass successfully	All tests run properly without any failure or error except TestGetFromOnlineServer has error	**Fail**

Stress Testing

Test case 4.0 Stress test

Test ID: 4.0	**Tester:** Test-leader
Test Name: Stress test	**Requirement Covered:** 6
Test Type: Stress testing	**Execution Date:** 21/12/2017
Description: Test the server under high load	
Pre-Condition: - The web server has been started - Have JMeter	
Post-Condition:	

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Test the server with 500 threads under 1s	The test pass without errors	As expected	**Pass**

Test case 4.1 Stress test

Test ID: 4.1	Tester:
Test Name: Stress test	Requirement Covered: 6
Test Type: Stress testing	Execution Date: 21/12/2017

Description: Test the server under high load
Pre-Condition: - The web server has been started - Have JMeter
Post-Condition:

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Test the server with 1000 threads under 1s	The test pass without errors	The test has error, the 1000 threads needs minimum 2s to run without errors	Fail

Test case 4.2 Stress test

Test ID: 4.2	Tester: Test-leader
Test Name: Stress test	Requirement Covered: 6
Test Type: Stress testing	Execution Date: 21/12/2017

Description: Test the server under high load
Pre-Condition: - The web server has been started - Have JMeter
Post-Condition:

Step	Action	Expected Outcome	Actual Outcome	Pass/Fail
1	Test the server with 1000 threads under 2s	The test pass without errors	As expected	Pass

Test Evaluation

Traceability Matrix

Requirement Identifiers	Reqs Tested	Req 1 UC1	Req 2 UC2	Req 3 UC3	Req 4	Req 5	Req 6	Req 7	Req 8	Req 9
Test Cases	27	5	2	7	7	1	3	1	1	0
1.0	1	X								
1.1	1	X								
1.2	1	X								
1.3	1	X								
1.4	1	X								
1.5	1		X							
1.6	1		X							
1.7	1					X				
1.8	2			X	X					
1.9	2			X	X					
1.10	2			X	X					
1.11	2			X	X					
1.12	2			X	X					
1.13	2			X	X					
1.14	2			X	X					
2.0	1							X		
3.0	1								X	
4.0	1						X			
4.1	1						X			
4.2	1						X			

Regarding to Req 9 "Supplementary specification, "Req 4. The source code should be released under GPL-2.0"". After checking the license file in the project folder. It's noted that the software has released under MIT license.

The test results show that the server can run and display the shared resources properly, but the access log doesn't work and some other minor faults. The stress tests show the server is suitable for small companies because the server fails when run under heavy load. The web server is very easy to deploy but it needs further develop and regression testing to make sure all the tests pass in order to fulfill all the requirements.