**CS 1699 - DELIVERABLE 3: Web Testing with BDD**

**for imgur.com**

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https://github.com/mjb187/CS1699-Deliverable3

CS 1699: Software Testing

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**DECISION TO TEST IMGUR.COM**

We decided to test the general functionality of the popular image-hosting and image-sharing site, imgur.com (pronounced “image-er” according to the site itself). Specifically, we decided to test the site’s ability to prompt unregistered users to either login or signup, to accept keyboard shortcuts, to allow users a suite of commenting options, [x], [x], and [x]. We had initially wanted to also test functionality on the mobile version of the site, but since we could not force m.imgur.com to load in the desktop browser, we elected to omit testing this functionality.

We decided on imgur as the basis for testing for a few reasons. First off, it has a user account system that allows for increased site interactivity when utilized (and thus giving us a good basis to use when formulating test cases). Secondly, imgur is large site, making it easy to section off our tests and not cause a disruption by uploading test images and test comments. Additionally, its functionality is similar to that of a messageboard; if we were testing Amazon (a site where the main functionality is to make purchases and leave useful product feedback), it would feel odd to test everything but the ability to purchase things. It would also make me very uneasy to trust something like Selenium to actually follow through with purchases, lest it accidentally purchase ten things that I do not want on accident. For this reason, we deemed imgur a “safe” choice for testing. Finally, imgur is a widely used and popular site, so we thought it would be informative to put ourselves in the mindset of the developers of such a high-traffic site and come up with tests as if we were first designing the site.

**DESCRIPTION OF ISSUES**

As with before, the first issue we faced was simply deciding what to test. With such a big site like imgur, there are many features that come into play, as well as the two complementary states of “logged in” and “not logged in” changing the features that are available to the user. The features we eventually decided on were chosen due to their relatively simple ability to test (such as searching for a login prompt on the page or checking that a keypress triggered the appropriate event) and their level of discretion (such as avoiding flooding the image stream with xkcd comics and cute kitten pictures while running tests). However, in choosing tests in this way, we acknowledge that we have skipped over a great deal of the site’s functionality. In a professional setting, it would be wise to be more thorough. We also tried to minimize the amount of dependencies invoked since we were again using the unit test framework.

The next issue to tackle was the issue of the Selenium API itself. Navigating to pages and selecting elements or text from the page is simple enough, but there are more nuances that appeared through actually attempting to test the scenarios and user stories we decided on. For example, one of the biggest hurdles was the fact that Selenium does not seem to be able to select elements within an iframe (which imgur uses to create login and signup prompts). To get around this, we had to test the source URL for the iframe itself. Figuring out how to log into the site without being able to select the individual textarea elements was almost impossible until we discovered a static login page for imgur. Other issues like this popped up while creating tests, but they were eventually overcome thanks to the robust nature of Selenium – it even includes the ability to spoof touchscreen interaction on a browser, which is neat.

Another issue we faced (that is again similar to the last deliverable) was deciding exactly how to test the user stories that we came up with. We eventually agreed that a user story should be analogous to a single unit test, but the issue of how to create our assertions was a common source of confusion throughout the entire project. For example, take the test scenario1\_keyboardShortcuts.test\_favorite(); there are a few different ways to test this: going to the user account’s “favorites” page and verifying the favorited image appears there, checking that the upvote counter incremented with the press of the favorite button, or checking that the favorite button now displays a visual indication of the favoriting action. For navigating to the user account’s list of favorites, we thought this might be relying on too many other dependencies (for instance, this might be controlled by a database somewhere, meaning there are functions to add to or fetch from the database, etc.), so we decided against testing it in that way. For incrementing the upvote counter, we didn’t think this was a natural thing to do since upvoting on its own also increments the upvote counter and favoriting seems to be a separate action. Thus, we decided to test the visual indication of the action, which amounts to checking the CSS classes applied to the HTML element; this information was gathered via investigating the webpage using Chrome’s Developer Tools. We were not sure if this was appropriate, however, as it seemed as though we were almost testing at a level below feature-level testing in this way. So we had to address the question of “what makes up the ‘favorite’ feature?” This is something that we encountered often, because were a human is able to almost instantly verify a feature, a program has a much more difficult time doing this.

**FAILED TESTS**

Note that all tests have the possibility to fail when executed due unseen factors such as the webpage taking longer to load than the WebDriver’s implicit wait time or Selenium choosing to disregard that implicit wait time. We attempted to minimize this sort of thing in our code, but every so often a glitch like this would cause a random test known to pass to fail.

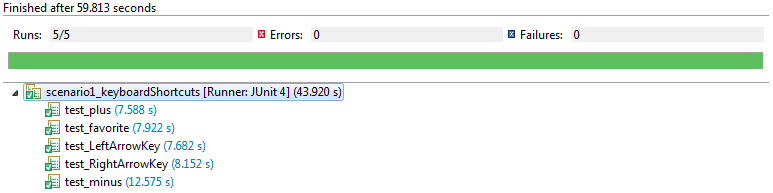
***scenario2\_login.java***

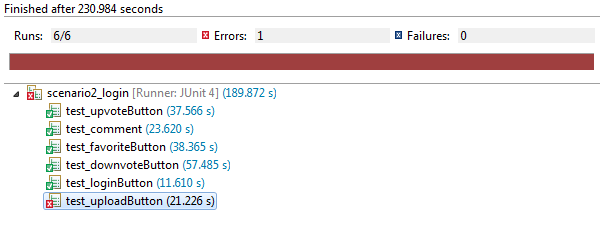
*test\_uploadButton()*

This test fails because imgur allows users to upload images to their site without having to create a user account first. This image is given a page and a permalink (most likely to be removed after a few days) so that images can be easily shared in this way. However, these images cannot be “published” to the site and appear in feeds and streams without a user account. If we had tested for the ability to publish rather than strictly upload an image, this test would have passed. We decided to only test the ability to upload because we assumed that was the “base” functionality of the site.

**SPECIAL INSTRUCTIONS**

**EXECUTED TESTS**

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