50 CODING CHALLENGES

... IN 50 DAYS OR LESS

codeguppy.com

About these coding challenges

- These coding challenges are intended for code newbies that want to practice JavaScript
- The challenges are designed to be solved only with basic JavaScript language constructs
- Although intended for beginners, advanced users can have fun too
- Try to solve at least 1 coding challenge per day
- Any solution that you find is a good solution… we are not looking for the perfect solution
- For convenience, when you work on these challenges, you can use an online coding playground, such as the one from https://codeguppy.com
- Feel free to share this booklet with your friends and invite them to complete the coding challenges
- This booklet contains also all the solutions to these challenges
- These challenges are great as coding exercises for CS classrooms!
- Have fun!

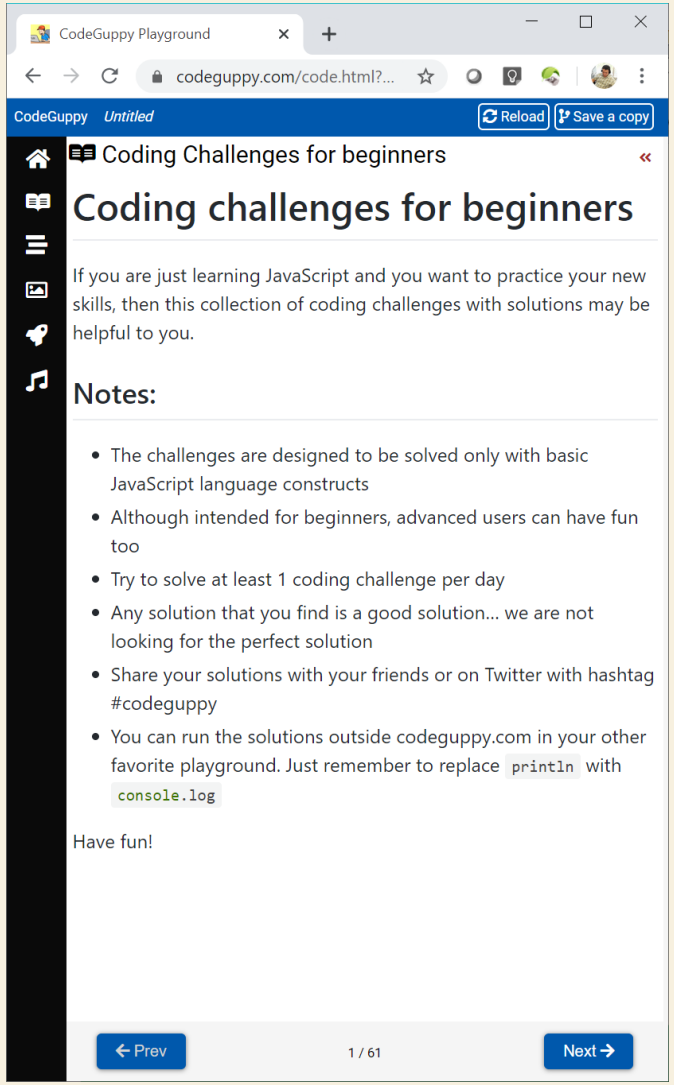
This booklet is completely free. Feel free to share it with your friends, post it on your website or share it on your social network.

50 coding challenges – Part 1

1. Print numbers from 1 to 10
2. Print the odd numbers less than 100
3. Print the multiplication table with 7
4. Print all the multiplication tables with numbers from 1 to 10
5. Calculate the sum of numbers from 1 to 10
6. Calculate 10!
7. Calculate the sum of even numbers greater than 10 and less than 30
8. Create a function that will convert from Celsius to Fahrenheit
9. Create a function that will convert from Fahrenheit to Celsius
10. Calculate the sum of numbers in an array of numbers
11. Calculate the average of the numbers in an array of numbers
12. Create a function that receives an array of numbers as argument and returns an array containing only the positive numbers
13. Find the maximum number in an array of numbers
14. Print the first 10 Fibonacci numbers without recursion
15. Create a function that will find the n^{th} Fibonacci number using recursion
16. Create a function that will return a Boolean specifying if a number is prime
17. Calculate the sum of digits of a positive integer number
18. Print the first 100 prime numbers
19. Create a function that will return in an array the first "p" prime numbers greater than "n"
20. Rotate an array to the left 1 position
21. Rotate an array to the right 1 position
22. Reverse an array
23. Reverse a string
24. Create a function that will merge two arrays and return the result as a new array
25. Create a function that will receive two arrays of numbers as arguments and return an array composed of all the numbers that are either in the first array or second array but not in both
26. Create a function that will receive two arrays and will return an array with elements that are in the first array but not in the second

50 coding challenges – Part II

27. Create a function that will receive an array of numbers as argument and will return a new array with distinct elements
28. Calculate the sum of first 100 prime numbers and return them in an array
29. Print the distance between the first 100 prime numbers
30. Create a function that will add two positive numbers of indefinite size. The numbers are received as strings and the result should be also provided as string.
31. Create a function that will return the number of words in a text
32. Create a function that will capitalize the first letter of each word in a text
33. Calculate the sum of numbers received in a comma delimited string
34. Create a function that returns an array with words inside a text.
35. Create a function to convert a CSV text to a "bi-dimensional" array
36. Create a function that converts a string to an array of characters
37. Create a function that will convert a string in an array containing the ASCII codes of each character
38. Create a function that will convert an array containing ASCII codes in a string
39. Implement the Caesar cypher
40. Implement the bubble sort algorithm for an array of numbers
41. Create a function to calculate the distance between two points defined by their x, y coordinates
42. Create a function that will return a Boolean value indicating if two circles defined by center coordinates and radius are intersecting
43. Create a function that will receive a bi-dimensional array as argument and a number and will extract as a unidimensional array the column specified by the number
44. Create a function that will convert a string containing a binary number into a number
45. Create a function to calculate the sum of all the numbers in a jagged array (contains numbers or other arrays of numbers on an unlimited number of levels)
46. Find the maximum number in a jagged array of numbers or array of numbers
47. Deep copy a jagged array with numbers or other arrays in a new array
48. Create a function to return the longest word in a string
49. Shuffle an array of strings
50. Create a function that will receive n as argument and return an array of n random numbers from 1 to n. The numbers should be unique inside the array.
51. Find the frequency of letters inside a string. Return the result as an array of arrays. Each subarray has 2 elements: letter and number of occurrences.
52. Calculate Fibonacci(500) with high precision (all digits)
53. Calculate 70! with high precision (all digits)

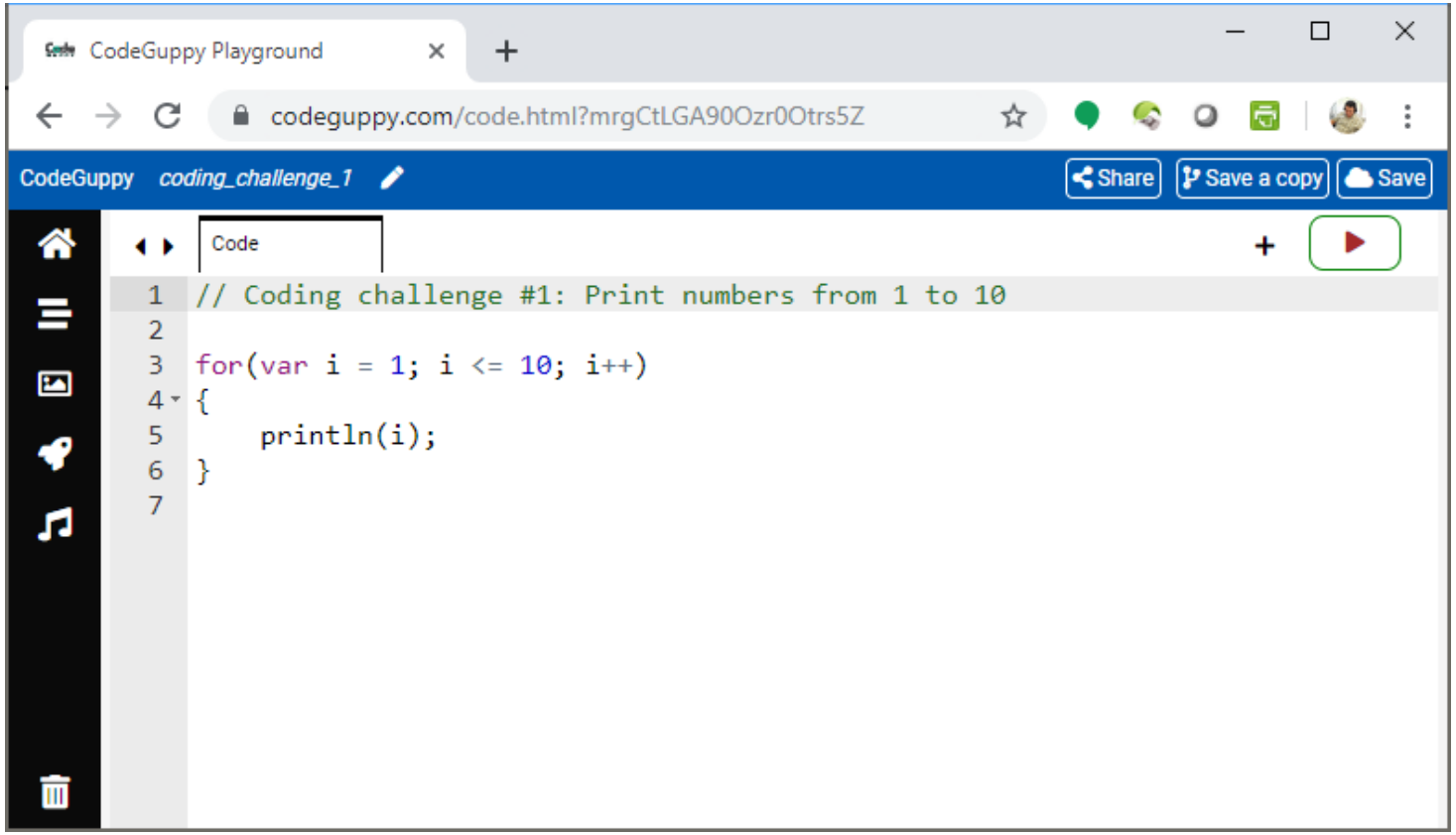


The source code of the solutions presented in this booklet is available online at:

https://codeguppy.com/code.html?t=coding_challenges

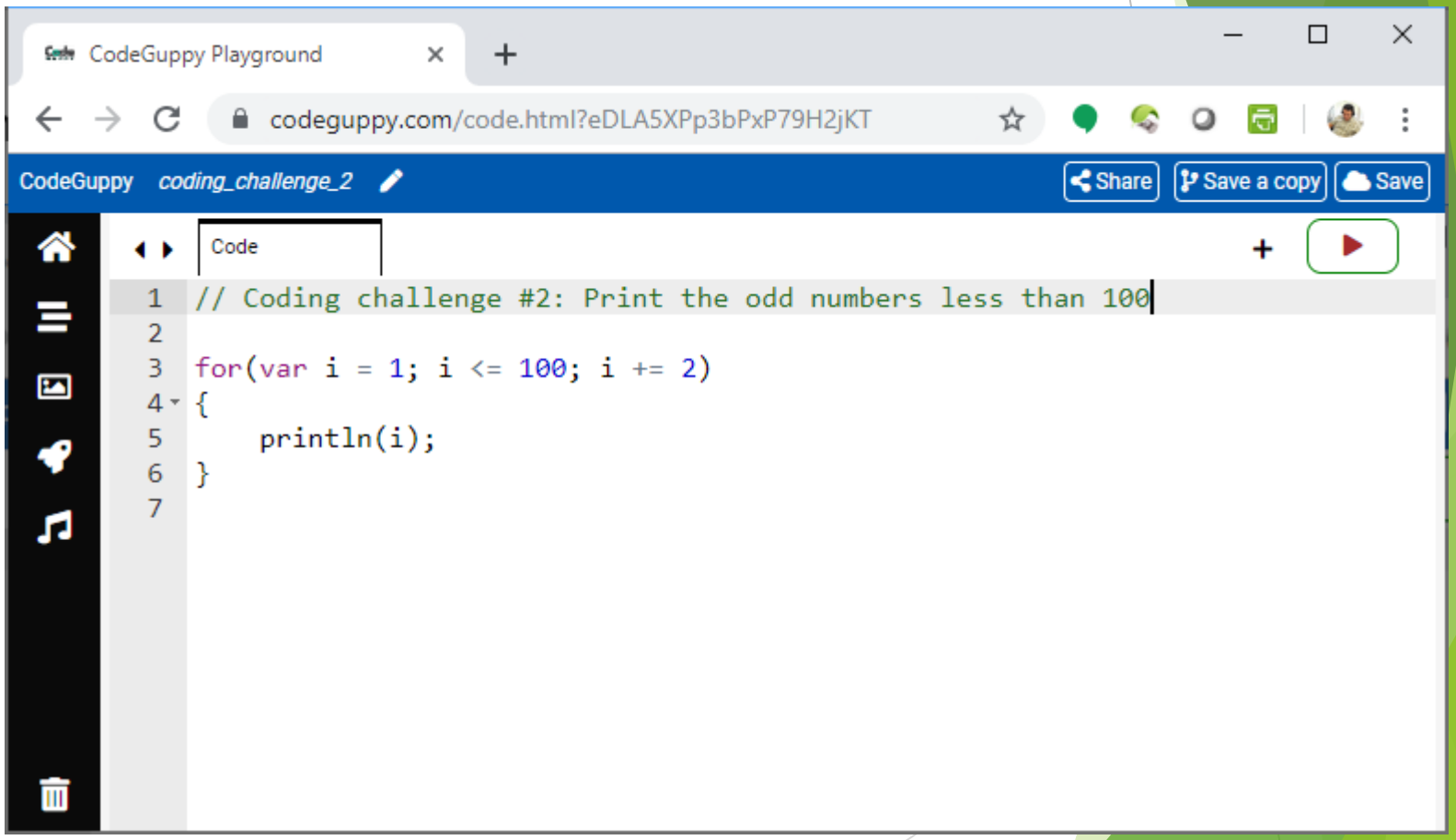
You can type-in the full link above, or just go to codeguppy.com and browse to locate the "Coding Challenges" project.

Coding challenge #1: Print numbers from 1 to 10



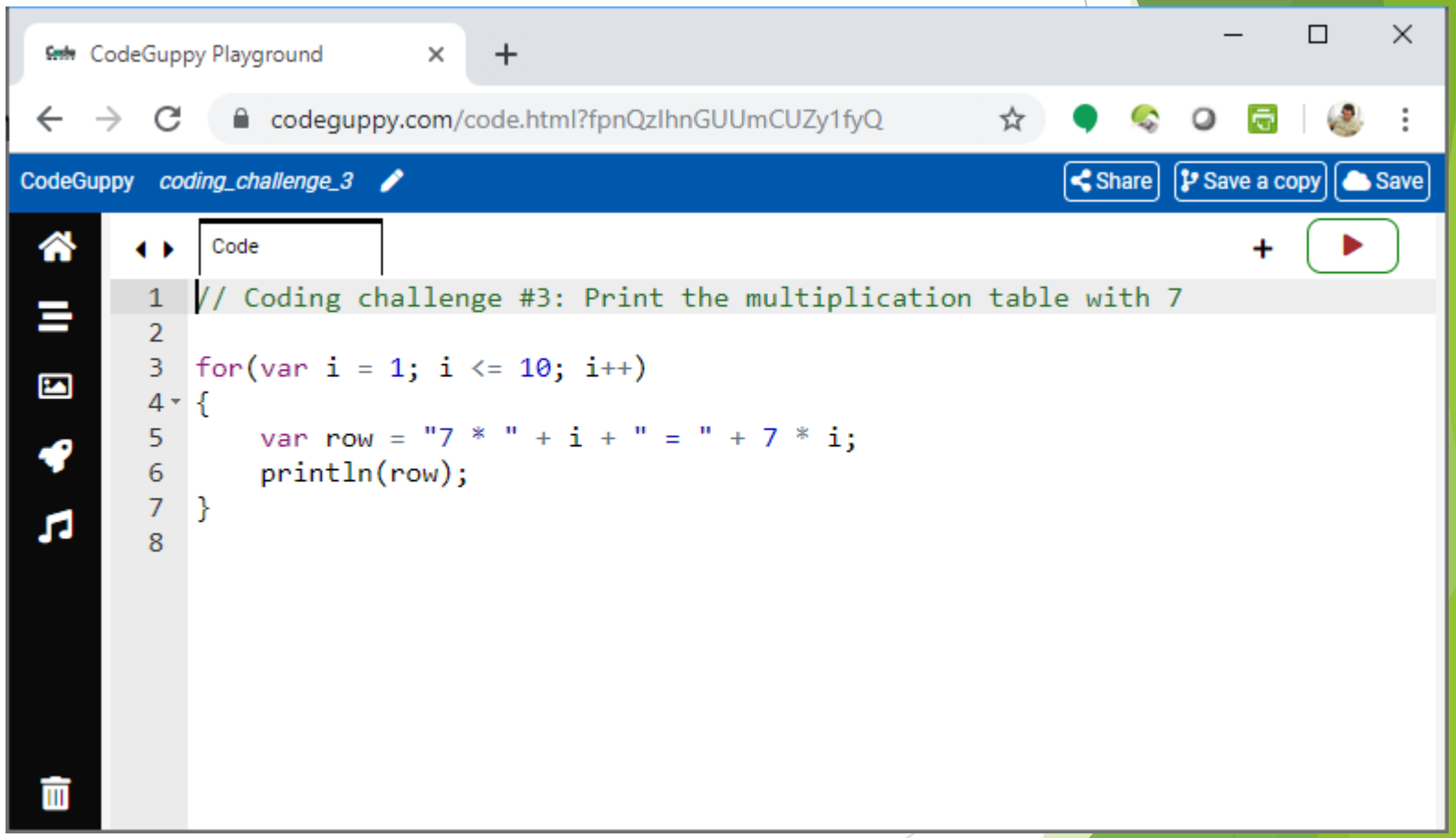
Coding challenge #2

Print the odd numbers less than 100



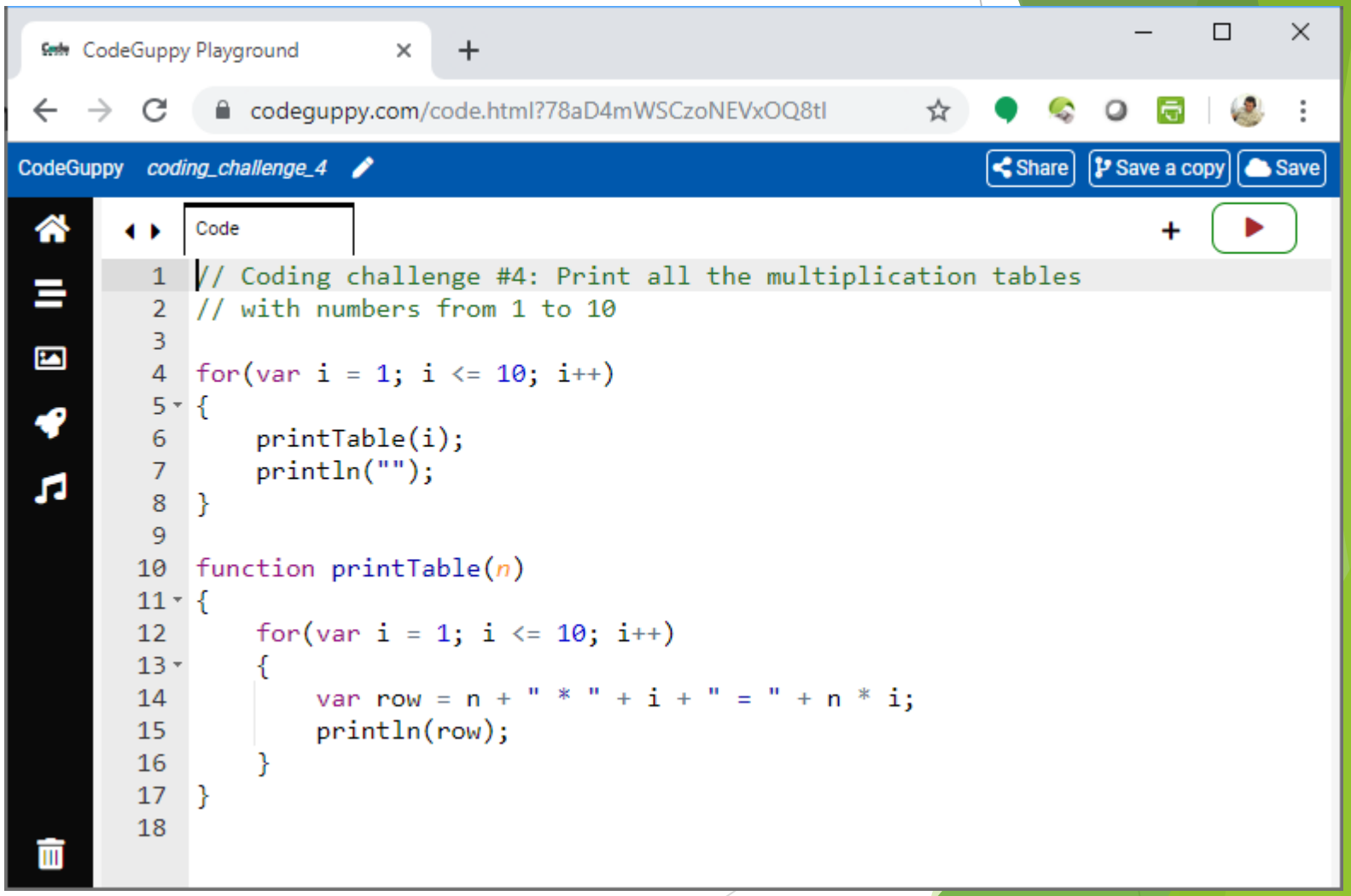
Coding challenge #3

Print the multiplication table with 7



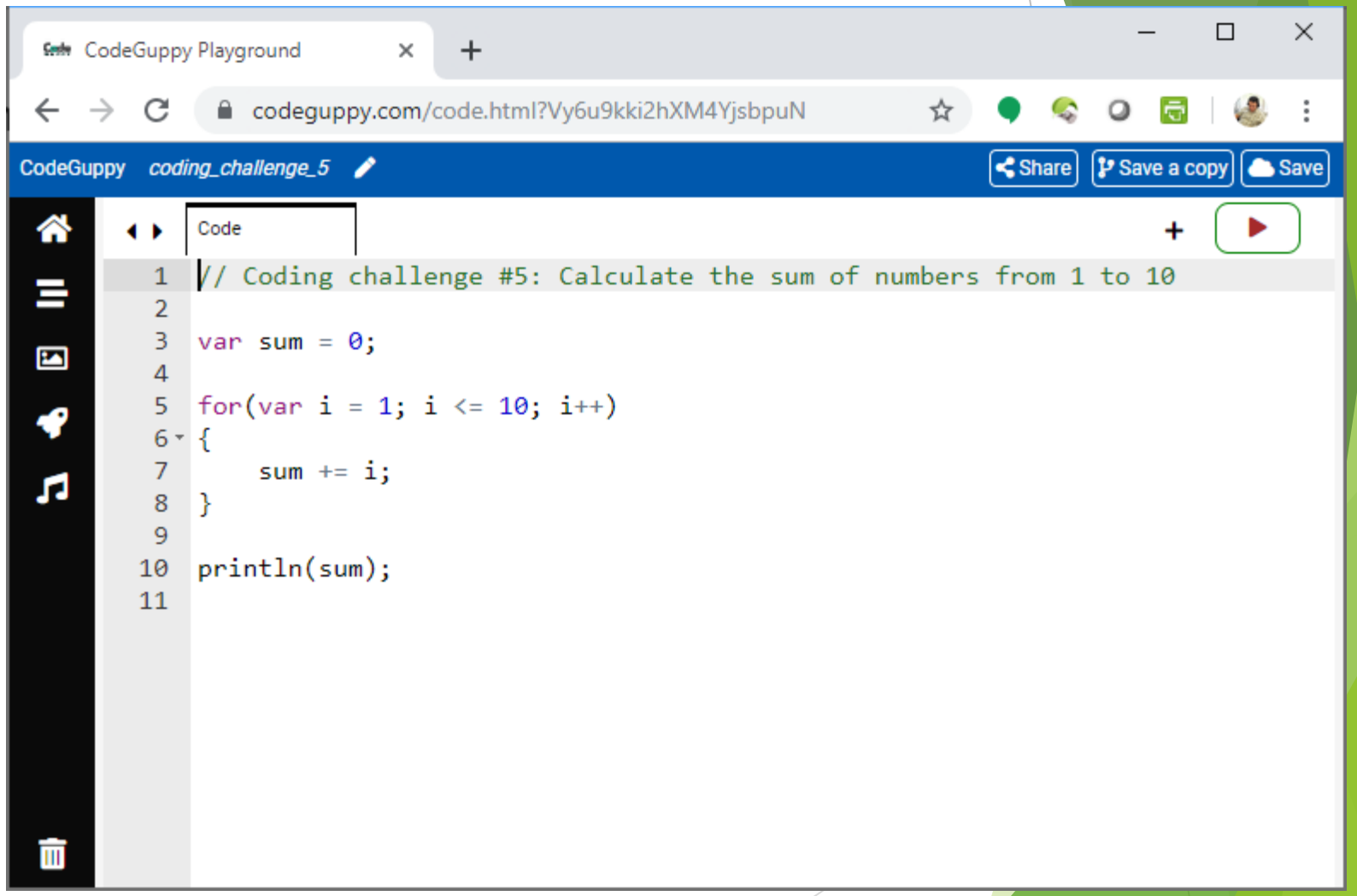
Coding challenge #4

Print the multiplication tables with numbers from 1 to 10



Coding challenge #5

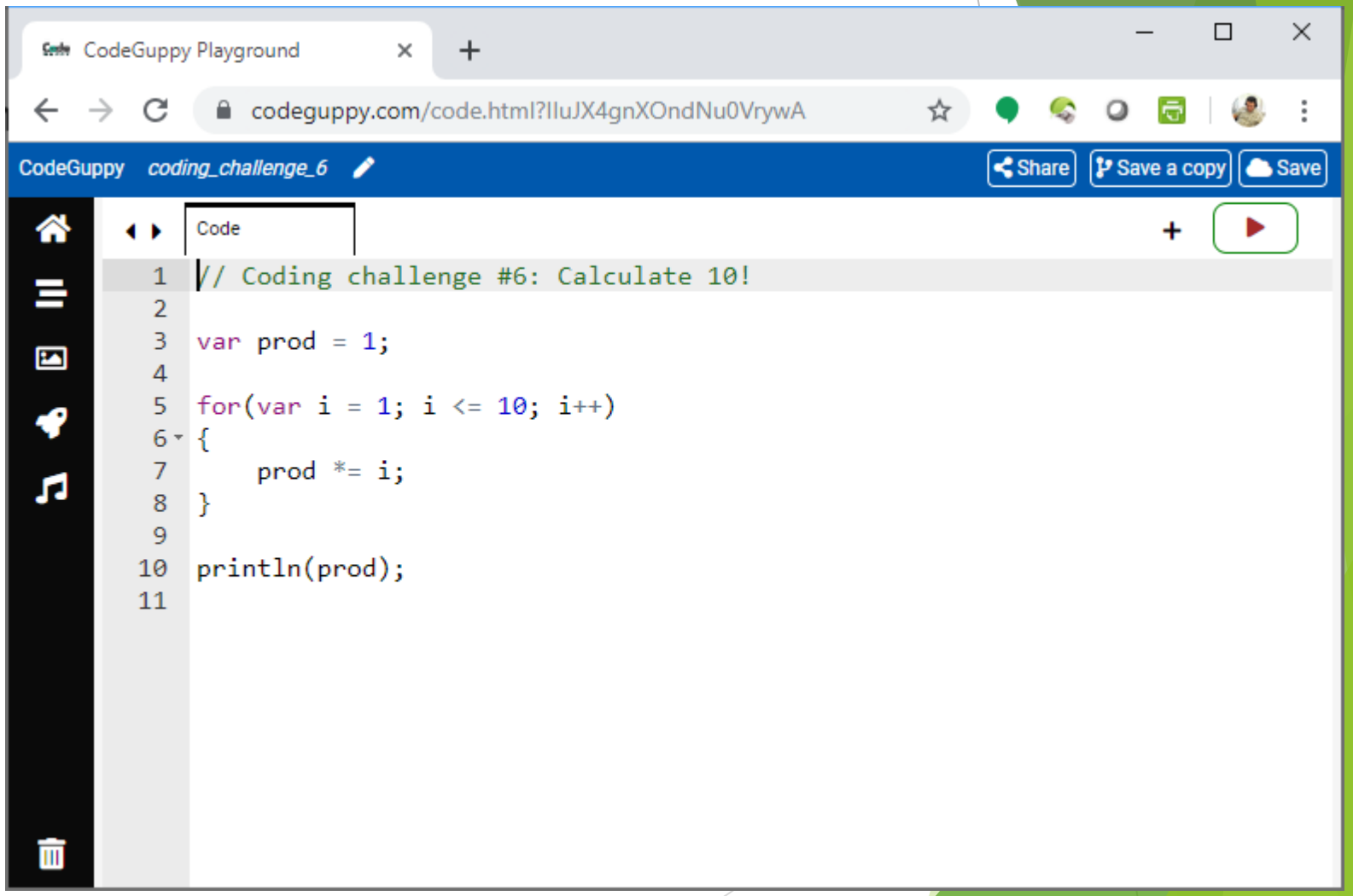
Calculate the sum of numbers from 1 to 10



Coding challenge #6

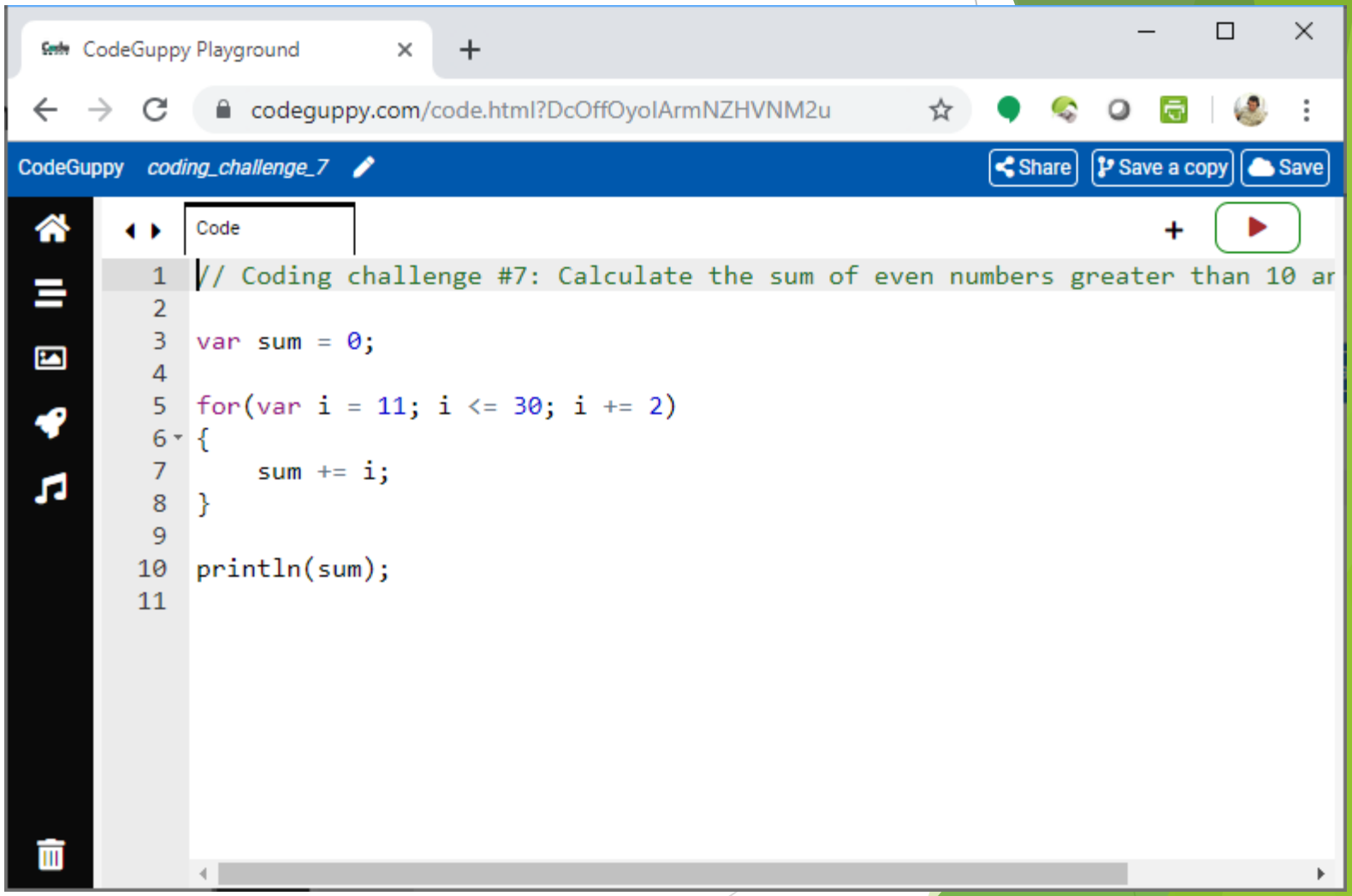
Calculate 10!

Reminder n! = 1 * 2 * … * n



Coding challenge #7

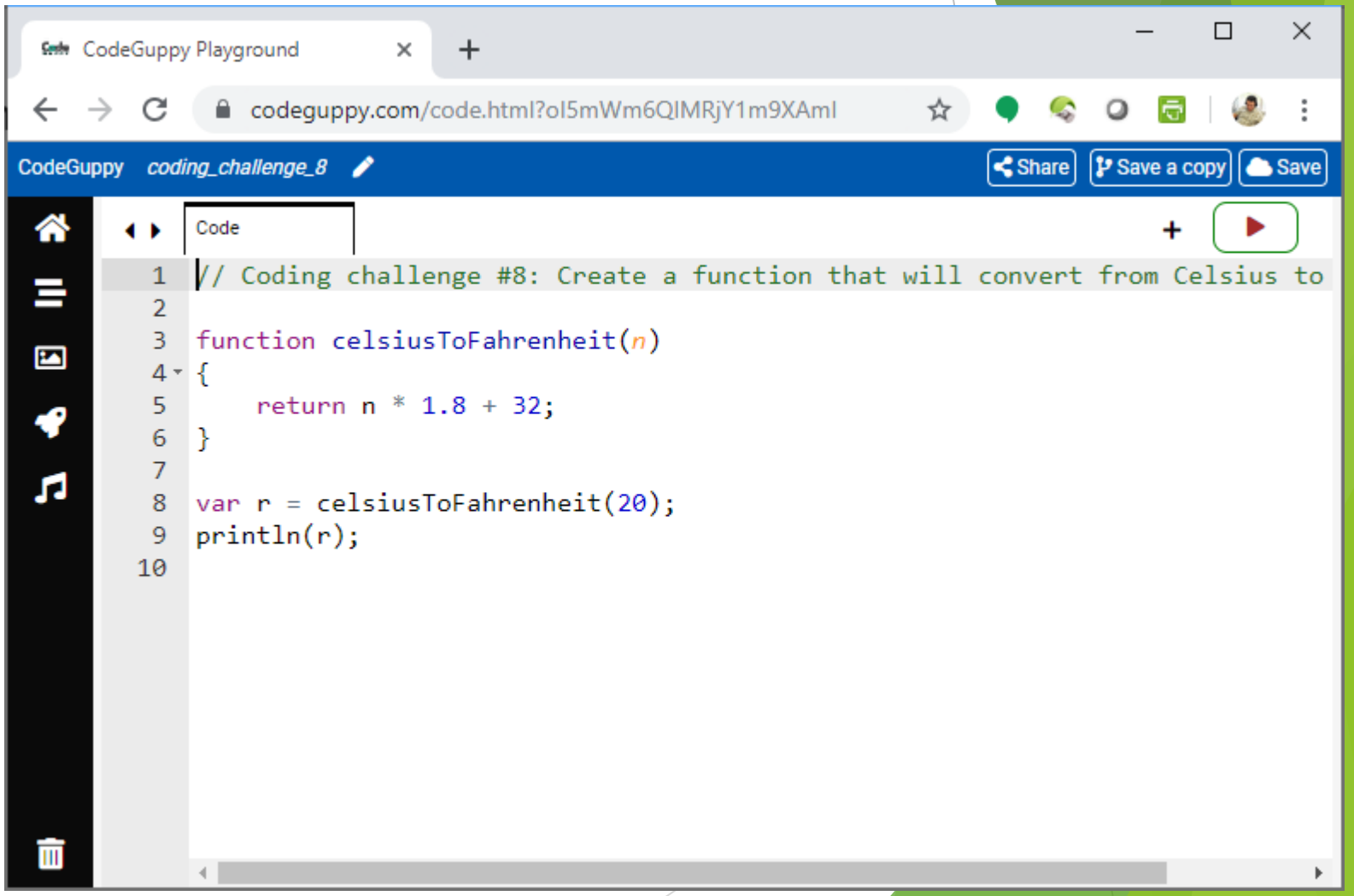
Calculate the sum of odd numbers greater than 10 and less or equal than 30



Coding challenge #8

Create a function that will convert from Celsius to Fahrenheit

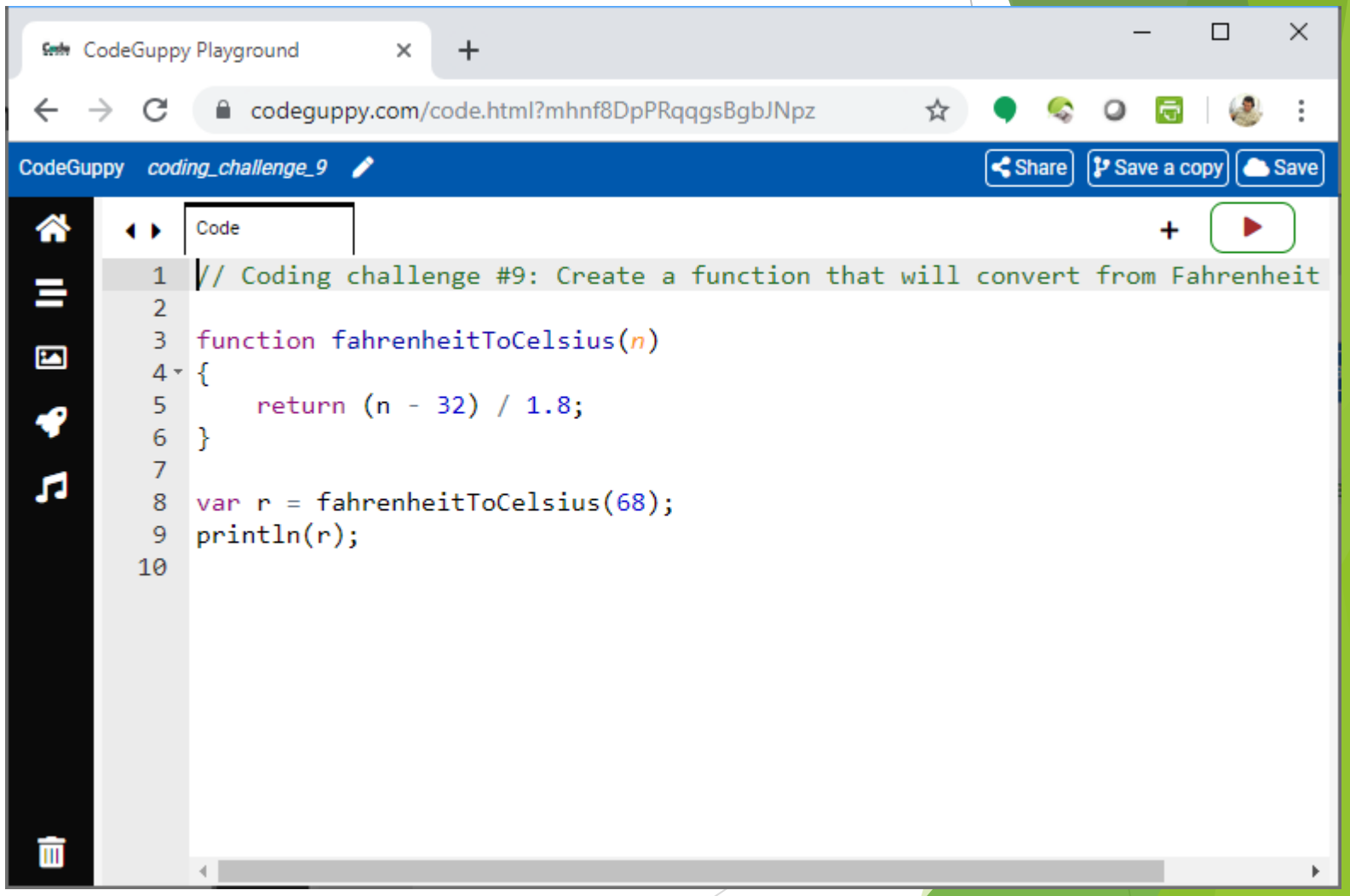
Reminder: C = F – 32 / 1.8



Coding challenge #9

Create a function that will convert from Fahrenheit to Celsius

Reminder: C = F – 32 / 1.8

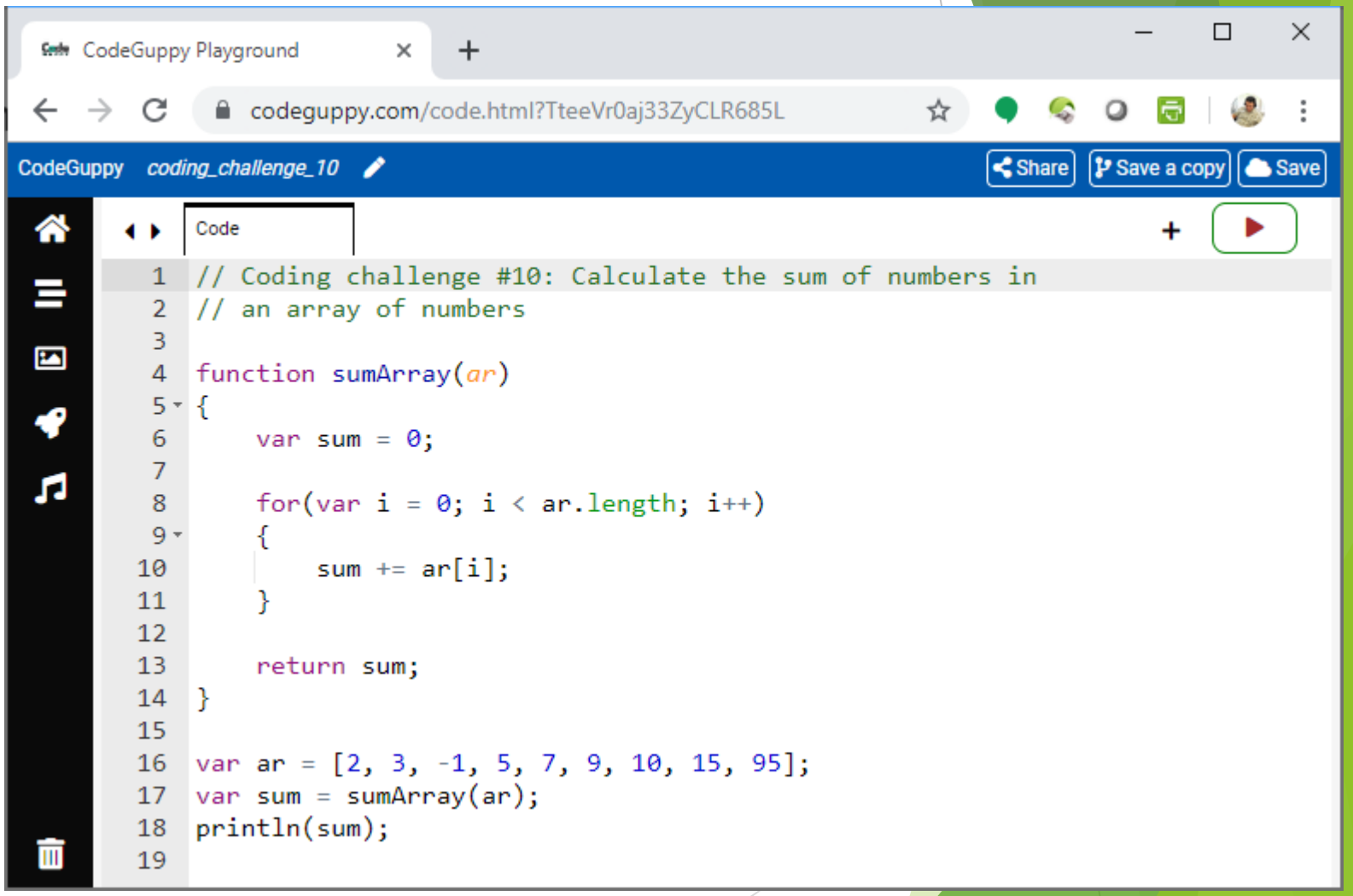


Coding challenge #10

Calculate the sum of numbers in an array of numbers.

Example array:
[2, 3, -1, 5, 7, 9, 10, 15, 95]

Expected output:
145

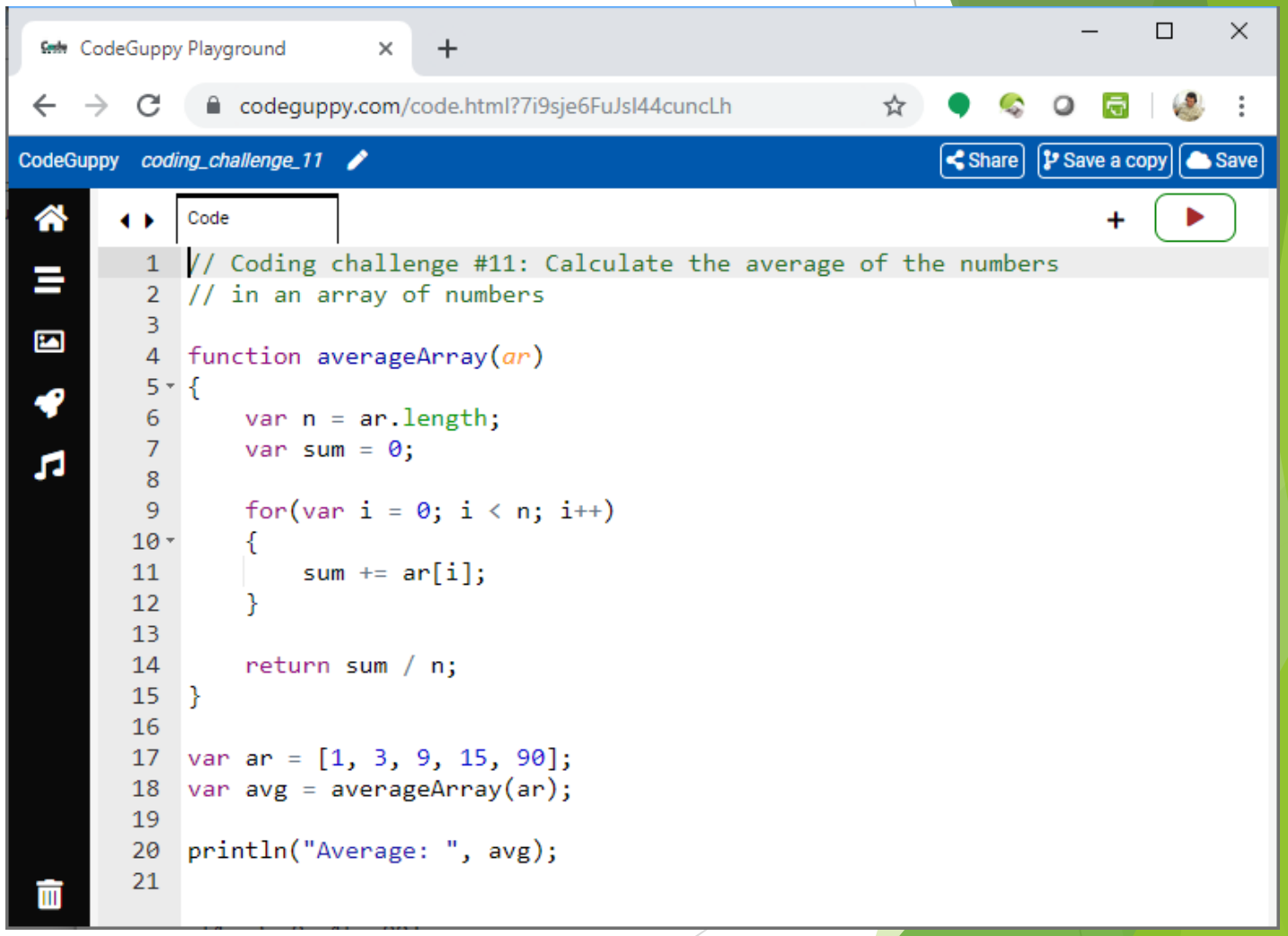


Coding challenge #11

Calculate the average of the numbers in an array of numbers

Example array:
[1, 3, 9, 15, 90]

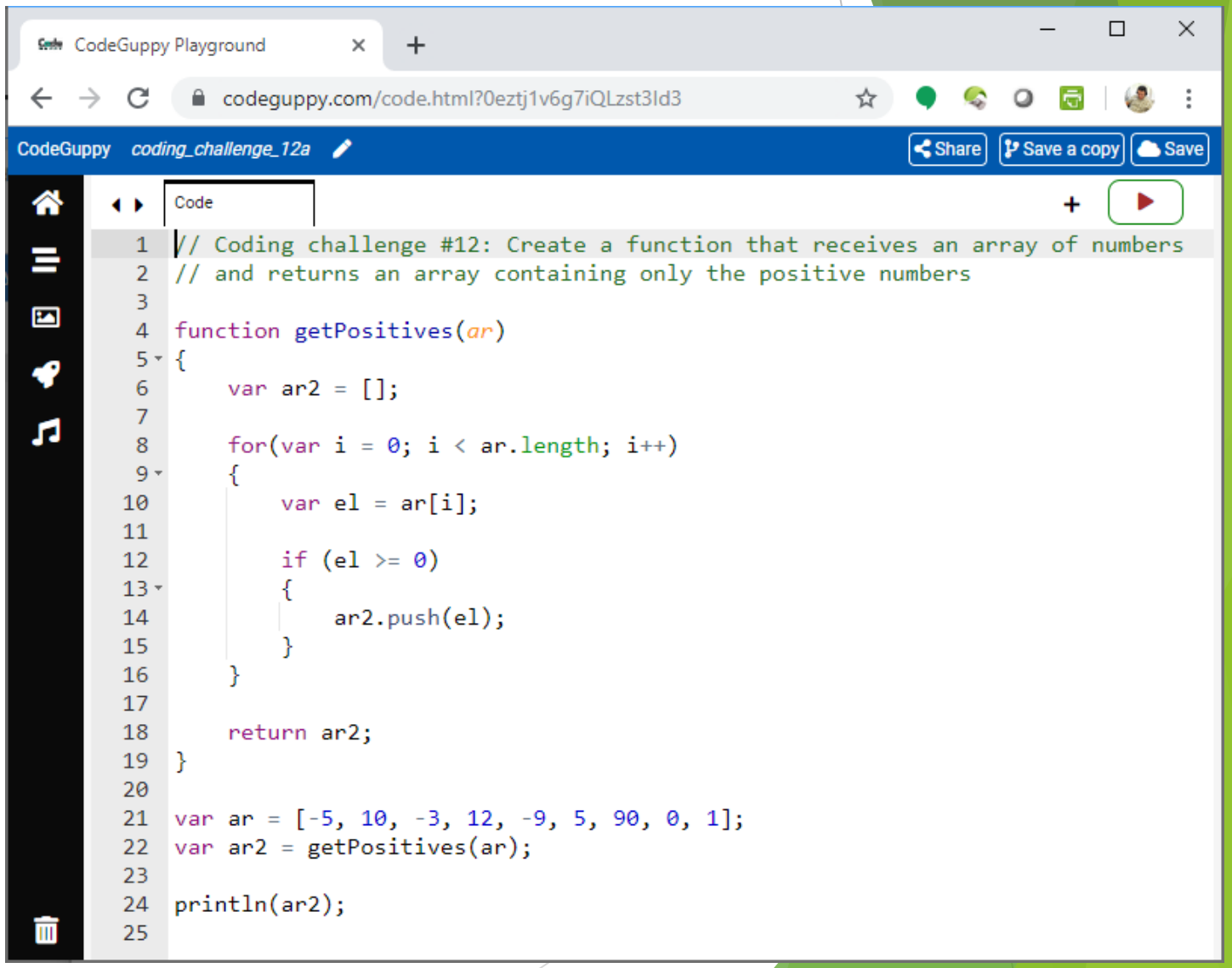
Expected output:
23.6



Coding challenge #12a

Create a function that receives an array of numbers and returns an array containing only the positive numbers.

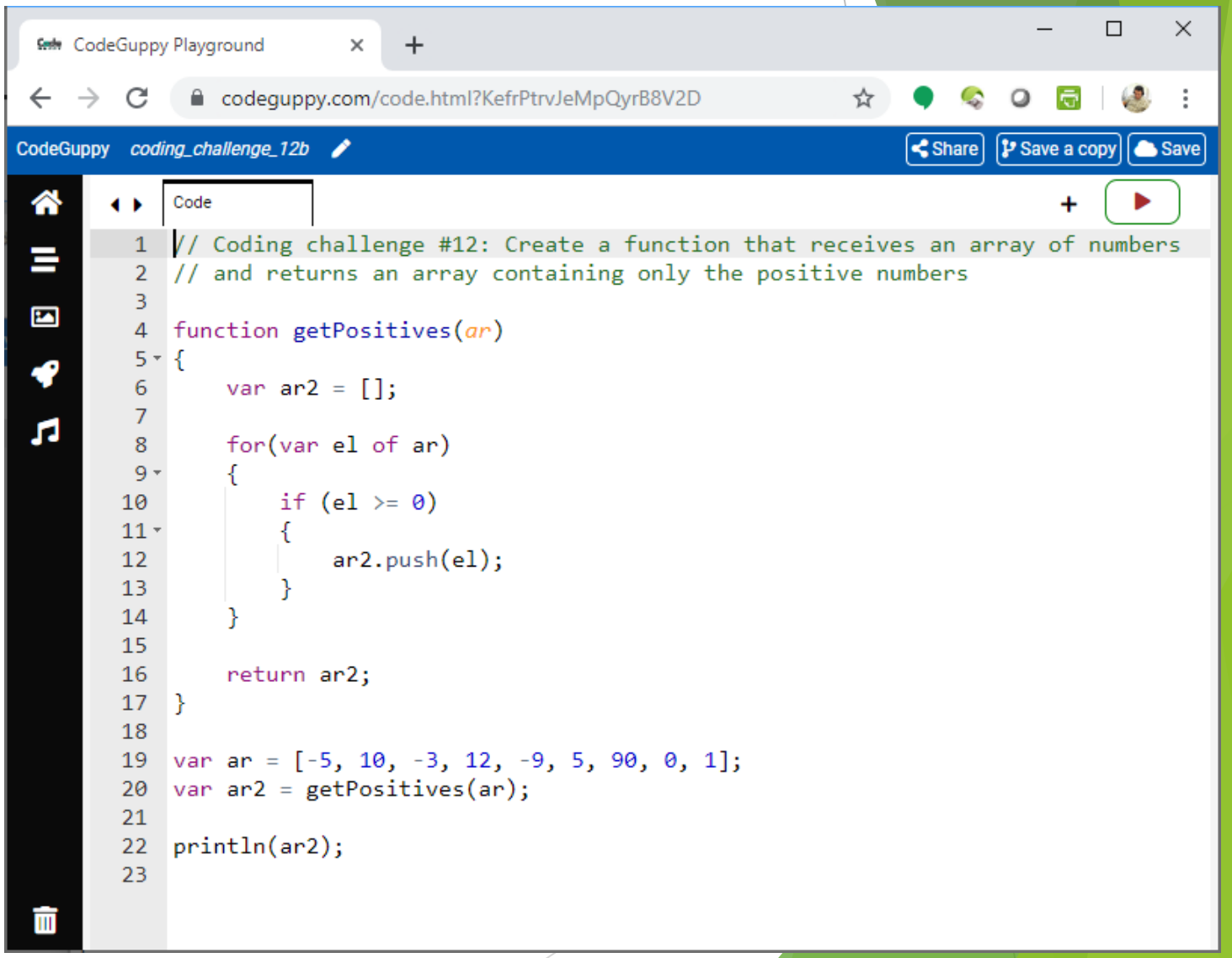
Requirement: Use a “for” loop



Coding challenge #12b

Create a function that receives an array of numbers and returns an array containing only the positive numbers.

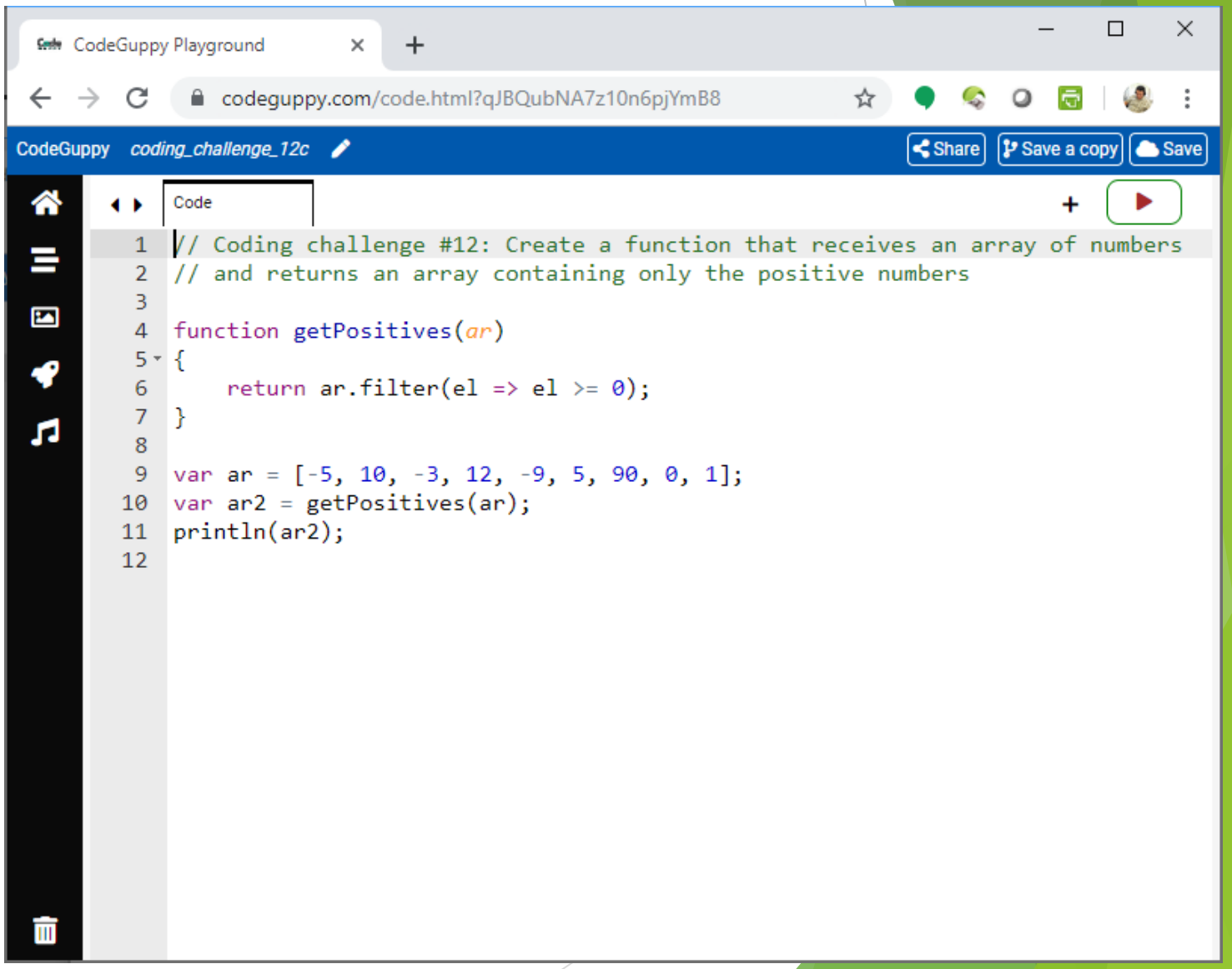
Requirement: Use a “for … of” loop



Coding challenge #12c

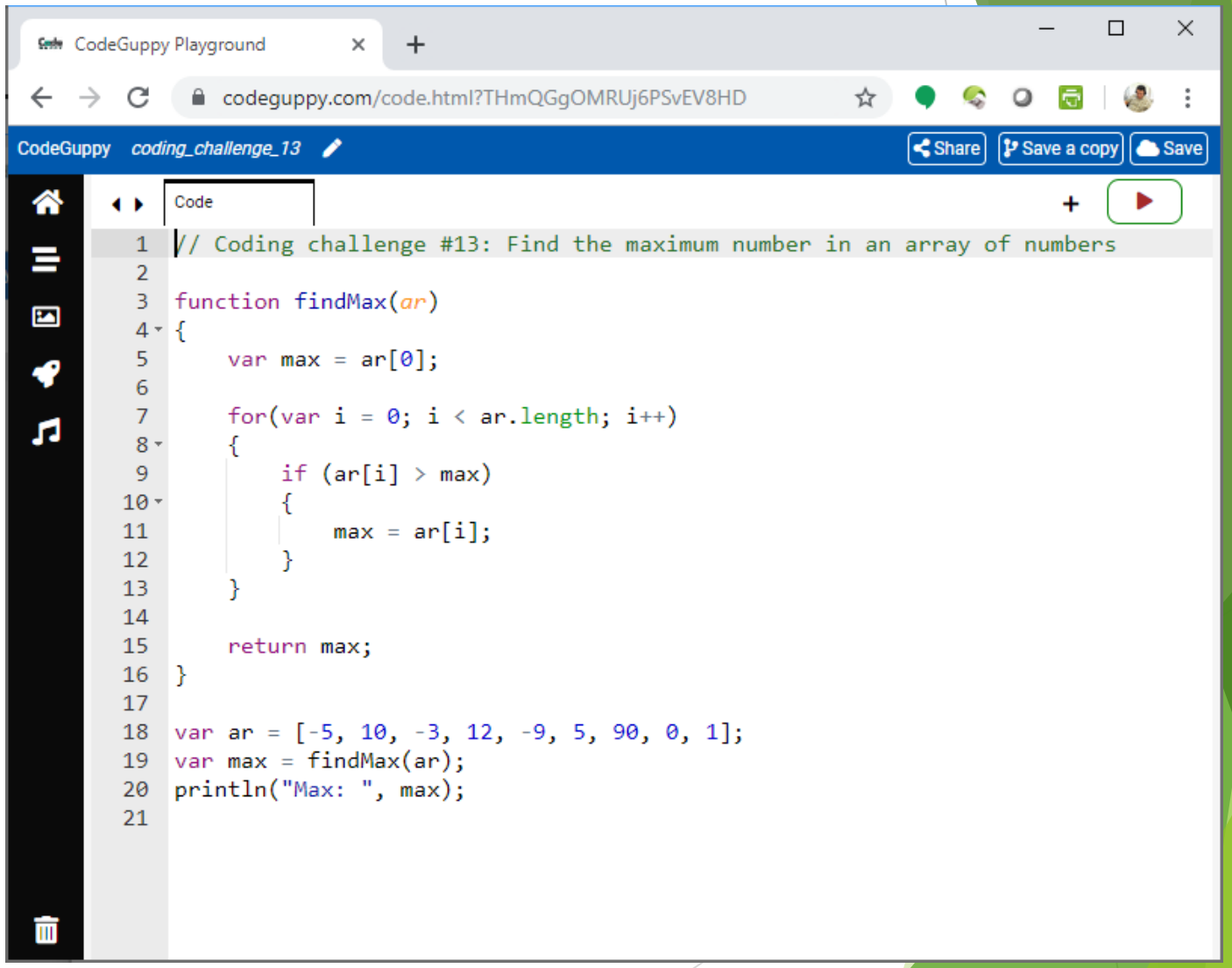
Create a function that receives an array of numbers and returns an array containing only the positive numbers.

Requirement: Use .filter() array method



Coding challenge #13

Find the maximum number in an array of numbers

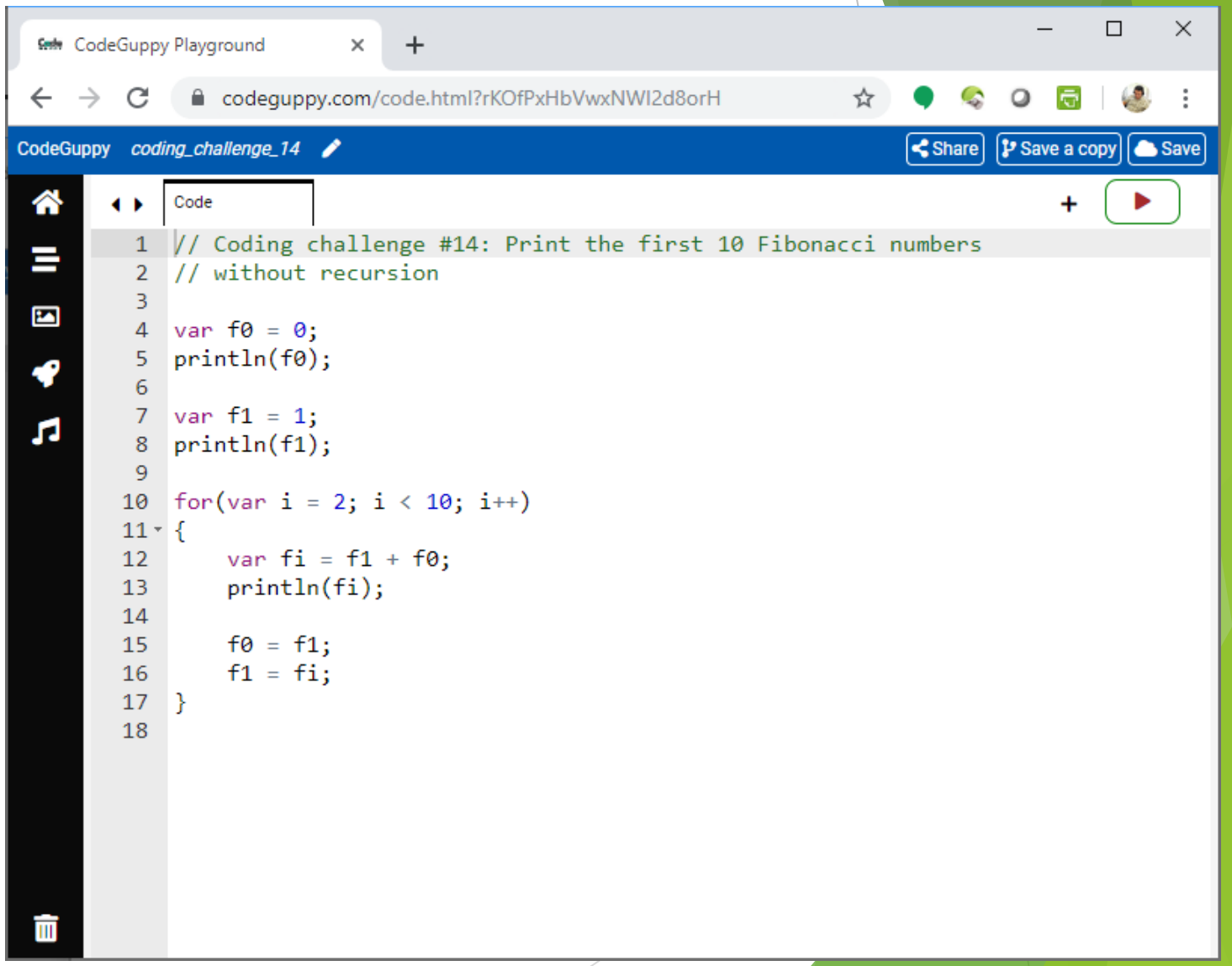


Coding challenge #14

Print the first 10 Fibonacci numbers without using recursion.

Reminder:

F(0) = 0
F(1) = 1
F(n) = F(n-1) + F(n-2)

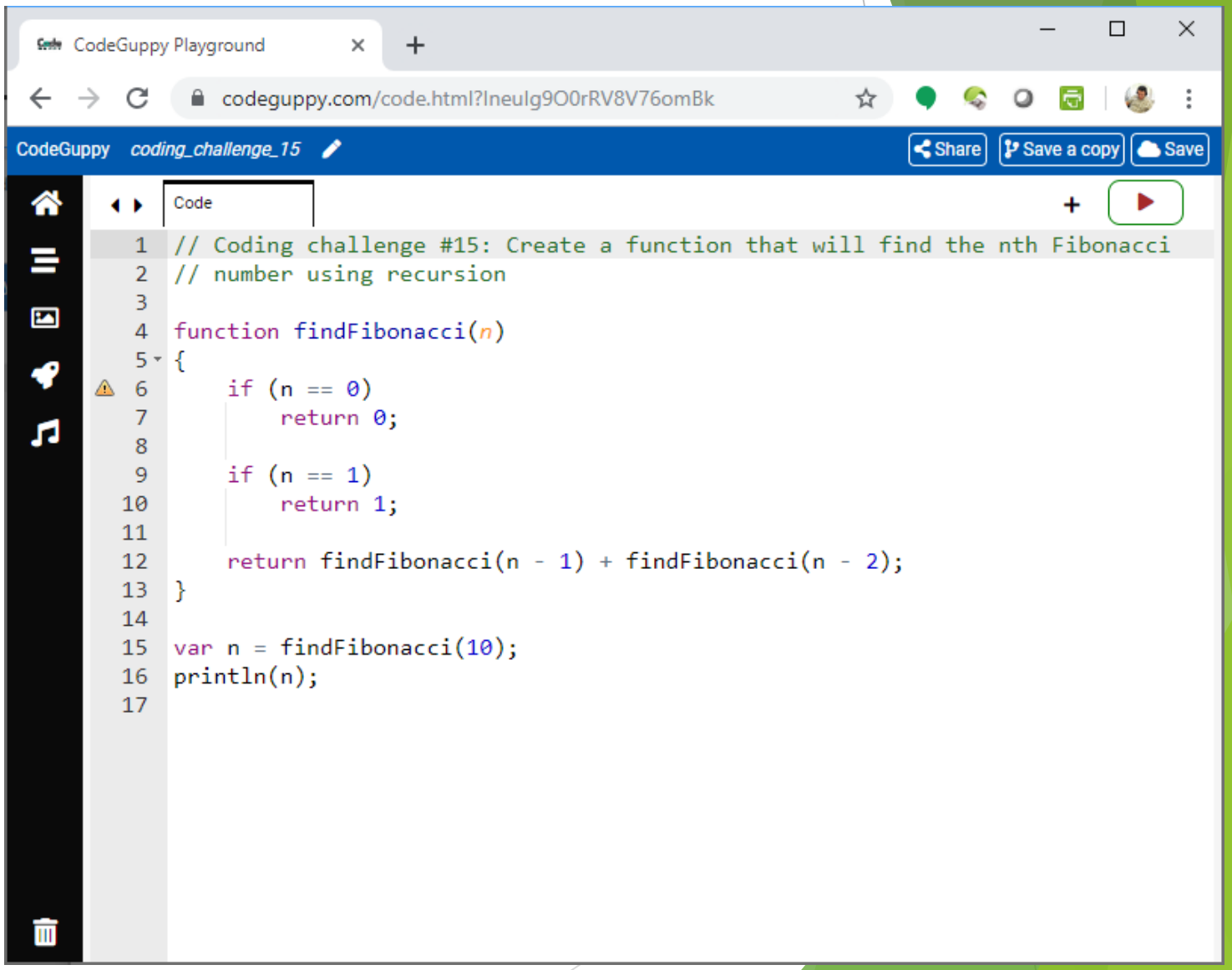


Coding challenge #15

Create a function that will find the nth Fibonacci number using recursion.

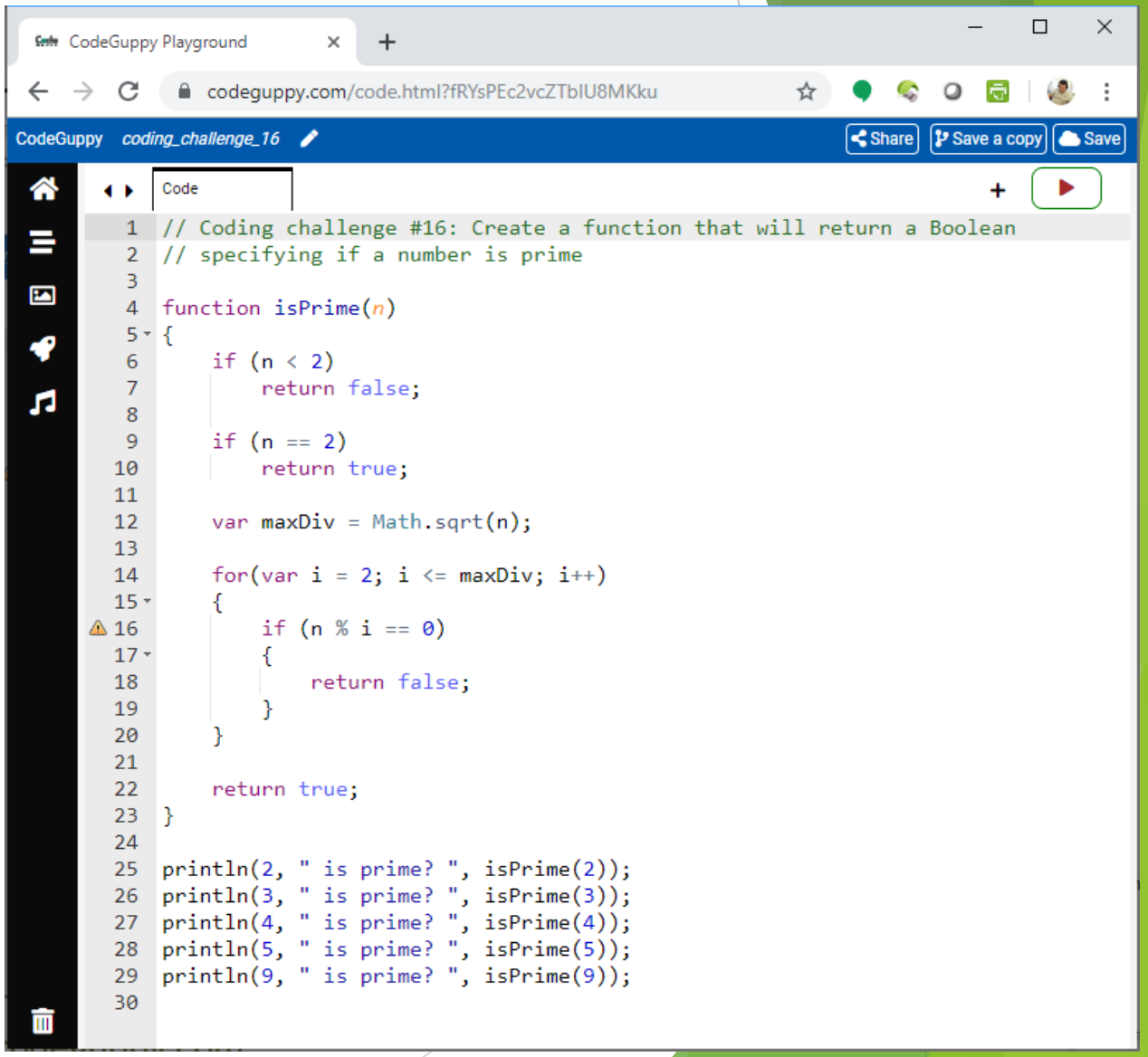
Reminder:

F(0) = 0
F(1) = 1
F(n) = F(n-1) + F(n-2)



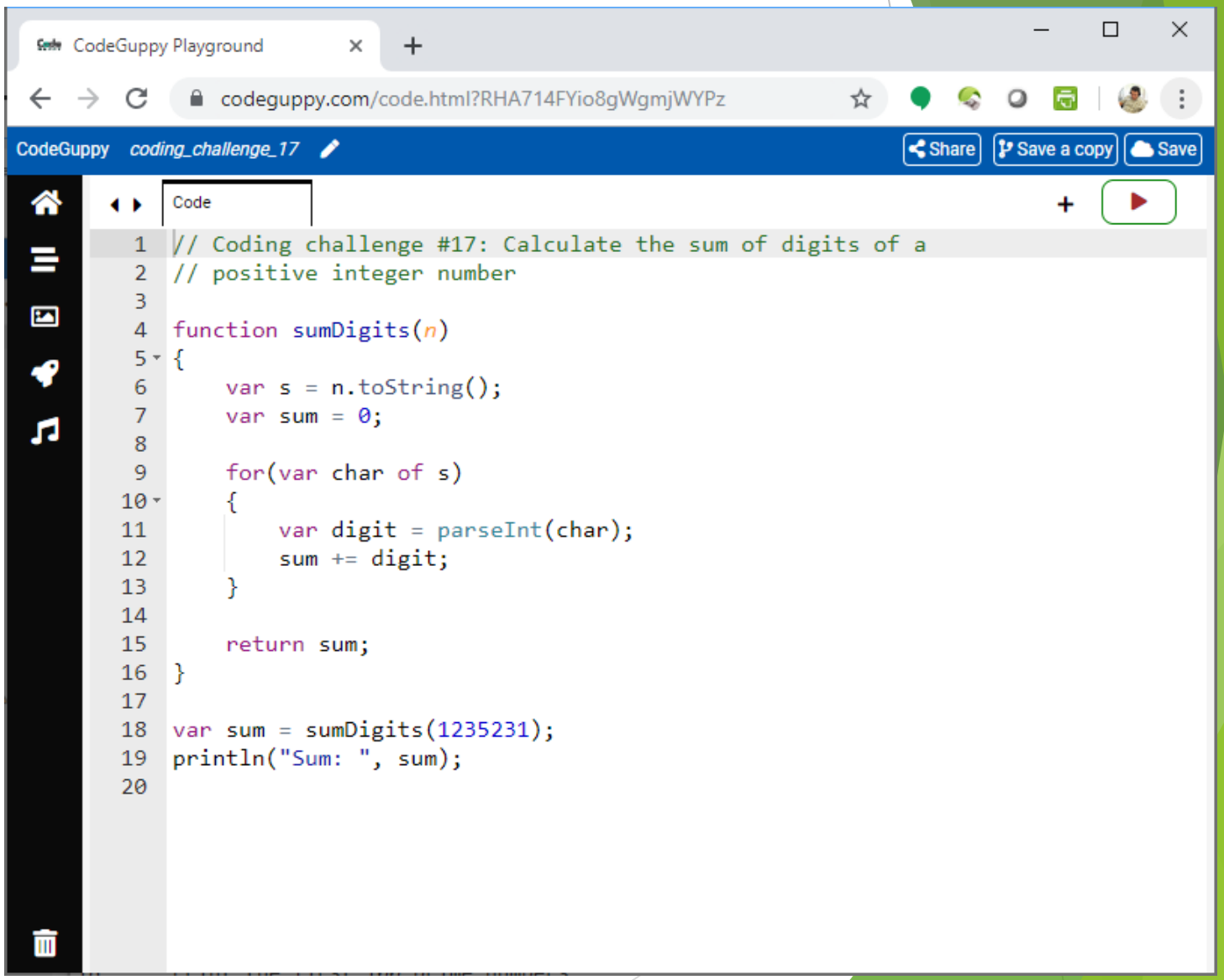
Coding challenge #16

Create a function that will return a Boolean specifying if a number is prime

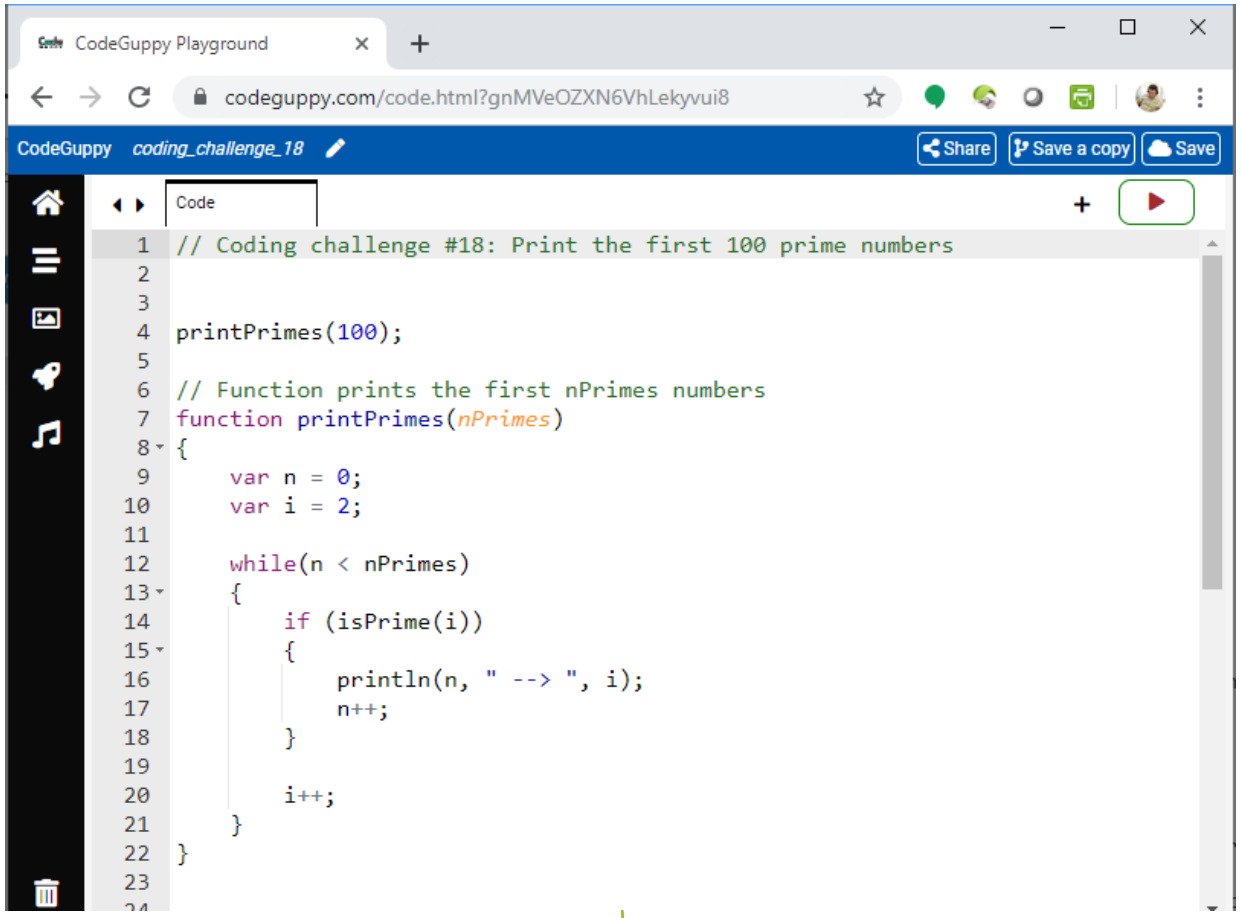


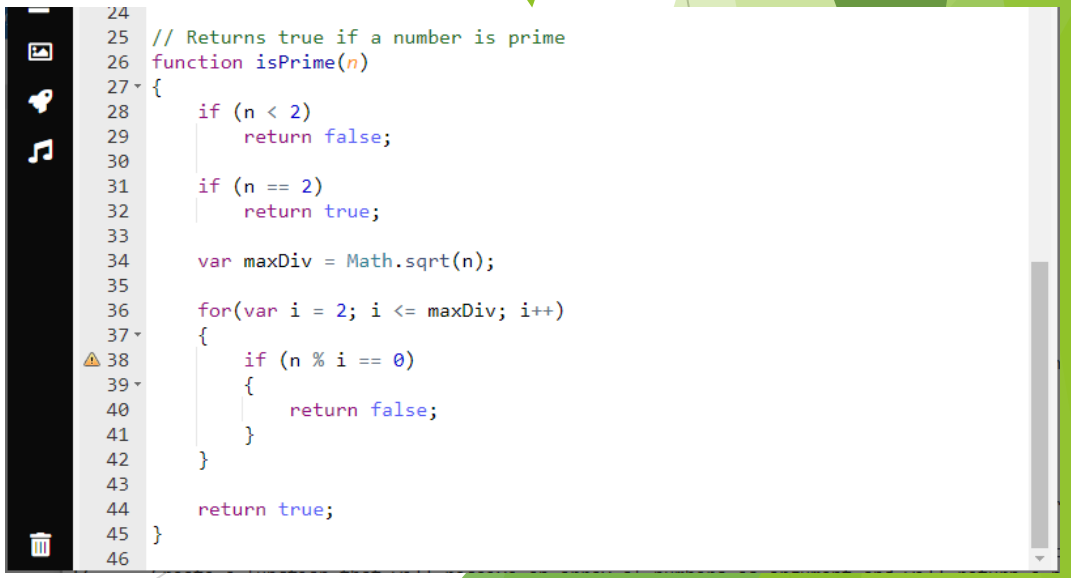
Coding challenge #17

Calculate the sum of digits
of a positive integer number



Coding challenge #18: Print the first 100 prime numbers





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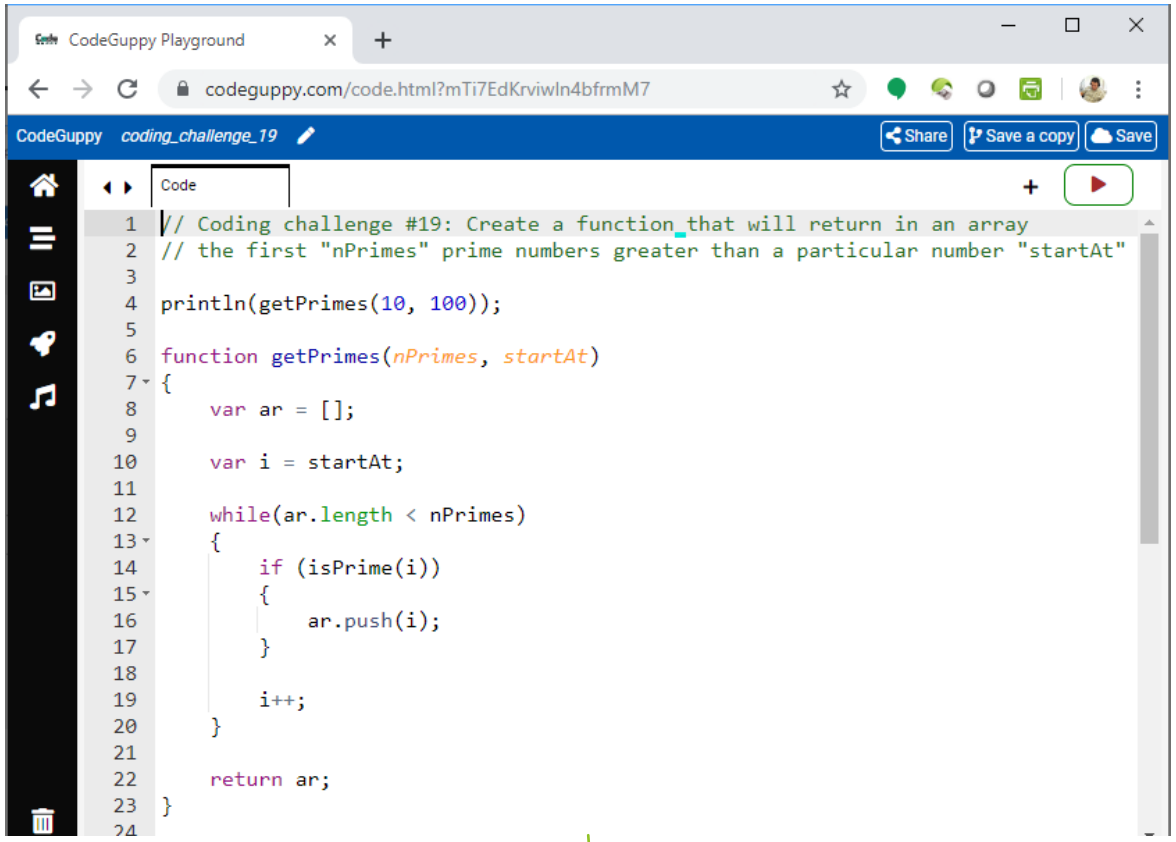
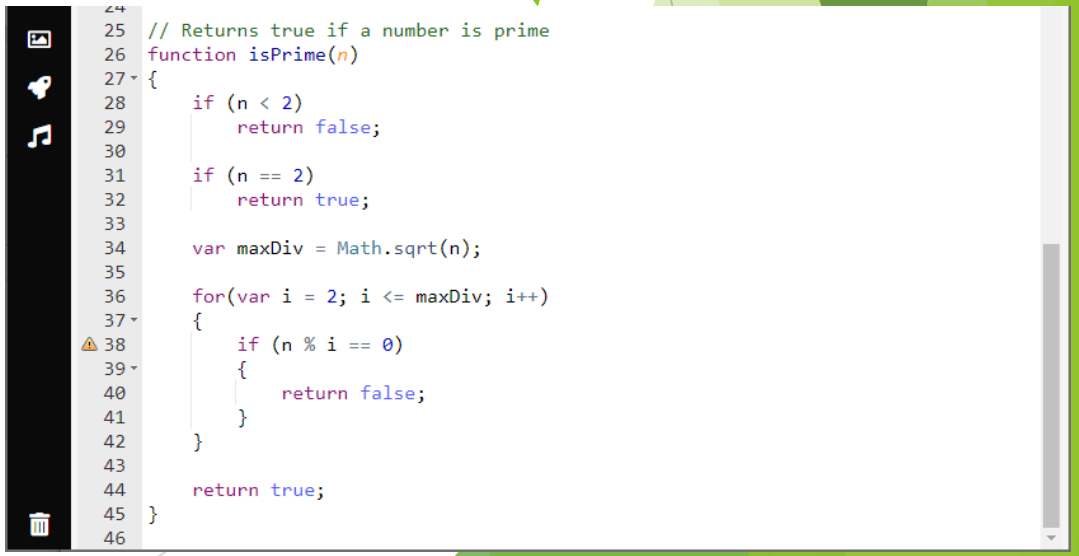
Coding challenge #19: Create a function that will return in an array the first "nPrimes" prime numbers greater than a number "startAt"





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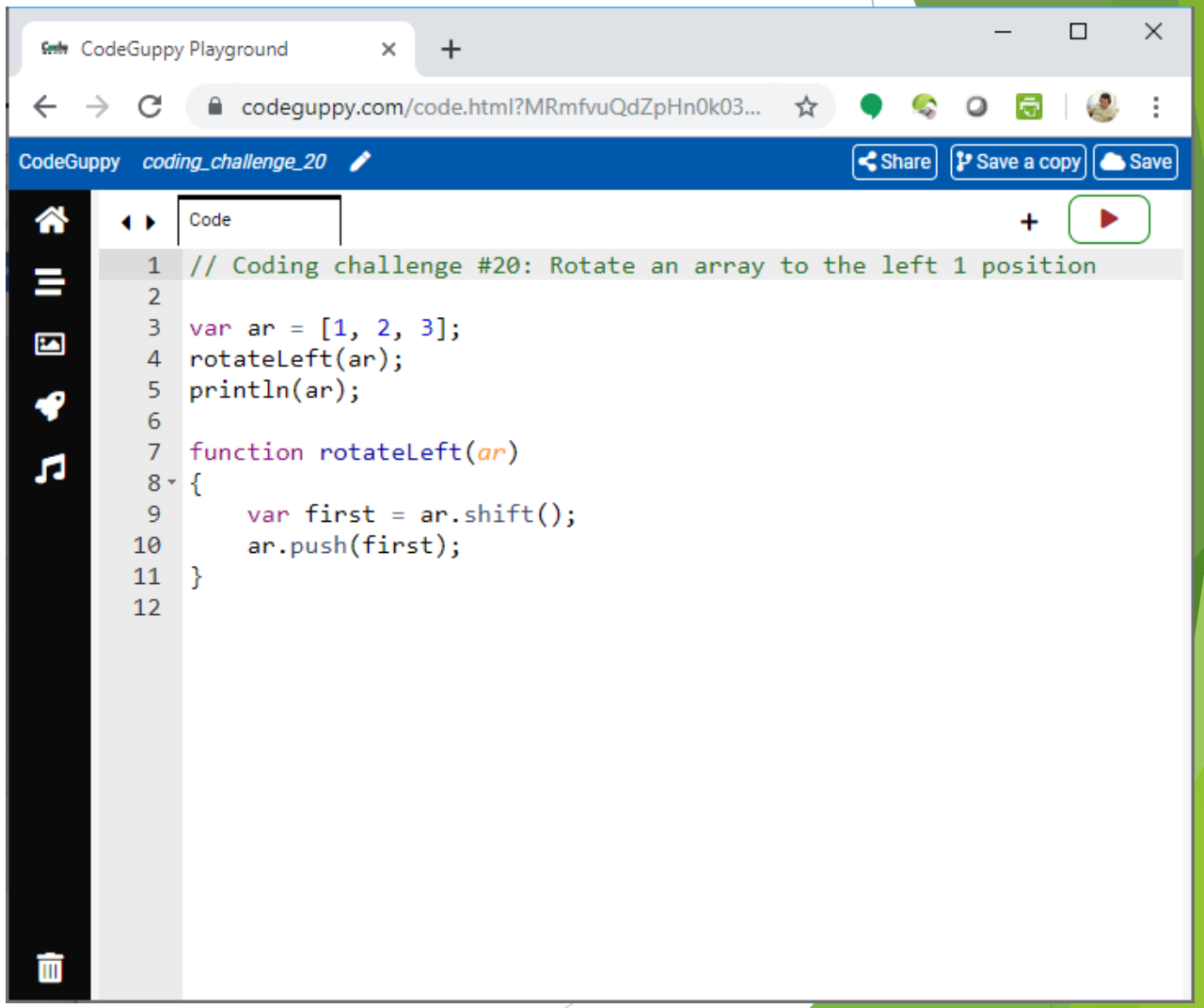
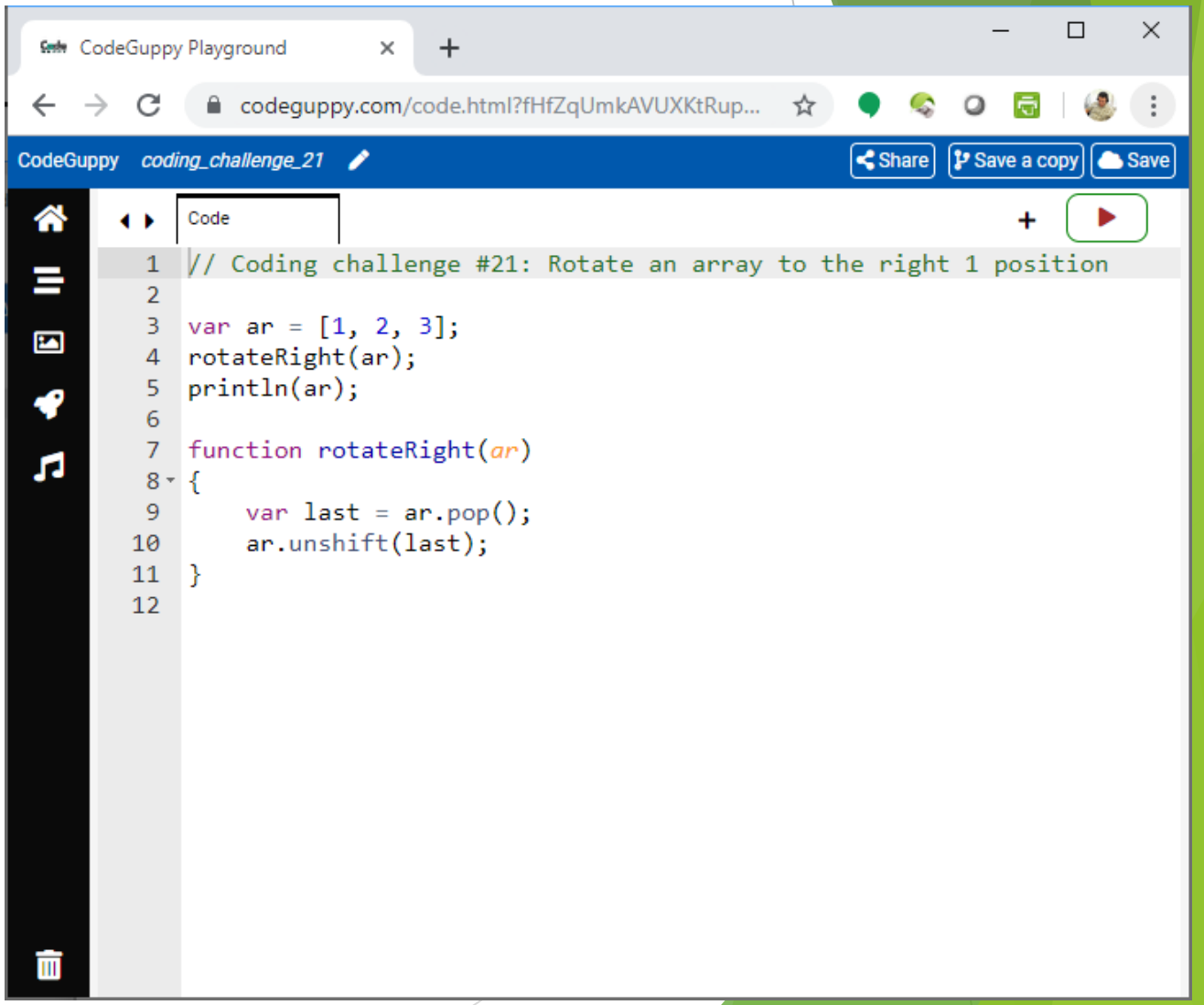
Coding challenge #20

Rotate an array to the left 1 position



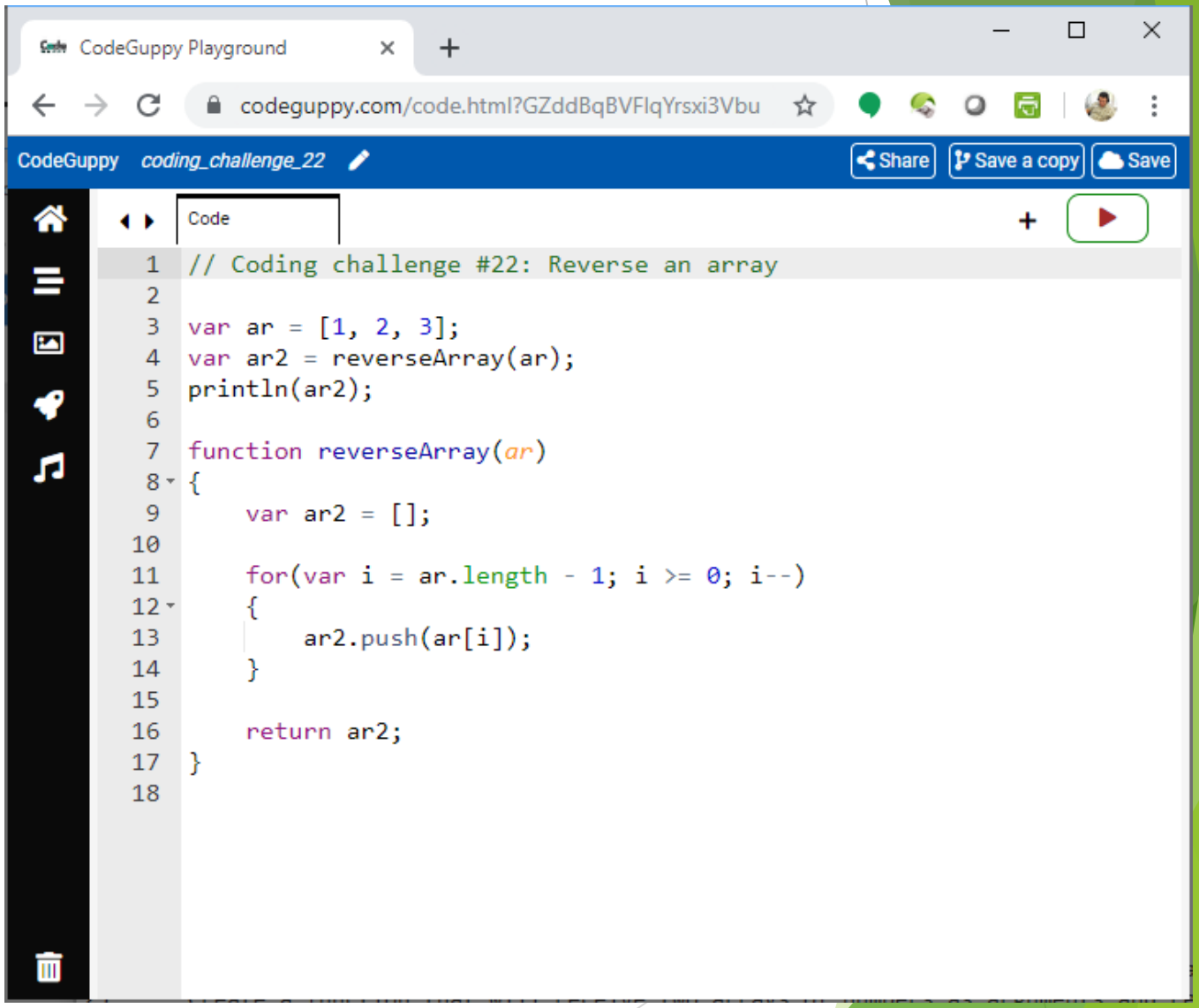
Coding challenge #21

Rotate an array to the right 1 position



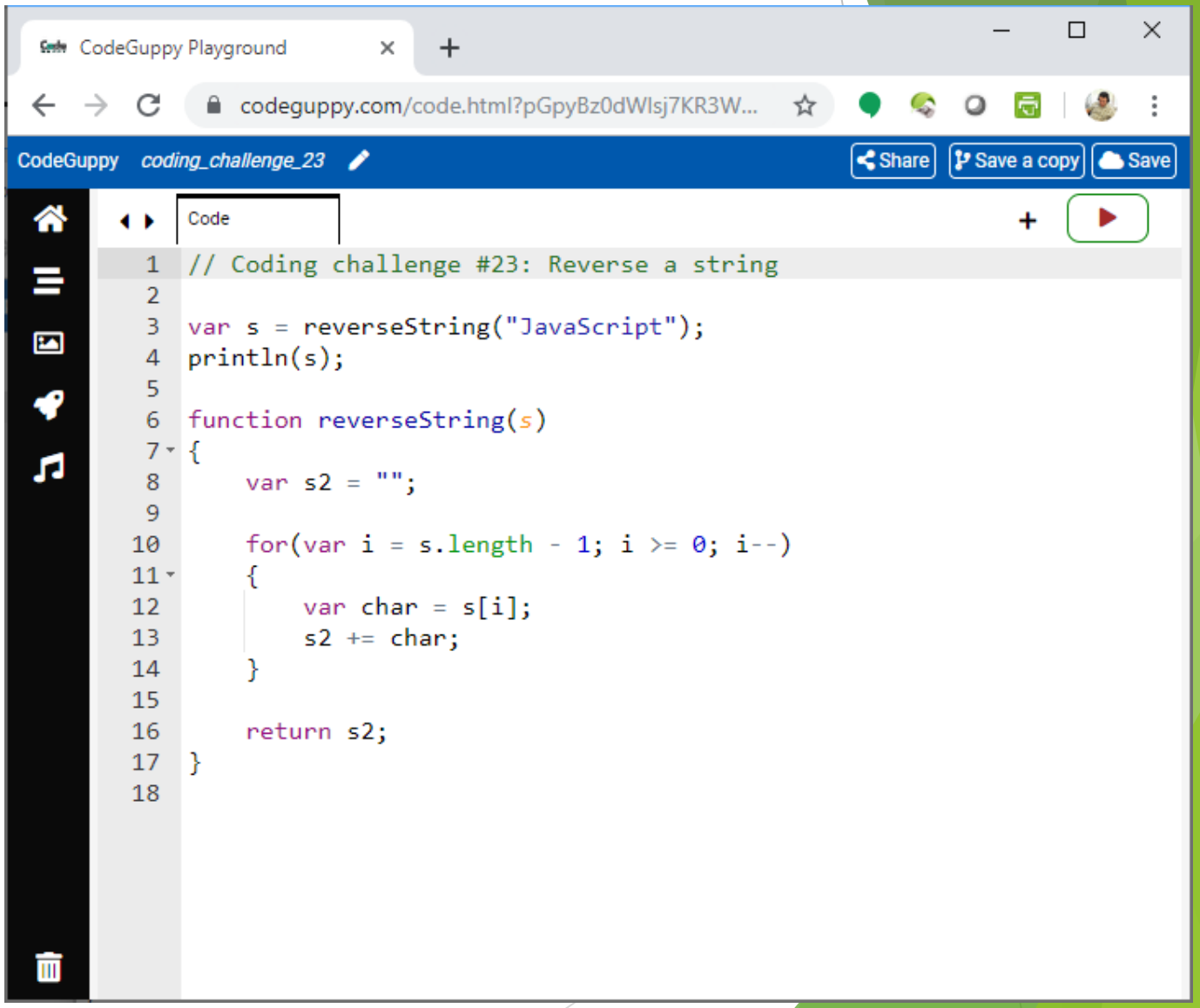
Coding challenge #22

Reverse an array



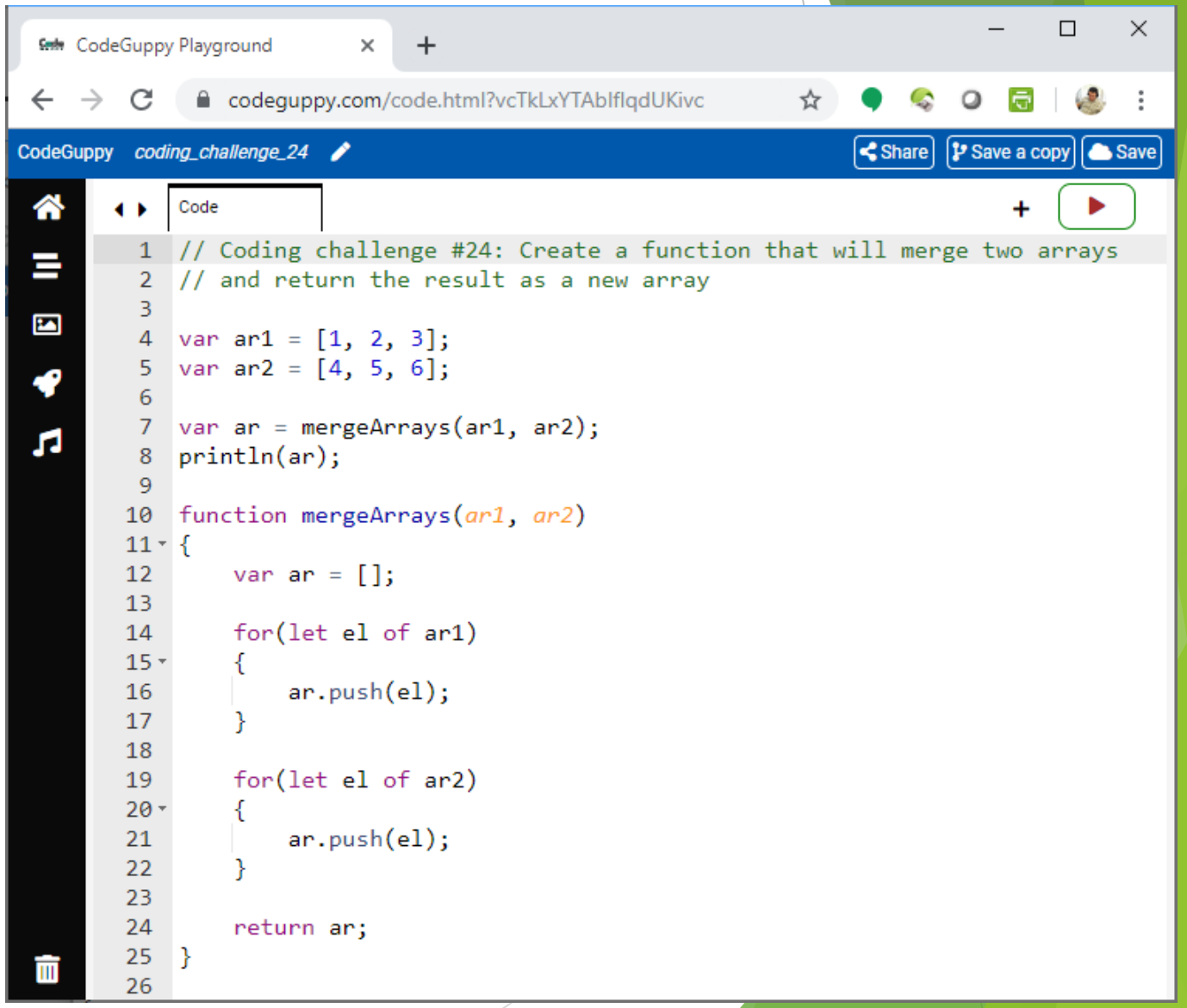
Coding challenge #23

Reverse a string



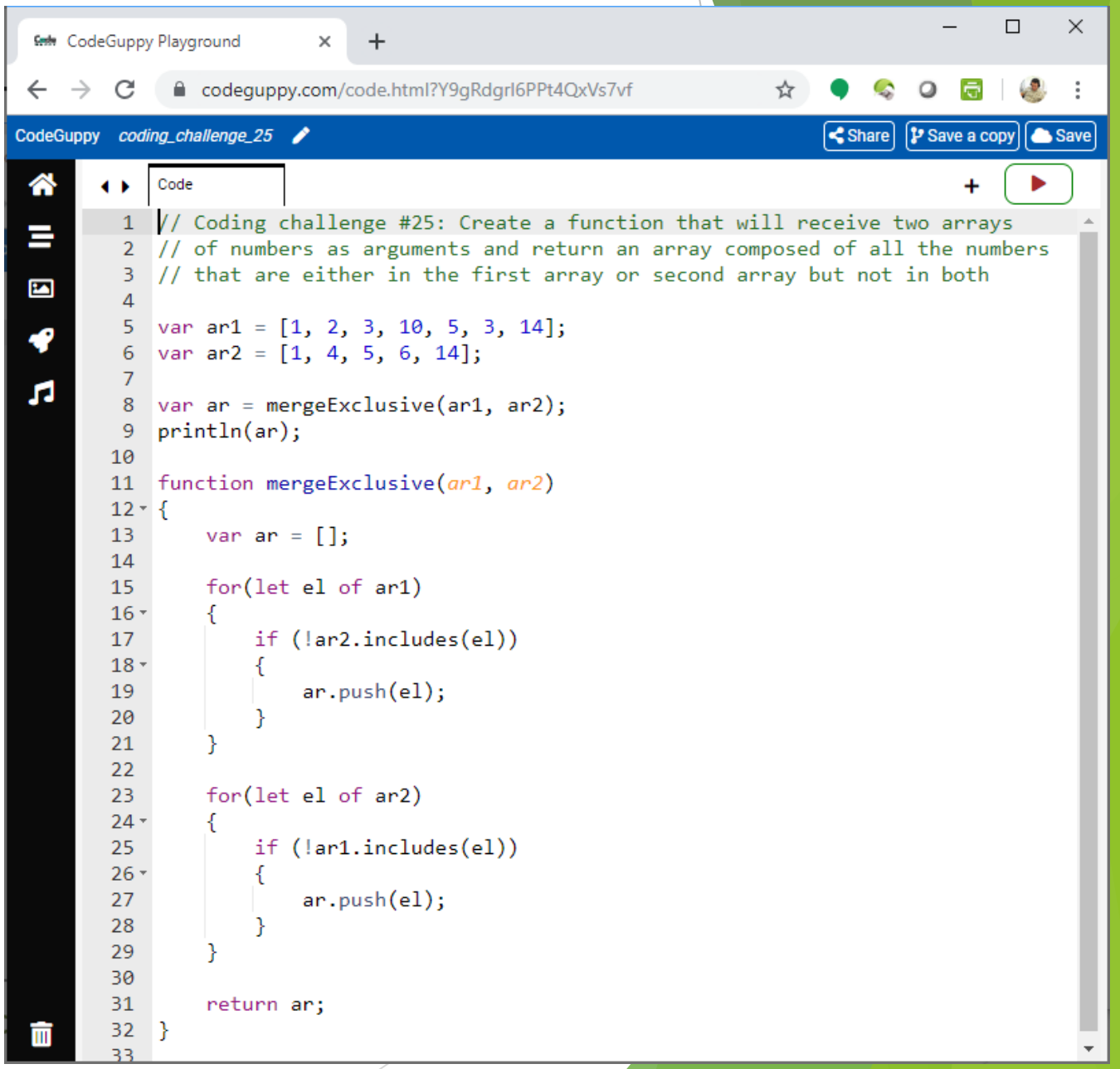
Coding challenge #24

Create a function that will merge two arrays and return the result as a new array



Coding challenge #25

Create a function that will receive two arrays of numbers as arguments and return an array composed of all the numbers that are either in the first array or second array but not in both



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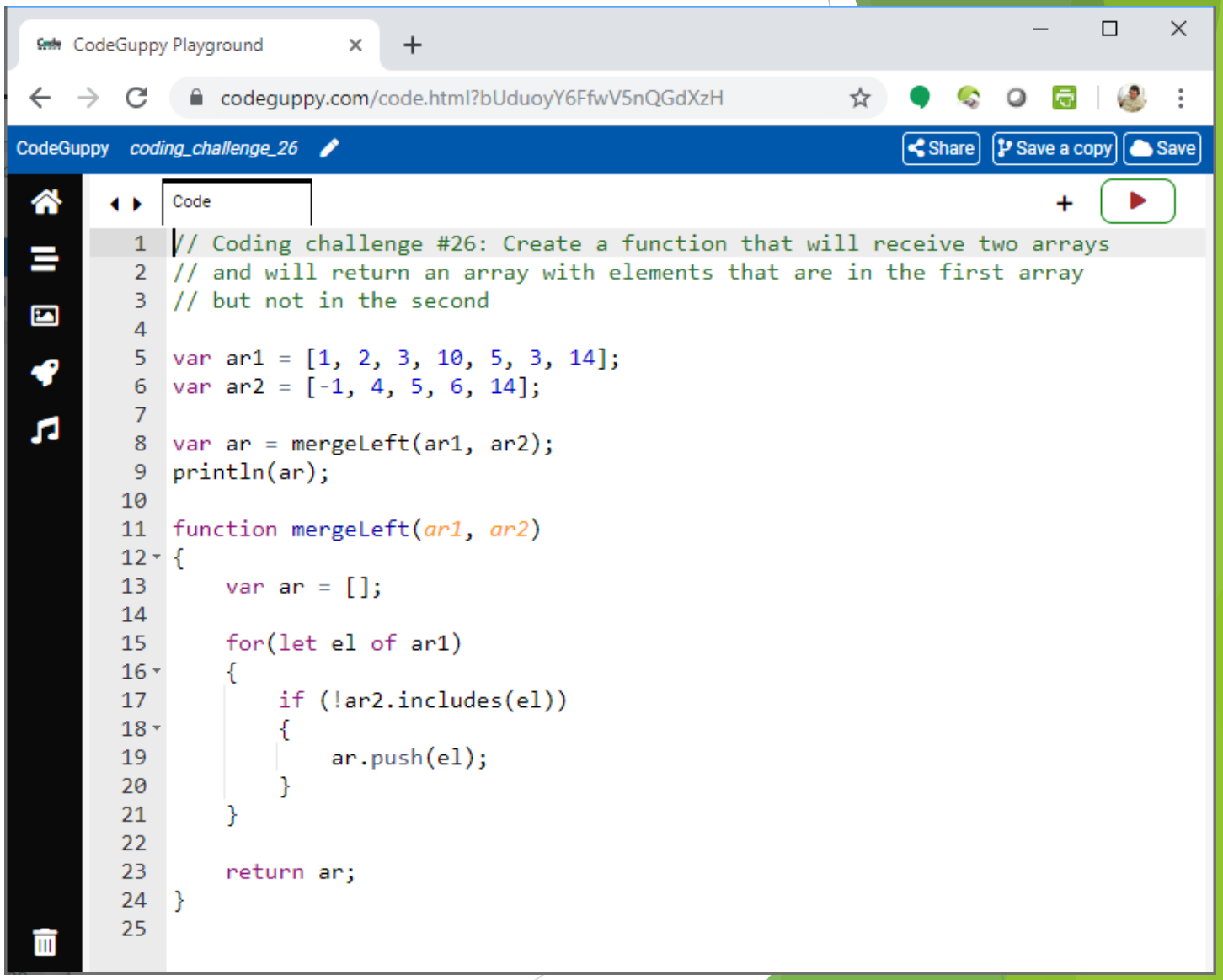
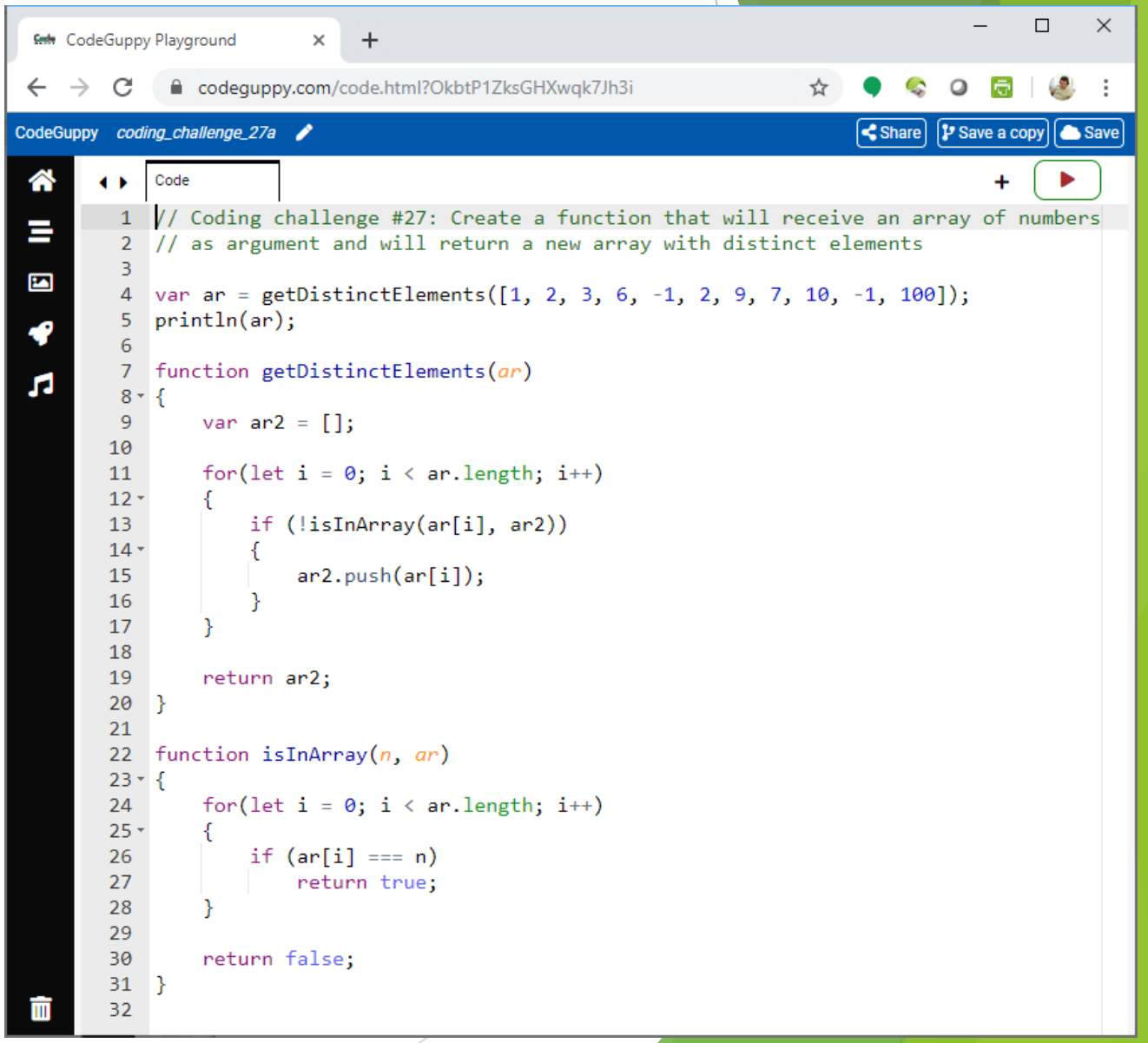
Coding challenge #26

Create a function that will receive two arrays and will return an array with elements that are in the first array but not in the second



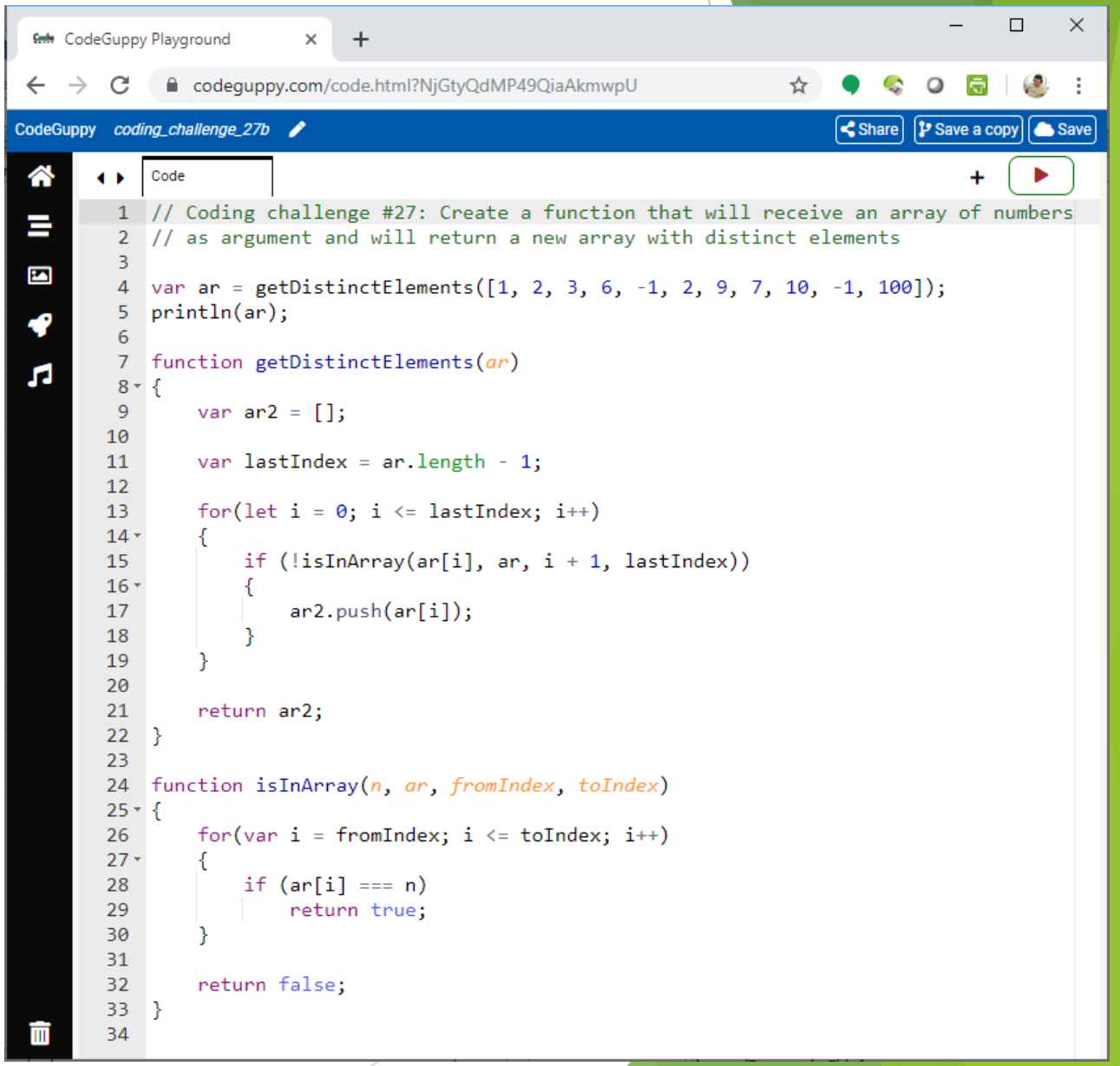
Coding challenge #27a

Create a function that will receive an array of numbers as argument and will return a new array with distinct elements

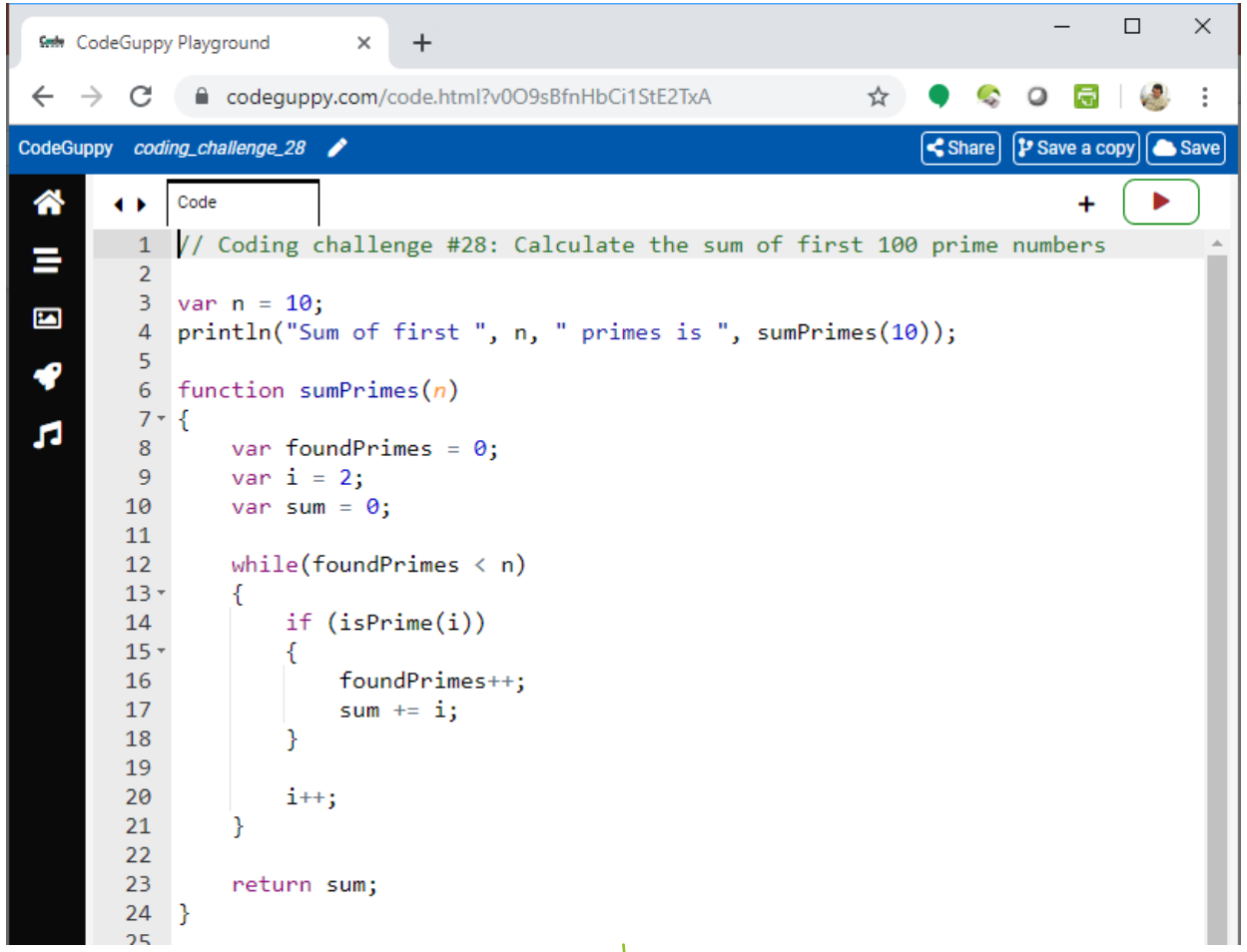


Coding challenge #27b

Create a function that will receive an array of numbers as argument and will return a new array with distinct elements



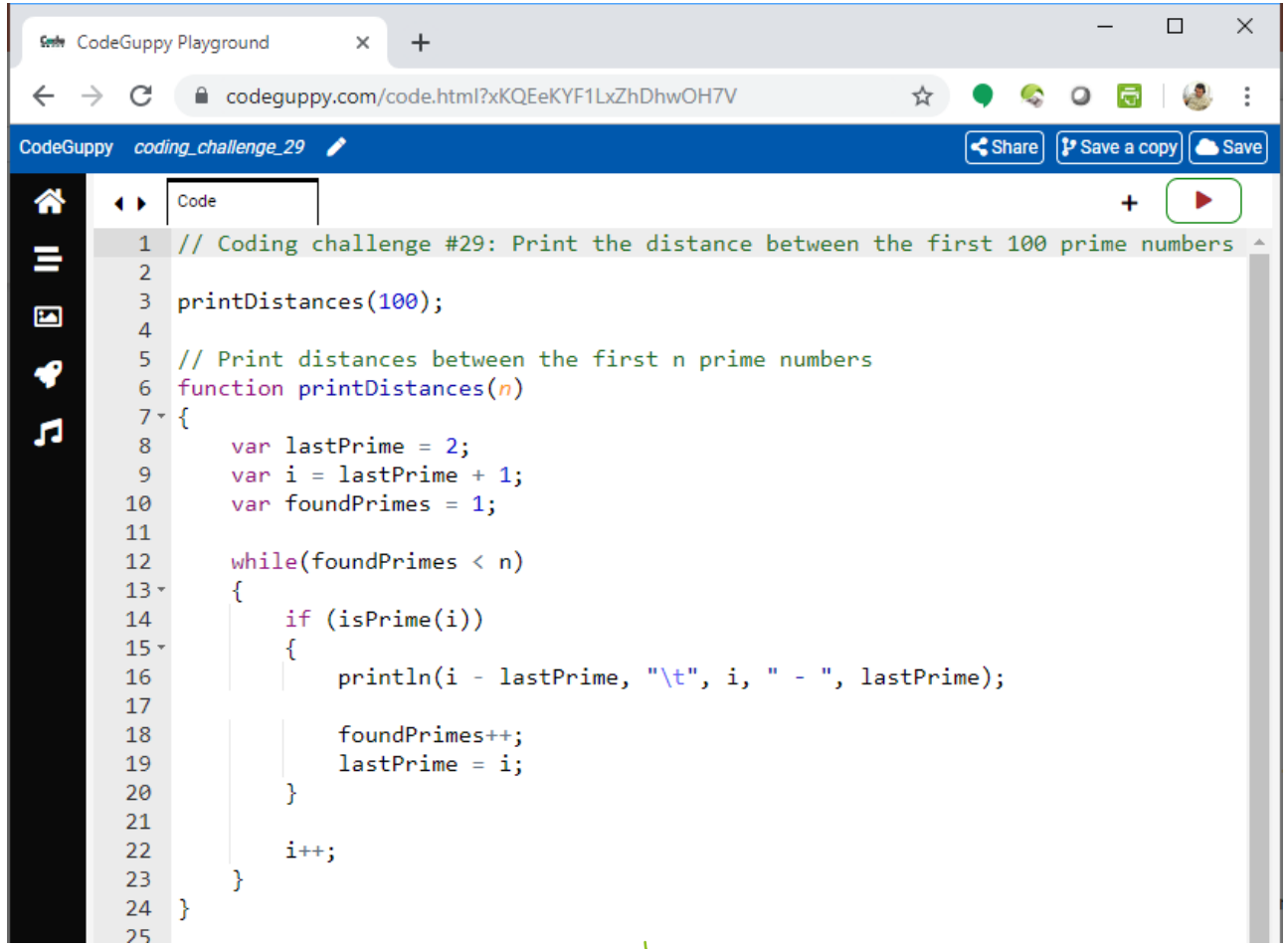
Coding challenge #28: Calculate the sum of first 100 prime numbers




```
// Coding challenge #28: Calculate the sum of first 100 prime numbers

var n = 10;
println("Sum of first ", n, " primes is ", sumPrimes(10));

function sumPrimes(n)
{
    var foundPrimes = 0;
    var i = 2;
    var sum = 0;

    while(foundPrimes < n)
    {
        if (isPrime(i))
        {
            foundPrimes++;
            sum += i;
        }

        i++;
    }

    return sum;
}
```

```
// Returns true if number n is prime
function isPrime(n)
{
    if (n < 2)
        return false;

    if (n == 2)
        return true;

    var maxDiv = Math.sqrt(n);

    for(var i = 2; i <= maxDiv; i++)
    {
        if (n % i === 0)
        {
            return false;
        }
    }

    return true;
}
```

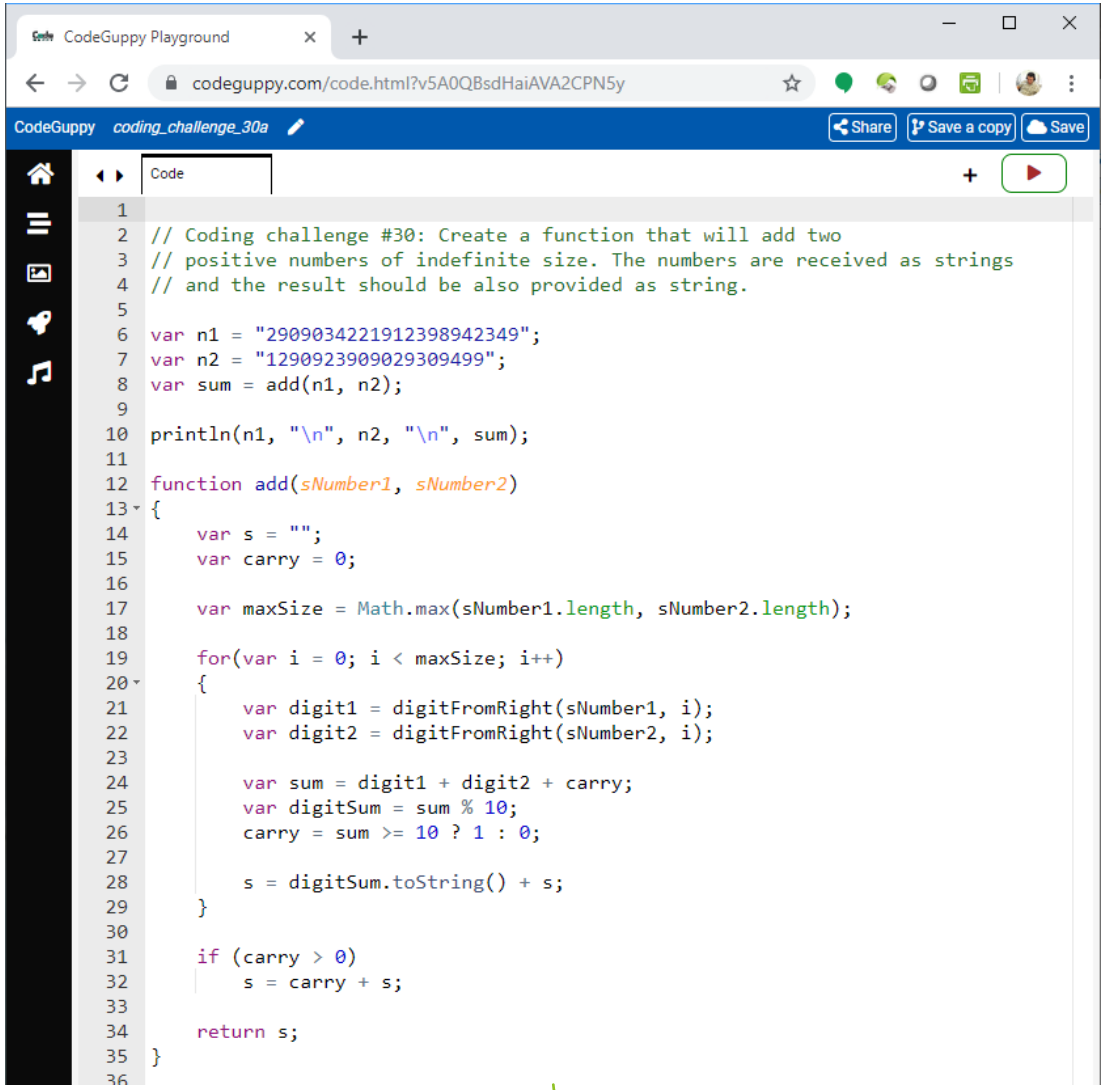
Coding challenge #29: Print the distance between the first 100 prime numbers




```
// Coding challenge #29: Print the distance between the first 100 prime numbers

printDistances(100);

// Print distances between the first n prime numbers
function printDistances(n)
{
    var lastPrime = 2;
    var i = lastPrime + 1;
    var foundPrimes = 1;

    while(foundPrimes < n)
    {
        if (isPrime(i))
        {
            println(i - lastPrime, "\t", i, " - ", lastPrime);

            foundPrimes++;
            lastPrime = i;
        }

        i++;
    }
}
```

```
// Returns true if number n is prime
function isPrime(n)
{
    if (n < 2)
        return false;

    if (n == 2)
        return true;

    var maxDiv = Math.sqrt(n);

    for(var i = 2; i <= maxDiv; i++)
    {
        if (n % i === 0)
        {
            return false;
        }
    }

    return true;
}
```

Coding challenge #30a: Create a function that will add two indefinite size numbers.

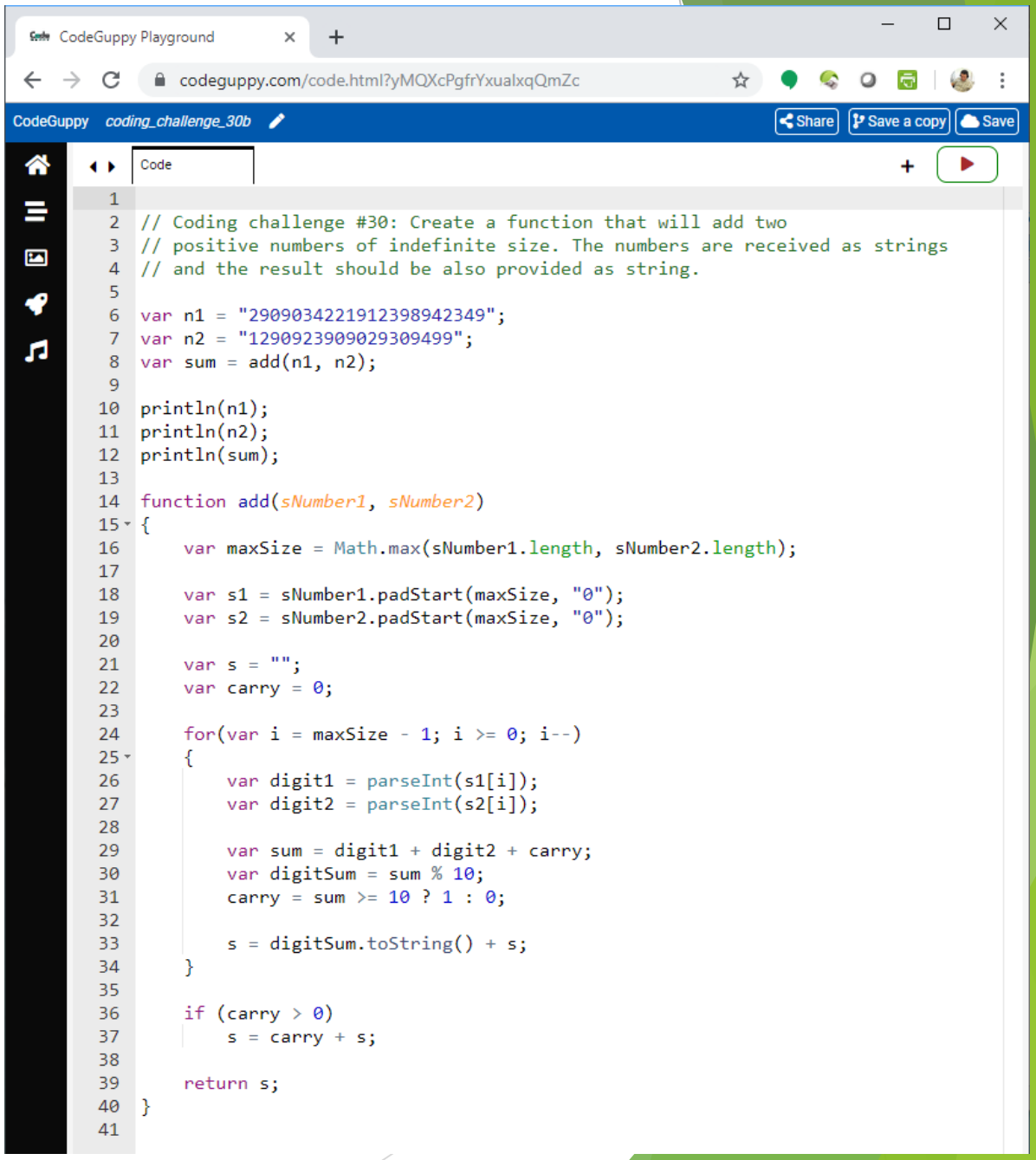



```
// Coding challenge #30: Create a function that will add two
// positive numbers of indefinite size. The numbers are received as strings
// and the result should be also provided as string.

var n1 = "2909034221912398942349";
var n2 = "1290923909029309499";
var sum = add(n1, n2);

println(n1, "\n", n2, "\n", sum);

function add(sNumber1, sNumber2)
{
    var s = "";
    var carry = 0;

    var maxSize = Math.max(sNumber1.length, sNumber2.length);

    for(var i = 0; i < maxSize; i++)
    {
        var digit1 = digitFromRight(sNumber1, i);
        var digit2 = digitFromRight(sNumber2, i);

        var sum = digit1 + digit2 + carry;
        var digitSum = sum % 10;
        carry = sum >= 10 ? 1 : 0;

        s = digitSum.toString() + s;
    }

    if (carry > 0)
        s = carry + s;

    return s;
}
```

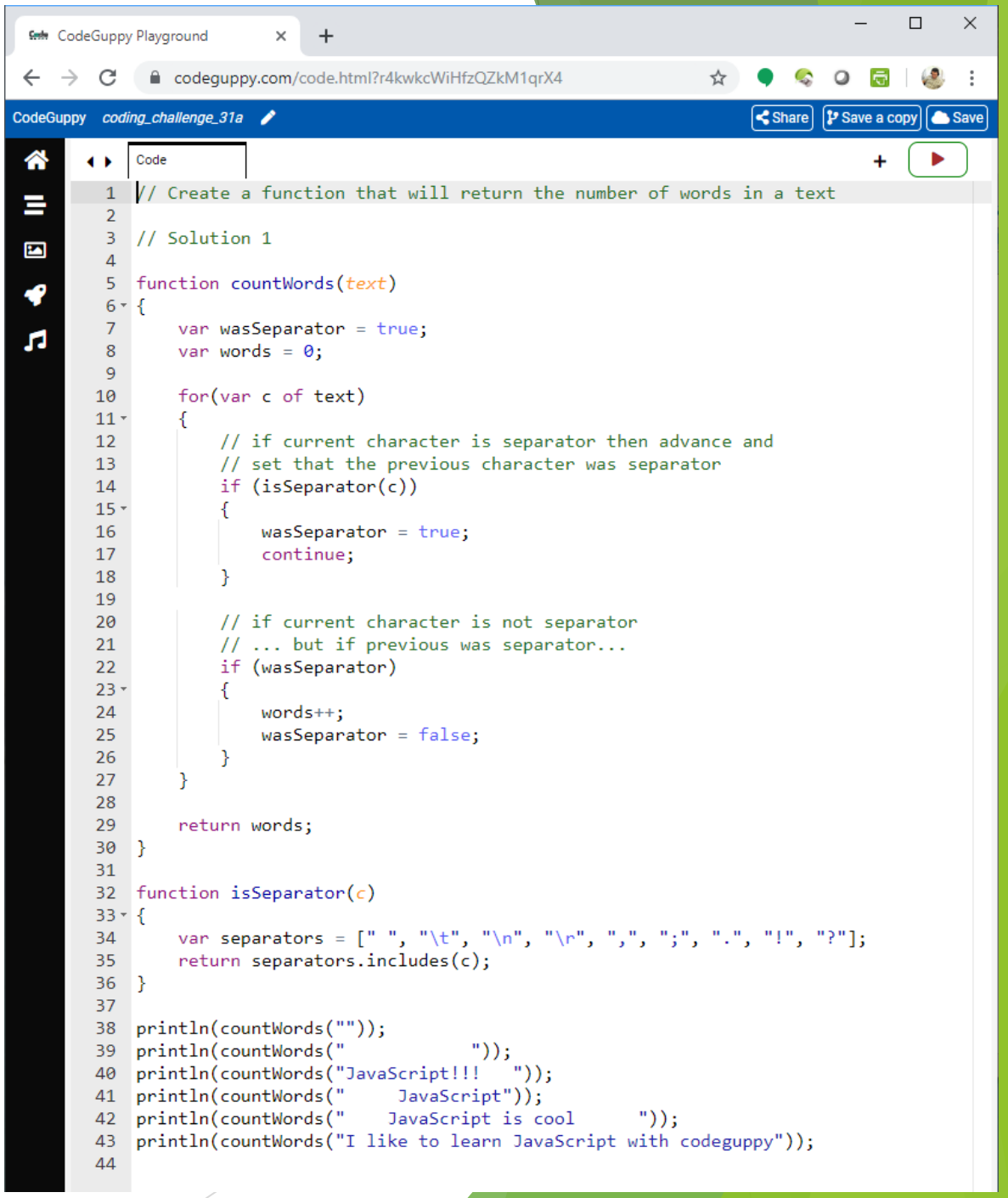
Requirements: Only positive numbers will be used and will be provided to the function as strings. The result should be also returned as a string.

```
function digitFromRight(s, digitNo)
{
    if (digitNo >= s.length)
        return 0;

    var char = s[ s.length - 1 - digitNo ];
    return parseInt(char);
}
```

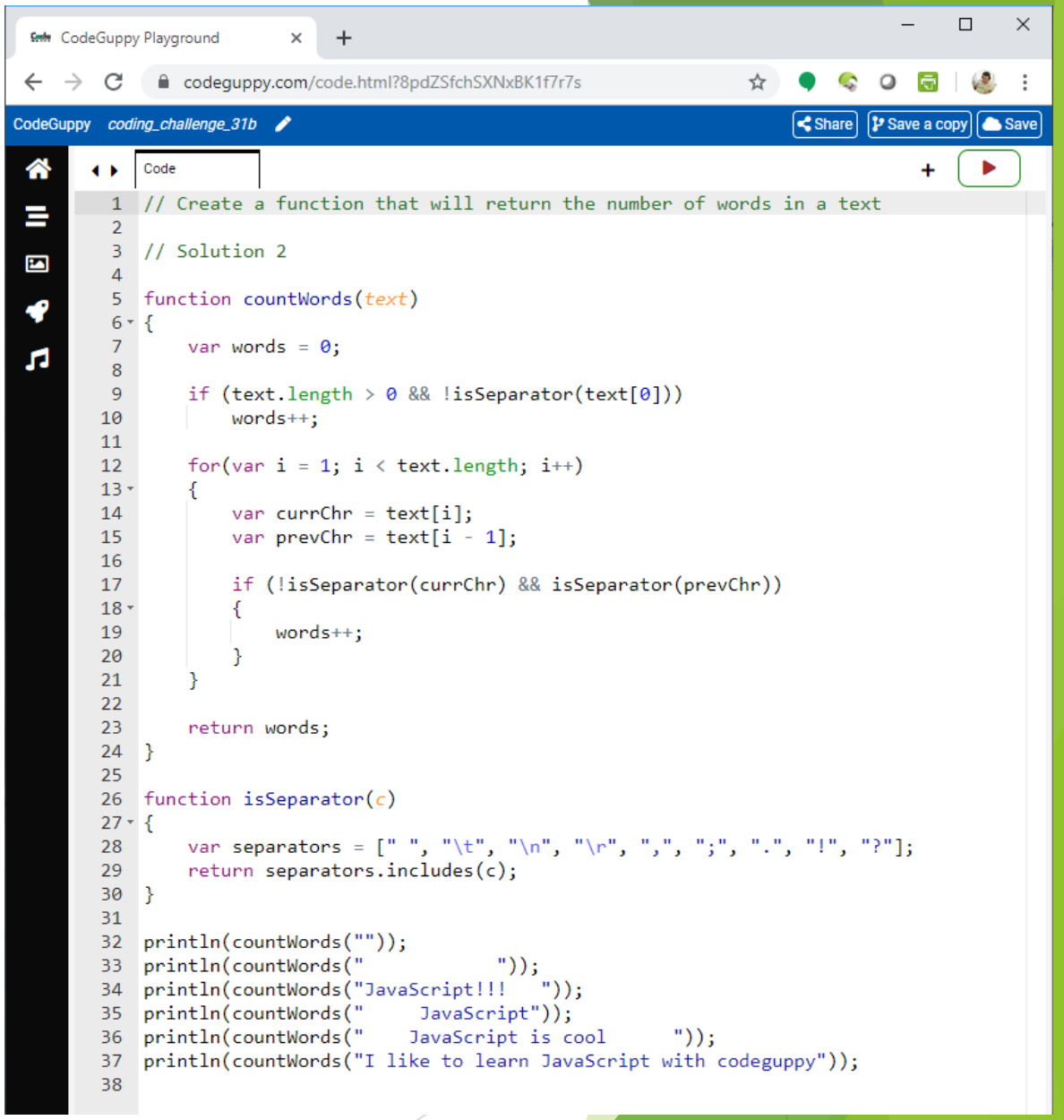
Coding challenge #30b: Create a function that will add two indefinite size numbers. Only positive numbers will be used and will be provided to the function as strings. The result should be also returned as a string.



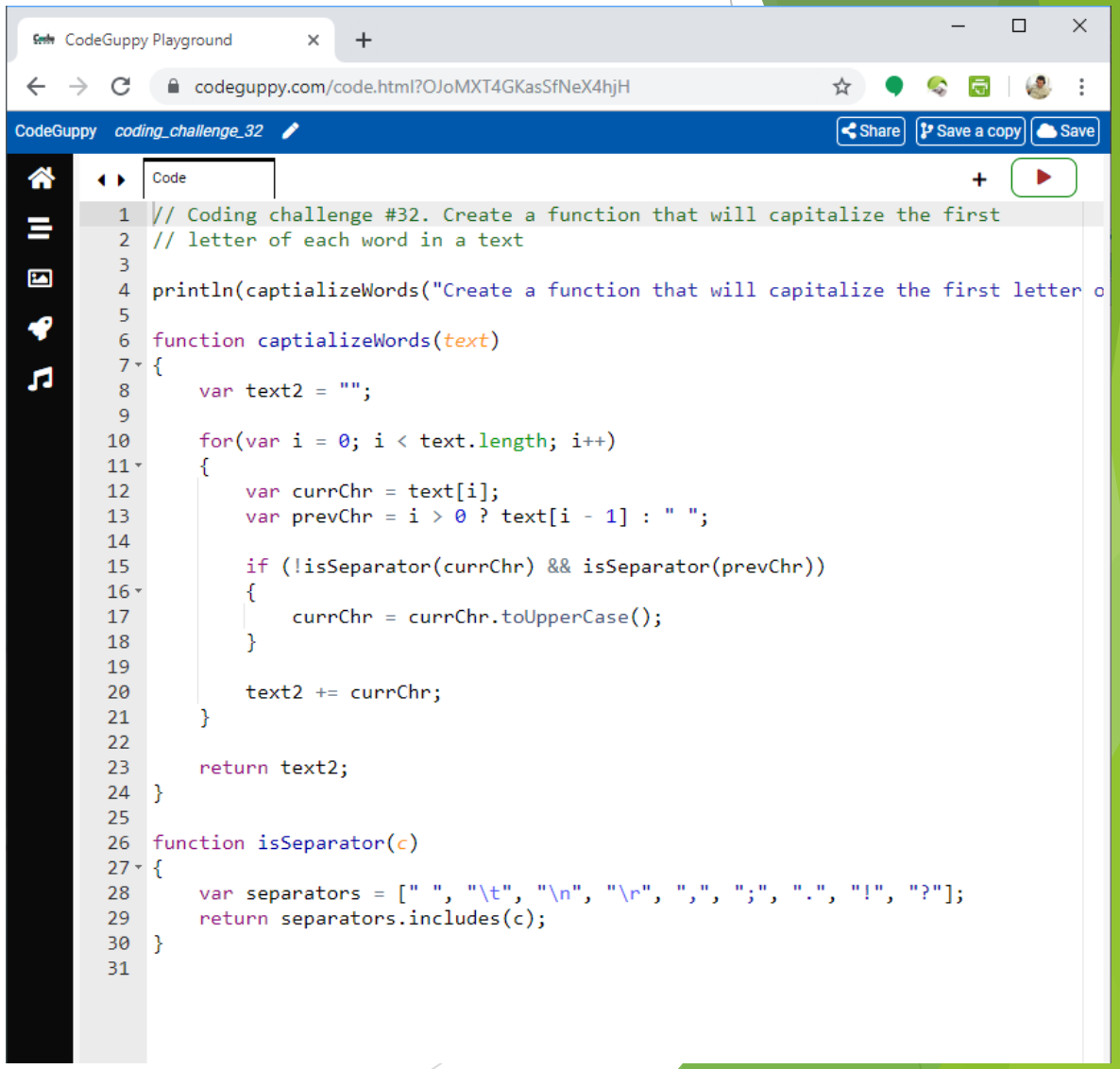
Coding challenge #31-a: Create a function that will return the number of words in a text



Coding challenge #31-b: Create a function that will return the number of words in a text



Coding challenge #32: Create a function that will capitalize the first letter of each word in a text



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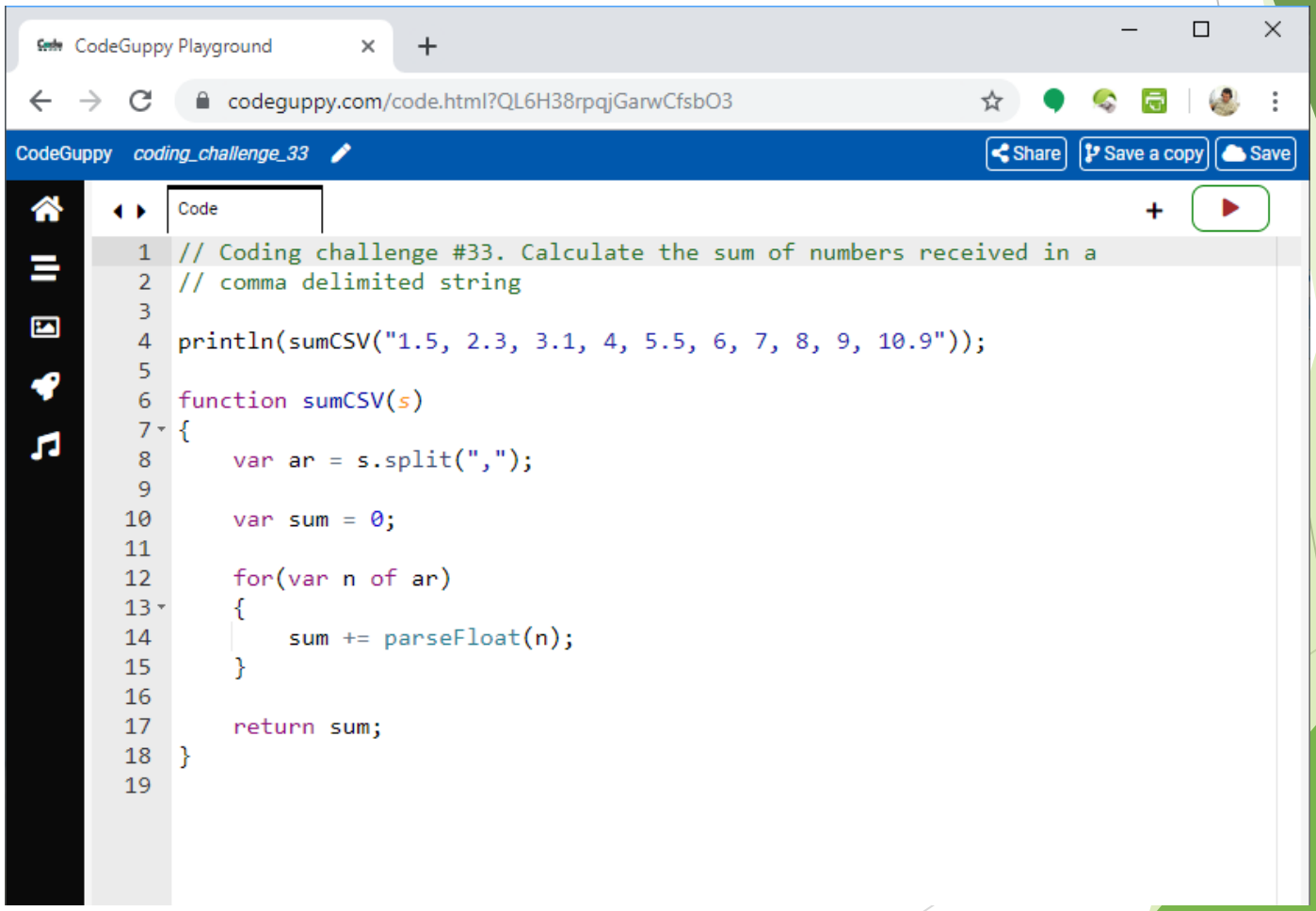
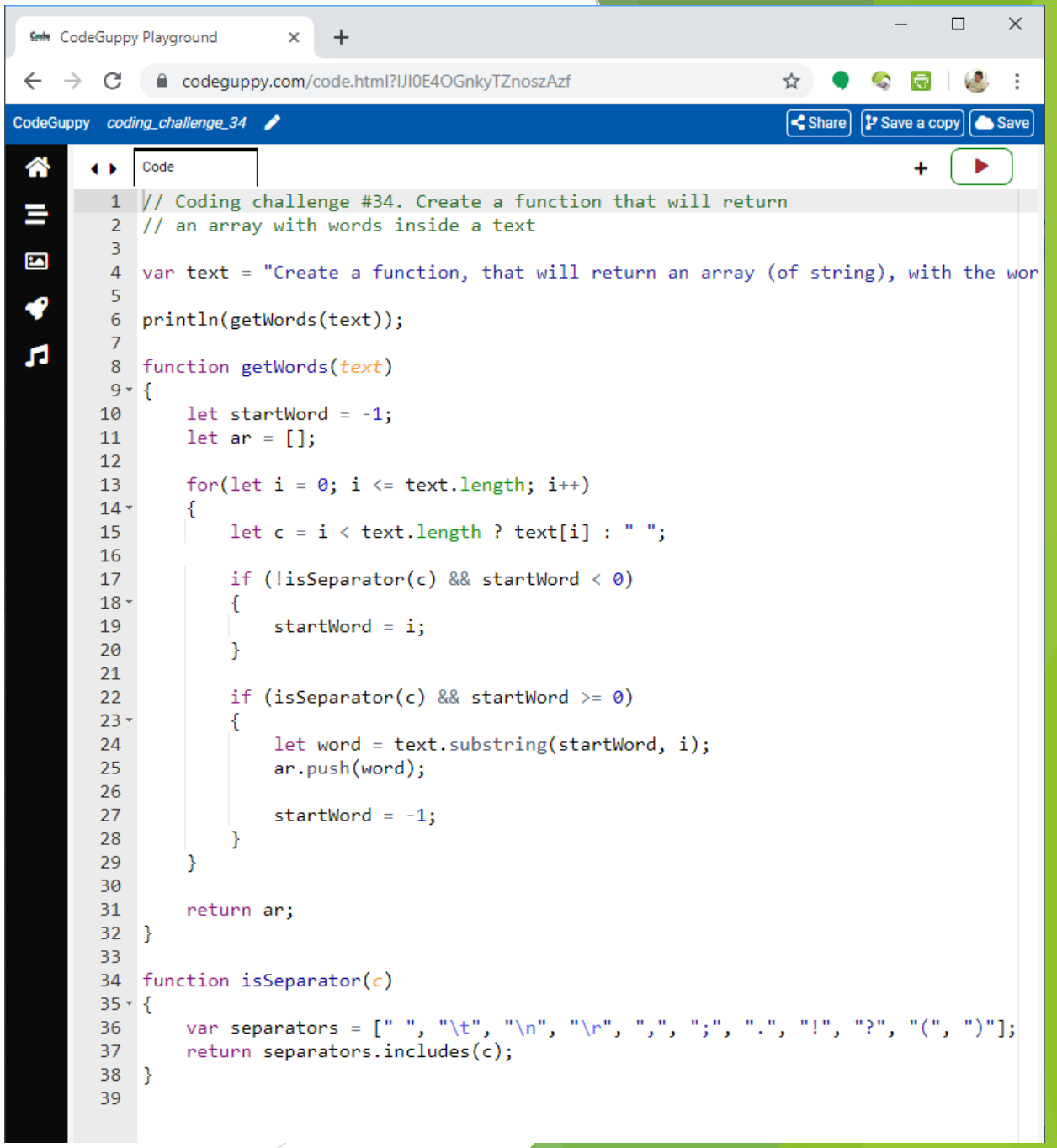
Coding challenge #33: Calculate the sum of numbers received in a comma delimited string



Coding challenge #34: Create a function that will return an array with words inside a text



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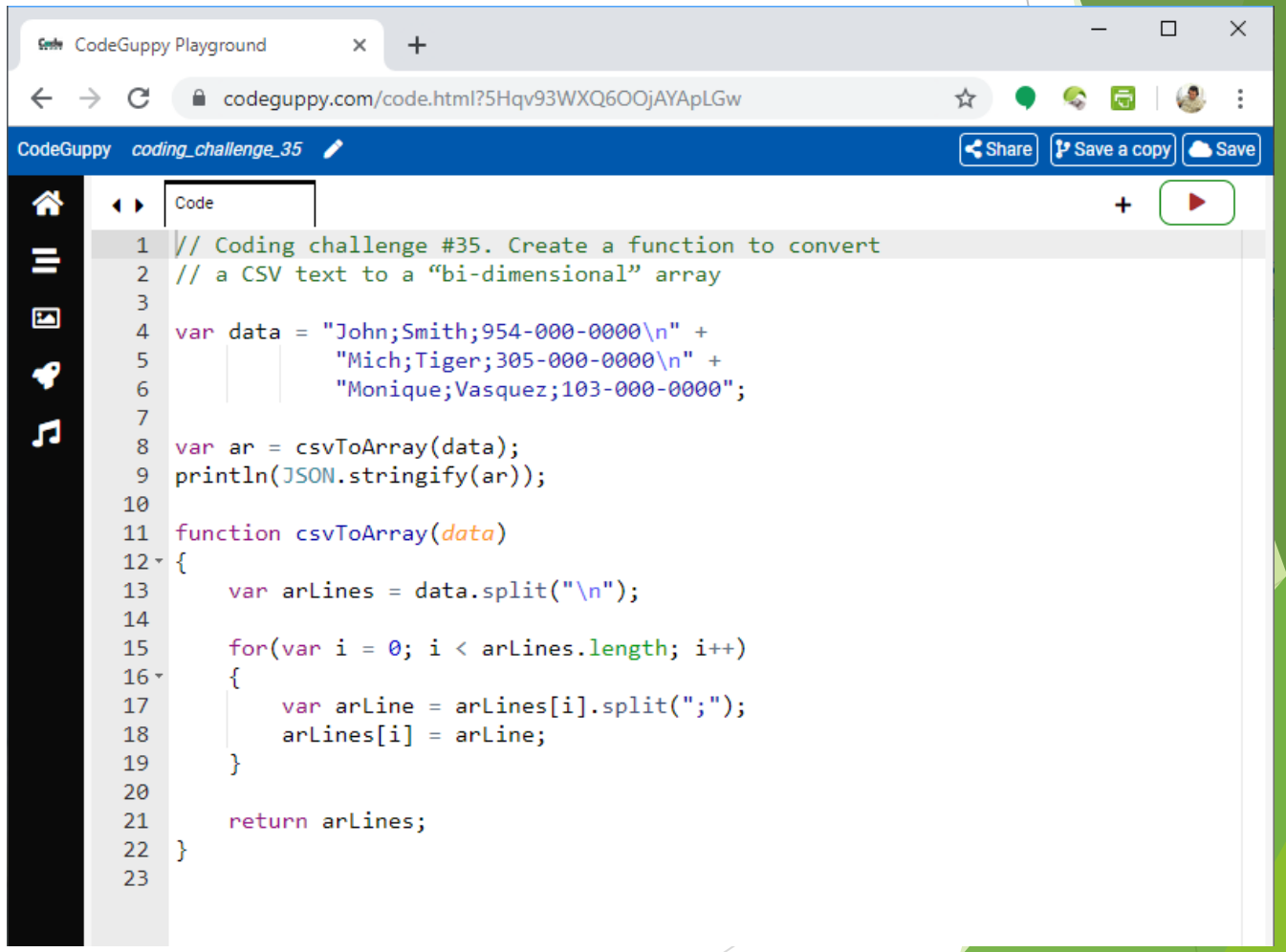
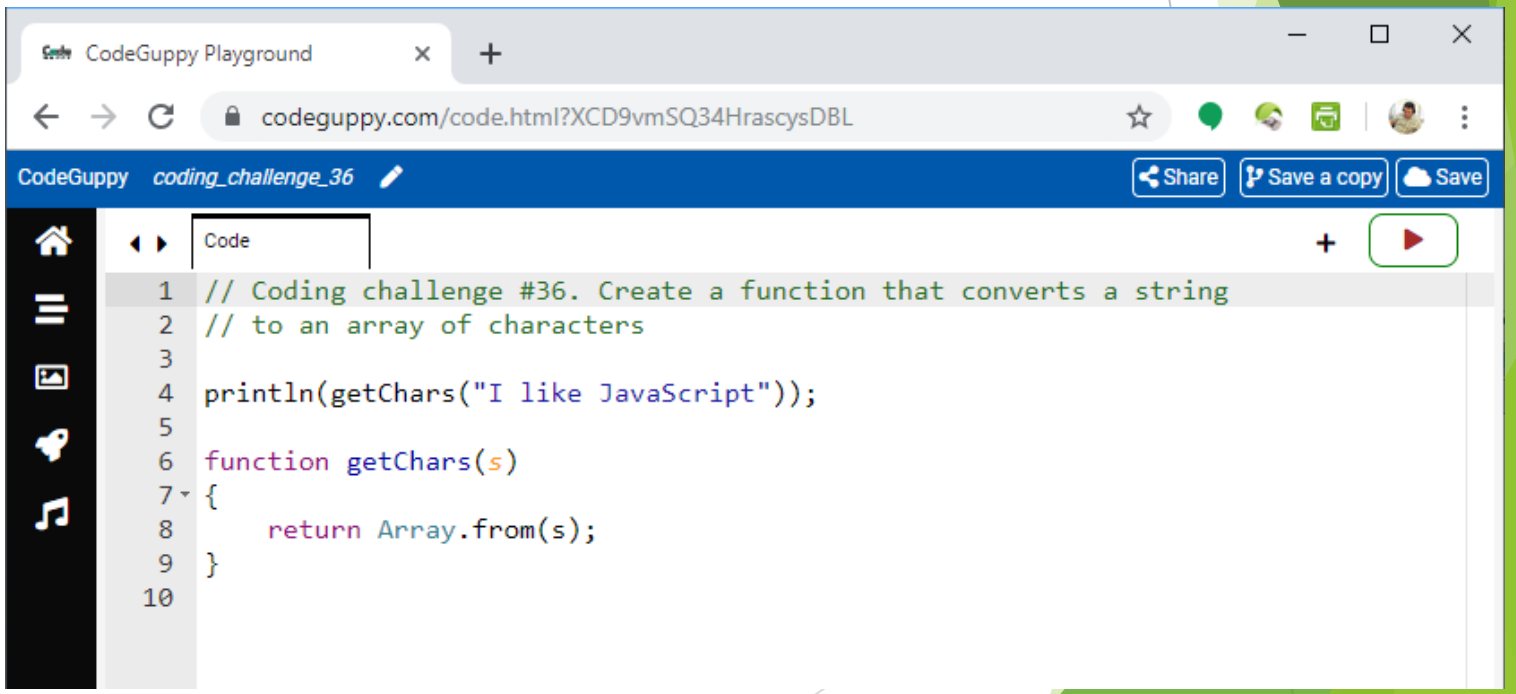
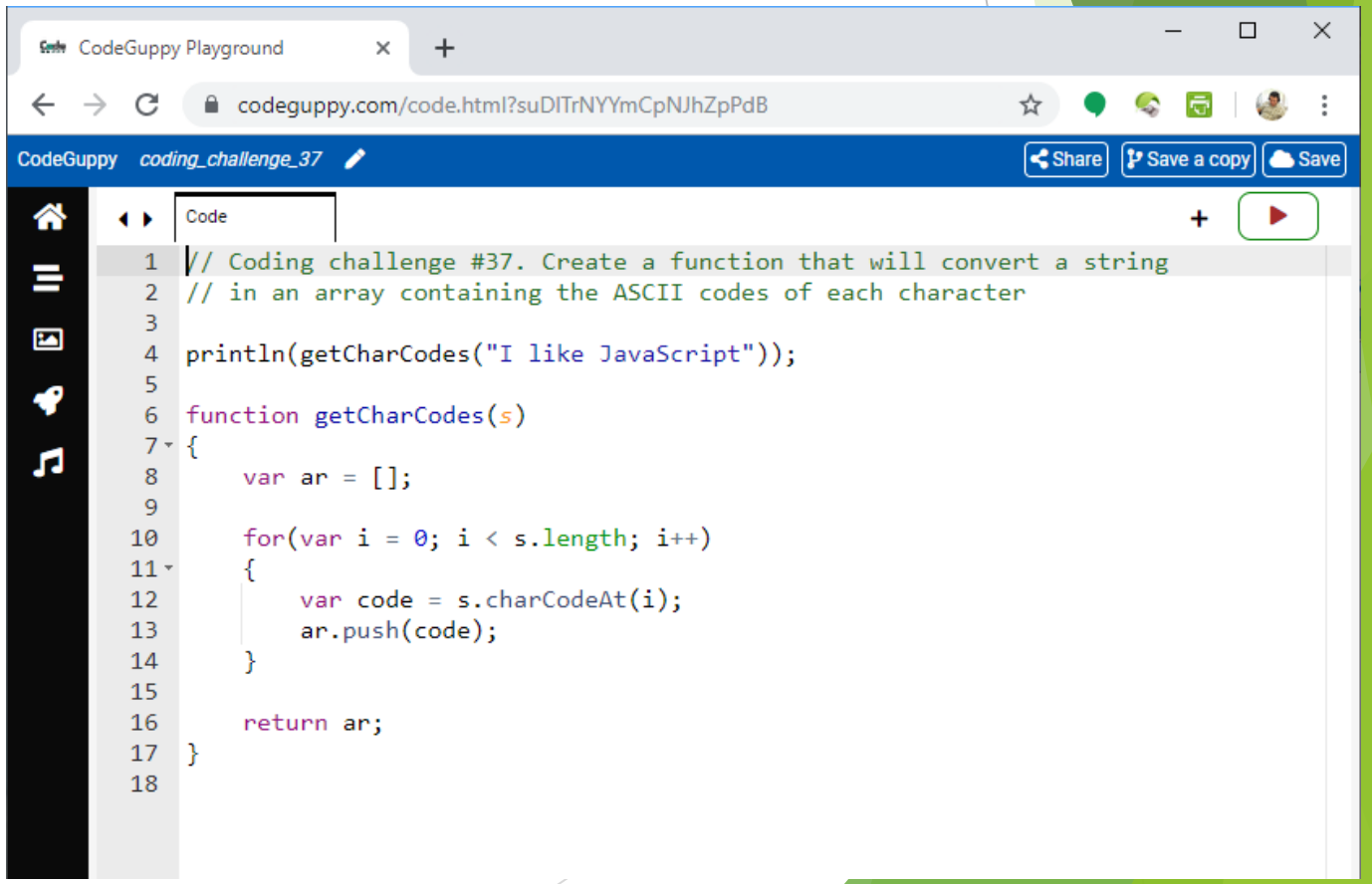
Coding challenge #35: Create a function to convert a CSV text to a “bi-dimensional” array



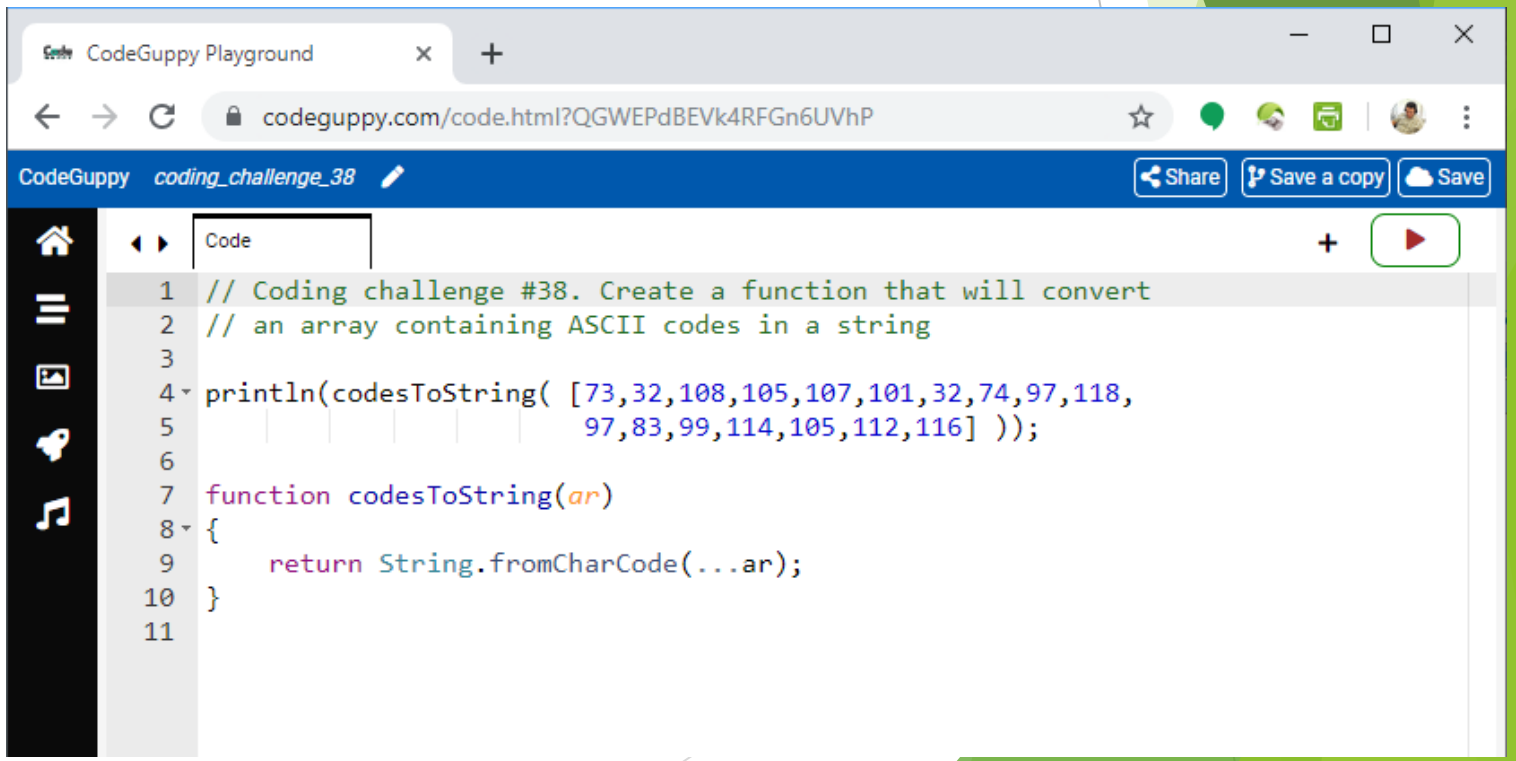
Coding challenge #36: Create a function that converts a string to an array of characters



Coding challenge #37: Create a function that will convert a string in an array containing the ASCII codes of each character



Coding challenge #38: Create a function that will convert an array containing ASCII codes in a string



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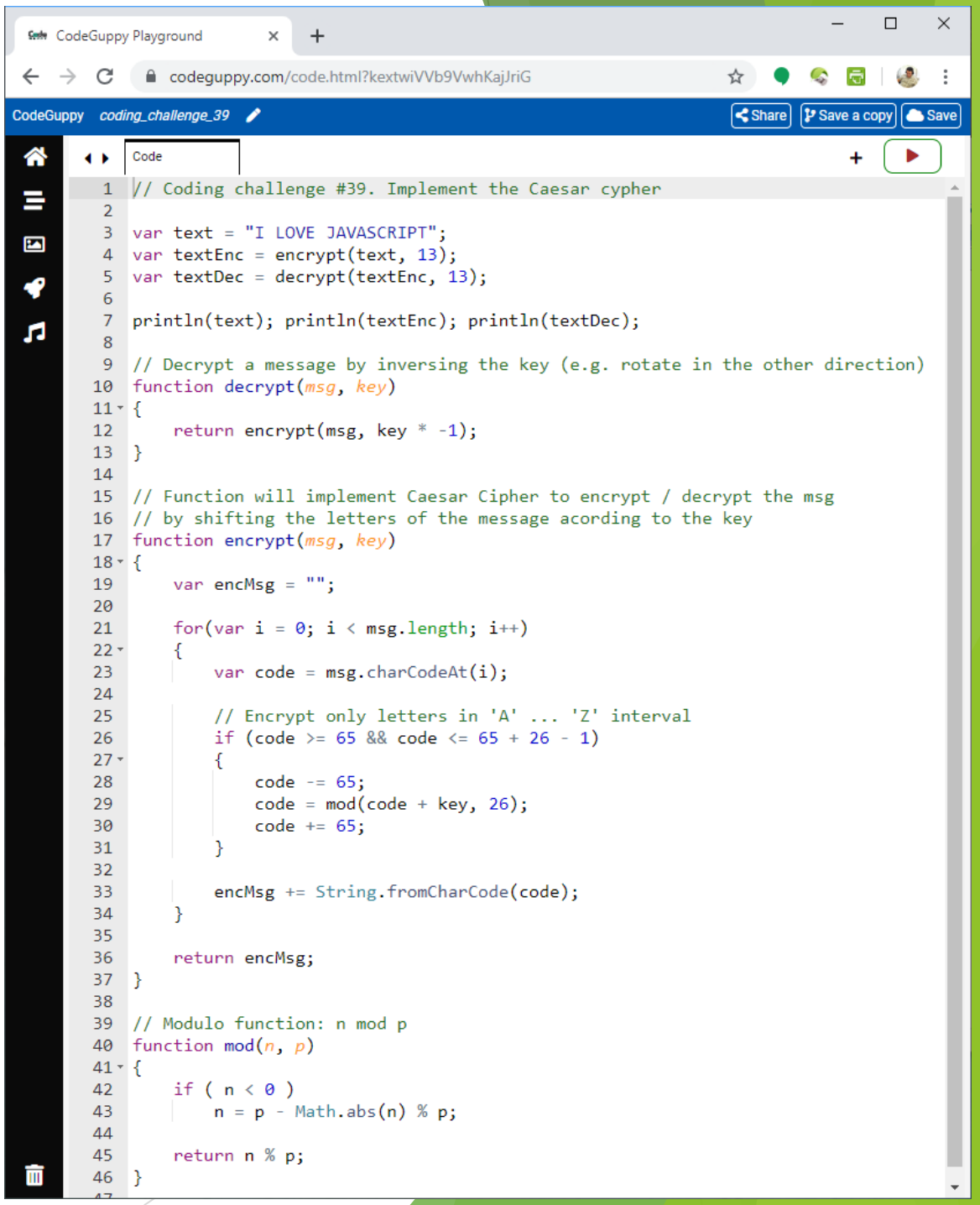
Coding challenge #39: Implement the Caesar cypher



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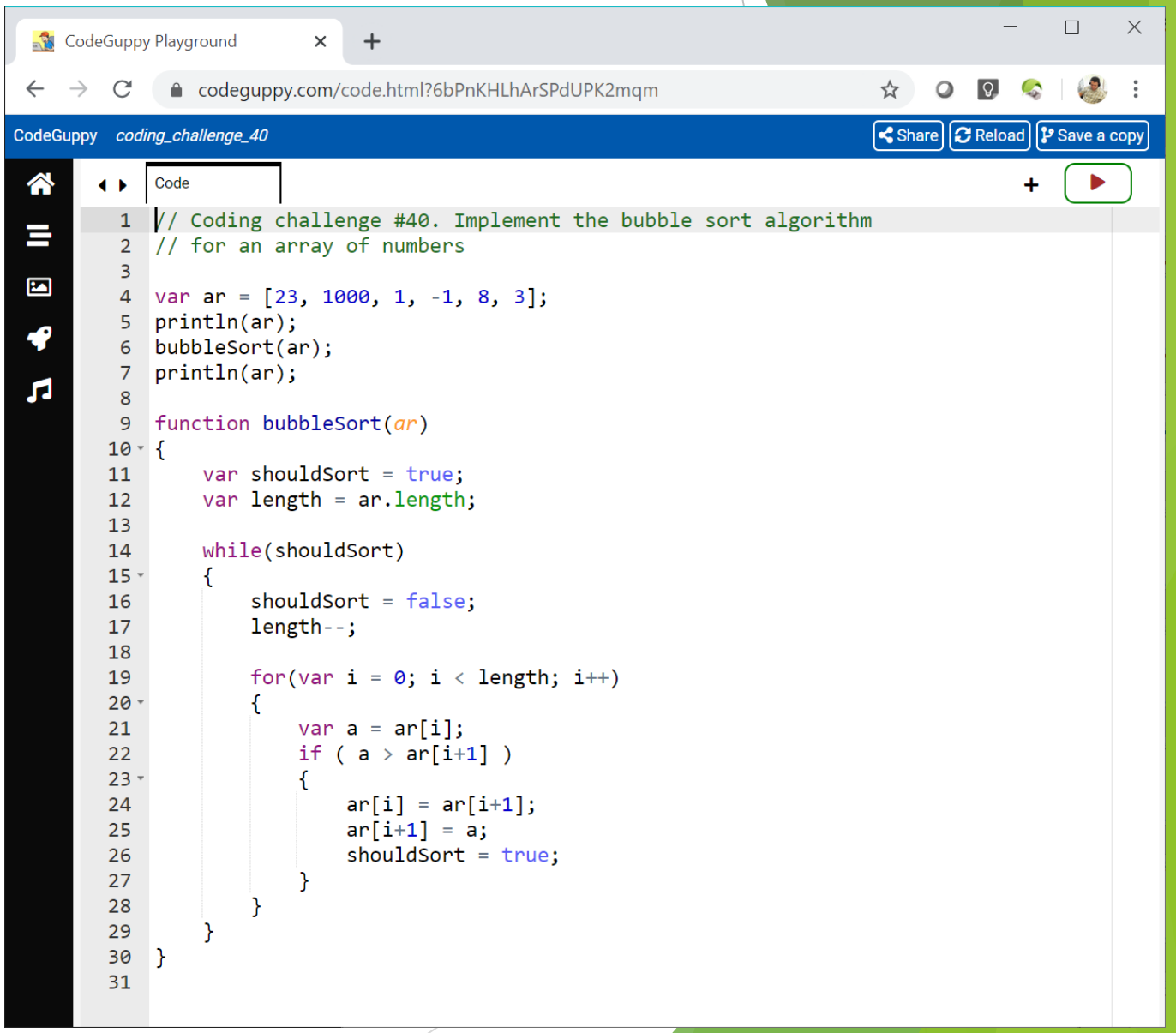
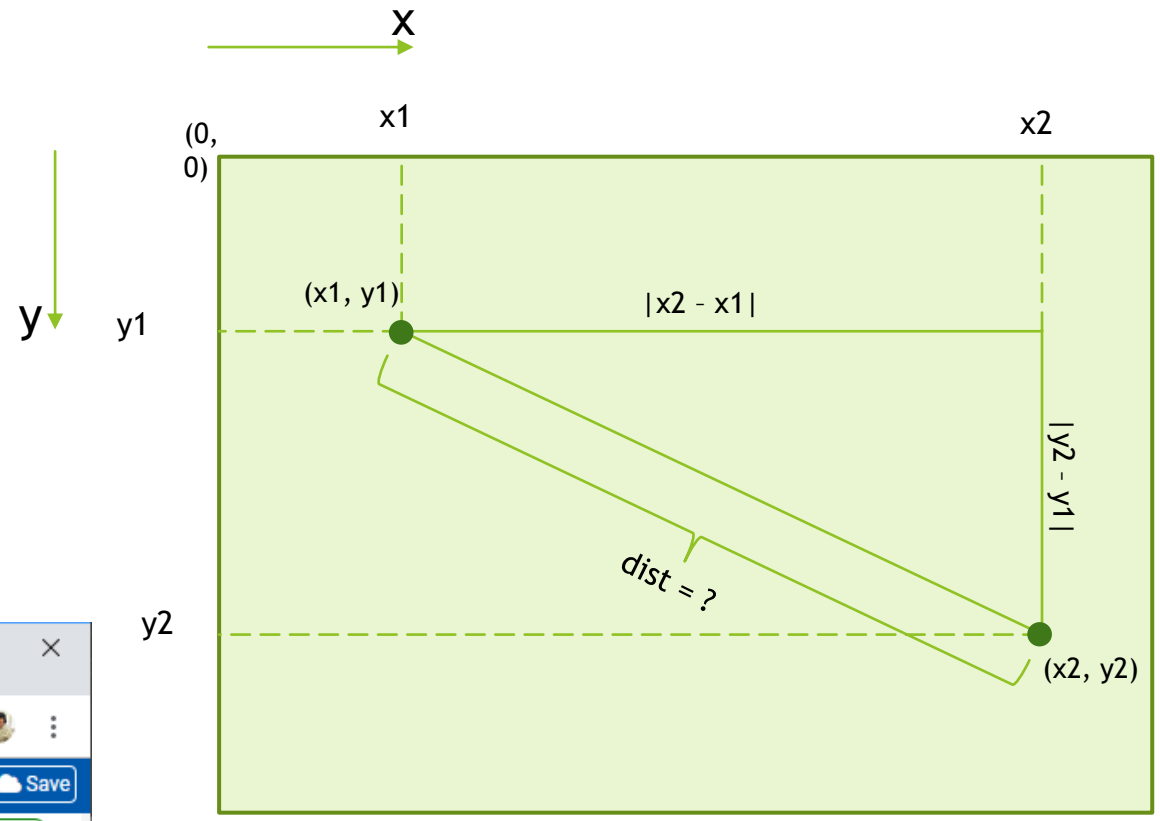
Coding challenge #40: Implement the bubble sort algorithm for an array of numbers



Coding challenge #41: Create a function to calculate the distance between two points defined by their x, y coordinates



CodeGuppy Playground

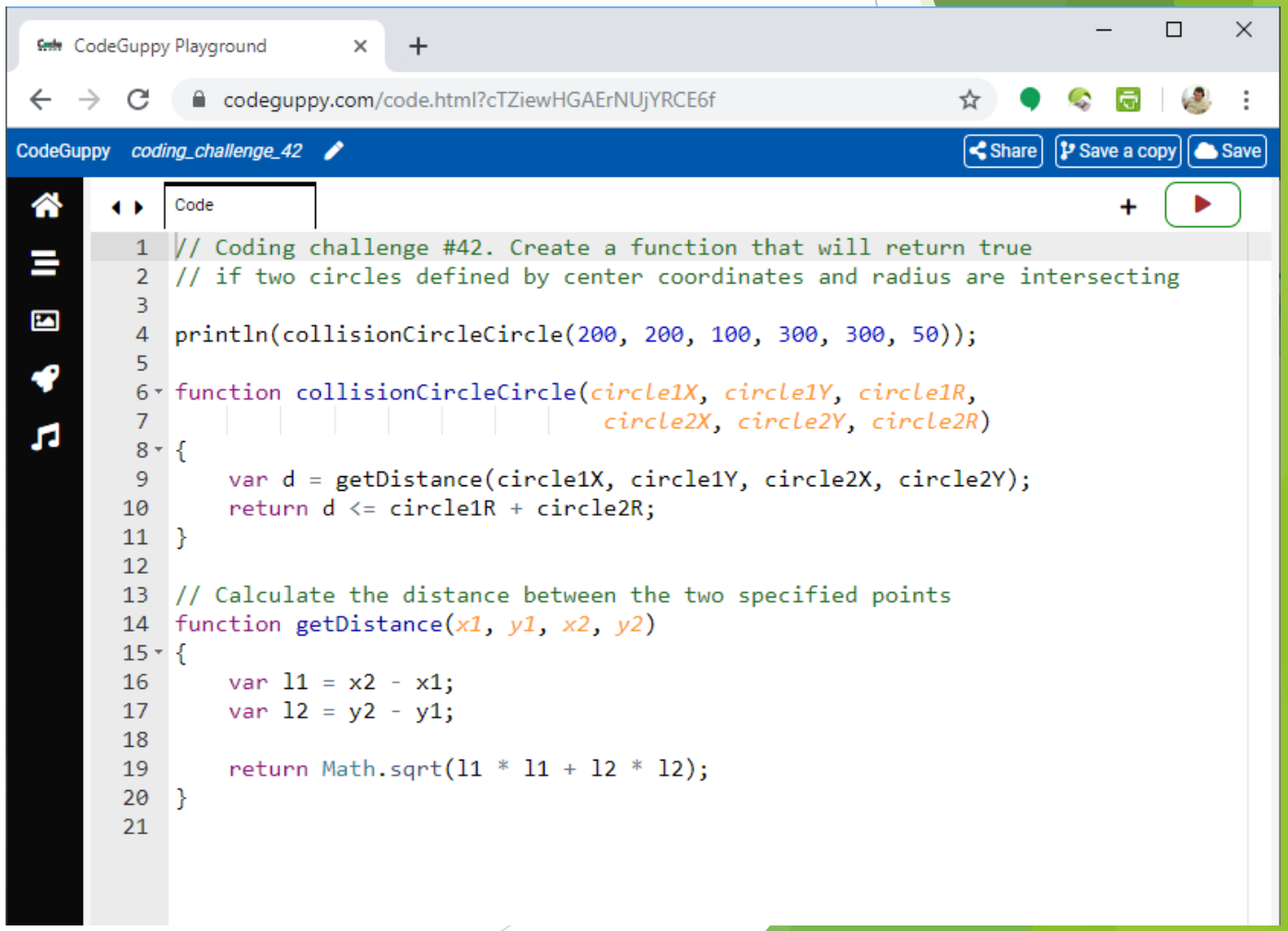
codeguppy.com/code.html?mnAuF3BjhDaFwBtDUnl4

CodeGuppy *coding_challenge_41* Share Save a copy Save

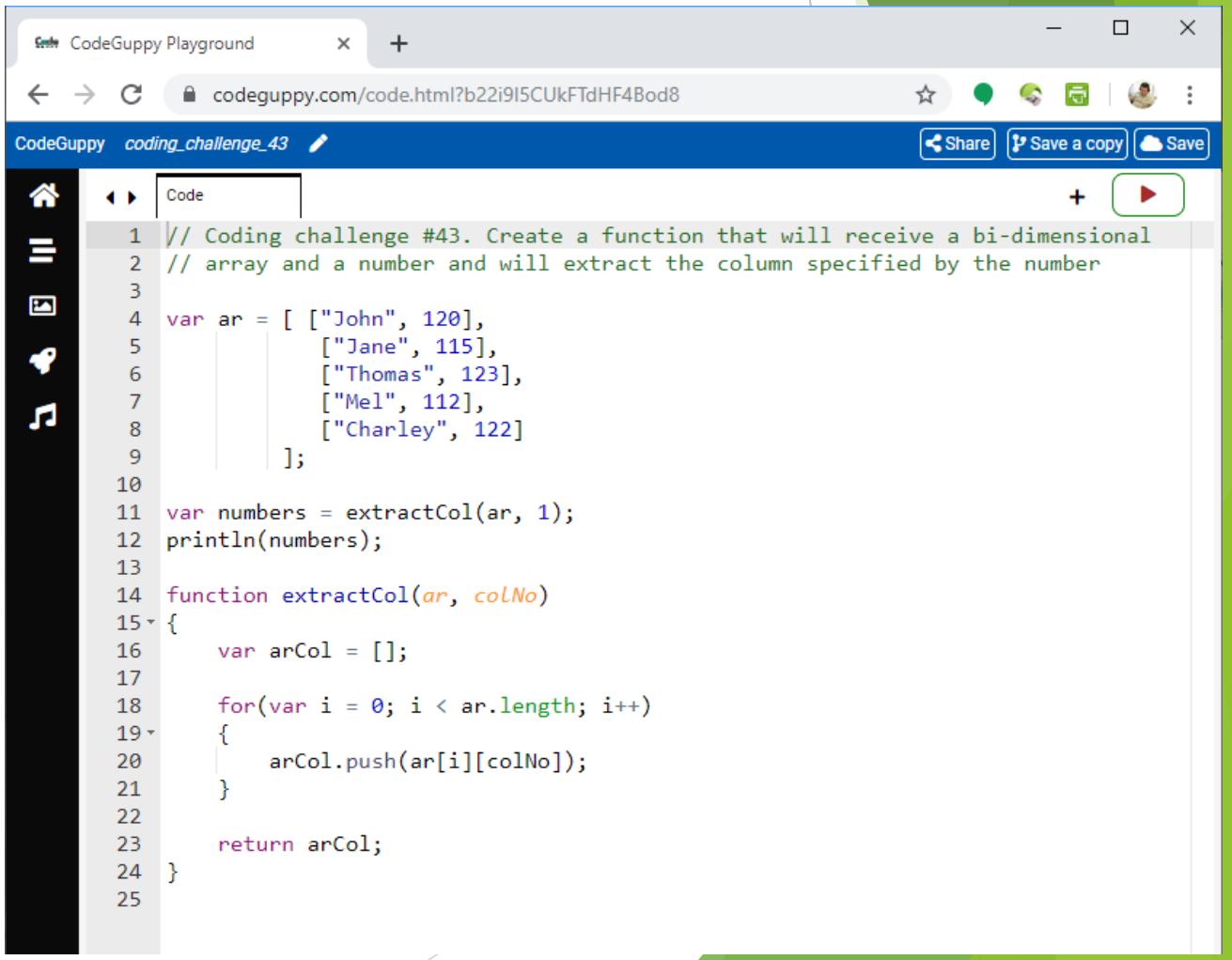
Code

```
1  // Coding challenge #41. Create a function to calculate the
2  // distance between two points defined by their x, y coordinates
3
4  println(getDistance(100, 100, 400, 300));
5
6  function getDistance(x1, y1, x2, y2)
7  {
8      var l1 = x2 - x1;
9      var l2 = y2 - y1;
10
11     return Math.sqrt(l1 * l1 + l2 * l2);
12 }
13
```

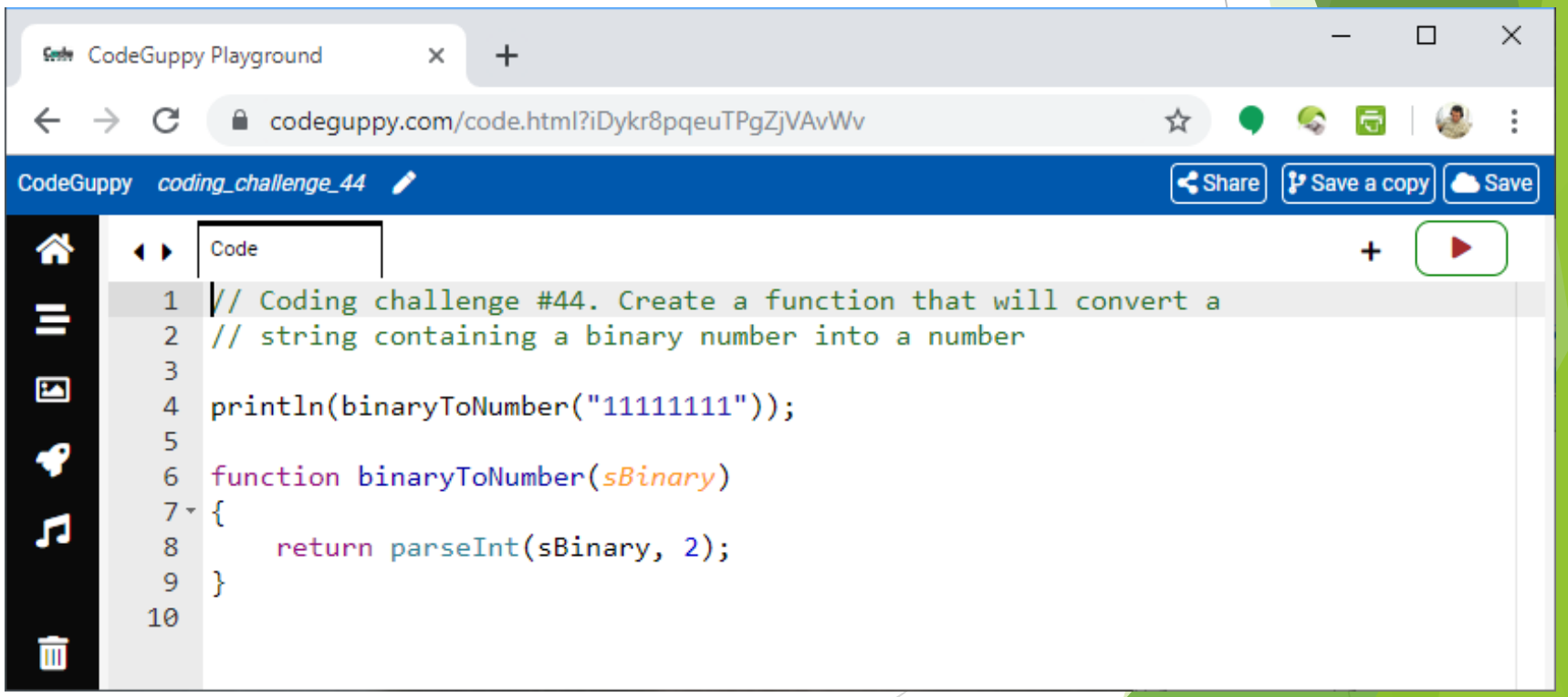
Coding challenge #42: Create a function that will return a Boolean value indicating if two circles defined by center coordinates and radius are intersecting



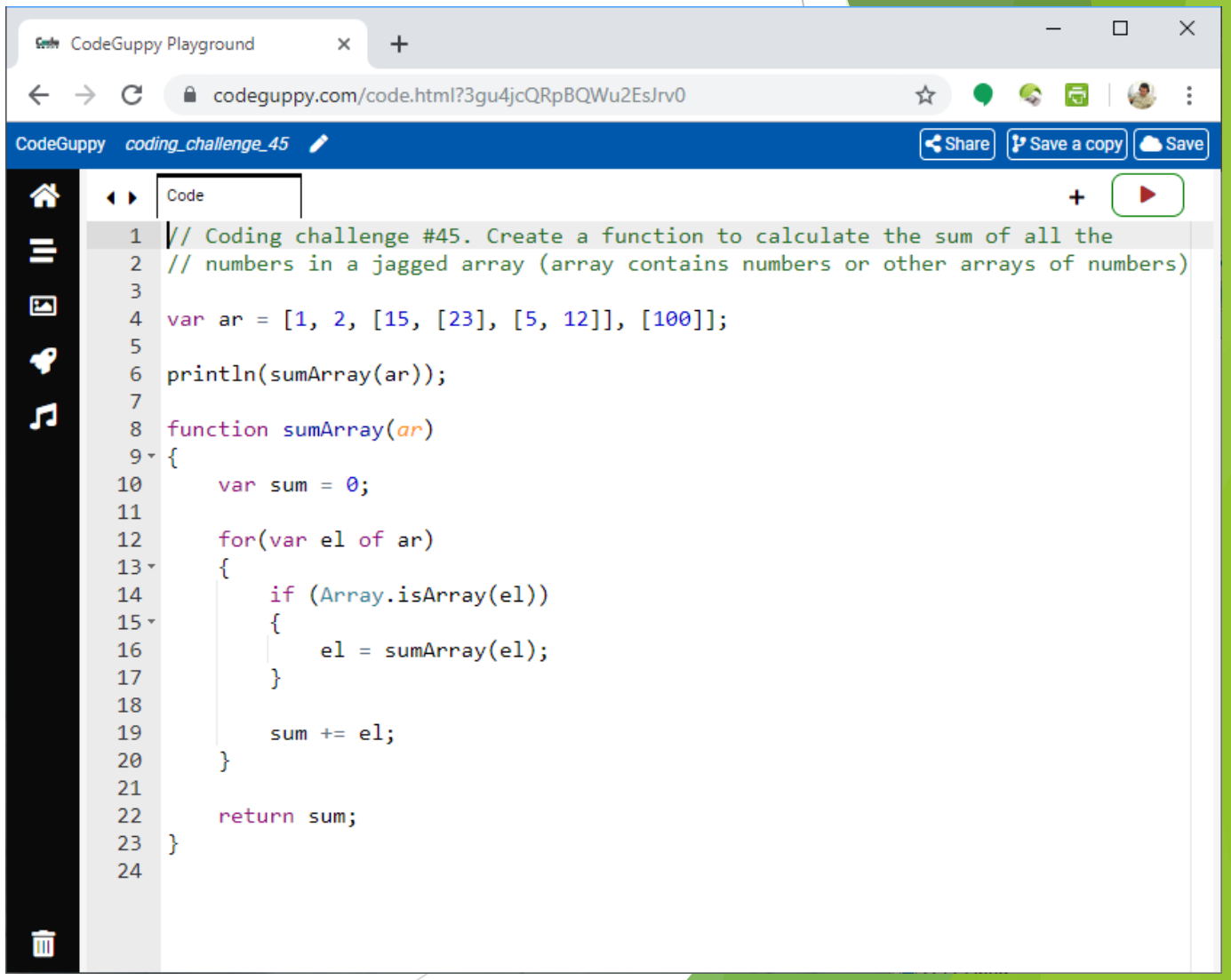
Coding challenge #43: Create a function that will receive a bi-dimensional array as argument and a number and will extract as a unidimensional array the column specified by the number



Coding challenge #44: Create a function that will convert a string containing a binary number into a number

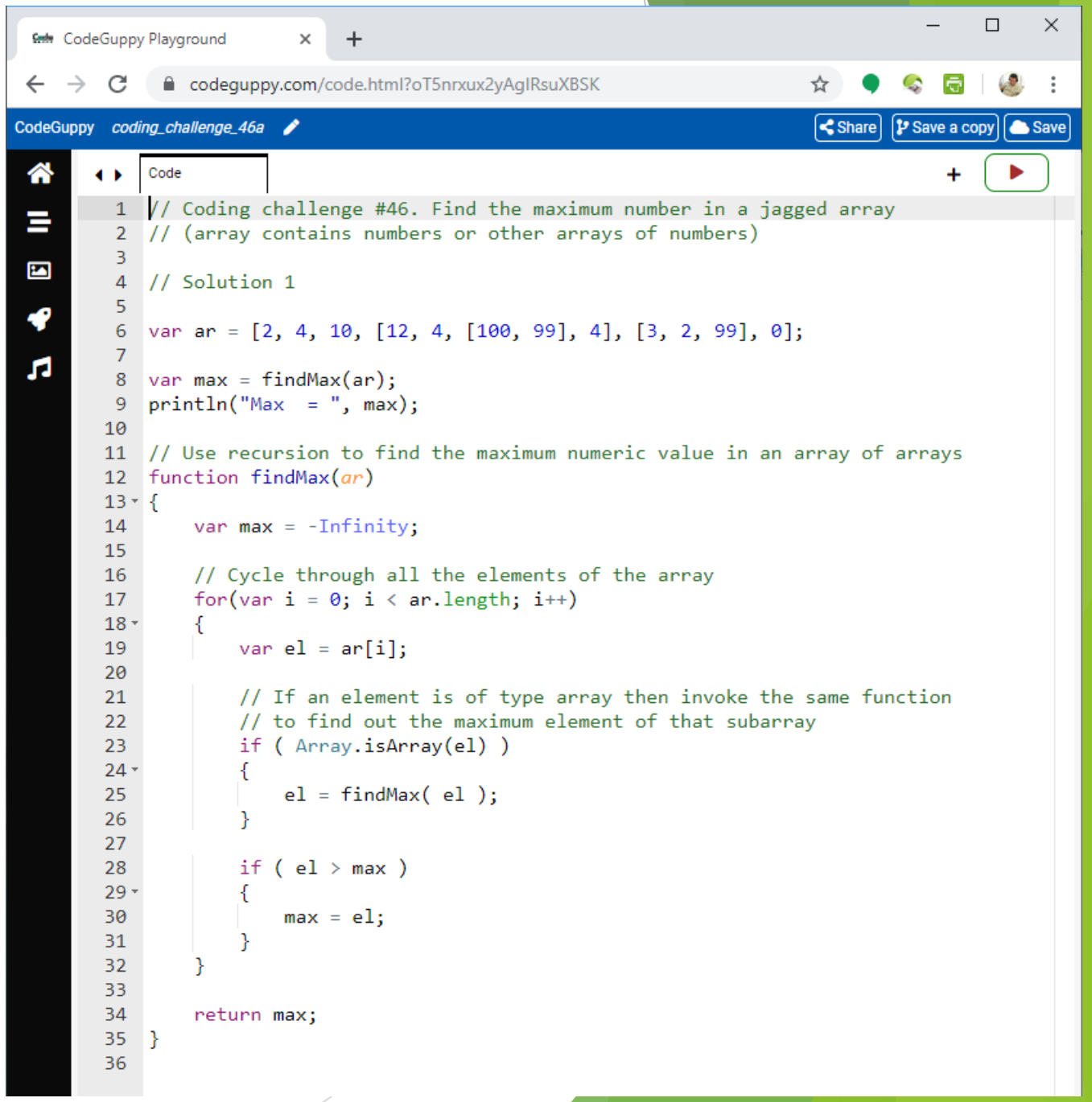


Coding challenge #45: Create a function to calculate the sum of all the numbers in a jagged array (array contains numbers or other arrays of numbers on an unlimited number of levels)



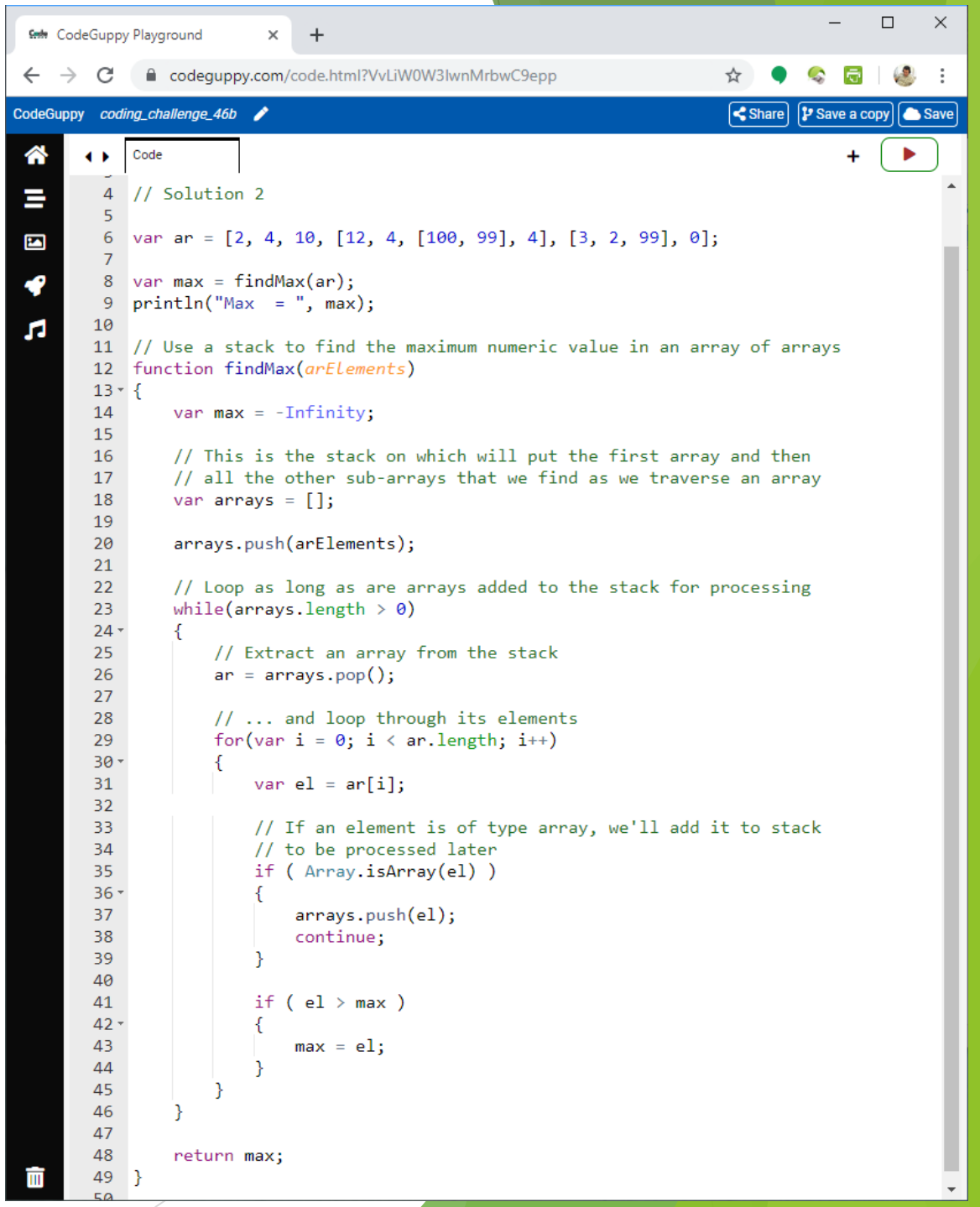
Coding challenge #46-a: Find the maximum number in a jagged array of numbers or array of numbers

Requirements: Use recursion



Coding challenge #46-b: Find the maximum number in a jagged array of numbers or array of numbers

Requirements: Do not use recursion



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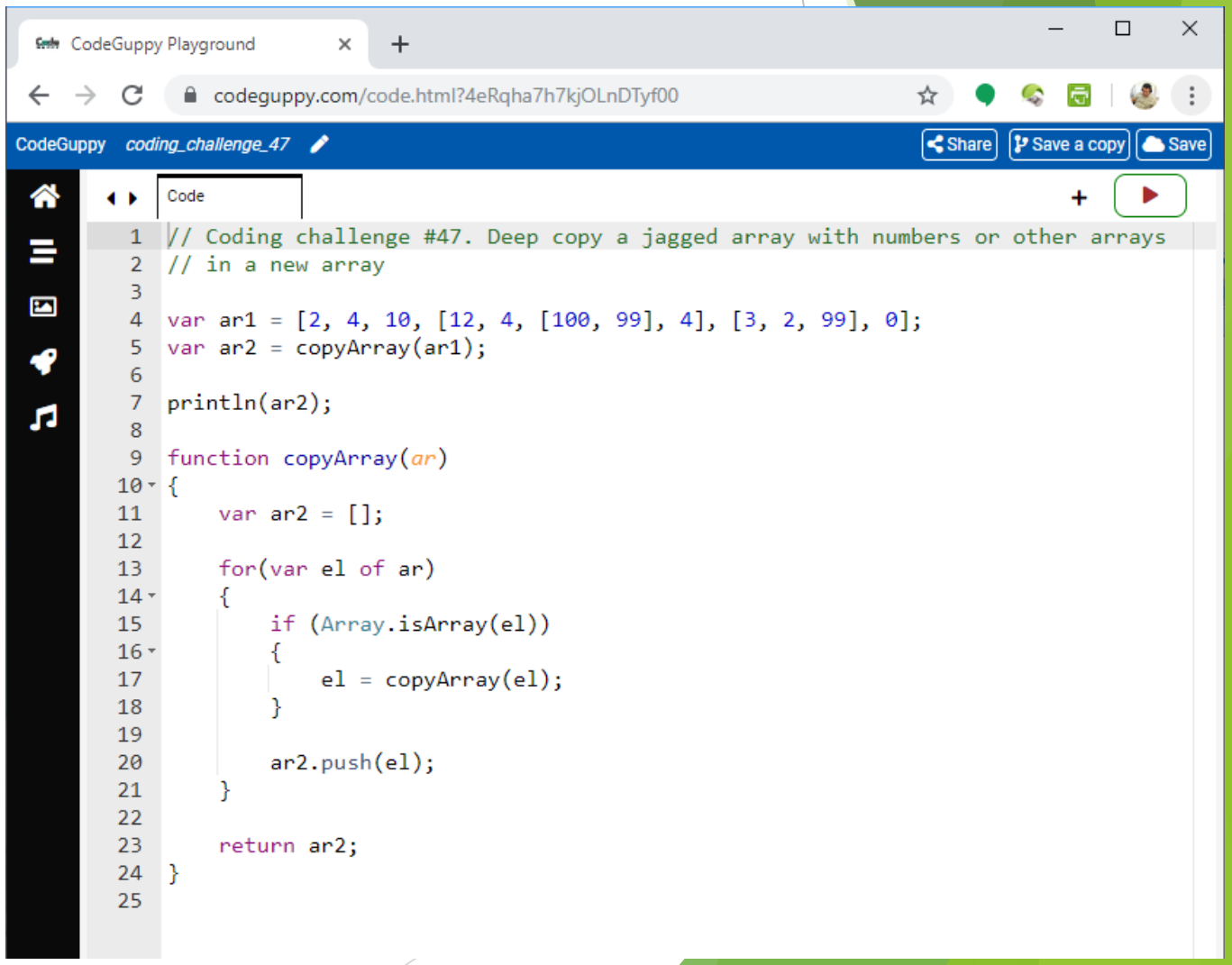
Coding challenge #47: Deep copy a jagged array with numbers or other arrays in a new array



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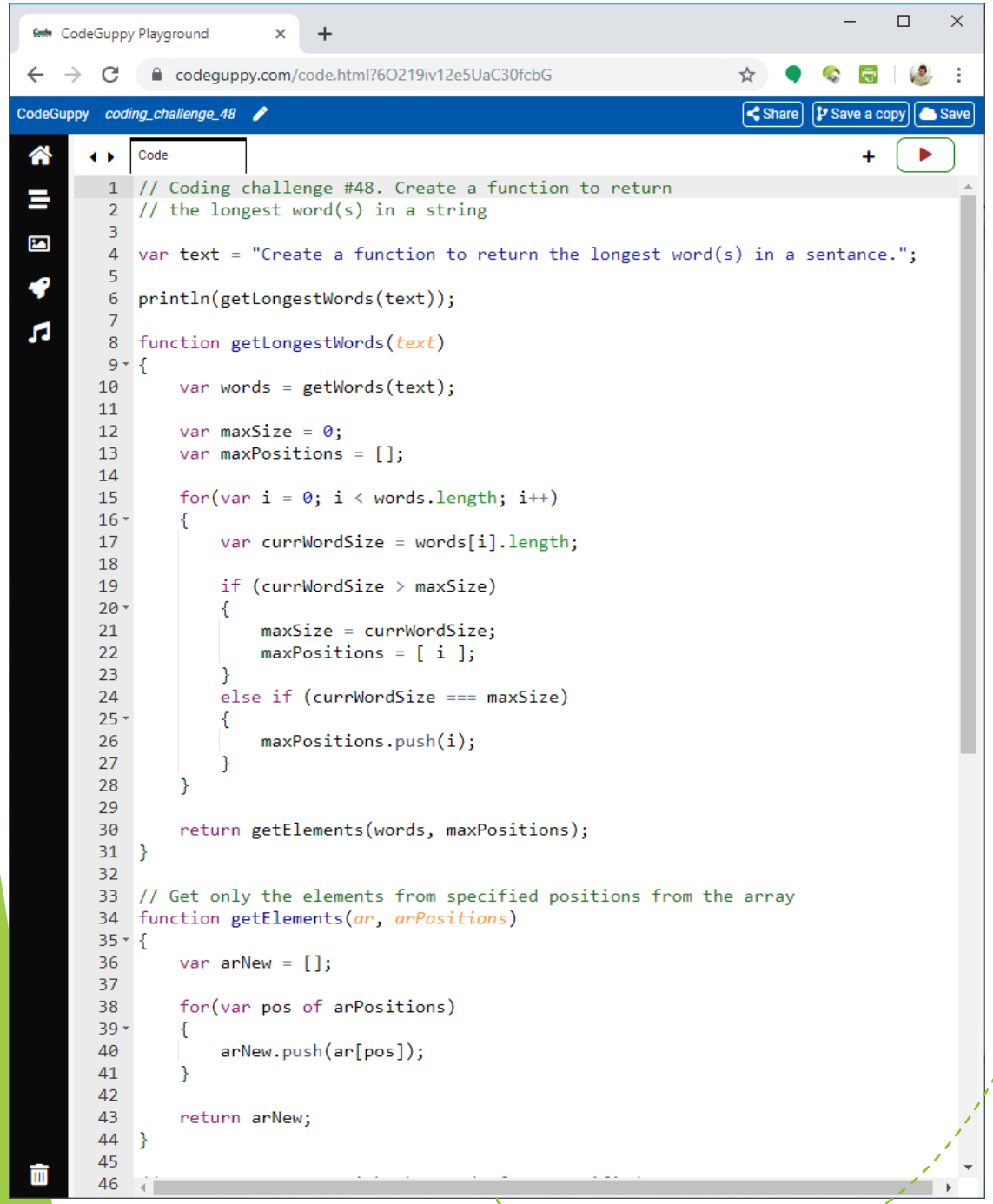
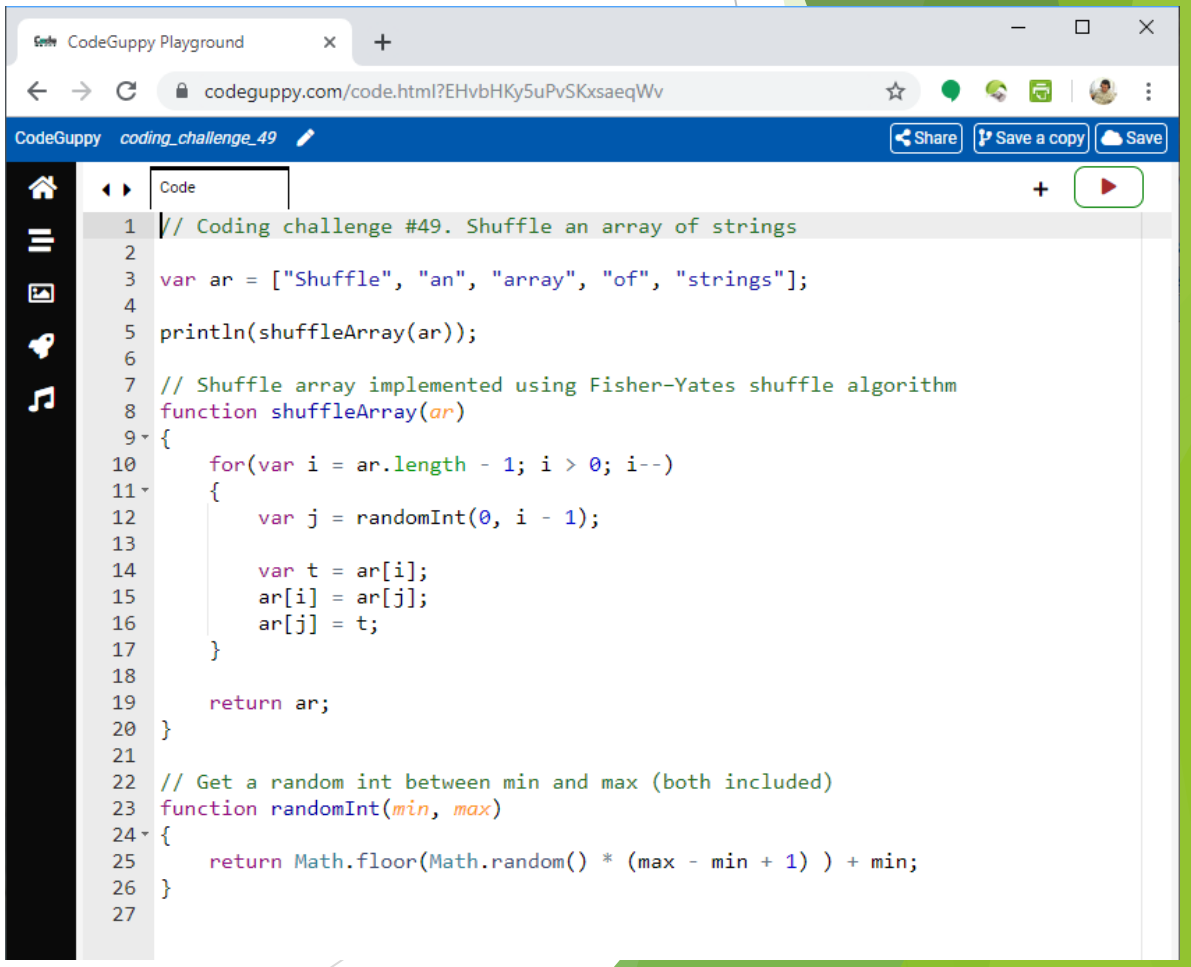
Coding challenge #48: Create a function to return the longest word(s) in a string



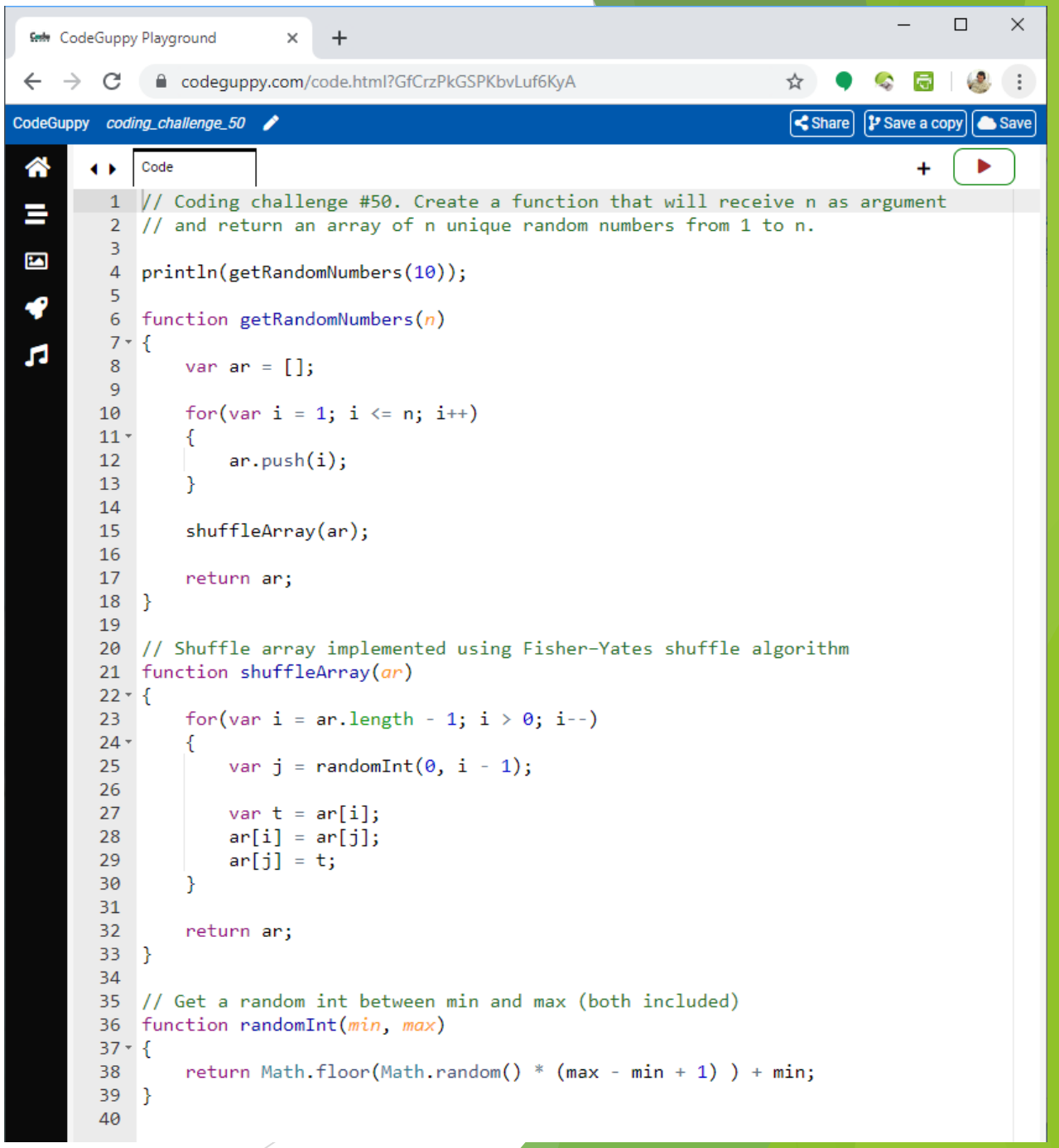

```
// Coding challenge #48. Create a function to return
// the longest word(s) in a string

var text = "Create a function to return the longest word(s) in a sentance.";

println(getLongestWords(text));

function getLongestWords(text)
{
    var words = getWords(text);

    var maxSize = 0;
    var maxPositions = [];

    for(var i = 0; i < words.length; i++)
    {
        var currWordSize = words[i].length;

        if (currWordSize > maxSize)
        {
            maxSize = currWordSize;
            maxPositions = [ i ];
        }
        else if (currWordSize === maxSize)
        {
            maxPositions.push(i);
        }
    }

    return getElements(words, maxPositions);
}

// Get only the elements from specified positions from the array
function getElements(ar, arPositions)
{
    var arNew = [];

    for(var pos of arPositions)
    {
        arNew.push(ar[pos]);
    }

    return arNew;
}
```

```
// Returns an array with the words from specified text
function getWords(text)
{
    let startWord = -1;
    let ar = [];

    for(let i = 0; i <= text.length; i++)
    {
        let c = i < text.length ? text[i] : " ";

        if (!isSeparator(c) && startWord < 0)
        {
            startWord = i;
        }

        if (isSeparator(c) && startWord >= 0)
        {
            let word = text.substring(startWord, i);
            ar.push(word);

            startWord = -1;
        }
    }

    return ar;
}

function isSeparator(c)
{
    var separators = [" ", "\t", "\n", "\r", ",", ";", ".", "!", "?", "(", ")"];
    return separators.includes(c);
}
```

Coding challenge #49: Shuffle an array of strings



Coding challenge #50: Create a function that will receive n as argument and return an array of n random numbers from 1 to n



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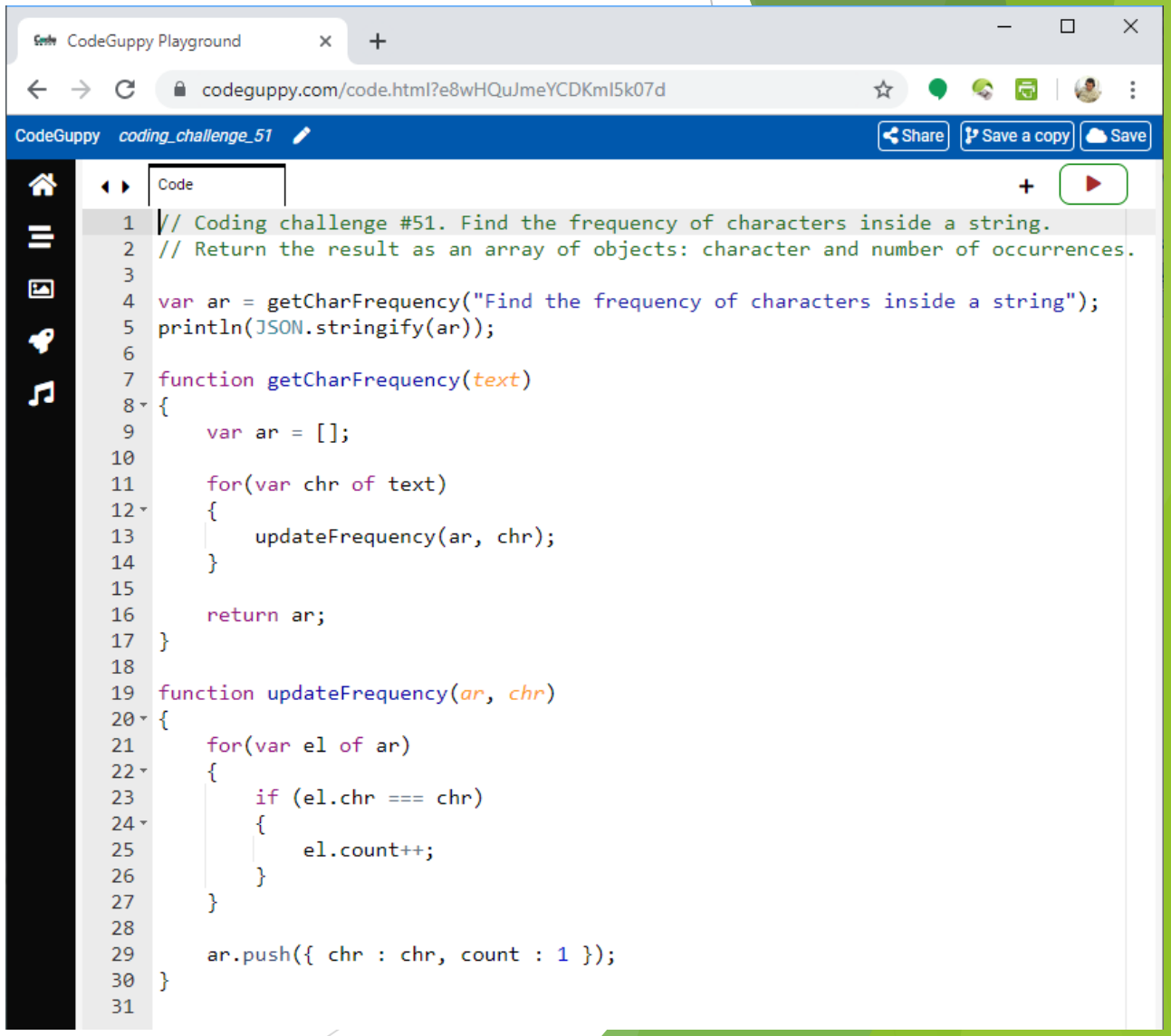
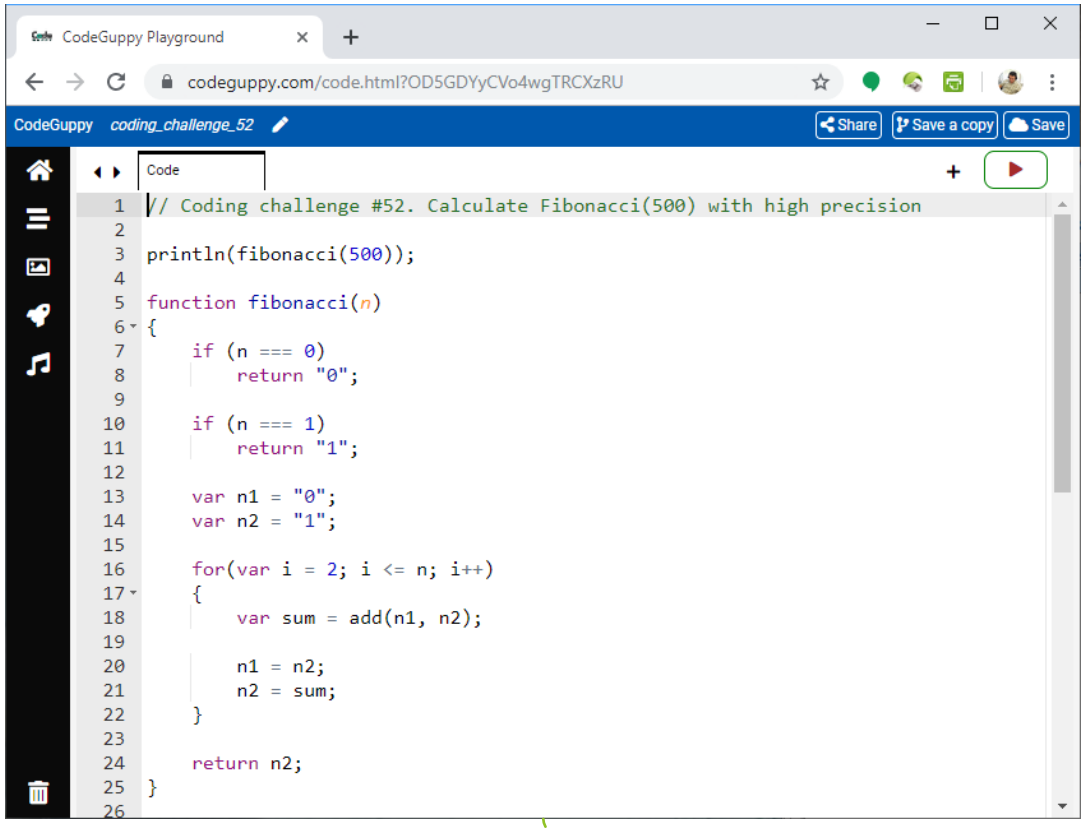
Coding challenge #51: Find the frequency of characters inside a string. Return the result as an array of objects.

Each object has 2 fields: character and number of occurrences.



Coding challenge #52: Calculate Fibonacci(500) with high precision (all digits)




```
// Coding challenge #52. Calculate Fibonacci(500) with high precision

println(fibonacci(500));

function fibonacci(n)
{
    if (n === 0)
        return "0";

    if (n === 1)
        return "1";

    var n1 = "0";
    var n2 = "1";

    for(var i = 2; i <= n; i++)
    {
        var sum = add(n1, n2);

        n1 = n2;
        n2 = sum;
    }

    return n2;
}
```

```
function add(sNumber1, sNumber2)
{
    var maxSize = Math.max(sNumber1.length, sNumber2.length);

    var s1 = sNumber1.padStart(maxSize, "0");
    var s2 = sNumber2.padStart(maxSize, "0");

    var s = "";
    var carry = 0;

    for(var i = maxSize - 1; i >= 0; i--)
    {
        var digit1 = parseInt(s1[i]);
        var digit2 = parseInt(s2[i]);

        var sum = digit1 + digit2 + carry;
        var digitSum = sum % 10;
        carry = sum >= 10 ? 1 : 0;

        s = digitSum.toString() + s;
    }

    if (carry > 0)
        s = carry + s;

    return s;
}
```

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Coding challenge #53: Calculate 70! with high precision (all digits)

CodeGuppy Playground

codeguppy.com/code.html?m4AfgJmCABGNEvKIUNtM

CodeGuppy *coding_challenge_53* Share Save a copy Save

Code

```
// Coding challenge #53. Calculate 70! with high precision (all decimals)

println(factorial(70));

// Calculate factorial(n) ... using big number calculations
function factorial(n)
{
    var prod = "1";

    for(var i = 2; i <= n; i++)
    {
        prod = mult(prod, i.toString());
    }

    return prod;
}

// Multiplies sNumber1 * sNumber2
// Each number is provided as string
function mult(sNumber1, sNumber2)
{
    // Calculate partial results according to multiplication algorithm
    var partialResults = [];

    for(var i = sNumber2.length - 1; i >= 0; i--)
    {
        var digit = parseInt(sNumber2[i]);

        var partialResult = multDigit(sNumber1, digit);
        partialResult += "0".repeat(partialResults.length);

        partialResults.push(partialResult);
    }

    // Sum partial results to obtain the product
    var sum = "";

    for(var r of partialResults)
    {
        sum = add(sum, r);
    }

    return sum;
}
```

```
// Multiplies number sNumber (as string) with a single digit number
function multDigit(sNumber, digit)
{
    var p = "";
    var carry = 0;

    for(var i = sNumber.length - 1; i >= 0; i--)
    {
        var numberDigit = parseInt(sNumber[i]);

        var prod = digit * numberDigit + carry;
        var prodDigit = prod % 10;
        carry = Math.floor(prod / 10);

        p = prodDigit.toString() + p;
    }

    if (carry > 0)
        p = carry + p;

    return p;
}
```

```
function add(sNumber1, sNumber2)
{
    var maxSize = Math.max(sNumber1.length, sNumber2.length);

    var s1 = sNumber1.padStart(maxSize, "0");
    var s2 = sNumber2.padStart(maxSize, "0");

    var s = "";
    var carry = 0;

    for(var i = maxSize - 1; i >= 0; i--)
    {
        var digit1 = parseInt(s1[i]);
        var digit2 = parseInt(s2[i]);

        var sum = digit1 + digit2 + carry;
        var digitSum = sum % 10;
        carry = sum >= 10 ? 1 : 0;

        s = digitSum.toString() + s;
    }

    if (carry > 0)
        s = carry + s;

    return s;
}
```

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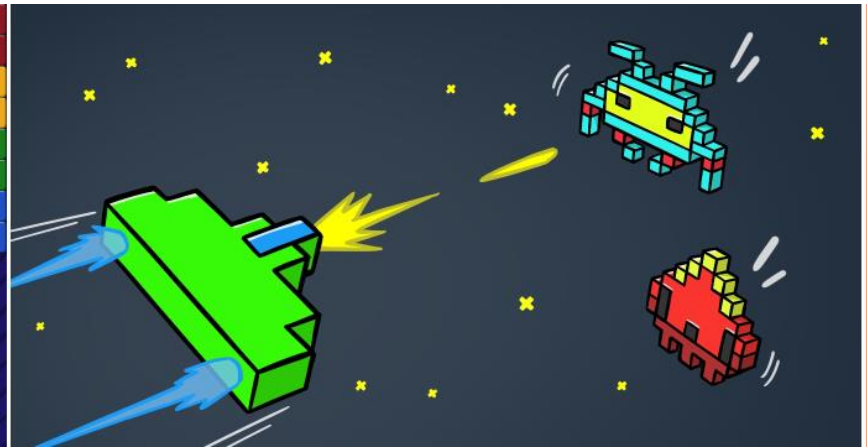
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