Github link for questions 1-3: https://github.com/cameron-mccawley/SWE-HW4

1) I wanted to create tests that ensured that the calculate_volume function only accepted the correct data types of floats and also was able to correctly calculate the correct volume for the given inputs. I purposely didn't put any error checking into the program so that some of the tests could be shown to fail, like testing for negative numbers. I also tested for edge cases like very large or very small numbers to see if the program behaved any differently.

2) For this I wanted to test a bit deeper since we are working with lists. I wanted to try edge cases such as what if there was nothing in the list, or how do negative numbers affect things? I also added the test of seeing if really small numbers have an impact on the average due to loss of precision, which I wrote with them expecting to fail, but due to the way python handles floating points when making comparison, it actually always rounded it correctly and was not failing, so I wrote a simple test to see if the test can fail properly when getting the answer wrong.

3) For these tests, since the function was so simple (just concatenating two strings together), the most important thing to test was how it handled different data types passed in. I did some simple tests to see if it worked with normal strings, and then I passed in raw integers to see if it would throw a value error (which it did). This meant that the function was working properly. I also did a test to see if it would fail on the adding a space part, with the intentions for the test to fail.

4) A component from my system in the class activity #1 would be the authentication server/system. This component authenticates users when supplied a correct username and password to let them access their account.

Unit test 1: I could test that when given a correct username and password and entering it into the site, I am authenticated by the server.

Unit test 2: I could test that when providing an incorrect username and password, the server does not authenticate me into the site.

Unit test 3: I could test that passing in escape string characters such as ("'/-`) does not actually break the program and is parsed correctly.