

C Language Programming: Homework #8
Assigned on 12/12/2017(Tuesday), Due on 12/19/2017(Tuesday)

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 $x*n$ 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 $(x^n)^m$, $(x*n)^m$, $(x/n)^m$, 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

Requirement:

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

Example:

```
> ./hw8 0 2 3 4 ( compute (23)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] 2
```

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%