**CMSC122**

**Grader Use Only:**

|  |  |  |
| --- | --- | --- |
| #1 |  | (22) |
| #2 |  | (18) |
| #3 |  | (30) |
| #4 |  | (30) |
| **Total** |  | (100) |

**Summer 2015**

**Final Exam Key**

**First Name (PRINT): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Last Name (PRINT): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**General Rules (Read):**

* This exam is a closed-book and closed-notes exam.
* Total point value is 100 points.
* Please use a pencil to complete the exam.
* For those questions requiring JavaScript code just provide what should appear in between the <script> and </script> tags.
* **WRITE NEATLY**. If we cannot understand your answer, we will not grade it (i.e., 0 credit).

**Problem 1**

Circle the correct answer(s).

1. (1 pt) Which of the following is considered an **invalid** variable name in JavaScript?

a) age b**)**  WAT

c) do √ d) ELEn

1. ­­­­­­­­­­­­­­(1 pt) In JavaScript infinite loops are not possible with **while** loops.

a) true b) false√

1. (1 pt) A return statement ends a function.

a) true√ b) false

1. (1 pt) In JavaScript a function can return only strings.

a) true b) false√

1. (1 pt) The JavaScript alert function allows us to find problems with our JavaScript code.

a) true√ b) false

1. (1 pt) We can use the % operator to determine whether a number is divisible by three.

a) true√ b) false

1. (1 pt) NaN stands for Not-A-Number.

a) true√ b) false

1. (1 pt) A call to the prompt function returns a string.

a) true√ b) false

1. (1 pt) Local variables always have 0 as their initial value.

a) true b) false√

1. (1 pt) The alert and prompt functions represent the same function.

a) true b) false√

1. (1 pt) === (three =) is more strict than == (two =).

a) true√ b) false

1. (1 pt) A JavaScript program can only have one function.

a) true b) false√

1. (1 pt) We can use null as the value for a variable.

a) true√ b) false

1. (1 pt) A global variable has 0 as its initial value.

a) true b) false√

1. (1 pt) We should avoid using global variables.

a) true√ b) false

1. (1 pt) Java is another name for the JavaScript programming language.

a) true b) false√

1. (1 pt) Which value is returned when we call the following function?

**function work() {**

**var y = 20;**

**}**

Answer: undefined

1. (1 pt) Which of the following is considered an event in JavaScript?
   1. Generating a random number
   2. Loading a web page √
   3. An infinite loop
2. (4 pts) Complete the following assignment so x is initialized with a random value between 1 (inclusive) and 6 (inclusive).

Answer:

var x = Math.floor(6 \* Math.random()) + 1;

**Problem 2**

Write a function that has the following prototype: **function lateMessage(minutesLate)** The function returns a string based on the **minutesLate** value. The message to return will be:

“ontime” → if **minutesLate** is 0

“almost ontime” → if **minutesLate** is greater than or equal to 1 and less than or equal to 5

“officially late” → for any other value

For this problem:

* You do not need to write pseudocode.
* You do not need to use meaningful variable names.
* You only need to write the function (no need for main, <script>, <body>, etc.).
* The function does not read any data (i.e., it may not have any prompt statements).
* The function does not print any data (i.e., it may not have document.writeln or alert).

Answer:

**function lateMessage(minutesLate) {**

**if (minutesLate == 0) {**

**return "ontime";**

**} else if (minutesLate >= 1 && minutesLate <= 5) {**

**return "almost ontime"**

**} else {**

**return "officially late";**

**}**

**}**

**Problem 3**

Write a JavaScript function which has the following prototype: **function computeCeiling(data)**. The function will return a new array with the ceiling of the elements in the **data** array. The original array (data) should not be modified. For example, the following code fragment will display 3,7,10 in the alert box.

var a = [2.5, 6.8, 9.3];

alert(computeCeiling(a));

For this problem:

* You do not need to write pseudocode.
* You may not modify the array parameter.
* You only need to write the function (no need for main, <script>, <body>, etc.).
* The function does not read any data (i.e., it may not have any prompt statements).
* The function does not print any data (i.e., it may not have document.writeln or alert).
* The function must work for arrays of any length.
* Use the Math.ceil function to compute ceiling values (e.g., Math.ceil(2.5) 🡪 3)

Answer:

**function computeCeiling(data) {**

**var result = new Array(data.length);**

**for (idx = 0; idx < data.length; idx++) {**

**result[idx] = Math.ceil(data[idx]);**

**}**

**return result;**

**}**

**Problem 4**

For this problem you will implement two functions: main() and printEvens(). These functions allow us to print a table of even values between 2 and a limit provided by the user. We have provided the form below; you just need to use it during the implementation of the functions.

**<body onload="main()">**

**<form>**

**Limit: <input type="text" id="limit">**

**<input type="button" id="printEvensButton" value="Print Even Values Table"><br>**

**<div id="toShowResults"></div>**

**</form>**

**<script>**

**function main() {**

**/\* You must implement \*/**

**}**

**function printEvens() {**

**/\* You must implement \*/**

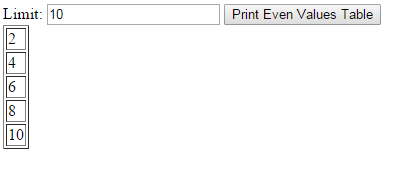
**}**

**</script>**

**</body>**

For this problem:

* You do not need to write pseudocode.
* You only need to define the body of the main and printEvens functions.
* The main function will define code that will allow the execution of the printEvens function when we click on the button.
* The printEvens function will generate a table of even values between 2 and the limit provided by the user. This table will be displayed in the <div></div> associated with the id “toShowResults”.
* The following is an example of running the program with 10 as the limit:



Answer:

function main() {

document.getElementById("printEvensButton").onclick = printEvens;

}

function printEvens() {

var limit = Number(document.getElementById("limit").value);

var answer = "<table border='1'>";

for (i = 2; i <= limit; i += 2) {

answer += "<tr><td>" + i + "</tr></td>";

}

answer + "</table>";

document.getElementById("toShowResults").innerHTML = answer;

}