cs201 – sum 2020

Lab 2 – (15 points)

For information on how to do this lab, see the page on "Integer Representation" in the Week 2 module.

Please submit the three C source code files, with your answers in comments, to the assignment folder for lab 2 by the due date.

Part A: Mixed Comparisons(4 points)

Download the labA.c file from the assignment folder. Compile and run the program with several positive, negative and zero values. Some suggested values are: 20, -20, 200, -200, 0. Explain why these values work or don't work in the comments at the top of the file.

Then change the function to work the way it should. Note that you should get a <= printout if the number is negative.

NOTE: Change the function ONLY. Don't touch the rest of the program. **And don't change the types.** Also, put your explanations inside comments in the file.

Part B: Typecasting (5 points)

Download the labB.c file from the assignment folder. The program inputs into a function a int type and then typecasts this number to various sizes and unsigned types. Explain the output for the following values: 1000, -1000, 100, -100. Think about unsigned/signed encoding and overflow in your answer. Why do some numbers end up negative when the value was positive? Why do some small numbers end up with a hugh magnitude when typecast to unsigned?

Put your explanation into the comments inside the file.

Part C: Multiply by a Power of Two (6 points)

Download the labC.c file from the assignment folder. Write a function that will multiple two numbers together **without the use of the multiplication operator (*).** Note that the second number is guaranteed to be a power of two.

NOTE: You can use a math function for getting the exponent from the second number. Or you can use a while loop to determine it.

NOTE: I'm using the pow() function to get the second number. This requires compiling with the math library option '-lm':

gcc -lm labC.c -o prog