EXPERIMENT 1

1.a) Write a JavaScript program which accepts a string as input and swap the case of each character. For example if you input 'The Quick Brown Fox' the output should be 'tHEqUICKbROWNfOX'. – "one.js"

```
const readline = require('readline');
var RL = readline.createInterface(process.stdin, process.stdout);
RL.question('Please Enter Text:  ', (name)=>{
  let x=name;
  let y="";
for(let i=0;i<x.length;i++)
{
if (x.charAt(i) >='A' && x.charAt(i) <= 'Z')
y=y+x.charAt(i).toLowerCase();
else if(x.charAt(i) >='a' && x.charAt(i) <= 'z')
y=y+x.charAt(i).toUpperCase();
}

  console.log(`Output is is ${y}`);

});
```

EXPECTED OUTPUT:

Sample input: The Quick Brown Fox
Sample Output: tHEqUICKbROWNfOX

b) **. Write a JavaScript program to find the most frequent item of an array. – "two.js"**

```
var arr1=[3, 'a', 'a', 'a', 2, 3, 'a', 3, 'a', 2, 4, 9, 3];
var mf = 1;
var m = 0;
var item;
for (var i=0; i<arr1.length-1; i++)
{
	for (var j=i; j<arr1.length; j++)
	{
		if (arr1[i] == arr1[j])
		 m++;
		if (mf<m)
		{
		  mf=m;
		  item = arr1[i];
		}
	}
	m=0;
}
console.log(item+" ( " +mf +" times ) ") ;
```

EXPECTED OUTPUT
a (5 times)

if the input contains same number of occurrences for two entries then it prints only least significant one

c). Write a JavaScript program to remove duplicate items from an array – 'three.js'

```
function removeDuplicates(num) {
      len=num.length;
      uniqueChars=[];

      num.forEach((c) => {
         if (!uniqueChars.includes(c)) {
            uniqueChars.push(c);
         }
      });
   return uniqueChars;
 }
 let Mynum = [1, 2, 2, 4, 5, 4, 7, 8, 7, 3, 6];
 result = removeDuplicates(Mynum);
 console.log("Original List:   "+Mynum);
 console.log("Unique List:    "+result);
```

EXPECTED OUTPUT:

d) Write a JavaScript program to perform a binary search. – "four.js"

```
let iterativeFunction = function (arr, x) {
   let start=0, end=arr.length-1;
   while (start<=end){
      let mid=Math.floor((start + end)/2);
      if (arr[mid]===x) return true;
      else if (arr[mid] < x)
          start = mid + 1;
      else
          end = mid - 1;
   }

   return false;
}


let arr = [1, 3, 5, 7, 8, 9];
let x = 5;
console.log(iterativeFunction(arr, x) )   ;
```

EXPECTED OUTPUT:

-> if x : 5 output: true

-> if x: 6 output: false

e) **Write a JavaScript program to list the properties of a JavaScript object – "five.js"**

```
let object = {
    name: 'Jack',
    age: 25,
    college: 'KMIT',
    year: 3,
    sem: 1
  };
let properties = Object.keys(object)
console.log(properties);
```

EXPECTED OUTPUT:

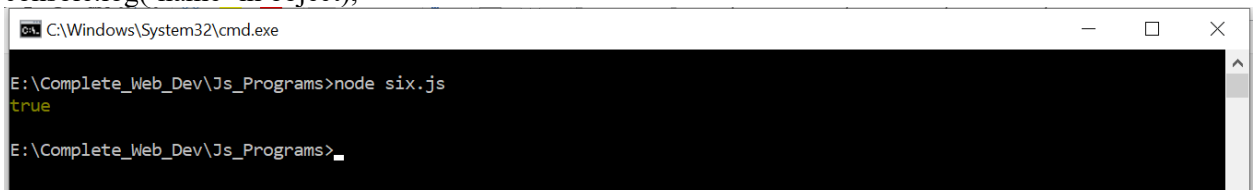
f) Write a JavaScript function to check whether an object contains given property. – "six.js"

***1. hasOwnProperty()* method**

```
let object = {
    name: 'Jack',
    age: 25,
    college: 'KMIT',
    year: 3,
    sem: 1
  };
console.log(object.hasOwnProperty('name'));
```

2. in operator Method:

```
let object = {
    name: 'Jack',
    age: 25,
    college: 'KMIT',    year: 3,    sem: 1
  };
console.log('name' in object);
```



3. Comparing with undefined Method:

```
let object = {
    name: 'Jack',
    age: 25,
    college: 'KMIT',    year: 3,    sem: 1
  };
console.log(object.name);
console.log(object.fee);
```

Expected output: here Name property is available so programs gives you output as 'Jack' but fee property is not available so it is giving output as undefined.

g) Write a JavaScript program to sort a list of elements using Quick sort. –"seven.js"

```
    function quick_Sort(origArray) {
        if (origArray.length <= 1) {
                return origArray;
        } else {

                var left = [];
                var right = [];
                var newArray = [];
                var pivot = origArray.pop();
                var length = origArray.length;

                for (var i = 0; i < length; i++) {
                        if (origArray[i] <= pivot) {
                                left.push(origArray[i]);
                        } else {
                                right.push(origArray[i]);
                        }
                }

                return newArray.concat(quick_Sort(left), pivot, quick_Sort(right));
        }
}

var myArray = [3, 0, 2, 5, -1, 4, 1 ];

console.log("Original array: " + myArray);
var sortedArray = quick_Sort(myArray);
console.log("Sorted array: " + sortedArray);
```

Expected Output:

h) Write a JavaScript program to implement Bubble Sort. –“eight.js”

```
function swap(arr, first_Index, second_Index){
   var temp = arr[first_Index];
   arr[first_Index] = arr[second_Index];
   arr[second_Index] = temp;
}

function bubble_Sort(arr){

   var len = arr.length,
      i, j, stop;

   for (i=0; i < len; i++){
      for (j=0, stop=len-i; j < stop; j++){
         if (arr[j] > arr[j+1]){
            swap(arr, j, j+1);
         }
      }
   }

   return arr;
}
myArray=[3, 0, 2, 5, -1, 4, 1];
console.log("Original array: " + myArray);
var sortedArray = bubble_Sort(myArray);
console.log("Sorted array: " + sortedArray);
```

Expected Output: