

URL:

lottery – <https://xmoj10.github.io/COMP20/HW6/lottery>

amicable – <https://xmoj10.github.io/COMP20/HW6/factors>

I really like that JavaScript syntactically resembles C++/C a lot. It has definitely made the transition from knowing 0 about JavaScript to actually programming a lottery drawing/a calculator to test if 2 numbers are amicable. I think that JavaScript merges the two halves of computer development: front-end and back-end. For example, you're able to write programs that are typically seen in computer science classes like COMP11 and display the results to the webpage with functions like `document.write` or `window.alert` or even `console.log`. I have really enjoyed learning about JavaScript and hope to further explore the bridge between back-end and front-end coding!

Lottery:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-
scale=1.0">
  <title>Lucky for Life</title>
  <link rel="shortcut icon" href="./images/lottery.png" type="image/
x-icon">
  <link rel="stylesheet" href="./css/lottery.css">
  <script language="javascript">
    var lott_num = [];
    var powerball;
    function drawLottery() {
      // create array and store numbers
      for (var i = 0; i < 5; i++) {
        lott_num[i] = Math.floor(1 + (Math.random() * 48));
      }
      powerball = Math.floor(1 + (Math.random() * 18));

      // display numbers
      display(lott_num, 0, powerball);

      // sort numbers
      lott_num.sort(function(a, b){return a - b});

      // display again
      display(lott_num, 1, powerball);
    }
    function display(num, row, powerball) {
      width = 6;
      for (var i = 0; i < 5; i++) {
        div_num = parseInt(row*width + i);
        var x = document.getElementById("num" + div_num);
        x.innerHTML = num[i];
      }
      var index = row*width + 5;
      var x = document.getElementById("num" + index);
      x.innerHTML = powerball;
    }
    function reportWinnings() {
      //read in values and store into array
      var x = document.getElementById("user_vals").value;
      var user_vals = x.split(" ", 5);
      user_vals[user_vals.length] =
document.getElementById("user_pb").value;

      // Print numbers to screen
      document.getElementById("result").innerHTML = " ";
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        for (var i = 0; i < user_vals.length; i++) {
            document.getElementById("result").innerHTML +=
user_vals[i] + " ";
        }

        var num_matched = 0;
        var winnings = " ";
        // iterate through lottery numbers
        for (i = 0; i < lott_num.length; i++) {
            // iterate through user numbers
            for (j = 0; j < user_vals.length; j++) {
                if (lott_num[i] == user_vals[j])
                    num_matched += 1;
            }
            winnings += "<hr>";
        }

        var winnings = "Sorry, no winnings";

        // display winnings
        if (user_vals[user_vals.length - 1] == powerball) {
            switch(num_matched) {
                case 5:
                    winnings = "$7,000 a WEEK for LIFE!";
                    break;
                case 4:
                    winnings = "$5,000";
                    break;
                case 3:
                    winnings = "$150";
                    break;
                case 2:
                    winnings = "$25";
                    break;
                case 1:
                    winnings = "$6";
                    break;
                case 0:
                    winnings = "$4";
                    break;
            }
        } else {
            switch(num_matched) {
                case 5:
                    winnings = "$25,000 a YEAR for LIFE!";
                    break;
                case 4:
                    winnings = "$5,000";
                    break;
                case 3:

```

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        winnings = "$20";
        break;
    case 2:
        winnings = "$3";
        break;
    }
}
document.getElementById("result").innerHTML = winnings;
document.getElementById("result").style.display = "block";
window.location.hash = "result";
}
</script>
</head>
<!------->
<body>
    <!-- headings -->
    <header>
        Massachusetts Lottery
    </header>
    <nav>
        <ul>
            <li><a href="#">Previous Winners</a></li>
            <li><a href="#">Today's Numbers</a></li>
            <li><a href="#">Claim Prize</a></li>
        </ul>
    </nav>

    <!-- main content -->
    <h2 style="text-align:center; margin-top: 1em;">Today's Numbers</
h2>
    <div class="drawing">
        <div id="ball"><div id="num0"></div></div>
        <div id="ball"><div id="num1"></div></div>
        <div id="ball"><div id="num2"></div></div>
        <div id="ball"><div id="num3"></div></div>
        <div id="ball"><div id="num4"></div></div>
        <div id="ball"><div id="num5"></div></div>
    </div>
    <div class="button">
        <button onclick="drawLottery()" class="draw-button">
            Draw Numbers
        </button>
    </div>
    <br>
    <hr>
    <br>

    <!-- Sorted Numbers -->
    <h2 style="text-align:center">Today's Numbers <br> (In Sorted
Order)</h2>

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<div class="drawing">
    <div id="ball"><div id="num6"></div></div>
    <div id="ball"><div id="num7"></div></div>
    <div id="ball"><div id="num8"></div></div>
    <div id="ball"><div id="num9"></div></div>
    <div id="ball"><div id="num10"></div></div>
    <div id="ball"><div id="num11"></div></div>
</div>
<br>
<hr>
<br>

<!-- Test Your Luck! -->
<h2 style="text-align:center">Test Your Luck!</h2>
<form>
    <h3 style="text-align:center">Enter 4 numbers between 1 - 48</
h2>
    <input type="text" name="user_vals" required="required"
id="user_vals"> <br>

    <h3 style="text-align:center">Enter 1 powerball number between
1 - 18</h2>
    <input type="text" name="user_pb" required="required"
id="user_pb"> <br>

    <input type="button" value="Submit"
onclick="reportWinings()">
</form>
<div id="result">
    FILLER
</div>
</body>
</html>

```

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*****
*****

```

Amicable:

```

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
    <link rel="shortcut icon" href="./images/counter.png" type="image/
x-icon">
    <link rel="stylesheet" href="./css/factors.css">
    <title>isAmicable()</title>

    <script language="javascript">
        function isAmicable() {

```

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num1 = parseInt(document.getElementById("num1").value);
num2 = parseInt(document.getElementById("num2").value);
outfile = document.getElementById("result");

if ((num1 == 0) || (num2 == 0)) {
    display(0, outfile, num1, num2);
    return; /* no need to check other numbers */
}
/* check if factors of num1 sum to num 2 */
/* first: adds all factors to array if factors of number
*/
num1_factors = [];
for (i = 0; i < num1; i++) {
    if (isFactor(i, num1)) {
        num1_factors[num1_factors.length] = i;
    }
}
/* adds up all factors */
num1_sum_factors = addFactors(num1_factors);

if (num1_sum_factors != num2) {
    display(0, outfile, num1, num2);
    return;
    /* no need to check other number*/
}
/*****/
/* check if factors of num2 sum to num 1 */
num2_factors = [];
for (i = 0; i < num2; i++) {
    if (isFactor(i, num2)) {
        num2_factors[num2_factors.length] = i;
    }
}
/* adds up all factors */
num2_sum_factors = addFactors(num2_factors);

if (num2_sum_factors != num1) {
    display(0, outfile, num1, num2);
} else {
    display(1, outfile, num1, num2);
}
}
function display(bool, outfile, num1, num2) {
    if (bool == 1) {
        outfile.style.backgroundColor = "rgb(121, 239, 121)";
        outfile.innerHTML = num1 + " and " + num2 + " are
amicable!";
    } else {
        outfile.style.backgroundColor = "rgb(239, 135, 121)";
        outfile.innerHTML = num1 + " and " + num2 + " are not

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amicable!"

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    }
    document.getElementById("result").style.display = "block";
}
function isFactor(num, test_num) {
    if ((test_num % num) == 0)
        return 1;

    return 0;
}
/*function test_isFactor() {
    var x = 3;
    // should print out all multiples of 3
    // between 0 and 30. i.e. 0, 3, 6, 9... 30
    for (var y = 0; y <= 30; y++) {
        if (isFactor(x, y))
            console.log(y);
    }
    window.alert("function done! check console");
}*/
function showFactors(array) {
    loc = document.getElementById("factors");
    loc.innerHTML = "Factors: ";
    for (i = 0; i < array.length; i++)
        loc.innerHTML += " " + array[i];
}
/*function test_showFactors() {
    array = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10];
    showFactors(array);
}*/
function addFactors(array) {
    sum = 0;
    for (i = 0; i < array.length; i++)
        sum += array[i];
    return sum;
}
/*function test_addFactors() {
    //should sum to 20, works...
    array = [1, 2, 3, 4, 5, 5];
    sum = addFactors(array);
    console.log(sum);

    //should sum to 650, works...
    array = [120, 150, 180, 20, 60, 40, 80];
    sum = addFactors(array);
    console.log(sum);
}*/
function getFactors(num) {
    array = [];
    for (i = 1; i <= num; i++) {
```

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        if ((num % i) == 0)
            array[array.length] = i;
    }
    return array;
}

/*function test_getFactors() {
    // should log all factors of 20:
    // 1, 2, 4, 5, 10, 20
    array = getFactors(20);
    for (i = 0; i < array.length; i++)
        console.log(array[i]);

    console.log("*****")

    // should log all factors of 7:
    // 1, 7
    array = getFactors(7);
    for (i = 0; i < array.length; i++) {
        console.log(array[i]);
    }
}*/
</script>
</head>
<body>
    <header>
        <h1>
            isAmicable( )
        </h1>
    </header>
    <main>
        <div class="form-container">
            <form>
                Number 1: <input id="num1" type="text">
                Number 2: <input id="num2" type="text"> <br>
                <!-- TESTER CODE: TEST IFFACTOR -->
                <!-- <input type="button" value="test: isFactor"
onclick="test_isFactor()"> -->

                <!-- TESTER CODE: TEST SHOWFACTORS -->
                <!-- <input type="button" value="test: showFactors"
onclick="test_showFactors()"> -->

                <!-- TESTER CODE: TEST ADDFACTORS -->
                <!-- <input type="button" value="test: addFactors"
onclick="test_addFactors()"> -->

                <!-- TESTER CODE: TEST GETFACTORS -->
                <!-- <input type="button" value="test: getFactors"
onclick="test_getFactors()"> -->

```



```
        <input type="button" value="check" onclick="isAmicable()">
    </form>
</div>
<div id="result"></div>
<div id="factors"></div>
</main>
</body>
</html>
```

Lottery:

```
<!DOCTYPE html>
<html lang="en">
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  <script language="javascript">
    var lott_num = [];
    var powerball;
    function drawLottery() {
      // create array and store numbers
      for (var i = 0; i < 5; i++) {
        lott_num[i] = Math.floor(1 + (Math.random() * 48));
      }
      powerball = Math.floor(1 + (Math.random() * 18));

      // display numbers
      display(lott_num, 0, powerball);

      // sort numbers
      lott_num.sort(function(a, b){return a - b});

      // display again
      display(lott_num, 1, powerball);
    }
    function display(num, row, powerball) {
      width = 6;
      for (var i = 0; i < 5; i++) {
        div_num = parseInt(row*width + i);
        var x = document.getElementById("num" + div_num);
        x.innerHTML = num[i];
      }
      var index = row*width + 5;
      var x = document.getElementById("num" + index);
      x.innerHTML = powerball;
    }
    function reportWinnings() {
      //read in values and store into array
      var x = document.getElementById("user_vals").value;
      var user_vals = x.split(" ", 5);
      user_vals[user_vals.length] =
document.getElementById("user_pb").value;

      // Print numbers to screen
      document.getElementById("result").innerHTML = " ";
```