



Controlling Devices Over the Internet > Introduction to Javascript

Variables in JavaScript

In the previous lesson, we learnt how to use JS code along with HTML code to make web pages more dynamic. But we did not see anything about how powerful JS code is. In this lesson, we shall learn how to use JS code evaluate arithmetic expressions, and manipulate HTML content dynamically.

Have you ever written a Thank You note or a letter to all the people that wished you on your Birthday? How would we have done this using a program? We would start by creating a template for the note, saying thank you for the wishes and maybe also sharing a bit about how the birthday celebrations went. Inside the template, you would also use the name of the person who wished you in multiple places. Great! Now we can just replace the name of the person in all the sentences in the template, print the message and send it. This will work really great if you have to update the name of the person only in few lines. What if there were 100 lines that you had to update each time you sent it to a new person?

Wouldn't this be a laborious task? Not to mention, the chances of you missing out on updating the name in a few lines could cause a huge issue. Wouldn't it be great if you could specify the name in just one place and all the lines would show the change? Variables are used in programming languages to solve this issue.

As you might have learnt in other programming languages as well, variables are used to store data values during the execution of a program. The variables are used so that we can replace using direct expressions such as $2+6$ to $x+y$ where x and y are variables so that the same code can work for multiple inputs by just changing the values stored in the variables.

We use the keyword `var` to define a variable in JavaScript. Here is an example of a some JS variables.

```
var a = 20;
```

```
var b = "platform";
```

In the above example, the variable `a` stores the value 20 and the variable `b` stores the value "platform".

It is not required to define the variable type, e.g. int, float, char etc. in JS as is the case in other programming languages such as C, C++ etc.

Arithmetic operations in JS

We can use JS variables for performing arithmetic operations on numbers. The operations can be performed on numbers, variables or expressions.



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1. Here is the syntax for all the basic arithmetic operations along with comments to describe each line of code. We use the `//` characters to add comments to JS code. Comments help in providing more information about the code to the person who is reading the code. The comments are not processed by the JS engine. Save the code in a file with `.js` extension e.g. `my-javascript.js`.

2. We shall also use a built-in function in JS called `console.log()`. The `console.log()` statement is a very powerful tool for testing and debugging applications that contain HTML, JS, and CSS code. The output of the `console.log` function is displayed in the Javascript console that is present in most modern browsers like Google Chrome, Firefox, etc. To open the JS console, you can right-click on the browser screen and select the `Inspect Element` option from the list displayed. Any errors due to JavaScript syntax in the HTML page are displayed in red in the JS console.

3. `var c = 3 + 4; // Addition operation on numbers.`

```
console.log ("The value of c is ", c);
```

```
var x = 2;
```

```
var y = 3;
```

```
var z = x - y; // Subtraction operation on variables.
```

```
console.log ("The value of z is ", z);
```

```
var m = x * y; // Multiplication operation on variables.
```

```
console.log ("The value of m is ", m);
```

```
var n = x / y; // Division operation on variables.
```

```
console.log ("The value of n is ", n);
```

```
var w = (x * y + 20) - 10 // Arithmetic operation on an expression.
```

```
console.log ("The value of w is ", w);
```

4. We shall now include the JS file in an HTML document so that we can view the output in the browser. Save the HTML code given below with the `.html` extension e.g. `my-webpage.html`.

5. `<!DOCTYPE html>`

```
<html>
```

```
<head>
```

```
<title>Javascript Variables</title>
```

```
<script type="text/javascript" src="my-javascript.js"></script>
```

```
</head>
```

```
<body>
```

```
</body>
```

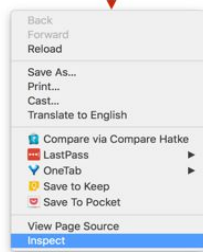


```
</html>
```

6. Open the HTML document in your browser and open the browser console as shown in the images below.

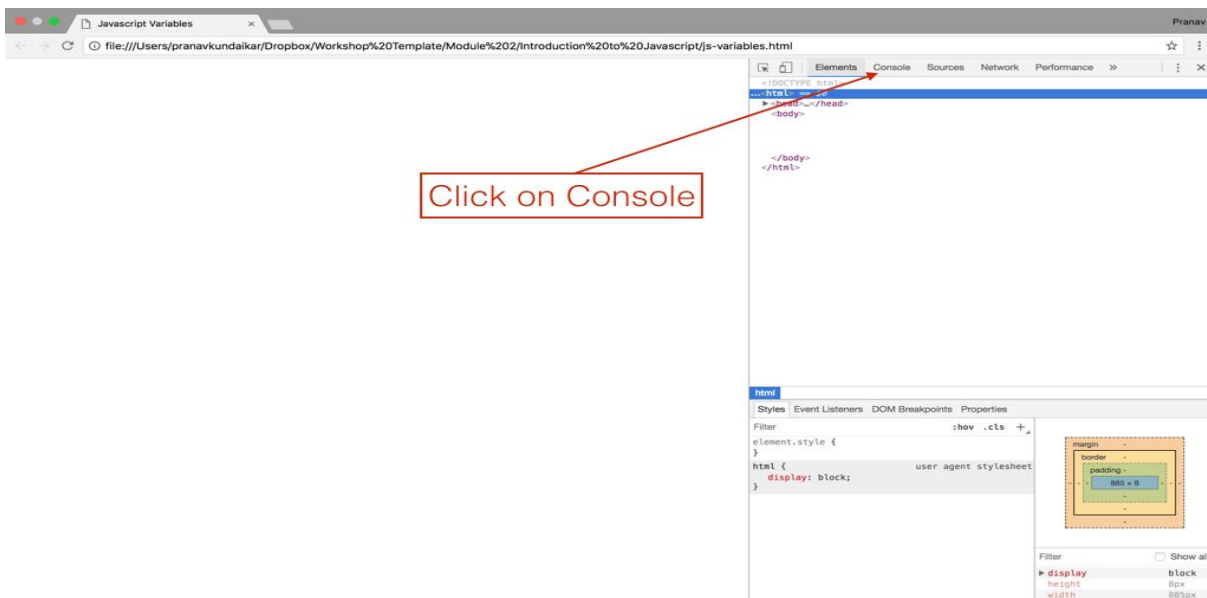


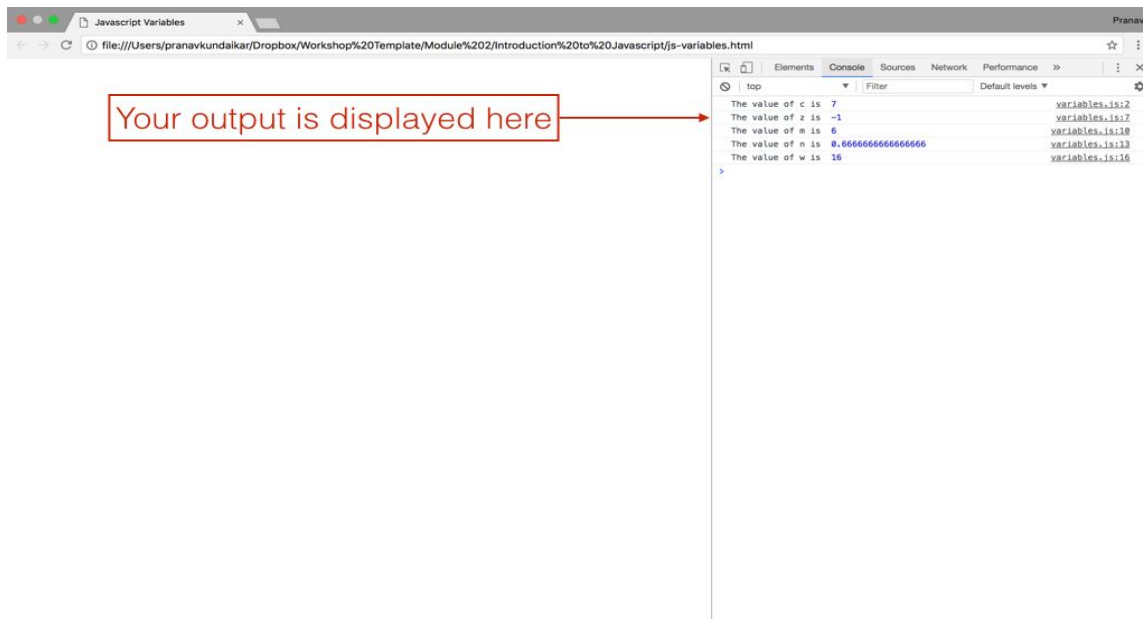
Right-click in your browser to open this menu



Select the Inspect option.

Note: It is called Inspect Element in Mozilla Firefox.





In this lesson, we learnt how to create variables in Javascript and basic arithmetic on them. In the next section, we shall learn how we can manipulate HTML using Javascript.