Hands-On Exam 1: Electricity

Complete the requirements in the files **Lastname-Electricity.c** and **ElectricityMain.c** which contain the program skeleton and descriptions (indicated as comments) for the functions that are expected. Follow the TO DOs for each of the files.

Given the previous and current meter reading as inputs, the program should compute for the base charges and generate the bill computation summary. Program terminates after displaying the bill computation summary.

REQUIREMENTS:

1. The current meter reading is always greater than or equal to the previous meter reading.
2. The electricity consumption (in kWh) is calculated by subtracting the previous meter reading from the current meter reading. It is then displayed.
3. The bill computation summary contains the following:
   a. Base charges for the 5 rate components:
      - Generation - calculated by multiplying the electricity consumption by 7.0
      - Transmission - calculated by multiplying the electricity consumption by 0.83
      - System Loss - calculated by multiplying the electricity consumption by 0.5
      - Distribution - calculated by multiplying the electricity consumption by 1.0
      - Subsidies - calculated by multiplying the electricity consumption by 0.17
   b. Tax - 12% of the total base charges
   c. Total Amount Due - sum of the base charges and tax
4. The bill computation summary must follow the format shown in the sample runs below. Otherwise, corresponding deductions will be incurred.

Other results deviating from these requirements will not be considered.

You are given **two files** for this problem:

- **LASTNAME-Electricity.c** - skeleton file which contains some initial code that you'll need to complete. All function headers (i.e. function names and parameters) are given. You are not allowed to change these. There are 3 TO DOs with a total of 35 points.

- **ElectricityMain.c** - skeleton file which contains the main() function and some initial code that you'll need to complete. All variables that you'll need are declared. You are not allowed to add, edit, or remove any of the variables. There are 4 TO DOs with a total of 15 points.

DELIVERABLES:

Submit your **ElectricityMain.c** and **LASTNAME-Electricity.c**. Replace the LASTNAME with your own. For example, if your last name is **Rivera**, you must upload your files as **RIVERA-Electricity.c**

TESTING & SCORING:

- Your program will be compiled via gcc -Wall. Thus, for each function that does not compile successfully, the score for that function is 0.
- Your program will be tested by your instructor with other main() (which may contain different values from the ones given to you) and with function calls of different parameter values.
- Full credit will be given for the function only if the student's implementation is correct for all the test values used by the instructor during checking AND only if the student's implementation complied with the requirement and did not violate restrictions. Deductions will be given if not all test cases produce correct results. No credit is given if restrictions were not followed.

SAMPLE RUNS:

SAMPLE 1:

```
Previous Reading: 15294
Current Reading: 15461
Actual Consumption: 167
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Bill Computation Summary

Generation              1169.00
Transmission             138.61
System Loss               83.50
Distribution             167.00
Subsidies                 28.39
Tax                      190.38

Total Amount Due        1776.88
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```

SAMPLE 2:

```
Previous Reading: 4039
Current Reading: 6350
Actual Consumption: 2311
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Bill Computation Summary

Generation             16177.00
Transmission            1918.13
System Loss             1155.50
Distribution            2311.00
Subsidies                392.87
Tax                     2634.54

Total Amount Due       24589.04
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```

SAMPLE 3:

SAMPLE 4:

Previous Reading: 10	Previous Reading: 145
Current Reading: 34	Current Reading: 148
Actual Consumption: 24	Actual Consumption: 3
Bill Computation Summary	Bill Computation Summary
Generation 168.00	Generation 21.00
Transmission 19.92	Transmission 2.49
System Loss 12.00	System Loss 1.50
Distribution 24.00	Distribution 3.00
Subsidies 4.08	Subsidies 0.51
Tax 27.36	Tax 3.42
Total Amount Due 255.36	Total Amount Due 31.92