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VanDerWaal’s Equation Solver

The LA who approved of my project was Taryn Jordan. The VanDerWaals equation solver on MATLAB was a very beneficial project for me. I thought it incorporated much of what I have learned throughout the year while also being something that I feel will be very useful and time saving in the coming years so that I do not have to solve that equation by hand every time. I started by knowing that I wanted to make the solver something that I could really see myself using in the future. The GUI was also very helpful because it told me where to input the numbers so that in the future I will know which numbers to set where and what units they are supposed to be in.

I initially started by creating places to put my Critical Temperature and my Critical Pressure. Alongside of them I placed the units that they should be in to remind my future self to use the correct units when solving the problem. From there I continued to work down along the left side that was the solving for pressure side. Within that side I placed a specific volume (m^3/mol) words and text input box as well as a Temp(K) word and text box. Beneath those I placed a calculate button which would trigger the function to activate and solve that side for me. Finally, there was a Final Pressure (Pa): which output my answer.

On the right side was the solving for temperature section where I had the To Solve for Temperature to start. Beneath that I placed the Specific Volume (m^3/mol): wording and text box. Underneath that I had the Pressure (Pa) words and text box. Finally, I had the calculate button to activate and solve that section followed by the Final Temperature(K) which is where my answer was shown.

After designing the figure I created a section where error codes would pop up if certain boxes had not been given an input. This was a relatively simple if statement that I had very recently done a previous lab. On the figure it would say what I would need to fill in if I had forgotten to fill in a certain box.

Finally, I had gone back to my chemical engineering notes and found the equation and built the function that solved the numbers for what I needed them to be solved for. I took the numbers from the text boxes and turned them into integers. From there the function would solve the side that I had input numbers on.

One of the difficulties I had with the beginning section was finding a sizing of the text boxes as well as finding spots on the figure so that the input boxes and wording looked more organized. Within the functions I had some difficulty initially when I was trying to figure out how to take the numbers from the text boxes and input them into usable numbers in the following functions.

In the future I feel I will use GUI’s more for public help. An example being if a classmate had certain code, it would be much easier to utilize in GUI rather than just code because I would simply input numbers or click buttons rather than actually trying to read the code and understand where I should be putting different numbers. I also feel that in the business world it would be much more beneficial to see code written in GUI’s so that everyone can understand it rather than just the people who can understand whatever programming language is being used.