The artifact I chose for these enhancements was my project from CS-465. This is an application that takes trip information from a database, and displays it in the browser, it has a level of authentication with a login. If the user that is logged in is an admin they will then see buttons to edit or add trips which on the screen, forms will pop up to do these things and submit them. Since this is an angular app it also updates in real time using HTTP requests with Json files to make the changes in the database. This was created about 3 months ago.

I chose this artifact because I thought it would cover all the bases of what we are trying to achieve in this course's outcomes without having to select different artifacts to do so. I improved this by adding extensive testing to each of the components in the angular program to make sure they function as intended even when failing to make sure that this program is as good as it can be. I did this with Karma and Jasmine, which work so well with this angular project. I think the AuthenticationService.spec.ts really shows off how I was able to set up complex testing within the code without having to actually register or edit users and show off my skills in error handling.

**Design and evaluate computing solutions that solve a given problem using algorithmic principles and computer science practices.**

**Demonstrate the ability to use well-founded and innovative techniques, skills, and tools in computing practices.**

**Develop a security mindset that anticipates adversarial exploits in software architecture.**

I think I met all of these outcomes with my code. The test files are very efficient and well rounded code that shows off my security mindset to show that my testing will cover cases of failure and success to make sure that the program is working as intended and not doing anything I do not expect it to do.

I faced many challenges setting up the correct data structures and making sure the correct imports and processes were done to get the Mock HTML request to work as intended. I also learned that the responses I was sending back with my program were not the typical response and was holding most of the information in the message: section of the response. This is fine for now, I don't see it being a huge issue, I might change it in the future. The one thing that I will change about these artifacts today is that I will most likely include test cases for the future features I intend to implement with this course, such as Oauth2 integration and payment portal, along with the extended data base. These will also need to be tested, which I will set up as I get them finished. I included pictures of the Karma page with all of the test cases I set up with them succeeding.

