

**CS 1632 Software Quality Assurance**

**Deliverable 3: Automated Web Testing**

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1. **INTRODUCTION**

Starting with the requirements, we broke the requirements into several different classes of behavior: input, output and functionality. This allowed us to figure out what kind of test cases were needed. We then split the requirements amongst ourselves and completed the test cases for each.

The issues faced when writing these tests were mainly based on being new user to Selenium IDE. The first thing we did was get familiar with the software by reading the API and getting a sense of how the software works by completing Exercise 3. When writing the tests, some issues arose when trying to record some actions, where the action performed wasn’t registered. This wasted a lot of time, since I would have to restart the test from scratch. Another big issue is that Selenium creates a new side file, each time you try to save any new changes to the file, instead of overwriting the original file, such as in this Word file. Speed, consistency, and organization are all problems to expect when using Selenium IDE in a future workplace.

Some tests, such as the ones used in the requirement “FUN-INVALID-VALUE”, failed due to the fact that the inputted value redirected the user to a page where the field the test is asserting is not present. When the program couldn’t find the element, it times out after 30 seconds and causes the test to fail.

**TRACEABILITY MATRIX**

**FUN-WELCOME**

**FUN-LINKS**

**FUN-FACT**

**FUN-FIB**

**FUN-INVALID-VALUE**

FUN-INVALID-VALUE-PASS, FUN-INVALID-VALUE-DECIMALERROR-FACT, FUN-INVALID-VALUE-DECIMALERROR-FACT, FUN-INVALID-VALUE-STRINGERROR-FACT, FUN-INVALID-VALUE-STRINGERROR-FIB

**FUN-HELLO**

FUN-HELLO-PASS

**FUN-HELLO-TRAILING**

FUN-HELLO-TRAILING-PASS

**FUN-CATHY**

FUN-CATHY-PASS

1. **TEST SUITE LOG PRINTOUT**

**Running 'FUN-CATHY'** 18:03:15

1. open on <https://cs1632ex.herokuapp.com/> OK 18:03:16

2. setWindowSize on 974x1040 OK 18:03:16

3. click on linkText=Cathedral Pics OK 18:03:16

4. assertElementPresent on css=li:nth-child(1) > img OK 18:03:16

5. assertElementPresent on css=li:nth-child(3) > img OK 18:03:17

6. assertElementPresent on css=li:nth-child(5) > img OK 18:03:17

**'FUN-CATHY' completed successfully** 18:03:17

**Running 'FUN-FACT-VALID-INPUT'** 18:03:17

1. open on /fact OK 18:03:18

2. setWindowSize on 1280x800 OK 18:03:18

3. sendKeys on name=value with value 10 OK 18:03:18

4. click on xpath=//input[@value='Submit'] OK 18:03:18

5. assertText on css=.jumbotron > h2 with value Factorial of 10 is 3628800! OK 18:03:18

**'FUN-FACT-VALID-INPUT' completed successfully** 18:03:18

**Running 'FUN-FIB-VALID-INPUT'** 18:03:18

1. open on /fib OK 18:03:19

2. setWindowSize on 1280x800 OK 18:03:19

3. sendKeys on name=value with value 5 OK 18:03:19

4. click on xpath=//input[@value='Submit'] OK 18:03:20

5. assertText on css=.jumbotron > h2 with value Fibonacci of 5 is 8! OK 18:03:20

**'FUN-FIB-VALID-INPUT' completed successfully** 18:03:20

**Running 'FUN-HELLO'** 18:03:20

1. open on <https://cs1632ex.herokuapp.com/> OK 18:03:21

2. setWindowSize on 974x1040 OK 18:03:21

3. click on linkText=Hello OK 18:03:21

4. assertText on css=h2 with value Hello CS1632, from Prof. Laboon! OK 18:03:21

**'FUN-HELLO' completed successfully** 18:03:21

**Running 'FUN-HELLO-TRAILING-NUM'** 18:03:21

1. open on <https://cs1632ex.herokuapp.com/hello/100> OK 18:03:22

2. setWindowSize on 974x1040 OK 18:03:22

3. assertText on css=h2 with value Hello CS1632, from 100! OK 18:03:22

**'FUN-HELLO-TRAILING-NUM' completed successfully** 18:03:22

**Running 'FUN-HELLO-TRAILING-STRING'** 18:03:22

1. open on <https://cs1632ex.herokuapp.com/hello/Mo> OK 18:03:23

2. setWindowSize on 974x1040 OK 18:03:23

3. assertText on css=h2 with value Hello CS1632, from Mo! OK 18:03:23

**'FUN-HELLO-TRAILING-STRING' completed successfully** 18:03:23

**Running 'FUN-INVALID-VALUE'** 18:03:23

1. open on <https://cs1632ex.herokuapp.com/> OK 18:03:24

2. setWindowSize on 974x1040 OK 18:03:24

3. click on linkText=Factorial OK 18:03:24

4. click on name=value OK 18:03:25

5. type on name=value with value 0 OK 18:03:25

6. sendKeys on name=value with value ${KEY\_ENTER} OK 18:03:25

7. assertText on css=h2 with value Factorial of 0 is 1! OK 18:03:25

8. click on linkText=Factorial OK 18:03:25

9. click on name=value OK 18:03:26

10. type on name=value with value -1 OK 18:03:26

11. sendKeys on name=value with value ${KEY\_ENTER} OK 18:03:26

12. assertText on css=h2 with value Factorial of -1 is 1! OK 18:03:26

13. click on linkText=Factorial OK 18:03:26

14. click on name=value OK 18:03:26

15. type on name=value with value -100 OK 18:03:26

16. sendKeys on name=value with value ${KEY\_ENTER} OK 18:03:27

17. assertText on css=h2 with value Factorial of -100 is 1! OK 18:03:27

18. click on linkText=Factorial OK 18:03:27

19. click on name=value OK 18:03:27

20. type on name=value with value 101 OK 18:03:27

21. sendKeys on name=value with value ${KEY\_ENTER} OK 18:03:27

22. assertText on css=h2 with value Factorial of 101 is 1! OK 18:03:28

23. click on linkText=Fibonacci OK 18:03:28

24. click on id=tb1 OK 18:03:28

25. type on id=tb1 with value 0 OK 18:03:28

26. sendKeys on id=tb1 with value ${KEY\_ENTER} OK 18:03:28

27. assertText on css=h2 with value Fibonacci of 0 is 1! OK 18:03:28

28. click on linkText=Fibonacci OK 18:03:29

29. click on id=tb1 OK 18:03:29

30. type on id=tb1 with value -1 OK 18:03:29

31. sendKeys on id=tb1 with value ${KEY\_ENTER} OK 18:03:29

32. assertText on css=h2 with value Fibonacci of -1 is 1! OK 18:03:29

33. click on linkText=Fibonacci OK 18:03:29

34. click on id=tb1 OK 18:03:30

35. type on id=tb1 with value -100 OK 18:03:30

36. sendKeys on id=tb1 with value ${KEY\_ENTER} OK 18:03:30

37. assertText on css=h2 with value Fibonacci of -100 is 1! OK 18:03:30

38. click on linkText=Fibonacci OK 18:03:30

39. click on id=tb1 OK 18:03:30

40. type on id=tb1 with value 101 OK 18:03:31

41. sendKeys on id=tb1 with value ${KEY\_ENTER} OK 18:03:31

42. assertText on css=h2 with value Fibonacci of 101 is 1! OK 18:03:31

**'FUN-INVALID-VALUE' completed successfully** 18:03:31

**Running 'FUN-INVALID-VALUE-DECIMALERROR-FACT'** 18:03:31

1. open on <https://cs1632ex.herokuapp.com/> OK 18:03:32

2. setWindowSize on 974x1040 OK 18:03:32

3. click on linkText=Factorial OK 18:03:32

4. click on name=value OK 18:03:32

5. type on name=value with value 1.1 OK 18:03:33

6. sendKeys on name=value with value ${KEY\_ENTER} OK 18:03:33

7. Trying to find css=h2... Failed: 18:03:33

Implicit Wait timed out after 30000ms

**'FUN-INVALID-VALUE-DECIMALERROR-FACT' ended with 1 error(s)** 18:04:03

**Running 'FUN-INVALID-VALUE-DECIMALERROR-FIB'** 18:04:03

1. open on <https://cs1632ex.herokuapp.com/> OK 18:04:04

2. setWindowSize on 974x1040 OK 18:04:04

3. click on linkText=Fibonacci OK 18:04:04

4. click on name=value OK 18:04:04

5. type on name=value with value 1.1 OK 18:04:04

6. sendKeys on name=value with value ${KEY\_ENTER} OK 18:04:05

7. Trying to find css=h2... Failed: 18:04:05

Implicit Wait timed out after 30000ms

**'FUN-INVALID-VALUE-DECIMALERROR-FIB' ended with 1 error(s)** 18:04:35

**Running 'FUN-INVALID-VALUE-STRINGERROR-FACT'** 18:04:35

1. open on <https://cs1632ex.herokuapp.com/> OK 18:04:36

2. setWindowSize on 974x1040 OK 18:04:36

3. click on linkText=Factorial OK 18:04:36

4. click on name=value OK 18:04:36

5. type on name=value with value Mo OK 18:04:36

6. sendKeys on name=value with value ${KEY\_ENTER} OK 18:04:36

7. Trying to find css=h2... Failed: 18:04:37

Implicit Wait timed out after 30000ms

**'FUN-INVALID-VALUE-STRINGERROR-FACT' ended with 1 error(s)** 18:05:07

**Running 'FUN-INVALID-VALUE-STRINGERROR-FIB'** 18:05:07

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:08

2. setWindowSize on 974x1040 OK 18:05:08

3. click on linkText=Fibonacci OK 18:05:08

4. click on name=value OK 18:05:08

5. type on name=value with value Mo OK 18:05:08

6. sendKeys on name=value with value ${KEY\_ENTER} OK 18:05:08

7. Trying to find css=h2... Failed: 18:05:09

Implicit Wait timed out after 30000ms

**'FUN-INVALID-VALUE-STRINGERROR-FIB' ended with 1 error(s)** 18:05:39

**Running 'FUN-LINKS-CATHY'** 18:05:39

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:40

2. setWindowSize on 1280x800 OK 18:05:40

3. storeAttribute on xpath=//nav//ul//li[8]/a@href with value homeLink OK 18:05:40

4. assert on homeLink with value /cathy OK 18:05:40

5. assertText on xpath=//nav//ul//li[8]/a with value Cathedral Pics OK 18:05:40

**'FUN-LINKS-CATHY' completed successfully** 18:05:40

**Running 'FUN-LINKS-FACT'** 18:05:40

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:41

2. setWindowSize on 1280x800 OK 18:05:41

3. storeAttribute on xpath=//nav//ul//li[2]/a@href with value homeLink OK 18:05:41

4. assert on homeLink with value /fact OK 18:05:42

5. assertText on xpath=//nav//ul//li[2]/a with value Factorial OK 18:05:42

**'FUN-LINKS-FACT' completed successfully** 18:05:42

**Running 'FUN-LINKS-FIB'** 18:05:42

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:42

2. setWindowSize on 1280x800 OK 18:05:43

3. storeAttribute on xpath=//nav//ul//li[4]/a@href with value homeLink OK 18:05:43

4. assert on homeLink with value /fib OK 18:05:43

5. assertText on xpath=//nav//ul//li[4]/a with value Fibonnaci Failed: 18:05:43

Actual value "Fibonacci" did not match "Fibonnaci"

**'FUN-LINKS-FIB' ended with 1 error(s)** 18:05:43

**Running 'FUN-LINKS-FIVE'** 18:05:43

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:44

2. setWindowSize on 1280x800 OK 18:05:44

3. verifyElementPresent on css=nav > ul OK 18:05:44

4. storeXpathCount on xpath=//body//nav//ul/li/\* with value xpathCount OK 18:05:45

5. assert on xpathCount with value 5 OK 18:05:45

**'FUN-LINKS-FIVE' completed successfully** 18:05:45

**Running 'FUN-LINKS-HELLO'** 18:05:45

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:46

2. setWindowSize on 1280x800 OK 18:05:46

3. storeAttribute on xpath=//nav//ul//li[6]/a@href with value homeLink OK 18:05:46

4. assert on homeLink with value /hello OK 18:05:46

5. assertText on xpath=//nav//ul//li[6]/a with value Hello OK 18:05:46

**'FUN-LINKS-HELLO' completed successfully** 18:05:46

**Running 'FUN-LINKS-INDEX'** 18:05:46

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:47

2. setWindowSize on 1280x800 OK 18:05:47

3. storeAttribute on xpath=//nav//ul//li[1]/a@href with value homeLink OK 18:05:47

4. assert on homeLink with value / OK 18:05:47

5. assertText on xpath=//nav//ul//li[1]/a with value CS1632 D3 Home OK 18:05:47

**'FUN-LINKS-INDEX' completed successfully** 18:05:48

**Running 'FUN-WELCOME-TEXT'** 18:05:48

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:48

2. setWindowSize on 1280x800 OK 18:05:48

3. assertText on css=.jumbotron > h2 with value CS1632 D3 OK 18:05:48

4. assertText on css=.jumbotron > p with value Welcome, friend,\nto a land of pure calculation.\nTHE WORLD IS YOUR OYSTER OK 18:05:49

**'FUN-WELCOME-TEXT' completed successfully** 18:05:49

**Running 'FUN-WELCOME-TITLE'** 18:05:49

1. open on <https://cs1632ex.herokuapp.com/> OK 18:05:50

2. setWindowSize on 1280x800 OK 18:05:50

3. assertTitle on CS1632 D3 OK 18:05:50

**'FUN-WELCOME-TITLE' completed successfully** 18:05:50

1. **DEFECTS**

**DEFECT-1**

* **IDENTIFER:**DEFECT-INVALIDVAL-DECIMAL-FIBORFACT
* **SUMMARY:** For a decimal input in the Fibonacci or Factorial page, instead of returning the value 1, it redirects the user to a new page with the message “Internal server error”
* **DESCRIPTION:**
  + Violates FUN-INVALID-VALUE-DECIMALERROR-FACT (8) and FUN-INVALID-VALUE-DECIMALERROR-FIB (9)
  + When the user is either in the Fibonacci page or the Factorial page, when inputting a decimal value, instead of displaying the value 1 the user is redirected to a new page with the message “Internal server error”
* **REPRODUCTION STEPS:**
  + In the browser of your choosing, enter the URL “<https://cs1632ex.herokuapp.com/>” and press Enter.
  + Click on the hyperlink, Factorial or Fibonacci.
  + In the field below the message “Enter number to calculate [factorial/Fibonacci] of: “ enter the value “1.1” and click Submit.
* **EXPECTED BEHAVIOR:**
  + User is redirected to a page, with the message “[factorial/Fibonacci] of 1.1 is 1!”
* **OBSERVED BEHAVIOR:** 
  + User is redirected to a page, with the message “Internal server error”

**DEFECT-2**

* **IDENTIFER:**DEFECT-INVALIDVAL-STRING-FIBORFACT
* **SUMMARY:**For a string input in the Fibonacci or Factorial page, instead of returning the value 1, it redirects the user to a new page with the message “Internal server error”
* **DESCRIPTION:**
  + Violates FUN-INVALID-VALUE-STRINGERROR-FACT (10) and FUN-INVALID-VALUE-STRINGERROR-FIB (11)
  + When the user is either in the Fibonacci page or the Factorial page, when inputting a string value, instead of displaying the value 1 the user is redirected to a new page with the message “Internal server error”
* **REPRODUCTION STEPS:**
  + In the browser of your choosing, enter the URL “<https://cs1632ex.herokuapp.com/>” and press Enter.
  + Click on the hyperlink, Factorial or Fibonacci.
  + In the field below the message “Enter number to calculate [factorial/Fibonacci] of: “ enter the value “Mo” and click Submit.
* **EXPECTED BEHAVIOR:**
  + User is redirected to a page, with the message “[factorial/Fibonacci] of Mo is 1!”
* **OBSERVED BEHAVIOR:**
  + User is redirected to a page, with the message “Internal server error”