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) \( \text{double power(double, int)} \) that calculates \( x^n \) if we call \( \text{power}(x, n) \), a function declared as (2) \( \text{double multiply(double, int)} \) that calculate \( x*n \) if we call \( \text{multiply}(x, n) \), and a function declared as (3) \( \text{double divide(double, int)} \) that calculate \( x/n \) if we call \( \text{divide}(x, n) \), where \( x \) must be double and \( n \) be integer.
2. Write a function \( \text{double powerpower(...)} \) that can compute \( (x^n)^m \), \( (x*n)^m \), \( (x/n)^m \), where \( \text{powerpower()} \) must use four parameters: a pointer to function, one double and two integers.
3. Also remember to write functions \( \text{divide()} \), \( \text{multiply()} \) and \( \text{power()} \)
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 \( \text{argc} \) and \( \text{argv} \).
6. Write the documentation

**Requirement:**
(1) Write functions \( \text{divide()} \), \( \text{multiply()} \) and \( \text{power()} \) as described.
(2) Write a function \( \text{double powerpower(...)} \) as described.
(3) Use \( \text{argv}[2] \sim \text{argv}[4] \) to input \( x, n, m \).
(4) Use \( \text{argv}[1] \) to represent which function(\( \text{divide} \) or \( \text{multiply} \) or \( \text{power} \)) will be chosen and pass to \( \text{powerpower(...)} \).
   “0” : choose power()
   “1” : choose multiply()
   “2” : choose divide()
(5) Print the result to the screen.

**Example:**
> ./hw8 0 2 3 4 (compute \( (2^3)^4 \))
> ./hw8 1 2 3 4 (compute \( 2*3^4 \))
> ./hw8 2 2 3 4 (compute \( 2/3^4 \))

**Command line:**
> ./hw8 [0-2] [x] [n] [m]
Output:
Output the result of functions mentioned above to the screen. If result is a double number, use “%.6lf” as format to print it. (Note: Don’t print any unnecessary message to screen, thank you.)

For example:
> ./hw8 0 2 3 4
4096
> ./hw8 1 2 3 4
1296
> ./hw8 2 2 3 4
0.197531

Score:
Correctness: 80%
Command line input: 10%
Report: 10%