



Project 2 Web testing with Selenium

Tags

軟體測試

Website to be checked

URL of website : <http://cc.ee.ntu.edu.tw/~farn/courses/ST/2021.Spring/>

Farn's Software Testing Class

Software Testing & Security

Checking

<http://cc.ee.ntu.edu.tw/~farn/courses/ST/2021.Spring/>

Software Testing & Security Checking 2021 Spring

Explanation of the SUT (Website)

Briefly tell the TA what the website has done.

That is a website for the Software Testing & Security Checking lesson, taught by Professor Farn Wang for the Spring 2021 semester, served as a comprehensive resource for the course.

The website provides detailed information about the course schedule, syllabus, lecture videos, examinations, and projects. The site also included updates related to changes in course structure and evaluation policy due to the pandemic, ensuring students stayed informed about quizzes, project deadlines, and the shift from a final exam to a final report.

Additionally, it hosted lecture videos and resources related to the course textbook and provided contact details for the professor and teaching assistant. This website was a central hub for students to access all course-related materials and updates.

Test Requirements

Description of what needs to be tested in a software system.

Check all the links on the website.

- Check HTTP 404 not found

HTTP 404 Not Found means the requested user does not exist.

- Check HTTP 401 gone

HTTP 410 Gone indicates a resource was permanently removed from a server.

- Check Invalid URL

Invalid URL signifies the web address is incorrect or non-existent.

- Check `StaleElementReferenceException`

`StaleElementReferenceException` happens when a referenced web element is no longer in the current page's DOM, becoming stale or obsolete.

Test Plan

Tell me the details of what you have done and tell me the test input.

Related tests should be identified in the Test Plan.

Test Plan : Website Link Verification Using Selenium WebDriver

Objective

To verify the functionality and accessibility of all hyperlinks (`<a>` tags) on the website.

Test Tool : Selenium WebDriver with Chrome browser.

Test Input :

1. **URL :** <http://cc.ee.ntu.edu.tw/~farn/courses/ST/2021.Spring/>
2. **Screen Sizes :** Initially set to (1920, 1080).

Additional sizes like (1366, 768) and (768, 1024) can be added as needed.

- **Test Procedure**

1. **Initialize WebDriver :** Launch Chrome WebDriver and navigate to the specified URL.
2. **Set Screen Size :** Iterate through screen sizes, adjusting the window for each size.
3. **Find Links :** Locate all `<a>` tags on the webpage and extract their `href` attributes.
4. **Link Verification :**

- Navigate to each hyperlink.
- Wait for the page to load.
- Check the response status of the link using `requests.get(href)`.
- Record the status code or any exceptions encountered.

5. **Error Handling :**

- Capture screenshots for 404 or 401 error pages.
- Log exceptions like `NoSuchWindowException` and `StaleElementReferenceException`.
- Mark invalid URLs as errors.

6. **Results Logging :** Document each hyperlink's status in a file (`result.txt`).

7. **Cleanup :** Close the browser and terminate the WebDriver session at the end of the test.

- **Expected Outcomes**

1. **Total Count of `<a>` Tags** : Recorded in the log.
 2. **Error Count** : Number of links with issues (e.g., 404 errors, exceptions).
 3. **Screenshots** : Generated for each link that leads to a 404 error page.
- **Test Cases**
 1. **Link Accessibility Test** : Each hyperlink should navigate to its target destination.
 2. **404 and 410 Error Detection** : Identify and log links that result in a 404 error.
 3. **Exception Handling** : Properly handle and log exceptions that occur during navigation.
 - **Evaluation Criteria**
 1. **Link Functionality**: All links should be functional and lead to the correct page.
 2. **Error Identification**: All errors and exceptions should be accurately identified and logged.
 3. **Adaptability**: The test should run correctly across different screen sizes.
-

Test Result

Tell me the coverage and what bugs were detected with screenshots.

```
The number of <a>: 97
The number of error in <a>: 17
The number of <a> (unchecked): 5
```

Bug

1. **Error 410** Gone indicates a resource was permanently removed from a server.

▼ @result.txt

1. `<a>` 69
<https://forms.gle/LX7hy2WQLnqtP9St9>
410

很抱歉，您所要求的檔案已遭刪除。

請確認您的網址正確無誤，且檔案擁有者未刪除該檔案。

運用 Google 雲端硬碟完成工作

Google 雲端硬碟內的應用程式能讓您輕鬆在線上建立、儲存並分享文件、試算表、簡報等多種檔案。

如需瞭解詳情，請前往
drive.google.com/start/apps。

2. <a> 73

<https://docs.google.com/spreadsheets/d/18ZjeUygcxlxOs6Am5CmvEwFiXURN1x8EqGXiC0eStE/edit#gid=0>

410



很抱歉，您所要求的檔案已遭刪除。

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Google 雲端硬碟內的應用程式能讓您輕鬆在線上建立、儲存並分享文件、試算表、簡報等多種檔案。

如需瞭解詳情，請前往
drive.google.com/start/apps。

404 not found Not Found means the requested user does not exist.

2. HackMD

▼ @result.txt

HackMD

404 Not Found



找不到您要的頁面。
登入或是回到首頁。

首頁

登入

<a> 82
<https://hackmd.io/@xIYUTygoRkyuQQlwXuWDWQ/ByaSzDCNL>
404

<a> 83
<https://hackmd.io/@xIYUTygoRkyuQQlwXuWDWQ/r1UU-rOL8>
404

<a> 84
<https://hackmd.io/@xIYUTygoRkyuQQlwXuWDWQ/r1UU-rOL8>
404

<a> 85
<https://hackmd.io/HPvzNcEsR1aj2oXjp494JA>
404

3. The typo Should be html but htm

▼ @result.txt

Not Found

The requested URL /~farn/courses/ST/2015.fall/index.htm was not found on this server.
Additionally, a 404 Not Found error was encountered while trying to use an ErrorDocument to handle the request.

Apache/1.3.39 Server at cc.ee.ntu.edu.tw Port 80

<a> 91
<http://cc.ee.ntu.edu.tw/~farn/courses/ST/2015.fall/index.htm>
404

<a> 92
<http://cc.ee.ntu.edu.tw/~farn/courses/ST/2014.fall/index.htm>
404

<a> 93
<http://cc.ee.ntu.edu.tw/~farn/courses/ST/2013.fall/index.htm>
404

<a> 94
<http://cc.ee.ntu.edu.tw/~farn/courses/ST/2013.spring/index.htm>
404

<a> 95
<http://cc.ee.ntu.edu.tw/~farn/courses/ST/2018.spring/index.htm>
404

4. Invalid URL Invalid URL signifies the web address is incorrect or non-existent.

▼ @result.txt

1. <a> 68
None
Invalid URL
2. <a> 70
None
Invalid URL
3. <a> 71
None
Invalid URL
4. <a> 74
None
Invalid URL
5. <a> 76
None
Invalid URL
6. <a> 88
None
Invalid URL

▼ @result_1.txt

<a> 68
Evaluation Policy:
No url

<a> 70
Final report (10%)
No url

<a> 71
, Wednesday, June. 30, 2021.
No url

<a> 74
Mid-term presentation (8%), deadline on April 28, 2021.
No url

<a> 76
The topic must be technologically related to one of the chapter in the textbook.
No url

<a> 89
Project evaluation criteria:
No url

! 注意 @result_1.txt 缺少 <a> 84 , 所以才會差一個 !

```
<a> 82
Project 1 (10%): Continuous testing and unit testing, deadline April. 7, 2021.
https://hackmd.io/exlVUTygoRkyuQQlwXuMDwQ/ByaSz2DCNL
<a> 83
GUI testing with Selenium (with Firefox on either Linux or Windows), deadline May 5, 2021.
https://hackmd.io/exlVUTygoRkyuQQlwXuMDwQ/r1UU-r0L8
<a> 85
https://hackmd.io/exlVUTygoRkyuQQlwXuMDwQ/r1UU-r0L8
<a> 86
mobile and web app testing
https://hackmd.io/HPvZNeSR1aj2oXjp494JA
```

! RequestException

This issue arises not due to a problem with the script itself.

But because executing `response = requests.get(href)` is not feasible.

Typically, this is caused by Redirect Loops (rewriting email) or Issues with SSL certificates.

▼ @result.txt

<a> 1
<mailto:farn@cc.ee.ntu.edu.tw>
RequestException

<a> 89
<http://cs.gmu.edu/~offutt/softwaretest/>
RequestException

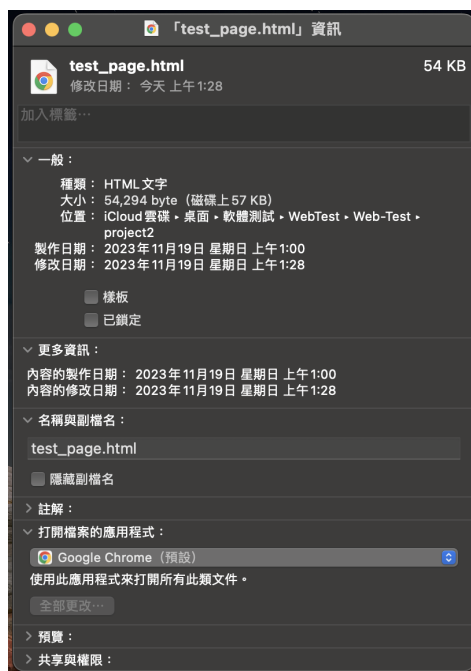
<a> 90
<http://cs.gmu.edu/~offutt/softwaretest/>
RequestException

<a> 96
<mailto:r08921105@ntu.edu.tw>
RequestException

<a> 97
<mailto:r08921105@ntu.edu.tw>
RequestException

Score

The final score is : (coverage of the test items) x $\log_2(\text{\#html sizes}) + 3 \times (\text{bugs detected})$



Coverage : coverage of the test items = $\#checked / (\#checked + \#unchecked) = 92 / 97 = 0.94845\%$

html sizes : 54 KB (code line = 1905) , $\log_2(54) = 5.75488$ 。

$0.94845 \times 5.75488 + 3 \times 4 = 17.458215936 > \text{Maximum score : 15}$
