

# NAME GAME: TEST STRATEGY

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Test Strategy .....	2
Project Scope .....	2
In Scope.....	2
Out of Scope.....	2
Platforms & Screen Sizes.....	2
Risk Analysis .....	3
Objectives .....	3
Manual Testing.....	3
Functional .....	3
Performance .....	3
Usability .....	3
Compatibility.....	4
Automated Testing .....	4
Existing Automation.....	4
New Automation.....	4
Test Environment Setup.....	4
Tests Requested .....	5
Results.....	6
Assumptions.....	7
Links .....	7
Existing Defects .....	8
Priorities.....	8
Observations .....	8
Defects .....	9
Glossary.....	11

## Test Strategy

This document outlines the manual and automation test strategy for the acquired web application, “Name Game”. Strategy includes:

1. Manual tests run on multiple platforms.
2. Automation tests.

## Project Scope

### In Scope

- Correct answers have a lower probability of repeating.
- Wrong answers have a higher probability of repeating.
- Counters:
  - Total number of attempts
  - Total number of correct answers
  - Current streak for correct answers

### Out of Scope

- Authentication
  - The URL currently does not require authentication access
- Adding additional Colleagues with matching pictures to the pool of Colleagues
  - Function is not currently available
- Removing names and pictures from the pool of Colleagues
  - Function is not currently available
- Accessibility
  - Does not appear in Client’s requirements
- Recoverability
  - Validating recoverability events does not fall under test Objectives.

### Platforms & Screen Sizes

Included in the Client’s scope:

- Web, iOS, and Android
- Mobile, Tablet, Desktop

The following table lists the devices used in testing.

DEVICE	OS	BROWSER	VERSION
iPhone	12.0.1	Safari	12.0.1
		Chrome	70.0.3538.75
iPad 10 Pro	12.0.1	Safari	12.0.1
		Chrome	69.0.3497.91
Android		Chrome	
Windows	8.1 Pro, 64-bit	Chrome	69.0.3497.100
		IE	11.0.9600.19155
		Firefox	63.0

## Risk Analysis

The following may impact being able to complete the objectives or completing them successfully.

- Availability of testing platforms and testing devices.
- Run time to do frequency tests.
- No access to the test database.

## Objectives

Initial objectives are to verify the current state of the web app we've inherited.

- Verify web app runs on various platforms and devices.
- Verify current functionality against the known requirements.
- Document any defects against known requirements.
- Document any observations that need to be addressed with the Client.

## Manual Testing

### Functional

#	TEST	RESULTS
1.	User can see the Counters incrementing on click.	Defect D-001
2.	Colleague name appears over image after clicked.	Defect D-003
3.	Images of correct selections are tinted in green.	Verified
4.	Images of wrong selections are tinted in red.	Verified
5.	Images in Lineup are all unique.	Verified

### Performance

#	TEST	RESULTS
6.	Images in Lineup load in a reasonable amount of time.	
7.	After a correct selection, there is a delay before a new quiz is loaded (gives user time to view results of completed quiz).	Verified

### Usability

#	TEST	RESULTS
8.	Game title appears at top of page.	Verified
9.	Whos question appears above Lineup.	Verified
10.	- Question includes a Colleague <First> then <Last> name.	Verified
11.	Five Colleague images appear in Lineup.	Defect D-002
12.	Images in Lineup are numbered 1 – 5.	Verified
13.	On desktop browsers, a clickable pointer icon appears when over an image in the Lineup.	Verified

## Compatibility

Verify web app is compatible on the required devices and platforms. See **Project Scope: Platforms and Screen Sizes** for requirements.

#	TEST	RESULTS
14.	Web app UI appears as expected in desktop browsers.	Verified
15.	Web app UI appears as expected in browsers on mobile devices – Portrait view	Verified
16.	Web app UI appears as expected in browsers on mobile devices – Landscape view	Verified
17.	Web app functions as expected in desktop browsers.	Defect D-001
18.	Web app functions in browsers on mobile devices – Portrait view	Verified
19.	Web app functions in browsers on mobile devices – Landscape view	Verified

## Automated Testing

### Existing Automation

The following are the automation tests from the previous contractor and will not be used in this new strategy:

1. Verify the “h1” header is not NULL.
  - a. This should be a manual test instead of automated.
2. Select the first image. Verify the “tries” counter is greater than it was before clicking the image.
  - a. The only thing this does is verify the “tries” counter increments on the first picture in the lineup.
    - i. This does not verify Tries is incremented by 1 per unique click.
    - ii. This does not verify Tries is incremented by any random image click.

### New Automation

#### Test Environment Setup

- \* Selenium----- 3.8.1
- \* Java ----- 1.8.0\_152
- \* TestNG ----- 6.13.1
- \* Maven----- 4.0
- \* Chrome WebDriver -- 2.33.506120
- \* Chrome ----- 69.0.3497.100

**Tests Requested**

#	TEST	CASES
1.	<p>Verify streak counter increments on correct answer. (NOTE: Counter is updated before new quiz loaded)</p> <pre>void verifyCounterStreak(int, int)</pre> <p>where: int = # in streak before wrong answer selected. int = # of wrong answers selected before streak.</p>	<ul style="list-style-type: none"> <li>- For 0 wrongs clicked first</li> <li>- For &gt;0 wrongs clicked first</li> <li>- For 1 quiz</li> <li>- For &gt;1 quiz</li> </ul>
2.	<p>Verify streak counter resets after wrong answer. (NOTE: Counter reset if, within same Lineup, a wrong answer is selected after selecting correct answer.)</p> <pre>void verifyCounterStreak(int, int)</pre> <p>where: int = # in streak before wrong answer selected. int = (optional) # of wrong answers selected before streak.</p>	<ul style="list-style-type: none"> <li>- When streak = 1</li> <li>- When streak &gt;= 1</li> <li>- Streak persists during User session</li> </ul>
3.	<p>Verify counters after 10 random selections.</p> <pre>void verifyCounterTriesAndCorrect(int)</pre> <p>where: int = achieve # of Tries from random clicks</p> <pre>void verifyCounterStreak(int)</pre> <p>where: int = # in streak before wrong answer selected.</p>	<ul style="list-style-type: none"> <li>- When random clicks &gt;= 10</li> <li>- When random clicks &lt; 10</li> </ul>
4.	<p>Verify Whols name &amp; Lineup change after correct answer. (i.e. a new quiz loads)</p> <pre>void verifyWhoIsAndLineupChange(int)</pre> <p>where: int = # of sequential quizzes to check.</p>	<ul style="list-style-type: none"> <li>- For correct answers = 1</li> <li>- For correct answers &gt;=1</li> </ul>
5.	<p>Verify wrong photo frequency in subsequent Lineups.</p> <pre>void frequencyOfWrongVsCorrect(int)</pre> <p>where: int = # of sequential quizzes to check.</p>	<p>The number of quizzes run depends on number of Colleagues in database. This will produce enough data to calculate frequency for a correct answer vs wrong answer.</p>

## Results

The following are some detailed notes about the automation created for each test and the results. Any defects found are noted in the **Defects** section.

TEST	RESULTS
<pre>void verifyCounterStreak(int c, int w)</pre> <ol style="list-style-type: none"> <li>1. Loop : click wrong answers until clicks == w</li> <li>2. Loop : click correct answers until clicks == c <ol style="list-style-type: none"> <li>a. For each correct answer, hard-assert streak counter</li> </ol> </li> <li>3. Click a wrong answer. <ol style="list-style-type: none"> <li>a. Hard-assert streak reset to 0</li> </ol> </li> </ol>	<p><b>Verified</b></p> <p>ChromeDriver, incognito</p> <p>correct clicks = 2, w = 1 correct clicks = 7, w = 2</p>
<pre>void verifyCounterTriesAndCorrect(int t)</pre> <ol style="list-style-type: none"> <li>1. Create a list of unique random clicks</li> <li>2. Loop : click random answers until clicks == t <ol style="list-style-type: none"> <li>a. If r == correct answer <ol style="list-style-type: none"> <li>i. Verify tries before new quiz</li> <li>ii. Create new list of random clicks</li> </ol> </li> <li>b. Else <ol style="list-style-type: none"> <li>i. Verify tries before new quiz</li> <li>ii. Increment random click index</li> </ol> </li> </ol> </li> </ol>	<p><i>Test completed but doesn't work</i></p> <p><b>Fails</b> randomly on assert</p> <p>I don't think the DOM is done refreshing when I try to get the 'attempts' element to verify the tries counter. I get some successes but it eventually fails.</p> <p>The assert that fails is always a wrong answer but not always the first wrong answer.</p>
<pre>verifyWhoIsAndLineupChange(int c)</pre> <ol style="list-style-type: none"> <li>1. Loop : click correct answers until clicks == (c-1) <ol style="list-style-type: none"> <li>a. From the Whols header, get correct answer: name_1, index_1</li> <li>b. From the gallery get colleagues in Lineup: list_1.</li> <li>c. Click the correct answer.</li> <li>d. Soft-assert name_1 does not appear in Whols header.</li> <li>e. Soft-assert the Lineup does not == list_1</li> </ol> </li> </ol>	<p><i>Test completed but doesn't work</i></p> <p><b>Fails</b> comparing lineups.</p> <p>I had this working then screwed it up somehow. Stepping through the code it looks like it should work but I can't pinpoint my mistake.</p>

TEST	RESULTS
<pre>void frequencyOfWrongVsCorrect(int x)</pre> <ol style="list-style-type: none"> <li>From the Whols header, get the correct answer.</li> <li>Save the correct name: name_c</li> <li>Click correct name.</li> <li>On new Lineup, save any wrong name: name_w</li> <li>Click wrong name.</li> <li>On new Lineup, get the correct index: index_c</li> <li>Loop : until number of Lineups == x <ol style="list-style-type: none"> <li>Get correct index: index_c</li> <li>If (name_w is in Lineup) AND (name_w != index_c)* { w_cnt++ }</li> <li>If (name_c is in Lineup) { c_cnt++ }</li> </ol> </li> <li>w_freq = x / w_cnt</li> <li>c_freq = x / c_cnt</li> <li>Soft-assert wrong frequency &gt; correct frequency</li> </ol>	<p><i>Partial test completed</i></p> <p>Verified for samples &lt;= 13</p> <p>Fails for samples &gt; 13 Stale element exception</p> <p>* The frequency sample is corrupted if the wrong name subsequently appears as a correct answer too early or simply before hitting the number of samples (x). If this happens, just report the stats as they currently stand and start counting over with a new correct and wrong name.</p>
<pre>void verifyWhoIsAppearsInLineup()</pre> <ol style="list-style-type: none"> <li>From the Whols header, get the correct answer: <ol style="list-style-type: none"> <li>name_c</li> <li>index_c</li> </ol> </li> <li>Hard-assert name_c appears in the Lineup gallery at position == index_c</li> </ol>	<p>Verified</p> <p>ChromeDriver, incognito</p>

## Assumptions

Assumptions were made for requirements that need more clarification if needed for testing.

Clarification may be needed by the Client if results are not as expected.

- What is “frequency”<sup>1</sup>?
  - that ColleagueX appears in Whols
  - that ColleagueX Img appears in Lineup
  - that ColleagueX is correctly identified
- “Authentication” pertains to access to the game by Colleagues only.
- Images render proportionally in square dimensions.
- Images are clicked only once during a quiz.

## Links

Links to the repositories created for this project.

Automation – [Github](#)

Test Strategy – [Github](#) (“NAME GAME-Test Strategy.pdf”)

Defect Report – Test Strategy document: Existing Defects

Test Results – Test Strategy document: Automated Tests: New Automation: Results

<sup>1</sup> In the original project document under “Test Automation”: “Bonus – Write a test to verify that failing to select one person’s name correctly makes that person appear more frequently than other “correctly selected” people.”

## Existing Defects

This section lists the defects and observations found during manual and automation testing.

### Priorities

Defect priorities are defined according to the following table:

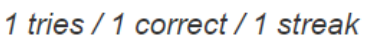
PRIORITY	NAME	DESCR
1	High	System or service failure
2	Medium	Functions not working as expected
3	Low	Syntax errors, formatting errors

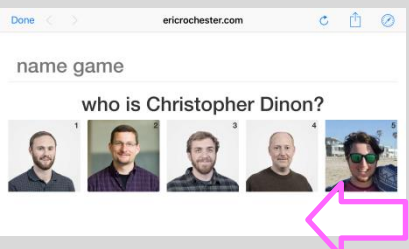
### Observations

The following were observations made during manual testing. There are no specific requirements so the Client should be asked to clarify.


<b>O-001</b>	Low priority
<b>TITLE</b>	"name game" vs "Name Game"
<b>DETAIL</b>	Should "name" and "game" be capitalized in title?

<b>O-002</b>	Low priority
<b>TITLE</b>	"who is <First> <Last>?" vs "Who is <First> <Last>?"
<b>DETAIL</b>	Should "who" be capitalized?

<b>O-003</b>	Low priority
<b>TITLE</b>	"1 tries" vs "1 try"
<b>DETAIL</b>	Would the client like the counter label customized for a single "try"?
<b>SCREENSHOT</b>	

<b>O-004</b>	Low priority
<b>TITLE</b>	Counters below fold – phones in landscape?
<b>DETAIL</b>	Should the User have to scroll to see the counters?
<b>SCREENSHOT</b>	
<b>PLATFORMS</b>	<input type="checkbox"/> Windows/Chrome <input type="checkbox"/> iPhone/Chrome <input type="checkbox"/> iPad/Chrome <input checked="" type="checkbox"/> Android/Chrome <input type="checkbox"/> Windows/Firefox <input checked="" type="checkbox"/> iPhone/Safari <input type="checkbox"/> iPad/Safari <input type="checkbox"/> Windows/IE

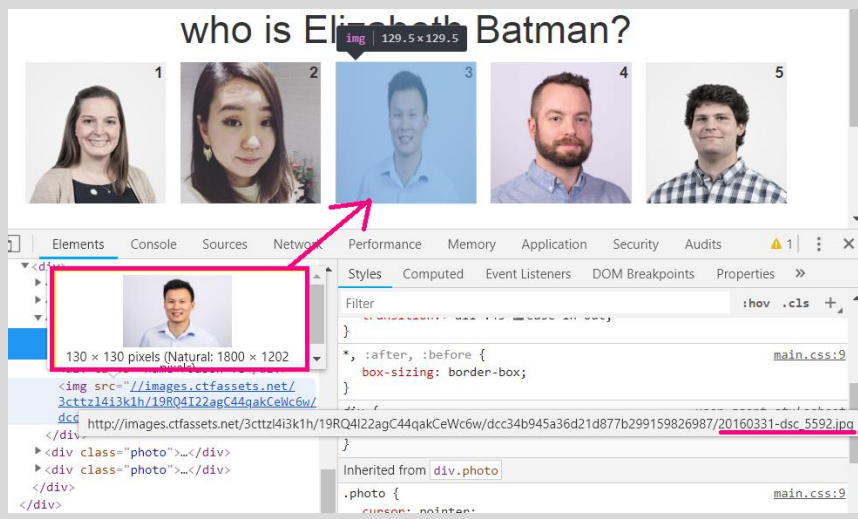


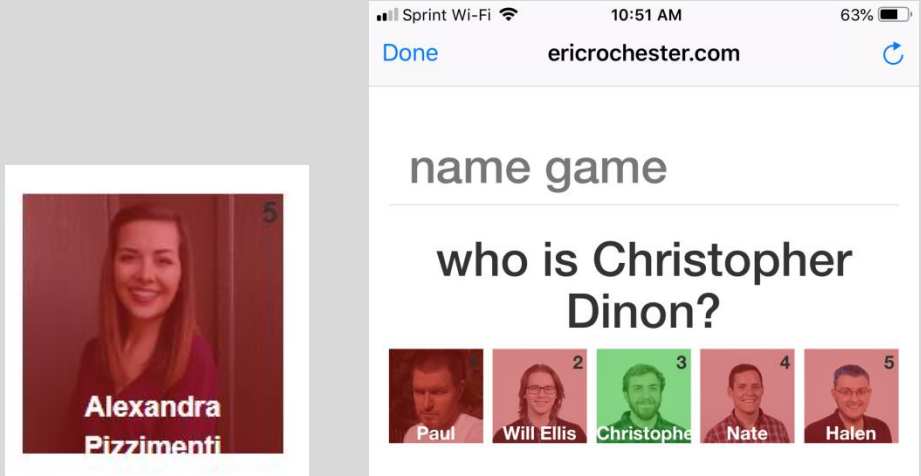
<b>O-005</b>	<b>Medium</b> priority
<b>TITLE</b>	Images still enabled after a correct answer (before a new lineup loads)
<b>DETAIL</b>	Should the User's streak be penalized (reset to 0) if they continue selecting incorrect images in the lineup after a correct image is selected?
<b>SCREENSHOT</b>	
<b>STEPS</b>	<ol style="list-style-type: none"> <li>1. Navigate to <a href="http://www.ericrochester.com/name-game/">http://www.ericrochester.com/name-game/</a></li> <li>2. From the lineup, select the correct answer. <ol style="list-style-type: none"> <li>a. Counters update to "1 tries / 1 correct / 1 streak"</li> </ol> </li> <li>3. Before the lineup refreshes to a new question, select another image. <ol style="list-style-type: none"> <li>a. Counters update to "2 tries / 1 correct / 0 streak"</li> </ol> </li> </ol>

## Defects

The following are the defects found during testing in order of priority.

<b>D-001</b>	<b>Medium</b> priority
<b>TITLE</b>	Web app does not work in IE
<b>DETAIL</b>	User cannot click on any of the images in the Lineup in IE 11.
<b>EXPECTED</b>	Clicking an image will increase counters and highlight the image as correct or wrong.
<b>ACTUAL</b>	Images cannot be clicked so no functionality is triggered.

<b>D-002</b>	<b>Low</b> priority
<b>TITLE</b>	Original image dimensions
<b>DETAIL</b>	When the original image is not square, the CSS requirement (130 x 130) distorts the image.
<b>SCREENSHOT</b>	
<b>PLATFORMS</b>	<input checked="" type="checkbox"/> Windows/Chrome <input type="checkbox"/> iPhone/Chrome <input type="checkbox"/> iPad/Chrome <input checked="" type="checkbox"/> Android/Chrome <input type="checkbox"/> Windows/Firefox <input checked="" type="checkbox"/> iPhone/Safari <input checked="" type="checkbox"/> iPad/Safari <input type="checkbox"/> Windows/IE
<b>EXPECTED</b>	Images are rendered proportionately.
<b>ACTUAL</b>	Some original images are not close enough to square and render distorted at 130 x 130.

<b>D-003</b>	Low priority
<b>TITLE</b>	Long names cut off
<b>DETAIL</b>	When a name wraps to a second line, it bleeds off the bottom horizontal of the image. On smaller screen sizes, the first name can be cut off the left and right vertical.
<b>SCREENSHOT</b>	
<b>PLATFORMS</b>	<input checked="" type="checkbox"/> Windows/Chrome <input type="checkbox"/> iPhone/Chrome <input type="checkbox"/> iPad/Chrome <input checked="" type="checkbox"/> Android/Chrome <input type="checkbox"/> Windows/Firefox <input checked="" type="checkbox"/> iPhone/Safari <input checked="" type="checkbox"/> iPad/Safari <input type="checkbox"/> Windows/IE
<b>EXPECTED</b>	Colleague's name appears when selected (correctly or incorrectly).
<b>ACTUAL</b>	If the name is too long, it's cut off on the sides and/or bottom of the image.

## Glossary

- Authentication**..... A gatekeeper, like a login page, to access the web app.
- Colleague** ..... Employee who appears in the Lineup of the quiz.
- Correct** ..... Total number of correct answers during a session.
- Hard assert**..... Immediately end a test when a failure is found.
- Lineup** ..... The random and unique Colleague images that appear in the quiz. Only one is the correct answer.
- Quiz** ..... Refers to one Whols question with a Lineup. Selecting a correct answer loads a new quiz.
- Recoverability** ..... How a web app performs during and after an interruption event (e.g. User clicks the Back button or Refresh in the browser, mobile device is powered down or battery = 0%, entering and exiting wi-fi/cellular zones, etc.)
- Session** ..... Counters are maintained by cookies. A session ends when these cookies are deleted (a new Chrome incognito window is opened or user manually clears cookies.)
- Soft assert** ..... Finish an automation test even when one or more failures are found. All failures are reported at end of test.
- Streak** ..... The longest number of correct answers, without error, during a session.
- Tries** ..... Total number of clicks during a session.
- User** ..... Person playing the Name Game.
- Whols** ..... In this document, “Whols” refers to the question header, “who is <First> <Last>?” or to the Colleague named in the question.