CS677 Lab 2 Tests

Bharath Narasimhan, Ronak Zala
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1 Test Scenarios

We created two types of tests - End to end tests to verify distributedness and consistency, and Unittests to verify logical consistency of the REST API calls. Below is the test setup for each case:

1.1 End to End Testing

Tests were focussed on the *buy()* command as it encompasses both types of requests (GET, POST), as well as logic. There are two end to end tests:

1. *test_out_of_stock()*
2. *test_restock()*

These Are present in the *end2end.py* file in the test directory. The common setup for both end to end tests is to initially have a fresh catalog server up (frontend and order server can already be running). As we are relying on the order logs the testing client needs to be on the same machine as order server. Other servers can be on different machines. (Not necessary for edlab machines) For running the respective test, un-comment the corresponding function call in *end2end.py*'s *main()*.

1.1.1 Out of stock scenario

This E2E test tests the scenario when the item that you are trying to buy goes out of stock. In that case you should not be able to buy the item successfully and that should also be logged in the order_log.

We are initiating the catalog with an item count of 5, then there are 5 buy orders which are made verified. After that another buy order is made and as the item count has reached 0 in the catalog. This buy order will be logged as failed in the order_logs.

```
~/D/l/test (master|+1…) $ python end2end.py
*** Testing out of stock case ***
Buying a book for 5 times
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Buying now should fail
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buying failed
!!! Test passed !!!
~/D/l/test (master|+1…) $
```

Figure 1: E2E test for Out of Stock scenario

1.1.2 Restock scenario

This E2E test tests the scenario when the item that you are trying to buy goes out of stock and is then **restocked**. In that case you should not be able to buy the item successfully before it has been restocked and that should also be logged in the order_log.

We are initiating the catalog with an item count of 5, then there are 5 buy orders which are made verified. After that another buy order is made and as the item count has reached 0 in the catalog. This buy order will be logged as failed in the order_logs. After this, the item will be restocked and the next buy order should be successful. **Note - These tests perform buy calls on the item with ID 1. It is trivial to extend small assumptions such as stock, ID etc. to the general case.**

1.2 Unit Testing

We wrote unit tests for each method to ensure logical consistency. We used the *pytest* framework (version 3.10.1). **Run *python -m pytest test/* from the *lab-2-dosboys* folder to run all the tests at once.** If you face a FileNotFound error create a dummy *times* folder in lab-2-dosboys.

1.2.1 Description of unit tests

1. *test_catalog_query*: This test checks the logic of *catalog.get_books()*. GET requests are mocked to the catalog server and the JSON responses parsed to assert correct results for both *search()* and *lookup()*

2. *test_catalog_update*: This test checks the logic of *catalog.update_books()*. POST requests are mocked to the catalog server and JSON responses parsed to assert that the cost is changed to the correct amount/the stock is increased/decreased by the correct amount.

```
~/D/l/test (master|+1…) $ python end2end.py
*** Testing restock case ***
Buying a book for 5 times
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buy Successful
Buying now should fail
Trying to buy How to get a good grade in 677 in 20 minutes a day
Buying failed
Periodic update successful for How to get a good grade in 677 in 20 minutes a day
Buying now should succeed
Trying to buy How to get a good grade in 677 in 20 minutes a day
Bought successfully
!!! Test passed !!!
~/D/l/test (master|+1…) $
```

Figure 2: E2E test for Restock scenario

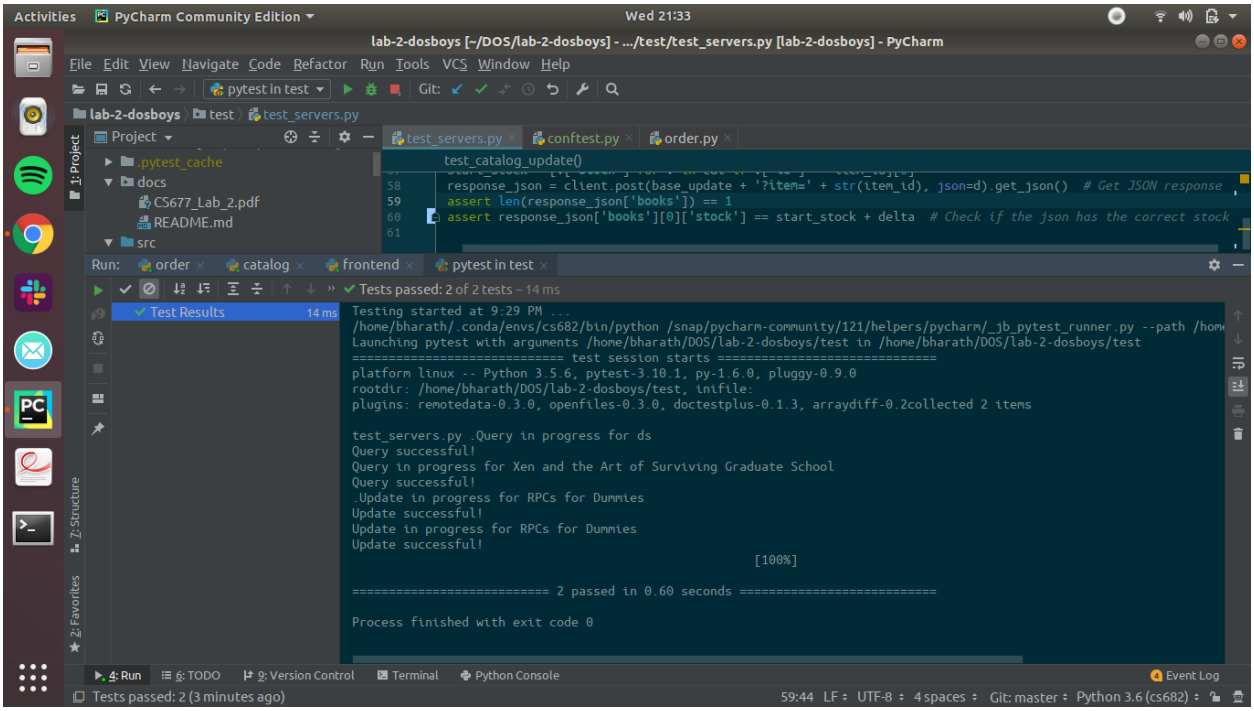

Figure 3: Unit Test runs for Catalog server