



University of Maryland College Park

Department of Computer Science

CMSC122 Fall 2022

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 each)	45
#2	Part #2 (Write the Code)	55
Total	Total	100

Part #1 (Short Answer – 3 pts each)

1. Given:

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

What will the alert box display? _____ 8 _____.

2. Which statement is false? Simply write the letter of the false statement: _____ D _____.

A. In JavaScript, you can have an array that has a mix of numbers and strings in its elements (i.e. arrays are heterogeneous in JS).

B. To assign the value true to a boolean variable, you should not use "true" instead use true.

C. A do while loop is a post-test loop, meaning it checks the condition after the first iteration.

D. alert(31%5); will display 2.

3. Given:

```
let str1 = "hi";  
let str2 = str1 + str1 ;  
str2 = str1.toUpperCase();  
alert(str1);
```

What will the alert box display? _____ hi _____ (must be all lowercase) _____.

4. Given:

```
let arr1 = [1,2,3];  
let arr2 = arr1;  
arr2[2] += 100;  
alert(arr1);
```

What will the alert box display? _____ 1,2,103 _____.

5. Given:

```
let myVar1 = 10, myVar2 = 30;  
if (myVar1 == 10 && myVar2 !=30)  
    alert("line 1");  
else if (myVar1 > 10 || myVar2 <30)  
    alert("line 2");  
else  
    alert("line 3");
```

What will the alert box display? _____ line 3 _____.

6. Given:

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

What will the alert box display? _____ line 2 _____.

7. Given the code below, how many alert boxes with Hello will show up? 4.

```
let count = 1;
do{
  alert("Hello");
  count*=2;
} while (count <= 10);
```

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

```
for (let i =0; i<=3; i++)
{
  for (let j=2; j<=3; j++)
    alert("Hello");
}
```

9. Given:

```
let myVar1 = [7,6,5];
let myVar2 =myVar1 ;
myVar2 = [10,20,30];
alert(myVar1[1]+ myVar2[2]);
```

What will the alert box display? 36.

10. Given:

```
function example1(myNum){
  myNum = 5;
}

let myNum = 100;
example1(myNum);
alert(myNum + myNum);
```

What will the alert box display? 200.

11. Given:

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

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

What will the alert box display? 4,4.

Directory id:

12. Given:

```
function example3(myNum) {  
    return myNum *3;  
}  
let myVar =5;  
example3(myVar);  
myVar = example3(myVar);  
alert(myVar);
```

What will the alert box display? 15.

13. Given:

```
function example4(myNum)  
{  
    myNum + 10;  
}  
  
let x = 5, y;  
y = example4(x);  
alert(y);
```

What will the alert box display? undefined.

14. Given:

```
let x = 10;  
if (x < 5); {  
    alert("less than 5");  
}  
else {  
    alert("5 or larger");  
}
```

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 ; after if (makes else be a syntax error)

15. Given:

```
function example5(myNum) {  
    let result = myNum + x;  
    return result;  
}  
  
function main() {  
    let x = 20;  
    alert(example5(50));  
}  
main();
```

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 x is out of scope in example5

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

16. (18 pts) Write a function called `mySum` that will have an array parameter called `myArr` and an integer parameter called `limit`. The function should return the sum of all values in that array that are less than `limit`. You can assume that `myArr` will be an array of integers with at least one element and that `limit` will be an integer. The function only returns the sum, and does not write anything on the webpage. Notice in the sample code below, the returned value is 26 which is the sum of 5,7,8, and 6.

<script>

```
function mySum(myArr, limit) {  
  
    let sum =0;  
    for (let i =0; i <myArr.length; i++)  
    {  
        if(myArr[i]<limit)  
            sum += myArr[i];  
    }  
    return sum;  
  
}
```

```
let example = [5,7,13,12,8,10,11,6];  
mySum(example, 10);  
alert ( mySum(example, 10)); //26
```

</script>

Directory id:

17. (19 pts) Write a function called `myTriangle` that will have an integer parameter called `start`. The function will print to the webpage a triangle with 5 rows starting with number `start`. A triangle just means that each row will have one more symbol (i.e. an integer or `*`) than the previous row. The symbols will alternate between integers and `*`. That is, instead of printing consecutive integers starting with `start`, use a `*` for every other consecutive integer. The function is not returning anything, it uses `document.write` to make the triangle on the webpage

`<script>`

```
function myTriangle(start) {
    let printNum =true;
    for (let i =1; i <=5; i++)
    {
        for (let j =1; j <=i; j++)
        {
            if(printNum){
                document.write (start);
                printNum = false
            }
            else{
                document.write ("*");
                printNum = true
            }

            start++;
        }
        document.write ("<br>");
    }

}
```

`</script>`

The call	The output to the webpage
<code>myTriangle(41);</code>	41 *43 *45* 47*49* 51*53*55
<code>myTriangle(8);</code>	8 *10 *12* 14*16* 18*20*22

18. (18 pts) Write a function called `valSwap` with one array parameter called `myArr`. You can assume `myArr` is a reference to an integer array with at least two elements and all integers in it are unique (i.e. there will be a unique smallest and largest value). The function will swap the largest and smallest element. Note that the function does not return anything and it does not write to the webpage. Notice in the example that 2 (the smallest) and 13 (the largest) switch places.

<script>

```
function valSwap(myArr) {
    let smallIndex, largeIndex;
    let small, large, temp;
    small = large = myArr[0];

    for (let i =1; i <myArr.length; i++)
    {
        if (myArr[i] <small )
        {
            small = myArr[i] ;
            smallIndex = i;
        }
        if (myArr[i] > large )
        {
            large = myArr[i] ;
            largeIndex = i;
        }
    }
    temp = myArr[smallIndex];
    myArr[smallIndex] = myArr[largeIndex];
    myArr[largeIndex] = temp;
}
```

```
let example = [5,7,13,12,8,10,11,2,6];
valSwap(example);
alert (example);    //5,7,2,12,8,10,11,13,6
```

</script>

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EXTRA PAGE IN CASE YOU NEED IT (SUBMIT WITH THE EXAM)

LAST PAGE