Assignment #1 for 104418019 - ELEC3270: Microprocessors

Each of the given values below are in base 10. Note "*N*" is the number of **bits**. **Fill in your results in the text file provided, save it as "SID_1" (where SID is your student number), and upload it to Blackboard.**

1. Determine the binary representation ($N_{integer}$=16) of:

(a) 21013 (b) 13103 (c) 13720 (d) -27814 (e) -16300 (f) -12253

2. Determine the binary representation ($N_{integer}$=4, $N_{fractional}$=8) of:

(a) 0.953125000 (b) 0.394531250 (c) 0.121093750

(d) -0.910156250 (e) -0.808593750 (f) -0.207031250

3. Determine the binary representation ($N_{integer}$=8, $N_{fractional}$=8) of:

(a) 89.996093750 (b) 73.078125000 (c) 21.425781250

(d) -75.707031250 (e) -54.609375000 (f) -57.324218750

4. Determine the hexadecimal representation ($N_{integer}$=16) of:

(a) 7192 (b) 31432 (c) 6940 (d) -16951 (e) -24710 (f) -5615

5. Determine the hexadecimal representation ($N_{integer}$=4, $N_{fractional}$=8) of:

(a) 0.121093750 (b) 0.449218750 (c) 0.417968750

(d) -0.558593750 (e) -0.824218750 (f) -0.292968750

6. Determine the hexadecimal representation ($N_{integer}$=8, $N_{fractional}$=8) of:

(a) 32.945312500 (b) 46.906250000 (c) 93.476562500

(d) -86.539062500 (e) -27.558593750 (f) -29.148437500

7. Determine the floating point sign bit (0 or 1), mantissa (in base 10), and exponent (in base 10) of the following numbers:

(a) 104.0 (b) 131.0 (c) 139.0 (d) -135.0 (e) -108.0 (f) -90.0

8. Determine the floating point sign bit (0 or 1), mantissa (in base 10), and exponent (in base 10) of the following numbers:

(a) 0.73437500 (b) 0.42187500 (c) 0.43359375

(d) -0.16015625 (e) -0.12890625 (f) -0.04296875

9. Determine the floating point sign bit (0 or 1), mantissa (in base 10), and exponent (in base 10) of the following numbers:

(a) 119.488281250 (b) 207.222656250 (c) 21.824218750

(d) -146.597656250 (e) -17.441406250 (f) -118.347656250

10. Determine the binary representation of the mantissa (without the leading 1 or decimal point) from each of your results in question 9 (*N*=16).

11. "Quickly" change each of your results in question 10 to hexadecimal (*N*=16).