Computer Science Division
Department of Mathematics
Faculty of Science

Level 2- Spring Semester
Course: COMP 206
Date: April 1, 2023

Sheet 1

Objective: upon successful completion of this sheet, students should be familiar with the PHP structure and code.

(1) Write a PHP program to construct the following patterns:

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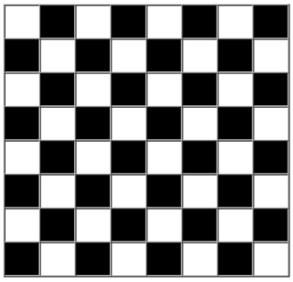
```



(2) Write a PHP program to simulate a simple calculator, where the allowed operators are addition, subtraction, multiplication, division, and remainder. The results of each operation should be presented in a tabular form. You can use some colors to distinguish a header row from the others.

(3) Write a PHP program to display the numbers from `1` to `100` such that for multiples of `3` display multiples of `3` instead of the number and for multiples of `5` display multiples of `5`. For numbers which are multiples of both `3` and `5` display multiples of `3` and `5`.

(4) Write a PHP program to calculate the sum of the following series.

$$\text{sum } 1 = 1^2 + 2^2 + 3^2 + \cdots + n^2$$

$$\text{sum } 2 = 1^2 + 3^2 + 5^2 + \cdots + n^2$$

$$\text{sum } 3 = 1^2 - 2^2 + 3^2 - 4^2 + \cdots + (-1)^{n+1} n^2$$

$$\text{sum } 4 = 1! + 2! + 3! + \cdots + n!$$

$$\text{sum } 5 = \frac{2}{1!} + \frac{3}{2!} + \cdots + \frac{n+1}{n!}$$

$$\text{sum } 6 = \frac{x^0}{0!} + \frac{x^1}{1!} + \frac{x^2}{2!} + \cdots + \frac{x^n}{n!}$$

The output of all series should look like the following:

sum	n	Value
Sum 1	**10**	**...**
Sum 2	**8**	**...**