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EECS 161 R1000

Assignment 4

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1. **Understanding the Problem**
   1. The problem is asking me to modify the code from assignment #3 in order for the user to input all the data points at once through the command line rather than inputting the variables one at a time. The core design of assignment 3 is displayed below:
   2. The problem is asking for the area under 1 of 5 curves selected by the user. The method for finding these areas is simply integration using both the rectangle method and the trapezoid method. The user is prompted for the variables involved in these calculations such as the number of rectangles/trapezoids, starting point, ending point, and which equation is desired for integration.
2. **Devising a Plan/Design**
   1. I would have to design a command line prompt for this entire program
   2. This would require the int argc and char \*argv[] parameters
   3. Prompt the command line prompts in main function
   4. Restructure program to obtain the user arguments of the following:
   5. Prompt the user to input which function he/she wants to be integrated
   6. Prompt user to input rectangle or trapezoid or both methods
   7. Prompt user for starting point and ending point
   8. Prompt user for number of rectangles or trapezoids
   9. Make a void function for each of these possible situations
      1. Rectangle for function 1
      2. Trapezoid for function 1
      3. Rectangle for function 2
      4. Trapezoid for function 2
      5. Rectangle for function 3
      6. Trapezoid for function 3
      7. Rectangle for function 4
      8. Trapezoid for function 4
      9. Rectangle for function 5
      10. Trapezoid for function 5
3. **Looking Back/Self-Reflection**
   1. Looking back, I find that I could have made the code much more readable for myself during my initial attempts on the assignment. Including a couple more comments would have been nice as well.
   2. From this assignment, I learned how to somewhat utilize arrays and command line prompts in order to change up how I approach user input
4. **Design for Assignment #4**
   1. Program 1
      1. In order to take a N X N matrix and create a new (N-1) x (N-1) matrix, we would first need to define the arrays necessary.
      2. We would also need to prompt user to input array values
      3. After we establish a three dimensional array, we would need to define the calculate\_result() function that takes each corner of the array and outputs an array with the sum of the contents. This would require a lot of programming involving arrays and such
      4. This would require recursive\_ calculate\_result() which would just take the prior function and apply it recursively to each corner
   2. Program 2
      1. This program would require the user to enter a line of text no more than 100 characters
      2. Prompt user to input up to 100 characters
      3. Store these characters in a c style string (array)
      4. Make function to ignore commas, white space, and periods and define these as indications of the end of individual words
      5. Use functions built into <cstdlib> and <string> to check each characters individually
      6. Print out results