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1. (**60 pts**) Binary, Hex, Decimal ... and back (**Need to show all steps**)

   (a) Convert the following unsigned binary number to decimal:

   $$(111111)_2 = (?)_{10}$$

   (b) Convert the following unsigned binary number to decimal:

   $$(0.1111111\cdots1)_2 = (?)_{10}$$

   The meaning of the dots $(\cdots)$ is that the 1's are going to infinity.

   (c) Convert the following decimal number to binary:

   $$(1111.111)_{10} = (?)_2$$

   (d) Convert the following hexadecimal number to binary, then the binary to decimal:

   $$(FFFF)_{16} = (?)_2 = (?)_{10}$$

   (e) Convert the following binary number to hexadecimal:

   $$(10110001101011.11110011)_2 = (?)_{16}$$

   (f) Perform the following (subtraction) operation:

   - $(1 - 11)_{10}$
     Using signed binary, 8–bit 2's complement arithmetic.

2. (**40 pts**) 32–bit FPN (IEEE 754) to decimal and back (**Need to show all steps**)

   (a) Convert the following 32–bit FPN (IEEE 754) to decimal number:

   `1 10000000 11110000000000000000000`

   (b) Convert the following decimal number to 32–bit FPN (IEEE 754) number:
   $(-2.75)_{10}$

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- **At the end of each problem CLEARLY state the final result**

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- How can I submit my assignment?

  The homework–report should **ALL** be written ... using only a word processor (e.g. Microsoft WORD, ..., TEX/LATEX). **Absolutely no handwriting/handgraphing and photographing)**. Writing the report follow the sample homework given in CANVAS (Modules).

  ... Upload the report (PDF) to CANVAS