C Language Programming: Homework #7
Assigned on 12/20/2016(Tuesday), Due on 01/03/2017(Tuesday)

Part I:
This assignment allows you to practice passing pointers to function into another function. Write a complete program to do the following:

1. Assume there is a function declared as (1) `double power(double, int)` that calculates $x^n$ if we call `power(x, n)`, a function declared as (2) `double multiply(double, int)` that calculate $x\times n$ if we call `multiply(x, n)`, and a function declared as (3) `double divide(double, int)` that calculate $x/n$ if we call `divide(x, n)`, where $x$ must be double and $n$ be integer.
2. Write a function `double powerpower(...)` that can compute $(x^n)^m$, $(x\times n)^m$, $(x/n)^m$, where `powerpower()` must use four parameters: a pointer to function, one double and two integers.
3. Also remember to write functions `divide()`, `multiply()` and `power()`.
4. Use `typedef` to define a new type `F` which is a pointer to function.
5. When executing your program, you can choose the values for $x$, $n$, and $m$ by using `argc` and `argv`.
6. Write the documentation

Example:

```
./hw7_1 2 2 3
64.000000
64.000000
1.000000
```
Part II:
Repeat the Homework #3 by using (1) union and (2) union and bit-field without bitwise operators.

1. 將hw3 type轉換分別用union + bitwise operators與 union + bit-field實作

2. 執行時輸入兩個參數，第一個參數做判斷執行什麼動作 (1: int to bit pattern, 2: float to bit pattern, 3: bit pattern to float(.23e))，第二個參數為輸入的值

3. 檔案名稱為 hw7_2(union + bitwise operators) hw7_3(union + bit-field)

Example:

```
./hw7_2 1 -1
11111111111111111111111111111

./hw7_3 1 -1
11111111111111111111111111111
```

Score:

hw7_1:
- typedef 15%
- pointer to function 15%
- command line 5%
- answer 5%

hw7_2: 20% (沒有實現union + bitwise operators不給分)

hw7_3: 20% (沒有實現union + bit-field不給分)

report: 20%