Lab 07 Function

Note: The underlined text is an input data.

For exponential operator, you can use either `pow()` or `**`.

1. **From the given Celsius to Fahrenheit conversion write 2 programs that reuse the same *2 or more functions (UDF)*. Your assignment will be scored if both assignment 1.1 and 1.2 are correct.**

$$°F = °C \times \frac{9}{5} + 32$$

Write down **the 2 or more reused functions** on the top of file. And you can copy **the 2 or more reused functions** from assignment 1.1 to assignment 1.2.

1.1 Write program that converts Celsius to Fahrenheit from given Celsius range (start end) and step (step) specify from command-line arguments.

Remark: range are always integer but step may be floating-point.

Command-line argument list: `start end step`

Example 01: php `ass-01-01.php 0 5 1`

```
Celsius Fahrenheit
   0.00      32.00
   1.00      33.80
   2.00      35.60
   3.00      37.40
   4.00      39.20
   5.00      41.00
```

Example 02: `php ass-01-01.php -2 3 0.5`

```
Celsius Fahrenheit
  -2.00      28.40
  -1.50      29.30
  -1.00      30.20
  -0.50      31.10
   0.00      32.00
   0.50      32.90
   1.00      33.80
   1.50      34.70
   2.00      35.60
   2.50      36.50
   3.00      37.40
```

1.2 From assignment 1.1, reuses the function to converts Celsius to Fahrenheit for data in the given file.

The file name comes from ***command-line arguments*** with the following format.

```
number_of_data
start1 end1 step1
start2 end2 step2
start3 end3 step3
...
```

Example input file 01: `ass-01-data1.txt`	Example input file 02: `ass-01-data2.txt`
3 0 5 1 -2 3 0.5 6 10 1.1	4 1 2 0.2 0 30 10 50 51 0.5 95 100 2.5

Example 01: `php ass-01-02.php ass-01-data1.txt`	Example 02: `php ass-01-02.php ass-01-data2.txt`
Celsius Fahrenheit 0.00 32.00 1.00 33.80 2.00 35.60 3.00 37.40 4.00 39.20 5.00 41.00 -2.00 28.40 -1.50 29.30 -1.00 30.20 -0.50 31.10 0.00 32.00 0.50 32.90 1.00 33.80 1.50 34.70 2.00 35.60 2.50 36.50 3.00 37.40 6.00 42.80 7.10 44.78 8.20 46.76 9.30 48.74	Celsius Fahrenheit 1.00 33.80 1.20 34.16 1.40 34.52 1.60 34.88 1.80 35.24 2.00 35.60 0.00 32.00 10.00 50.00 20.00 68.00 30.00 86.00 50.00 122.00 50.50 122.90 51.00 123.80 95.00 203.00 97.50 207.50 100.00 212.00

2. For the following assignment create *1 or more functions (UDF)* that can be reused on both. You can copy the reused functions from assignment 2.1 to assignment 2.2. Your assignment will be scored if both assignment 2.1 and 2.2 are correct.

   2.1 Write program that calculates x from given **a**, **b**, **c**, **d**, **p**, **q** and **r** specifying from *command-line arguments* and the following formula.

$$x = [(a + b)^p + (c + d)^q]^r$$

   Remark: all numbers are integer.

   Command-line argument list: `a b c d p q r`

   Example 01: `php ass-02-01.php 1 2 3 4 3 2 1`

   ```
   76
   ```

   Example 02: `php ass-02-01.php 7 6 5 4 3 2 1`

   ```
   2278
   ```

   Example 03: `php ass-02-01.php 1 2 3 4 1 2 3`

   ```
   140608
   ```

2.2 From assignment 2.1, reuses the function to calculate x from the following formula and data is specified from file.

$$x = (\cdots(((-base_1)^{y_1} - base_2)^{y_2} - base_3)^{y_3} \cdots - base_n)^{y_n}$$

The file name comes from ***command-line arguments*** with the following format.

```
n
base1 y1
base2 y2
...
```

Remark: all numbers are integer.

Example input file 01: `ass-02-data1.txt`	Example input file 02: `ass-02-data2.txt`
3 10 1 20 2 30 2	4 10 1 20 2 30 2 40 1

Example 01: `php ass-02-02.php ass-02-data1.txt`	Example 02: `php ass-02-02.php ass-02-data2.txt`
756900	756860