



University of Maryland College Park

Department of Computer Science

CMSC122 Fall 2023

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;  
num *=2;  
num++;  
alert(num++);
```

What will the alert box display? _____ **15** _____.

2. Assume an array with elements 5, 7, 2, 3. Which two values would be the first swap in bubble sort?

_____ **7 and 2** _____.

3. Assume an array with elements 5, 7, 2, 3. Which two values would be the first swap in selection sort?

_____ **5 and 2** _____.

4. Given:

```
let arr1 = [1,2,3];  
let arr2 = arr1;  
arr1 = [5,6,7];  
alert(arr2[2]);
```

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

5. Given:

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

What will the alert box display? _____ **line 1** _____.

6. Given:

```
let myVar1 = 10, myVar2 = 30;  
if (myVar1 != 10 && myVar2 ==30)  
    alert("line 1");  
if (myVar1 == 10)  
    alert("line 2");  
else  
    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+=5;
  if (count == 10)
    count = 21;
} while (count <= 20);
```

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

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

9. Given:

```
let myVar1 = "hello";
let myVar2 = myVar1.length;
alert(myVar1.toUpperCase()+ myVar2);
```

What will the alert box display? HELLO5 (must be in all caps).

10. Given:

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

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

What will the alert box display? undefined.

11. Given:

```
function example2(myArray) {
  myArray[0] = 7;
}

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

What will the alert box display? 7,4.

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12. Given:

```
function example3(myNum) {  
    return myNum + 2;  
}  
let myVar = 5;  
example3(myVar);  
myVar *= example3(myVar);  
alert(++myVar);
```

What will the alert box display? 36.

13. Given:

```
function example4(myStr)  
{  
    myStr = "*" + myStr + "*";  
}  
  
let str = "html";  
example4(str);  
alert(str);
```

What will the alert box display? html.

14. Given:

```
let x = 1;  
if (x < 5) {  
    let y = 10;  
    alert("less than 5");  
}  
else {  
    alert("5 or larger");  
}  
alert(y);
```

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 y has block scope and is being used outside block

15. Given:

```
function example5(myNum) {  
    let result = [1,2,3];  
    result[1] + myNum;  
    return result;  
}  
  
let x = 20;  
alert(example5(x));
```

What will the alert box display? 1,2,3.

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

16. (18 pts) Write a function called `replace` that will have an array parameter called `arr` and an integer parameter called `target`. The function will traverse the array in order and as soon as it finds an element larger than `target`, it will replace that element and all the remaining elements with a `*`. 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 does not return anything, nor does it write anything on the webpage.

```
<script>
```

```
function replace(arr, target){
    let change =false;

    for(let i = 0; i<arr.length;i++){
        if(arr[i]>target){
            change=true;
        }
        if(change){
            arr[i]="*";
        }
    }

}
```

```
function main(){
    let myArr =[7,2,3,5,12];
    replace(myArr,2);
    alert(myArr); //*,*,*,*,*
    myArr =[7,2,3,5,12];
    replace(myArr,10);
    alert(myArr); //7,2,3,5,*
    myArr =[7,2,3,5,12];
    replace(myArr,20); //7,2,3,5,12
    alert(myArr);
}
main();
</script>
```

17. (19 pts) Write a function called `writeTriangle` that will have a string parameter called `word`. The function will print to the webpage a triangle with 5 rows. A triangle just means that each row will have one more symbol (i.e. a letter or `*`) than the previous row. The symbols will start out with the letters in `word` and switch over to using an `*` once all letters in `word` have been printed out. The function is not returning anything, it uses `document.write` to make the triangle on the webpage. You can use the string method `charAt` to get one letter at a time from `word`.

```
<script>
function writeTriangle(word){
    let count = 0;
    for(let i = 1; i <= 5; i++){
        for(let j = 0; j < i; j++)
        {
            if(count < word.length){
                document.write(word.charAt(count)+" ");
                count++;
            }
            else{
                document.write("* ");
            }
        }
        document.write("<br>");
    }

}
```

```
</script>
```

The call	The output to the webpage
writeTriangle("javascript");	j a v a s c r i p t * * * * *
writeTriangle("html");	h t m l * * * * * * * * * * *

18. (18 pts) Write a function called `slice` with one array parameter called `arr` and an integer parameter called `index`. You can assume `arr` is a reference to an integer array with at least one element and `index` is an integer. The function **returns a new array** (does not change the original) with all values starting at the `index` to the end. If the index is out of bounds, it will simply return an array with one element that is an `X`. You can use the array method `push` to add elements into the new array that will be returned.

```
<script>
function slice(arr, index){
    let retArr =[];
    if(index < 0|| index>=arr.length){
        retArr.push("X");
        return retArr;
    }
    else{
        for(let i = index; i<arr.length;i++){
            retArr.push(arr[i]);
        }
        return retArr;
    }
}

}
```

```
function main(){
    let myArr =[7,2,3,5,12];

    alert(slice(myArr,2)); //3,5,12
    alert(slice(myArr,20)); //X
    alert(slice(myArr,-20)); //X
}
main();

</script>
```

Directory id:

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

LAST PAGE