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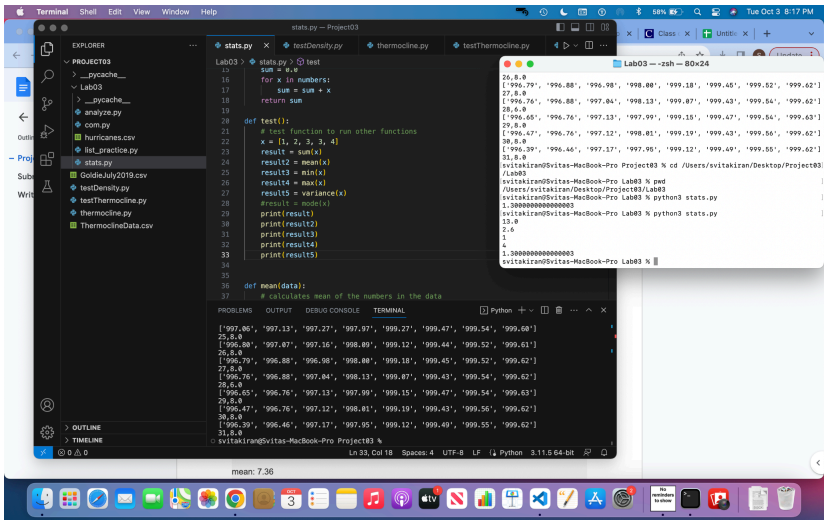
CS152
Project 3
Calculating Thermoclines

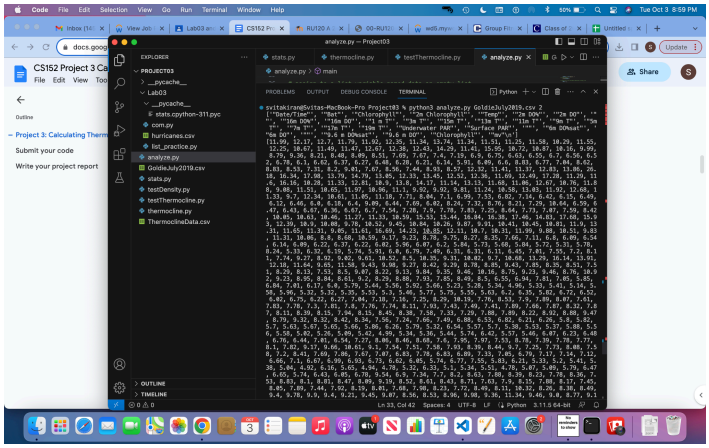
Abstract
The key concepts of this project were to create statistical functions and to develop and work with libraries. What the program specifically does is that it uses functions that you write first to use in mathematical equations, like in this case to calculate thermoclines. The input of the program is a data file with all the temperature measurements at different depths for all of July. The program calculates the thermocline depth of the day and gives that as the output.

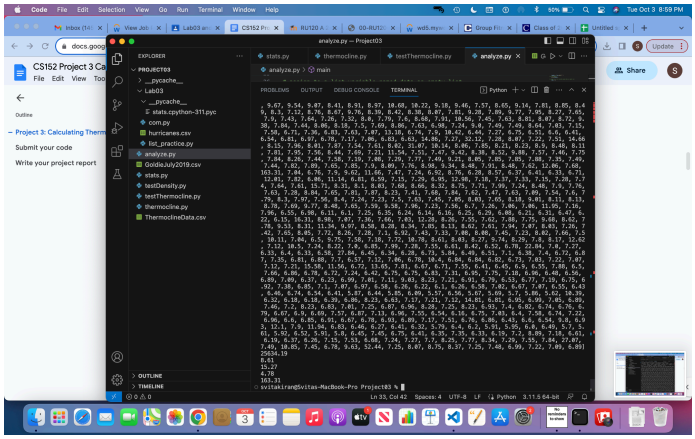
Results
Output 1:



My stats function called all the right results.

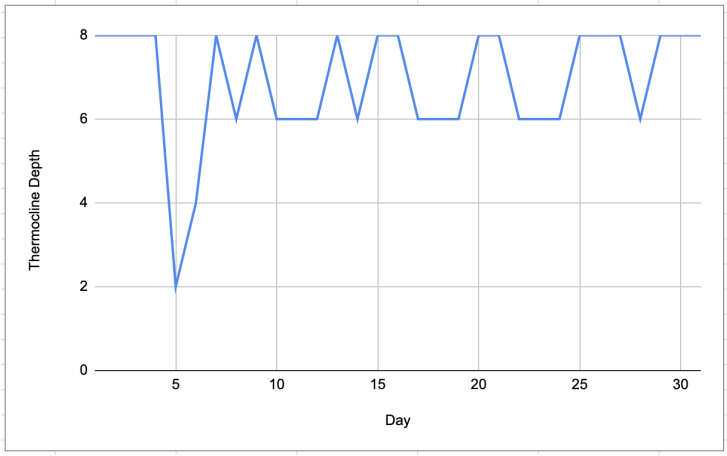
Output 2:





This is testing that the library function and my program work.

Output 3:



This is a plot of the results.

Reflection and Follow-up questions

The lecture concepts used here could help me in the future because using different libraries and categorizing them by their functions helps break down the project and group functions together. For example in the stats library, I only added statistical functions such as mean and finding the

min and max and that helped the code in other areas be much more organized, and it also helped me with not having to rewrite the function every time and instead just import the library for a one time use.

Output 4:

1. Code reuse is when you use already existing code in a program to save time and coding space. For example, if you already wrote a function to calculate the mean of a set of numbers, you can reuse that function in multiple programs instead of writing it out every time.
2. Modular design is when you break down code into smaller parts to be tested and run separately. For example, a menu has different modules for appetizers, entrees, and drinks.
3. Florence Nightingale was a woman statistician who used statistics to improve healthcare and immortality rates through sanitation.

Extensions

I added a mode function to the stats library and began attempting a standard deviation function also.

References/Acknowledgements

Meredith Green, Steve Tran, and Yubin Moon all helped me with this project in TA hours. I also used some code that I found on w3schools. Last, a library I imported was sys.