Name:

Do your work in this directory:

/data/courses/ece\_1111/current/quizzes/qu\_06/lastname\_firstname/p01

and create a file named p01.cc that contains your main program. *Your executable must be named p01.exe.* You must use a make file and header file as we have done for all our C programs. Your implementation of the function below must be in a file *p01\_00.cc*. When I type “make clean”, all your object and executable files should be removed. When I type “make”, *p01.exe* should be created from *p01.cc* and *p01\_00.cc*.

If you use a code generation tool for this assignment, you will need to come to my office and explain each step in great detail. Code generation tools are going to solve this problem in a much more complicated way than is needed.

**Task:** Write a C program that accepts a positive integer in the range [0,255] as an argument. Capture the lower four bits of this value. Remember, an 8-bit unsigned integer is represented by b7b6b5b4b3b2b1b0. Extract b3b2b1b0. Create a new signed integer that has this value. Write a function that computes the factorial of this number. The interface should look like this:

**ece-000\_[1]:p01.exe 19**

**the first four bits = 0011**

**the integer equivalent of the first four bits = 3**

**the value of 3! = 6**

You must implement your factorial function using this prototype:

**long myfactorial(long val);**

The implementation of this function must be in a file *p01\_00.cc*.

The output of your program must match the above exactly for the test case shown.

You might find this document useful:

**https://www.rapidtables.com/convert/number/decimal-to-binary.html**