University of Maryland College Park
Department of Computer Science
CMSC122 Fall 2021
Exam #2

FIRSTNAME, LASTNAME (PRINT IN UPPERCASE):

KEY

STUDENT ID (e.g. 123456789):

Instructions

- Please print your answers and use a pencil.
- This exam is a closed-book, closed-notes exam with a duration of 50 minutes and 100 total points.
- **Do not remove the exam's staple.** Removing it will interfere with the scanning process (even if you staple the exam again).
- Write your directory id (e.g., terps1, not UID) at the bottom of pages with **DirectoryId**.
- Provide answers on the provided lines or the rectangular areas.
- Do not remove any exam pages. Even if you don't use the extra pages for scratch work, return them with the rest of the exam.
- Your code must be efficient and as short as possible.
- If you continue a problem on the extra page(s) provided, make a note on the particular problem.
- You don't need to use meaningful variable names; however, we expect good indentation.
- **You must write your name and id at this point (we will not wait for you after time is up).**
- You must stop writing once time is up.

Grader Use Only

#1	Part #1 (Short Answer 3pts)	45
#2	Part #2 (Write the Code)	55
Total	Total	100

1

Part #1 (Short Answer – 3 pts each)

1. Given:

```
let num = 7 + 3;
num += 4;
alert(num);
```

What will the alert box display? **14.**

2. Which statement is true? Simply write the letter of the true statement: **_C.**

   A. The last index of an array is the same as the length of the array
   B. An array can only have numbers as the values of the elements, not strings.
   C. A `for` loop is a pre-test loop, meaning it checks the condition before the first iteration.
   D. A `while` loop is a post-test loop, meaning it checks the condition after the first iteration

3. Given:
```
let str = "hi";
str = str.toUpperCase();
alert(str);
```

What will the alert box display? HI (must be in all cap for credit).

4. Given:
```
let arr = [1,2,3];
let b = arr;
b[1] = 100;
alert(arr[1]);
```

What will the alert box display? 100.

5. Given:

```
let myVar1 = 10, myVar2 = "hi";
if (myVar1 == 10 && myVar2 == "Hi")
     alert("line 1");
else if  (myVar1 == 10 || myVar2 == "Hi")
     alert("line 2");
else
     alert("line 3");
```

What will the alert box display? **line2_**.

6. Given:

```
let myVar1 = 10, myVar2 = 20;
if (myVar1 == 10 && myVar2 == 20)
     alert("line 1");
else if  (myVar1 == 10 || myVar2 == 20)
     alert("line 2");
else
     alert("line 3");
```

What will the alert box display? **line1**

7. Given the code below, how many alert boxes with Hello will show up? **1.**

```
let count = 0;
do{
    alert("Hello");
    count++;
} while (count <= 0);
```

8. Given the code below, how many alert boxes with Hello will show up? _____**10**_____.

```
for (let i =0; i<=3; i++)
{
    for (let j=i; j<=3; j++)
        alert("Hello");
}
```

9. Given:

```
let myVar1 = [7,6,5];
myVar1 [0] = 25;
myVar1 = [10,20,30];
alert(myVar1[0]+ myVar1[1]);
```

What will the alert box display? _____**30**_____.

10. Given:

```
function example1(myNum){
    myNum = 100;
}

let myNum = 5;
example1(myNum);
alert(myNum);
```

What will the alert box display? **5**

11. Given:

```
function example2(myArray) {
    myArray[0]=0;
    myArray[1]=0;
    myArray = "hi";
}

let myVar=[5,4];
example2(myVar);
alert(myVar);
```

What will the alert box display? **0, 0**

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12. Given:

```
function example3(myStr){
     myStr="CSS";
}
let myVar ="JavaScript";
myVar = example3(myVar);
alert(myVar);
```

What will the alert box display? **undefined**.

13. Given:

```
function example4(myNum)
{
     return myNum + 10;
}

let x = 5, y;
y = example4(x);
y+=x;
alert(y);
```

What will the alert box display? _**20**_.

14. Given:

```
let x = 10;
if (x < 5) {
     alert("One");
}
Else {
     alert("Two");
}
```

There is an error in this code. What is wrong with it? (You can assume that it has been correctly placed in the <script> element in an html document).

Answer case sensitive --Else should be else

15. Given:

```
let myArray =[5,6,7];
myArray.shift();
myArray.unshift(3);
myArray.pop();
myArray.push(1);

alert(myArray);
```

What will the alert box display? **3,6,1**

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Section 2–Write the code – YOU ONLY NEED TO WRITE THE FUNCTIONS

16. (18 pts) Write a function called `changeIfLess` that will have an array parameter called `myArr` and an integer parameter called `target`. The function should change any value that is less than `target` to be a `-1`. You can assume that `myArr` will be an array of integers with at least one element and that `target` will be an integer. The function should not return a value or print anything on the webpage. Notice in the sample code below, all values less than 10 are changed to a `-1` after the function call.

```
<script>




function changeIfLess(myArr, target)
    {
        for (let i =0; i <myArr.length; i++)
        {
            if(myArr[i] <target)
                myArr[i] = -1;

        }

    }
let example = [5,7,13,12,8,10,11,6];
changeIfLess(example, 10);
alert (example);   //-1,-1,13,12,-1,10,11,-1

</script>
```

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17. (19 pts) Write a function called `stringMaker` that will have a string parameter called `word` and an integer parameter called `repeat`. The function should return a string with `repeat` parts, each terminated with an *. Each part will have the word concatenated one more time than the previous part. As an example, look at the sample code where `word` is CSS and `repeat` is 4. The output has 4 parts each ending with a *. The first part has CSS once, second part had CSS 2 times, third part has CSS 3 times, and 4th part has CSS 4 times. **Hint:** Think about the code to make a triangle.

```
<script>

function stringMaker (word, repeat)
    {
        let str = "";
        for (let i =1; i <=repeat; i++)
        {
            for (let j =1; j <=i; j++)
                str += word;
            str+="*";
        }
        return str;

    }




alert (stringMaker ("CSS", 4));  //CSS*CSSCSS*CSSCSSCSS*CSSCSSCSSCSS*
alert (stringMaker ("Hi", 6)); // Hi*HiHi*HiHiHi*HiHiHiHi*HiHiHiHiHi*HiHiHiHiHiHi*


</script>
```

18. (18 pts) Write a function called `calculateStats` with one array parameter called `myData`. You can assume `myData` is a reference to an integer array with at least one element. The function will return a new

array with 2 elements. The first element will have the sum of the values in `myData` and the second element will have the average of the values in `myData`. The values inside of `myData` should not be modified. Make sure that you are returning the newly created 2 element array from your function.

```
<script>


function calculateStats(myData)
    {
        let result = new Array(2);
        let sum = 0;
        for(let i = 0; i <myData.length; i++)
        {
            sum += myData[i];
        }
        result[0]= sum;
        result[1] = sum/myData.length;

        return result
    }
```

```
  let arr = [10,20,30,40,50];
  alert(calculateStats(arr)); //150,30
  alert(arr);   //10,20,30,40,50
```

```
</script>
```

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