 Course title and number:

420-DW3-AS Web Server Application Development I

**LAB 4**

Essential content to be covered –

Arrays

Indications

1. Submit the code of your program (.php files).
2. Submit this form with corresponding screenshots (more than one when applicable) below each exercise that prove you created the appropriate program and it works.

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**EXERCICE 1**

Create a program including a form that allows users to enter a set of numbers (at least 3 numbers) separated with commas that represent a dataset of observations (e.g. The salary of employees). The program saves each of these numbers as a unidimensional array element to calculate and display the statistical information below:

1. Mean: The arithmetic average of the set of numbers, this means the sum of numbers divided by the quantity of numbers;

E.g. : Mean (1, 2, 3, 4, 5) = (1+2+3+4+5)/5 = 3

1. Median : The number that is in the middle of the set of numbers when there is one or the arithmetic values of the 2 numbers that are in the middle of the set of numbers;

E.g. : Median (1, 2, 3, 4, 5) = 3 ;

Median (1, 2, 3, 4, 5, 6) = (3 + 4) / 2 = 3.50

1. Mode : that is the most common (repeated) number or numbers in a data set, when there is one or mulptiple;

E.g. Mode (1, 2, 3, 1, 5) = 1 ;

Mode (1, 2, 3, 1, 5, 6, 7, 3) = 1 and 3

Mode (1, 2, 3, 4, 5) = “There is no mode”.

The following strategy and built-in functions can be used to create this program –

1. Create an initial array with the text collected from the form, including numbers separated with commas, and order this array in ascending order [explode (), sort($dataset, SORT\_NUMERIC)].
2. Count the number of elements in the initial array. When they are lower than 3 stop the program and display an error message (“Enter more than 2 numbers. Try again!”) and a button that allows users to come back to the form [count()]; When they are greater than or equal to 3 execute the steps indicated below.
3. Calculate the mean and display only 2 decimal numbers [array\_sum(), count() and number\_format()].
4. Calculate the mean and display only 2 decimal numbers [number\_format()].
5. When there is an even number of numbers in the initial array ($size%2==0), $median = ($dataset[$index1] + $dataset[$index2])/2; where $index1 and $index2 can be calculated using the number of elements in the initial array calculated above. E.g. Median (1, 2, 3, 4, 5, 6) = (3 + 4) / 2 = 3.5

When there is an odd number of numbers in the initial array ($size%2!=0) execute the step indicated below.

1. $median = ($dataset[$index1]; where $index1 is the integer part of the result obtained when dividing the number of elements in the initial array calculated above by 2 [intval()].
2. Calculate the mode.
3. Create an associative array that contains each unique number included in the initial array and its occurrence [array\_count\_values()].

e.g. $item => $description where $item corresponds to one of the numbers included in the initial array and $description correspond to its occurrence.

1. Select the maximum occurrence [max()] in the associative array. When the maximum occurrence is equal to 1, display the following message : “There is no mode!” When the maximum occurrence is greater than 1, execute the step indicated below.
2. Use a foreach loop to create a final array that contains only the numbers ($item) included in the associative array that have a description ($description) corresponding to the maximum occurrence. This means the final array includes the mode(s) when there is(are).
3. Display the ordered dataset, mean, median, and mode (when applicable) calculated above and a button that allows users to come back to the form.

**SOLUTION –**

2-Copy/Paste the screenshots of the execution of your program below.

Consider all the possibilities indicated below to completely check your program.

**Scenario 1-**Two numbers

1-Input

1, 2

2-Output

Enter more than 2 numbers. Try again!

3-Screenshot

**Scenario 2-**One number for the median

1-Input

4, 1, 2

2-Output

Dataset ordered in ascending order:

1 2 4

Quantity of observations : 3

Mean : 2.33

Median : 2.00

Mode : There is no mode!

3-Screenshot

**Scenario 3**-Two numbers for the median

1-Input

8, 1, 2, 6

2-Output

Dataset ordered in ascending order:

1 2 6 8

Quantity of observations : 4

Mean : 4.25

Median : 4.00

Mode : There is no mode!

3-Screenshot

**Scenario 4 –** One mode

1-Input

8, 1, 2, 1

2-Output

Dataset ordered in ascending order:

1 1 2 8

Quantity of observations : 4

Mean : 3.00

Median : 1.50

Mode : 1

3-Screenshot

**Scenario 5 –** Two modes

1-Input

1, 8, 1, 2, 6, 8

2-Output

Dataset ordered in ascending order:

1 1 2 6 8 8

Quantity of observations : 6

Mean : 4.33

Median : 4.00

Mode : 1 8

3-Screenshot