

**San Jose State University**  
**Department of Electrical Engineering**

**Mini-Project I (Due Sep. 28)**

Using a high-level software language including Matlab, C/C++, or Python,

Write a “bit-accurate” model of half-precision floating point multiplier and adder, as discussed in class.

Write a “bit-accurate” model of  $\mu$ -law multiplier and adder.

Write a “bit-accurate” model of n-bit (parameterizable) fixed-point multiplier and adder.

Test all the above models with the following cases:

- 1)  $0.25 + 1.125$
- 2)  $150 - 250$
- 3)  $-2.5 \times -7.25$
- 4)  $0.0001 + 0.00000001$
- 5)  $1024 - 8075$
- 6)  $2014 \times 3.75$

Your report should include the source code listing, compilation report, and screen shots showing the “bit-accurate” results of the test cases, along with detailed and in-depth discussion of the design process.

Note that the models need not be pipelined.

**NOTE:** To show the authenticity of your work, attach the last two digits of your student ID to every signal and variable name used in your code. For example, if your SID is 123456789, signal or variable names should be x89, a89, etc. Each of the screen captures of your code and simulation results should bear these signal names.