

## HW4-writeup

### 1. Positive Tests

- `validNestedArrayAndStructArrayVarStatements`: This felt like an important test because it made sure that the structs and arrays were working as they were supposed to. I had had issues in the HW because of an `ASTParser` issue where I wasn't allowing the creation of an array of structs so this test made sure that was fixed. Additionally seen as structs and arrays caused so many extra if statements and checks I felt it would be good to make another test to validate their working correctly.
- `extremeVariableShadowingWorking`: This test is actually basically identical to my final test. I had initially made the test to be a negative test but then it passed which forced me to look at the logic closer and I realized I actually wrote something viable. Thought it was just a good comparison to the failing test that I wrote after by tweaking what got printed when.

### 2. Negative Tests

- `accessUndefinedStructField`: this was a pretty obvious test, I correctly initialized a struct and made a new struct. But then I tried to access a field of a struct that didn't exist which generated the static error I wanted. Structs should be flawless now!
- `nestedArrayIndexingOnNonArray`: I felt that this was a good test because I wrote the code to look like, at first glance, that I was creating a new variable `y` of type `x` array, and setting it to a new array of size 6 holding type `x`. This would be valid if `x` were a valid type, but I hadn't declared this to be any sort of struct so that was a valid reason to fail. But additionally, `x` is the name of the variable I declared right before it so I wondered if the compiler would get at all confused or would try to set `y = x` or something. But it worked correctly so that was great!
- `extremeVariableShadowingError`: this is the test that I had to restructure to get to fail. I added a `print(j)` where there should have been any `'j'`. I thought this was important because shadowing was one of the main focus' of this homework and it is good to have more checks to make sure that it works regardless of how deep you go. And that the environments are being pushed and popped correctly.

### Challenges/Issues:

This homework took time. Just by virtue of how late I am turning this in, this is evident. When I started the homework multiple parts were difficult such as understanding the shadowing and not getting lost in the vast amount of code that I was writing. Here I found it very helpful to write out comments and try to keep my code styled cleanly so that I could come back and debug it when I eventually ran my tests. This homework got put on the backburner because of the time

it was taking me to get through it and other assignments that came up, and by the time I got back to it I had already done other later HW's which made it easier for me to understand how to code this. I had gotten a lot of experience writing statements for certain situations in HW5 so coming back to HW4 felt more straightforward than it had before. I ended up getting quite a few persistent errors when I ran my tests but many of them went away after I applied changes that I made to the ASTParser during HW6 complications. Currently I have 2 persistent errors that have to do with the lvalue and rvalue of structs, but only two of them are not passing which confuses me. But regardless, it is time to get this in so crossing my fingers that it won't hurt me too much down the line.