

GENERATING RANDOM NUMBERS

PROF. DAVID ROSSITER

AFTER THIS PRESENTATION

- You'll be able to generate and manipulate random numbers

WE WILL LOOK AT

`Math.random()`

`Math.floor()`

OVERVIEW

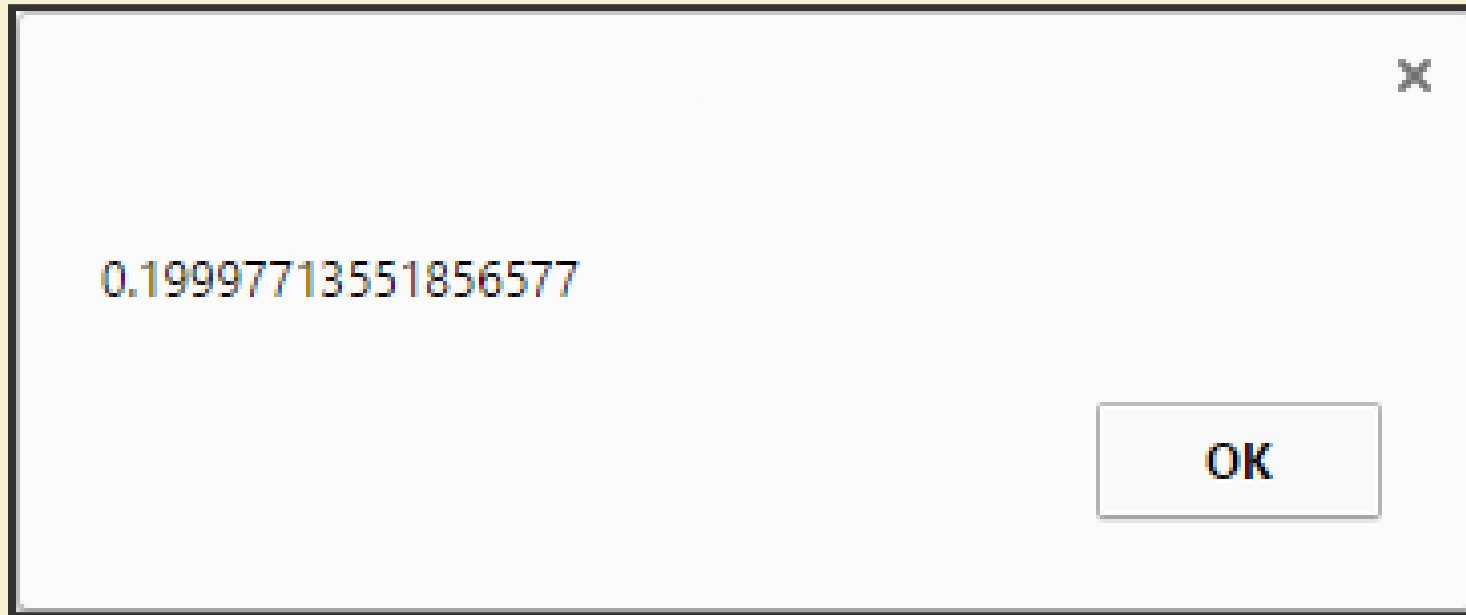
- Generate a random number
- Set up the range
- Throw away the decimal place

GENERATING A RANDOM NUMBER

- You can generate a random number like this:

```
var random_number = Math.random();
```

- The resulting range is $[0, 1)$
- 1 will not be generated



Click [here](#) to open the example

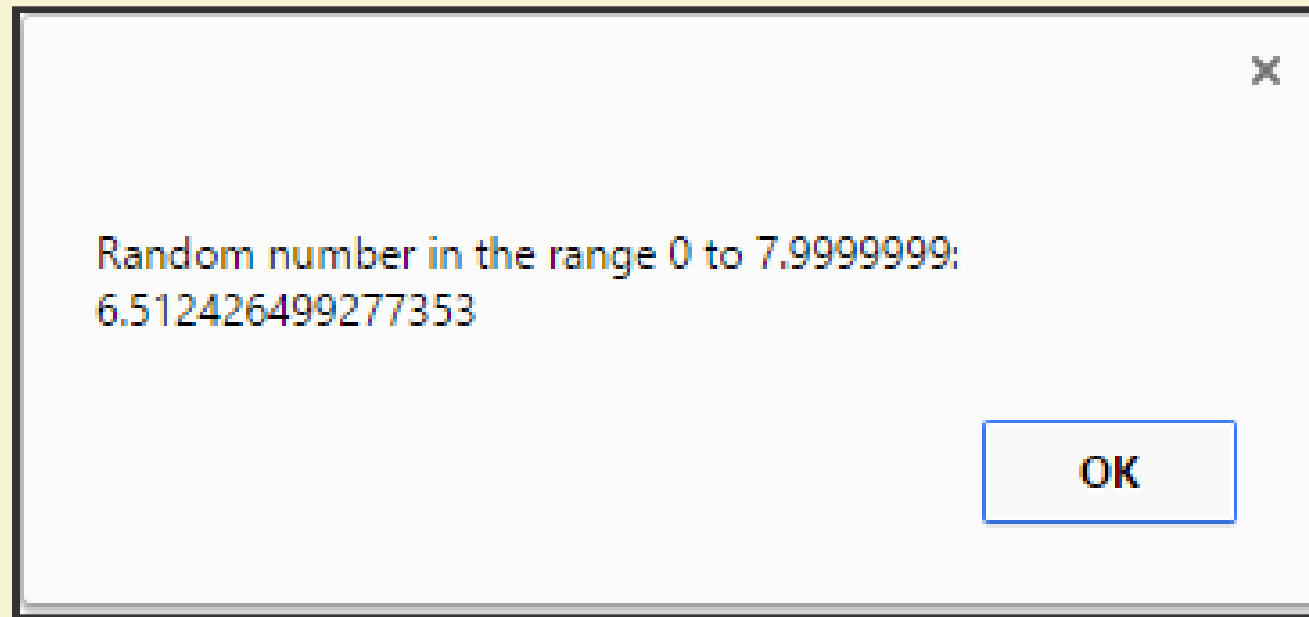
```
<!doctype html>
<html>
  <body>
    <script>
      var random_number;
      random_number = Math.random();
      alert( random_number );
    </script>
  </body>
</html>
```

SETTING UP THE RANGE

- So far the random number is in the range 0 up to 1
- Multiply in order to get the range you want, i.e.

```
random_number = Math.random() * max_value;
```

- We now have a number in the range $[0, \text{max_value})$

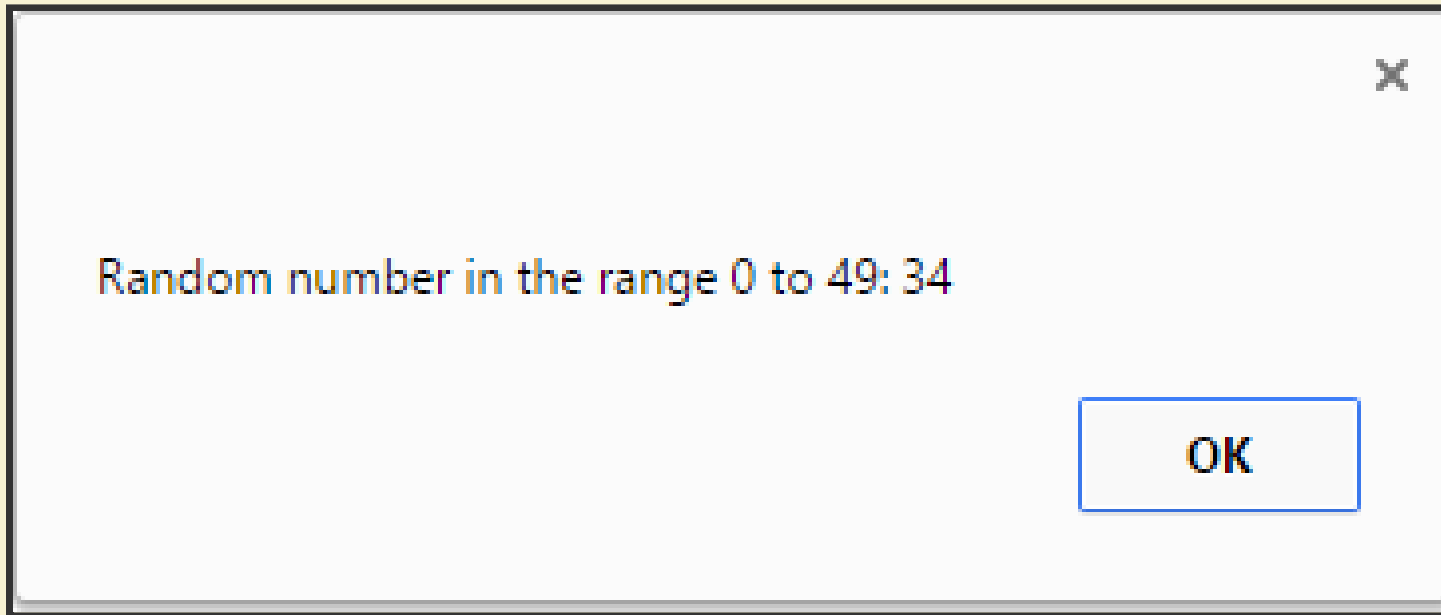


Click [here](#) to open the example

```
<!doctype html>
<html>
  <body>
    <script>
      var random_number;
      random_number = Math.random() * 8;
      alert("Random number in the range 0 to " +
            "7.99999999:\n" + random_number );
    </script>
  </body>
</html>
```

THROW AWAY THE DECIMAL PLACE

- There is still a decimal place
- `Math.floor()` dumps the decimal place
- For example, 2.82248 becomes 2



Click [here](#) to open the example

```
<!doctype html>
<html>
  <body>
    <script>
      var random_number;
      random_number = Math.random() * 50;
      random_number = Math.floor( random_number );
      alert("Random number in the range 0 to 49: " +
            random_number);
    </script>
  </body>
</html>
```