# 4. Write a JavaScript program to check whether a matrix is a diagonal matrix or not. In linear algebra, a diagonal matrix is a matrix in which the entries outside the main diagonal are all zero (the diagonal from the upper left to the lower right).

Example:
[1, 0, 0], [0, 2, 0], [0, 0, 3] ]) = true
[1, 0, 0], [0, 2, 3], [0, 0, 3] ]) = false

**Analysis**

A square matrix of nxn can be viewed as a two-dimensional array, or as a one-dimensional array of length n in which each of its elements is another array of length n.
In this way, I can use two for cycles, the first one to traverse the first array containing the other arrays, and the second one to traverse the arrays within the "parent" array.
An element of an array is on its diagonal if the index of its row matches the index of its column. Thus, if at any time the index of my first cycle (i) matches the index of my second cycle (j), I will be on the diagonal.
But, if I am on the diagonal, I have nothing to analyze since the elements inside the diagonal can take any value, so the condition I will use is that the elements outside the diagonal (i != j) are non-zero.

```
function isMatrizDiagonal(array) {
    /*
        I initialize a boolean variable as true so that I can use it inside the
loop by comparing it with the
        result of comparing each element outside the diagonal with zero.
    */
    var isDiagonal = true;
    for(var i = 0; i < array.length; i++){
        for(var j = 0; j < array.length; j++){
            if (i === j){
                continue;
            }else{
                /*
                If at any time any of the off-diagonal elements is non-zero, the
ternary operator will return false
                , and so the isDiagonal variable will be false for the rest of the
cycle, otherwise it will remain true.
                */
                isDiagonal &&= (array[i][j] === 0) ? true : false
            }
        }
    }
    return isDiagonal;
}
```

**Some test examples:**

```
isMatrizDiagonal([[1, 0, 0], [0, 2, 0], [0, 0, 3] ]) // -> Returns true
isMatrizDiagonal([[1, 0, 0], [0, 2, 3], [0, 0, 3] ]) // -> Returns false
isMatrizDiagonal([[1, 0, 0, 0], [0, 2, 0, 0], [0, 0, 3, 0], [0, 0, 0, 4] ]) // ->
Returns true
isMatrizDiagonal([[1, 0, 0, 2], [0, 2, 0, 0], [0, 0, 3, 0], [0, 0, 0, 4] ]) // ->
Returns false
```