Assignment Solution
Problem Solving - Arrays

Assignment

1. Given an array having 0,1 as input. We need to write a function that sorts the array in ascending order without using inbuilt sort function

Input Array -> [0,1,1,0,1,0,0,1]
Output -> [0,0,0,0,1,1,1,1]
Solution -> https://jsfiddle.net/041zoLwu/1/

```
var input = [1,1,1,0,0,1,1,0,0,0,1,0,1,0,1];
var size = input.length;
// function to sort an array containing 0,1, and return the sorted array
function sortZeroOne(input, size) {
    let mid = 0;
    let end = size-1;
    let swap = 0; //variable for swapping
    while (mid <= end) {
        if (input[mid] == 0) {
            mid++;
        } else {
            swap = input[end];
            input[end] = input[mid];
            input[mid] = swap;
            end--;
        }
    }
    return input;
}

var output = sortZeroOne(input, size);
console.log(output);
```

2) Given 2D Array. A Magic square is a 2D array having n rows and n columns which will be having all elements as distinct and the sum of row, column or diagonal is equal to the same number.

You need to check whether that array is a magic square or not.

Solution -> https://jsfiddle.net/01rxntcp/

```
function magicSquare(arr)
{
  var N = arr.length

  var sumd1 = 0,sumd2=0;
  for (var i = 0; i < N; i++)
  {

    sumd1 = sumd1 + arr[i][i];
    sumd2 = sumd2 + arr[i][N-1-i];
  }

  if(sumd1!=sumd2)
    return false;


  for (var i = 0; i < N; i++) {
    var colSum = 0;
    var rowSum = 0;
    for (var j = 0; j < N; j++)
    {
      rowSum += arr[i][j];
      colSum += arr[j][i];
    }
    if (rowSum != colSum || colSum != sumd1)
      return false;
  }
  return true;
}

var arr = [[ 2, 7, 6 ],
    [ 9, 5, 1 ],
    [ 4, 3, 8 ]];

if (magicSquare(arr))
  console.log( "Array is Magic Square");
else
  console.log( "Array is not a Magic Square");
```