

# Homework A: NYPL Catalog Acceptance Test Conclusion

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## Drew Guarnera & Heather Michaud

The Acceptance Test is meant to provide the library (i.e., the stakeholders) with information about the quality of the New York Public Library (NYPL) Catalog, as found on <http://browse.nypl.org>. This is determined by whether the product meets the requirements as specified in the contract. To verify that these requirements have been met, a set of ten functional and non-functional automated tests were constructed using Python and Selenium. These are now described in detail.

### Search via keyword

Four phrases, "Hitchhiker's Gude to the Galaxy", "Algorithms", "Software Testing", and "Fahrenheit 451" were used as keywords to search in the NYPL Catalog. We first check that any results were returned. Then we compare that the results that the product found correspond to the oracle (here, the old NYPL catalog) - that at least the same or a greater number of results are returned by the product than by the oracle. Additionally, that every title that the oracle returned when searching by that same keyword is also found in the product.

### Search via title

Four phrases, "Hitchhiker's Gude to the Galaxy", "Algorithms", "Software Testing", and "Fahrenheit 451" were used to search by title in the product. We first check that any results were returned. Then we verify that all books found have the searched title phrase in them.

### Search via ISBN

Four ISBNs (0345391802, 1451673310, 0471043281, 0811874559) corresponding to The Hitchhiker's Guide to the Galaxy, Fahrenheit 451, The Art of Software Testing, and All My Friends Are Dead are used. For each ISBN, Amazon is search to acquire the corresponding title. Then the NYPL Catalog is searched by the same ISBN and we verify that this title matches the oracle's given title (here, Amazon).

### Search via location

Four separate titles are searched based on four separate locations. In one, we look for

"Harry Potter" at Tompkins Square. Next, "Software Testing" at 115th street, then "Hitchhiker's Guide to the Galaxy" at St. Agnes, and finally we search for "Don Quixote" at the Harlem library. In each scenario, the results of the search are compared to that of the oracle (here, the old NYPL catalog). We verify that the number of copies at the location is the same in both the product and the oracle.

### **View the ISBN of a book**

Four ISBNs (0345391802, 1451673310, 0471043281, 0811874559) corresponding to The Hitchhiker's Guide to the Galaxy, Fahrenheit 451, The Art of Software Testing, and All My Friends Are Dead are used. For each, we perform a search via ISBN to find the books. Next, we verify that the same ISBN can be found in the additional information listed for the title.

### **View number of copies for a book**

Two books, The Hitchhiker's Guide to the Galaxy and Frankenstein, with ISBN 0345391802 and 0553212478 respectively, are searched via ISBN in the product. In the results section we note the number of copies - whether they are available or unavailable. Next, we search the oracle (here, the old NYPL catalog) via the same ISBN and note the number of copies. Finally we verify that the number of copies provided by the oracle and the product are the same.

### **View location of a copy**

Two books, The Hitchhiker's Guide to the Galaxy and Frankenstein, with ISBN 0345391802 and 0553212478 respectively, are searched via ISBN in the product. We keep track of the location of each copy, and verify that it is consistent with the location of each copy as listed in the oracle (here, the old NYPL catalog).

### **Searching with non-ASCII characters is allowable**

Two books written in non-ASCII characters are searched for and we verify that each search returns results. One is the Art of War, with the title in Chinese characters. The other is Crime and Punishment as the title is written in Russian characters.

### **An SQL injection fails**

Four SQL injections are used during a search by keyword and we verify that either results appear or the page says that no results, in order to check that the site does not crash or produce an error.

### **The search bar does not go outside of the boundaries of the page**

We verify that the search bar stays within the bounds of the page when the browser is resized to be smaller.

## Evaluation

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A search by keyword using the product revealed that a search for certain books had less results when compared to the old version of the NYPL Catalog used as an oracle. Specifically this was the case when searching for "Hitchhiker's Guide to the Galaxy".

A search by title (e.g., "Harry Potter") and location (e.g. "Tompkins Square") returned less results in the product when compared to the old version of the NYPL Catalog used as an oracle (25 vs. 30).

In testing the view of the location in which copies are at, when searching for The Hitchhiker's Guide to the Galaxy via ISBN, we found that the old catalog had a copy of it at the Ottendorfer Fiction library, but the new catalog had all of the same location listings except this one.

Doing a search by ISBN in the new catalog unexpectedly showed more than one result in some cases (see 1451673310 for Fahrenheit 451). To mitigate this disparity during testing that books can be searched by ISBN, we checked that the results were at least less than five. However, while this was not explicitly stated in the requirements we test for, the issue remains that a search by unique ISBN does not return a single unique title.

Unless otherwise stated, the remaining tests passed.

## Conclusion

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A set of ten functional and non-functional requirements were tested using python and selenium. These automated tests verified the listed requirements in terms of search and view functionality, as well as security and responsiveness. Several issues were found with the functional requirements that caused the acceptance test to fail. As these issues were discovered using simple test cases, we expect that they persist in other cases throughout the system.

Thus, we conclude that the NYPL Catalog is not complete. While the responsiveness and security features are acceptable based on the terms of the contract, part of the expected search and view functionality has failed.