

JavaScript Preparation Questions

Variables

1. When is it necessary to use the `var` keyword?
2. Create a script that uses `document.write` to print the following message, including the quotes:

```
She cried, "Aren't you going to help me?"
```

3. What output does the following script produce?

```
var one = "AB";  
var two = "CD";  
var three = "EF";  
  
document.write(one + "+" + two + three);
```

4. What output does the following script produce?

```
var a = 3;  
var b = 6;  
  
document.write(a + " " + b + "<br>");  
a = 2;  
b = a;  
document.write(a + " " + b + "<br>");  
a = 8;  
document.write(a + " " + b + "<br>");
```

Operators

1. What output does the following script produce?

```
var a = 3;  
var b = 6;  
  
a = 15 / 3;  
b = 2 * 2;  
document.write(a + " " + b + "<br>");  
a = b + 1;  
b = a + 1;  
document.write(a + " " + b + "<br>");  
a = a * 2;  
b = 8 - b;  
document.write(a + " " + b + "<br>");
```

2. What output does the following script produce?

```
var a = 3;
var b = 6;

a += 4;
b *= 2;
document.write(a + " " + b + "<br>");
a++;
b--;
document.write(a + " " + b + "<br>");
a = 6;
b = 3;
a /= b;
document.write(a + " " + b + "<br>");
```

3. What output does the following script produce?

```
var a = 1 + 4 * 4 / 2
var b = (1 + 4) * (4 / 2);

document.write(a + " " + b + "<br>");
```

Control Structures

1. Write a JavaScript program that converts a person's age to "dog years". Folk wisdom says a person's age in dog years is their normal age multiplied by 7, so a 10-year-old person would be 70 years old in dog years. The script should prompt the user for their age, then print out a message about how old that person would be in dog years. If the age someone types in is less than zero, then tell the user they made a mistake and don't do the conversion. (You don't need to ask them to type in their age again; they only get once chance.)
2. Write a JavaScript program converts a person's age to "dog years" as in the previous script, but if they type a number less than zero, then keep asking them for their age over and over until they type it correctly. Then do the conversion and print out the message.
3. Write a JavaScript program that uses some kind of loop (`for`, `while`, or `do/while`) to calculate and print the following sequences. You should use a different loop for each sequence (meaning a different actual piece of code for each sequence; you can use same *type* of loop if you want).

(a) 1 2 3 4 5

(b) 5 4 3 2 1

(c) 2 4 6 8 10 12

4. What output does the following script produce? (If this is an infinite loop, then say so.)

```
var p = 1;

while (p <= 10)
{
    document.write(p + " ");

    if (p <= 5) {
        p++;
    }
    else if (p <= 7) {
        p += 2;
    }
    else {
        p += 3;
    }
}

document.write(p);
```

5. What output does the following script produce? (If this is an infinite loop, then say so.)

```
var p = 1;

while (p < 3)
{
    document.write(p + " ");

    if (p == 1) {
        p = 2;
    }
    else {
        p = 1;
    }
}

document.write(p);
```

6. What output does the following script produce? (If this is an infinite loop, then say so.)

```
for (var p = 10; p < 5; p++)
{
    document.write(p + " ");
}
document.write(p);
```

Functions

1. Write a JavaScript function called `test` that takes four variables, `a`, `b`, `c`, and `d` as arguments. This function should return the boolean literal `true` if `a` is less than `b` and `c` is less than `d`. Otherwise, this function should return the boolean literal `false`.
2. Write a JavaScript function called `changeBgColor` that takes no arguments. When called, this function should prompt the user for a color and change the background color of the page to whatever the user typed in. You may assume that the user always types in a valid color.
3. Write a JavaScript function called `calcTip` that takes two arguments. The first argument is a number that specifies the amount (in dollars) that a customer spent at a restaurant. The second argument is a string that must be one of the following: `"good"`, `"fair"`, or `"poor"`. This function should calculate the tip that a customer should leave based on the amount they spent (the first argument) and the level of service they received (the second argument), and return the tip. If they received `good` service, the customer should leave a 20% tip; if they received `fair` service, they should leave a 15% tip; and if they received `poor` service, then they should leave a 10% tip.

Sample calls to this function:

```
calcTip(20, "good") returns 4 (meaning $4)
calcTip(30, "fair") returns 4.5 (meaning $4.50)
calcTip(50, "poor") returns 5 (meaning $5)
```

4. Write the complete code, in HTML and JavaScript, for the following webpage. This webpage should have a button on it, that when clicked, prompts the user for an amount of money that they spent at a restaurant, then prompts them for the level of service that they received. (The user will type `good`, `fair`, or `poor`.) After the user enters these two values, an `alert()` box should be displayed which contains a message about exactly how big a tip they should receive, based on the `calcTip` function described above. (For this question, you may assume that the `calcTip` function works as described, regardless of what you wrote for the previous question. You do not have to re-define `calcTip`).

5. What output does the following webpage produce?

```
<html><head><title>The Title</title>

<script type="text/javascript">

    function f(x, y)
    {
        return (x * 2) + y;
    }

    function g(x, y)
    {
        if ((y > x) || (y < x)) {
            return "YES";
        }
        else {
            return "NO";
        }
    }

</script>

</head>
<body>

<script type="text/javascript">

    var a = 1;
    var b = 2;

    document.write(f(a, b) + "<br>");
    document.write(g(b - 1, a) + "<br>");

</script>
</body></html>
```