Justin Phillips

cs362 winter2020

assignment 4

2/14/2020

Unit Testing

I started off the unit testing by creating the test_classroom function where we will initiate the values needed for the student function. The first test that was created, was to test if the __init__ created the correct values for the student, then I ran an assertEqual to verify that the values for the Student class are what they are supposed to be.

The next function that is tested is the get_full_name function, in this test I first created the student object. I then set the first_name and last_name to their own independent variables. I then called the get_full_name function with the student object as the parameters and set the results to a variable called fullname. Then ran an assertEqual comparing the fullname to the (fn, " ", ln)

Test_submit_assignment was the next function that I tested. I started this off by creating a student object where it was set to the variable of student, then created an empty assignments list and appended "test" to it. I then called the get_assignments function, also called the get_assignment and set the results to name. After calling these I then called the submit_assignment(name) then used the assertEqual and compared the length of the list to 2 checking that the assignment was added to the list.

Next test was on the get_assignments, the first things that needed to be done was to create an object for student and assignment. I then added the assignment to the student object and ran an assertEqual comparing the assignment object was equal to the assignment that was adding in the get_assignment function call.

The test_get_average function was probably the most difficult to create the test for, I started off by creating the student object and created 2 assignment objects. I then assigned grades to the objects, then added those grades together and then divided them get an average. The results were set that average to a new variable. I then appended the assignment to the assignment list, called the get_average function set those results to a variable. I then called the assertEqual function to test if the results of the average variables were equal.

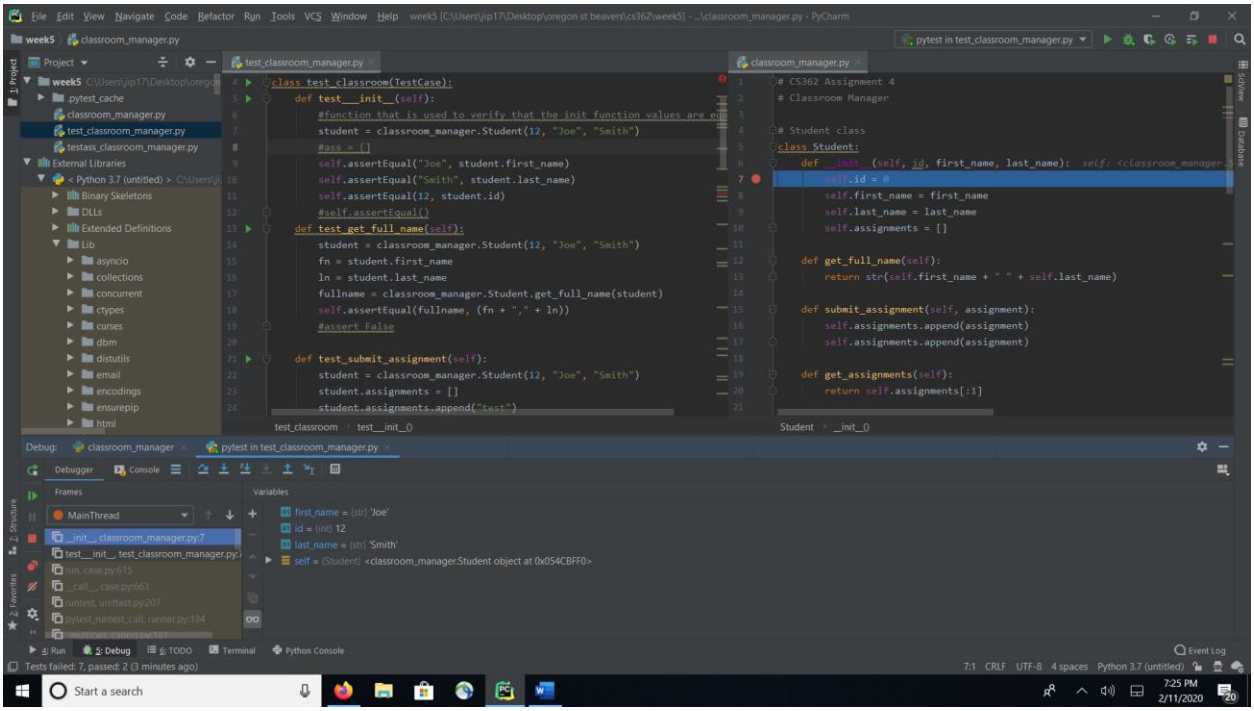
The last function for the student class is test_remove_assignment, first step was to create the student object followed by creating a list for the object. Next, I needed to create the assignment object to add to the list, appended that assignment to the list and then called the remove function. To check the results, I used assertEqual comparing the length of the list to 0.

The student functions are finished now I needed to test the assignment class. The first test was to test that the class is initiated properly, so to test this I created an assignment object and created a grade for this object. I then ran assertEqual on the items that were added to the object.

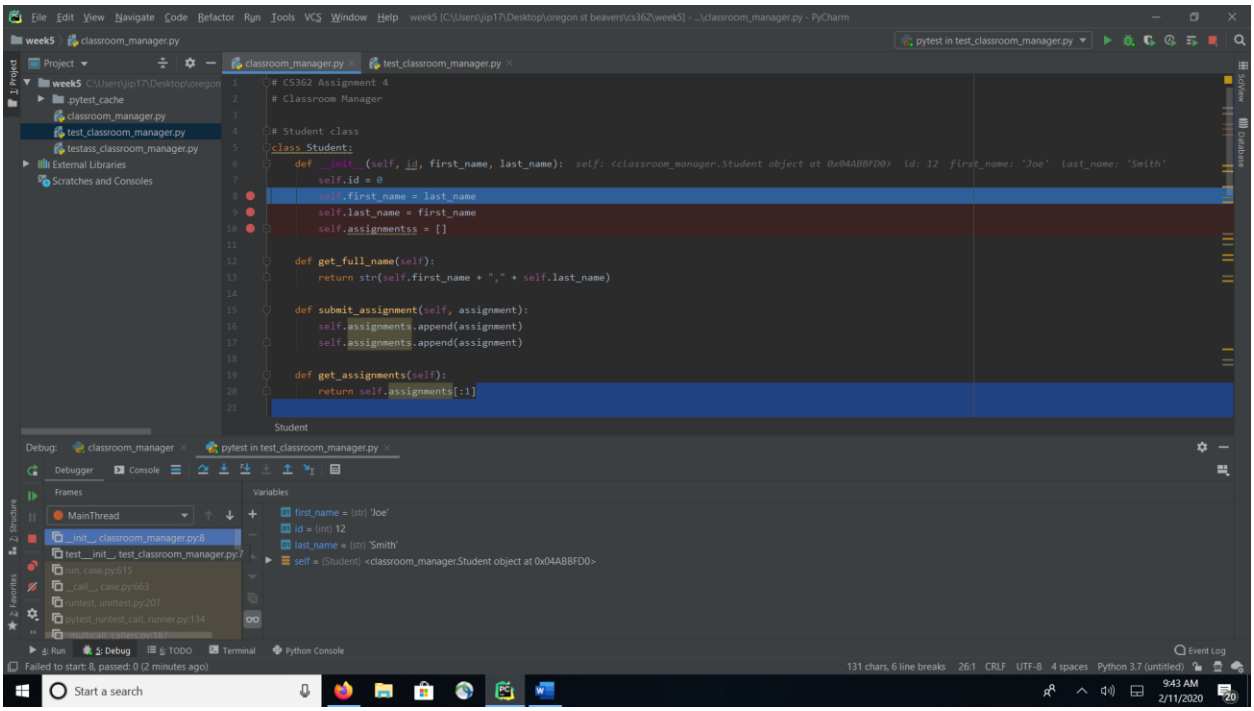
The last function that I created unit test for was test_asign_grade for the assignment class. I created the assignment object, then called the assign grade function. In this test case I had a boundary case since if the grade was over the max grade then the grade was none. The first assertEqual was just to check if the grade in the object was equal to the grade that got assigned. I then called assign_grade again with a number greater than the max, called assertEqual and compared it what the results should be which is none.

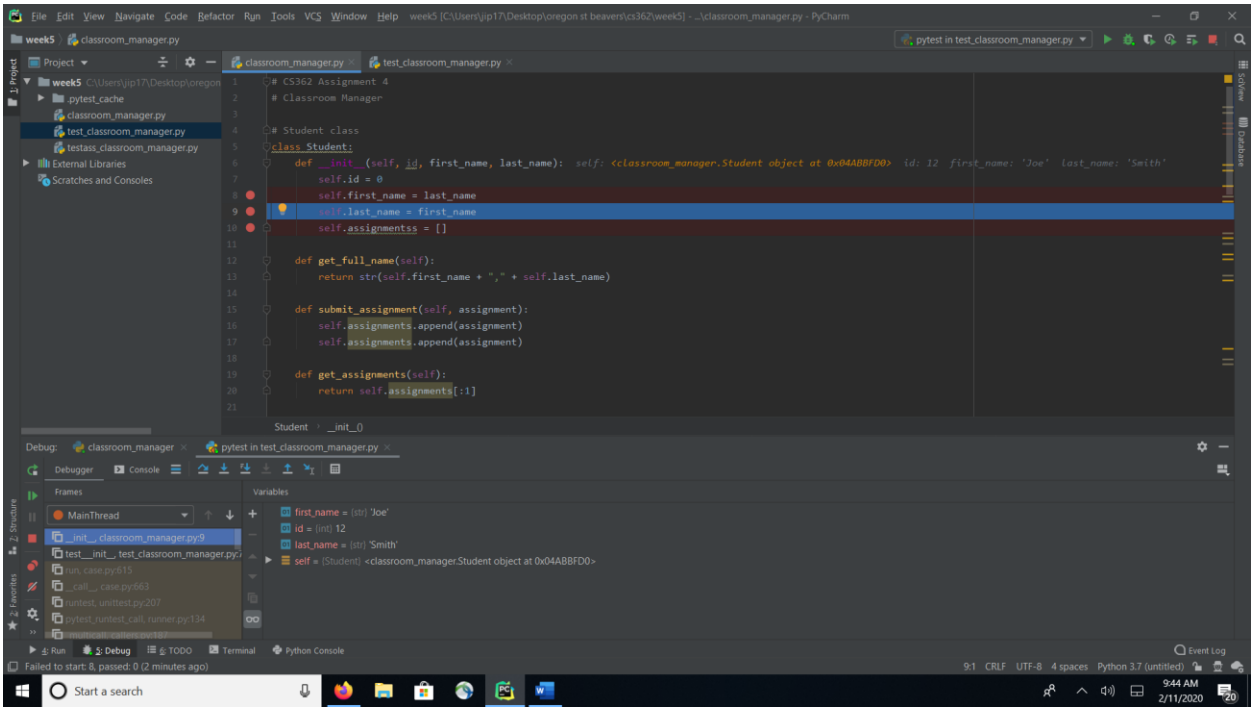
Debugging

The first bug I started with was in the __inti__ function the original code had id set = 0 and it should be self.id = id.

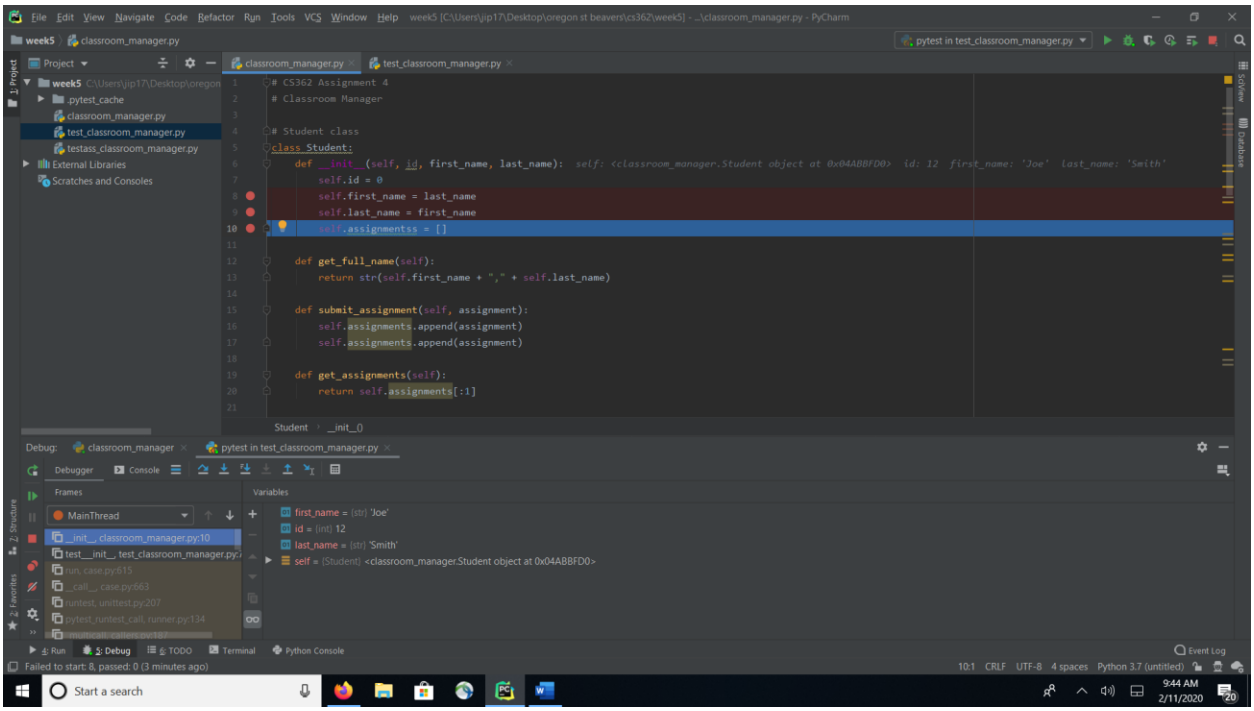


The next bug I found was also in __init__ where the arguments being passed were flipped and had been assigned to the wrong name. They had self.first_name = last_name and self.last_name = first_name.

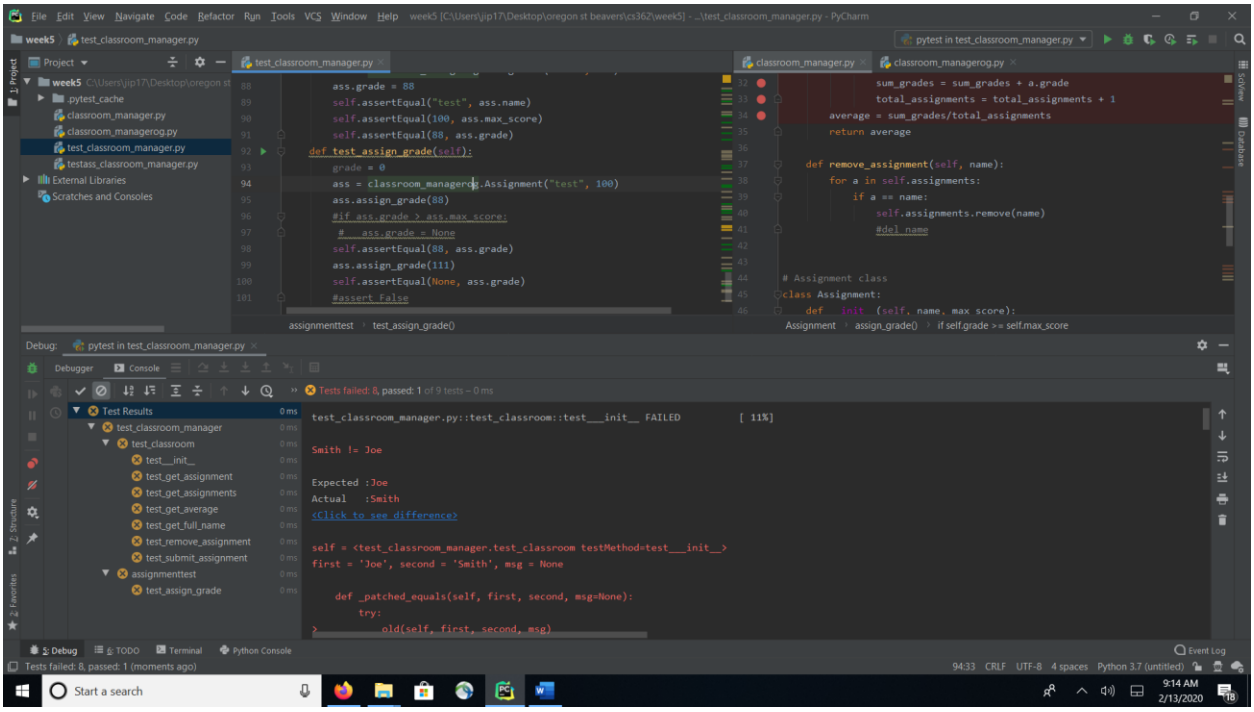




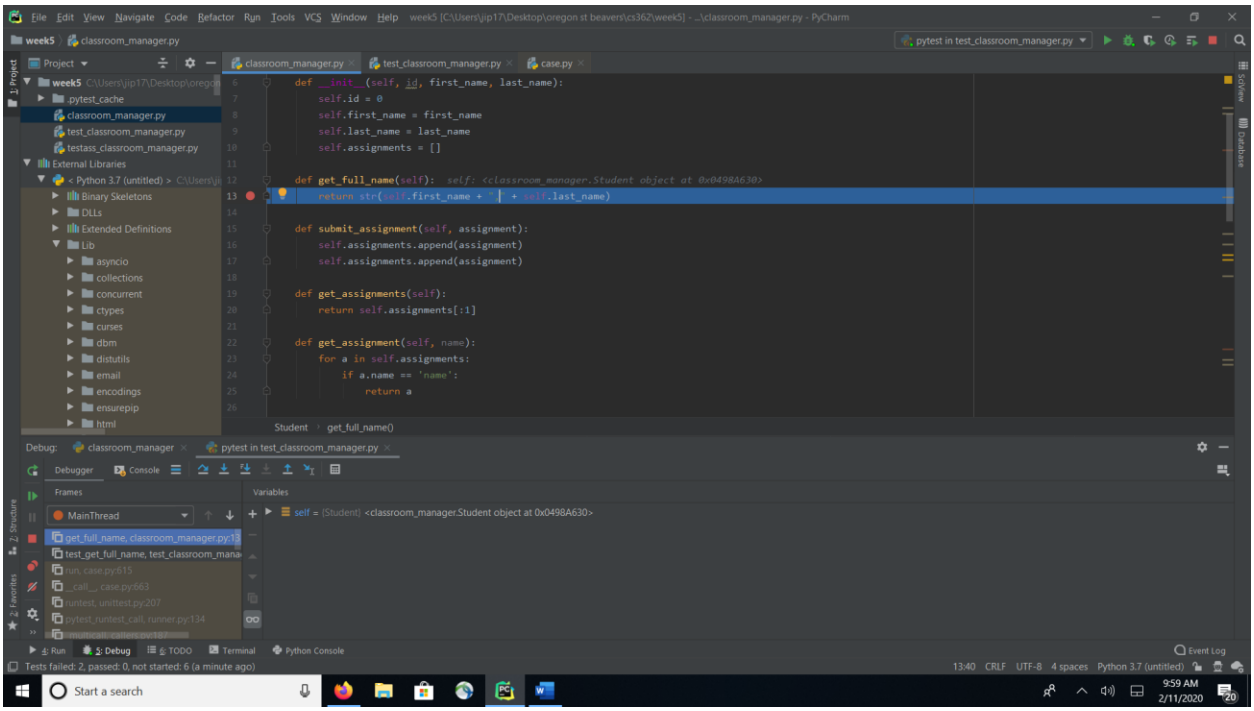
I found a bug in a misspelling of assignments; this was an easy find since PyCharm highlights variables when they aren't being used. I tried to make an assignment list the word "assignment" was highlighted.

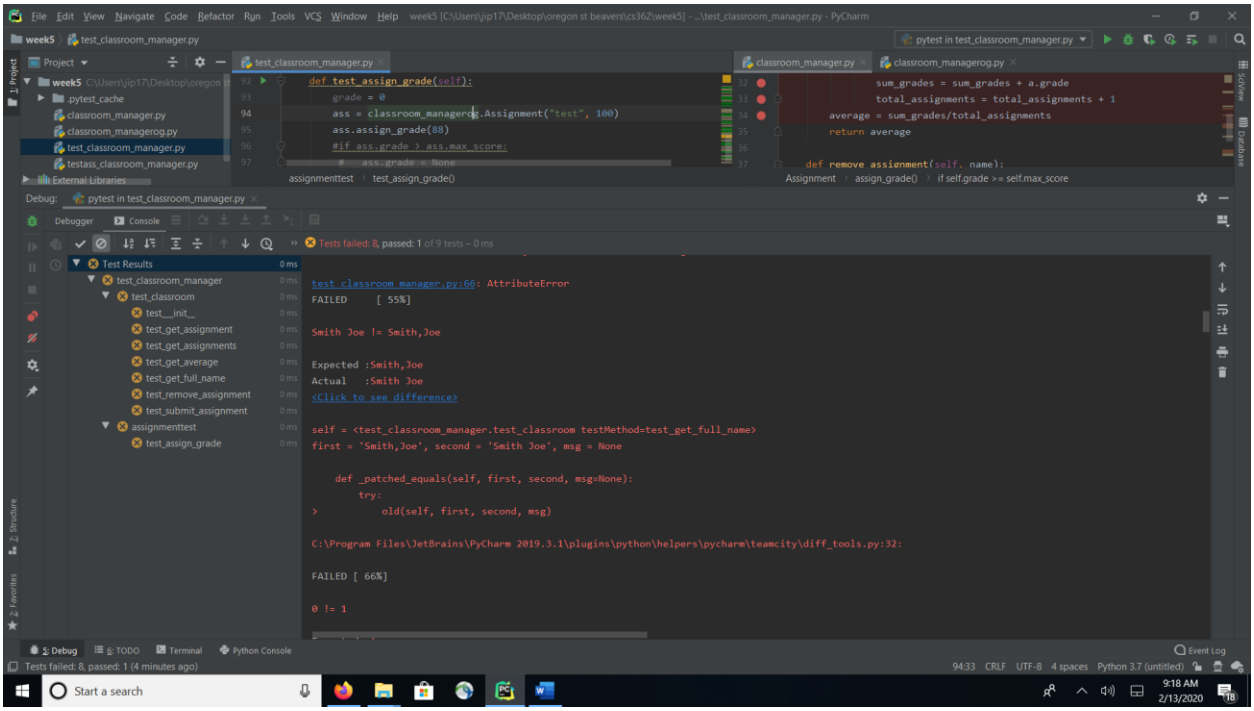


The failed test showed how the name was wrong which also gave a hint at the bug

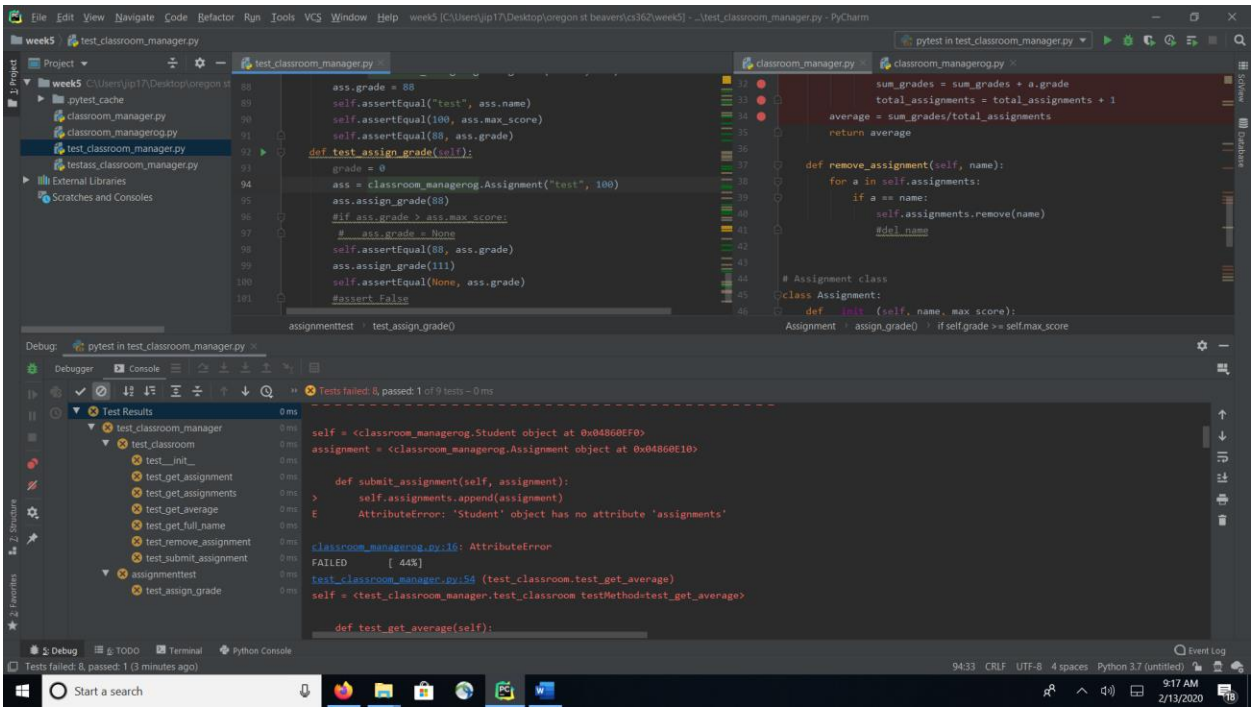


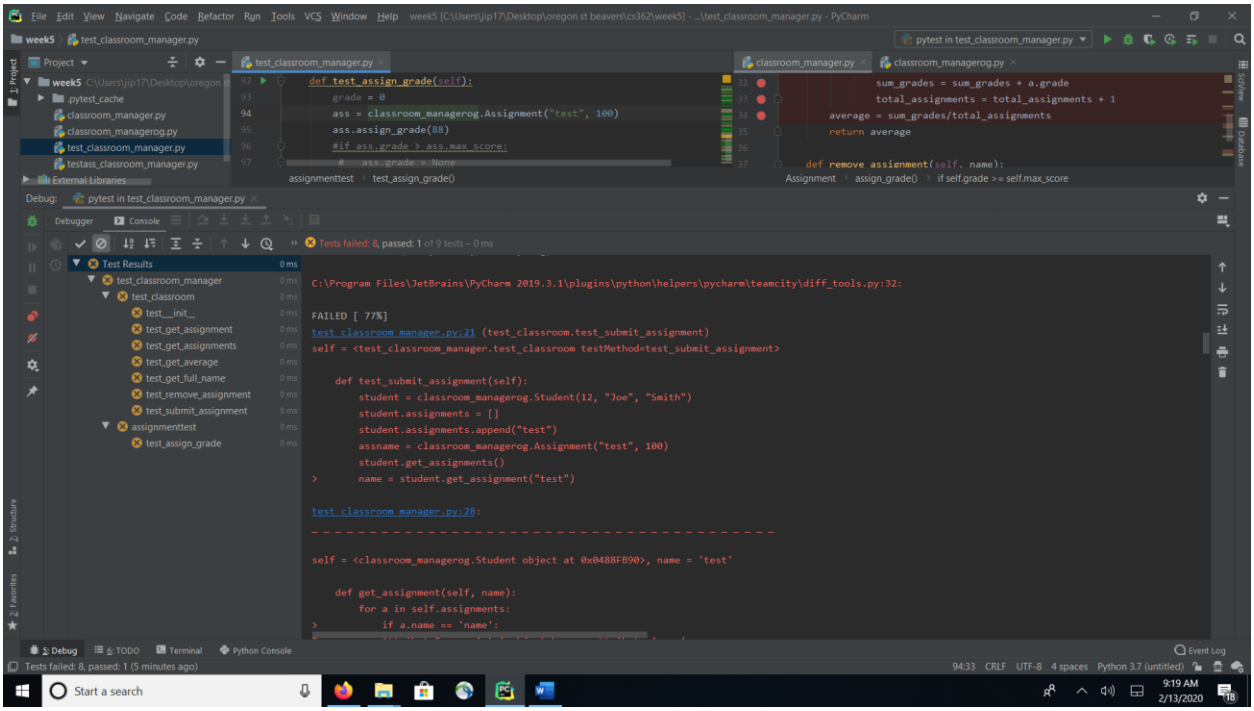
The next bug I discovered was in the get_full_name function in the instruction it calls for there to be a whitespace between the first and last names, but the function had a “,” so I just fixed it.



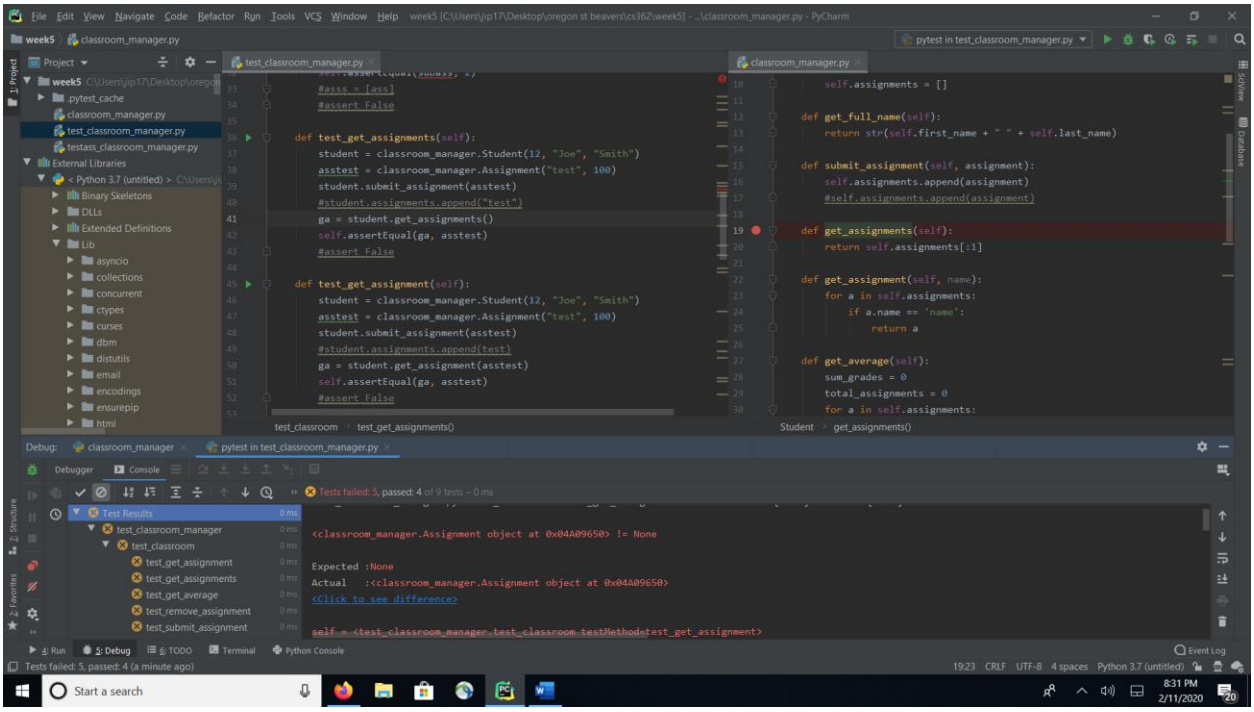


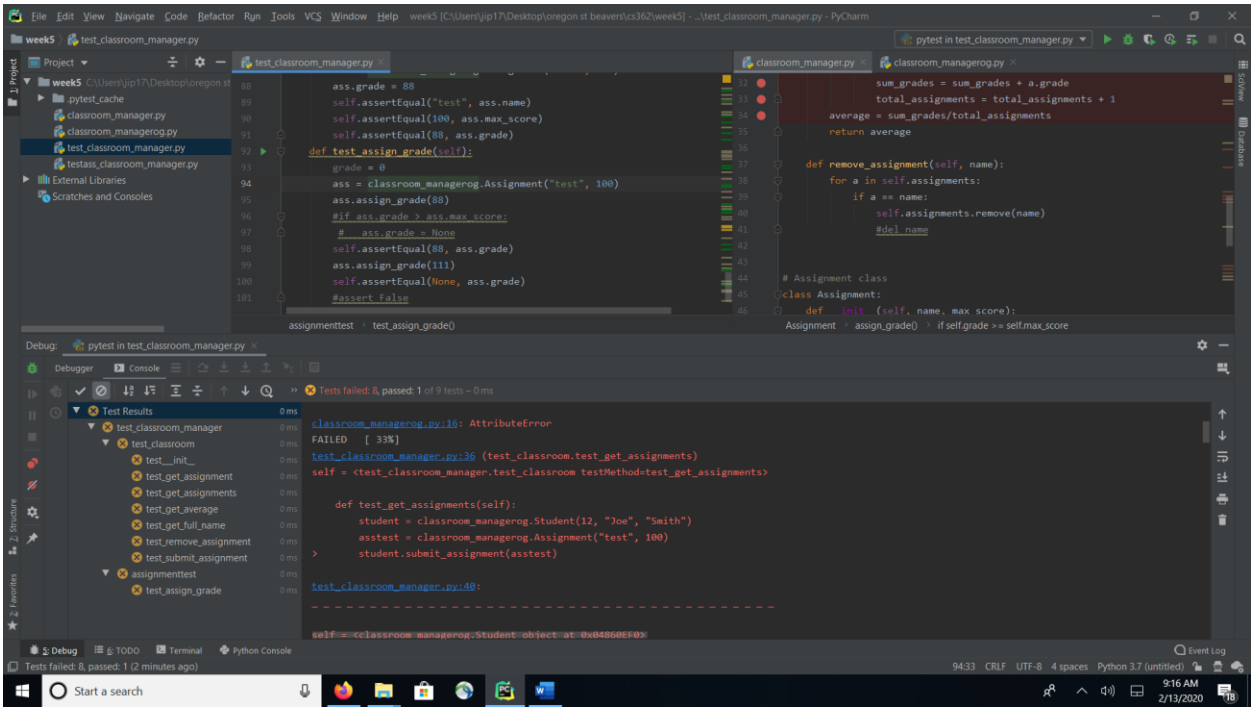
In test_submit_assignments it seemed that it submitted the assignment 2 times, so I deleted one of them.



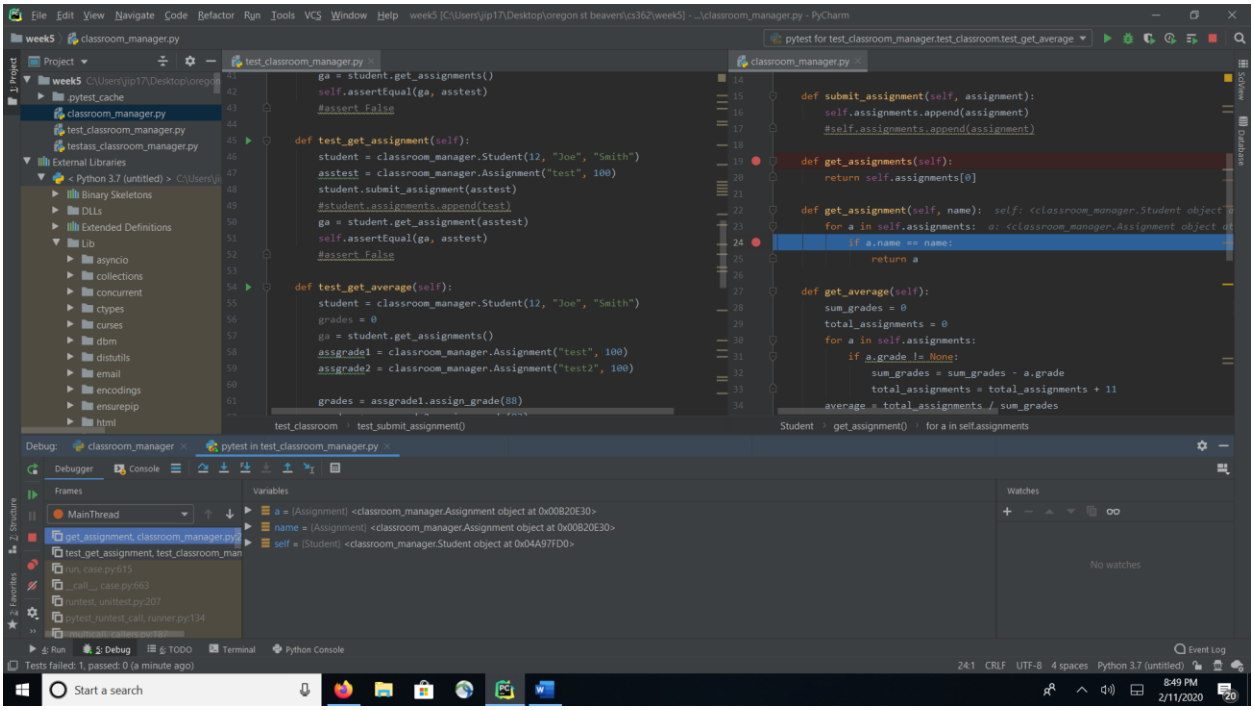


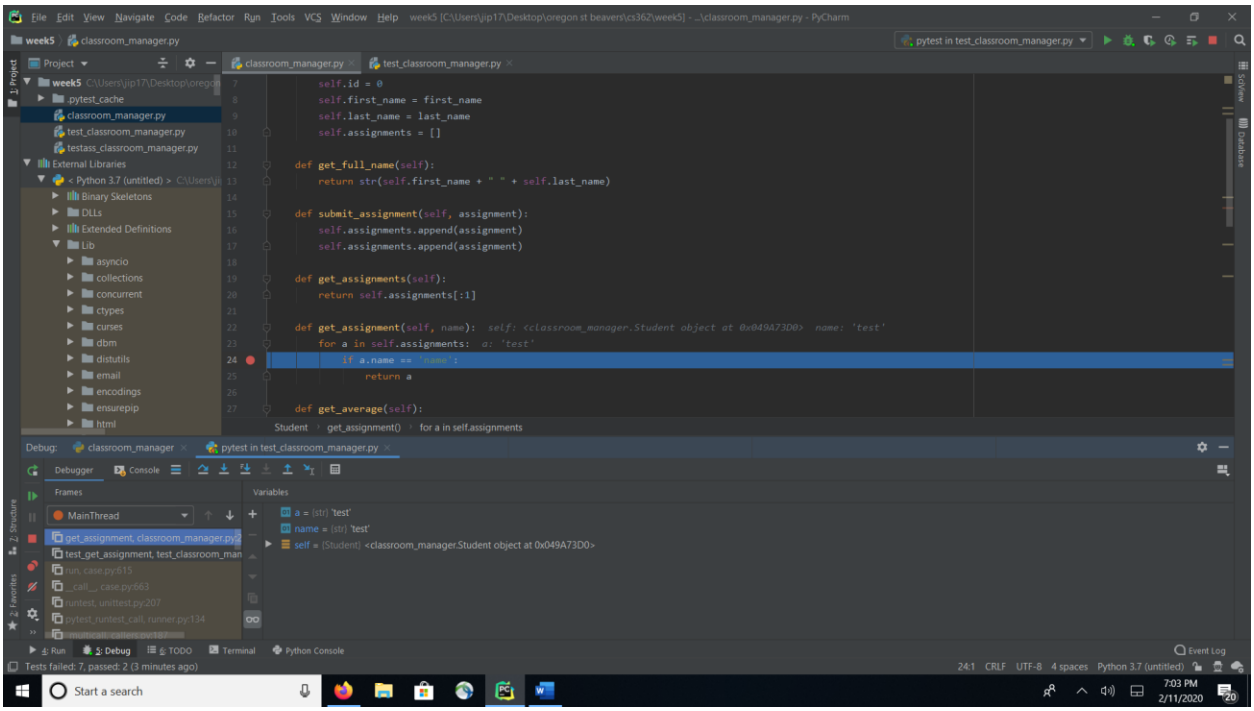
The bug I found here was that the return is get_assignments was returning assignments [:1], I fixed this to return assignments [0].

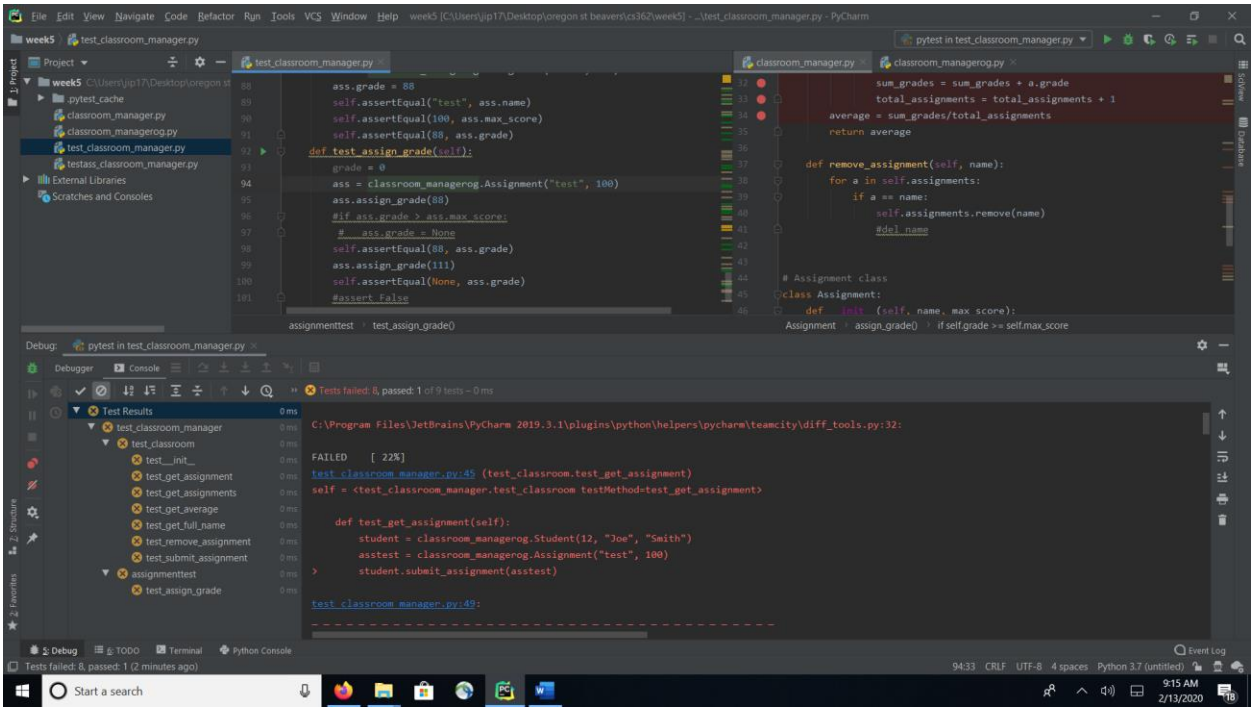

test_classroom_manager.py
classroom_manager.py
def test_get_assignments(self):
def test_get_assignment(self):
def get_full_name(self):
def submit_assignment(self, assignment):
def get_assignments(self):
def get_assignment(self, name):
def get_average(self):
Debug: classroom_manager
pytest in test_classroom_manager.py
Tests failed: 5, passed: 4 of 9 tests – 0 ms
<classroom_manager.Assignment object at 0x04A09650> != None
Expected :None
Actual :<classroom_manager.Assignment object at 0x04A09650>
<Click to see difference>
Tests failed: 5, passed: 4 (a minute ago)
Start a search
8:31 PM
2/11/2020

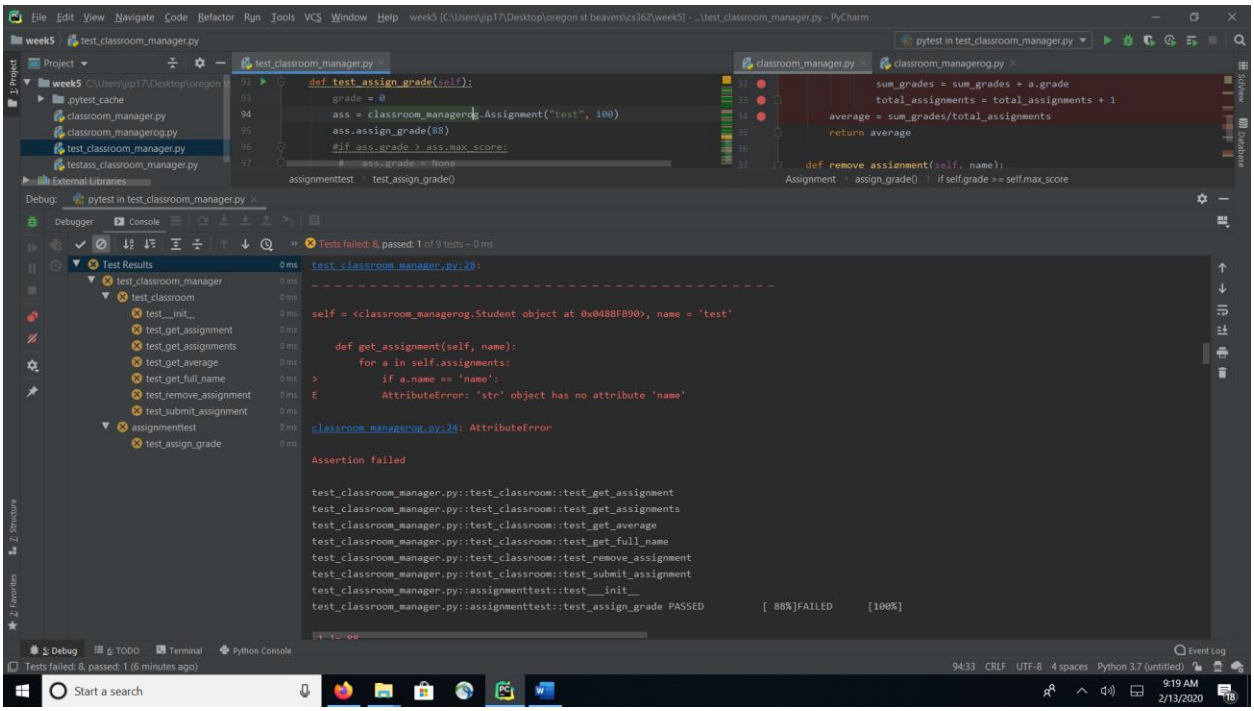

test_classroom_manager.py
classroom_manager.py
classroom_managerog.py
def test_assign_grade(self):
def remove_assignment(self, name):
# Assignment class
class Assignment:
Debug: pytest in test_classroom_manager.py
Tests failed: 8, passed: 1 of 9 tests – 0 ms
classroom_managerog.py:16: AttributeError
FAILED [33%]
test_classroom_manager.py:36 (test_classroom.test_get_assignments)
self = <test_classroom_manager.test_classroom testMethod=test_get_assignments>
def test_get_assignments(self):
student = classroom_managerog.Student(12, "Joe", "Smith")
asstest = classroom_managerog.Assignment("test", 100)
> student.submit_assignment(asstest)
test_classroom_manager.py:40:
self = <classroom_managerog.Student object at 0x04860EF0>
Tests failed: 8, passed: 1 (2 minutes ago)
Start a search
9:16 AM
2/13/2020

In get_assignment I found a.name doesn't exist changed it a == name

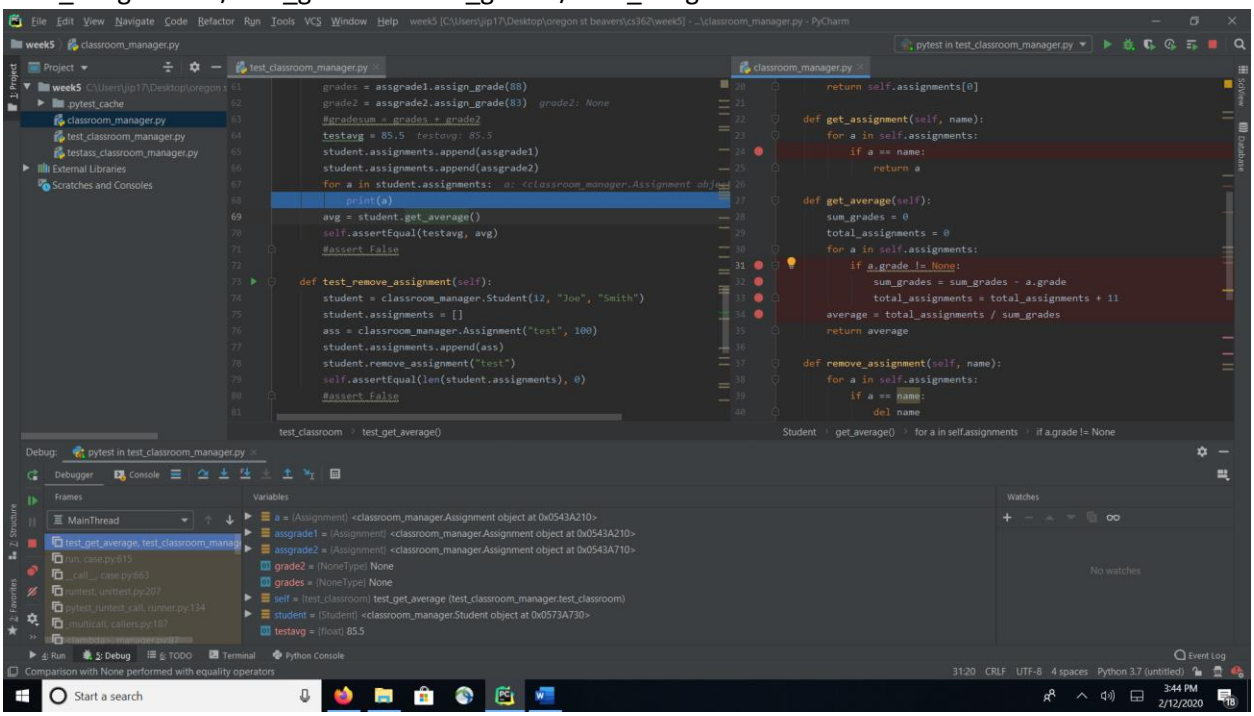


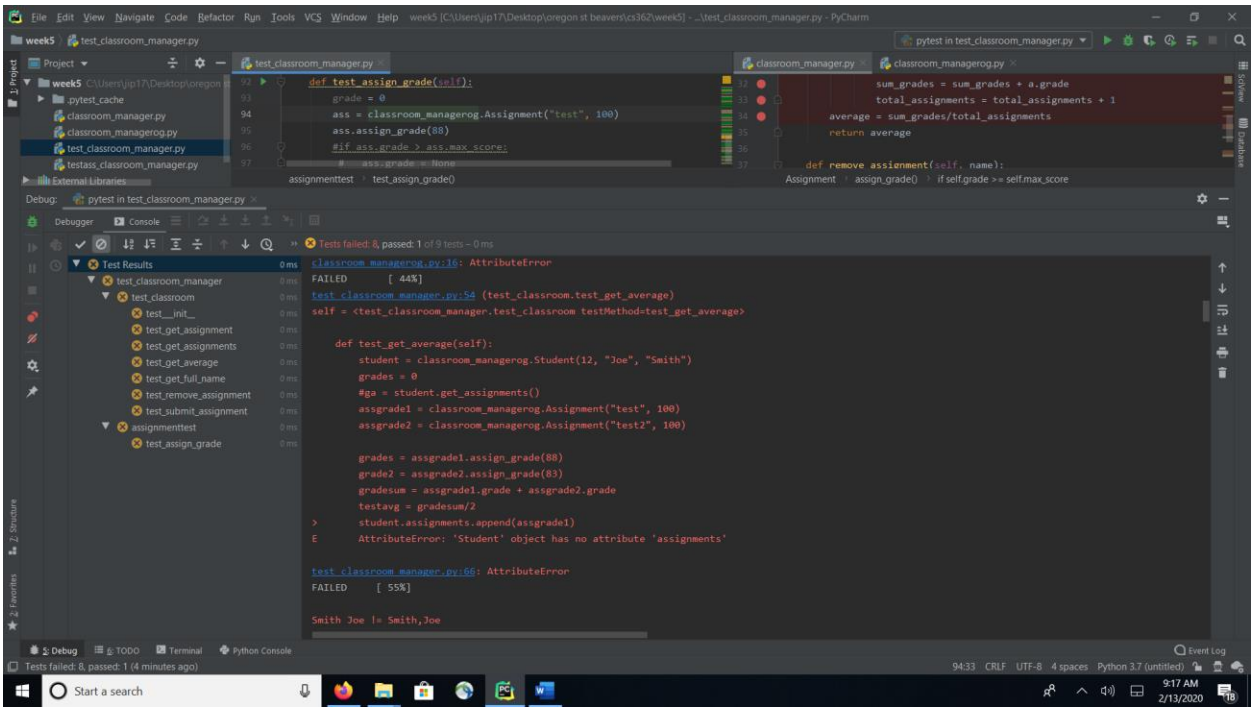

File Edit View Navigate Code Refactor Run Tools VCS Window Help
week5 [C:\Users\jip17\Desktop\oregon st beavers\cs362\week5] - ...\classroom_manager.py - PyCharm
week5 > classroom_manager.py
pytest in test_classroom_manager.py
Project
classroom_manager.py
test_classroom_manager.py
week5 C:\Users\jip17\Desktop\oregon
.pytest_cache
classroom_manager.py
test_classroom_manager.py
testass_classroom_manager.py
External Libraries
< Python 3.7 (untitled) > C:\Users\jip
Binary Skeletons
DLLs
Extended Definitions
Lib
asyncio
collections
concurrent
ctypes
curses
dbm
distutils
email
encodings
ensurepip
html
self.id = 0
self.first_name = first_name
self.last_name = last_name
self.assignments = []
def get_full_name(self):
return str(self.first_name + " " + self.last_name)
def submit_assignment(self, assignment):
self.assignments.append(assignment)
self.assignments.append(assignment)
def get_assignments(self):
return self.assignments[:1]
def get_assignment(self, name): self: <classroom_manager.Student object at 0x049A73D0> name: 'test'
for a in self.assignments: a: 'test'
if a.name == 'name':
return a
def get_average(self):
Student > get_assignment() > for a in self.assignments
Debug: classroom_manager pytest in test_classroom_manager.py
Debugger Console
Frames
Variables
MainThread
get_assignment, classroom_manager.py:2
test_get_assignment, test_classroom_man
run, case.py:615
__call__, case.py:663
runtest, unittest.py:207
pytest_runtest_call, runner.py:134
a = {str} 'test'
name = {str} 'test'
self = {Student} <classroom_manager.Student object at 0x049A73D0>
Run Debug TODO Terminal Python Console
Event Log
Tests failed: 7, passed: 2 (3 minutes ago)
24:1 CRLF UTF-8 4 spaces Python 3.7 (untitled)
Start a search
7:03 PM
2/11/2020


File Edit View Navigate Code Refactor Run Tools VCS Window Help
week5 [C:\Users\jip17\Desktop\oregon st beavers\cs362\week5] - ...\test_classroom_manager.py - PyCharm
week5 > test_classroom_manager.py
pytest in test_classroom_manager.py
Project
test_classroom_manager.py
classroom_manager.py
classroom_managerog.py
week5 C:\Users\jip17\Desktop\oregon st
.pytest_cache
classroom_manager.py
classroom_managerog.py
test_classroom_manager.py
testass_classroom_manager.py
External Libraries
Scratches and Consoles
ass.grade = 88
self.assertEqual("test", ass.name)
self.assertEqual(100, ass.max_score)
self.assertEqual(88, ass.grade)
def test_assign_grade(self):
grade = 0
ass = classroom_managerog.Assignment("test", 100)
ass.assign_grade(88)
#if ass.grade > ass.max_score:
# ass.grade = None
self.assertEqual(88, ass.grade)
ass.assign_grade(111)
self.assertEqual(None, ass.grade)
#assert False
assignmenttest > test_assign_grade()
sum_grades = sum_grades + a.grade
total_assignments = total_assignments + 1
average = sum_grades/total_assignments
return average
def remove_assignment(self, name):
for a in self.assignments:
if a == name:
self.assignments.remove(name)
#del name
# Assignment class
class Assignment:
def __init__(self, name, max_score):
Assignment > assign_grade() > if self.grade >= self.max_score
Debug: pytest in test_classroom_manager.py
Debugger Console
Tests failed: 8, passed: 1 of 9 tests – 0 ms
Test Results 0 ms
test_classroom_manager 0 ms
test_classroom 0 ms
test__init__ 0 ms
test_get_assignment 0 ms
test_get_assignments 0 ms
test_get_average 0 ms
test_get_full_name 0 ms
test_remove_assignment 0 ms
test_submit_assignment 0 ms
assignmenttest 0 ms
test_assign_grade 0 ms
C:\Program Files\JetBrains\PyCharm 2019.3.1\plugins\python\helpers\pycharm\teamcity\diff_tools.py:32:
FAILED [22%]
test_classroom_manager.py:45 (test_classroom.test_get_assignment)
self = <test_classroom_manager.test_classroom testMethod=test_get_assignment>
def test_get_assignment(self):
student = classroom_managerog.Student(12, "Joe", "Smith")
asstest = classroom_managerog.Assignment("test", 100)
> student.submit_assignment(asstest)
test_classroom_manager.py:49:
Debug TODO Terminal Python Console
Event Log
Tests failed: 8, passed: 1 (2 minutes ago)
94:33 CRLF UTF-8 4 spaces Python 3.7 (untitled)
Start a search
9:15 AM
2/13/2020

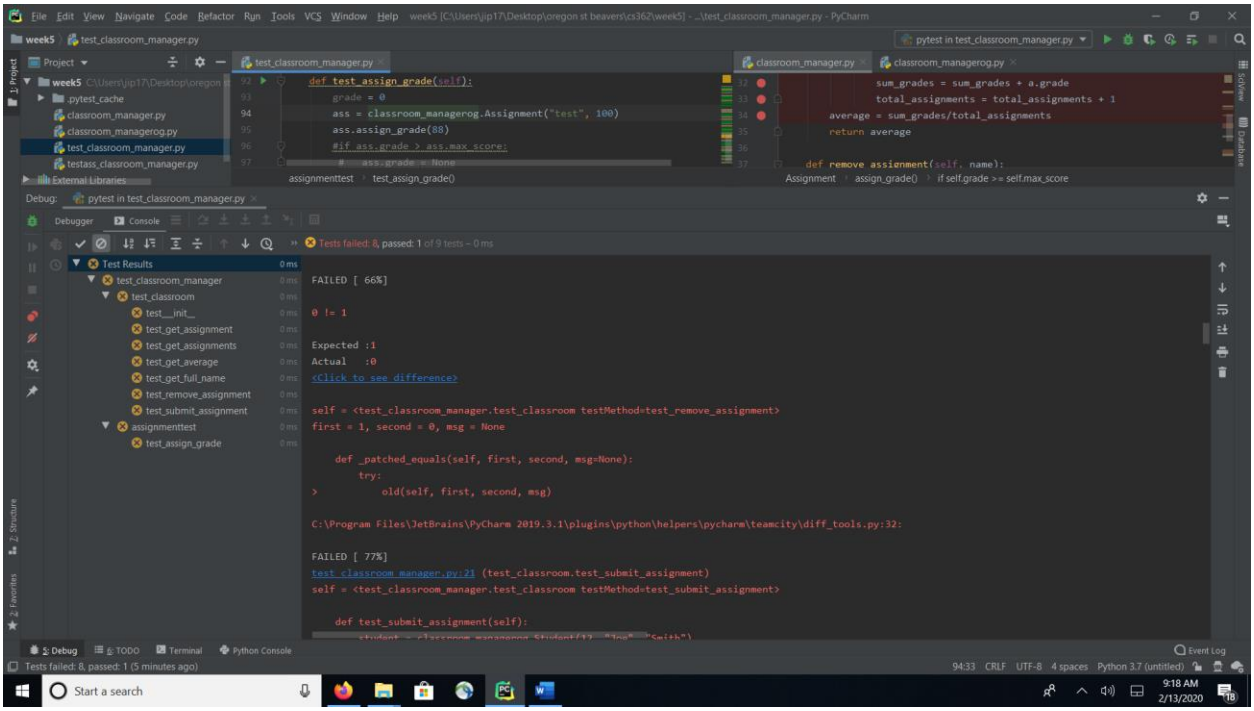


In the get_average function I found a few bugs, the first one I changed was “!= ” to “is not” (not sure if this was needed). There was a mistake in the for loop that added +11 to each pass to total_assignments, I changed this to +1. The formula for figuring out average was wrong, and I fixed it by switching total_assignments/sum_grades to sum_grades/total_assignments.

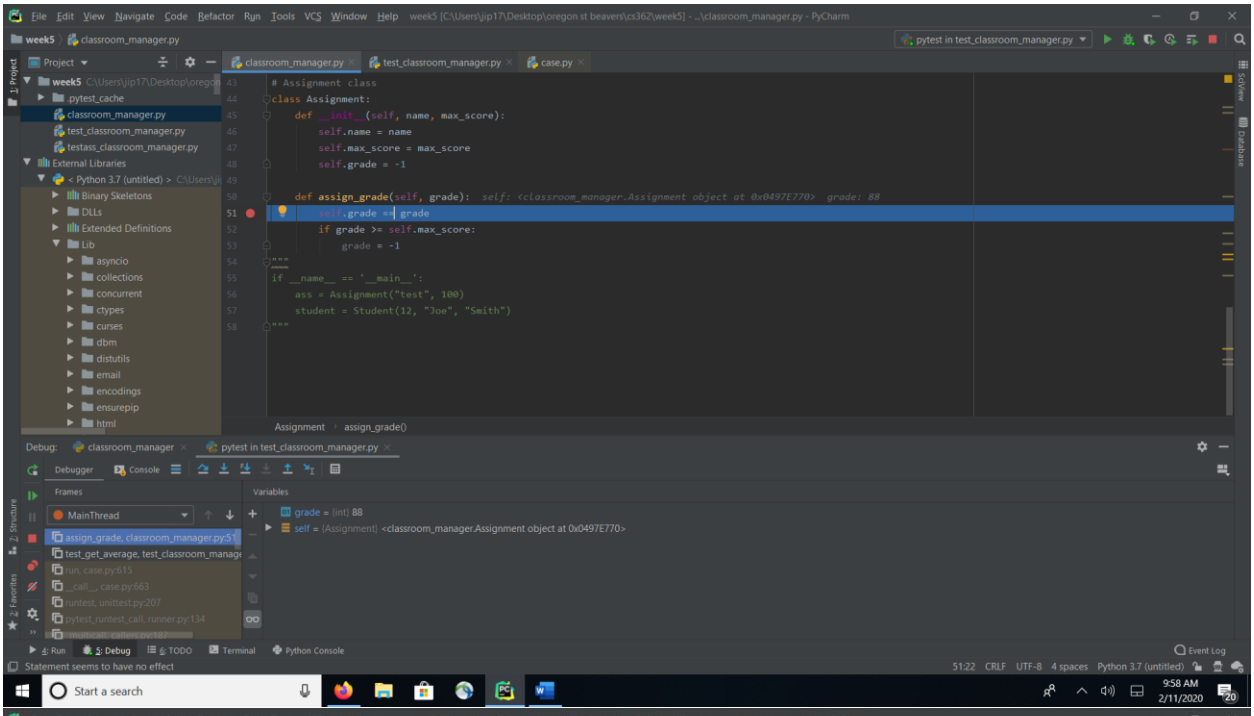


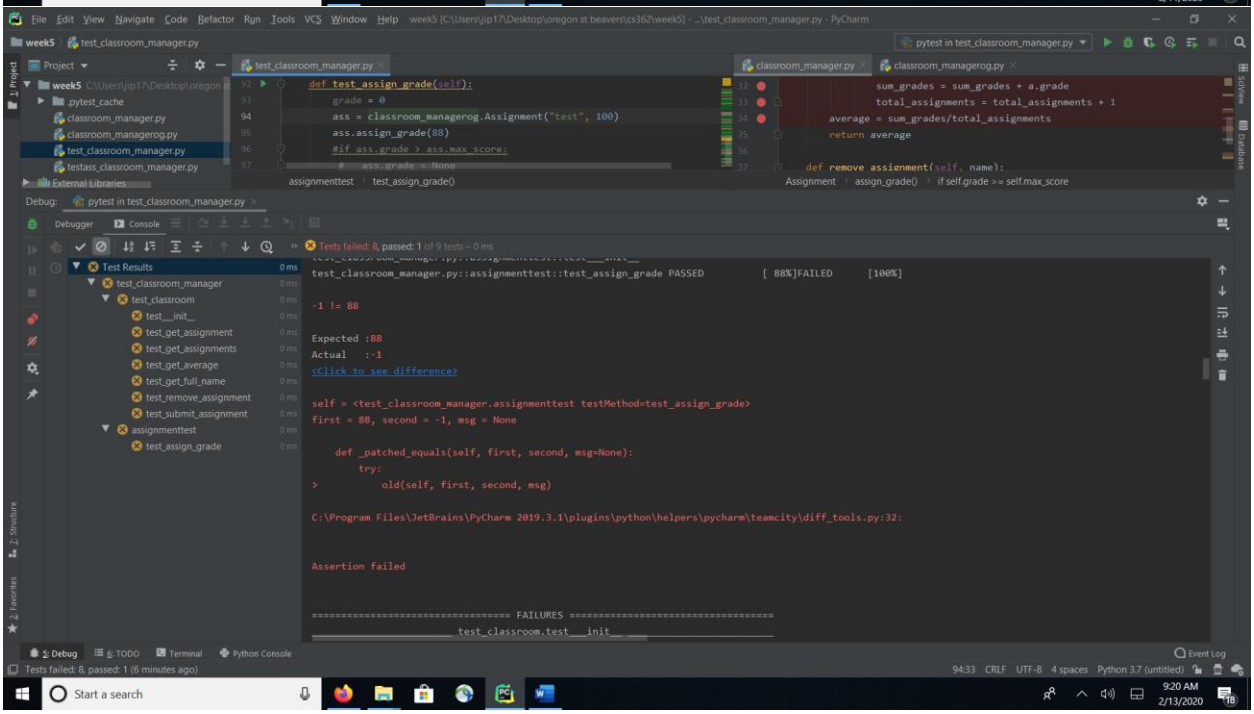


In remove_assignment I changed del name to self.assignments.remove(name)



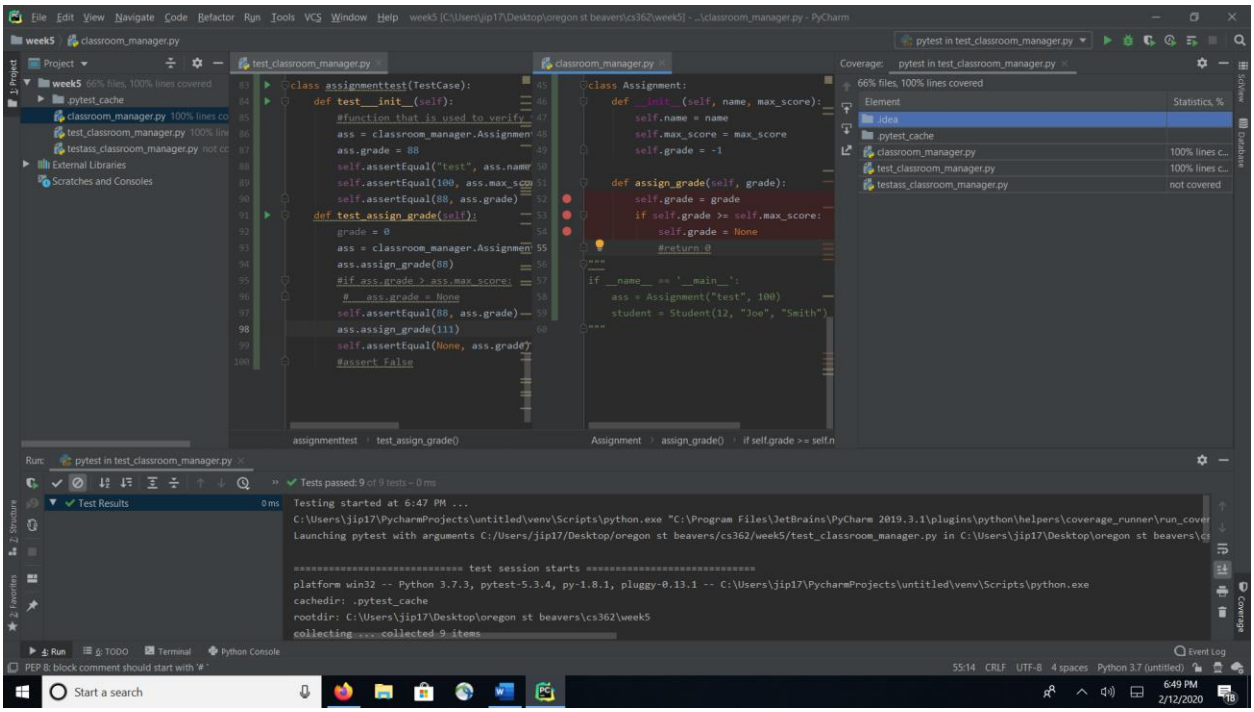
In assign_grade the bug I ran into was a simple fix the original had == and I changed that to =. I also changed the if statement from if grade to if self.grade and when true instead of grade = -1 I fixed it to self.grade = None.



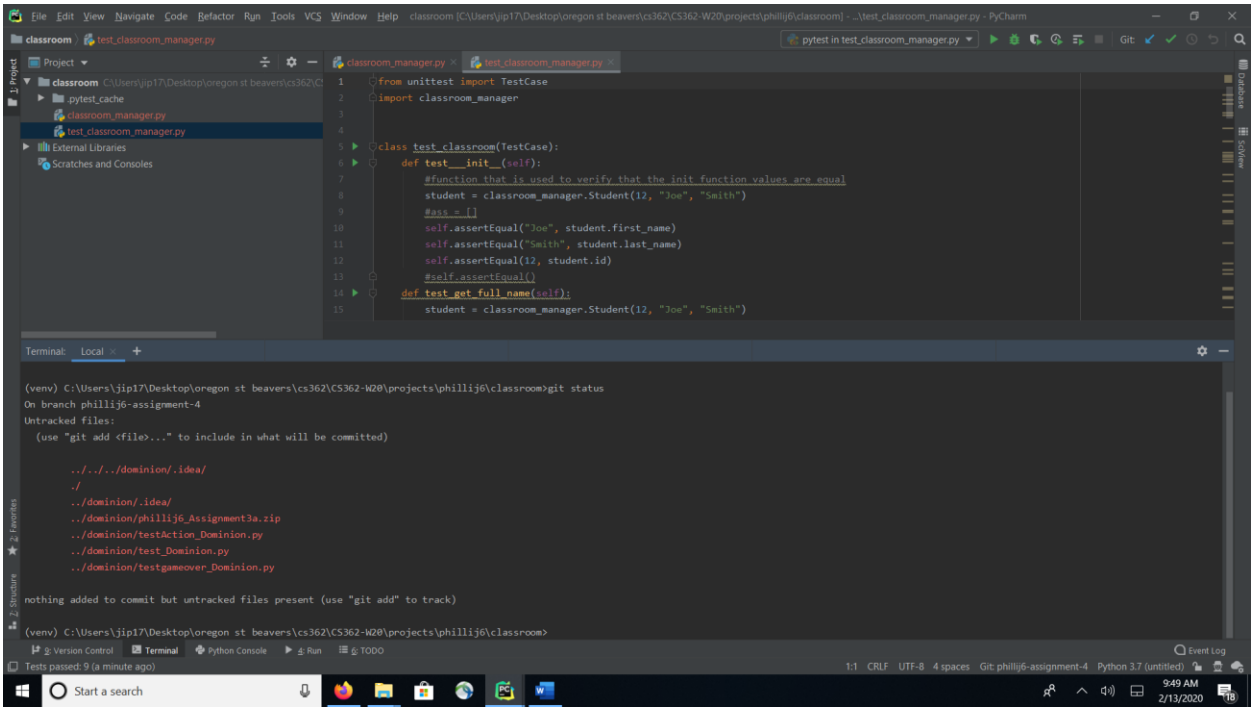


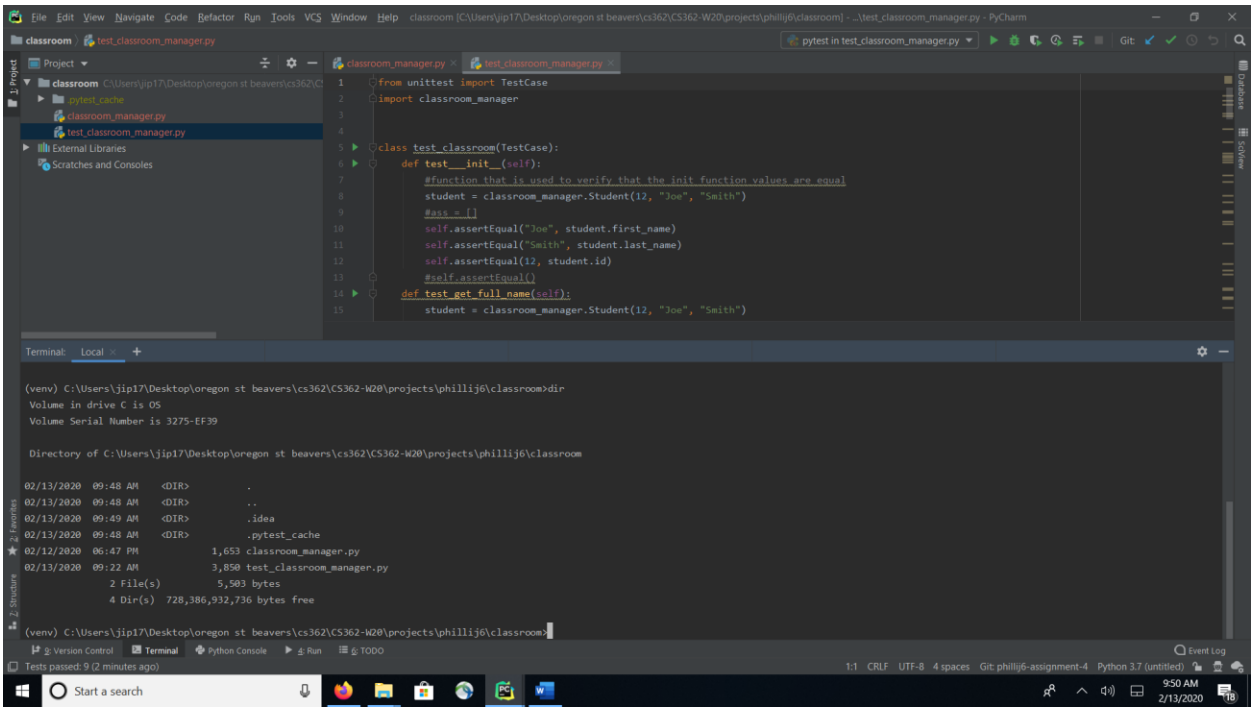
Code Coverage

Based on the tests ran using code coverage, I was able to achieve 100% code coverage



Section D Git Repository




File Edit View Navigate Code Refactor Run Tools VCS Window Help
classroom [C:\Users\jip17\Desktop\oregon st beavers\cs362\CS362-W20\projects\phillij6\classroom] - ...\test_classroom_manager.py - PyCharm
classroom
test_classroom_manager.py
pytest in test_classroom_manager.py
Git:
Project
classroom C:\Users\jip17\Desktop\oregon st beavers\cs362\C
pytest_cache
classroom_manager.py
test_classroom_manager.py
External Libraries
Scratches and Consoles
classroom_manager.py
test_classroom_manager.py
1 from unittest import TestCase
2 import classroom_manager
3
4
5 class test_classroom(TestCase):
6 def test___init__(self):
7 #function that is used to verify that the init function values are equal
8 student = classroom_manager.Student(12, "Joe", "Smith")
9 #ass = []
10 self.assertEqual("Joe", student.first_name)
11 self.assertEqual("Smith", student.last_name)
12 self.assertEqual(12, student.id)
13 #self.assertEqual()
14 def test_get_full_name(self):
15 student = classroom_manager.Student(12, "Joe", "Smith")
Terminal: Local
(venv) C:\Users\jip17\Desktop\oregon st beavers\cs362\CS362-W20\projects\phillij6\classroom>dir
Volume in drive C is OS
Volume Serial Number is 3275-EF39
Directory of C:\Users\jip17\Desktop\oregon st beavers\cs362\CS362-W20\projects\phillij6\classroom
02/13/2020 09:48 AM <DIR> .
02/13/2020 09:48 AM <DIR> ..
02/13/2020 09:49 AM <DIR> .idea
02/13/2020 09:48 AM <DIR> .pytest_cache
02/12/2020 06:47 PM 1,653 classroom_manager.py
02/13/2020 09:22 AM 3,850 test_classroom_manager.py
2 File(s) 5,503 bytes
4 Dir(s) 728,386,932,736 bytes free
(venv) C:\Users\jip17\Desktop\oregon st beavers\cs362\CS362-W20\projects\phillij6\classroom>
9: Version Control
Terminal
Python Console
4: Run
6: TODO
Event Log
Tests passed: 9 (2 minutes ago)
1:1 CRLF UTF-8 4 spaces Git: phillij6-assignment-4 Python 3.7 (untitled)
Start a search
9:50 AM
2/13/2020