## CpE 318 HW#2 (due 2/10/04)     (20 points)

1) Write a function to perform $2^s$ Complement addition (overload "+").
2) Write a function to perform $2^s$ Complement subtraction (overload "-").
3) Write a function to perform $2^s$ Complement multiplication (overload "*").
4) Write a procedure to perform $2^s$ Complement division:
   procedure DIVIDE(dividend, divisor: in TWOS_COMP; quotient, remainder: out TWOS_COMP);

* use a type called TWOS_COMP:   type TWOS_COMP is array(natural range <>) of std_logic;
* 1, 2, and 3 should take TWOS_COMP operands, L and R, and return TWOS_COMP type
* for 1 and 2 the length of the result should be: MAX(L'length, R'length) + 1
* for 3 the length of the result should be: L'length + R'length
* for 4 quotient'length = dividend'length and remainder'length = divisor'length
* the only standard package that you should use is IEEE.std_logic_1164 (i.e. do not use the numeric_std package)
* name your file: lastname_student#.vhd
* include as comments: name and student number (-- precedes a comment line)
* include these three functions and the procedure in a package called: TWOS_COMP_ARITH
* email only your package as an attachment from the PC (ftp to PC) to: cpe318@umr.edu
* your package will then be run on my testbench
* there will be 5 test cases for each function/procedure, worth 1 point each, for a total of 20 points
* you should write your own testbench to test your package, however you should not turn this in
* make sure that all names match those on this sheet, otherwise your package will not run on my testbench and you will receive 0 points