

## 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:



The screenshot shows a Windows command prompt window titled "C:\Windows\System32\cmd.exe". The user has navigated to the directory "C:\Users\Jaicharan\Desktop\JSDemo" and executed the command "node three.js". The output of the program is displayed in the command prompt, showing the original array [1, 2, 2, 4, 5, 4, 7, 8, 7, 3, 6] and the resulting unique array [1, 2, 4, 5, 7, 8, 3, 6].

```
C:\Windows\System32\cmd.exe  
C:\Users\Jaicharan\Desktop\JSDemo>node three.js  
Original List:  1,2,2,4,5,4,7,8,7,3,6  
Unique List:    1,2,4,5,7,8,3,6  
C:\Users\Jaicharan\Desktop\JSDemo>
```

**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**

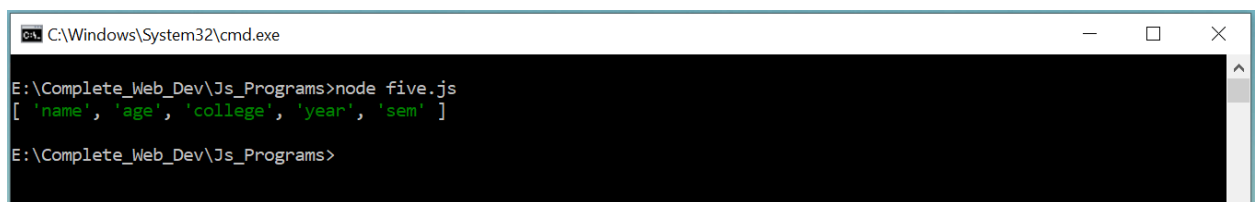


```
C:\Windows\System32\cmd.exe  
Microsoft Windows [Version 10.0.19044.1645]  
(c) Microsoft Corporation. All rights reserved.  
  
E:\Complete_Web_Dev\Js_Programs>node four.js  
  
E:\Complete_Web_Dev\Js_Programs>node four.js  
true  
  
E:\Complete_Web_Dev\Js_Programs>node four.js  
false
```

**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:



```
C:\Windows\System32\cmd.exe  
E:\Complete_Web_Dev\Js_Programs>node five.js  
[ 'name', 'age', 'college', 'year', 'sem' ]  
E:\Complete_Web_Dev\Js_Programs>
```

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

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

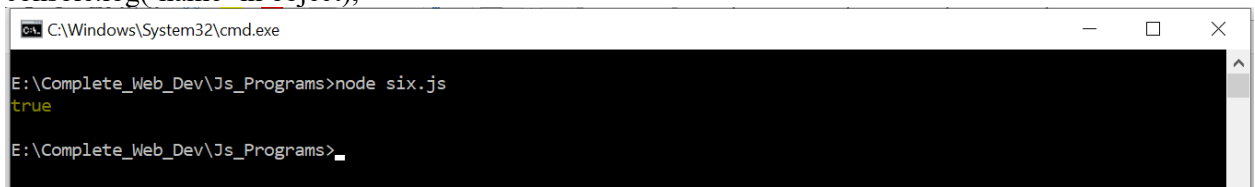
```
let object = {  
  name: 'Jack',  
  age: 25,  
  college: 'KMIT',  
  year: 3,  
  sem: 1  
};  
console.log(object.hasOwnProperty('name'));
```



```
C:\Windows\System32\cmd.exe  
E:\Complete_Web_Dev\Js_Programs>node six.js  
true  
E:\Complete_Web_Dev\Js_Programs>_
```

**2. *in operator Method:***

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

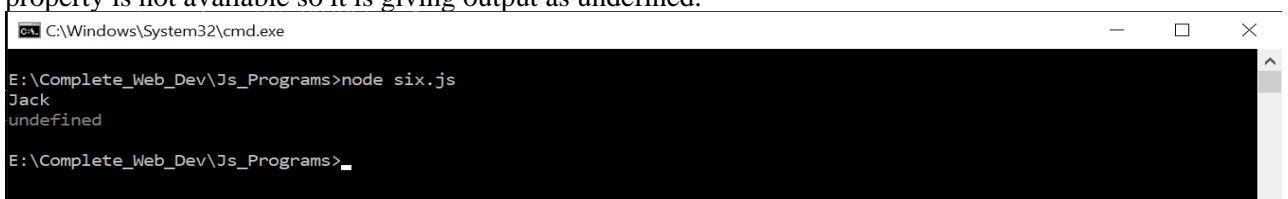


```
C:\Windows\System32\cmd.exe  
E:\Complete_Web_Dev\Js_Programs>node six.js  
true  
E:\Complete_Web_Dev\Js_Programs>_
```

**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.



```
C:\Windows\System32\cmd.exe  
E:\Complete_Web_Dev\Js_Programs>node six.js  
Jack  
undefined  
E:\Complete_Web_Dev\Js_Programs>_
```

**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:

```
C:\Windows\System32\cmd.exe

E:\Complete_Web_Dev\Js_Programs>node seven.js
Original array: 3,0,2,5,-1,4,1
Sorted array: -1,0,1,2,3,4,5

E:\Complete_Web_Dev\Js_Programs>
```

**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:



The screenshot shows a Windows command prompt window with the title bar "C:\Windows\System32\cmd.exe". The window contains the following text:

```
E:\Complete_Web_Dev\Js_Programs>node eight.js
Original array: 3,0,2,5,-1,4,1
Sorted array: -1,0,1,2,3,4,5
E:\Complete_Web_Dev\Js_Programs>_
```