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CS20 - Web Programming
Professor DiOrio
Assignment 6: Amicable Numbers

Online Link
https://mattia-danese.github.io/CS20/hw6/index.html

HTML Code
```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Amicable Numbers</title>

    <link rel = "stylesheet" href = "./style.css" />
    <style></style>
    <script src="script.js"></script>

</head>
<body>
    <h1>Amicable Numbers</h1>

    <form>
        <input id="num1" type="text" placeholder="   first number"/>
        <input id="num2" type="text" placeholder="   second number"/>

        <button type='button' onclick="initialize();">Submit</button>

        <div id="error">Please specify two numbers</div>

        <br>
        <br>

        <div id="content">
            <div id="result"></div>
            <br>
            <div id="factors1"></div>
            <div id="factors2"></div>
        </div>

    </form>
```

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

<u>Javascript Code</u>

```javascript
function validInput(n1, n2){
    if(isNaN(n1) || isNaN(n2)){
        document.getElementById("error").style = "display: block;";
        document.getElementById("content").style = "display: none;";
        return false;
    }

    document.getElementById("error").style = "display: none;";
    document.getElementById("content").style = "display: block;";
    return true;

}


function isAFactor(x,y){
    if(y % x == 0){
        return true;
    }

    return false;
}

function getFactors(n){
    const factors = new Array();

    for(i=1; i <= (n/2); i++){
        if(isAFactor(i,n) == true){
            factors.push(i);
        }
    }

    return factors;
}

function sumArray(arr){
    total = 0;
    for(i=0; i < arr.length; i++){
        total += arr[i];
    }

    return total;
}
```

```javascript
function updateDOM(num1, num2, num1_factors, num2_factors, num1_factors_sum,
num2_factors_sum){
    // checks if sum of factors equals the other number
    if(num1 == num2_factors_sum && num2 == num1_factors_sum){
        document.getElementById("result").innerHTML = "The numbers: " + num1 +
" and " + num2 + " are amicable";
    }
    else{
        document.getElementById("result").innerHTML = "The numbers: " + num1 +
" and " + num2 + " are not amicable";
    }

    // displays factors of each number
    document.getElementById("factors1").innerHTML = "The factors of " + num1 +
" are: " + num1_factors.join();
    document.getElementById("factors2").innerHTML = "The factors of " + num2 +
" are: " + num2_factors.join();
}


function initialize(){
    // gets user inputted numbers
    num1 = parseInt(document.getElementById("num1").value);
    num2 = parseInt(document.getElementById("num2").value);

    // checks if input specifies two numbers
    if(!validInput(num1, num2)){
        return
    }

    // populates arrays with all factors of each number (excluding the number
itself)
    num1_factors = getFactors(num1);
    num2_factors = getFactors(num2);

    // sums the arrays containing all factors of each number
    num1_factors_sum = sumArray(num1_factors);
    num2_factors_sum = sumArray(num2_factors);

    // populates the DOM with all needed information
    updateDOM(num1, num2, num1_factors, num2_factors, num1_factors_sum,
num2_factors_sum);
```

}

CSS Code

```css
body{
    height: 100vh;
    width: 100vw;


    text-align: center;
    background-color: azure;
    position: relative;
}

h1{
    text-decoration: underline;
    color: navy;
    font-size: 10vh;
    margin-bottom: 3.5vh;
}

form{
    position: absolute;
    top: 45%;
    left: 50%;
    transform: translate(-50%, -50%);
    height: 40vh;
}

#content{
    text-align: left;
    margin-top: 0%;
    width: 100%;
}

input {
    width: 15vw;
    height: 3vh;
    border-radius: 15px;
    font-size: large;
}

button{
    width: 15vw;
    height: 4vh;
    border-radius: 20px;
```

```css
    font-size: large;
    font: black;
    background-color: lightgreen;
}

#error{
    display: none;
    color: red;
}

#factors1, #factors2{
    word-wrap: break-word;
}
```