

1. Write a php function that calculates the power

Display the following table using the custom power function that you wrote:

num	num^2	num^3
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
6	36	216
7	49	343
8	64	512
9	81	729
10	100	1000

Solution:

```
<?php
function generatePowerTable($numbers, $exponents) {
    echo "<table>";
    echo "<tr><th>Base</th>";

    foreach ($exponents as $exponent) {
        echo "<th>Exponent $exponent</th>";
    }

    echo "</tr>";

    foreach ($numbers as $base) {
        echo "<tr>";
        echo "<td>$base</td>";

        foreach ($exponents as $exponent) {
            echo "<td>" . pow($base, $exponent) . "</td>";
        }

        echo "</tr>";
    }

    echo "</table>";
}

// Example usage
$numbers = [2, 4, 8];
$exponents = [2, 3];
generatePowerTable($numbers, $exponents);
?>
```

2. Multiplication Table

Create and display the following multiplication table

1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18
3	6	9	12	15	18	21	24	27
4	8	12	16	20	24	28	32	36
5	10	15	20	25	30	35	40	45
6	12	18	24	30	36	42	48	54
7	14	21	28	35	42	49	56	63
8	16	24	32	40	48	56	64	72
9	18	27	36	45	54	63	72	81

Solution:

```
<?php
function generateMultiplicationTable($start, $end) {
    echo "<table>";
    echo "<tr><th></th>";

    // Generate table header row
    for ($i = $start; $i <= $end; $i++) {
        echo "<th>$i</th>";
    }

    echo "</tr>";

    // Generate table rows
    for ($i = $start; $i <= $end; $i++) {
        echo "<tr>";
        echo "<td>$i</td>";

        for ($j = $start; $j <= $end; $j++) {
            echo "<td>" . ($i * $j) . "</td>";
        }

        echo "</tr>";
    }

    echo "</table>";
}

// Example usage
$start = 1;
$end = 5;
generateMultiplicationTable($start, $end);
?>
```

3. Largest Row and Column

Write a 4x4 array and fill it with random 1's or 0's

0 0 1 1

0 1 0 0

1 0 1 1

1 0 0 1

Display which row and which column has the biggest number of 1's

Solution:

```
<?php
// Function to generate a random 4x4 array filled with 1's or 0's
function generateRandomArray() {
    $array = [];
    for ($i = 0; $i < 4; $i++) {
        $row = [];
        for ($j = 0; $j < 4; $j++) {
            $row[] = rand(0, 1);
        }
        $array[] = $row;
    }
    return $array;
}

// Function to determine the row and column with the highest number of 1's
function findMaxOnesRowAndColumn($array) {
    $maxOnesRow = -1;
    $maxOnesRowNum = 0;
    $maxOnesCol = -1;
    $maxOnesColNum = 0;

    for ($i = 0; $i < 4; $i++) {
        $rowOnes = 0;
        $colOnes = 0;
        for ($j = 0; $j < 4; $j++) {
            if ($array[$i][$j] === 1) {
                $rowOnes++;
            }
            if ($array[$j][$i] === 1) {
                $colOnes++;
            }
        }
        if ($rowOnes > $maxOnesRow) {
            $maxOnesRow = $rowOnes;
            $maxOnesRowNum = $i + 1;
        }
        if ($colOnes > $maxOnesCol) {
            $maxOnesCol = $colOnes;
            $maxOnesColNum = $j + 1;
        }
    }

    return [
        'row' => $maxOnesRowNum,
        'column' => $maxOnesColNum
    ];
}
```

```
// Generate the random array
$array = generateRandomArray();

// Display the array
echo "Generated Array:<br>";
foreach ($array as $row) {
    echo implode(' ', $row) . "<br>";
}

// Find the row and column with the highest number of 1's
$maxOnes = findMaxOnesRowAndColumn($array);

// Display the result
echo "<br>";
echo "The row with the highest number of 1's is: " . $maxOnes['row'] . "<br>";
echo "The column with the highest number of 1's is: " . $maxOnes['column'] . "<br>";
?>
```

4. Mod Rewrite

Create a php file called file.php that GETs two parameters and prints them

Use mod_rewrite to rewrite the URL from:

/file.php?x=7&y=3 -> /file.php/x/y

Make sure to also submit the .htaccess file

Solution:

```
<?php
$x = $_GET['x'] ?? '';
$y = $_GET['y'] ?? '';

echo "Parameter x: $x<br>";
echo "Parameter y: $y<br>";
?>
```

<http://alkets.com/file.php?x=7&y=3>

<http://alkets.com/file.php/7/3>

5. Power 2.0 - Return of AJAX

1. Modify the Power php script so that it GETs a power parameter from the URL (ex. pow=3) and displays a table with two columns:
 - First column: Numbers from 1 to 10
 - Second column: Power of these numbers according to the GET parameter (ex. 1 to 10 in the power of 3)

Solution Part 1:

```
<?php
$power = $_GET['pow'] ?? '';

echo "<table>";
echo "<tr><th>Number</th><th>Result</th></tr>";

for ($i = 1; $i <= 10; $i++) {
    $result = pow($i, $power);
    echo "<tr><td>$i</td><td>$result</td></tr>";
}

echo "</table>";
?>
```

2. Create another php or html file that has four buttons named: " x^2 ", " x^3 " and " x^4 ", and a div below the buttons
3. When a button is pressed, request the power.php with the respective GET parameters by using AJAX, and display the table in the div

You may find a tutorial for ajax and php [here](#)

Solution Part 2:

```
<!DOCTYPE html>
<html>
<head>
  <title>Power Buttons</title>
  <!-- Include the jQuery library -->
  <script src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
  <script>
    $(document).ready(function() {
      // Execute the following code when the document is ready

      // Attach a click event handler to the buttons
      $("button").click(function() {
        // Retrieve the power value from the clicked button
        var power = $(this).data("power");

        // Make an AJAX request to power.php
        $.ajax({
          url: "power.php",
          data: { pow: power }, // Pass the power value as a GET parameter
          success: function(data) {
            // Handle the response from power.php
            $("#result").html(data); // Display the received data in the 'result' div
          }
        });
      });
    });
  </script>
</head>
<body>
  <h1>Power Buttons</h1>
  <button data-power="2"> $x^2$ </button>
  <button data-power="3"> $x^3$ </button>
  <button data-power="4"> $x^4$ </button>
  <div id="result"></div> <!-- Placeholder to display the table -->
</body>
</html>
```