Lab: Functions and Forms

Problems for lab for the "PHP Fundamentals" course @ SoftUni.

You can check your solutions in Judge.

I. Declaring and Invoking Functions

1. Sign of Integer

Create a function that prints the **sign** of an integer number:

Example

Input	Output
2	The number 2 is positive.
-5	The number -5 is negative.
0	The number 0 is zero.

2. Grades

Write a function that **receives a grade** between **2.00** and **6.00** and **prints the corresponding grade in words**

- 2.00 – 2.99 - "Fail"
- 3.00 – 3.49 - "Poor"
- 3.50 – 4.49 - "Good"
- 4.50 – 5.49 - "Very good"
- 5.50 – 6.00 - "Excellent"

Examples

Input	Output
3.33	Poor
4.50	Very good
2.99	Fail

Hint

Read the grade from the console and pass it to a function:

```
$grade=readline();
printInWords($grade);
```

Then create the function and make the **if** statements for each case:

```
function printInWords($grade){
    if($grade>=2.00 && $grade<=2.99){
        echo ('Fail');
    }
    else if($grade>=3.00 && $grade<=3.49){
        echo ('Poor');
    }
    //TODO: make the rest
}
```

3. Calculations

Write a program that receives a string on the first line (**add**, **multiply**, **subtract**, **divide**) and on the next two lines receives two numbers. Create **four functions (for each calculation)** and invoke the right one depending on the command. The function should also print the result.

Example

Input	Output
subtract 5 4	1
divide 8 4	2

Hints

Read the command on the first line and the two numbers, and then make an **if/switch** statement for each type of calculation

```
$command=readline();
$a=readline();
$b=readline();

switch($command){
    case 'add':
        add($a,$b);
        break;
        //TODO: other cases
}
```

Then create the four functions and print the result.

4. Printing Triangle

Create a function for printing triangles as shown below:

Examples

Input	Output
3	1 1 2 1 2 3 1 2 1
4	1 1 2 1 2 3 1 2 3 4 1 2 3 1 2 1

Hints

1. After you read the input
2. Start by creating a function **for printing a single line** from a **given start** to a **given end**. Choose a **meaningful name** for it, describing its purpose:

```
function printLine($start,$end){
    for($i=$start;$i<=$end;$i++){
        echo ($i . ' ');
    }
    echo " " . PHP_EOL;
}
```

3. Think how you can use it to solve the problem
4. After you spent some time thinking, you should have come to the conclusion that you will need two loops
5. In the first loop you can print the first half of the triangle without the middle line:

```
for($i=0;$i<$n;$i++){
    printLine(1,$i);
}
```

6. Next, print the middle line:

```
printLine(1,$n);
```

7. Lastly, print the rest of the triangle:

```
for($i=$n-1;$i>=0;$i--){
    printLine(1,$i);
}
```

5. Orders

Write a function that calculates the total price of an order and prints it on the console. The function should receive one of the following products: **coffee**, **coke**, **water**, **snacks**; and a **quantity of the product**. The prices for a single piece of each product are:

- coffee – 1.50
- water – 1.00
- coke – 1.40
- snacks – 2.00

Print the result **rounded to the second decimal place**.

Example

Input	Output
water 5	5.00
Coffee 2	3.00

Hint

- Read the first two lines
- Create a function the pass the two variables in
- Print the result in the functions

II. Returning Values

6. Calculate Rectangle Area

Create a function that calculates and **returns** the area of a triangle by given width and length:

Examples

Input	Output
3 4	12

7. Math Power

Create a function that calculates and returns the value of a number raised to a given power:

Examples

Input	Output
2 8	256
3 4	81

Hints

1. As usual, read the input
2. Create a function which will have two parameters - the number and the power

8. Factorial

You are given number **n** as input. Your task is to write an **assigning anonymous function** that calculate **n** factorial and return it.

Constrains

- The integer **n** will be in **range [0, 100]**.

Examples

Input	Output
1	1
5	120
25	15511210043330985984000000

9. Multiply Evens by Odds

Create a program that reads an **integer number** and **multiplies the sum of all its even digits** by **the sum of all its odd digits**:

Examples

Input	Output	Comments
12345	54	12345 has **2 even digits** - 2 and 4. Even digits has **sum of 6.** Also it has **3 odd digits** - 1, 3 and 5. Odd digits has **sum of 9.** **Multiply 6 by 9** and you get **54.**
-12345	54	

Hints

1. Create a function with a **name describing its purpose** (like **`getMultipleOfEvensAndOdds`**). The function should have a **single integer parameter** and an **integer return value**. Also, the function will call two other functions:

```
function getMultipleOfEvensAndOdds($n){
    $evensSum=getSumOfEvenDigits($n);
    $oddsSum=getSumOfOddDigits($n);

    return $evensSum * $oddsSum;
}
```

2. Create a function **`getSumOfEvenDigits()`**
3. Create **`getSumOfOddDigits()`**

4. As you test your solution you may notice that it doesn't work for negative numbers. Following the program execution line by line, find and fix the bug (**hint: you can use `abs()`**)

10. Repeat String

Write a function that receives a string and a repeat count n (integer). The function should return a new string (**the old one repeated n times**)

Example

Input	Output
abc 3	abcabcabc
String 2	StringString

Hints

Firstly read the string and the repeat count n

Then create the function and pass it the variables

```
function repeatString($str,$count){
    $result="";

    for($i=0;$i<$count;$i++){
        //TODO: append the string to the result
    }
    return $result;
}
```

11. Math operations

Write a function that receives two number and an operator, calculates the result and returns it. You will be given three lines of input. The first will be the **first number**, the second one will be the **operator** and the last one will be the **second number**. The possible operators are: **`"/", "*", "+", "-"`**

Print the result **rounded up to the second decimal point**.

Example

Input	Output
5 * 5	25.00
4 + 8	12.00
7 / 2	3.50

Hint

Read the inputs and create a function that returns a floating point number (the result of the operation)

```
function calculate($a,$operator,$b){
    $result=0.0;

    switch ($operator){
        //TODO: check for all possible operands and
        //TODO: calculate the result
    }
    return result;
}
```

III. Forms

12. Hello, Person!

Write a program which receives a **name** from a **form** and prints in the html the **following greeting** (after your click on the **[Submit]** button). The **form** should **disappear** after clicking the input:

- **"Hello, {name}!"**

You should read the name from the following form:

```
<form>
    Name: <input type="text" name="person" />
    <input type="submit" />
</form>
```

Examples

13. Multiply Two Numbers

You are given an integer number **num1** and an integer number **num2**. Write a PHP script that multiplies **num1 * num2** and prints the result. The input comes as parameters named **num1** and **num2**.
Print the output in the HTML page.

Skeleton

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>PHP Form</title>

</head>
<body>
<form>
    N: <input type="text" name="num1"/>
    M: <input type="text" name="num2"/>
    <input type="submit"/>
</form>
<!--Write your PHP Script here-->
</body>
</html>
```

Examples

Parameters names	Input	Output
num1	2	6
num2	3	

Input	Output
13	169
13	

Hints

- This time the form which will be given to use will have 2 input elements, with names **num1** and **num2**

```
<form>
    N: <input type="text" name="num1" />
    M: <input type="text" name="num2" />
    <input type="submit" />
</form>
```

- We must check both elements, if they have values before we perform any action

```
<?php
if(isset($_GET['num1']) && isset($_GET['num2'])) {

}
?>
```

- When we have checked both elements we get them both and extract their values into variables and we perform the specified action:

```php
if(isset($_GET['num1']) && isset($_GET['num2'])) {
    $n = intval($_GET['num1']);
    $m = intval($_GET['num2']);
    echo $n * $m;
}
```

- The result is as follows: