Problems for recitation- Bytes

1. Write a function Called(endian) that will return 1 when compiled on a little endian machine and will return 0 when run on a big_endian machine. The program should work on both 64 bit and 32 bit machines.

   Submit a C code file

2. Write the twos complement of these numbers:
   1. -5
      a. 5 in bin = 0101, flip = 1010, add one = 1011
   2. -20
      a. 20 in bin = 10100, flip = 01011, add one = 01100
   3. -89
      a. 89 in bin = 1011001, flip = 0100110, add one = 0100111
   4. -256
      a. -256 in bin = 100000000, flip = 011111111, add one = 1000000000

   Submit your solutions for this problem as a pdf file of all the answers with steps.

3. Find the floating-point representation of:
   5. -28.75
      a. First digit = 1
      b. 28 in bin = 11100, 0.75 in bin = 0.11
      c. 11100.11 -> 4 shifts left -> 1.110011
      d. Bias 127 + 4 = 131
      e. 131 in bin = 10000011
      f. Discard leading 1 in mantissa -> 110011
      g. 1 10000011 11001100000000000000000
   6. 0.25
      a. First digit = 0
      b. 0 in bin = 0, 0.25 in bin = 0.01
      c. 0.01 -> 2 shifts right -> 1.00
      d. Bias 127 – 2 = 125
      e. 125 in bin = 1111101
      f. Discard leading 1 mantissa -> 000000
      g. 0 01111101 00000000000000000000000
   7. 128.0
      a. First digit = 0
      b. 128 in bin = 10000000, 0 in bin = 0.0
      c. 10000000.0 -> 7 left shifts -> 1.00000000
      d. Bias 127 + 7 = 134
      e. 134 in bin = 10000110
      f. Discard leading 1 in mantissa -> 00000000
      g. 0 10000110 00000000000000000000000

8. 256.5
    a. First digit = 0
    b. 256 in bin = 100000000, 0.5 in bin = 0.1
    c. 100000000.1 -> 8 left shifts -> 1.000000001
    d. Bias 127 + 8 = 135
    e. 135 in bin = 10000111
    f. Discard leading 1 in mantissa -> 000000001
    g. 0 10000111 00000000100000000000000

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