CSc 130 Midterm 1 Training

Duration: 45 Minutes. Answer all questions in the answer book provided, do not answer on this paper. All paper notes and textbooks are authorized. Use of electronic devices is ***not*** *permitted. Points of each section (1, 2, etc) are divided equally between the questions (a, b, etc) The total of the midterm is 15 points.*

1) JavaScript Data Types: 2 points

For each of the following sets of statements, what is the value of the variable 'a' after they are executed?

a) `var a = 0/0`
b) `var 10 = 5; a /= 10;`
c) `var a = 10 + 5 * 5 + 10;`
d) `var b = [ [1,2] , [3,4] ]; var a = b[1][1]`

2) HTML and CSS: 3 points

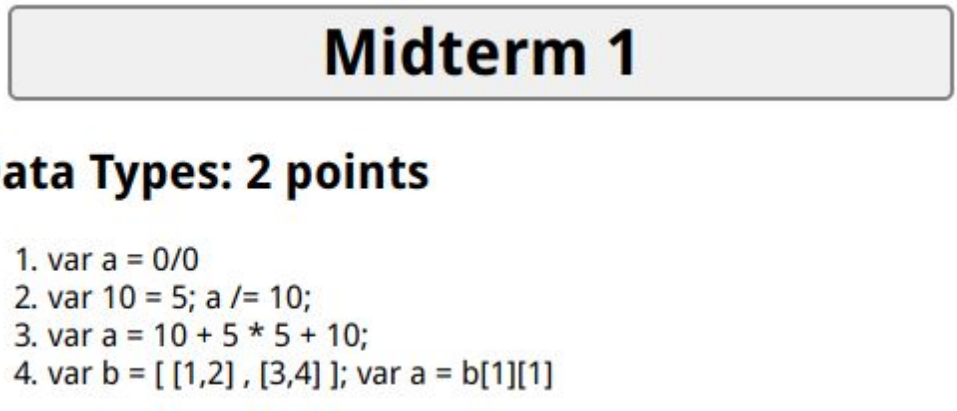
Consider the following HTML code:

```
<!DOCTYPE html>
<html>
<head>
  <meta charset="utf-8">
  <title>CSc 130</title>
  <link rel="stylesheet" href="style.css">
</head>
<body>
  <h1>Midterm 1</h1>
  <h2>Data Types: 2 points</h2>
  <ol>
    <li>var a = 0/0</li>
    <li>var 10 = 5; a /= 10;</li>
    <li>var a = 10 + 5 * 5 + 10;</li>
    <li>var b = [ [1,2] , [3,4] ]; var a = b[1][1]</li>
  </ol>
</body>
</html>
```

Write the `style.css` file that changes the appearance of first-level header as follows (see screenshot on the next page) :

a) The text should be centered
b) The border around the header should be two pixels wide and grey

c) The border should have rounded corners
d) The background color should be a light grey (for instance `#f0f0f0`)
e) The space between the content and the border should be three pixels
f) There should be a 20 pixels space outside of the border, on the left and right (the top and bottom should remain unchanged)



3) JavaScript Functions : 4 points

a) Write a function named `max` that takes an array of numbers (or objects that can be converted to a number) as an argument, and returns the maximum value of all the elements of the array. If the array contains some elements that cannot be converted to a number, the function should return `NaN`.
b) Write a function named `average` that takes an array of numbers and returns the average (arithmetic mean) of all the elements. If the array contains some elements that cannot be converted to a number, the function should return `NaN`.

4) JavaScript Objects: 6 points

a) Define a function constructor (aka, a class) named `Pilot`, that accepts the following parameters:
   - `name`
   - `teamName`
   - `racesPositions`

   Instances of the `Pilot` class should have properties for each of the fields listed above. The `racesPositions` parameter should be optional when calling the function constructor. If it is not provided, the corresponding property of the object instance should be an empty array.
b) Instances of the class `Pilot` should have a method named `finishedRace` that takes an argument named `position`, and should add it to the `racesPositions` array.

c) Instances of the class `Pilot` should have a method named `getPoints` which returns the total number of points based on the pilot's position, according to the following table:

Position	1	2	3	4	5	6	7	8
Points	25	20	15	10	8	6	4	2

You get **2 bonus points** if you can do this without creating a new array, and use only one `if/else` statement. *Hint*: there is a formula to compute the scores based on the position.