C Language Programming: Homework #4
Assigned on 10/31/2017(Tuesday), Due on 11/14/2017(Tuesday)

1. Write a program that can input a float or double number and print out its bit pattern and vice versa (input 32 bits for float or 64 bits for double 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,
      1.17549435082228750796873653722245677818665556772087521508751706278417259454727172851560500000000000000000000000000000000e-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

   f1 = 1.17549435082228750796873653722245677818665556772087521508751706278417259454727172851560500000000000000000000000000000000e-38f;
   f2 = 1.175494350822287500e-38f;

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

   Explain the result.

Input:
Use *argv* to read input file. Input file include four lines, each line contain a number or bit pattern. First line is a float number, second line is a double number, third line is 32-bit pattern, fourth line is 64-bit pattern. Your programs should convert float(double) number to 32-bit(64-bit) pattern or convert 32-bit(64-bit) pattern to float(double) number.

Input file example:
0.0625
0.00390625
00111101100000000000000000000000
0011111101110000000000000000000000000000000000000000000000000000

Output:
hw4a: A file named "output_a" which include results.
hw4b: A file named "output_b" which include results.
hw4c: A file named "output_c" which include results.

Output file example:
00111101100000000000000000000000
0011111101110000000000000000000000000000000000000000000000000000
0.0625
0.00390625

Example:
> ./hw4a input
> ./hw4b input
> ./hw4c input

[problem 2]
Please answer three questions on your report (use Chinese or English).

Score:
hw4a: 20%
hw4b: 20%
hw4c: 20%
Report: 40% (Include problem 1 report and problem 2 answer)