University of Huddersfield

MEng Group Project

Cryptic Crossword Solver

Test Document

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Contents

List of Figures

List of Tables

Chapter 1

Testing

1.1 Unit Testing

1.2 Walk-through

The previous section focused upon automated unit tests that were able to programmatically deduce the correctness of output. Although unit testing is a major part of the overall testing strategy it is not the only strategy.

Within this section a number of objective based software walk-throughs will be conducted. A software walk-through is an analysis technique that requires all interested parties to ask questions and make comments about possible anomalies, violation of development standards, and other problems (IEEE, 2008).

As described within the development section, the user interface makes use of JavaScript, and hence there will be two walk-throughs, one with JavaScript enabled and another with JavaScript disabled.

Non-JavaScript

As part of the testing process, the user interface's default view will be tested through a series of walk-throughs. These tests are designed to test to ensure that a user is unable to break the user interface.

All of the tests shown in table 1.1 were conducted in a browser that had JavaScript disabled.

Test Number	Test Data	Reason For Test	Expected Outcome	Actual Outcome	Corrective Action Key	Notes
Clue Input						
1	cryptic clue = nil solution length = nil known characters = nil	To ensure that the server rejects incomplete submitted data.	When the page is reloaded, error messages are shown informing the user that required fields have not been given.	As expected.	None.	None.
2	cryptic clue = “We hear twins shave” solution length = nil known characters = nil	To ensure that the server rejects incomplete submitted data.	When the page is reloaded, error messages are shown informing the user that required fields have not been given.	As expected.	None.	None.
3	cryptic clue = nil solution length = “4” known characters = nil	To ensure that the server rejects incomplete submitted data.	When the page is reloaded, three error messages are shown informing that required fields have not been given.	As expected.	None.	None.

4	cryptic clue = “We hear twins shave” solution length = “4” known characters = nil	To ensure that the server rejects incomplete submitted data.	When the page is reloaded, error messages are shown informing the user that required fields have not been given.	As expected.	None.	None.
5	cryptic clue = “We hear twins shave” solution length = “4” known characters = “pr”	To ensure that the server rejects incomplete submitted data.	When the page is reloaded, an error message informing the user that the solution length and known characters do not match.	As expected.	None.	None.
6	cryptic clue = “We hear twins shave” solution length = “4” known characters = “p??r”	To ensure that the server accepts correctly submitted data.	When the page is reloaded, a number of results are displayed.	As expected.	None.	None.
7	cryptic clue = “We hear twins shave” solution length = “4” known characters = “????”	To ensure that the server accepts correctly submitted data.	When the page is reloaded, a number of results are displayed.	As expected.	None.	None.
Solution Output						

8	cryptic clue = “We hear twins shave” solution length = “4” known characters = “????”	To ensure that the correct result is returned upon the submission of a valid form with a solvable clue.	A number of solutions should be returned, with the correct solution – “pair” – holding the highest confidence rating.	As expected.	None.	41 solutions were returned.
9	cryptic clue = “We hear twins shave” solution length = “4” known characters = “p??r”	To ensure that the correct result is returned upon the submission of a valid form with a solvable clue.	A reduced result set in comparison to test #8, however the correct solution – “pair” – should have the highest confidence rating.	As expected.	None.	2 solutions were returned.
10	cryptic clue = “We hear twins shave” solution length = “4” known characters = “????”	To ensure that the all results as shown, with their solution trace’s open, and viewable.	All solution traces are open, and viewable by default.	As expected.	None.	None.

Table 1.1: Non-JavaScript enabled walk-through test results

JavaScript

As described within the development section, the user interface by default will use JavaScript to reduce the amount of input the user is required to do. It also adds to the user experience, by removing the requirement for some pages to be 'reloaded'.

Within this subsection, a number of software walk-throughs will be conducted with JavaScript enabled. This will test the additional layer of functionality that is brought by using JavaScript. Table 1.2 outlines the results of each of the tests.

Test Number	Test Data	Reason For Test	Expected Outcome	Actual Outcome	Corrective Action Key	Notes
Clue Input						
11	cryptic clue = nil solution length = nil known characters = nil	To ensure that the JavaScript prevents submission of an invalid form.	The 'cryptic clue' and the 'solution length' inputs should become red. The 'known characters' input fields should not appear.	As expected.	None.	None.
12	cryptic clue = "We hear twins shave" solution length = nil known characters = nil	To ensure that the JavaScript prevents submission of an invalid form.	The 'cryptic clue' input should become green, the 'solution length' input should become red. The 'known characters' input fields should not appear.	As expected.	None.	None.
13	cryptic clue = nil solution length = "4" known characters = nil	To ensure that the JavaScript prevents submission of an invalid form.	The 'solution length' input should become green, the 'cryptic clue' input should become red. The 'known characters' input fields should not appear.	As expected.	None.	None.

14	cryptic clue = “We hear twins shave” solution length = “4” known characters = nil	To ensure that the JavaScript allows the submission of a valid form.	The ‘cryptic clue’ and the ‘solution length’ inputs should become green, and a “Solving Clue” message dialogue appears.	As expected.	None.	None.
15	cryptic clue = “We hear twins shave” solution length = “4” known characters = “p”, “”, “”, “r”	To ensure that the JavaScript allows the submission of a valid form.	The ‘cryptic clue’ and the ‘solution length’ inputs should become green, and a “Solving Clue” message dialogue appears.	As expected.	None.	None.
Solution Output						
16	cryptic clue = “We hear twins shave” solution length = “4” known characters = nil	To ensure that the correct result is returned upon the submission of a valid form with a solvable clue.	A number of solutions should be returned, with the correct solution – “pair” – holding the highest confidence rating.	As expected.	None.	41 solutions were returned.

17	cryptic clue = “We hear twins shave” solution length = “4” known characters = “p”, “”, “”, “r”	To ensure that the correct result is returned upon the submission of a valid form with a solvable clue.	A reduced result set in comparison to test #14, however the correct solution – “pair” – should have the highest confidence rating.	As expected.	None.	2 solutions were returned.
18	cryptic clue = “We hear twins shave” solution length = “4” known characters = nil	To ensure that the results are paginated to 10 solutions per page.	41 solutions are expected, and therefore there should be 5 pages of results with no more than 10 solutions per page	As expected.	None.	None.
19	cryptic clue = “We hear twins shave” solution length = “4” known characters = nil	To ensure that the top solution’s trace is opened, and viewable by default.	The top solution’s solution’s trace is viewable by default.	As expected.	None.	None.
20	cryptic clue = “We hear twins shave” solution length = “4” known characters = nil	To ensure that other solution traces can be viewed when clicked upon, and any open solution traces are closed.	Clicking upon a second solution opens the associated trace and closes the original trace.	As expected.	None.	None.

Table 1.2: JavaScript enabled walk-through test results

Glossary of Terms

The following section contains a glossary with the meanings of all names, acronyms, and abbreviations used by the stakeholders.

Term/Acronym	**Definition**
The Guardian	A newspaper with a website featuring cryptic crosswords
Blackberry	A mobile phone platform by Blackberry
iOS	A mobile phone platform by Apple
Android	A mobile phone platform by Google
NLP	Natural Language Processing
SRS	Software Requirements Specification
App	Short for application

Bibliography

IEEE (2008). IEEE Standard for Software Reviews and Audits. *IEEE STD 1028-2008*, pages 1–52.