

Jamhuriya University of Science & Technology

Faculty of Computer Science & IT

Course Title: Web Application Dev - PHP & MySQL

Class: CA22s

Activity: Magic Square Assignment

Due date: October 31, 2025

Introduction

A magic square in math is a square array of numbers in which each row, column, and diagonal of numbers has the same sum, called the **magic constant**.

Magic square 3*3 has 9 consecutive numbers. Magic constant = total of all numbers divided by 3 (number of rows). The number in the middle of the series of consecutive numbers is called the **median**. The median is the number that will go in the middle square of the 3 x 3 magic square.

In the example of consecutive numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, the magic constant number is 15 and the median is 5.

15	15	15	15	15
15				15
15		median (5)		15
15				15
15	15	15	15	15

There is a formula to fill in the corner boxes of a magic square. **m** is the value that is in the middle square. In this example, it is 5. The four corner boxes are $m+1$, $m+3$, $m-1$, and $m-3$, where $m+1$ and $m-1$ are in the same diagonal, whereas $m+3$ and $m-3$ are in the same diagonal.

$m + 1$		$m + 3$
	m	
$m - 3$		$m - 1$

6		8
	5	
2		4

Now, you can calculate the remaining 5 boxes by subtracting the total of the two boxes provided in the row or column from the magic constant number (15 in this list). For example, to calculate the middle box of the 1st row, $15 - (6 + 8) = 1$.

After calculating all the boxes, the magic square will look like the following square.

15	15	15	15	15
15	6	1	8	15
15	7	5	3	15
15	2	9	4	15
15	15	15	15	15

Assignment

Write a PHP program that declares an array of one dimension of 9 consecutive numbers, for example, 1, 2, 3, 4, 5, 6, 7, 8, 9.

Calculate the magic constant number, the median, and all other boxes values, then draw the magic square and fill it with values calculated. Validate your program for the correctness of consecutive numbers, whether the array (list) is less than 9 elements, or greater than 9 elements. You can use any consecutive numbers.