

100.541 Uncertainty Quantification & Analysis in Systems Modeling and Simulation

Homework Assignment 1

In a new 9-bit binary digital computer system, a floating-point (FP) representation is implemented as follows. The first bit is \pm sign (0: positive; 1: negative). The next five bits represent the Exponent. And the last three bits are Mantissa.

(1) What are the values of the following FP binary numbers in decimal format?

1	0	1	1	0	1	1	0	1
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1	1	1	1	1	1	0	0	0
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1	1	1	1	1	1	0	0	1
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1	0	0	0	0	0	0	1	0
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(2) What are the FP number of the decimal values $1.000_{(10)}$, $-1.125_{(10)}$ and $-1.250_{(10)}$?

(3) If the rounding of the machine is set to *Round_Towards_Zero*, what is the FP number of the decimal values $-4.13_{(10)}$?