C Language Programming: Homework #6
Assigned on 12/08/2015(Tuesday), Due on 12/15/2015(Tuesday)

1. Write a program that can input a float or double number and print out its bit pattern and vice versa (input a 32-bit or 64-bit pattern and output its value).
   Note: you should use the three techniques mentioned in the class:
   (a) an integer pointer to float or double,
   (b) union, and
   (c) bit field

2. Please check:
   1. Is it correct that the value,
      \[
      1.1754943508222875079687365372222456778186655567720 \\
      8752150875170627841725945472717285156050000000000 \\
      000000000000000000000e-38f
      \]
      is the smallest floating point number as stated in the textbook. If not, what is the smallest floating point number?
   2. What is the bit pattern of f=0.0
   3. run

\[
\begin{align*}
f1 &= 1.1754943508222875079687365372222456778186655 \\
    &\quad 56772087521508751706278417259454727172851560500 \\
    &\quad 0000000000000000000000000000000000e-38f; \\
f2 &= 1.17549435082228750e-38f; \\
\end{align*}
\]

   if( f1==f2 ) { printf("%100e = %100e", f1, f2); } 
   else { printf("%100e != %100e", f1, f2); }

   Explain the result.

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**Requirement:**

1. Write two programs named `hw6_1.c` and `hw6_2.c`.
   - In `hw6_1.c`, you should use integer pointer to convert number.
   - In `hw6_2.c`, you should use union to convert number.
   *Remember that you can input float or double number and vice versa in both programs.*

2. Input number can be negative.

3. Question2, please answer three questions on report.
   Ex:
   2-1: Yes, because…
   2-2: No, because…
4. Here is the input Example:

- Please follow the order of input like example below

```
float number,
binary number to float,
double number,
binary number to double
```

![Input Example](image)

You can use the Executable named `a.out` in `/home/data/hw6` or this [website](https://example.com) to verify your answer.

Score:
- Integer pointer : 25%
- Union : 25%
- Correctness : 30%
- Report : 20%